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WITH A PREFACE AND PRECEPTS FOR THE EXPLANATION AND USE OF THE SAME,

BY NEVIL MASKELYNE, F.R.S. *ASTRONOMER ROYAL.*

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PREFACE.

PREFACE.

LOGARITHMS are a ſet of artificial numbers, which have been calculated, and put in tables, to facilitate arithmetical calculations. They were invented by the learned and never-enough renowned *John Napier*, Baron of Merchiſton, in Scotland, and publiſhed by him in 1614. By their means the tedious operations of multiplication and diviſion of numbers, raiſing powers, and extracting roots, have been reduced to the addition and ſubtraction of their correſpondent logarithms, multiplying them by the index of the power, or dividing by the index of the root.

The improvements made by *Tycho Brahe*, the noble Dane, both in the theory and practice of aſtronomy, together with the determination of the true motions of the planets from his obſervations by his illuſtrious pupil *Kepler*, had greatly enlarged the bounds of this ſcience, and ſeemed to demand a more eaſy and expeditious method of calculating obſervations rendered capable of ſo much exactneſs, and leading to ſuch important diſcoveries. Baron *Napier* was probably acquainted with theſe improvements in ſcience before his invention of logarithms, and ſtimulated thereby in the purſuit of ſo uſeful a compendium of aſtronomical calculation. However that may be, he applied himſelf to the ſearch of this *deſideratum*, which he happily diſcovered, without any hint or communication from any one elſe, no leſs to his own honour, than the benefit of aſtronomy, and every branch of mathematics.

The table publiſhed by Baron *Napier*, conſiſted of natural and logarithmic ſines, co-ſines, and tangents, and was principally deſigned for the ſolution of ſpheric triangles, (in the doctrine of which, as well as of plane trigonometry, he was a conſummate maſter) but which he ſhewed might be occaſionally uſed to find the logarithms of numbers, though not with equal facility as the ſines and tangents. The logarithms, which he introduced, have been ſometimes called Naperian, from their author, but more generally hyperbolic, becauſe they were afterwards ſhewn to be meaſured by the areas of the hyperbola contained between the curve aſymtote and its ordinates; though ſince it has been ſhewn that every ſpecies of logarithms may be expreſſed by hyperbolic ſpaces. They have alſo ſometimes been called natural logarithms, becauſe they are what naturally ariſe in the ſolution of mathematical queſtions. Their ſcale is determined from hence, that the logarithm of a number which exceeds unity by an indefinitely ſmall quantity is equal to that quantity; whence the logarithm of 10 comes out 2.302585, &c.

This

This interesting discovery was immediately taken up by the illustrious *Henry Briggs*, the first Professor of Geometry at Gresham College, and afterwards Savilian Professor of Astronomy at Oxford, who recommended the present scale of logarithms, as better adapted to the decimal scale of arithmetic; in which the logarithm of 1 being 0, as it should be in every scale of logarithms, the log. of the ratio of 10 to 1 is 1, that of 100 to 1 is 2, that of 1000 to 1 is 3, and so on. This alteration was explained by Mr. *Briggs* in his public lectures at Oxford, and also communicated by him to Baron *Napier*, who entirely approved of it, saying at the same time, that he also had thought of it. Mr. *Briggs*, indeed, in imitation of Baron *Napier's* trigonometrical table, in which the logarithm of the sine increases affirmatively as the sine itself decreases from unity, had made the logarithm of numbers less than unity affirmative, and of those greater than unity negative. Baron *Napier* said he thought it more expedient, making 0, as before, the logarithm of unity, to make 100000 the logarithm of the radius, which was in fact only changing the signs of the logarithms proposed by Mr. *Briggs*, with which alteration Mr. *Briggs* acquiesced, and accordingly set immediately about computing ample tables of logarithms to 14 places of figures, besides the index, and in about 8 years, a short time for so great a work, completed and published those of 30 chiliads of numbers. He also computed a table of logarithmic sines and tangents of arcs to every centesm of a degree of the quadrant, likewise to 14 places of figures, besides the index, which were printed under the care of *Adrian Vlacq*, at Gouda, in Holland; and the author in the mean time dying, published by *Henry Gellibrand*, Professor of Astronomy at Gresham College, under the title of *Trigonometria Britannica*.

Adrian Vlacq completed *Briggs's* Table of Logarithms of Numbers by adding 70,000 numbers to the 30,000 which *Briggs* had computed, and also computed the logarithmic sines and tangents for every 10 seconds of the quadrant, both these tables being carried only to 10 decimal places in the logarithms, whereas *Briggs's* logarithms went to 14 decimal places. But even a less number of decimal places, viz. that of 7 places, has been since thought sufficient for most purposes, and particularly for astronomical calculations; and may still be thought so, notwithstanding the improved accuracy of instruments and the modes of observing; since they are capable of determining the place of a heavenly body from observation, as far as depends on the tables, to a tenth of a second, while the best observations are liable to an error of 5 seconds or more.

Thus we are indebted to *Napier*, *Briggs*, and *Vlacq*, for their ingenious inventions and industrious labours in providing us with our present logarithmic tables, as to the substance; some improvements in the form and disposition of them only having been introduced by later authors. *Gardiner's* Tables of Logarithms of Numbers and Logarithms of Sines and Tangents for every ten seconds of the quadrant, which are the most complete tables published since *Vlacq's*, are confessedly taken from *Vlacq's*, only abridged to 7 places of decimals. The trouble of making proportion for the intermediate seconds, or computing equations of 2d and 3d differences, &c. where the differences are very irregular, has alone been complained of.

To obviate these difficulties, the late Mr. *M. Taylor* undertook this laborious work of computing the logarithmic sines and tangents to every second of the quadrant, by interpolating *Vlacq's* logarithmic sines and tangents, whereby

whereby he obtained a table to every ſecond, conſiſting of ten decimal places of figures, as *Vlacq's* did, which he then abridged to only 7 decimal places beſides the index, taking particular care to make the laſt figure true to the neareſt unit over or under, a circumſtance that will be found very conducive to exactneſs in ſuch caſes where an unit in the laſt place is of conſequence, and where ſeveral logarithms are added together.

Nor did the author uſe leſs care and diligence in ſuperviſing the preſs and correcting its errors. He generally examined 3 and ſometimes 4 ſucceſſive proofs with the help of an aſſiſtant, one reading while the other hearkened. The firſt proof he compared with his manuſcript, attending chiefly to the 2, 3 or 4 laſt figures, according as the differences rendered neceſſary; and further examined the index and 3 or 4 or 5 firſt decimal figures himſelf ſingly. He alſo compared the 2d proof, as to the 2, 3 or 4 laſt figures, and again as to the two laſt, with the manuſcript; then at every 36″ with *Brigg's* Trigonometria Britannica; and laſtly to every 10″ with *Vlacq's* and *Gardiner's* Tables. He further took the differences of the two laſt figures of the ſucceſſive numbers by inſpection. He examined the tangents and their correſponding cotangents by trying whether their ſum every where came out 10; and, if any difference appeared, detected where the error lay, whether in the tangents or cotangents, by the differences. By this method, and with this care, the 3d proof was generally rendered correct to the author's mind; if not another, and another were taken, till the preſs was found correct; and the ſheet was then worked off. The table of logarithms of numbers was compared in the printing with the beſt tables of logarithms, and particularly with thoſe of Dr. *Hutton's* Mathematical Tables.

The five laſt pages of the table of logarithmic ſines and tangents were all that remained unfiniſhed at the preſs when the author died. Theſe I examined carefully myſelf in the ſame manner as the author had the reſt of the work. Only I examined the tangents and cotangents, by trying whether the ſum of the correſponding figures in every place, beginning from the left, made 9, except the laſt ſignificant figures to the right which ſhould make 10; which comes to the ſame thing with the author's method.

Having been informed by the author, a ſhort time before his death, that he had diſcovered ſome errata in the tables, which he intended to correct in all the copies of the impreſſion, by eraſing the faulty figures and putting in the right ones with a printer's type and ink, I cauſed diligent ſearch to be made for them among his papers, which were at laſt happily found. To render the work complete, thoſe which affected only a ſmall part of the ſignature, which was the caſe of the greater number, have been corrected ſince in all the books, in the manner propoſed by the author; but, as it is poſſible that ſome miſtakes might be made in correcting the copies, I have ſet down thoſe errata at the end of the precepts for the uſe of the tables, that the curious calculator might be enabled to examine his book by them. It appeared too arduous an undertaking to correct the books for thoſe errata which affected the whole or a large part of the impreſſion; although the author, out of his great regard for the credit and ſucceſs of his work, intended to have done ſo; theſe errata, therefore, are inſerted at the end of the tables. On the ſame page are added ſome numbers, with their logarithms, which may be frequently wanted in calculation.

P R E F A C E.

I ſhall now give an account of the principal contents of the Precepts. I have firſt given an explanation of the general nature and properties of logarithms, in a manner that appeared to me the moſt ſimple and eaſy of conception. In explaining the uſe of the logarithmic tables, I have had my eye both on *Gardiner's* Precepts to his quarto book of logarithms, and Mr. *Callet's* improved explanation of them annexed to his elegant octavo edition of the ſame, entitled, *Tables Portatifs de Gardiner*. *Gardiner's* Explanation is undoubtedly too abſtracted and conciſe for the generality of perſons who are likely to make uſe of ſuch tables. Mr. *Callet's* Explanation is much preferable for common uſe, being more diffuſe, and expreſſed in common language without ſymbols. I have taken freely from both, at the ſame time adapting the explanation to the peculiar form of theſe tables, and inſerting various improvements of my own, all of which it would be too tedious to particulariſe, and will beſt appear by comparing theſe precepts with the others. I will, however, mention the principal of them

In page 17, I have pointed out the proper method of taking out the logarithmic ſine of an arc between 90° and 180° or between 270° and 360°, directly, without taking the complement of the arc; and in like manner in page 21 to find the arc directly from its logarithm. In page 17 will be found eaſy and accurate rules to find the logarithmic ſine or tangent of a ſmall arc, or the logarithmic coſine or cotangent of one near 90°; and in like manner will be found in page 22 rules to find a ſmall arc from its logarithmic ſine or tangent, or an arc near 90° from its logarithmic coſine or cotangent, where by the common rule it would have been neceſſary to have applied equations of ſecond and perhaps higher differences, which would have been attended with conſiderable trouble to the calculator. In page 28 and 29 are given two new rules for finding the logarithm of a decimal fraction, one to be uſed with negative indices and the other with affirmative ones by adding 10 to the index. I have taken the ſubſtance of the rule of proportion from Mr. *Callet*, which is much clearer than as it ſtands in *Gardiner's* precepts. The rule for the combination and arbitration of exchange is chiefly taken from Dr. *Hutton's* arithmetic. Mr. *Jones's* 20 caſes of compound intereſt, and 5 others following, and that in article 10, which are all given in *Gardiner*, and 5 others by Mr. *Callet*, are here computed by a new method, by firſt finding certain arcs from the things given, and thence computing the things required by theorems equivalent to but much more ſimple than the uſual expreſſions for the ſame, and better adapted to logarithmic calculation. I have choſen here, as well as in ſome other places, to give the rules and theorems themſelves in algebraic language, rather than as applied to logarithmic calculation, that the reader might ſee more clearly the ground and reaſon of what he is about; after which he will be at no loſs to make the calculation by logarithms.

General properties of plane triangles, right-angled ſpheric triangles, oblique-angled ſpheric triangles, and rectilateral ſpheric triangles, or having one of the ſides equal to 90°, are prefixed to the reſpective ſolutions of the ſame; as well to explain the reaſon of the ſolutions, as to give the reader information which may be uſeful to him on other occaſions. I have given tables of the ſolutions of the ſeveral caſes of plane and ſpheric triangles by analogies, and with reference to ſchemes, in the uſual manner, and added rules to point out whether the things found are greater or leſs than 90°, and not left it to the reader to ſupply ſo neceſſary a part of the ſolution from his own conſideration and contemplation of the ſcheme and the general doctrine of triangles, as has been cuſtomary with trigonometrical writers, which might often take up much time, and ſometimes occaſion miſtakes. A diſtinct table of ſolutions of the

caſes

caſes of a rectilateral ſpheric triangle is here given, which has not, that I know of, been done before, being analogous to the table of caſes of a right-angled ſpheric triangle, of which this rectilateral triangle is the ſupplemental one.

Not content with giving the ſolutions of ſpheric triangles by analogies, I have given them over again in another manner, directly adapted to practice, by theſe tables of logarithmic ſines and tangents to every ſecond of the quadrant. I had two views in this, firſt to render the calculation more ready and eaſy, and ſecondly to introduce ſome new improvements, in order to make the calculation univerſally accurate in all caſes, whereas the common rules frequently fail, which however is a circumſtance not generally adverted to, nor hitherto much taken notice of.

The failure of the common rules ſometimes ariſes from the ſmallneſs or even vaniſhing of the difference of the logarithmic ſines for a difference of a ſecond in the arc near the end of the quadrant, or of the coſine near the beginning of it; and ſometimes from a contrary cauſe the largeneſs of the difference of the logarithms.

To obviate the error in finding an arc ariſing from the ſmallneſs of the logarithmic difference of its ſine or coſine, a new and accurate rule has been laid down to be made uſe of in that caſe. The error ariſing from the largeneſs of the logarithmic difference happens only when the firſt arc is not computed to a ſmall enough fraction of a ſecond to deduce the ſine or coſine of the ſame arc with accuracy in the ſecond operation; this error will be prevented by finding the arc with at leaſt as many decimal places of a ſecond as the logarithmic difference has places. But there is another method recommended to be purſued in this caſe, attended with ſuperior advantages, namely, to derive the ſine or coſine, or their arithmetical complement, for the uſe of the ſecond operation, from the tangent or cotangent of the firſt arc, which is already found, and the coſine of the ſame, if the ſine ſhould be uſed by the common rule, or the ſine if the coſine ſhould be uſed by the common rule, taken out of the table, whoſe logarithmic difference will be ſmaller than that of the ſine or coſine required by the common rule, and conſequently eaſier taken out of the table. The advantage attending theſe methods is ſo great, that if proportion be made for the differences the reſult will be obtained true in moſt caſes within a tenth of a ſecond, and in any caſe the error will not be greater than what might ariſe from that of a tenth of a ſecond in any of the data; and in moſt practical caſes, if the exactneſs of only a ſecond or a ſecond and half be required, the making any proportions at all for the differences may be diſpenſed with, and the logarithms may be taken out at ſight to the neareſt ſecond of the arc, and the arc to the neareſt ſecond from the logarithm, which will much ſimplify and ſhorten the calculation.

Next follow the ſolutions of fifteen uſeful problems. The ſecond and third of theſe, which are to find the logarithm of the ſum or difference of two numbers, whoſe logarithms are given, are taken from Mr. *Cagnoli's* uſeful treatiſe of plane and ſpheric trigonometry. The following problems, from the third to the eighth, are ſolved according to the ſame principles. The eighth and ninth problems are ſubſervient to the ſolution of the eleventh problem or of cubic equations. The ninth contains the ſolution of a famous problem, that of finding any power of an impoſſible binomial in terms of another impoſſible binomial,

mial, which I have derived from the analogy of the circle to the equilateral hyperbola. There is ſomething of this kind propoſed and partly executed by Mr. *De Moivre*, at the end of *Sanderſon's* Algebra. His extraction of the cubic root of an impoſſible binomial is juſt and complete, but not ſo ſimple as what is here given. His rule for extracting any root out of any given power of an impoſſible binomial gives rightly the poſſible part of the binomial required, but leaves the impoſſible part undetermined.

The thirteenth and fourteenth problems will, I hope, be found of conſiderable uſe in practical aſtronomy, being more clear and preciſe than any rules I have ſeen for the ſame purpoſe, and at the ſame time capable of giving the reſult true to a ſecond or little more, in the caſe of the planets or zodiacal ſtars, by only taking out the logarithms for the neareſt ſecond of an arc, and the arc to the neareſt ſecond anſwering to the logarithms.

The fifteenth or laſt problem, to clear the obſerved diſtance of the moon from the ſun, or a fixed ſtar, of the effects of refraction and parallax, is one of the moſt important in practical navigation, on account of its great uſe in finding the longitude at ſea. Its ſolution here given is new, and preferable to *Dunthorne's* improved, contained in the ſecond edition of the Requiſite Tables uſed with the Nautical Ephemeris. Beſides theſe tables of logarithmic ſines and tangents, it requires only the tables of refraction and of the ſun's parallax, or the firſt and third of the Requiſite Tables. It will be ſufficient to take out the logarithmic ſines and tangents as they ſtand in the table oppoſite the arc, taken to the neareſt ſecond, and the arc to the neareſt ſecond anſwering to the logarithm, which will make the calculation very eaſy.

NEVIL MASKELYNE.

GREENWICH,
January 14*th*, 1793.

THE EXPLANATION AND USE OF THE LOGARITHMIC TABLES.

THE nature and properties of Logarithms may be eaſily explained, in the following manner:

Let $1 : 1 + e : \overline{1+e}|^2 : \overline{1+e}|^3$ &c. indefinitely continued be a geometrical progreſſion beginning from unity, in which the common ratio is $1 : 1 + e$, and e is indefinitely ſmall; or the ratio $1 : 1 + e$ is indefinitely near to that of equality. It is evident that ſome term or other of the progreſſion will be equal to, or coincide with each term of the ſeries of natural numbers, 1, 2, 3, 4, &c. as well as to every other intermediate mixt number conſiſting of a whole number with a decimal annexed. The products of the given quantity e multiplied by the indices of the ſeveral terms of the geometric ſeries are called the hyperbolic logarithms of the numbers to which the terms themſelves are equal. Thus $e \times 1 = e$ is the hyperbolic logarithm of the number $1 + e = \overline{1+e}|^1$ whoſe index is 1; $e \times 2 = 2e$ is the hyperbolic logarithm of the number $\overline{1+e}|^2$ whoſe index is 2; and, generally, $e \times n = ne$ is the hyperbolic logarithm of $\overline{1+e}|^n$ whoſe index is n; and $e \times 0$ or 0 is the hyperbolic logarithm of $1 = \overline{1+e}|^0$ whoſe index is 0.

Hence the hyperbolic logarithms being proportional to the indices of the powers muſt have ſimilar properties; And as

$$\overline{1+e}|^2 \times \overline{1+e}|^3 = \overline{1+e}|^5 \text{; ſo } \log. \overline{1+e}|^2 + \log. \overline{1+e}|^3 = \log. \overline{1+e}|^5 = 5e$$

$$\frac{\overline{1+e}|^5}{\overline{1+e}|^3} = \overline{1+e}|^2 \text{; ſo } \log. \overline{1+e}|^5 - \log. \overline{1+e}|^3 = \log. \overline{1+e}|^2 = 2e$$

$$\overline{\overline{1+e}|^2}|^3 = \overline{1+e}|^{2\times 3} = \overline{1+e}|^6 \text{; ſo } 3 \times \log. \overline{1+e}|^2 = \log. \overline{1+e}|^6 = 3 \times 2 \times e = 6e$$

$$\sqrt[3]{\overline{1+e}|^6} = \overline{1+e}|^{\frac{6}{3}} = \overline{1+e}|^2 \text{; ſo } \log. \overline{1+e}|^{\frac{6}{3}} = \frac{\log. \overline{1+e}|^6}{3} = \frac{6}{3} \times e = 2e$$

$$\overline{1+e}|^m \times \overline{1+e}|^n = \overline{1+e}|^{m+n} \text{; ſo } \log. \overline{1+e}|^m + \log. \overline{1+e}|^n = \log. \overline{1+e}|^{m+n} = \overline{m+n} \times e$$

$$\frac{\overline{1+e}|^m}{\overline{1+e}|^n} = \overline{1+e}|^{m-n} \text{; ſo } \log. \overline{1+e}|^m - \log. \overline{1+e}|^n = \log. \overline{1+e}|^{m-n} = \overline{m-n} \times e$$

$$\overline{\overline{1+e}|^m}|^n = \overline{1+e}|^{m\times n} = \overline{1+e}|^{mn} \text{; ſo } \log. \overline{\overline{1+e}|^m}|^n \text{ or of } \overline{1+e}|^{mn} = m \times n \times e = mne$$

$$\sqrt[n]{\overline{1+e}|^m} = \overline{1+e}|^{\frac{m}{n}} \text{; ſo } \log. \sqrt[n]{\overline{1+e}|^m} \text{ or of } \overline{1+e}|^{\frac{m}{n}} = \frac{\log. \overline{1+e}|^m}{n} = \frac{m}{n} e$$

But

But the geometric ſeries muſt be carried backwards, as well as forwards, in order to include numbers leſs than unity, as well as thoſe that are greater; and the ſeries will ſtand thus:

The Numbers, &c.	$\overline{1+e}\rfloor^{-3}$,	$\overline{1+e}\rfloor^{-2}$,	$\overline{1+e}\rfloor^{-1}$,	$\overline{1+e}\rfloor^{0}$,	$\overline{1+e}\rfloor^{1}$,	$\overline{1+e}\rfloor^{2}$,	$\overline{1+e}\rfloor^{3}$,	&c.
Their Logarithms, &c.	$-3e$,	$-2e$,	$-e$	0	e.	$2e$.	$3e$	&c.

where it is evident, when the indices become negative, the terms of the progreſſion will expreſs numbers leſs than unity; and their logarithms, like their indices, will become negative alſo.

As the products of the given quantity e, multiplied by the indices of the terms of the progreſſion, are the hyperbolic logarithms of the terms, and have properties ſimilar to thoſe of the indices; ſo if theſe logarithms be multiplied by any given quantity v, they will have ſimilar properties to what they had before, or become logarithms of a new ſcale; which, as v is variable at pleaſure, admits of infinite variety. If v be taken $= 0{,}4342945$ &c. then $0{,}4342945$, &c. $\times$ e $\times$ into the indices of the terms of the geometric progreſſion before given, will be the common or Briggian logarithms of the terms, and the logarithm of $1 + e$, which exceeds 1 by the indefinitely ſmall quantity e, will be equal to $0{,}4342945$ &c. $\times$ e; and the logarithm of 10 will come out equal to unity; which renders this ſcale the moſt convenient for common uſe, as being beſt adapted to our decimal ſcale of arithmetic, and has been the reaſon for the adoption of it in preference to the hyperbolic logarithms firſt invented by Baron NAPIER.

The quantity e being indefinitely ſmall, n muſt be indefinitely great, to make $\overline{1+e}\rfloor^{n}$ exceed unity by a finite difference, or to repreſent any of the natural numbers greater than unity. But this expreſſion may be transformed into another, which contains only finite quantities. Thus putting $n = \frac{m}{e}$ where m is a finite quantity, we ſhall have $\overline{1+e}\rfloor^{n} = \overline{1+e}\rfloor^{\frac{m}{e}} = \overline{\overline{1+e}\rfloor^{\frac{1}{e}}}\rfloor^{m} = a^{n}$, putting the given quantity $\overline{1+e}\rfloor^{\frac{1}{e}} = a$. It may be obſerved, that the quantity $\overline{1+e}\rfloor^{\frac{1}{e}}$ is that whoſe hyperbolic logarithm is $= \frac{1}{e} \times e = 1$. Its quantity is found by the binomial theorem $= 1 + 1 + \frac{1}{2} + \frac{1}{2.3} + \frac{1}{2.3.4}$ &c. $= 2{,}7182818$ &c. whoſe ratio to unity has been called by Mr. Cotes the modular ratio, becauſe its logarithm taken in any ſyſtem is the modulus of that ſyſtem. Thus $\overline{1+e}\rfloor^{\frac{m}{e}} = a^{m}$ is the number whoſe hyperbolic logarithm is $ne = \frac{m}{e} \times e = m$, or common logarithm equal to v m.

This might alſo be deduced from the general properties of logarithms. For, in every ſcale, the logarithm of $b^m = m \times$ logarithm of b; and therefore if b be taken equal to the number whoſe logarithm of that ſcale is equal to unity, the logarithm of b^m will be equal to m. Hence, if b repreſent the number $2{,}7182818$ &c. above-mentioned, whoſe hyperbolic logarithm is equal to unity, the hyperbolic logarithm of b^m will be equal to m. And if b repreſent 10, the number whoſe Briggian or common logarithm is unity, the logarithm of b^m or 10^m will be m; that is, the common logarithm of any number is the index of that power of 10, which is equal to the number. Thus, the logarithm of 10 or $\overline{10}\rfloor^{1}$ is 1; that of $100 = \overline{10}\rfloor^{2}$ is 2; that of $1000 = \overline{10}\rfloor^{3}$ is 3; the logarithm of $2 = \overline{10}\rfloor^{0,3010300}$ is 0. 3010300; the logarithm of $20 = \overline{10}\rfloor^{1,3010300}$ is 1. 3010300; and if any number be $= \overline{10}\rfloor^{\pm n}$ its logarithm will be $\pm$ n.

Hence

Hence, the terms of the decimal ſeries of numbers

$$\text{----}\overline{10}^{3};\ \overline{10}^{2};\ \overline{10}^{1};\ \overline{10}^{0};\ \overline{10}^{-1};\ \overline{10}^{-2};\ \overline{10}^{-3}$$

or 1000; 100; 10; 1; 0,1; 0,01; 0,001 have their logarithms reſpectively

+ 3; + 2; + 1; 0; — 1; — 2; — 3

The logarithm of any intermediate number, between any two neareſt terms of the ſeries above, conſiſts of the exponent of the ſecond of the two terms, which may be either poſitive or negative, and a decimal fraction, which is always poſitive, unleſs otherwiſe declared. Thus the logarithm of 756, which lies between 1000 or $\overline{10}^{3}$ and 100 or $\overline{10}^{2}$ is $2 + 0.8785218$ or 2.8785218. The logarithm of 0,0756 which lies between 0,1 or $\overline{10}^{-1}$ and 0,01 or $\overline{10}^{-2}$ is $-2 + 0.8758218$. And generally the logarithm of a number a lying between $\overline{10}^{\pm n + 1}$ and $\overline{10}^{\pm n}$ is $\pm n + A$, where A is a decimal fraction. The exponent n is called the index or characteriſtic of the logarithm of a, and is always a whole affirmative or negative number, or zero, and ſhews the diſtance of the firſt ſignificant figure of the number a from the place of units, either above or below it.

The negative index of a logarithm, whoſe decimal part is poſitive, as uſual, is beſt diſtinguiſhed by the negative ſign placed above the index; thus the logarithm $-n + A$ will be expreſſed by $\bar{n} + A$; and the logarithm $-2 + 0.8785218$ will be expreſſed by $\bar{2}.8785218$; and if this diſtinction be well obſerved, the negative ſign prefixed to the index may then be uſed to ſignify the whole logarithm, both index and decimal part to be negative, as in the logarithm -1.1214782 which is the ſame as the former only reduced to this form, as will be ſhewn below.

The characteriſtics of the logarithms being thus eaſily determined, upon ſimple inſpection of the numbers whoſe logarithm are ſought, are not expreſſed in theſe Tables. The decimal fraction, or other part of the logarithm (which is what theſe Tables exhibit) is always affirmative. Nevertheleſs, when the index is negative, if any one chuſes to make the whole logarithm of one kind, that is wholly negative, which may ſometimes be uſeful, eſpecially in raiſing powers, it is eaſily done, by adding an affirmative unit to the negative index (which is the ſame thing as leſſening the negative index by a unit), and inſtead of the decimal part putting down its arithmetical complement. Thus the logarithm of 0,0756 being $-2 + 0.8785218, = \bar{2}.8785218$, if $+1$ be added to its index -2, and the arithmetical complement of the decimal part be taken $= 1 - 0.8785218 = 0.1214782$, will become -1.1214782, which is wholly negative. The arithmetical complement is eaſily found, by ſubtracting each figure ſeparately from 9, only ſubtracting the laſt ſignificant figure from 10, and putting down the remainders in order. Generally, if the logarithm be $-n + A, = \bar{n} + A$, make the new index $= -n + 1$, and the new decimal fraction or complement of $A = -1 + A$, and both the index and decimal fraction will be negative, to which prefix the common ſign of negation, and you have the logarithm of a wholly negative $= \overline{-n+1}\,\overline{-1+A} = -(\overline{n-1} + \overline{1-A})$.

But

But it is more generally uſeful to put theſe logarithms of decimal fractions under a poſitive form, by borrowing 10 to the index, or in ſome caſes 100 or 1000; which is done by only ſubſtituting for the index its arithmetical complement to 10 or 100, &c. as the caſe may require. Thus, inſtead of $\bar{2}.8785218$ we may take 8,8785218 or 98,8785218 or 998,8785218 &c. We muſt remember, however, to ſubtract the 10 borrowed in the place of the index from the reſulting logarithm, at the end of any operation where ſuch transformed logarithm is employed; and, if the reſulting index ſhould then be leſs than 10, to put the firſt ſignificant figure of the correſponding natural number as much below the place of units as the reſulting index wants of 10. Thus, if the reſulting logarithm ſhould be 13.7951846, diminiſh its index by 10, the remainder 3,7951846 will be the proper logarithm, whoſe natural number is 6240; but if the reſulting logarithm be 7.7951846, whoſe index is leſs than 10 by 3, the natural number will be 0,00624, whoſe firſt ſignificant figure 6 is depreſſed 3 places below the place of units.

Becauſe multiplying or dividing any number by 10, 100, 1000, &c. only adds 1, 2, 3, &c. to the index of its logarithm, or diminiſhes it as much; therefore the decimal part of the logarithm is not varied by ſhifting the decimal point or comma of any given number, the index only ſuffering an increaſe by as many units as the point is ſhifted to the right, or a diminution by as many units as the point is ſhifted to the left. It is, from this property of the common logarithms, that one table of them, carried up ſuppoſe to 100000 natural numbers, with their correſpondent logarithms to 7 decimal places of figures, will expreſs the logarithms of any numbers *ad infinitum* true to the ſame number of decimal places, by only varying the index, and thereby becomes in effect an infinite table, which renders theſe logarithms ſo valuable; which is not the caſe of the hyperbolic logarithms, where multiplication or diviſion by 10, 100, 1000, &c. cannot be performed without adding or ſubtracting the hyperbolic logarithms of thoſe numbers. Thus, if the number 54321 be varied, by changing the poſition of the decimal point, the index of the correſponding logarithm will vary accordingly, the decimal part continuing the ſame, as follows:

Numbers.	Logarithms.	Logarithms of Decimal Fractions borrowing 10.
54321	4.7349678	
5432,1	3.7349678	
543,21	2.7349678	
54,321	1.7349678	
5,4321	0.7349678	
0,54321	$\bar{1}$.7349678	9.7349678
00,54321	$\bar{2}$.7349678	8.7349678
0,0054321	$\bar{3}$.7349678	7.7349678
0,00054321	$\bar{4}$.7349678	6.7349678

The

The PROPERTIES of LOGARITHMS.

LET a, b, c, &c. be any numbers; and L. a; L. b; L. c, &c. their Logarithms; and L′. a; L′. b; L′. c, &c. the complements of their logarithms to zero, or $= 0 - L.a$; $0 - L.b$; $0 - L.c$, respectively, which follows from the supposition that $L'a + L.a = L.1 = 0$ Then

1 $L.a + L.b = L.a \times b = L.ab.$

$L.3 + L.5 = L.3 \times 5 = L\,15$

$L.a + L.b + L.c + L.d = L.a \times b \times c \times d = L.abcd.$

$L.3 + L.5 + L.7 + L.11 = L.3 \times 5 \times 7 \times 11 = L.1155$

2 $L.\frac{a}{b} = L.a - L.b = L.a + L'.b.$

$L\,\frac{3}{5} = L.3 - L\,5 = L\,3 + L'.5.$

$L\,\frac{1}{a} = L.1 - L.a = 0 - L.a = L'.a$

$L\,\frac{1}{3} = L.1 - L\,3 = 0 - L.3 = L'.3.$

3 $L.a^n = n\,L.a$; $L.a^{\frac{1}{n}} = \frac{1}{n}\,L.a$; $L.a^{\frac{m}{n}} = \frac{m}{n}\,L.a.$

$L\,3^9 = 9\,L.3$; $L.3^{\frac{1}{9}} = \frac{1}{9}\,L.3$; $L.3^{\frac{4}{9}} = \frac{4}{9}\,L.3$

$L.\frac{1}{a^{\frac{m}{n}}} = \frac{m}{n}\,L'.a$

4 $L\,\overline{\frac{a}{b}}\Big|^{\frac{m}{n}} = \frac{m}{n}\,L.\frac{a}{b} = \frac{m}{n} \times \overline{L.a - L.b} = \frac{m}{n} \times \overline{L.a + L'.b}$

$L\,\overline{\frac{3}{5}}\Big|^{\frac{4}{9}} = \frac{4}{9}\,L.\frac{3}{5} = \frac{4}{9} \times \overline{L.3 - L.5} = \frac{4}{9} \times \overline{L.3 + L'.5}$

5 $L.\frac{a^m\,b^n\,c^t}{p^v\,q^x\,r^z} = m\,L.a + n\,L.b + t\,L.c - v\,L.p - x\,L.q - z\,L.r = m\,L.a + n\,L.b + t\,L.c + v\,L'.p + x\,L'.q + z\,L'.r$

$L.\frac{3^4 \times 5^9 \times 7^2}{12^6 \times 13^8 \times 14^{10}} = 4\,L.3 + 9\,L\,5 + 2\,L.7 - 6\,L.12 - 8\,L.13 - 10\,L.14 = 4\,L.3 + 9\,L.5 + 2\,L.7 + 6\,L'.12 + 8\,L'.13 + 10\,L'.14.$

The complement to *zero*, or simply the complement of a number, is what must be added to the number to produce zero. Although the complement of a number, and what is called its arithmetical complement, come to the same thing in practice, when properly understood, we ought not to confound one with the other.

The arithmetical complement of a number, is what we must add to a number to produce not *zero*, but an unit of a certain place, generally one higher than that of the first significant place of the number, when it is a whole number or a fraction; but when it is a fraction, the practice is to take its complement to unity.

For *Example:*

The arithmetical complement of 769	is	1000 — 769	or 231
Its complement to *zero* - - -	is	0 — 769	or 231 — 1000
The arithmetical complement of 76,943	is	100 — 76,943	or 23,057
Its complement to *zero* - - -	is	0 — 76,943	or 23,057 — 100
The arithmetical complement of 0,76943	is	1 — 0,76943	or 0,23057
Its complement to *zero* - - -	is	0 — 0,76943	or 0,23057 — 1

When two numbers are complements of one another, the numbers to which they correſpond are reciprocals of one another; that is, the ratio of the firſt to unity is the inverſe or reciprocal of the ratio of the ſecond to unity. Thus 7 and $\frac{1}{7}$ are reciprocal, becauſe $\frac{1}{7}$: 1 is inverſely or reciprocally as 7 : 1. If L. a + L. b = 0 = L. 1, we ſhall have a b = 1, and b = $\frac{1}{a}$. Whence we ſee that the logarithm of a number is equal to that of its reciprocal, but with a contrary ſign; and that the logarithm of the reciprocal of a number is the complement of its logarithm. It may therefore be often convenient, inſtead of a logarithm, to make uſe of its complement, which may be readily found: thus,

Increaſe the index by 1; that is, if it is poſitive, augment it by a poſitive unit, and if it is negative, diminiſh it by a negative unit; then change its ſign, and put down what each of the following figures of the decimal part wants of 9, only what the laſt ſignificant figure wants of 10; but, if the decimal part is equal to nothing, only change the ſign of the index. See the following *Examples:*

L. 8 = 0.9030900. L $\frac{1}{8}$ or L′. 8 = $-\bar{1}$. 0969100. 0969100 = 9. 0969100 = — 0. 9030900
L. 8000 = 3. 9030900. L′. 8000 = $-\bar{4}$. 0969100. 0969100 = 6. 0969100 = — 3. 9030900
L. 1000 = 3. 0000000. L′. 1000 = $-\bar{3}$. 0000000. 0000000 = 7. 0000000 = — 3. 0000000
L. 54321 = 4. 7349678. L′. 54321 = $-\bar{5}$. 2650322. 2650322 = 5. 2650322 = — 4. 7349678

The arithmetical complement of any number is eaſily found, by writing down what each of its figures wants of 9, except of the laſt ſignificant figure to the right, whoſe difference from 10 is to be ſet down.

The complement of a number being equal to the number with a contrary ſign, it follows, that the complement of the logarithm of a decimal fraction becomes the negative logarithm of this fraction, or of any vulgar fraction equal to it.

EXPLANATION of the TABLE of LOGARITHMS of NUMBERS.

THIS Table conſiſts of two parts, or two tables; both of which together contain the decimal part of the logarithms of all numbers, from 1 to 100999. The firſt, or particular table, and which occupies the two firſt pages, contains the decimal part of the logarithm of the numbers from 1 to 1260; and the ſecond, or general table (which is much more extenſive, and occupies the remaining pages) contains the decimal part of the logarithm of numbers, from 10000 to 100999. The logarithmic decimal, aſſigned

to

to the firſt 1260 numbers, in the beginning of the table, and to the numbers, from 100000 to 100999, at the end of the table, conſiſts of eight places of figures; but in the reſt, or intermediate and greater part of the table, only of ſeven places of figures. In the firſt two pages, or firſt table, the natural numbers are contained in the columns marked N (the initial of Natural), and the logarithmic decimal in the adjacent column, marked Logar. (for Logarithms), and anſwering to the number preceding it in the ſame horizontal line. In the ſecond, or general table, the four firſt figures of the natural numbers, from 10000 to 100000, are contained in the column marked N at the top, and the fifth figure (including the cypher as one), at the top and bottom of the ten following columns. The logarithmic decimal of all theſe numbers is inſerted in the ſaid ten columns, intitled 0, 1, 2, 3, &c. both at top and bottom, viz. the three firſt figures in the beginning of the ſecond column, and the four laſt figures on the right hand ſide of the ſame column adjoining to the three firſt figures, and in the other nine columns intitled 1, 2, 3, &c. This is to be underſtood with reſpect to the numbers from 10000 to 100000; but from 100000 to 100999 the logarithmic decimal conſiſts of eight places, as before-mentioned; the four firſt figures of which, being common to all the columns, are contained in the beginning of the ſecond column, and the four laſt figures on the right hand ſide of the ſecond column and in the nine following columns. This being what is called a table of double entry, is entered with the four or five firſt figures of the natural number in the firſt column, and the fifth or ſixth figure at the top or bottom of one of the ten following columns; at the common meeting of the vertical and horizontal lines the four laſt decimals of the logarithm will be found, to which muſt be prefixed the three or four firſt figures from the beginning of the ſecond column.

The three or four firſt logarithmic figures continuing the ſame, for ſeveral lines together, it has been uſual to ſet them down only once in the tables, namely, where they firſt begin to take place in the ſecond column; they are therefore to be underſtood as if they had been repeated, or the beginning of the ſecond column filled up with them, till a new ſet of three or four firſt figures, greater by one than the former, takes place; or, which comes to the ſame thing, the three or four firſt logarithmic figures, if not found againſt the given number, will be the firſt that occur above, except in part of the line immediately preceding a new ſet of three or four firſt figures, where the four laſt figures begin with a cypher, or any leſs figure than the laſt four in the ſecond column, in which caſe the three or four firſt figures are to be taken from the beginning of the ſecond column in the line immediately below.

The index to the logarithms has been omitted, as being eaſily ſupplied, and better ſo than if it had been inſerted in the table, being equal to the diſtance of the higheſt figure of the natural number from the place of units, and poſitive if to the left, negative if to the right. It will therefore vary according as the number, if not all integral, is divided by the decimal point or comma, into integers and decimals; whereas the decimal part of the logarithm depends only on the figures of which the number is compoſed, conſidered all together as an integer. Otherwiſe, the logarithmic decimal contained in the table truly

expreſſes

expreſſes the logarithm of the natural number, ſuppoſing its firſt or higheſt figure to occupy the place of units, and the remaining figures to be decimals. Thus the logarithm of 9,83 is 0.99255352, found in the table oppoſite 983; and the logarithm of 1,0194 is 0.0083446, ſtanding in the table oppoſite 10194. So that inſtead of putting an index to the logarithm in the table, we ſhould rather put a decimal point or comma to the natural number, to ſeparate its firſt figure from the reſt. But both diſtinctions are unneceſſary.

If the natural number, whoſe logarithm is required, conſiſts of more than five places of figures, a proportional addition muſt be made to the logarithm contained in the table; therefore immediately after the logarithms are placed ſmall tables of proportional parts of the difference of the logarithms, anſwering to the figures 1, 2, 3, &c. in the ſixth place of the natural number, or $\frac{1}{10}$, $\frac{2}{10}$, $\frac{3}{10}$, &c. of the difference. The number at the head of the column ſignifies the difference of two ſucceſſive logarithms in the table, and is placed to anſwer as near as poſſible to the logarithms to which it belongs in the ſame horizontal line. To find what particular ſmall table ſhould be made uſe of, the difference of the ſucceſſive logarithms may be taken, or it may be ſufficient to take only their difference in the place of units, for the other figures of the difference will immediately appear at the head of the ſmall table by the ſide.

USE of the TABLE of LOGARITHMS.

PROBLEM I.

To find the Logarithm of any given Number by the Tables.

LET the firſt ſignificant figure of the number occupy whatever place it will, in the firſt inſtance conſider the number as an integer, remembering only that the proper index is to be aſſigned to the logarithm, after its decimal part ſhall have been found, in the manner before-mentioned.

CASE I. If the number does not exceed 1260, look for it in one of the columns marked N in one of the two firſt pages, or firſt Table, its logarithmic decimal to eight places of figures is even with it in the adjacent column marked Logar. Thus the logarithmic decimal of the number 1023 is .00987563, and the logarithm of 1023 is 3.00987563, and that of 102,3 is 2.00987563.

CASE II. If the given number is between 1000 and 10100, look for it in the firſt column of the reſt of the table, or general table, after the two firſt pages, and in the adjacent column marked 0, you will find its logarithmic decimal, the three or four firſt figures of which, when not ſtanding even in a line with the given number, muſt be taken from the firſt which occur above. From 1000 to 10000 the logarithmic decimal conſiſts of ſeven places of figures, but from 10000 to 10099 it conſiſts of eight places. Thus the logarithm of 4627 is 3.6652995; and that of 46,27 is 1.6652995, and that of 100,76 is 2.00328816.

CASE

CASE III. If the number is between 10000 and 100000, or consists of five places of significant figures, look for the first four figures in the column marked N, and the fifth figure at the top or bottom of one of the ten following columns; then in this column, and even with the four first figures of the number, you will find the four last figures of the logarithm; and you will find its three first figures at the beginning of the second column, either even with the first four figures of the number, or the first which occur above; except in part of the line, immediately preceding a new set of the first three figures, where the four last figures begin with a cypher, or any less figure than the last four in the second column, and then the three first figures are to be taken from the beginning of the second column in the line below. Thus the logarithm of 546,74 is 2.7377808, and that of 73,284 is 1.8650092. If the number was between 100000 and 101000, its logarithm might be found in like manner; thus the logarithm of 1005,93 is 3.00256776, and that of 10,0767 is 1.00331833.

CASE IV. If the number is between 100000 and 1000000, or consists of six significant figures, seek for the logarithmic decimal answering to the first five figures, take the difference of the logarithms, with which enter one of the small tables of proportional parts at top, and with the sixth figure of the given number on the side; the correspondent proportional part added to the logarithmic decimal belonging to the five first figures of the number will be the logarithmic decimal of the given number. *Example:* Let the logarithm of 67832,3 be required. The logarithmic decimal of 67832, or the five first figures is .8314346, the difference between which and the next greater logarithm in the table is 64; the column so intitled, even with 3, the sixth figure of the number, gives the proportional part 19, which added to the logarithmic decimal .8314346 gives .8314365, therefore the true logarithm of 67832,3 is 4.8314365. If the number was greater than 1000000 and less than 1010000, its logarithm would be found in the same manner. *Example:* Let the logarithm of 1008,764 be required. The logarithmic decimal of 100876 is .00378785, the logarithmic difference is 431, with which entering the small table on the side even with 4 the last figure of the number, I find 172, which I add to .00378785 and supplying the index, I have 3.00378957 the true logarithmic decimal of 1008,764.

CASE V. If the number consists of seven or eight significant figures, seek for the logarithmic decimal answering to the first five figures, and with the logarithmic difference at the top of one of the small tables, and with the sixth, seventh, and eighth figures of the number on the side, take out successively the proportional parts; the first proportional part, with one-tenth of the second, and one-hundredth of the third, added to the logarithmic decimal before found, will give the logarithmic decimal of the given number. Otherwise, and rather more exactly, multiply the logarithmic difference by the figures following the first five figures, considering them as a decimal fraction; the proper product, that is, what remains after as many figures are cut off to the right as there were figures in the decimal multiplier, will be the proper proportional part to be added to the logarithmic decimal answering to the first five figures. *Example:* Let the logarithmic decimal of 276358,49 be required. The logarithmic decimal of 27635, or the five first figures, is by the table .4414595, the difference between which and the next greater logarithm in the table is 157. The column so intitled entered with 8, 4, 9, viz. the

 sixth,

ſixth, ſeventh, and eighth figures of the number ſucceſſively on the ſide, gives 126, 63, and 141; but only the tenth of the ſecond proportional part is to be taken, viz. 6, 3, and one-hundredth of the third proportional part, or 1,41; therefore 126 and 6,3 and 1,41 added to .4414595 and the index being ſupplied, gives 5.4414729 the logarithm of 276358,49. Otherwiſe, multiply the logarithmic difference 157 by ,849, the ſixth, ſeventh, and eighth figures of the number conſidered decimally, the product will be 133,293, from which reject the three laſt figures becauſe there were three in the multiplicator, the remainder 133 will be the true proportional part, which added to .4414595 and the index being ſupplied, gives 5.4414728 the true logarithmic decimal of 27635849, and more correct than that found by the table of proportional parts, from which it however differs only by 1 in defect.

CASE VI. If the number is a fraction, ſubtract the logarithm of the denominator from the logarithm of the numerator, the remainder will be the logarithmic of the number required; where, it is evident, the index of a proper fraction will be negative. Or, if you ſhould chuſe to avoid negative indices, ſubtract the logarithm of the denominator of a proper fraction from the logarithm of the numerator increaſed by 10 in the place of the index, the remainder will be the logarithm of the fraction, under a poſitive form.

If a mixed number be given, conſiſting of an integer and a fraction, reduce the mixed number to an improper fraction, and ſubtract the logarithm of the denominator from the logarithm of the numerator, the remainder will be the logarithm of the mixed number. If the proper fraction, improper fraction, or mixed number be eaſily convertible into a terminating decimal, convert it ſo, and take its logarithm. *Examples:* 1. Let the vulgar fraction, whoſe logarithm is ſought, be $\frac{2}{3}$. From 0.3010300 or the logarithm of 2, ſubtract 0.4771213 or the logarithm of 3, the remainder $\bar{1}$.8239087 is the logarithm of the fraction, whoſe index is negative. Or adding 10 to the index of the logarithm of the numerator, from 10.3010300 ſubtract 0.4771213, the remainder 9.8239087 is the logarithm of the fraction under a poſitive form. 2. Required the logarithm of $3\frac{16}{113}$? This turned into an improper fraction becomes $\frac{355}{113}$. From the logarithm of 355 which is 2.55022835 ſubtracting that of 113 which is 2.05307844, the difference is 0.49714991 the logarithm required. 3. The logarithm of $\frac{1}{5}$ or 0,2 is $\bar{1}$.3010300 or 9.3010300. The logarithm of $\frac{3}{4}$ = 0,75 is $\bar{1}$.87506126 or 9.87506126. The logarithm of $\frac{7}{8}$ = 0,875 is $\bar{1}$.94200805 or 9.94200805.

CASE VII. If the given number is a decimal fraction, ſeek for its logarithm as if it was a whole number, and apply the proper characteriſtic to it. *Examples:* The logarithm of 0,76134 is $\bar{1}$.8815786, or 9.8815786. The logarithm of 0,076134 is $\bar{2}$.8815786 or 8.8815786. The logarithm of 0,0076134 is $\bar{3}$.8815786 or 7.8815786.

CASE VIII. If the given number conſiſts of a finite part and an infinite recurring ſeries, conſider the finite part together with the firſt recurring period as an integer, from which ſubtract the finite part taken as an integer by itſelf; add the logarithm of the remainder to the arithmetical complement of the

the logarithm of as many nines as the recurring period has figures (which may be found on the page at the end of the logarithmic Sines and Tangents) and ſubtract 10 from the index, and you will have the logarithm required, in caſe the finite part is an integer; but if the finite part be not an integer, increaſe or diminiſh the index ſo found as much as the decimal point or comma falls to the right or left of the laſt figure of the finite part; or elſe ſettle the index, as uſual, with reference to the poſition of the decimal point or comma in the given number, that is equal to the diſtance of its firſt figure from the place of units, poſitive if it falls to the left, negative if it falls to the right. *Example:* Let the logarithm of the number 320676, 7 &c. be required, where the infinite recurring ſeries is diſtinguiſhed from the finite part by points placed over its figures. I conſider the finite part 320 with the firſt recurring period 67 or 32067 as an integer, from which I ſubtract the finite part 320 taken as an integer by itſelf; the remainder is 31747, whoſe logarithm 4.5017027 I add to the arithmetical complement of the logarithm of 99 or two nines, becauſe there are two figures in the recurring period, viz. to 8.0043648; (ſee the Table at the end of the logarithmic Sines and Tangents) and I ſubtract 10 from the index, the remainder 2.5060675 is the logarithm of 320, 6767 &c. or the finite part taken as an integer with the recurring ſeries adjoining as a decimal. But the given number was 320676, 7 &c. whoſe decimal comma falls to the right of the laſt figure of the finite part of 320 by three places of figures: therefore I add 3 to the index, and the true logarithm of 320676, 7 &c. will be 5.5060675; or the index is determined at once to be 5, as being one leſs than the number of figures contained in the integer 320676, which is part of the given number.

PROBLEM II.

To find the Natural Number that anſwers to any given Logarithm.

NEGLECT the conſideration of the index in the firſt inſtance, and find the natural number as an integer anſwering to the decimal part of the logarithm ſought for in the table: then divide the number ſo found properly by the decimal point or comma, that the firſt or higheſt figure may be at the diſtance from the place of units which is ſhewn by the index, and to the left if the index be poſitive, and to the right if the index be negative, adding cyphers to the right or prefixing them to the left, if neceſſary.

CASE I. If the natural number be wanted true only to three places of figures, look in the firſt or particular table contained in the two firſt pages, and in the column marked Logar. for the neareſt logarithm over or under to that given: even with this in the preceding column marked N you will find the natural number required. *Example:* The natural number to three places of figures, anſwering to the logarithm 1.94117836 will be found immediately, without regarding the index, to be 873, but on account of the index 1 it muſt be taken 87,3. Had the index been 3, it muſt be taken 8730; with the index 2, it muſt be 873; with the index 0, it muſt be 8,73; with the index — 1, it muſt be 0,873; with the index — 2, it muſt be 0,0873.

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CASE II. If the natural number be wanted true only to four places of figures, ſeek in the column intitled o of the general Table for the logarithm neareſt to the given logarithm over or under; in the firſt column adjoining, intitled N, you will have the four figures of the natural number required, which you muſt divide properly, according to the index, into integers and decimals. *Example:* The natural number to four places of figures, anſwering to the logarithm 2.3194713, found immediately, is 2088; but, paying due regard to the index 2, is 208,8.

CASE III. If the natural number be wanted true only to five places of figures, ſeek in the general Table for the logarithm neareſt to the given logarithm over or under; even with this in the firſt column, intitled N, you will find the four firſt figures of the number; and at the top of the column where the logarithm was found you will find the fifth or laſt figure of the number. *Example:* The natural number to five places of figures anſwering to the logarithm — 2.8712012 is 0,074336. The natural number anſwering to the logarithm 2.8170183 is 656,17, the four laſt figures of the logarithm being found in the line above that where the three firſt figures 817 are found, becauſe the four laſt figures are leſs than thoſe in the column intitled o in the ſame line.

CASE IV. If the natural number be wanted true to ſix, ſeven, or eight places of figures, ſeek in the general Table for the next leſs logarithm than that given, and you will have the firſt four figures of the natural number even in the ſame line in the firſt column, intitled N, and the fifth figure at the top or bottom of the column where the logarithm was found nearly. To find the following figure or figures of the natural number, ſubtract the logarithm found in the table from the logarithm given, and ſeek the remainder in the right hand column of the proper table of proportional parts, or the next leſs number, if it be not found exactly, the correſponding number in the left hand column will be the ſixth figure of the natural number.

If more places of figures be required, from the remainder above mentioned ſubtract the next leſs number, in the right hand column of the table of proportional parts, for a ſecond remainder, to which affix o, and ſeek for it in the right hand column of proportional parts, or the next leſs number, if it be not found exactly; the correſponding number in the left hand column will be the ſeventh figure of the natural number. In like manner an eighth figure may be found, if neceſſary; that is, if ſuch exactneſs be requiſite, and the laſt remainder was not found exactly in the table of proportional parts. Otherwiſe, and rather more exactly, eſpecially if eight places of figures are wanted, in order to find the figures additional to the firſt five, add as many cyphers to the firſt remainder above-mentioned as you want additional figures, and divide the ſum by the difference of the two ſucceſſive logarithms in the table, the quotient will be the figures required to be added to the five figures of the natural number found before. *Example:* What is the natural number whoſe logarithm is 5.4414728? The next leſs logarithmic decimal in the table is 4414595 anſwering to the natural number 27635; ſubtract this logarithmic decimal from that given, the remainder is 133: ſubtract alſo the given logarithm from the next following it in the table, the difference is 157. In the column of proportional parts, on the ſide, intitled 157, ſeek the next leſs number to 133 which is 126, to which the number

anſwering

anſwering in the left column is 8, the ſixth figure of the natural number. From the remainder 133 ſubtract the number 126, found in the table, for a ſecond remainder, which is 7, but with 0 affixed to it is 70; the neareſt number to this in the table of proportional parts is 63, to which the number anſwering in the left column is 4, the ſeventh figure of the natural number. Subtract 63, the number found in the table, from 70, for a third remainder, which is 7, but with 0 affixed to it is 70, the neareſt number to which in the table of proportional parts is 63; the number anſwering to this in the left column is 4, the eighth figure of the natural number; therefore the firſt five figures of the natural number being 27635, and the ſixth, ſeventh, and eighth figures being 8, 4, 4, the natural number is 27635844. Otherwiſe, add three cyphers to 133, the difference of the given logarithm and the next leſs logarithm in the table, and divide the reſulting number 133000 by 157, the difference of the two ſucceſſive logarithms in the table, the quotient is 847 for the three figures to be added to 27635; therefore the natural number is 27635847; but becauſe the index of the given logarithm is 5 it will be 276358,47, and more exact than that found by the table of proportional parts, from which however it differs only by 3 in exceſs. It is however to be obſerved that the natural number cannot be obtained entirely accurate to eight places of figures, becauſe the logarithms in the table are carried only to 7 places of figures.

CASE V. If the given logarithm is entirely negative, ſeek for it in the tables, as if it was poſitive, and make its correſponding number the denominator of a fraction whoſe numerator is unity. Thus if the logarithm was $-4.37242 = \log. 8'',75 - \log. 206264'',8$, and wholly negative, the natural number will be $\frac{1}{23573}$, which expreſſes the ratio of the ſemidiameter of the earth to its mean diſtance from the ſun.

CASE VI. If the logarithm has a negative characteriſtic, the decimal part being poſitive, find the correſpondent number as uſual, and place its firſt ſignificant figure as many places below the place of units as is expreſſed by its negative index. Thus the logarithm -5.62758, or rather 5.62758, borrowing 10 to the index to put it in a form entirely poſitive, or the logarithmic ſine of $8'',75$, the ſun's mean horizontal parallax, has the natural number 42421 anſwering to it; but becauſe the index is either -5 or 5 with 10 borrowed, the natural number will be 0,000042421, which is to unity, as the ſemidiameter of the earth, to the mean diſtance of the ſun.

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EXPLANATION AND USE

OF THE TABLE OF

LOGARITHMIC SINES AND TANGENTS

TO EVERY SECOND OF THE QUADRANT.

ALTHOUGH the tables are intitled Sines and Tangents, &c. yet artificial or logarithmic ſines and tangents, &c. are to be underſtood. The logarithmic ſines and tangents of arcs, and the logarithmic ſines and tangents of their complements, called logarithmic co-ſines and co-tangents, being often wanted in the ſame calculation, it has long been the practice to place them altogether in the ſame page, or at leaſt at the ſame opening of the book. The ſame method has been uſed in the arrangement of theſe tables. The degrees are put at the top and bottom of the page, and the minutes at the head and foot of the ſeveral columns; except the firſt and laſt, in which the ſeconds are placed. The left hand page contains the logarithmic ſines and co-ſines, and the right hand page contains the logarithmic tangents and co-tangents, as expreſſed by the titles put at the top and bottom of the four departments or particular tables of ſines, co-ſines, tangents and co-tangents. The degrees placed at the top of the page, with the minutes placed at the top of the column, and the ſeconds in the left hand margin, expreſs the arc whoſe L. ſine or tangent, &c. is contained in the correſpondent part of the area of the table under the title ſine, tangent, &c. and the degrees placed at the bottom of the page, with the minutes at the bottom of the column, and the ſeconds in the right hand margin, expreſs the arc whoſe ſine or tangent, &c. is contained in the correſpondent part of the area of the table above the title ſines, tangents, &c. The degrees, minutes, and ſeconds, read off by entering the table at top and bottom, are complements of one another; thoſe read off from the top being leſs than 45°, and thoſe read off from the bottom being greater than 45°.

In order to reduce the table into moderate bounds, it was thought neceſſary to place at the head of each column, and immediately under the title of minutes, the index, or the index and one, two, or three firſt decimal figures of the logarithm, which were common to the whole or at leaſt part of the column, and to put the remaining figures in the area of the table beneath; by which contrivance the ſize of the table has been reduced to near half what it would have been if the logarithms had been printed at full length. It muſt however be carefully obſerved, that the initial figures at the top of the column are common to the whole column, only when the initial figures in the next column to the right continue the ſame; but if they vary from the former by a unit, then the initial figures at the top of the

firſt

firſt column are common only to ſo much of the column as reaches from the top to the place where the numbers in the column, after increaſing up to 99, &c. decreaſe immediately to 00, &c. or, *vice versâ*, after decreaſing to 00 immediately increaſe to 99, &c. and, below this place, the initial figures common to the reſt of the column are thoſe which ſtand at the head of the next column to the right. The table has been ſo arranged that there ſhall never occur more than one ſuch change in any column, except in the column of ſines intitled 7° 4′ where two ſuch changes are found. A ſtrong full-point, of the ſize of thoſe printed at the end of the title Deg. at the top and bottom of every page, may be added to their books, by the curious, at the place where the change occurs, or over the index preceding the initial decimals at the top of the ſame column, or in both places, either with a pen or a printer's type and ink, which will facilitate the uſe of the table; but without that, by only taking a little care, the logarithm may be readily taken out without any danger of miſtake.

PROBLEM I.

To find the logarithmic Sine, Co-Sine, Tangent, or Co-Tangent, of any given Arc.

IF the given arc be under 45°, enter the table, with the degree at top of the page, in the department intitled ſine, co-ſine, tangent, or co-tangent, which ever you want, and with the minute at the head of one of the columns, and with the ſeconds in the left hand margin: even with the ſeconds, under the given minute, you will find the four or more laſt figures of the logarithmic ſine, co-ſine, tangent, or co-tangent, under its reſpective title. But if the given arc be greater than 45°, enter the table with the degree at the bottom of the page, in the proper department of ſine, co-ſine, tangent, or co-tangent, and with the minute at the bottom of one of the columns, and with the ſeconds in the right hand margin; even with the ſeconds, over the given minute, you will find the four or more laſt figures of the logarithmic ſine, tangent, co-ſine, or co-tangent, above its reſpective title. In either caſe you will find the index, or index with initial figures of the decimal, at the top of the column of minutes; except the initial figures vary by unity at the head of the next column to the right, and at the ſame time the number found in the area of the table falls below the place where the numbers of the column, after increaſing to 99, &c. decreaſe immediately to 00; or, *vice versâ*, after decreaſing to 00, &c. immediately increaſe to 99, &c. and then you are to take the index, or index and initial decimals, from the head of the next column to the right. Prefix the initial figures thus found to thoſe taken out of the area of the table, and the logarithmic ſine, co-ſine, tangent, or co-tangent, will be complete.

Otherwiſe; if the numbers of the column of given minutes do not any where increaſe up to 99, &c. and decreaſe immediately to 00, &c. or do not any where decreaſe to 00, &c. and increaſe immediately to 99, &c. or if the given ſeconds indicate the laſt figures of the decimal as lying above ſuch place of change, take and prefix the initial figures from the top of the column: but if the given ſeconds indicate the laſt figures of the decimal as lying below ſuch place of change, take and prefix the initial figures from the head

of

of the next column to the right, which in ſuch caſe will always differ by unity from thoſe at the head of the given column of minutes.

Example 1. The logarithmic ſine of 22° 35′ 25″ is 9.5844880, the four firſt figures of which are taken from the head of the column intitled 35′, and the four laſt in the ſame column in the area of the table even with 25″. *Example* 2. The logarithmic ſine of 22° 37′ 4″ is 9.5849887, the four firſt figures of which are taken from the head of the column intitled 37′, and the four laſt in the ſame column in the area of the table even with 4″. Here the initial figures change by unity, viz. from 9.584 in this column to 9.585 in the next column to the right; but the line of 4″ being above the place where the change of the numbers happens from increaſing to decreaſing, the initial figures are ſtill to be taken from the column of given minutes. *Example* 3. The logarithmic ſine of 22° 37′ 12″ is 9.5850291, whereof the four laſt figures are taken from the area of the table in the column intitled 37′ and even with 12″; but becauſe the initial figures vary by unity from 9.584 in this column to 9.585 in the next to the right, and at the ſame time the line of 12″ falls below the place where the change of the numbers in the column happens from increaſing to decreaſing, the initial figures 9.585 are taken from the head of the next column to the right, viz. that of 38′. *Example* 4. The logarithmic co-ſine of 32° 55′ 10″ is 9.9239873. *Example* 5. The logarithmic ſine of 67° 39′ 40″ is 9.9661192. *Example* 6. The logarithmic ſine of 67° 37′ 30″ is 9.9660066. *Example* 7. The logarithmic ſine of 67° 37′ 20″ is 9.9659979. *Example* 8. The logarithmic co-tangent of 53° 23′ 20″ is 9.8709692. *Example* 9. The logarithmic co-tangent of 53° 23′ 10″ is 9.8710132.

If the given arc has decimals of a ſecond, or a vulgar fraction of a ſecond annexed to it, and the utmoſt exactneſs be required in the calculation, take the difference of the logarithms of the next leſs and next greater arcs, and multiply it by the vulgar or decimal fraction; the product added to the logarithmic ſine or tangent or co-ar. of co-ſine, or ſubtracted from the logarithmic co-ſine, co-tangent, or co-ar. of ſine of the next leſs arc, will give the logarithmic ſine, tangent, co-ar. of co-ſine, co-ſine, co-tangent, or co-ar. of ſine, of the given arc. *Example* 1. The logarithmic ſine of 22° 35′ 25″,47 is 9.5844880 + 51 × ,47 = 9.5844880 + 24 = 9.5844904, where 51 is the difference of the logarithmic ſines of 22 35′ 25″, and 22° 35′ 26″ the next leſs and next greater arcs. *Example* 2. The logarithmic co-tangent of 84° 54′ 12″,632 is 8.9503112 — 238 ×,632 = 8.9503112 — 150 = 8.9502962, where 238 is the difference of the logarithmic co-tangents of 84° 54′ 12″ and 84° 54′ 13″. *Example* 3. The logarithmic tangent of 3° 28′ 13″ $\frac{43}{117}$ = 8.7827731 + 349 × $\frac{43}{117}$ = 8.7827731 + 128 = 8.7827859. *Example* 4. The co-ar. of log. co-ſine of 41° 7′ 26″, 37 is = co-ar. of log. co-ſine of 41° 7′ 26″ +, 37 × 19 = 0.1230382 + 7 = 0.1230389. The proportional part of the difference for the fraction of a ſecond may alſo be applied always additively, as well in the caſe of a logarithmic ſine, tangent, or co-ar. of co-ſine, which increaſe with the arcs, as of a logarithmic co-ſine, co-tangent, or co-ar. of ſine, which decreaſe as the arcs increaſe; by adding the product of the difference multiplied by the fraction of a ſecond in the firſt caſe to the log. ſine, tangent, or co-ar. of co-ſine of next leſs arc; and by adding the product of the difference multiplied by the complement

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of the fraction of a ſecond to unity, in the ſecond caſe, to the log. co-ſine, co-tangent, or co-ar. of ſine of the next greater arc. The firſt or more ſimple caſe has been illuſtrated by ſome of the examples above. The following examples will illuſtrate the latter caſe. *Example* 1. The logarithmic co-tangent of $84^\circ\ 54'\ 12'',632$ is $=$ log. co-tangent of $84^\circ\ 54'\ 13'' + 238 \times \overline{1 - ,632} = 8.9502874 + 238 \times ,368 = 8.9502874 + 88 = 8.9502962$ the ſame as found above by the other or common method. *Example* 2. The co-ar. of log. ſine of $32^\circ\ 49'\ 4'',57$ is $=$ co-ar. log. ſine $32^\circ\ 49'\ 5'' +, 43 \times 33 = 0.2660223 + 14 = 0.2660237$.

Hitherto the given arc has been ſuppoſed to be leſs than 90°; but if it be greater, and between 90° and 180°, take its ſupplement to 180°; if between 180° and 270°, diminiſh it by 180°; if between 270° and 360°, take its complement to 360°; and take the logarithmic ſines and tangents as before. Otherwiſe, for log. ſine or tangent of an arc between 90° and 180°, or 270° and 360°, take out log. co-ſine or log. co-tangent of exceſs of arc above 90° or 270°; for log. co-ſine or log. co-tangent of an arc above 90° or 270° take out log. ſine or log. tangent of exceſs of arc above 90° or 270°. But for the log. ſine and log. tangent, &c. of an arc between 180° and 270° take the log. ſine and log. tangent, &c. of the exceſs of the arc above 180°. Thus the log. ſine or log. tangent of $120^\circ\ 27'\ 36''$ or $300^\circ\ 27'\ 36''$ is to be taken as the log. co-ſine or log. co-tangent of $30^\circ\ 27'\ 36''$, and the log. co-ſine or log. co-tangent of $120^\circ\ 27'\ 36''$ or $300^\circ\ 27'\ 36''$ as log. ſine or log. tangent of $30^\circ\ 27'\ 36''$, and the log. ſine, co-ſine, tangent, or co-tangent, of $220^\circ\ 18'\ 14''$ is to be taken as the log. ſine, co-ſine, tangent, or co-tangent, of $40^\circ\ 18'\ 14''$. This method ſaves the trouble of taking the complement of the arc.

If the ſucceſſive differences of the logarithmic ſines and tangents, &c. in the table are irregular, or rather if the ſecond difference exceeds three or four units, the logarithm cannot be had true to the neareſt unit without allowing an equation of ſecond difference, and ſometimes third differences, &c. This happens to the logarithmic ſines and tangents of arcs under 20′, or of co-ſines and co-tangents of arcs above 89° 40′, or within 20′ of 90°. In this caſe, the following rules will determine them accurately and readily without the trouble of equations of differences of various orders. To the logarithm of the arc reduced into ſeconds with the decimal annexed, add the conſtant quantity 4.6855749, and from the ſum ſubtract one-third of the arithmetical complement of the log. co-ſine, the remainder will be the logarithmic ſine of the given arc.

The rule to find the tangent of a ſmall arc is this: To the conſtant logarithm 4.6855749 add the logarithm of the given arc reduced into ſeconds with the decimals annexed, and two-thirds of the arithmetical complement of the log. co-ſine; the ſum is the tangent of the given arc. The ſame ſubtracted from 20 will give the co-tangent of the ſame arc, or the tangent of an arc greater than 89° 40′.

The tangent of ſuch an arc greater than 89° 40′ may be alſo found directly, by ſubtracting the ſum of the logarithm of the ſeconds contained in the complement of the arc to 90°, and two thirds of the arithmetical complement of the co-ſine, from the conſtant quantity 15.3144251.

Example 1. The log. ſine of 10′ 12″, 624 or 612″, 624 is = 4. 6855749 + log. of 612, 624 — $\frac{1}{3}$ co-ar. of log. co-ſine 10′ 12″ = 4. 6855749 + 2. 7871940 — 6 = 7. 4727683. *Example* 2. The log. tangent of the ſame arc is 4. 6855749 + 2. 7871940 + 13 = 7. 4727702. *Example* 3. The log. co-tangent of the ſame arc is = 20 — 7. 4727702 = 12. 5272298. Otherwiſe the log. tangent of 89° 49′ 47″, 376 which wants 10′ 12″, 624 of 90° is = 15. 3144251 — log. 612, 624 — $\frac{2}{3}$ co-ar. co-ſine 10′ 13″ = 15. 3144251 — 2. 7871940 — 6 = 12. 5272305, the ſame as by the other method.

For greater exactneſs regard may be had to the eighth decimal figure of the logarithm of the ſeconds in the arc, in finding the proportional part, and alſo in finding one third or two thirds of the arithmetical complement of the log. co-ſine, and then the conſtant logarithm to eight places to be uſed will be 4. 68557487, which is the arithmetical complement of the logarithm of 206264, 806 the number of ſeconds in an arc equal to the radius of a circle; finally reject the eighth decimal figure, only if it exceeds five, increaſe the ſeventh decimal figure by unity. *Example:* The log. ſine of 8′ 17″, 426 or 497″, 42 is = 4. 68557487 + 2. 69672848 — 43 = 7. 38230292, or rejecting the laſt figure = 7. 3823029. Theſe rules for computing the ſines and tangents of ſmall arcs extend to 2° without producing an error of more than $\frac{1}{7}$ of a unit in the ſeventh place, and to 2°$\frac{1}{2}$ without producing an error of more than $\frac{1}{2}$ of a unit, at 4° the error is only 2, 3 and is always in defect, and for all leſs arcs ſenſibly proportional to the fourth power of the arc or even its ſine.

Although theſe tables exhibit only the logarithms of the ſines, co-ſines, tangents, and co-tangents, yet we may by them find the logarithms of the ſecants, co-ſecants, verſed-ſines, and co-verſed-ſines.

To the complement arithmetical of the log. co-ſine or ſine add 10. 0000000, and you will have the log. ſecant or co-ſecant. To double the log. ſine of half the arc add 0. 3010300 and reject 10. 0000000 from the ſum, and you will have the logarithm of the verſed-ſine. To double the log. ſine of half the complement of the arc add 0. 3010300, reject 10. 0000000 from the ſum, and you will have the logarithm of the co-verſed-ſine.

PROBLEM II.

To find the Arc anſwering to a given logarithmic Sine, Co-Sine, Tangent, or Co-Tangent.

IF a logarithmic ſine or co-ſine be given, enter the table on the left hand page; but if a logarithmic tangent or co-tangent be given, enter the table on the right hand page; ſeek in ſome column, having the given index, or index and initial figures at top, the remaining figures, but above the place of ſudden change of the ſeries of numbers as to increaſe or decreaſe, if ſuch change occurs; and if you cannot find them ſo circumſtanced, go to the next column to the left, where the initial figures at top vary by unity, and you will find them below the place of change in that column. Then if the title of ſine, co-ſine, &c. which

which ever be concerned, ſtands at the top of the page, the degrees will be alſo found at the top of the page, the minutes at the top of the column where the final figures were found, and the ſeconds even with the final figures in the left hand margin; but if the title of ſine, co-ſine, &c. ſtands at the bottom of the page, the degree will alſo be found at the bottom of the page, the minutes at the bottom of the column in which the final figures were found, and the ſeconds even with the final figures in the right hand margin.

Otherwiſe ſeek for the final figures between the two places in the area of the table where the changes happen in two diſtinct columns, one being immediately to the left of the firſt column which has the given initial figures at its head, the other being the laſt to the right which has the given initial figures at its head. *Example* 1. The arc is required whoſe log. ſine is 9.5844880. I enter the table on the left hand page, and find the initial figures 9.584 at top of the ſeveral columns and the remaining figures, 4880 underneath in one of theſe columns; and, becauſe a log. ſine was given, and the title ſine ſtands at the top of this department which contains the given logarithm, I write out 22 degrees from the top of the department, 35′ from the head of the column where the final figures were found, and 25″ from the left hand margin even with the final figures. Therefore 22° 35′ 25″ is the arc required. There was no change of the initial figures in the columns of minutes in this example, as there was no change of them from this column to the next to the right. *Example* 2. The arc is required whoſe log. ſine is 9.5849887? I find, on the left hand page, in a column having the initial figures 9.584 at top, the remaining figures 9887 beneath, but above the place of ſudden change of the ſeries of numbers as to increaſing or decreaſing. And as a log. ſine was given, and the title ſine ſtands at the top of the page, I take 22° from the top of the page, 37′ from the top of the column where the final figures were found and 4″ from the left hand margin ſtanding even with the final figures. Therefore 22° 37′ 4″ is the arc required. *Example* 3. The arc is required whoſe log. ſine is 9.5850291? I ſeek on the left hand page in the columns having the initial figures 9.585 at top for the final figures 0291 but cannot find them, except in the laſt column to the right hand ſo intitled, and there below the place of change; therefore I go to the firſt column to the left of all theſe having 9.585 at their head till I come to that which varies from them by unity and intitled 9.584, and here I find the given final figures 0291, but below the place of change, as it ought to be. And, becauſe the title ſine is found at top, I take out 22° from the top, 37′ from the head of the column where the final figures were found, and 12″ from the left hand margin even with the final figures. Therefore 22° 37′ 12″ is the arc required. *Example* 4. What is the arc whoſe log. co-ſine is 9.9239873? Seeking in the columns belonging to the ſines and co-ſines under the head 9.923 I can no where find the final figures 9873 except in one column below the place of change; therefore I go to the firſt column to the left, whoſe initial figures vary from theſe by unity, that is to ſay, whoſe initial figures are 9.924, and I find the given final figures 9873 below the place of change, as it ought to be. And becauſe a log. co-ſine was given, and the title co-ſine ſtands at the top of this department, I take out the degree from the top, viz. 32°, and 55′ from the head of the column in which the final figures were found, and 10″ from the left hand margin even with the final figures. Therefore the arc required is 32° 55′ 10″.

Example

Example 5. What is the arc whose log. sine is 9.9661192? I find, on the left hand page, in the column having 9.966 at the head, the final figures 1192 beneath. And as the title sine stands at the bottom of the department, I take out 67° at bottom, 39′ from the bottom of the column containing the final figures, and 40″ from the right hand margin even with the final figures. Therefore the arc required is 67° 39′ 40″. *Example* 6. What is the arc whose log. sine is 9.9660066? I find on the left hand page, in one of the columns having 9.966 at top, the remaining figures 0066 beneath, but above the place of change; therefore the arc required is 67°, standing at the bottom by the side of the title sine, with 37′ standing at the bottom of the column containing the final figures, and 30″ standing in the right hand margin even with the final figures. *Example* 7. What is the arc whose log. sine is 9.9659979? I cannot find on the left hand page the final figures 9979 in any column having 9.965 at the head, and above the place of change; therefore I go to the first column to the left hand of these whose initial figures at top vary from these by unity, viz. to that intitled 9.966 in which I find the final figures 9979 below the place of change, as it ought to be; and, as the title sine stands at the bottom of the page, I look there for the degree 67°, and also for 37′ at the bottom of the column containing the final figures, and 20″ in the right hand margin even with the final figures. Therefore the arc required is 67° 37′ 20″. *Example* 8. What is the arc whose log. co-tangent is 9.8709692? I find on the right hand page in a column having 9.870 at the head, the remaining figures 9692, which are above the place of change; and as the title co-tangent stands at the bottom of the page, I take out the degree at the bottom by the side of the title, viz. 53°; the minutes at the bottom of the column containing the final figures, viz. 23′; and the seconds in the right hand margin even with the final figures, viz. 20″. *Example* 9. What is the arc whose logarithmic co-tangent is 9.8710132? I seek in the right hand page in the columns having 9.871 at the head for the remaining figures 0132, but cannot find them except in one column below the place of change; therefore I go to the first column to the left whose initial figures vary from these by unity, viz. 9.870 and there I find the given final figures 0132, below the place of change as it ought to be. And as the title co-tangent stands at the bottom of the page, I take out 53° at the bottom by the side of the title, and 23′ from the bottom of the column of the final figures, and 10″ from the right hand margin even with the final figures.

If the given logarithm is not to be found in the table, make use of that which approaches nearest to it over or under, and find its correspondent arc, which will be the required arc true to half a second. But if you want the arc more accurately, or as accurately as the tables are capable of giving it, take the difference of the given logarithm and the next less of the same kind in the table, if the given logarithm be a sine or tangent; or take the difference of the given logarithm and the next greater of the same kind in the table, if the given logarithm be a co-sine or co-tangent; that is, take the difference between the given logarithm and that logarithm of the two of the same kind in the table, one greater and the other less than the given logarithm, which lies nearest to the given title of sine, or co-sine, &c. at the top or bottom of the page, for the numerator of a fraction; and take the difference of the two logarithms in the table, one of which is next less and the other next greater than the given logarithm for the denominator

nator of the fraction; and you will have the fraction of a ſecond to be added to the arc anſwering to that logarithm of the two in the table, one leſs and the other greater than the given logarithm, which is nearest to the given title. This vulgar fraction of a ſecond may be converted into a decimal, if required, by dividing the numerator by the denominator. *Example* 1. What is the arc whoſe logarithmic ſine is 9. 5844896? I look among the ſines and find 9. 5844880 the next leſs, and 9. 5844931 the next greater ſine in the table; I take the difference between 9. 5844880 which lies nearest to the title of ſine at the top of the page, and 9. 5844896 the given logarithm, which is 16, for the numerator of the fraction. I alſo take the difference of the two logarithms in the table, which is 51, for the denominator of the fraction. The arc anſwering to the log. ſine 9. 5844880, that nearest to the title, is 22° 35′ 25″: therefore the arc required is 22° 35′ 25″ $\frac{16}{51}$ = 22° 35′ 25″, 313, &c. *Example* 2. What is the arc whoſe log. co-tangent is 9. 8710096? I look among the co-tangents and find the next greater and next leſs co-tangents to be 9. 8710132 and 9. 8710088. I take the difference between the firſt 9. 8710132, which lies nearest to the title co-tangent and 9. 8710096 the given co-tangent, which is 36 for the numerator of a fraction. I alſo take the difference of the two logarithms in the table, which is 44 for the denominator of the fraction. Therefore the fraction is $\frac{36}{44}$, and as the arc anſwering to the log. co-tangent 9. 8710132, which is nearest to the title, is 53° 23′ 10″, the arc required is 53° 23′ 10″ $\frac{36}{44}$ = 53° 23′ 10″ $\frac{9}{11}$ = 53° 23′ 10″, 818, &c.

Hitherto the required arc has been ſuppoſed to be under 90°; but if it ſhould be greater, find the arc as before, viz. leſs than 90°; and if the required arc ſhould be between 90° and 180°, take the ſupplement of the arc found to 180°; if between 180° and 270° take the ſum of 180° and the arc found; if between 270° and 360° take the complement of the arc found to 360°, and you will have the required arc. Otherwiſe, if the required arc ſhould be between 90° and 180°, or between 270° and 360°, to avoid the trouble of taking the ſupplement of the reſult to 180°, or the complement of the reſult to 360°, conſider the log. ſine or tangent of an arc as the log. co-ſine or log co-tangent of another arc; and conſider the log. co-ſine or log. co-tangent of an arc as the log. ſine or log. tangent of another arc, which being found in the tables accordingly, and added to 90° or 270°, will give the arc required. Thus an arc between 180° and 270° is = 180° + arc found anſwering to a given log. ſine, co-ſine, tangent, or co-tangent: and an arc between 90° and 180°, or 270° and 360° = 90° or 270° + arc whoſe log. co-ſine = given log. ſine; or whoſe log. ſine = given log. co-ſine, or whoſe log. co-tangent = given log. tangent, or whoſe log. tangent = given log. co-tangent.

If the ſucceſſive differences of the logarithmic ſines and tangents, &c. in the table are irregular, or rather if the ſecond difference exceeds three or four units, the arc cannot be had true to the utmoſt accuracy as to the fractional part of a ſecond by the uſual method, unleſs an allowance be made on account of thoſe differences, and perhaps alſo of third and fourth differences, &c. This happens when the log. ſine, tangent, or co-tangent of an arc under 20′, or the log. co-ſine, tangent, or co-tangent of an arc above 89° 40′, or within 20′ of 90° are given.

In theſe caſes the following rules will determine the arc accurately and readily, without the trouble of computing the effect ariſing from the differences of various orders. The rule to find the arc from the ſine

is this: To the given logarithmic ſine of a ſmall arc add the conſtant logarithm 5. 3144251, and $\frac{1}{3}$ of co-ar. of log. co-ſine; and ſubtract 10 from the index of the ſum, and you will have the logarithm of the number of ſeconds with the decimal fraction of the given arc. The rule to find the arc from the tangent is this: To the log. tangent of a ſmall arc add the conſtant logarithm 5. 3144251, and from the ſum ſubtract $\frac{2}{3}$ of co-ar of log. co-ſine, and ſubtract 10 from the index, and you will have the logarithm of the number of ſeconds with the decimal fraction of the given arc. If the co-tangent of an arc under 20′, or tangent of an arc above 89° 40′ were given, take the complement of the co-tangent of the ſmall arc or of the tangent of the large arc to 20. 00, &c. and you will have the tangent of a ſmall arc under 20′; from which find the arc as before, which will be that whoſe co-tangent was given; or its complement to 90° will be that whoſe tangent was given. The log. co-ſine of an arc above 89° 40′ being = log. ſine of an arc under 20′, conſider it as a log. ſine, and find the arc by the rule given above; its complement to 90 will be the arc required. The log. co-tangent of an arc above 89° 40′ being = log. tangent of an arc under 20′, find this ſmall arc by the rule above: its complement to 90° will be the arc required. *Example* 1. What is the arc whoſe log. ſine is = 7. 4727683? Anſwer: 7. 4727683 + 5. 3144251 + 0. 0000006 — 10, 00, &c. = 2. 7871940 the logarithm of the required arc, which is therefore = 612″, 624 = 10′ 12″, 624. *Example* 2. What is the arc whoſe log. tangent is 7. 5228031? Anſwer 7. 5228031 + 5. 3144251 — 0. 0000016 — 10. 00, &c. = 2. 8372266, the logarithm of the required arc; which is therefore = 687″, 427 = 11′ 27″, 427. *Example* 3. What is the arc, greater than 89° 40′, whoſe log. co-ſine is 7. 4727683? This logarithm will be the ſine of a ſmall arc under 20′, which has been found in example 1 = 10′ 12″, 624. Therefore its complement or 89° 49′ 47″, 376 is the arc required. *Example* 4. What is the arc, leſs than 20′, whoſe log. co-tangent = 12. 4771969? Anſwer: The complement of 12. 4771969 to 20. 00, &c. = 7. 5228031 is the tangent of a ſmall arc under 20′, which has been found in example 2. = 11′ 27″, 427. *Example* 5. What is the arc greater than 89° 40′ whoſe tangent = 12. 4771969. Anſwer: The complement of 12. 4771969 to 20. 00, &c. = 7. 5228031 the tangent of an arc under 20′, which has been found in example 2. = 11′ 27″, 427; its complement to 90 = 89° 48′ 32″, 573 is the arc required. *Example* 6. What is the arc, greater than 89° 40′, whoſe log. co-tangent = 7. 5228031. Anſwer: 7. 5228031 is the tangent of an arc under 20′, which has been found in example 2. = 11′ 27″, 427; its complement to 90° = 89° 48′ 32″, 573 is the arc required.

If the logarithmic ſecant or co-ſecant were given, to find the arc by theſe tables; ſubtract 10 from the index, the complement of the remainder is the log. co-ſine or ſine of the arc. If the logarithmic verſed-ſine or co-verſed-ſine were given to find the arc; add 9. 6989700 to the log. verſed-ſine, half the ſum will be the log. ſine of half the arc. Add 9. 6989700 to the log. co-verſed-ſine, half the ſum will be the log. ſine of half the complement of the arc.

It may be proper to remark here that the radius of the quadrant is unity, and the ſines, co-ſines, tangents, &c. are reckoned in decimal parts of the ſame. The ſines and co-ſines are leſs than the radius, and ſo are the tangents of arcs under 45°; their numerical values are then fractions, properly ſpeaking, and the

characteriſtics

characteriſtics of their logarithms ſhould be negative; and the logarithm of the radius ſhould be nothing. But the tangents of arcs greater than 45°, and the ſecants and co-ſecants are greater than the radius, and conſequently their logarithms are affirmative. To put the logarithms in the table under a form wholly poſitive, 10 has been borrowed or added to all the characteriſtics, and the logarithm of the radius has been made 10. But we muſt remember at the end of any addition, to repay the ten or tens borrowed in the place of the index, by ſubtracting as many tens from the index of the reſult as there were logarithms of ſines, co-ſines, &c. which entered into the calculation, if the reſult be the logarithm of a number; and if ſo many tens cannot be ſubtracted, to ſubtract a number of tens leſs by one than the number of the log. ſines, &c. which entered the calculation, and the reſult will be the logarithm of a decimal fraction: but if the reſult be a log. ſine, co-ſine, tangent, &c. the number of tens ſubtracted from the index muſt be leſs by one than the number of log. ſines, co-ſines, &c. which entered the calculation; except, however, that no diminution is to be made to the index, on account of the arithmetical complement of a log. ſine or log. co-ſine, that may enter the calculation, which is a proper and affirmative logarithm.

Of the ADDITION of LOGARITHMS.

1. IF the logarithms are all affirmative, or all negative, add them together in the ſame manner as other decimal numbers, and prefix the common ſign to the ſum. Thus ± 2.4771213; ± 1.7781513; $\pm 4.0791812 = \pm 8.3344538$.

2. If the logarithms are ſome affirmative and ſome negative, take the difference between the ſums of the affirmative and negative, and prefix the ſign of the greater. Thus $+ 3.6989700$; $- 7.6532125$; $+ 2.4771213$; $- 4.5686362 = - 12.2218487 + 6.1760913 = 6.0457574$.

3. If the indices only of the logarithms are all negative: add the affirmative parts of the logarithms together; the ſum of the indices, diminiſhed by what is carried from the affirmative parts, if any, will be a negative index. Thus $\bar{1}.6989700$; $\bar{2}.9542425$; $\bar{4}.8239087 = \bar{5}.4771212$.

4. If the indices have different ſigns, the decimal parts being all affirmative: add the affirmative parts of the logarithms together, and what is carried (if any) add to the affirmative indices; then the difference of the affirmative and negative indices, with the ſign of the greater, will be the index of the ſum of the logarithms. Thus the ſum of 3.6989700; $\bar{7}.3467875$; 1.4771213; $\bar{5}.4313638 = \bar{7}.9542426$.

5. If ſome of the logarithms are negative, or ſome have the index only negative, the ſum of the logarithms may be alſo found thus: ſubſtitute for the negative logarithm its arithmetical complement; or for the negative index, where that only is negative, ſubſtitute its arithmetical complement; and add the logarithms thus transformed to the affirmative logarithms, and from the ſum ſubtract as many tens in the place of the index, as arithmetical complements were taken, if poſſible, and you will have the proper logarithmic ſum; but if the index of the ſum immediately found be leſs than ſo many tens as have been directed

directed to be ſubtracted, ſubtract one ten leſs, that is ſubtract ſo many tens as arithmetical complements were taken, wanting one; the remainder will be the logarithm of the ſum, which will be a decimal fraction, whoſe firſt ſignificant figure will be ſo many places to the right of unity as the index wants of 10. Thus the ſum of 3. 6989700; $\bar{7}$. 3467875; 1. 4771213; —4. 5686362; = 3. 6989700 + 3. 3467875 + 1. 4771213 + 5. 4313638 — 20 = 13. 9542426 — 20; or becauſe 20 the index to be ſubtracted is greater than 13 the index of the ſum, ſubtract 10 leſs, and the ſum will be 3. 9542426, the logarithm of the decimal fraction ,0000009000002, whoſe firſt ſignificant figure lies 10 — 3 = ſeven places of figures to the right of, or below, the place of units.

SUBTRACTION of LOGARITHMS.

1. WHEN the logarithms are both affirmative, or both negative, or the one affirmative and the other negative, change the ſign of the ſubtrahend, then proceed as in addition.

2. When only the indices are both or either of them negative, ſubtract the affirmative part of the ſubtrahend from that of the minuend, as uſual; and if one is borrowed from the index place add + 1 to the index of the ſubtrahend, then change its ſign, and do as in addition.

Thus $\bar{3}$. 1549020 ſubtracted from $\bar{7}$. 9788107 leaves the remainder $\bar{4}$. 8239087; $\bar{3}$. 6989700 ſubtracted from $\bar{4}$. 6532125 leaves $\bar{2}$. 9542425; 4. 6989700 ſubtracted from $\bar{2}$. 2218487 leaves $\bar{7}$. 5228787; $\bar{4}$. 9542425 ſubtracted from 6. 6532125 leaves 9. 6989700.

3. Otherwiſe, make uſe of this one rule comprehending both caſes. If the minuend and ſubtrahend are both affirmative logarithms, take the latter from the former, borrowing 10, if neceſſary; remembering, that if 10 was borrowed the remainder will be the logarithm of a decimal fraction. But if one or both logarithms are negative, or have the index only negative, ſubſtitute for the negative logarithm its arithmetical complement; or for the negative index, if that only was negative, ſubſtitute its arithmetical complement; and further, if the index of one of the logarithms was poſitive, increaſe it by 10. Now take the ſubtrahend from the minuend, both being thus altered, borrowing 10, if neceſſary; remembering that if 10 was borrowed, the remainder will be the logarithm of a decimal fraction.

Thus 1. 9542425 taken from 5. 1303338 leaves 3. 1760913. 4. 1867431 taken from 2. 0643564 leaves 7. 8776133 the logarithm of a decimal fraction, becauſe 10 was borrowed to make the ſubtraction. To ſubtract — 3. 1760913 from — 6. 0211893, take their arithmetical complements 6. 8239087 and 3. 9788107, and ſubtract the firſt from the ſecond, the remainder is 7. 1549020, the logarithm of a decimal fraction, becauſe 10 was borrowed. To ſubtract — 3. 1760913 from $\bar{7}$. 9788107, take the arithmetical complement of the firſt, and the arithmetical complement of the index of the ſecond, and affix the decimal part of the logarithm to it, and you will have 6. 8239087 and 3. 9788107, the firſt of which ſubtracted from the ſecond leaves 7. 1549020, the logarithm of a decimal fraction, becauſe 10 was borrowed. To

ſubtract

ſubtract $\bar{3}$. 1549020 from $\bar{7}$. 9788107. The arithmetical complements of the indices being taken, and ſubſtituted in their place, give the logarithms 7. 1549020 and 3. 9788107, the firſt of which taken from the ſecond leaves 6. 8239087, the logarithm of a decimal fraction becauſe 10 was borrowed. To ſubtract $\bar{3}$. 0457575 from 0. 5228788; ſubſtitute for the index — 3 its arithmetical complement, and add 10 to the index of the other logarithm, and we ſhall have 7. 0457575 and 10. 5228788, the firſt of which taken from the ſecond leaves 3. 4771213. To ſubtract 4. 6989700 from $\bar{2}$. 2218487; take the arithmetical complement of the negative index, and add 10 to the index of the other logarithm, and we ſhall have 14. 6989700 and 8. 2218487, the firſt of which taken from the ſecond leaves 3. 5228787, the logarithm of a decimal fraction, becauſe 10 was borrowed to make the ſubtraction.

MULTIPLICATION and DIVISION of LOGARITHMS.

1. IF the logarithm, which is to be multiplied or divided, is wholly affirmative or negative, multiply or divide it by the given number, and prefix the ſign of the given logarithm to the product or quotient.

Thus the logarithm + 2. 3010300 multiplied by 4 gives the product = + 9. 2041200. The logarithm — 2. 7781512 multiplied by 3 gives the product — 8. 3344536. The logarithm 9. 2041200 divided by 4 gives the quotient + 2. 3010300. The logarithm — 8. 3344536 divided by 3 gives the quotient — 2. 7781512.

2. If the index of the logarithm, which is to be multiplied, is negative, its decimal part being affirmative, and the multiplicator be a whole number, multiply the decimal part of the logarithm by the multiplicator, and ſubtract what is carried over to the place of units from the product of the negative index by the multiplicator, the remainder will be the negative index of the product, to which affix the decimal part of the product.

To divide a logarithm in the ſame circumſtances, by any whole number, if the negative index contains or meaſures the given number or diviſor an exact number of times, divide the negative index by the given diviſor for a new negative index, and the decimal part of the logarithm by the ſame for a new decimal part. But if the negative index does not meaſure or contain the given diviſor an exact number of times, increaſe the negative index by the leaſt number that will make the index a multiple of the diviſor, and prefix the ſame number to the decimal part of the index, and divide the increaſed index by the diviſor for a new negative index, and the increaſed decimal part by the ſame diviſor for a new decimal part.

Otherwiſe multiply or divide the complement of the given logarithm, which will be affirmative, by the given multiplicator or diviſor; the complement of the product or quotient will be the product or quotient required.

Thus the product of the logarithm $\bar{2}.6989700$ by 5 is $= \bar{7}.4948500$; the quotient of $\bar{9}.9030972$ divided by 3 is $= \bar{3}.3010324$. The quotient of $\bar{5}.7958828$ divided by 4 is $= \bar{2}.9489707$. Or the complement of the ſame logarithm $\bar{5}.7958828$ is 4.2041172 which divided by 4 gives 1.0510293, whoſe complement is $\bar{2}.9489707$, the ſame as found before by the other method.

Otherwiſe: To multiply the logarithm of a decimal fraction by any whole number, let the logarithm be put under an affirmative form, by adding 10 to the negative index, and multiply it by the given number, and diminiſh the index by the product of the number leſſened by unity multiplied into 10, and you will have the required product under a poſitive form, with 10 borrowed to the index. And to divide the logarithm of a decimal fraction by a whole number, let the logarithm be put under an affirmative form, by adding the product of 10 by the given diviſor, and dividing the ſum by the diviſor, you will have the required quotient, under a poſitive form, with 10 borrowed to the index.

Thus to multiply the logarithm $\bar{2}.6989700$ by 5, adding 10 to the negative index, the logarithm becomes 8.6989700, which multiplied by 5 gives 43.4948500, from which ſubtracting 40 = the product of 10 into 4 (the given multiplicator leſſened by unity) leaves 3.4948500, the logarithm required, with 10 borrowed to the index. To divide the logarithm $\bar{7}.4948500$ by 5; adding 50 (the product of 10 by the given diviſor 5) to the negative index $\bar{7}$, the logarithm becomes 43.4948500, which divided by 5 gives 8.6989700, the required quotient under a poſitive form, with 10 borrowed to the index.

3. If the multiplicator of the logarithm is a fraction, either proper or improper $\left(\text{as } \frac{m}{n}\right)$, the index of the logarithm being negative, and the decimal part affirmative, as before; add the denominator (n) or ſome multiple of it (p n) to the negative index of the logarithm (— r), ſo as to make the ſum (n — r or p n — r) either 0 or a poſitive number, and affix the decimal part of the logarithm to it, and multiply the whole by the given fraction, and from the index of the product ſubtract the numerator of the fraction, or the numerator multiplied into the number by which the denominator was multiplied before (m or p m), and you will have the product required. To divide a logarithm by a fraction is the ſame thing as to multiply it by the reciprocal of that fraction, which is produced by changing the numerator and denominator for one another, and therefore requires no particular directions. *Example* 1. To multiply the logarithm $\bar{1}.9175502$ by $\frac{3}{2}$? The denominator 2 added to the negative index $\bar{1}$ makes the logarithm become 1.9175502, which multiplied by the fraction $\frac{3}{2}$ gives 2.8763253, from which ſubtracting the numerator 3 the reſult is $\bar{1}.8763253$, the product required. *Example* 2. To multiply the logarithm $\bar{4}.6346587$ by the fraction $\frac{2}{3}$? Becauſe the denominator 3, taken abſolutely, is leſs than the negative index $\bar{4}$, I multiply the denominator by 2, which makes 6, which I add to the negative index $\bar{4}$, and the logarithm will become 2.6346587, which I multiply by the fraction $\frac{2}{3}$, the product is 1.7564391, from which I ſubtract 4, the product of the numerator by 2 (becauſe the denominator was multiplied by 2) which leaves $\bar{3}.7564391$, the product required.

Otherwiſe,

Otherwiſe, to multiply the logarithm of a decimal fraction by any vulgar fraction, proper, or improper; let the logarithm be put under an affirmative form, by adding 10 to the negative index, and multiply it by the numerator of the fraction, and add or ſubtract the product of the difference of the numerator and denominator by 10, according as the fraction is proper or improper, and divide the ſum or difference by the denominator of the fraction, and you will have the logarithm required in an affirmative form, or with 10 borrowed to the index. Thus to find the product of the logarithm $\bar{1}.8763253$ by $\frac{2}{5}$; add 10 to the negative index $\bar{1}$, which puts the logarithm under a form wholly affirmative, and makes it 9.8763253; this multiply by the numerator 2, which gives 19.7526506, to which, becauſe the fraction is proper, add 30 (the product of 3, the difference of the numerator and denominator, by 10), the ſum will be 49.7526506, which divided by the denominator 5 gives the quotient 9.9505301, the logarithm required under a form wholly affirmative, in which 10 is borrowed to the index. Alſo to multiply the logarithm $\bar{1}.9505301$ by $\frac{5}{2}$, which is an improper fraction; add 10 to the negative index $\bar{1}$, makes the logarithm 9.9505301, wholly affirmative; which multiplied by the numerator 5 gives 49.7526505, from which ſubtracting 30 (the product of the difference of the numerator and denominator by 10) becauſe the fraction is improper, leaves 19.7526506, which divided by the denominator 2 gives the quotient 9.8763253, the logarithm required under a poſitive form with 10 borrowed to the index.

Various Rules and Problems, wherein ſome of the Uſes of Logarithms are ſhewn.

The RULE of PROPORTION.

THE anſwer will be obtained by finding a dividend compoſed of factors, which are ſome of the given terms; and a diviſor compoſed of factors, which are the reſt of the given terms. The quotient will be the term required.

Seek among the terms, which enter into the queſtion, that which is of the ſame kind with the unknown term, which call the homologous term. Call thoſe terms which have a relation to the unknown term, its correlatives; and thoſe which have a relation to the homologous term, its correlatives. The dividend will be compoſed of thoſe correlatives of the unknown term, which have a direct ratio to it, that is to ſay, which make the unknown term increaſe or decreaſe, as they increaſe or decreaſe themſelves; of the homologous term; and of thoſe correlatives of the homologous term, which bear an inverſe ratio to the ſame, that is to ſay, which make the homologous term decreaſe or increaſe as they themſelves increaſe or decreaſe. And the diviſor will be compoſed of thoſe correlatives of the unknown term, which bear an inverſe ratio to it; and of thoſe correlatives of the homologous term which bear a direct ratio to it.

This rule is ſo general as to comprehend all caſes that come under the common rules of proportion; whether direct or inverſe; whether ſingle or any how compounded.

Example

Example 1. If 280*l.* ſerve 120 men for 32 weeks, how much will ſerve 360 men for 48 weeks? Anſwer, 1260*l.*

The unknown term, or term ſought, is a ſum of money or a number of pounds. Therefore 280*l.* is the homologous term, whoſe correlatives are 120 men, and 32 weeks; and the correlatives of the unknown term are 360 men, and 48 weeks. Now the correlatives of the unknown term have both a direct ratio to it, for there muſt be ſo many more pounds, as there are more men to be ſupported, and as they are to be ſupported for a longer time. Therefore 360, 48, and 280 will be the factors of the dividend. Alſo the correlatives of the homologous term have both a direct ratio to it; therefore 120, and 32 will be the factors of the diviſor; and the quotient will give the anſwer $= \frac{360 \times 48 \times 280l.}{120 \times 32} = 1260l.$ As will appear by adding together the logarithms of 360, 48, and 280, and the arithmetical complements of the logarithms of 120 and 32, and ſubtracting 20, on account of the two arithmetical complements, from the ſum; which will give 2,5563025 + 1.6812412 + 2.4471580 + 7.9208188 + 8.4948500 — 20 = 3.1003705 = log. of 1260, the number of pounds required.

Example 2. What is the intereſt of 2750*l.* for 292 days at $4\frac{1}{2}$ per cent. per annum?

Anſwer, 99*l.*

If 100*l.* in 365 days bring an intereſt of 4,5*l.* what intereſt will 2750*l.* bring in 292 days? The unknown term is an intereſt, therefore the homologous term is 4,5*l.* whoſe correlatives are 100*l.* and 365 days. The correlatives of the unknown term are 2750*l.* and 292 days, which both bear a direct ratio to it, becauſe the intereſt will be ſo much greater, as the ſum put to intereſt is greater, and as the time for which it is lent is greater. For the ſame reaſon, the correlatives of the homologous term bear a direct ratio to it. Therefore the term required $= \frac{2750 \times 292 \times 4,5l.}{100 \times 365} = 99l.$ By logarithms, 3.43933269 + 2.46538285 + 0.65321251 + 8.00000000 + 7.43770714 — 20 = 1.99563519 = log. of 99, the number of pounds required.

Example 3. If 248 men, in $5\frac{1}{2}$ days, of 11 hours each, dig a trench $232\frac{1}{2}$ yards long, $3\frac{2}{3}$ wide, and $2\frac{1}{3}$ deep, in how many days, of 9 hours, will 24 men dig a trench $337\frac{1}{2}$ yards long, $5\frac{2}{5}$ wide, and $3\frac{1}{2}$ deep? Anſwer, 231 days. The unknown term is a number of days, the homologous term is then $5\frac{1}{2}$ or 5,5 days. The correlatives of the unknown term are 24 men; 9 hours; 337,5 yards; 5,6 yards; and 3,5 yards. The correlatives of 5,5 days, the homologous term, are 248 men; 11 hours; 232,5 yards; 3,666, &c. yards; and 2,333, &c. yards. Of the correlatives of the unknown term, the dimenſions of the ditch bear a direct ratio to it, becauſe the time taken to make the trench will be ſo much greater, as the trench is longer, wider, and deeper: on the other hand the men, and hours bear an inverſe ratio to the unknown term, becauſe the time will be ſo much leſs or greater, as more or fewer men are employed, and theſe men work more hours a day. Therefore 337,5; 5,6; and 3,5 will be factors of the dividend; and 9, and 24 will be factors of the diviſor. Alſo the homologous term 5,5 will, as it always is, be a factor of the dividend. Now its correlatives 248 men, and 11 hours (the length of their day) bear an inverſe ratio to the time taken to make their trench; whilſt the dimenſions of the trench 232,5 yards;

3.666,

3,666, &c. yards; and 2,333, &c. yards bear a direct ratio to it. Therefore 248 and 11 will be factors of the dividend, and 232,5 yards, 3,666, &c. yards, and 2,333, &c. yards will be factors of the divisor. Hence the term required $= \frac{337,5 \times 5,6 \times 3,5 \times 5,5^{d} \times 248 \times 11}{9 \times 24 \times 232,5 \times 3.6 \times 2,3} = 231$ days. By logarithms 2. 5282738 + 0. 7481880 + 0. 5440680 + 0. 7403627 + 2. 3944517 + 1. 0413927 + 9. 0457575 + 8. 6197888 + 7. 6335770 + 9. 4357286 + 9. 6320232 — 50 = 2. 3636120 = log. of 231, the number of days required.

COMPOUND RULE,

OR

RULE for the COMBINATION and ARBITRATION of EXCHANGE.

IF the course of exchange be given between one place and a second, between the second and a third, between the third and a fourth, &c. &c. and money be supposed to be remitted in a circuitous way from the first place to the last; the arbitration of exchange is the method of computing, from these *data*, the rate of exchange from the first place to the last; or of finding, either what quantity of money of the last place will be equivalent to a given sum of the first place; or what quantity of money of the first place will be equivalent to a given sum of the last place.

1. Distinguish the given rates or prices in the circular course, into antecedents and consequents; and place the antecedents in one column, and consequents in another on the right, fronting one another by way of equation. And, in this distribution into antecedents and consequents, each consequent must be of the same kind with the next antecedent, and the first antecedent of the same kind with the last consequent, which must be the sum whose value in exchange is required.

2. Multiply the antecedents continually together for a divisor, and the consequents continually for a dividend; the quotient of the products will be the sum required in exchange.

Example 1. If London would remit 1000l. sterling to Spain, first by way of Holland, thence to France, thence to Venice, and thence to Spain; the exchange from London to Holland being 35s. per l.; thence to France at 58d. per crown; thence to Venice at 100 crowns per 60 ducats; and thence to Spain at 360 maravedies per ducat; how many piastres will it produce in Spain?

Antecedents.		Consequents.
1l. sterling	=	35s. or 420d. Flemish.
58d. Flemish	=	1 crown.
100 crowns	=	60 ducats.
1 ducat	=	360 maravedies.
272 maravedies	=	1 piastre.
How many piastres	=	1000l. sterling.?

Then $\frac{420 \times 60 \times 360 \times 1000}{58 \times 100 \times 272} = 5750,507$ piaſtres.

By logarithms $2.6232493 + 1.7781512 + 2.5563025 + 3.0000000 + 8.2365720 + 8.0000000 + 7.5654311 - 30 = 3.7597061$ the log. of 5750,507. Therefore the produce in Spain will be 5750,507 piaſtres.

Example 2. If London would remit by the way of Holland, thence to France, thence to Venice, and thence to Spain, the value of 5000 piaſtres, in Engliſh pounds ſterling, the courſe of exchange being as in example 1. I deſire to know how many pounds ſterling muſt be remitted to pay the 5000 piaſtres?

Antecedents.		Conſequents.
1 piaſtre	=	272 maravedies.
360 maravedies	=	1 ducat Venice.
60 ducats	=	100 crowns French.
1 crown	=	58d.
35s. or 420d.	=	1l. ſterling.

How many pounds ſterling = 5000 piaſtres?

Then $\frac{272 \times 100 \times 58 \times 5000}{360 \times 60 \times 420} = 869,488$ 5l. ſterling.

By logarithms $2.4345689 + 2.0000000 + 1.7634280 + 3.6989700 + 7.4436975 + 8.2218487 + 7.3767507 - 30 = 2.93926385 =$ log. of 869,4885. Therefore London muſt remit 869,4885l. ſterling.

Of COMPOUND INTEREST.

Let a be an annuity, or ſum which will become due, or be payable repeatedly, at ſeveral equal intervals of time to n number of times. Let the rate of compound intereſt be that of 1 to $1 + r$, where r is the gain of 1l. in one time. Let p be the preſent value of the ſaid annuities, or the principal money which would purchaſe them; and m the amount or future value of the ſame annuities at the end of n times, or what they will produce at the end of the n times, if continually put out to compound intereſt as faſt as they become due.

The amount m will be equal to the ſum of the terms of the geometrical progreſſion, $a ; a.\overline{1+r} : a.\overline{1+r}^2 : a.\overline{1+r}^3 \ldots a.\overline{1+r}^{n-1} = \frac{a.\overline{1+r}^n - 1}{r}$: and the principal p will be equal to the ſum of the terms of this other ſeries, $\frac{a}{1+r} : \frac{a}{\overline{1+r}^2} : \frac{a}{\overline{1+r}^3} \ldots \frac{a}{\overline{1+r}^n} = \frac{a.\overline{1+r}^n - 1}{r.\overline{1+r}^n}$: by means of which two equations, any three of theſe five terms a, n, r, m, p being given, the two others are found, as ſhewn in the following table. To facilitate the calculations by the table of logarithmic ſines and tangents; put $r = t^2$, A or

$1 + r$

$1 + r = \text{sec}^2, A = \sqrt[n]{\frac{m}{p}}$. Put alſo $\overline{1+r}|^n = \text{sec}^2, B = \overline{\text{sec}^2, A}|^n = \frac{m}{p}$. $\because \overline{1+r}|^n - 1 = \frac{m}{p} - 1 = t^2, B$, and $\frac{\overline{1+r}|^n - 1}{\overline{1+r}|^n} = s^2, B$. Put $\frac{pr}{a} = s^2, C \because 1 - \frac{pr}{a} = c^2, C$. Put $\frac{rm}{a} = t^2, D \because 1 + \frac{rm}{a} = \text{sec}^2, D$. Put $\frac{a}{m} \times t^2, B = t^2, E \because 1 + \frac{a}{m} \times t^2, B = \text{sec}^2, E$

GIVEN	CASE	REQUIRED.	CASE	REQUIRED.
a, p, r	1	$m = \frac{ap}{a-pr} = \frac{p}{c^2, C}$	2	$n = \frac{L.a - L.\overline{a-pr}}{L.\overline{1+r}} = \frac{2\,L.\text{sec}, C - 20}{L.1+r}$
a, m, r	3	$p = \frac{am}{a+rm} = m \times c^2, D$	4	$n = \frac{L.\overline{a+mr} - L.a}{L.\overline{1+r}} = \frac{2\,L.\text{sec}, D - 20}{L.\overline{1+r}}$
a, n, r	5	$m = \frac{a \times \overline{\overline{1+r}|^n - 1}}{r} = \frac{a}{r} \times t^2, B$	6	$p = \frac{a \times \overline{\overline{1+r}|^n - 1}}{r \times \overline{1+r}|^n} = \frac{a}{r} \times s^2, B$
m, p, r	7	$a = \frac{rm}{\overline{1+r}|^n - 1} = mr \times \text{co-}t^2, B$	8	$n = \frac{L.m - L.p}{L.\overline{1+r}}$
n, p, r	9	$m = p \times \overline{1+r}|^n$	10	$a = \frac{pr \times \overline{1+r}|^n}{\overline{1+r}|^n - 1} = \frac{pr}{s^2, B}$
m, n, r	11	$p = \frac{m}{\overline{1+r}|^n}$	12	$a = \frac{rm}{\overline{1+r}|^n - 1} = mr \times \text{co-}t^2, B$
a, m, p	13	$r = \frac{a \times \overline{m-p}}{mp} = \frac{a}{m} \times t^2, B$	14	$n = \frac{L.m - L.p}{L.\overline{1+r}} = \frac{L.m - L.p}{2\,L.\text{sec}, E - 20}$
m, n, p	15	$1 + r = \sqrt[n]{\frac{m}{p}}$	16	$a = \frac{rm}{\overline{1+r}|^n - 1} = m \times t^2, A \times \text{co-}t^2, B$
	17 and 18	Given a, n, p, required m and r? $\frac{a}{p} \times \text{co-}t^2, A \times s^2, B - 1 = 0$ Aſſume different values of A and thence find the correſponding values of B till the expreſſion is $= 0$ Then $m = p \times \text{sec}^2, B$ and $1 + r = \text{sec}^2, A$	19 and 20	Given a, m. n, required p and r? $\frac{a}{m} \times \text{co-}t^2, A \times t^2, B - 1 = 0$ Aſſume different values of A and thence find the correſpondent values of B till the expreſſion is $= 0$ Then $p = m \times c^2, B$ and $1 + r = \text{sec}^2, A$

2. If the annuity commence t times hence; let n = time of continuance. Put $\frac{pr \times \overline{1+r}|^t}{a} = s^2, F$. We ſhall have the five following formulæ, by which having given any four of the five quantities a, p, n, r, t, we may find the fifth.

CASE	GIVEN	REQUIRED.
1	a, n, r, t	$p = \frac{a \times \overline{\overline{1+r}|^n - 1}}{r \times \overline{1+r}|^n \times \overline{1+r}|^t} = \frac{a \times s^2, B}{r \times \overline{1+r}|^t}$
2	p, n, r, t	$a = \frac{pr \times \overline{1+r}|^n \times \overline{1+r}|^t}{\overline{1+r}|^n - 1} = \frac{pr \times \overline{1+r}|^t}{s^2, B}$
3	a, p, n, r,	$t = \frac{L.\overline{\overline{1+r}|^n - 1} - L.\overline{1+r}|^n - L.r + L.a - L.p}{L.\overline{1+r}} = \frac{L.a + 2L.s, B - L.r - L.p}{L.\overline{1+r}}$
4	a, p, r, t	$n = \frac{-L.\overline{1 - \frac{pr \times \overline{1+r}|^t}{a}}}{L.\overline{1+r}} = \frac{2\,L.\text{sec}, F}{L.\overline{1+r}}$
5	a, p, n, t	Required r? $o = \frac{pr}{a} \times \overline{1+r}|^t \times \frac{\overline{1+r}|^n}{\overline{1+r}|^n - 1} - 1 = \frac{p}{a} \times t^2, A \times \overline{\text{sec}^2 A}|^t \times \text{co-sec}^2, B - 1$ Assume different values of A, and thence find the corresponding values of B, till the expression is $= o$ Then $1 + r = \text{sec}^2, A$

3. Let p be the present worth of an estate in fee-simple, whose annual rent is a, at the rate or gain r on 1l. per an.

Then $a = pr$.

4. Let n be the number of years purchase that will buy an estate in fee-simple, at the rate or gain r on 1l. per an.

Then $n = \frac{2}{r}$; and $r = \frac{2}{n}$.

5. If an estate in fee-simple, whose annual rent is a, to commence t times hence, is worth p ready-money, at the rate r on 1l. per an. Any three of the terms a, p, r, t being given, to determine the fourth.

Given a, r, t; $p = \frac{a}{r \times \overline{1+r}|^t}$

Given p, r, t; $a = pr \times \overline{1+r}|^t$

Given a, p, r; $t = \frac{L.a - L.p - L.r}{L.\overline{1+r}}$

Given a, p, t; to find r? $\frac{pr}{a} \times \overline{1+r}|^t - 1 = o$ Assume different values of r till the expression is $= o$

6. What sum p at compound interest, in the time N amounts to M, and in the time n amounts to m? $L.p = \frac{N\,L.m - n\,L.M}{N - n}$

7. If the sum p, at compound interest, in the time n amounts to m; what will be the amount M of that sum p in the time N? $L.M = \frac{N \times \overline{L.m - L.p} + n\,L.p}{n}$

8. If

8. If the ſum p, at compound intereſt, in n years amounts to m; in what time N will that ſum p amount to M? $N = \frac{n \times \overline{L.M - L.p}}{L.M - L.p}$

9. If the ſums B, C, D, E are to be paid b, c, d, e years (or ſpaces of time) hence; to find the time t when the ſum $p = B + C + D + E$ may be paid without detriment to either party, at a given rate r of compound intereſt? $t = \frac{L.p - L.\overline{\frac{B}{\overline{1+r}|^{tb}} + \frac{C}{\overline{1+r}|^{tc}} + \frac{D}{\overline{1+r}|^{td}} + \frac{E}{\overline{1+r}|^{te}}}}{L.\overline{1+r}|^{t}}$

10. If the ſum a is to be paid, at each payment, for n ſeveral payments; to find the time t, when the whole ſum na may be paid all together, at a given rate r of compound intereſt?

$$t = \frac{-L.\overline{\overline{1+r}|n-1} + L.\overline{1+r}|n + L.n + L.r}{L.\overline{1+r}} = \frac{L.n + L.r - 2 \times L.s, B}{L.\overline{1+r}}$$

If the debtor wiſhed to pay a ſum m greater or ſmaller than na, but greater than p, there would be found $t = \frac{L.m + L.r + n\,L.\overline{1+r} - L.a - L.\overline{\overline{1+r}|^{n}-1}}{L.\overline{1+r}} = \frac{L.m + L.r + n\,L.\overline{1+r} - L.a - 2\,L.t, B}{L.\overline{1+r}}$

If the debtor ſhould fix the time, at which he would pay his money, to be at the end of the given time t, and the ſum m be required which he ought to pay at this epoch, we ſhall have $L.m = t\,L.\overline{1+r} + L.a + L.\overline{\overline{1+r}|^{n}-1} - n\,L.\overline{1+r} - L.r = \overline{t-n} \times L.\overline{1+r} + L.a + 2\,L.t, B$

11. Let p be a principal money, which ſhould bring in pr annually, at the rate of r for 1l. per an.; a, a ſum greater or ſmaller than pr, which we will ſuppoſe to be paid by the debtor to the creditor at the end of each year; m′ the ſum to which, if the debtor paid nothing, the principal with intereſt upon intereſt would amount at the end of n years; m″ the amount of the ſum a paid annually, at the end of the ſame number of years; and m the ſum in which the debtor will be indebted to the creditor at the end of n years. It is evident that we ſhall have $m = m' - m''$: but $m = p \times \overline{1+r}|^{n}$; and $m'' = \frac{a \times \overline{1+r}|^{n} - a}{r}$; we ſhall then have $m = p \times \overline{1+r}|^{n} - \frac{a \times \overline{1+r}|^{n} - a}{r}$, by means of which, any four of theſe five quantities a, p, n, m, r being given we may find the fifth, as in the following table. Put $\frac{a}{mr} \times t^{2}, B = t^{2}, G$; and put $\frac{p}{m} \times \overline{1+r}|^{n} = \frac{p}{m} \times \text{ſec.}^{2}$, $B = \text{ſec.}^{2}, H$, or $\frac{m}{p} \times c^{2}, B = c^{2}, H$, $\because \frac{p}{m} \times \overline{1+r}|^{n} - 1 = t^{2}, H$. If $\frac{mr}{a}$ and $\frac{pr}{a}$ are greater than 1, put $\frac{mr}{a} = \text{ſec}^{2}, K$, or $\frac{a}{rm} = c^{2}, K$; and $\frac{pr}{a} = \text{ſec}^{2}, L$, or $\frac{a}{pr} = c^{2}, L$. But if $\frac{mr}{a}$ and $\frac{pr}{a}$ are leſs than 1, put $\frac{mr}{a} = s^{2}, M$, and $\frac{pr}{a} = s^{2}, N$.

CASE

CASE	GIVEN	REQUIRED.
1	a, p, n, r	$m = p \times \overline{1+r}|^n - a \times \frac{\overline{1+r}|^n - 1}{r} = p \times \overline{1+r}|^n - \frac{a}{r} \times t^2, B$
2	a, m, n, r	$p = \frac{mr + a \times \overline{1+r}|^n - 1}{\overline{1+r}|^n \times r} = m \times c^2, B + \frac{a}{r} \times s^2, B = m \times c^2, B \times sec^2, G$
3	m, n, p, r	$a = \frac{r \times \overline{p \times \overline{1+r}|^n - m}}{\overline{1+r}|^n - 1} = rm \times \frac{\overline{\frac{p}{m} \times \overline{1+r}|^n - 1}}{\overline{1+r}|^n - 1} = \frac{rm \times t^2, H}{t^2, B}$
4	a, m, p, r	Required n? $n = \frac{L.\overline{mr-a} - L.\overline{pr-a}}{L.\overline{1+r}} = \frac{L.\overline{\frac{mr}{a} - 1} - L.\overline{\frac{pr}{a} - 1}}{L.\overline{1+r}} = \frac{2 \times \overline{L.t, K - L.t, L}}{L.\overline{1+r}}$ or $n = \frac{L.\overline{a-mr} - L.\overline{a-pr}}{L.\overline{1+r}} \; \frac{L.\overline{1 - \frac{mr}{a}} - L.\overline{1 - \frac{pr}{a}}}{L.\overline{1+r}} = \frac{2 \times \overline{L.c, M - L.c, N}}{L.\overline{1+r}}$. N. B. mr and pr must be both at the same time greater or less than a; else the problem will be impossible.
5	a, p, n, m	To find r? $\frac{p}{m} \times \overline{1+r}|^n - \frac{a \times \overline{\overline{1+r}|^n - 1}}{mr} - 1 = 0 = \frac{p}{m} \times sec^2, B - \frac{a \times t^2, B}{m \times t^2, A} - 1$ Assume different values of A, and thence the correspondent values of B by the equation $\overline{1+r}|^n = \overline{sec^2, A}|^n = sec^2, B$, till the equation above is $= 0$, then $1 + r = sec^2, A$, or $r = t^2, A$.

If the sum a, instead of being paid annually by the debtor, was on the contrary lent to the same debtor at the end of each year, we should only have to make a negative, or to change the signs of each of the terms in which it enters in the foregoing table. For case 4, put $\frac{mr}{a} = t^2, P$, and $\frac{pr}{a} = t^2, Q$.

Then $n = \frac{L.\overline{mr+a} - L.\overline{pr+a}}{L.\overline{1+r}} = \frac{L.\overline{\frac{mr}{a} + 1} - L.\overline{\frac{pr}{a} + 1}}{L.\overline{1+r}} = \frac{2 \times \overline{L.c, Q - L.c, P}}{L.\overline{1+r}}$

GENERAL PROPERTIES of PLANE TRIANGLES.

1. THE sum of the three angles is equal to two right angles.

2. The greater side is opposed to the greater angle, and the less side to the less angle.

3. The sum of any two sides is greater than the third; and the difference of any two sides is less than the third.

The

4. The triangle is equilateral, isoscelar, or scalene, according as it has its three angles all equal, or two of them equal, or all three unequal; and *vice versâ*.

5. The angles opposite the two least sides are acute.

6. The obtuse angle, if there is one, for there cannot be more, must be opposite the greatest side.

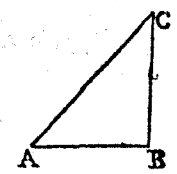
7. Of the two segments intercepted between the perpendicular to the base and the two angles at the base, the greatest segment lies next to the greatest side, and the least segment next to the least side.

8. The greatest angle at the base lies next the least side, and least segment; and the least angle at the base lies next the greatest side, and greatest segment.

9. If the angles at the base are both acute, the perpendicular falls within the triangle; but if one of them is obtuse the perpendicular falls without the triangle on the side of the obtuse angle.

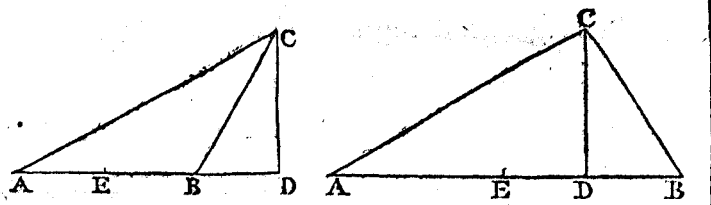
10. If both the segments of the base are less than the base, or both the segments of the vertical angle less than the vertical angle, the perpendicular falls within the triangle; but if either of the segments of the base is greater than the base, or either of the segments of the vertical angle is greater than the vertical angle, the perpendicular falls without the triangle.

The SOLUTIONS of the CASES of RIGHT-ANGLED PLANE TRIANGLES.

GIVEN	REQUIRED	CASE	SOLUTIONS.
Hyp. AC, and the angles.	One leg BC	1	Rad : s, A :: Hyp. AC : leg BC 
Hypotenuse AC and one leg BC	The angles	2	AC : BC :: rad : s, A ; whose complement is the angle C. When BC is nearly equal to AC, or A is near 90°, and AC and BC are given to more than seven places of figures, or their difference to two or more places of figures, use one of these two rules. $s, \frac{1}{2} C = \sqrt{\frac{AC-BC}{2AC}}$ or $t \frac{1}{2} C = \sqrt{\frac{AC-BC}{AC+BC}}$; and complement of C = A.
	Other leg AB	3	Let the angles be found by case 2, and then the required leg AB by case 1. Or $AB = AC \times c,A = AC \times$ [illegible]. Otherwise, $AB = \sqrt{\overline{AC-BC} \times \overline{AC+BC}}$
The angles and one leg BC	Hyp. AC	4	s, A : rad :: leg BC : hyp. AC
	Other leg AB	5	s, A : BC :: s, C : AB . . Or, rad : t, C :: BC : AB
The two legs AB and BC	The angles	6	AB : BC :: rad : t, A ; whose complement is the angle C.
	Hyp. AC	7	Let the angles be found by case 6; and then hypotenuse AC by case 4. Or $AC = \frac{AB}{c,A} = \frac{BC}{s,A}$ Use the first or second value of AC, according as A is under or over 45°.

The

The SOLUTIONS of the CASES of OBLIQUE PLANE TRIANGLES.

GIVEN	REQUIRED	CASE	SOLUTIONS.
The angles and one side AC	Either of the other sides, BC	1	s, B : AC :: s, A : BC 
Two sides AC, BC, and an angle B opposite one of them AC	The other angles A and ACB	2	AC : s, B :: BC : s, A; which added to B, and the sum subtracted from 180° gives the other angle ACB.
	The other side AB	3	Let the angle ACB be found by the preceding case; then it will be s, B : AC :: s, ACB : AB. If BC is less than AC, A is acute; and, A, ACB, and AB have each one value only; otherwise they have each two values.
Two sides AB, AC, and an included angle A	The other angles B and ACB	4	Sum of AB and AC : their diff. :: t, $\frac{1}{2}$ sum of ACB and B : t, $\frac{1}{2}$ their diff. which added to, and subtracted from their $\frac{1}{2}$ sum, gives the two angles. Otherwise; less side AC : greater side AB :: rad : t, of an angle. And rad : t, excess of this angle above 45° :: t, compl. $\frac{1}{2}$ A : t, of an angle; which added to, and subtracted from, the compl. $\frac{1}{2}$ A, gives the two angles ACB and B, whereof the greater will be opposed to the greater side and the less to the less side.
	The other side BC	5	Let the angles be found by the last case, then BC by case 1. Otherwise put $\frac{2\,s,\frac{1}{2}A}{AB \sim AC}\sqrt{AB \times AC} = t, z$ Then $BC = \frac{AB \sim AC}{c,z} = \frac{2\,s,\frac{1}{2}A\sqrt{AB \times AC}}{s,z}$. Use the first or second of these two values of BC, according as z is less or greater than 45°.
All the three sides.	An angle suppose A or B	6	Let fall a perpendicular CD, upon the base AB, opposite the required angle A, or B. Then AB : sum of AC and BC :: their diff. : 2 DE or twice dist. of perpendicular from middle of the base. Then if AC, the side next to A, is greater than the other side BC, take AE + ED = AD, with which and AC the angle A will be found by case 2 of right-angled triangles. Or if B, the angle next the less side BC be required, take ED ~ EB = DB; with which and BC the angle B will be found in like manner; and if ED is greater than EB the perpendicular falls without the triangle, and the angle B is obtuse. If A and B be both required; after finding A, say; BD : AD :: t, A : t, B. Or after finding B, say; AD : BD :: t, B : t, A. Whence the third angle C will be also given. Otherwise, $s, \frac{1}{2}A = \sqrt{\frac{\frac{1}{2}(BC+\overline{AB-AC}) \times \frac{1}{2}(BC-\overline{AB-AC})}{AB \times AC}}$ Or; - - - $c, \frac{1}{2}A = \sqrt{\frac{\frac{1}{2}(\overline{AB+AC}+BC) \times \frac{1}{2}(\overline{AB+AC}-BC)}{AB \times AC}}$

GENERAL PROPERTIES of SPHERICAL TRIANGLES.

1. The greater side is opposed to the greater angle, and the less side to the less angle.

2. The sum of any two sides is greater than the third, and the difference of any two sides is less than the third.

3. The

3. The difference of any two ſides is leſs than 180°, and their ſum leſs than 360°.

4. The ſum of the three ſides is leſs than 360°.

5. The ſum of the three angles is greater than 180°, and leſs than 540°.

6. The external angle is leſs than the ſum of the two internal and oppoſite angles, but not by ſo much as 360°.

7. According as the ſum of any two ſides is greater, or leſs than, or equal to 180°, the ſum of their two oppoſite angles is alſo greater, or leſs than, or equal to 180°; or half the ſum of any two ſides is of the ſame kind with half the ſum of their two oppoſite angles.

8. There may be drawn two perpendiculars from the vertical angle to the baſe, one being the continuation of the other to 180°, and which cut the baſe in two points 180° aſunder, whether meaſured along the baſe or along the perpendiculars.

9. If any point be aſſumed in the baſe, as for inſtance, either extremity of it, or the middle of it, the neareſt perpendicular to it will be within 90° of it; and the furtheſt perpendicular from it will be more than 90° from it, but leſs than 180°.

10. Only one perpendicular can fall within the triangle, but both of them may fall without it.

11. The perpendicular oppoſite to or ſubtending one of the angles at the baſe may at the ſame time be neareſt to, that is, within 90° of both angles at the baſe; or it may be the neareſt to only one angle at the baſe, and the other perpendicular neareſt to the other angle at the baſe.

12. If the two angles at the baſe are of the ſame kind, or if the baſe is greater than its firſt ſegment, or the vertical angle is greater than its firſt ſegment, one of the perpendiculars let fall from the vertical angle on the baſe falls within the triangle; otherwiſe both the perpendiculars fall without it.

13. If the ſide, from the end of which the perpendiculars are let fall on the baſe, and the contiguous angle at the baſe be like, the neareſt perpendicular will fall oppoſite to or will ſubtend the angle at the baſe, and the furtheſt perpendicular will be oppoſite to or ſubtend the external angle at the baſe. But if the ſide and angle are unlike, the neareſt perpendicular will ſubtend the external angle at the baſe, and the furtheſt perpendicular will ſubtend the angle at the baſe.

14. According as any two ſides are of the ſame, or different kind, the ſegments of the third ſide are alſo of the ſame or different kind, and the ſegments of the vertical angle are likewiſe of the ſame or different kind.

15. A ſpheric triangle is equilateral, iſoſcelar, or ſcalene, according as it has its three angles all equal, or two of them equal, or all three unequal; and the contrary.

16. If from the three angles, as poles, there be deſcribed upon the ſurface of the ſphere three arches of a great circle, forming by their interſection a new ſpheric triangle, the angles taken in either triangle, and their oppoſite ſides in the other, will be ſupplements of each other.

17. A ſide and its oppoſite angle, and alſo another ſide or angle being given, the kinds of the other parts are doubtful.

GENERAL PROPERTIES of RIGHT-ANGLED SPHERIC TRIANGLES.

1. THE angles at the hypotenuſe and their oppoſite ſides are of the ſame kind.

2. The hypotenuſe is leſs or greater than a quadrant, according as the ſides are of the ſame or different kind; alſo, according as the angles at the hypotenuſe are of the ſame or different kind; and the contrary.

3. If the hypotenuſe be of 90°, one at leaſt of the ſides will be the ſame.

4. If the three ſides are each of 90°, the three angles will be the ſame; and the contrary.

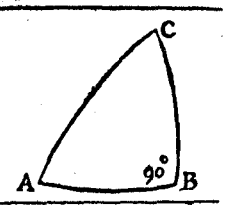
5. Every ſide leſs than 90° is ſmaller than the hypotenuſe; and every ſide greater than 90° is greater than the hypotenuſe.

6. An oblique angle, if acute, can never be ſmaller; nor, if obtuſe, larger, than its oppoſite ſide.

7. The difference of the two oblique angles is leſs; and their ſum greater than 90°.

TABLE of SOLUTIONS of the CASES of RIGHT-ANGLED SPHERIC TRIANGLES.

GIVEN	CASE	REQUIRED	SOLUTIONS.
The hypotenuſe AC and one angle A	1	The other angle C	Radius : c, AC :: t, A : cot, C
	2	The adjacent leg AB	Radius : c, A :: t, AC : t, AB
	3	The oppoſite leg BC	Radius : s, AC :: s, A* : s, BC*
The hypotenuſe AC and one leg AB	4	The other leg BC	c, AB : Radius :: c, AC : c, BC
	5	The oppoſite angle C	s, AC : Radius :: s, AB* : s, C*
	6	The adjacent angle A	t, AC : t, AB :: Radius : c, A
One leg AB and the adjacent angle A	7	The other leg BC	Radius : s, AB :: t, A* : t, BC*
	8	The oppoſite angle C	Radius : s, A :: c, AB* : c, C*
	9	The hypotenuſe AC	c, A : Radius :: t, AB : t, AC
Both legs AB and BC	10	An angle ſuppoſe A	Radius : s, AB :: cot, BC* : cot, A*
	11	The hypotenuſe AC	Radius : c, AB :: c, BC : c, AC
Both angles A and C	12	The hypotenuſe AC	t, A : cot, C :: Radius : c, AC
	13	A leg ſuppoſe AB	s, A : c, C* :: Radius : c, AB*
One leg BC and the oppoſite angle A	14	The other leg AB	t, A : t, BC :: Radius : s, AB, doubtful.
	15	The adjacent angle C	c, BC : Radius :: c, A : s, C, doubtful.
	16	The hypotenuſe AC	s, A : s BC :: Radius : s, AC, doubtful.



REMARKS.

REMARKS.

The ſpheric triangle ABC is right-angled in B. The two quantities, whether arcs or angles, marked with aſteriſcs in the ſame analogy, are both of the ſame kind; that is, both at the ſame time leſs, or both at the ſame time greater than 90°. The three laſt caſes are doubtful, ſince it cannot be determined by the data alone whether AB, C, and AC are leſs or greater than 90° each. In the remaining caſes, if the two given quantities, whether arcs or angles, which occur in the previous terms of the ſame analogy, are both of the ſame kind, the laſt term or anſwer required will be under 90°; but if they are of different kinds, the laſt term will be above 90°.

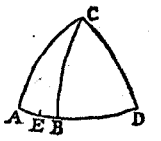
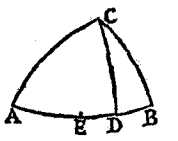
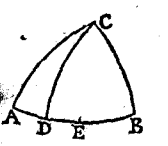
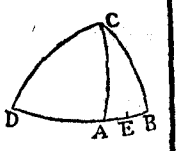
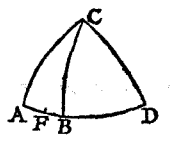
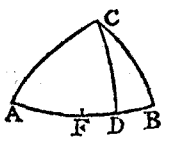
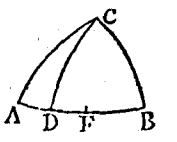
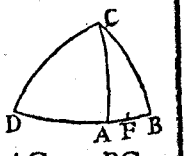
SOLUTIONS of OBLIQUE SPHERIC TRIANGLES.

(The character < placed between two quantities denotes that the firſt is leſs than the ſecond, and the character > placed in like manner, ſignifies that the firſt is greater than the ſecond. The character ~ placed between two quantities denotes the difference of the quantities, whether the firſt or ſecond be the greateſt.)

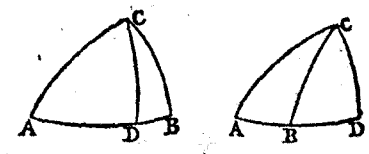
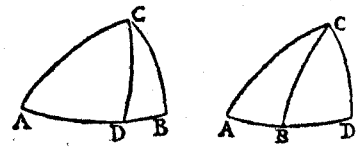
GIVEN	CASE	REQUIRED	SOLUTIONS.
Two ſides AB, AC and included angle A	1	One of the other angles B	 Let fall the perpendicular CD from the unknown angle C which is not required, upon the oppoſite ſide AB R : c, A :: t, AC : t, AD < or > 90° as A and AC are like or unlike. AB ~ AD = BD. s, BD : s, AD :: t, A : t, B like or unlike A as AD is < or > AB.
	2	The third ſide BC	Let fall the perpendicular CD from one of the angles not given, C, upon the oppoſite ſide AB R : c A :: t, AC : t, AD < or > 90° as A and AC are like or unlike. AB ~ AD = BD c, AD : c, BD :: c AC : c, BC Or c, B : R :: t, BD : t, BC } < or > 90° as A and BD are like or unlike.
Two angles A, ACB and intermediate ſide AC	3	One of the other ſides BC	Let fall the perpendicular CD from the end C of given ſide AC, which is next to the required ſide BC, upon the oppoſite ſide AB. R : c, AC :: t, A : cot. ACD < or > 90° as AC and A are like or unlike. ACB ~ ACD = BCD. c, BCD : c, ACD :: t, AC : t, BC < or > 90° as A and BCD are like or unlike.
	4	The third angle B	Let fall the perpendicular CD from one of the given angles, C, upon the oppoſite ſide AB. R : c, AC :: t, A : cot, ACD < or > 90° as AC and A are like or unlike. ACB ~ ACD = BCD s, ACD : s, BCD :: c, A : c, B Or R : c, BC :: t, BCD : cot, B } like or unlike A as ACD is < or > ACB.

SOLUTIONS

SOLUTIONS of OBLIQUE SPHERIC TRIANGLES continued.

GIVEN	CASE	REQUIRED	SOLUTIONS.
All the three sides AB AC BC	5	One of the angles as A or	Fig. 1  Fig. 2  Fig. 3  Fig. 4  Let fall the perpendicular CD from one of the angles not required, C, upon the opposite side AB; bisect AB in E, and let AC be > AB. $R^2 : t, \frac{1}{2}\overline{AC + BC} \times t, \frac{1}{2}\overline{AC - BC} :: \cot, \frac{1}{2} AB : t, Z = ED < 90°$, being distance of nearest perpendicular from E the middle of the base AB. There are four cases of this problem; 1. Fig. 1. $\frac{1}{2}\overline{AC + BC} < 90°$, and $Z > \frac{1}{2} AB$; $AD = Z + \frac{1}{2} AB$, and $BD = Z - \frac{1}{2} AB$; and the perpendicular falls without the triangle on the side B. 2. Fig. 2. $\frac{1}{2}\overline{AC + BC} < 90°$, and $Z < \frac{1}{2} AB$; $AD = \frac{1}{2} AB + Z$, and $BD = \frac{1}{2} AB - Z$, and the perpendicular falls within the triangle. 3. Fig. 3. $\frac{1}{2}\overline{AC + BC} > 90°$, and $Z < \frac{1}{2} AB$; $AD = \frac{1}{2} AB - Z$, and $BD = \frac{1}{2} AB + Z$, and the perpendicular falls within the triangle. 4. Fig. 4. $\frac{1}{2}\overline{AC + BC} > 90°$, and $Z > \frac{1}{2} AB$; $AD = Z - \frac{1}{2} AB$, and $BD = Z + \frac{1}{2} AB$, and the perpendicular falls without the triangle on the side A. Then $t, AC : t, AD :: R : c, A$ $t, BC : t, BD :: R : c, B$ The kinds of A and B in the four several cases will be as follows; 1 A is like and B is unlike BC 2 A and B are both like BC 3 A and B are both like AC 4 A is unlike, and B is like AC
All the three angles A B C	6	One of the sides AC or BC	Fig. 1  Fig. 2  Fig. 3  Fig. 4  Let fall the perpendicular CD from an angle C not opposite the required side AC or BC, upon the opposite side AB; and let an arc CF be drawn within the triangle bisecting the vertical angle ACB, and let B be > A, and consequently AC > BC. $R^2 : t, \frac{1}{2}\overline{A + B} \times t, \frac{1}{2}\overline{B - A} :: t, \frac{1}{2} ACB : t$, Z or $FCD < 90$, being contained between the arc CF and the nearest perpendicular to it CD. There are four cases of this problem; 1. Fig. 1. $\frac{1}{2}\overline{A + B} < 90°$, and $Z > \frac{1}{2} ACB$; $ACD = Z + \frac{1}{2} ACB$, and $BCD = Z - \frac{1}{2} ACB$, and the perpendicular falls without the triangle on the side B. 2. Fig. 2. $\frac{1}{2}\overline{A + B} < 90°$, and $Z < \frac{1}{2} ACB$; $ACD = \frac{1}{2} ACB + Z$, and $BCD = \frac{1}{2} ACB - Z$, and the perpendicular falls within the triangle. 3. Fig. 3. $\frac{1}{2}\overline{A + B} > 90°$, and $Z < \frac{1}{2} ACB$; $ACD = \frac{1}{2} ACB - Z$, and $BCD = \frac{1}{2} ACB + Z$, and the perpendicular falls within the triangle. 4. Fig. 4. $\frac{1}{2}\overline{A + B} > 90°$, and $Z > \frac{1}{2} ACB$; $ACD = Z - \frac{1}{2} ACB$, and $BCD = Z + \frac{1}{2} ACB$, and the perpendicular falls without the triangle on the side A. Then $R^2 : \cot, A \times \cot, ACD :: R : c, AC$ $R^2 : \cot, B \times \cot, BCD :: R : c, BC$ The kinds of AC and BC in the four several cases will be as follow; 1. AC is < or > 90° as A and ACD are like or unlike. BC is like A and unlike B. 2. AC is < or > 90° as A and ACD are like or unlike. B is like A and B. 3. AC is like A and B. BC is < or > 90°, as B and BCD are like or unlike. 4. AC is unlike A and like B. BC is < or > 90° as B and BCD are like or unlike

SOLUTIONS of OBLIQUE SPHERIC TRIANGLES continued.

GIVEN	CASE	REQUIRED	SOLUTIONS.
Two ſides AC, BC, and an angle A oppoſite one of them BC	7	The angle B oppoſite the other given ſide AC	Let fall the perpendicular CD from the angle C contained between the given ſides AC, BC, upon the oppoſite ſide AB.  s, BC : s, AC :: s, A : s, B doubtful whether $<$ or $>$ 90°. The kind of B however may for the moſt part be determined by this propoſition, the ſum of the given ſides AC, BC, and the ſum of their oppoſite angles A, B, lie both on the ſame ſide of 180°, that is, are both leſs or both greater than 180° at the ſame time.
	8	The angle ACB contained between the given ſides AC, BC,	From the required angle ACB let fall the perpendicular CD upon the oppoſite ſide AB. R : c, AC :: t, A : cot, ACD $<$ or $>$ 90° as AC and A are like or unlike. t, BC : t, AC :: c, ACD : c, BCD $>$ 90° if one of, or all the three terms ACD, AC, BC, are $>$ 90°; otherwiſe $<$ 90°. ACD $\pm$ BCD = ACB doubtful on account of the ambiguity of the ſigns: which uncertainty may however be for the moſt part obviated by one of the two following rules; if the ſum of the ſegments ACD, BCD be $>$ 180°, take their difference, if the ſecond ſegment BCD be greater than the firſt ſegment ACD, take their ſum for the angle ACB.
	9	The third ſide BC	Let fall the perpendicular CD from the angle C contained between the two given ſides AC, BC, upon the oppoſite or required ſide AB. R : c, A :: t, AC : t, AD $<$ or $>$ 90° as A and AC are like or unlike. c, AC : c, BC :: c, AD : c BD $>$ 90° if one of, or all the three terms AD, BC, AC, are $>$ 90°; otherwiſe $<$ 90°. AD $\pm$ BD = AB doubtful; but may for the moſt part be determined by one of theſe two rules. If the ſum of the ſegments AD, BD is greater than 180°, take their difference; but if the ſecond ſegment BD is greater than the firſt ſegment AD, take their ſum for the ſide AB.
Two angles A, B, and a ſide AC oppoſite one of them B	10	The ſide BC oppoſite the other given angle A	Let fall the perpendicular CD from the angle C not given upon the oppoſite ſide AB  s, B : s, A :: s, AC : s, BC doubtful whether $<$ or $>$ 90°, but may however for the moſt part be determined from this conſideration, that the ſum of the given angles A, B, and the ſum of their oppoſite ſides AC, BC, lie both on the ſame ſide of 180°. If this rule is not ſufficient, or no other means are given to determine the kind of BC in this problem, it will be impoſſible to determine the value of the other parts of the triangle by the ſolutions of the two following problems.
	11	The ſide AB included between the given angles A, B.	Let fall the perpendicular CD from the angle C not given upon the oppoſite or required ſide AB. R : c, A :: t, AC : t, AD $<$ or $>$ 90° as A and AC are like or unlike. t, B : t, A :: s, AD : s, BD doubtful whether $<$ or $>$ 90°. AD $\pm$ BD = AB doubtful on account of the ambiguity of the ſigns, as well as of BD, but may often be determined by one of theſe two rules. If the ſum of the ſegments AD, BD, be greater than 180° take their difference. If the ſecond ſegment BD be greater than the firſt AD take their ſum for AB.
	12	The third angle ACB	Let fall the perpendicular CD from the required angle ACB upon the oppoſite ſide AB. R : c, AC :: t, A : cot, ACD $<$ or $>$ 90° as AC and A are like or unlike. c, A : c B :: s, ACD : s, BCD doubtful whether $<$ or $>$ 90°. ACD $\pm$ BCD = ACB doubtful on account of the ambiguity of the ſigns, as well as of BCD, but may often be determined by one of theſe two rules. If the ſum of the ſegments ACD, BCD be $>$ 180°, take their difference; if the ſecond ſegment BCD be $>$ then the firſt ACD, take their ſum, for ACB.

GENERAL PROPERTIES *of a* RECTILATERAL SPHERIC TRIANGLE, *or having one Side equal to* 90°.

Call the arch equal to 90° the quadrant, and call its oppoſite angle the hypotenuſal angle, and call the other ſides and angles ſimply ſides and angles.

1. The angles at the quadrant and their oppoſite ſides are of the ſame kind.

2. The hypotenuſal angle is greater or leſs than 90°, according as the angles at the quadrant are of the ſame or different kind; alſo according as the ſides are of the ſame or different kind.

3. If the hypotenuſal angle be of 90°, one at leaſt of the angles at the quadrant will be ſo, and its oppoſite ſide the ſame.

4. If the three ſides are each of 90°, the three angles will be the ſame, and the contrary.

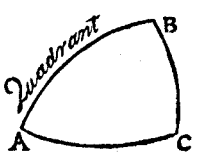
5. Every angle leſs than 90° is leſs than the hypotenuſal angle, and every angle greater than 90° is greater than the hypotenuſal angle.

6. An acute angle cannot be greater, nor an obtuſe angle leſs than its oppoſite ſide.

7. The difference of the two ſides is leſs than 90° and their ſum leſs than 270°.

The SOLUTIONS of a RECTILATERAL SPHERIC TRIANGLE, or having one ſide equal to 90°.

GIVEN	CASE	REQUIRED	SOLUTION.
Hypotenuſal angle C, and one ſide AC	1	Oppoſite angle B	Radius : s, hyp. angle C :: s, AC* : s, B*
	2	Adjacent angle A	Radius : c, AC :: t, hyp. angle C : t, A
	3	Other ſide BC	Radius : c, hyp. angle C :: t, AC : cot, BC
Hypotenuſal angle C, and one angle A	4	The other angle B	c, A : Radius :: c, hyp. angle C : c, B
	5	The oppoſite ſide BC	s, hyp. angle C : Radius :: s, A* : s, BC*
	6	Adjacent ſide AC	t, hyp. angle C : t, A :: Radius : c, AC
One angle A, and adjacent ſide AC	7	The other angle B	Radius : s, A :: t, AC* : t, B*
	8	The oppoſite ſide BC	Radius : s, AC :: c, A* : c, BC*
	9	The hyp. ang. C	c, AC : Radius :: t, A : t, hyp. angle C
Both angles, A, and B	10	Hyp. angle C	Radius : c, A :: c, B : c, hyp. angle C
	11	A ſide ſuppoſe AC	s, A : Radius :: t, B* : t, AC*
Both ſides AC, and BC	12	An angle ſuppoſe A	s, AC : c, BC* :: Radius : c, A*
	13	Hyp. angle C	t, AC : cot, BC :: Radius : c, hyp. angle C
One ſide AC, and oppoſite angle B	14	The other angle A	t, AC, t, B :: Radius : s, A, doubtful.
	15	Adj. ſide BC	c, B : Radius : c, AC : s, BC, doubtful.
	16	Hyp. angle C	s, AC : s, B :: Radius : s, hyp. angle C, doubtful.



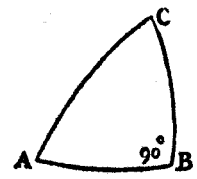
REMARKS.

The ſide AB of the ſpheric triangle ABC is equal to a quadrant, or 90 degrees. The two quantities whether arcs or angles, marked with aſteriſcs in the ſame analogy are both of the ſame kind, that is both at the ſame time leſs or both at the ſame time greater than 90°. The three laſt caſes are doubtful, ſince it cannot be determined by the things given alone whether A, BC, and C be leſs or greater than 90° each. In the remaining caſes, if the two given quantities, whether arcs or angles, which occur in the previous terms of the ſame analogy, are both of the ſame kind, the laſt term or anſwer required will be above 90°; but if they are of different kinds, the laſt term will be under 90°.

TABLE

TABLE of ACCURATE SOLUTIONS of CASES of RIGHT-ANGLED SPHERIC TRIANGLES by LOGARITHMS.

GIVEN	CASE	REQUIRED	QUALITY of Things REQUIRED	SOLUTION.
Hypotenuse AC, and one angle A	1	Other angle C		c, AC + t, A − 10 = cot, C
	2	Contig. leg AB		t, AC + c, A − 10 = t, AB
	3	Opposite leg BC	extr. / mean	s, AC + s, A* − 10 = s, BC* t, AC + c, A − 10 = t, AB {extr. c, AC + 10 − c, AB / mean c, AC + t, AB − s, AB} = c, BC like A
Hypotenuse AC, and one leg AB	4	Other leg. BC	mean / extr.	c, AC + 10 − c, AB = c, BC $\frac{t, \frac{1}{2}\overline{AC-AB} + t, \frac{1}{2}\overline{AC+AB}}{2} = t, \frac{1}{2}BC$
	5	Opposite angle C	extr. / mean	s, AB* + 10 − s, AC = s, C* $\frac{t, \frac{1}{2}\overline{AC+AB} + cot, \frac{1}{2}\overline{AC-AB}}{2} = t$, Z like AB; and 2 Z − 90° = C
	6	Contig. angle A	mean / extr.	t, AB + cot, AC − 10 = c, A $\frac{s, \overline{AC-AB} + 20 - s, \overline{AC+AB}}{2} = t, \frac{1}{2}A$
One leg AB, and contig. angle A	7	Other leg BC		s, AB + t, A* − 10 = t, BC*
	8	Opposite angle C	mean / extr.	c, AB* + s, A − 10 = c, C* s, AB + t, A − 10 = t, BC {extr. c, A + 10 − c, BC / mean c, A + t, BC − s, BC} = s, C like AB.
	9	Hypotenuse AC		t, AB + 10 − c, A = t, AC
Both legs, AB and BC	10	An angle A	mean / extr.	s, AB + cot, BC* − 10 = cot, A*
	11	Hypotenuse AC		c, AB + c, BC − 10 = c, AC s, AB + cot, BC − 10 = cot, A {extr. s, BC + cot, A − c, A / mean s, BC + 10 − s, A} = s, AC
Both angles, A and C	12	Hypotenuse AC	mean / extr.	cot, A + cot, C − 10 = c, AC $\frac{c, \overline{A+C} + 20 - c, \overline{A \sim C}}{2} = t, \frac{1}{2}AC$
	13	A leg AB	mean / extr.	c, C* + 10 − s, A = c, AB* $\frac{c, \overline{A+C} + 20 - c, \overline{A \sim C}}{2} = t, \frac{1}{2}AC$. Then t, AC + c A − 10 = t, AB like C
One leg BC, and opposite angle A	14	Other leg AB	extr. / mean	t, BC + cot, A − 10 = s, AB < or > 90 Find C by case 15, or AC by case 16, and rather the furthest from 90° then c, C + 10 − s, A or c, AC + 10 − c, BC = c, AB Otherwise, $\frac{s, \overline{A+BC} + 20 - s, \overline{A-BC}}{2} = t$, X < 90°; and AB = 2 X − 90° r 270° − 2 X
	15	Contig. angle C	extr. / mean	c, A + 10 − c, BC = s, C < or > 90° Find AB by case 14, or AC by case 16, and rather the furthest from 90°; Then c, AB + s, A − 10 or t, BC + cot, AC − 10 = c, C Otherwise, $\frac{cot, \frac{1}{2}\overline{A+BC} + cot, \frac{1}{2}\overline{A-BC}}{2} = t$, y < 90°; and C = 2 y − 90, or 270 − 2 y
	16.	Hypotenuse AC	extr. / mean	s, BC + 10 − s, A = s, AC < or > 90° Find AB by case 14, or C by case 15, and rather the furthest from 90°. Then c, AB + c, BC − 10 = c, AC; or t, BC + 10 − c, C = t, AC Otherwise, $\frac{t, \frac{1}{2}\overline{A+BC} + cot, \frac{1}{2}\overline{A-BC}}{2} = t$, Z < 90°; and AC = 2 Z − 90° or 270° − 2 Z



REMARKS

REMARKS necessary to explain the USE of the above TABLE.

1. By sine, cosine, tangent, cotangent, are here meant the logarithmic sine, cosine, tangent and cotangent.

2. If any arc is nearer 0° or 180° than 90°, that is $<45°$ or $>135°$, it is called an extreme arc; and if it is nearer 90° than 0° or 180°, that is between 45° and 135° it is called a mean arc.

3. The two quantities, whether arcs or angles, marked with asterisks in the same equation, are both of the same kind, that is, both at the same time less, or both at the same time greater than 90°. The three last cases are doubtful, since it cannot be determined from the things given, alone, whether AB, C, and AC are less or greater than 90° each. In the remaining cases, if the two things given, whether arcs or angles, are of the same kind, the thing required will be $<90°$; but if they are of different kinds, it will be $>90°$.

The grounds of the solutions of the foregoing table, so far as they differ from those of page 38, are as follow: This table is taken from that page, but adapted to logarithms, for the convenience of the Computer. The additions are designed to render the results accurate in all cases; whereas the common rules would often introduce errors, on account of the limitation of the logarithms to seven decimal places of figures. The term required, when it comes out by a tangent or cotangent by the common rule, as in cases 1, 2, 7, 9, 10, will be obtained accurately, viz. within $\frac{1}{10}$th of a second, when the arc found is near 45°, and nearer when it is either less or greater, because the difference of the logarithmic tangents and cotangents for the difference of one second of the arc is 42 at an arc of 45°, and larger in every other part of the quadrant, till at 0° or 90° it becomes indefinitely great; and an error of half an unit may arise in each of the three logarithms concerned in the calculations, and no more, because these tables have been studiously made exact to the nearest unit in the last place. The answer will be exact likewise by the common rule when it comes out by the sine of an extreme arc, or by the cosine of a mean arc, because the difference of the logarithms for one second of the arc is large; but will be less and less accurate as the arc given by its sine approaches 90°, or the arc given by its cosine approaches 0° or 180°, because the logarithmic difference grows less and less, and at last vanishes. When the arc given by its sine is distant 4° from 90°, or given by its cosine is distant 4° from 0° or 180°, the error may amount to one second, and in proportion as the arc is nearer those points the error will be greater, being inversely as that distance. Therefore in these cases, in order to obtain the like exactness as where the answer comes out by a tangent or cotangent, or by the sine of a small arc or the cosine of a large one, in the foregoing solutions, recourse has been had to other solutions, which constitute the additions made to table page 38, besides the reducing it to logarithmic calculation. These new solutions introduced here, to be used instead of the common ones where they fail, proceed on these grounds; to find from the things given the tangent or cotangent of some other part of the triangle, and consequently its arc exact, and then from that and one of the two original things given to find the arc required by a sine if the common rule gave it by a cosine, or by a cosine if it gave it by a sine, and consequently exact, because when the logarithmic difference belonging to the sine is small, that belonging to the corresponding cosine will be large, and the contrary.

Moreover,

Moreover, where two operations are pointed out in the table, there is uſed in the ſecond the ſine or coſine of the ſame arc whoſe tangent or cotangent was given by the firſt operation; to find which exact from the logarithmic tables, it would be neceſſary, where the logarithmic difference is large (as in the ſines of ſmall arcs or coſines of large ones) to find the arc previouſly from its tangent to a minute part of a ſecond, either by a vulgar, or decimal fraction, or a ſexageſimal of a lower denomination. To prevent this trouble, without leſſening the exactneſs, the logarithmic ſine of an extreme arc A is taken $= L.\ t, A + L.\ c, A - 10$ or $= L.\ c, A + 10 - L.\ \cot, A$; or the log. coſine of a mean arc A is taken $= L.\ s, A + 10 - L.\ t, A$ or $= L.\ s, A + L\ \cot, A - 10$, where the tangent or cotangent of A is already given by the firſt operation, and the finding the ſine or coſine will be very eaſy, becauſe the logarithmic difference will be ſmall. In this way it will be ſufficient to bring out the arc in the firſt operation to $\frac{1}{100}$th of a ſecond.

There is another great advantage ariſing from this method, that if the reſult is required exact only within the limit of a ſecond, which is moſt commonly the caſe, the logarithms may then be taken out correſpondent to the arcs and the arcs correſpondent to the logarithms, directly from the tables by inſpection, without making any proportion for the logarithmic differences or odd parts of a ſecond, which is the part of the work that gives moſt trouble in calculations, and is moſt obnoxious to error.

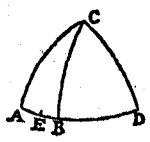
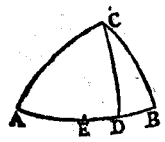
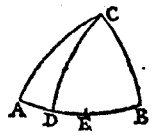
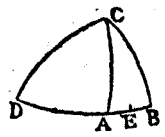
Some of the new ſolutions are given by a peculiar rule, by one operation, the anſwer coming out by a tangent, and conſequently exact in all caſes, whether the ſimple rule fails or not.

TABLE

TABLE of ACCURATE SOLUTIONS of OBLIQUE SPHERIC TRIANGLES by LOGARITHMS.

GIVEN	CASE	REQUIRED	SOLUTIONS.
Two ſides AB, AC, and included angle A,	1	Angle B, oppoſite one of the given ſides AC	Let fall the perpendicular CD from the unknown angle C which is not required, upon the oppoſite ſide AB t, AC + c, A − 10 = t, AD < or > 90° as AC and A are like or unlike. AB ∼ AD = BD. AD { extr t, AD + c, AD + t, A + co-ar. s, BD − 20 / mean s, AD + t, A + co-ar. s, BD − 10 } = t, B like or unlike A as AD is < or > AB. REMARK. B comes out liable to error when BC is ſmall or near 180°, which however is not to be conſidered as material in practice, becauſe a like error will ariſe from a ſmall error in any of the things given AB, AC, A.
	2	The third ſide BC	Let fall the perpendicular CD from one of the angles not given, as C, upon the oppoſite ſide AB t, AC + c, A − 10 = t, AD < or > 90° as AC and A are like or unlike. AB ∼ AD = BD AD { extr. co-ar. c, AD + c, BD + c, AC − 10 / mean t, AD + co-ar. s, AD + c, BD + c, AC − 20 } = c BC < or > 90° as A and BD are like or unlike. REMARK. BC when ſmall will not come out exact from this rule by the tables, but the error will not exceed a ſmall fraction of a ſecond, as low as 14° or 15°, the leaſt; diſtance of the moon from the fixt ſtars ſet down in the Nautical Almanac. It may however be found very exact by either of the two following ſolutions. Otherwiſe, 2dly. Find the angle B by caſe 1, and thence BC as follows: B { extr. co-ar. c, B + t, BD / mean t, B + co-ar. s, B + t, BD } = t, BC < or > 90° as A and BD are like or unlike. REMARK. BC will come out always exact if proportion be made for differences, and within 1½ without making any proportion, although the angle B may err much more when BC is ſmall, as abovementioned, which however will not affect BC more than here mentioned. Otherwiſe, 3dly. s, ½ A + co-ar. s, ½ $\overline{AB \sim AC}$ + ½ s, AB + ½ s, AC − 10 = t, Z Z { extr. co-ar. c, Z + s, ½ $\overline{AB \sim AC}$ / mean t, Z + co-ar. s, Z + s, ½ $\overline{AB \sim AC}$ } = s, ½ BC REMARK. By making proportion of the differences, this rule will be exact to ¼″ if BC does not exceed 90°. Without any proportioning it will be exact to a ſecond, if BC is ſmall; and not err more than 2″ even when BC is 90°.
Two angles A, ACB and the ſide AC between them.	3	One of the other ſides BC	Let fall the perpendicular CD from the end C of the given ſide AC, which is next the required ſide BC, upon the oppoſite ſide AB. t, A + c, AC − 10 = cot, ACD < or > 90°, as A and AC are like or unlike. ACB ∼ ACD = BCD ACD { extr. c, ACD + t, AC + co-ar. c BCD − 10 / mean cot, ACD + s, ACD + t, AC + co-ar. c BCD − 20 } = t, BC < or > 90° as A and BCD are like or unlike. REMARK. BC comes out liable to error when B is ſmall or near 180°, which however is not to be conſidered as material in practice, becauſe a like error will ariſe from a ſmall error in any of the things given A, ACB, and AC.
	4	The other angle B	Let fall the perpendicular CD from one of the given angles, as C, upon the oppoſite ſide AB t, A + c, AC − 10 = cot, ACD < or > 90°, as A and AC are like or unlike. ACB ∼ ACD = BCD ACD { extr. cot, ACD + co-ar. c, ACD + s, BCD + c, A − 20 / mean co-ar. s, ACD + s, BCD + c, A − 10 } = c, B like or unlike A as ACD is < or > ACB. REMARK. B will not come out exact by this rule when ſmall; when = 7° the error however will not exceed a ſecond. It may however be found very exact by either of the two following ſolutions. Otherwiſe, 2dly. Find the ſegment BCD and the ſide BC by caſe 3. BC { extr. c, BC + t, BCD − 10 / mean co-ar. t, BC to 20 + s, BC + t, BCD − 20 } = cot, B like or unlike A as ACD is < or > ACB. REMARK. BC will come out always exact if proportion be made for differences. But without any proportioning it will never err more than 1½″, although BC previouſly found may err much more when B is ſmall, as abovementioned, which however will not affect B more than here mentioned. Otherwiſe, 3dly. s, ½ AC + co-ar. c, ½ $\overline{A + C}$ + ½ s, A + ½ s, C − 10 = t, z Z { extr. c, ½ $\overline{A + C}$ + 10 − c, Z / mean c, ½ $\overline{A + C}$ + t, Z + co-ar. s, z − 10 } = s, ½ B REMARK. By making proportion of the differences, this rule will be exact to ¼″, if B does not exceed 90°. But without any proportioning it will be exact to a ſecond if B is ſmall, and within two ſeconds if it is near 90°.

TABLE of ACCURATE SOLUTIONS of OBLIQUE SPHERIC TRIANGLES by LOGARITHMS continued.

GIVEN	CASE	REQUIRED	SOLUTIONS.
All the three sides AB AC BC	5	One of the angles as A or B	Fig. 1  Fig. 2  Fig. 3  Fig. 4  Let fall the perpendicular CD from one of the angles not required, as C, upon the opposite side AB; bisect AB in E, and let AC be > AB. t, $\frac{1}{2}\overline{AC + BC}$ + t, $\frac{1}{2}\overline{AC - BC}$ + cot, $\frac{1}{2}$ AB − 20 = t, Z = ED < 90°, being distance of nearest perpendicular from E middle of the base AB. There are four cases of this problem; 1. Fig. 1. $\frac{1}{2}\overline{AC + BC}$ < 90°, and Z > $\frac{1}{2}$ AB; AD = Z + $\frac{1}{2}$ AB, and BD = Z − $\frac{1}{2}$ AB; and the perpendicular falls without the triangle on the side B. 2. Fig. 2. $\frac{1}{2}\overline{AC + BC}$ < 90°, and Z < $\frac{1}{2}$ AB; AD = $\frac{1}{2}$ AB + Z, and BD = $\frac{1}{2}$ AB − Z, and the perpendicular falls within the triangle. 3. Fig. 3. $\frac{1}{2}\overline{AC + BC}$ > 90°, and Z < $\frac{1}{2}$ AB; AD = $\frac{1}{2}$ AB − Z, and BD = $\frac{1}{2}$ AB + Z, and the perpendicular falls within the triangle. 4. Fig. 4. $\frac{1}{2}\overline{AC + BC}$ > 90°, and Z > $\frac{1}{2}$ AB; AD = Z − $\frac{1}{2}$ AB, and BD = Z + $\frac{1}{2}$ AB, and the perpendicular falls without the triangle on the side A. Then A { Mean t, AD + cot, AC − 10 = c, A; extr. s, $\overline{AC - AD}$ + 20 − s, $\overline{AC + AD}$ } / 2 = t, $\frac{1}{2}$ A B { Mean t, BD + cot, BC − 10 = c, B; extr. s, $\overline{BC - BD}$ + 20 − s, $\overline{BC + BD}$ } / 2 = t, $\frac{1}{2}$ B The kind of A and B in the four several cases is as follows; 1 A is like and B is unlike BC 2 A and B are both like BC 3 A and B are both like AC 4 A is unlike, and B is like AC Otherwise, 2d Solution. Put the sum of the sides = S (s, $\frac{1}{2}\overline{S - AC}$ + s, $\frac{1}{2}\overline{S - AB}$ + co-ar. s, AC + co-ar. s, AB) / 2 = s, $\frac{1}{2}$ A In words; Take half the sum of the three sides, and its difference from each of the sides containing the required angle. To the logarithmic sines of the said differences add the arithmetical complements of the logarithmic sines of the containing sides. Half the sum of these four logarithms will be the logarithmic sine of half the required angle. Remark. This rule fails when the required angle A is near 180°; but is proper to be used when A is under 90°. When A is greater than 90°, use the following rule: Otherwise, 3d Solution. Let S represent the sum of the sides, as in the preceding solution. (s, $\frac{1}{2}$ S + s, $\frac{1}{2}\overline{S - BC}$ + co-ar. s, AC + co-ar. s, AB) / 2 = c, $\frac{1}{2}$ A In words; Add together the logarithmic sines of half the sum of the three sides, and of the said $\frac{1}{2}$ sum lessened by the side opposite the required angle A, and the arithmetical complements of the logarithmic sines of the containing sides. Half the sum of these four logarithms will be the logarithmic cosine of half the required angle. Remark. This rule fails when A is near 0°, but is proper to be used when A is between 90° and 180°; as the preceding rule is fittest to be used when A is under 90°.

TABLE

TABLE of ACCURATE SOLUTIONS of OBLIQUE SPHERIC TRIANGLES by LOGARITHMS continued.

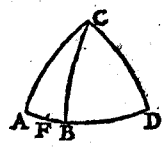
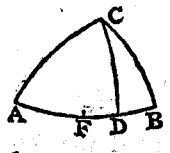
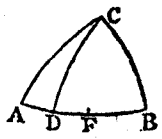
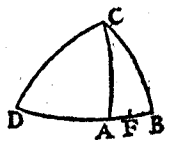
GIVEN	CASE	REQUIRED	SOLUTIONS.
All the three angles A B C	6	One of the sides AC or BC	Fig. 1  Fig. 2  Fig. 3  Fig. 4  Let fall the perpendicular CD from an angle C not opposite the required side AC or BC, upon the opposite side AB; and let an arc CF be drawn within the triangle bisecting the vertical angle ACB, and let B be $>$ A, and consequently AC $<$ BC. t, $\frac{1}{2}\overline{A+B}$ + t, $\frac{1}{2}\overline{B-A}$ + t, $\frac{1}{2}$ ACB $-$ 20 = t, Z or FCD $<$ 90° being the angle contained between the arc CF and the nearest perpendicular CD. There are four cases of this problem; 1. Fig. 1. $\frac{1}{2}\overline{A+B} < 90°$, and Z $\frac{1}{2} >$ ACB; ACD = Z + $\frac{1}{2}$ ACB, and BCD = Z $-$ $\frac{1}{2}$ ACB, and the perpendicular CD falls without the triangle on the side B. 2. Fig. 2. $\frac{1}{2}\overline{A+B} > 90°$, and Z $> \frac{1}{2}$ ACB; ACD = $\frac{1}{2}$ ACB + Z, and BCD = $\frac{1}{2}$ ACB $-$ Z, and the perpendicular CD falls within the triangle. 3. Fig. 3. $\frac{1}{2}\overline{A+B} > 90°$, and Z $< \frac{1}{2}$ ACB; ACD = $\frac{1}{2}$ ACB $-$ Z, and BCD = $\frac{1}{2}$ ACB + Z, and the perpendicular CD falls within the triangle. 4. Fig. 4. $\frac{1}{2}\overline{A+B} > 90°$, and Z $>$ $\frac{1}{2}$ ACB; ACD = Z $-$ $\frac{1}{2}$ ACB, and BCD = Z + $\frac{1}{2}$ ACB, and the perpendicular CD falls without the triangle on the side A. Then AC $\begin{cases}\text{Mean cot, } \overline{A + \text{cot ACD}} - 10 = \text{c, AC} \\ \text{extr. } \dfrac{\text{c, } \overline{A + \text{ACD}} + 20 - \text{c, } \overline{A \sim \text{ACD}}}{2} = \text{t, } \frac{1}{2}\text{AC}\end{cases}$ BC $\begin{cases}\text{Mean cot, } \overline{B + \text{cot, BCD}} - 10 = \text{c, BC} \\ \text{extr. } \dfrac{\text{c, } \overline{B + \text{BCD}} + 20 - \text{c, } \overline{B \sim \text{BCD}}}{2} = \text{t, } \frac{1}{2}\text{BC}\end{cases}$ The kind of AC and BC in the four several cases will be as follows; 1. AC is $<$ or $>$ 90° as A and ACD are like or unlike. BC is like A and unlike B. 2. AC is $<$ or $>$ 90° as A and ACD are like or unlike. BC is like A and B. 3. AC is like A and B. BC is $<$ or $>$ 90°, as B and BCD are like or unlike. 4. AC is unlike A and like B. BC is $<$ or $>$ 90° as B and BCD are like or unlike. Otherwise, 2d Solution. Put the sum of the angles = S $\dfrac{\text{c, } \frac{1}{2}\text{S} + \text{c, } \overline{\frac{1}{2}\text{S} - \text{B}} + \text{co-ar. s, A} + \text{co-ar. s. C}}{2} = \text{s, } \frac{1}{2}\text{AC}$ In words. Add together the logarithmic cosines of half the sum of the three angles, and of the said half sum lessened by the angle B opposite the required side AC, and the arithmetical complements of the logarithmic sines of the other two angles A, C. Half the sum of these four logarithms will be the logarithmic sine of half the required side AC. Remark. This rule fails when the required side AC is near 180°, but is proper to be used when AC is under 90°. When AC is greater than 90°, use the following rule; Otherwise, 3d Solution. Let S represent the sum of the angles, as in the preceding solution. $\dfrac{\text{c, } \overline{\frac{1}{2}\text{S} - \text{A}} + \text{c, } \overline{\frac{1}{2}\text{S} - \text{C}} + \text{co-ar. s, A} + \text{co-ar. s, C}}{2} = \text{c, } \frac{1}{2}\text{AC}$ In words. Take half the sum of the three angles, and its differences from each of the angles adjoining to the required side. To the logarithmic cosines of the said differences add the arithmetical complements of the logarithmic sines of the adjoining angles. Half the sum of these four logarithms will be the logarithmic cosine of half the required side. Remark. This rule fails, when the required side AC is near 0°, but is proper to be used when AC is above 90°, as the preceding rule is fittest to be used when AC is under 90°.

TABLE of ACCURATE SOLUTIONS of OBLIQUE SPHERIC TRIANGLES by LOGARITHMS continued.

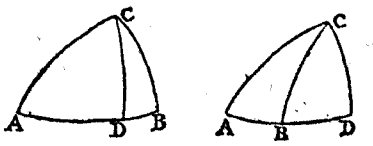
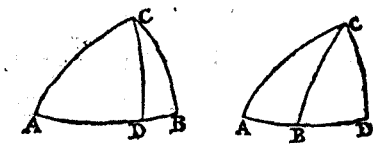
GIVEN	CASE	REQUIRED	SOLUTIONS.
Two ſides AC, BC, and an angle A oppoſite one of them BC	7	The angle B oppoſite the other given ſide AC	 Let fall the perpendicular CD from the angle C contained between the given ſides AC, BC, upon the oppoſite ſide AB. B { extr. s, AC + s, A + co-ar. s, BC − 10 = s, B < or > 90° mean. With AC and A find CD by caſe 3d, right-angled ſpherics, and with CD and BC find B by caſe 5, do. < or > 90°. The kind of B may however, for the moſt part, be determined by this propoſition. The ſum of the given ſides AC, BC, and the ſum of their oppoſite angles A and B lie both on the ſame ſide of 180°, that is, will both be leſs or both greater than 180° at the ſame time.
	8	The included angle ACB	From the required angle ACB let fall the perpendicular CD upon the oppoſite ſide AB. c, AC + t, A − 10 = cot, ACD < or > 90°, as AC and A are like or unlike. ACD { extr. c, ACD + t, AC + cot, BC − 20 / mean. cot, ACD + s, ACD + t, AC + cot, BC − 30 } c, BCD > 90°, if one of, or all the three terms ACD, AC, BC are > 90°; otherwiſe < 90°. This value of BCD will be near enough the truth unleſs it be very near 0° or 180°. In that caſe with AC, and A find CD by caſe 3d right-angled ſpherics, and with BC and CD find BCD by caſe 6 do. Then ACD ± BCD = ACB doubtful on account of the ambiguity of the ſigns; which uncertainty may however, for the moſt part be obviated by one of the two following rules; if the ſum of the ſegments ACD, BCD > 180° take their difference; if the ſecond ſegment BCD is greater than the firſt ſegment ACD take their ſum for the angle ACB.
	9	The third ſide AB	Let fall the perpendicular CD from the angle C contained between the two given ſides AC, BC, upon the oppoſite or required ſide AB. t, AC + c, A − 10 = t, AD < or > 90° as AC and A are like or unlike. AD { extr. c, AD + c, BC + co-ar. c, AC / mean 20 − t, AD + s, AD + c, BC + co-ar. c, AC − 20 } = c, BD > 90°, if one of, or all three terms AD, BC, AC, are > 90°; otherwiſe < 90°. This value of BD will be near enough the truth unleſs it be near 0° or 180°. In that caſe with AC, and A find CD by caſe 3 of right-angled ſpheric triangles, and with BC and CD find BD by caſe 4 do. AD ± BD = AB, doubtful on account of the ambiguity of the ſigns, but may for the moſt part be determined by one of theſe two rules. If the ſum of the ſegments AD, BD is greater than 180°, take their difference; but if the ſecond ſegment BD is greater than the firſt ſegment AD, take their ſum for the ſide AB.

TABLE of ACCURATE SOLUTIONS of OBLIQUE SPHERIC TRIANGLES by LOGARITHMS continued.

GIVEN	CASE	REQUIRED	SOLUTIONS.
Two angles A, B,	10	The ſide BC oppoſite the other given angle A	Let fall the perpendicular CD from the angle C not given upon the oppoſite ſide AB.  BC { extr. s, A + s, AC + co-ar. s, B − 10 = s, BC < or > 90°. mean. With AC and A find CD by caſe 3 right-angled ſpherics, and with CD and B find BC by caſe 16 do. < or > 90°. } The kind of BC however may for the moſt part be determined by this propoſition; the ſum of the given angles A, B and the ſum of their oppoſite ſides AC, BC lie both on the ſame ſide of 180°. *If this rule is not ſufficient, or no other means are given to determine the kind of* BC in this problem, it will be impoſſible to determine the value of the other parts of the triangle by the ſolutions of the two following problems.
and a ſide AC oppoſite one of them B.	11	The ſide AB included between the given angles A, B.	Let fall the perpendicular CD from the angle C not given upon the oppoſite or required ſide AB. c, A + t, AC − 10 = t, AD < or > 90° as A and AC are like or unlike. AD { mean. s, AD + t, A + cot, B − 20 extr. t, AD + c, AD + t, A + cot, B − 30 } = s, BD < or > 90°. This value of BD will be near enough the truth unleſs it be near 90°. In that caſe, with AC and A find CD by caſe 3 right-angled ſpherics, and with CD and B find BD by caſe 14 do. AD ± BD = AB doubtful, on account of the uncertainty of the ſigns as well as of BD, but may often be determined by one of theſe two rules. If the ſum of the ſegments AD, BD be greater than 180° take their difference. If the ſecond ſegment BD be greater than the firſt AD take their ſum for AB.
	12	The third angle ACB	Let fall the perpendicular CD from the required angle ACB upon the oppoſite ſide AB. c, AC + t, A − 10 = cot, ACD < or > 90° as AC and A are like or unlike. ACD { mean. s, ACD + c, B + co-ar. c, A − 10 extr. 20 − cot, ACD + c, ACD + c, B + co-ar. c, A − 20 } = s, BCD < or > 90°. This value of BCD will be near enough the truth unleſs it falls near 90°. In that caſe with AC and A find CD by caſe 3 of right-angled ſpherics, and with CD and B find BCD by caſe 15 do. < or > 90°. ACD ± BCD = ACB doubtful, on account of the ambiguity of the ſigns, as well as of BCD; but may often be determined by one of theſe two rules. If the ſum of the ſegments ACD, BCD > 180°, take their difference: if the ſecond ſegment BCD be greater than the firſt ACD take their ſum for ACB.

REMARKS

REMARKS on the foregoing SOLUTIONS.

The foregoing ſolutions are contrived to produce accurate reſults in all caſes, that is liable to no greater errors than what might ariſe from an error of $\frac{1}{10}$ of a ſecond in the things given, whereas the rules commonly given by trigonometrical writers are frequently ſubject to conſiderable errors. The principles of theſe ſolutions are the ſame with thoſe of right-angled ſpheric triangles, which have been explained in the remarks following them.

It may be uſeful however to ſhew the reaſon of the preſent ſolutions independent of thoſe explanations, although it may appear partly a repetition of what has been mentioned before.

The errors occuring in the uſe of the common rules have two ſources; the one an inaccurate way of taking out the logarithmic ſine or coſine of the firſt arc, when the tabular difference is large; the other the uncertainty of the required arc found from its ſine or coſine, when the tabular difference is ſmall. In moſt of the foregoing ſolutions the firſt ſegment of the baſe or vertical angle, found by the firſt operation, comes out either by a tangent or a cotangent, and therefore may be obtained to the exactneſs of a ſmall fraction of a ſecond by theſe tables of logarithmic ſines and tangents, which go to ſeven decimal places of figures, even where the logarithmic difference is ſmalleſt, as at 45°, where 42 anſwers to one ſecond. In the ſecond operation the logarithmic ſine or coſine of the ſame arc or angle is made uſe of; and as the difference of the ſines of ſmall arcs and coſines of large ones is conſiderable, it will be neceſſary, where ſuch are concerned, previouſly to compute the firſt ſegment from its tangent or cotangent to a minute part of a ſecond, in order to get its logarithmic ſine or coſine true to the neareſt unit in the laſt place. In fact, if decimals are uſed, as many ſhould be taken as the logarithmic difference of the ſine or coſine has places. Thus in this caſe two operations are required, each attended with ſome trouble; to ſave which and ſtill preſerve the requiſite exactneſs, the following method is uſed in the foregoing ſolutions. Let A repreſent the firſt arc or ſegment, whoſe logarithmic tangent or cotangent is given by the firſt operation. Find the value of A from the table with the fractional part of a ſecond expreſſed by a vulgar fraction, having the difference between the given logarithm and that of the next leſs value of A in the table for its numerator, and the difference of the next leſs and greater logarithms in the table for its denominator; or by a decimal fraction carried to a ſufficient number of places. Then if the logarithmic tangent of A is given by the firſt operation you are in the ſecond operation for log. ſine of an extreme arc A or one nearer 0° or 180° than 90° to uſe L. t, A + L. c, A — 10; and for log. coſine of a mean arc A or one nearer 90° than 0° or 180° to uſe L. ſine, A + 10 — L. t, A. But if log. cotangent of A be given, then for log. ſine of an extreme arc A to uſe L. c, A + 10 — L. cot, A; or for log. coſine of a mean arc A to uſe L. s, A + L. cot, A — 10: where no more logarithms are required to be looked out than by the common rule, becauſe log. tangent of A or log. cotangent of A are already given by the firſt operation. The logarithmic ſine of a mean arc, or logarithmic coſine of an extreme arc is however ſtill to be uſed in the ſecond operation agreeable to the common rule.

This

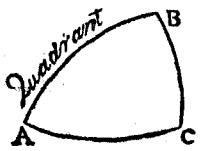
This method is founded on theſe theorems; $s, A = \frac{t, A \times c, A}{Rad.} = \frac{c, A \times Rad.}{cot, A}$; and $c, A = \frac{s, A \times Rad.}{t, A} = \frac{s, A \times cot, A}{Rad.}$; and on this conſideration that where the logarithmic difference of the ſines is large that of the coſines is ſmall, and the contrary. Hence the logarithmic ſines or coſines uſed according to this method in the ſecond operation will be readily taken out on account of the ſmallneſs of the difference, and frequently even by inſpection; and the difficulty is obviated which might occur by the common method when the firſt ſegment is near 0°, or 180°, or 90°; and thoſe caſes are rendered the eaſieſt which before were moſt embarraſſing. In like manner it may be expedient generally in trigonometrical calculations to find the ſine of a ſmall angle or coſine of a large one from its tangent or cotangent, when they ſhould happen to be given by a preceding operation. This method does not indeed increaſe the accuracy of the reſult; but prevents the danger of miſtakes, and leſſens the labour of calculation by ſubſtituting the proportioning ſmaller differences inſtead of larger ones.

The other error which may ariſe from the uſe of the common rules, and which happens when the required arc comes out by a ſine or coſine, and the tabular logarithmic difference for one ſecond of the arc is ſmall, can be obviated no other way than by having recourſe to ſome other rule, which ſhall bring out the arc by a ſine if the common rule gave it by a coſine, or by a coſine if it gave it by a ſine; or in either caſe by a tangent or cotangent. This method therefore has been adopted in theſe caſes. Thus by the uſe of theſe ſeveral methods, varying from the common rules as often as occaſion requires, the foregoing ſolutions have been rendered ſufficiently accurate for the niceſt practice in all caſes.

Theſe improved ſolutions have moreover this very great advantage attending them, peculiar to themſelves as applied to theſe tables of logarithmic ſines and tangents to every ſecond of the quadrant, that they give the reſult true to the exactneſs of a ſecond or very little more, in the moſt uſual caſes, by only taking out the logarithm anſwering to the neareſt ſecond of the arc, or the neareſt arc to the logarithm, by inſpection, in the tables, without making any proportion for the logarithmic differences, or taking any account of the fractional parts of a ſecond; which conſiderably leſſens the labour of computation, and at the ſame time entirely obviates the danger of miſtakes in thoſe operations. In extraordinary caſes, ſuch as where one the ſides of the triangle is ſmall, the reſult indeed will not always come out ſo exact; but the error, even when apparently conſiderable, will be of no conſequence in practice, ſince it will be no more than what might ariſe from an alteration of a ſecond in any of the things given.

TABLE

TABLE of ACCURATE SOLUTIONS of a RECTILATERAL SPHERIC TRIANGLE, or having one side equal to 90°, by LOGARITHMS.

GIVEN	CASE	REQUIRED	QUALITY of Things REQUIRED	SOLUTION.
Hypotenusal angle C, and one side AC	1	Other side BC	- - -	c, C + t, AC − 10 = cot, BC 
	2	Adj. angle A	- - -	t, C + c, AC − 10 = t, A
	3	Opposite angle B	extr. mean	s, C + s, AC* − 10 = s, B* t, C + c, AC − 10 = t, A $\left\{\begin{matrix}\text{extr. c, C + 10 − c, A}\\ \text{mean c, C + t, A − s, A}\end{matrix}\right\}$ = c, B like AC
Hypotenusal angle C, and one angle A	4	Other angle B	mean extr.	c, C + 10 − c, A = c, B $\frac{t, \frac{1}{2}\overline{A \sim C} + t, \frac{1}{2}\overline{A + C}}{2}$ = cot, $\frac{1}{2}$ B
	5	Opposite side BC	extr. mean	s, A* + 10 − s, C = s, BC* $\frac{\text{cot, } \frac{1}{2}\overline{A \sim C} + t, \frac{1}{2}\overline{A + C}}{2}$ = t, Z like A; and 2 Z − 90° = BC
	6	Adjacent side AC	mean extr.	cot, C + t, A − 10 = c, AC $\frac{s, \overline{A \sim C} + 20 - s, \overline{A + C}}{2}$ = cot, $\frac{1}{2}$ AC
One angle A, and adjacent side AC	7	Other angle B	- - -	s, A + t, AC* − 10 = t, B*
	8	Opposite side BC	mean extr.	c, A* + s, AC − 10 = c, BC* s, A + t, AC − 10 = t, B $\left\{\begin{matrix}\text{extr. c, AC + 10 − c, B}\\ \text{mean c, AC + t, B − s, B}\end{matrix}\right\}$ = s, BC like A
	9	Hypote. angle C	- - -	t, A + 10 − c, AC = t, C
Both angles, A and B	10	A side suppose AC	- - -	s, A + cot, B* − 10 = cot, AC*
	11	Hypote. angle C	mean extr.	c, A + c, B − 10 = c, C s, A + cot, B − 10 = cot, AC $\left\{\begin{matrix}\text{extr. s, B + cot, AC − c, AC}\\ \text{mean s, B + 10 − s, AC}\end{matrix}\right\}$ = s, C
Both sides, AC and BC	12	Hypote. angle C	mean extr.	cot, AC + cot, BC − 10 = c, C $\frac{c, \overline{AC + BC} + 20 - c, \overline{BC \sim AC}}{2}$ = cot, $\frac{1}{2}$ C
	13	An angle suppose A	mean extr.	c, BC* + 10 − s, AC = c, A* $\frac{c, \overline{AC + BC} + 20 - c, \overline{AC \sim BC}}{2}$ = cot, $\frac{1}{2}$ C then t, C + c, AC − 10 = t, A like BC
One side AC, and opposite angle B	14	The other angle A	extr. mean	t, B + cot, AC − 10 = s, A < or > 90° Find BC by case 15, or C by case 16, and rather the furthest from 90°; then c, BC + 10 − s, AC, or c, C + 10 − c, B = c, A. Otherwise, $\frac{s, \overline{B + AC} + 20 - s, \overline{B \sim AC}}{2}$ = t, X < 90°; and A = 2 X − 90° or 270° − 2 X
	15	Adj. side BC	extr. mean	c, AC + 10 − c, B = s, BC < or > 90° Find A by case 14, or C by case 16, and rather the furthest from 90°; then c, A + s, AC − 10 or t, B + cot, C − 10 = c, BC Otherwise, $\frac{\text{cot, } \frac{1}{2}\overline{B + AC} + \text{cot. } \frac{1}{2}\overline{B \sim AC}}{2}$ = t, Y < 90°, and BC = 2 Y − 90°, or 270° − 2 Y
	16	Hypote. angle C	extr. mean	s, B + 10 − s, AC = s, C < or > 90° Find A by case 14, or BC by case 15, and rather the furthest from 90°; then c, A + c, B − 10 = c, C; or t, B + 10 − c, BC = t, C. Otherwise, $\frac{t, \frac{1}{2}\overline{B + AC} + \text{cot, } \frac{1}{2}\overline{B \sim AC}}{2}$ = t, Z < 90°, and C = 2 Z − 90°, or 270° − 2 Z

REMARKS necessary to explain the USE of the above TABLE.

The two quantities, whether arcs or angles, marked with asterics, in the same equation, are both of the same kind, that is both at the same time less or both at the same time greater than 90°. The three last cases are doubtful, since it cannot be determined from the things given alone, whether A, BC, and C, are less or greater than 90°. In the remaining cases, if the two things given, whether arcs or angles, are of the same kind, the thing required will be greater than 90°; but if they are of different kinds it will be less than 90°.

The solutions are founded on the same principles as those of right-angled spheric triangles on page 8, and are equally exact with them; this rectilateral spheric triangle being the supplemental triangle to the right-angled one.

Here follow fifteen Problems, together with their Solutions, illustrating the Use of the LOGARITHMIC TABLES.

I. To find n mean proportionals between two quantities a and b, of which b is the least?

Solution. The mth. mean proportional reckoned from b is $b \times \overline{\frac{a}{b}}\Big|^{\frac{m}{n+1}}$, and the mth. mean proportional reckoned from a is $a \times \overline{\frac{b}{a}}\Big|^{\frac{m}{n+1}} = a \div \overline{\frac{a}{b}}\Big|^{\frac{m}{+1}}$

By logarithms. Multiply the difference of the logarithms of a and b by the fraction $\frac{m}{n+1}$, the product added to the logarithm of b will give the logarithm of the mth. mean proportional reckoned from b, or subtracted from the logarithm of a will give the logarithm of the mth. mean proportional reckoned from a.

II. The logarithms of a and b being given, to find the logarithm of a + b?

Solution. Put $\sqrt{\frac{b}{a}} = t, z$. Then $a + b = a \times \overline{1 + \frac{b}{a}} = a \times \overline{1 + t^2}, z = a \times \text{sec}^2, z = \frac{a}{c^2, z}$.

By logarithms. $\frac{L.\,b + 20 - L.\,a}{2} = L.t, z$. Then $L.\overline{a+b} = L.\,a + 20 - 2\,L.\,c, z = L.\,b + 20 - 2\,L.\,s, z$.

Use the first expression, if z is an extreme arc; and the second expression, if it is a mean arc.

III. The logarithms of a and b being given, to find the logarithm of a — b?

Solution. Put $\sqrt{\frac{b}{a}} = s, z$. Then $a - b = a \times \overline{1 - \frac{b}{a}} = a \times \overline{1 - s^2}, z = a \times c^2, z$

By logarithms. Put $\frac{L.\,b + 20 - L.\,a}{2} = L.\,s, z$. Then $L.\,\overline{a - b} = L.\,a + 2\,L.\,c, z - 20$

IV. The

IV. The logarithms of a and b being given, to find the logarithm of $\sqrt{a^2 + b^2}$?

Solution. Put $\frac{b}{a} = t, z$. Then $\sqrt{a^2+b^2} = a\sqrt{1 + \frac{b^2}{a^2}} = a \times \text{sec}, z = b \times \text{cosec}, z$

By logarithms. Put $L.b + 10 - L.a = L.t, z$. Then $L.\sqrt{a^2+b^2} = L.a + 10 - L.c, z = L.b + 10 - L.s, z$. Use the first expression, if z is an extreme arc, and the second if it is a mean arc.

V. The logarithms of a and b being given, to find the logarithm of $\sqrt{a^2 - b^2}$?

Solution. Put $\frac{b}{a} = s, z$. Then $\sqrt{a^2 - b^2} = a\sqrt{1 - \frac{b^2}{a^2}} = a \times c, z$

By logarithms. $L.b + 10 - L.a = L.s, z$. Then $L.\sqrt{a^2-b^2} = L.a + L.c, z - 10$

VI. The logarithms of a and b being given, to find the logarithm of $\sqrt{a + b}$?

Solution. Put $\sqrt{\frac{b}{a}} = t, z$. Then $\sqrt{a+b} = \sqrt{a} \times \sqrt{1 + \frac{b}{a}} = \sqrt{a} \times \sqrt{1 + t^2, z} = \sqrt{a} \times \text{sec}, z = \frac{\sqrt{a}}{c, z}$

By logarithms. Put $\frac{L.b + 20 - L.a}{2} = L.t, z$. Then $L.\sqrt{a+b} = \frac{1}{2} L.a + 10 - L.c, z$ or $= \frac{1}{2} L.b + 10 - L.s, z$. Use the first expression if z is a small arc, and the second if it is a large one.

VII. The logarithms of a and b being given, to find the logarithm of $\sqrt{a - b}$?

Solution. Put $\sqrt{\frac{b}{a}} = s, z$. Then $\sqrt{a-b} = \sqrt{a} \times \sqrt{1 - \frac{b}{a}} = \sqrt{a} \times \sqrt{1 - s^2, z} = \sqrt{a} \times c, z$

By logarithms. Put $\frac{L.b + 20 - L.a}{2} = L.s, z$. Then $L.\sqrt{a-b} = \frac{1}{2} L.a + L.c, z - 10$.

VIII. The logarithms of a and b being given, to find the logarithm of $\overline{a \pm b}|^{\frac{m}{n}}$, and the logarithm of $\overline{a+b}|^{\frac{m}{n}} + \overline{a-b}|^{\frac{m}{n}}$, and also the logarithm of $\overline{a+b}|^{\frac{m}{n}} - \overline{a-b}|^{\frac{m}{n}}$?

Solution. Put $\frac{b}{a} = s, z$; and $\overline{t, 45^\circ - \frac{1}{2} z}|^{\frac{m}{n}} = t, u$. Then $\overline{a \pm b}|^{\frac{m}{n}} = \overline{a \times c, z \times t, 45^\circ \pm \frac{1}{2} z}|^{\frac{m}{n}} = \overline{a \times c, z}|^{\frac{m}{n}} \times \text{cot}, u$, or $\overline{a \times c, z}|^{\frac{m}{n}} \times t, u$. Hence $\overline{a+b}|^{\frac{m}{n}} \pm \overline{a-b}|^{\frac{m}{n}} = \overline{a \times c, z}|^{\frac{m}{n}} \times \overline{\text{cot}, u \pm t, u}$; and $\overline{a+b}|^{\frac{m}{n}} + \overline{a-b}|^{\frac{m}{n}} = \overline{a \times c, z}|^{\frac{m}{n}} \times 2 \times \text{cosec}, 2u$; and $\overline{a+b}|^{\frac{m}{n}} - \overline{a-b}|^{\frac{m}{n}} = \overline{a \times c, z}|^{\frac{m}{n}} \times 2 \times \text{cot}, 2u$.

By logarithms. Put $L.b + 10 - L.a = L.s, z$; and $\frac{m}{n} \times L.t, \overline{45^\circ - \frac{1}{2} z} = L.t, u$. Then $L.\overline{a \pm b}|^{\frac{m}{n}} = \frac{m}{n} \times \overline{L.a + L.c, z + L.t, 45^\circ \pm \frac{1}{2} z - 20}$

And $L.\overline{\overline{a+b}|^{\frac{m}{n}} + \overline{a-b}|^{\frac{m}{n}}} = \frac{m}{n} \times \overline{L.a + L.c, z - 10} + L.2 + 10 - L.s, 2u$.

And $L.\overline{\overline{a+b}|^{\frac{m}{n}} - \overline{a-b}|^{\frac{m}{n}}} = \frac{m}{n} \times \overline{L.a + L.c, z - 10} + L.2 + L.\text{cot}, 2u - 10$.

IX. The

IX. The logarithms of a and b being given, to find the power of the impoſſible binominal $a \pm \sqrt{-b^2}$ whoſe index is $\frac{m}{n}$, that is, to find $\overline{a \pm \sqrt{-b^2}}|^{\frac{m}{n}}$ by another impoſſible binomial; and thence the value of $\overline{a + \sqrt{-b^2}}|^{\frac{m}{n}} + \overline{a - \sqrt{-b^2}}|^{\frac{m}{n}}$, which is always poſſible, whether a or b be greateſt?

Solution. Put $\frac{b}{a} = t, z$. Then $\overline{a \pm \sqrt{-b^2}}|^{\frac{m}{n}} = \overline{a^2+b^2}|^{\frac{m}{2n}} \times c, \frac{m}{n} z \pm \sqrt{-s^2}, \frac{m}{n} z$. Hence $\overline{a + \sqrt{-b^2}}|^{\frac{m}{n}} + \overline{a - \sqrt{-b^2}}|^{\frac{m}{n}} = \overline{a^2+b^2}|^{\frac{m}{2n}} \times 2\, c, \frac{m}{n} z = \overline{a \times \text{ſec}, z}|^{\frac{m}{n}} \times 2\, c, \frac{m}{n} z = \overline{b \times \text{coſec}, z}|^{\frac{m}{n}} \times 2\, c, \frac{m}{n} z$; where the firſt or ſecond of theſe two laſt expreſſions is to be uſed according as z is an extreme or mean arc; or rather, becauſe $\frac{b}{a}$ is not only the tangent of z, but alſo of $z + 360°$, $z + 720°$ &c. therefore the factor in the anſwer will have ſeveral values, viz. $2\, c, \frac{m}{n} z$; $2\, c, \frac{m}{n} \times \overline{z + 360}$; $2\, c, \frac{m}{n} \times \overline{z + 720°}$ &c. the number of which, if m and n be whole numbers, and the fraction $\frac{m}{n}$ be in its leaſt terms, will be equal to the denominator n; otherwiſe infinite.

By logarithms. Put $L.\, b + 10 - L.\, a = L.\, t, z$. Then $L.\, \overline{\overline{a + \sqrt{-b^2}}|^{\frac{m}{n}} + \overline{a - \sqrt{-b^2}}|^{\frac{m}{n}}} = \frac{m}{n} \times \overline{L.\, a + 10 - L.\, c, z} + L.\, 2 + L.\, c, \frac{m}{n} z - 10 = \frac{m}{n} \times \overline{L.\, b + 10 - L.\, s, z} + 2 + L.\, c, \frac{m}{n} z - 10$; where the firſt or ſecond expreſſion is to be uſed, according as z is an extreme or mean arc. Moreover by taking ſucceſſively, $L.\, c, \frac{m}{n} z$; $L.\, c, \frac{m}{n} \times \overline{z + 360}$; $L.\, c, \frac{m}{n} \times \overline{z + 720°}$ &c. There will ariſe ſeveral diſtinct anſwers to the queſtion, agreeable to the remark above.

X. To find the roots of a quadratic equation, when poſſible?

There are four forms of quadratic equations. Theſe with their ſolutions are given as follow:

1. $x^2 - px - q = 0$	$\frac{2\sqrt{q}}{p} = t, z$. Then 1ſt $x = \frac{p}{2} \times t, z \times \cot, \frac{1}{2} z$; and 2d $x = -\frac{p}{2} \times t, z \times t, \frac{1}{2} z$
2. $x^2 + px - q = 0$	The roots of the ſecond form are negatives of thoſe of the firſt.
3. $x^2 - px + q = 0$	$\frac{2\sqrt{q}}{p} = s, z$. Then 1ſt $x = \frac{p}{2} \times s, z \times \cot, \frac{1}{2} z$; and 2d $x = \frac{p}{2} \times s, z \times t, \frac{1}{2} z$
4. $x^2 + px + q = 0$	The roots of the fourth form are negatives of thoſe of the third.

The roots of the firſt and ſecond forms are always poſſible. Thoſe of the third and fourth forms are alſo poſſible if $\frac{2\sqrt{q}}{p}$ is not greater than unity; otherwiſe they are impoſſible.

By logarithms. *Form 1ſt.* $L.\, 2 + \frac{1}{2} L.\, q + 10 - L.\, p = L.\, t, z$. Then L. 1ſt. x, poſitive $= L.\, \frac{p}{2} + L.\, t, z + L.\, \cot, \frac{1}{2} z - 20$; and L. 2d. x, negative $= L.\, \frac{p}{2} + L.\, t, z + L.\, t, \frac{1}{2} z - 20$.

Form 2d. Its roots will be negatives of thoſe of the firſt form.

Form 3d. $L.\, 2 + \frac{1}{2} L.\, q + 10 - L.\, p = L.\, s, z$. Then L. 1ſt. x, poſitive $= L.\, \frac{p}{2} + L.\, s, z + L.\, \cot, \frac{1}{2} z - 20$; and L. 2d. x, poſitive, $= L.\, \frac{p}{2} + L.\, s, z + L.\, t, \frac{1}{2} z - 20$.

Form 4th. Its roots are negatives of thoſe of the third form.

If $L.\, 2 + \frac{1}{2} L.\, q + 10 - L.\, p$ comes out greater than 10, the roots of the third and fourth forms are impoſſible.

XI. *Solution.*

XI. *Solution of Cubic Equations.*

The following method is adapted to a Cubic Equation, wanting the ſecond term; therefore, if the Equation has the ſecond term, it muſt be firſt taken away in the uſual manner. There are four forms of Cubic Equations wanting the ſecond term, whoſe roots, according to known rules, equivalent to Cardan's, are as follow:

1ſt. $x^3 + px - q = 0$ - - $x = \sqrt[3]{\frac{q}{2} + \sqrt[2]{\frac{q^2}{4} + \frac{p^3}{27}}} - \sqrt[3]{-\frac{q}{2} + \sqrt[2]{\frac{q^2}{4} + \frac{p^3}{27}}}$

2d. $x^3 + px + q = 0$ - - $x = \sqrt[3]{-\frac{q}{2} + \sqrt[2]{\frac{q^2}{4} + \frac{p^3}{27}}} - \sqrt[3]{\frac{q}{2} + \sqrt[2]{\frac{q^2}{4} + \frac{p^3}{27}}}$

3d. $x^3 - px - q = 0$ - - $x = \sqrt[3]{\frac{q}{2} + \sqrt[2]{\frac{q^2}{4} - \frac{p^3}{27}}} + \sqrt[3]{\frac{q}{2} - \sqrt[2]{\frac{q^2}{4} - \frac{p^3}{27}}}$

4th. $x^3 - px + q = 0$ - - $x = -\sqrt[3]{\frac{q}{2} - \sqrt[2]{\frac{q^2}{4} - \frac{p^3}{27}}} - \sqrt[3]{\frac{q}{2} + \sqrt[2]{\frac{q^2}{4} - \frac{p^3}{27}}}$

The roots of the firſt and ſecond forms are negatives of each other; and thoſe of the third and fourth are alſo negatives of each other. The firſt and ſecond forms have only root each. The third and fourth forms have alſo only root each, when the quadratic ſurd $\sqrt{\frac{q^2}{4} - \frac{p^3}{27}}$ is poſſible; but have three roots each when that ſurd is impoſſible. The roots of all the four forms may, in all caſes, be eaſily computed as follows:

Forms 1ſt and 2d. Put $\frac{q}{2} \times \overline{\frac{3}{p}}|^{\frac{3}{2}} = t, z$; and $\sqrt[3]{t, 45 - \frac{1}{2} z} = t, u$. Then $x = \pm \sqrt{\frac{4p}{3}} \times \cot. 2u$, where the upper ſign belongs to the firſt form, and the lower ſign to the ſecond form.

Forms 3d and 4th. Put $\frac{2}{q} \times \overline{p}|^{\frac{3}{2}}$ if $<$ unity, elſe its reciprocal $\frac{q}{2} \times \overline{\frac{3}{p}}|^{\frac{3}{2}} = c, z$.

Caſe 1ſt. $\frac{2}{q} \times \overline{\frac{p}{3}}|^{\frac{3}{2}} <$ unity. Put $\sqrt[3]{t, 45^\circ - \frac{1}{2} z} = t, u$. Then $x = \pm \sqrt[2]{\frac{4p}{3}} \times$ coſec, $2u$; where the upper ſign belongs to the third form, and the lower ſign to the fourth form.

Caſe 2d. $\frac{2}{q} \times \overline{\frac{p}{3}}|^{\frac{3}{2}} >$ unity. x has 3 values, in each form; viz. $x = \pm \sqrt{\frac{4p}{3}} \times c, \frac{z}{3} = \mp \sqrt[2]{\frac{4p}{3}} \times c, \overline{60^\circ - \frac{z}{3}}$ $= \mp \sqrt[2]{\frac{4p}{3}} \times c, \overline{60^\circ + \frac{z}{3}}$; where the upper ſigns belong to the third form, and the lower ſigns to the fourth form.

By logarithms. *Forms 1ſt and 2d.* $L. \frac{q}{2} + 10 - \frac{3}{2} \times L. \frac{p}{3} = L. t, z$; and $\frac{L. t, \overline{45^\circ - \frac{1}{2} z} + 20}{3} = L. t, u$ Then $L. x = \frac{1}{2} L. \frac{4p}{3} + L. \cot, 2u - 10$; and x will be affirmative in the firſt form, and negative in the ſecond form.

Forms 3d and 4th. $^3 \times L. \frac{p}{3} + 10 - L. \frac{q}{2}$ being leſs than 10 (which is caſe 1ſt) or $L. \frac{q}{2} + 10 - \frac{3}{2} \times L. \frac{p}{3}$ being leſs than 10 (which is caſe 2d) $= L. c, z$.

Caſe 1ſt. $\frac{L. t, 45^\circ - \frac{1}{2} z + 20}{3} = L. t, u$. Then $L. x = \frac{1}{2} L. 4p + 10 - L. s, 2u$: and x will be affirmative in the third form, and negative in the fourth form.

Case 2d. x has three values. 1st $L. \pm x = \frac{1}{2} L. \frac{4p}{3} + L. c, \frac{z}{3} - 10$. 2d $L. \mp x = \frac{1}{2} L. \frac{4p}{3} + L. c, \overline{60^\circ - \frac{z}{3}}$. 3d $L. \mp x = \frac{1}{2} L. \frac{4p}{3} + L. c, \overline{60^\circ + \frac{z}{3}} - 10$; where the upper signs belong to the third form, and the lower signs to the fourth form; that is the first value of x in the 3d form is positive, and its 2d and 3d values negative; and the first value of x in the fourth form is negative, and its 2d and 3d values affirmative.

XII. The altitudes of the barometer at two stations, with the heights of Fahrenheit's thermometer attached to the barometer, and the heights of two thermometers of the same kind, exposed to the air but sheltered from the sun at the two stations, being given, to find the perpendicular altitude of one station above the other?

Put B for the observed height of the barometer at the lower station, and b for that at the upper station, D for the difference of height of Fahrenheit's thermometer attached to the barometer at the two stations, and F for the mean of the two heights of Fahrenheit's thermometer exposed freely for a few minutes to the open air, in the shade, at the two stations. The altitude of the upper station above the lower, in English fathoms, will be expressed as follows, according to the respective observations of M. de Luc, the late General Roy, and Sir George Shuckburgh, in which the upper sign — is to be used when the thermometer attached to the barometer is highest at the lower station (which is most usual) and the lower sign + when it is lowest at the lower station.

M. de Luc - - - $\overline{L. B - L. b \mp 0,452\, D} \times \overline{1 + F - 40^\circ} \times 0,00223$

General Roy - - - $\overline{L. B - L. b \mp 0,468\, D} \times \overline{1 + F - 32^\circ} \times 0,00245$

Sir George Shuckburgh $\overline{L. B - L. b \mp 0,440\, D} \times \overline{1 + F - 32^\circ} \times 0,00243$

Mean of the two last - $\overline{L. B - L. b \mp 0,454\, D} \times \overline{1 + F - 32^\circ} \times 0,00244$

The observations of General Roy and Sir George Shuckburgh having been made with barometers and thermometers constructed and accurately divided by Mr. Ramsden, and with the detatched thermometers never exposed to the sun, appear to me clearly to deserve the preference above those of M. de Luc, who however, it must be acknowledged, has done great service to science by his ingenious labors and considerable improvements on this subject, as well as by exciting by his example the two other accurate observers to institute similar observations to his own, and with superior advantages in point of instruments, in some measure to surpass himself. I have therefore, after the symbolical rules, suited to the experiments of all the three observers, set down a fourth rule, by taking a mean of the rules of the two latter observers. I shall now set down the same in common language, in order to render the calculation more generally practicable.

Take the difference of the tabular logarithms of the observed heights of the barometer at the two stations, considering the four first figures, exclusive of the index, as whole numbers, and the remaining figures

figures to the right as decimals, and ſubtract or add $\frac{454}{1000}$th of the difference of altitude of Fahrenheit's thermometer attached to the barometer at the two ſtations, according as it was higheſt at the lower or upper ſtation; thus you will have the height of the upper ſtation above the lower in Engliſh fathoms, nearly; to be corrected as follows: Multiply the height found nearly by the difference between the mean of the two altitudes of Fahrenheit's thermometer expoſed to the air at the two ſtations and 32°, and by the decimal fraction 0,00244; the product will be the correction of the approximate height, which added to or ſubtracted from the ſame, according as the mean of the two altitudes of Fahrenheit's thermometer expoſed to the air was higher or lower than 32°, will give the true height of the upper ſtation above the lower in Engliſh fathoms; which multiplied by ſix, will give the true height in Engliſh feet.

XIII. The right aſcenſion and declination of a celeſtial object, together with the obliquity of the ecliptic, being given, to find its longitude and latitude?

Put L. t, decl. + 10 — L. s, ☋ = L. t, A; N. North or S. South, as declination is. Call O the obliquity of the ecliptic in ſix firſt ſigns of ☋, S. or South; and in laſt ſix ſigns N. North. A + O, found according to their ſigns, as in algebra, = B.

A $\left\{\begin{array}{l}\text{Extr. co-ar. L. c, A + L. c, B + L. t, ☋ — 10 - -}\\ \text{Mean L. t, A + co-ar. L. s, A + L. c, B + L. t, ☋ — 20}\end{array}\right\}$ = L. t, long. of the ſame kind as ☋, unleſs B be more than 90°, in which caſe the quantity found of the ſame kind as ☋ ſubtracted from 12 ſigns will give the longitude. Otherwiſe, long. will be of the ſame kind, or in the ſame quadrant of the circle as ☋ is, unleſs B exceeds 90°, which can only happen when ☋ is in 2d ſemi-circle. Then, if ☋ be in 3d quadrant, or from 6ˢ to 9ˢ, longitude will be in 2d quadrant, or from 3ˢ to 6ˢ, and the operation will give L. cot. exceſs of long. above 3ˢ. Or if ☋ be in 4th quadrant, or from 9ˢ to 12ˢ, longitude will be in 1ſt quadrant; and the operation will give L. t, long. under 3ˢ, or in 1ſt quadrant.

Long. $\left\{\begin{array}{l}\text{Mean L. s, long. + L. t, B — 10}\\ \text{Extr. L. t, long. + L. c, long. + L. t, B — 20}\end{array}\right\}$ = L. t, lat. of ſame name as B.

XIV. The longitude and latitude of a celeſtial object, with the obliquity of the ecliptic, being given, to find its right aſcenſion and declination?

Put L. t, lat. + 10 — L. s, long. = L. t, A; N or S as latitude is. Call O the obliquity of the ecliptic, in firſt 6ˢ of long. N. and in laſt 6ˢ, S. A + O, found according to their ſigns or names, as in algebra, = B.

A $\left\{\begin{array}{l}\text{Extr. co-ar. L. c, A + L. c, B + L. t, Long. — 10. - - -}\\ \text{Mean L. t, A + co-ar. L. s, A + L. c, B + L. t, Long. — 20}\end{array}\right\}$ = L. t, ☋, of ſame kind as long. unleſs B be more than 90°, in which caſe the quantity found of ſame kind as long. ſubtracted from 12ˢ will give ☋.——Otherwiſe, ☋ will be of the ſame kind, or in the ſame quadrant of the circle as the long. is, unleſs

unlefs B exceeds 90°, which can only happen when long. is in 1ft femi-circle. Then if long. be in 1ft quadrant, Æ will be in 4th quadrant; and the operation will give log. cot, excefs of Æ above 9°. Or if long. be in 2d quadrant, Æ will be in 3d quadrant, and the operation will give L. t, excefs of Æ above 6°.

Æ { Mean L. s, Æ + L. t, B — 10 - - - - / Extr. L. t, Æ + L. c, Æ + L. t, B — 20 } = L. t, declin. of fame name as B.

N. B. The longitude and latitude of a planet or zodiacal ftar found by Problem XIII. and its right afcenfion and declination found by Problem XIV. will be true to a fecond or a very little more in all cafes, by only taking out the logarithms for the neareft fecond, and the neareft fecond anfwering to the logarithms, without proportioning for the differences of the logarithms, or for odd parts of a fecond; and although the error in a ftar's computed longitude or right afcenfion may be augmented to many feconds, if the latitude or declination be confiderable, yet as this error is meafured upon the ftar's parallel of latitude or parallel of declination, which grows fmaller and fmaller as the latitude or declination increafes, the real error of the computed place of the ftar upon the furface of the fphere will not be greater in this cafe than the other, that is not above a fecond or a little more. Now as the right afcenfion and declination of a ftar or planet given by the beft inftruments, and by the moft accurate obfervations, namely thofe on the meridian, cannot be depended upon nearer than five feconds, and oftentimes not nearer than twice that quantity, it may feem fuperfluous to pufh the calculations to a greater exactnefs than this of a fecond or a fecond and half, which may be attained by this eafy and compendious method of taking out the figures by fight from thefe Tables of Logarithmic Sines and Tangents to every Second of the quadrant, which will much abridge the labor of a very important part of aftronomical calculation, and thereby excite Aftronomers to diligence as well in making as reducing their obfervations. See the principles of this compendious practice explained page 51 and 52 of thefe Precepts.

XV. The moon's obferved diftance from a ftar or the fun, with the altitudes of both, and the moon's horizontal parallax being given, to find their correct diftance cleared of refraction and parallax?

1ft. To the log-fine of the moon's horizontal parallax add the log-cofine of the moon's apparent altitude, ufing five decimal places of the logarithms; the fum, abating 10 from the index, is the log-fine of the moon's parallax in altitude, from which fubtract the moon's refraction taken with the moon's apparent altitude out of Table I. (Requifite Tables) and you will have the correction of the moon's altitude. Add this to the moon's apparent altitude, and you will have the moon's true altitude.——Alfo with the ftar's apparent altitude take the ftar's refraction out of Table I. which fubtract from the ftar's apparent altitude, and you will have the ftar's true altitude. But if the moon's diftance was obferved from the fun, with the fun's apparent altitude take the refraction out of Table I. and his parallax out of Table III.

III. and take the difference, and ſubtract it from the ſun's apparent altitude, and you will have the ſun's true altitude. Take the difference of the true altitudes of the moon and ſtar, or moon and ſun, and the difference of their apparent altitudes.

2dly. Take half the ſum and half the difference of the apparent diſtance and difference of the apparent altitudes.

3dly. To the log-ſines of the above half ſum and half difference add the log-coſines of the true altitudes, and the arithmetical complements of the log-coſines of the apparent altitudes; and take half the ſum.

4thly. From this half ſum take the log-ſine of half the difference of the true altitudes, and look for the remainder among the tangents, and take out the correſponding log-coſine, without taking out the arc, which is unneceſſary.

5thly. Subtract the ſaid log-coſine from the log-ſine of half the difference of the true altitudes increaſed by 10 in the index; the remainder will be the log-ſine of half the true diſtance.

EXAMPLE I.

Suppose the apparent altitude of the star to be 24° 48′, that of the moon's centre 12° 30′, and the apparent distance of the star from the moon's centre 51° 28′ 35″, and the moon's horizontal parallax 56′ 15″. Required the true distance of the star from the moon's centre, cleared of refraction and parallax?

☽'s apparent altitude	12° 30′ 0″	Log-cosine	9.98958
☽'s horizontal parallax	56. 15	Log-sine	8.21383
☽'s parallax in altitude	54. 55	Log-sine	8.20341
☽'s refraction from Requisite Tables I.	— 4. 13		
Correction of ☽'s altitude	+ 50. 42		
☽'s apparent altitude	12. 30. 0		
☽'s true altitude	13. 29. 42		
✱'s apparent altitude	24. 48. 0		
Refraction from Table I.	— 2. 3		
✱'s true altitude	24. 45. 57		
☽'s true altitude	13. 20. 42		
Difference of true altitudes of ☽ and ✱	11. 25. 15		
✱'s apparent altitude	24. 48. 0		
☽'s apparent altitude	12. 30. 0		
Difference of apparent altitudes of ☽ and ✱	12. 18. 0		
Apparent distance	51. 28. 35		
Sum	63. 46. 35		
Difference	39. 10. 35		
Half sum	31. 53. 17	Log-sine	9.7228488
Half difference	19. 35. 17	Log-sine	9.5253755
☽'s apparent altitude	12. 30. 0	Co-ar. log-cosine	0.0104185
☽'s true altitude	13. 20. 42	Log-cosine	9.9881119
✱'s apparent altitude	24. 48. 0	Co-ar. log-cosine	0.0420206
✱'s true altitude	24. 45. 57	Log-cosine	9.9580990
			2)39.2468743
			19.6234371
Half difference of true altitudes	5. 42. 37½	Log-sine	8.9978159
		Log-tangent of an arc	10.6256212
		Correspondent log-cosine	9.3625337
Half true distance	25. 34. 54½	Log-sine	9.6352822
	2		
True distance	51. 9. 49		

EXAMPLE

EXAMPLE II.

Let the apparent altitude of the moon's centre be 5° 17′, that of the ſun 84° 7′, and their apparent diſtance 90° 21′ 13″, and the moon's horizontal parallax 61′ 48″; required the true diſtance of the ſun and moon?

☽'s horizontal parallax	1° 1′ 1.48″	Log-ſine	8.25469
☽'s apparent altitude	5. 17. 0	Log-coſine	+9.99815
☽'s parallax in altitude	1. 1. 32	Log-ſine	8.25284
☽'s refraction from Table I.	— 9. 28		
Correction of ☽'s altitude	+ 52. 4		
☽'s apparent altitude	5. 17. 0		
☽'s true altitude	6. 9. 4		
☉'s apparent altitude	84. 7. 0		
Difference of refraction and parallax	— 0. 5		
☉'s true altitude	84. 6. 55		
☽'s true altitude	6. 9. 4		
Difference of true altitudes of ☉ and ☽	77. 57. 51		
☉'s apparent altitude	84. 7		
☽'s apparent altitude	5. 17		
Difference of apparent altitudes of ☉ and ☽	78. 50		
Apparent diſtance	90. 21. 13		
Sum	169. 11. 13		
Difference	11. 31. 13		
Half ſum	84. 35. 36	Log-ſine	9.9980635
Half difference	5. 45. 36	Log-ſine	9.0015681
☽'s apparent altitude	5. 17. 0	Co-ar. log-coſine	0.0018490
☽'s true altitude	6. 9. 4	Log-coſine	9.9974924
☉'s apparent altitude	84. 7. 0	Co-ar. log-coſine	0.9892626
☉'s true altitude	84. 6. 55	Log-coſine	9.0108395
			2)38.9990751
			19.4995375
Half difference of true altitudes of ☉ and ☽	38. 58. 55	Log-ſine	9.7987027
		Log-tangent of an arc	9.7008348
		Correſponding log-coſine	9.9511707
Half true diſtance	44. 44. 36½	Log-ſine	9.8475320
	2		
True diſtance	89. 29. 13		

ERRATA in this Explanation and Uſe of the Logarithmic Tables.

Page 4 line 2 *for* borrowing *read* adding.
Page 4 line 5 *for* borrowed *read* added.
Page 40 line 4 } *for* let AC be > AB *read* let AC be > BC.
Page 47 line 4 }
Page 40 line 3 from bottom, *for* the firſt B, *read* BC.

E R R A T A

Of the LOGARITHMIC TABLES, which affect only Part of the Impreſſion of the Sheet; and have been corrected by the Printer ſince the Impreſſion, except any may have eſcaped Correction through Inadvertence.

LOGARITHMS OF NUMBERS.

Signature.		
E	No. 31340—90 in the logarithm corrected with the pen.	

LOGARITHMIC SINES, &c.

		°	′	″	
A	Sine and tangent of	0	0	0	*inſert* infinite negative.
T	Co-ſine of	7	8	2	*for* 0249 *read* 6249 } in about 100 copies.
—	Co-ſine of	7	8	3	*for* 0246 *read* 6246 }
X	Sine of	81	30	5	*read* 81° 30′ 3″ in about 120 copies.
D d	Co-ſine of	11	7	34	*for* 7697 *read* 7597
—	Co-ſine of	11	12	39	*for* 6330 *read* 6329
E e	Co-ſine of	11	35	10	*for* 9991.9594 *read* 9991.0594 in about one quire.
—	Tangent of	11	44	13	*for* 5674 *read* 5673 } doubtful whether a few copies are erroneous or not.
—	Co-tangent of	11	44	13	*for* 4326 *read* 4327 }
K k	Tangent of	14	10		A rule under 10′ at top of page, in one ſheet.
O o	Tangent of	16	0	3	*for* 7″ *read* 3″
P p	Co-tangent of	16	24	34	*for* 9220 *read* 9219 } in about half of the impreſſion.
—	Co-tangent of	16	24	59	*for* 7276 *read* 7277 }
Q q	Tangent of	16	49	0	*for* $\frac{9.}{48}$ *read* $\frac{9.}{480}$ in about 5 quires.
—	Co-ſine of	17	19	4	*for* 8126 *read* 8526 in 10 or 11 quires.
—	Co-tangent of	17	13	50	*for* 4471 *read* 4475 } only in one copy.
—	Co-tangent of	17	13	51	*for* 4405 *read* 4401 }
S s	Tangent of	18	20	0	*for* 6361 *read* 6351.
—	Sine of	18	27		*for* $\frac{9.}{50}$ *read* $\frac{9.}{500}$
Y y	Sine of	20	15	48	*for* 4968 *read* 4969 in 18 impreſſions.
Z z	Sine of	69	29		*read* 69 29 in about 25 impreſſions.
B b b	Co-tangent of	21	39	18	*for* 1770 *read* 1670. } in about 107 impreſſions.
—	Co-tangent of	21	39	49	*for* 9867 *read* 9767.
—	Co-tangent of	21	44	1	*for* 3322 *read* 4322.
—	Tangent of	21	39	49	*for* 0133 *read* 0233.
D d d	Sine of	67	29		*read* 67° 29′
F f f	Errors of ſignature, in 2 copies.				
—	4th page, *for* ſine *read* coſine and *for* coſine *read* ſine, in 3 copies.				
G g g	Tangent of	24	10	25	*for* 1152 *read* 1151
I i i	Co-ſine of	25	5	10	*for* 9708 *read* 9707 in nine copies.
R r r	Tangent of	28	46	59	*for* 8546 *read* 8646 } in about ½d of impreſſion.
—	Sine of	29	3	19	*for* 3262 *read* 3263 }
T t t	Tangent of	29	49	17	*for* 3070 *read* 3071 } in 20 copies.
—	Tangent of	29	52	18	*for* 1901 *read* 1900 }
—	Tangent of	30	13	38	*for* 4079 *read* 4078 } in 47 copies.
—	Co-tangent of	30	13	38	*for* 5921 *read* 5922 }
Z z z	The ſignature wanting in about half the impreſſion.				
—	Co-tangent of	32	1	51	*for* 6929 *read* 6909 in 3 or 4 copies.
—	Co-tangent of	32	59		Top of column for 178 *read* 187 in one copy.
4 *M*	Sine of	38	15	17	*for* 7020 *read* 8020 in about ½d of impreſſion.

A

TABLE

OF THE

LOGARITHMS

OF

NUMBERS.

C H I L I A D I.

N	Logar.	N.	Logar.	N.	Logar.	N.	Logar.	N.	Logar.	N.	Logar.	N.	Logar.	N.	Logar.	N.	Logar.
1	00000000	71	85 125835	141	14 921911	211	32 428246	281	44 870632	351	54 530712	421	62 428210	491	69 108149	561	74 896286
2	30103000	72	733250	142	15 228834	212	633586	282	45 024911	352	654266	422	531245	492	196510	562	973632
3	47712125	73	86 332286	143	533604	213	837960	283	178644	353	777471	423	634037	493	284692	563	75 050839
4	60205999	74	923172	144	836249	214	33 041377	284	331834	354	900326	424	736586	494	372695	564	127910
5	69897000	75	87 506126	145	16 136800	215	243846	285	484486	355	55 022835	425	838893	495	460520	565	204845
6	77815125	76	88 081359	146	435286	216	445375	286	636603	356	145000	426	940960	496	548168	566	281643
7	84509804	77	649073	147	731733	217	645973	287	788190	357	266822	427	63 042788	497	635639	567	358306
8	90308999	78	89 209460	148	17 026172	218	845649	288	939249	358	388303	428	144377	498	722934	568	434834
9	95424251	79	762709	149	318627	219	34 044411	289	46 089784	359	509445	429	245729	499	810055	569	511227
10	00000000	80	90 308999	150	609126	220	242268	290	239800	360	630250	430	346846	500	897000	570	587486
11	04139269	81	848502	151	897695	221	439227	291	389299	361	750720	431	447727	501	983773	571	663611
12	07918125	82	91 381385	152	18 184359	222	635297	292	538285	362	870857	432	548375	502	70 070372	572	739603
13	11394335	83	907809	153	469143	223	830486	293	686762	363	990663	433	648790	503	156799	573	815462
14	14612804	84	92 427929	154	752072	224	35 024802	294	834733	364	56 110138	434	748973	504	243054	574	891189
15	17609126	85	941893	155	19 033170	225	218252	295	982202	365	229286	435	848926	505	329138	575	966784
16	20411998	86	93 449845	156	312460	226	410844	296	47 129171	366	348109	436	948649	506	415052	576	76 042248
17	23044892	87	951925	157	589965	227	602586	297	275645	367	466606	437	64 048144	507	500796	577	117581
18	25527251	88	94 448267	158	865709	228	793485	298	421626	368	584782	438	147411	508	586371	578	192784
19	27875360	89	939001	159	20 139712	229	983548	299	567119	369	702637	439	246452	509	671778	579	267856
20	30103000	90	95 424251	160	411998	230	36 172784	300	712125	370	820172	440	345268	510	757018	580	342799
21	32221929	91	904139	161	682588	231	361198	301	856650	371	937391	441	443859	511	842090	581	417613
22	34242268	92	96 378783	162	951501	232	548798	302	48 000694	372	57 054294	442	542227	512	926996	582	492298
23	36172784	93	848295	163	21 218760	233	735592	303	144263	373	170883	443	640373	513	71 011737	583	566855
24	38021124	94	97 312785	164	484385	234	921586	304	287358	374	287160	444	738297	514	096312	584	641285
25	39794001	95	772361	165	748394	235	37 106786	305	429984	375	403127	445	836001	515	180723	585	715587
26	41497335	96	98 227123	166	22 010809	236	291200	306	572143	376	518784	446	933486	516	264970	586	789762
27	43136376	97	677173	167	271647	237	474835	307	713838	377	634135	447	65 030752	517	349054	587	863810
28	44715803	98	99 122608	168	539928	238	657696	308	855072	378	749180	448	127801	518	432976	588	937733
29	46239800	99	563519	169	788670	239	839790	309	995848	379	863921	449	224634	519	516736	589	77 011529
30	47712125	100	00 000000	170	23 044892	240	38 021124	310	49 136169	380	978360	450	321251	520	600334	590	085201
31	49136169	101	432137	171	299611	241	201704	311	276039	381	58 092498	451	417654	521	683772	591	158748
32	50514998	102	860017	172	552845	242	381537	312	415459	382	206336	452	513843	522	767050	592	232171
33	51851394	103	01 283722	173	804610	243	560627	313	554434	383	319877	453	609820	523	850169	593	305469
34	53147892	104	703334	174	24 054925	244	738983	314	692965	384	433122	454	705585	524	933129	594	378644
35	54406804	105	02 118930	175	303805	245	916608	315	831055	385	546073	455	801140	525	72 015930	595	451697
36	55630250	106	530587	176	551267	246	39 093511	316	968708	386	658730	456	896484	526	098574	596	524626
37	56820172	107	938378	177	797327	247	269695	317	50 105926	387	771097	457	991620	527	181062	597	597433
38	57978360	108	03 342376	178	25 042000	248	445168	318	242712	388	883173	458	66 086548	528	263392	598	670118
39	59106461	109	742650	179	285303	249	619935	319	379068	389	994960	459	181269	529	345567	599	742682
40	60205999	110	04 139269	180	527251	250	794001	320	514998	390	59 106461	460	275783	530	427587	600	815125
41	61278386	111	532298	181	767857	251	967372	321	650503	391	217676	461	370093	531	509452	601	887447
42	62324929	112	921802	182	26 007139	252	40 140054	322	785587	392	328607	462	464198	532	591163	602	959649
43	63346846	113	05 307844	183	245109	253	312052	323	920252	393	439255	463	558099	533	672721	603	78 031731
44	64345268	114	690485	184	481782	254	483372	324	51 054501	394	549622	464	651798	534	754126	604	103694
45	65321251	115	06 069784	185	717173	255	654018	325	188336	395	659710	465	745295	535	835378	605	175537
46	66275783	116	445799	186	951294	256	823997	326	321760	396	769519	466	838592	536	916479	606	247262
47	67209786	117	818586	187	27 184161	257	993312	327	454775	397	879051	467	931688	537	997429	607	318869
48	68124124	118	07 188201	188	415785	258	41 161971	328	587384	398	988307	468	67 024585	538	73 078228	608	390358
49	69019608	119	554696	189	646180	259	329976	329	719590	399	60 097290	469	117284	539	158877	609	461729
50	69897000	120	918125	190	875360	260	497335	330	851394	400	205999	470	209786	540	239376	610	532984
51	70757018	121	08 278537	191	28 103337	261	664051	331	982799	401	314437	471	302091	541	319727	611	604121
52	71600334	122	635983	192	330123	262	830129	332	52 113808	402	422605	472	394200	542	399929	612	675142
53	72427587	123	990511	193	555731	263	995575	333	244423	403	530505	473	486114	543	479983	613	746047
54	73239376	124	09 342169	194	780173	264	42 160393	334	374647	404	638137	474	577834	544	559890	614	816837
55	74036269	125	691001	195	29 003461	265	324587	335	504481	405	745502	475	669361	545	639650	615	887512
56	74818803	126	10 037055	196	225607	266	488164	336	633928	406	852603	476	760695	546	719264	616	958071
57	75587486	127	380372	197	446623	267	651126	337	762990	407	959441	477	851838	547	798733	617	79 028516
58	76342799	128	720997	198	666519	268	813479	338	891670	408	61 066016	478	942790	548	878056	618	098848
59	77085201	129	11 058971	199	885308	269	975228	339	53 019970	409	172331	479	68 033551	549	957234	619	169065
60	77815125	130	394335	200	30 103000	270	43 136376	340	147892	410	278386	480	124124	550	74 036269	620	239169
61	78532984	131	727130	201	319606	271	296929	341	275438	411	384182	481	214508	551	115160	621	309160
62	79239169	132	12 057393	202	535137	272	456890	342	402611	412	489722	482	304704	552	193908	622	379038
63	79934055	133	385164	203	749604	273	616265	343	529412	413	595005	483	394713	553	272513	623	448805
64	80617997	134	710480	204	963017	274	775056	344	655844	414	700034	484	484536	554	350976	624	518459
65	81291336	135	13 033377	205	31 175386	275	933269	345	781910	415	804810	485	574174	555	429298	625	588002
66	81954394	436	353891	206	386722	276	44 090908	346	907610	416	909333	486	663627	556	507479	626	657433
67	82607480	137	672057	207	597035	277	247977	347	54 032947	417	62 013605	487	752896	557	585520	627	726754
68	83250891	138	987909	208	806333	278	404480	348	157924	418	117628	488	841982	558	663420	628	795964
69	83884909	139	14 301480	209	32 014629	279	560420	349	282543	419	221402	489	930886	559	741181	629	865065
70	84509804	140	612804	210	221929	280	715803	350	406804	420	324929	490	69 019608	560	818803	630	934055

N.	Logar.	N.	Logar.	N.	Logar.	N.	Logar.	N.	Logar.	N.	Logar.	N.	Logar.	N.	Logar.	N.	Logar.
631	800 02936	701	845 71802	771	887 05438	841	924 79600	911	959 51838	981	991 66901	1051	021 60272	1121	049 60561	1191	075 91176
632	71708	702	846 33711	772	61730	842	925 31209	912	99484	982	992 11149	1052	022 01574	1122	99286	1192	076 27626
633	801 40371	703	95533	773	888 17949	843	82757	913	960 47078	983	55352	1053	42837	1123	050 37976	1193	64044
634	802 08926	704	847 57266	774	74096	844	926 34245	914	94620	984	99510	1054	84061	1124	76631	1194	077 00433
635	77373	705	848 18912	775	889 30170	845	85671	915	961 42109	985	993 43623	1055	023 25246	1125	051 15252	1195	36791
636	803 45712	706	80470	776	86172	846	927 37036	916	89547	986	87691	1056	66392	1126	53839	1196	73118
637	804 13943	707	849 41941	777	890 42102	847	88341	917	962 36934	987	994 31715	1057	024 07499	1127	92392	1197	078 09415
638	82068	708	850 03326	778	97960	848	928 39585	918	84268	988	75694	1058	48567	1128	052 30910	1198	45682
639	805 50086	709	64624	779	891 53746	849	90769	919	963 31551	989	995 19629	1059	89596	1129	69394	1199	81918
640	806 17997	710	851 25835	780	892 09460	850	929 41893	920	78783	990	63519	1060	025 30587	1130	053 07844	1200	079 18125
641	85803	711	86960	781	65103	851	92956	921	964 25963	991	996 07365	1061	71538	1131	46260	1201	54301
642	807 53503	712	852 47999	782	893 20675	852	930 43959	922	73092	992	51167	1062	026 12452	1132	84643	1202	90447
643	808 21097	713	853 08953	783	76176	853	94903	923	965 20170	993	94925	1063	53326	1133	054 22991	1203	080 26563
644	88587	714	69821	784	894 31606	854	931 45787	924	67197	994	997 38638	1064	94163	1134	61305	1204	62649
645	809 55971	715	854 30604	785	86966	855	96611	925	966 14173	995	82308	1065	027 34961	1135	99586	1205	98705
646	810 23252	716	91302	786	895 42255	856	932 47376	926	61099	996	998 25934	1066	75720	1136	055 37833	1206	081 34731
647	90428	717	855 51916	787	97473	857	98082	927	967 07973	997	69516	1067	028 16442	1137	76046	1207	70727
648	811 57501	718	856 12444	788	896 52622	858	933 48729	928	54798	998	999 13054	1068	57125	1138	056 14226	1208	082 06693
649	812 24470	719	72889	789	897 07700	859	99316	929	968 01571	999	56549	1069	97771	1139	52372	1209	42630
650	91336	720	857 33250	790	62709	860	934 49845	930	48295	1000	000 00000	1070	029 38378	1140	90485	1210	78537
651	813 58099	721	93526	791	898 17648	861	935 00315	931	94968	1001	43408	1071	78947	1141	057 28564	1211	083 14414
652	814 24760	722	858 53720	792	72518	862	50727	932	969 41591	1002	86772	1072	030 19479	1142	66610	1212	50262
653	91318	723	859 13830	793	899 27319	863	936 01080	933	88164	1003	001 30093	1073	59972	1143	058 04623	1213	86080
654	815 57775	724	73857	794	82050	864	51374	934	970 34688	1004	73371	1074	031 00428	1144	42602	1214	084 21869
655	816 24130	725	860 33801	795	900 36713	865	937 01611	935	81161	1005	002 16606	1075	40846	1145	80549	1215	57628
656	90384	726	93662	796	91307	866	51789	936	971 27585	1006	59798	1076	81227	1146	059 18462	1216	93357
657	817 56537	727	861 53441	797	901 45832	867	938 01910	937	73959	1007	003 02947	1077	032 21570	1147	56342	1217	085 29058
658	818 22589	728	862 13138	798	902 00289	868	51973	938	972 20284	1008	46053	1078	61876	1148	94189	1218	64729
659	88541	729	72753	799	54678	869	939 01978	939	66559	1009	89117	1079	033 02144	1149	060 32003	1219	086 00371
660	819 54394	730	863 32286	800	903 08999	870	51925	940	973 12785	1010	004 32137	1080	42376	1150	69784	1220	35983
661	820 20146	731	91738	801	63252	871	940 01816	941	58962	1011	75116	1081	82569	1151	061 07532	1221	71566
662	85799	732	864 51108	802	904 17437	872	51648	942	974 05090	1012	005 18051	1082	034 22726	1152	45248	1222	087 07121
663	821 51353	733	865 10397	803	71555	873	941 01424	943	51169	1013	60945	1083	62846	1153	82931	1223	42646
664	822 16808	734	69606	804	905 25605	874	51143	944	97199	1014	006 03795	1084	035 02928	1154	062 20581	1224	78142
665	82165	735	866 28734	805	79588	875	942 00805	945	975 43181	1015	46604	1085	42974	1155	58198	1225	088 13609
666	823 47423	736	87781	806	906 33504	876	50411	946	89114	1016	89371	1086	82983	1156	95783	1226	49047
667	824 12583	737	867 46749	807	87353	877	99959	947	976 34998	1017	007 32095	1087	036 22954	1157	063 33336	1227	84456
668	77646	738	868 05636	808	907 41136	878	943 49452	948	80834	1018	74778	1088	62890	1158	70856	1228	089 19837
669	825 42612	739	64444	809	94852	879	98888	949	977 26621	1019	008 17418	1089	037 02788	1159	064 08344	1229	55188
670	826 07480	740	869 23172	810	908 48502	880	944 48267	950	72361	1020	60017	1090	42650	1160	45799	1230	90511
671	72252	741	81821	811	909 02085	881	97591	951	978 18052	1021	009 02574	1091	82475	1161	83222	1231	090 25805
672	827 36927	742	870 40391	812	55603	882	945 46859	952	63695	1022	45090	1092	038 22264	1162	065 20613	1232	61071
673	828 01506	743	98881	813	910 09055	883	96070	953	979 09290	1023	87563	1093	62016	1163	57971	1233	96308
674	65990	744	871 57294	814	62440	884	946 45227	954	54837	1024	010 29996	1094	039 01732	1164	95298	1234	091 31516
675	829 30377	745	872 15627	815	911 15761	885	94327	955	980 00337	1025	72387	1095	41412	1165	066 32593	1235	66696
676	94670	746	73883	816	69016	886	947 43372	956	45789	1026	011 14736	1096	81055	1166	69855	1236	092 01847
677	830 58867	747	873 32060	817	912 22206	887	92362	957	91194	1027	57044	1097	040 20663	1167	067 07086	1237	36970
678	831 22969	748	90160	818	75330	888	948 41297	958	981 36551	1028	99311	1098	60234	1168	44284	1238	72064
679	86977	749	874 48182	819	913 28390	889	90176	959	81861	1029	012 41537	1099	99769	1169	81451	1239	093 07131
680	832 50891	750	875 06126	820	81385	890	949 39001	960	982 27123	1030	83722	1100	041 39269	1170	068 18586	1240	42169
681	833 14711	751	63994	821	914 34316	891	87770	961	72339	1031	013 25867	1101	78732	1171	55690	1241	77178
682	78437	752	876 21784	822	87182	892	950 36485	962	983 17507	1032	67970	1102	042 18159	1172	92761	1242	094 12160
683	834 42070	753	79498	823	915 39984	893	85146	963	62629	1033	014 10032	1103	57551	1173	069 29801	1243	47113
684	835 05610	754	877 37135	824	92721	894	951 33752	964	984 07703	1034	52054	1104	96907	1174	66810	1244	82038
685	69057	755	94695	825	916 45395	895	82304	965	52731	1035	94035	1105	043 36228	1175	070 03787	1245	095 16935
686	836 32412	756	878 52180	826	98005	896	952 30801	966	97713	1036	015 35976	1106	75513	1176	40732	1246	51804
687	95674	757	879 09588	827	917 50551	897	79244	967	985 42647	1037	77876	1107	044 14762	1177	77046	1247	86645
688	837 58844	758	66921	828	918 03034	898	953 27634	968	87536	1038	016 19735	1108	53976	1178	071 14529	1248	096 21459
689	838 21922	759	880 24178	829	55453	899	75969	969	986 32378	1039	61555	1109	93155	1179	51381	1249	56244
690	84909	760	81359	830	919 07809	900	954 24251	970	77173	1040	017 03334	1110	045 32298	1180	88201	1250	91001
691	839 47805	761	881 38466	831	60102	901	72479	971	987 21923	1041	45073	1111	71406	1181	072 24990	1251	097 25731
692	840 10609	762	95497	832	920 12333	902	955 20654	972	66626	1042	86772	1112	046 10479	1182	61748	1252	60433
693	73323	763	882 52454	833	64500	903	68775	973	988 11284	1043	018 28431	1113	49516	1183	98474	1253	95107
694	841 35947	764	883 09336	834	921 16605	904	956 16843	974	55896	1044	70050	1114	88519	1184	073 35170	1254	098 29754
695	98480	765	66144	835	68648	905	64858	975	989 00462	1045	019 11629	1115	047 27487	1185	71835	1255	64373
696	842 60924	766	884 22877	836	922 20628	906	957 12820	976	44982	1046	53168	1116	66419	1186	074 08469	1256	98964
697	843 23278	767	79536	837	72546	907	60729	977	89456	1047	94668	1117	048 05317	1187	45072	1257	099 33528
698	85542	768	885 36122	838	923 24402	908	958 08585	978	990 33885	1048	020 36128	1118	44180	1188	81644	1258	68064
699	844 47718	769	92634	839	76196	909	56388	979	78269	1049	77549	1119	83009	1189	075 18185	1259	100 02573
700	845 09804	770	886 49073	840	924 27929	910	959 04139	980	991 22608	1050	021 18930	1120	049 21802	1190	54696	1260	37055

Number 10000 *to* 10699
Logarithm 000 0000 *to* 029 3432

N.	0	1	2	3	4	5	6	7	8	9	Dif. & Pro. Parts				
1000	000 0000	0434	0869	1303	1737	2171	2605	3039	3473	3907		435	434	433	432
01	4341	4775	5208	5642	6076	6510	6943	7377	7810	8244	1	44	43	43	43
02	8677	9111	9544	9977	0411	0844	1277	1710	2143	2576	2	87	87	87	86
03	001 3009	3442	3875	4308	4741	5174	5607	6039	6472	6905	3	131	130	130	130
04	7337	7770	8202	8635	9067	9499	9932	0364	0796	1228	4	174	174	173	173
1005	002 1661	2093	2525	2957	3389	3821	4253	4685	5116	5548	5	218	217	217	216
06	5980	6411	6843	7275	7706	8138	8569	9001	9432	9863	6	261	260	260	259
07	003 0295	0726	1157	1588	2019	2451	2882	3313	3744	4174	7	305	304	303	302
08	4605	5036	5467	5898	6328	6759	7190	7620	8051	8481	8	348	347	346	346
09	8912	9342	9772	0203	0633	1063	1493	1924	2354	2784	9	392	391	390	389
1010	004 3214	3644	4074	4504	4933	5363	5793	6223	6652	7082		431	430	429	428
11	7512	7941	8371	8800	9229	9659	0088	0517	0947	1376	1	43	43	43	43
12	005 1805	2234	2663	3092	3521	3950	4379	4808	5237	5666	2	86	86	86	86
13	6094	6523	6952	7380	7809	8238	8666	9094	9523	9951	3	129	129	129	128
14	006 0380	0808	1236	1664	2092	2521	2949	3377	3805	4233	4	172	172	172	171
1015	4660	5088	5516	5944	6372	6799	7227	7655	8082	8510	5	216	215	215	214
16	8937	9365	9792	0219	0647	1074	1501	1928	2355	2782	6	259	258	257	257
17	007 3210	3637	4064	4490	4917	5344	5771	6198	6624	7051	7	302	301	300	300
18	7478	7904	8331	8757	9184	9610	0037	0463	0889	1316	8	345	344	343	342
19	008 1742	2168	2594	3020	3446	3872	4298	4724	5150	5576	9	388	387	386	385
1020	6002	6427	6853	7279	7704	8130	8556	8981	9407	9832		427	426	425	424
21	009 0257	0683	1108	1533	1959	2384	2809	3234	3659	4084	1	43	43	43	42
22	4509	4934	5359	5784	6208	6633	7058	7483	7907	8332	2	85	85	85	85
23	8756	9181	9605	0030	0454	0878	1303	1727	2151	2575	3	128	128	128	127
24	010 3000	3424	3848	4272	4696	5120	5544	5967	6391	6815	4	171	170	170	170
1025	7239	7662	8086	8510	8933	9357	9780	0204	0627	1050	5	214	213	213	212
26	011 1474	1897	2320	2743	3166	3590	4013	4436	4859	5282	6	256	256	255	254
27	5704	6127	6550	6973	7396	7818	8241	8664	9086	9509	7	299	298	298	297
28	9931	0354	0776	1198	1621	2043	2465	2887	3310	3732	8	342	341	340	339
29	012 4154	4576	4998	5420	5842	6264	6685	7107	7529	7951	9	384	383	383	382
1030	8372	8794	9215	9637	0059	0480	0901	1323	1744	2165		423	422	421	420
31	013 2587	3008	3429	3850	4271	4692	5113	5534	5955	6376	1	42	42	42	42
32	6797	7218	7639	8059	8480	8901	9321	9742	0162	0583	2	85	84	84	84
33	014 1003	1424	1844	2264	2685	3105	3525	3945	4365	4785	3	127	127	126	126
34	5205	5625	6045	6465	6885	7305	7725	8144	8564	8984	4	169	169	168	168
1035	9403	9823	0243	0662	1082	1501	1920	2340	2759	3178	5	212	211	211	210
36	015 3598	4017	4436	4855	5274	5693	6112	6531	6950	7369	6	254	253	253	252
37	7788	8206	8625	9044	9462	9881	0300	0718	1137	1555	7	296	295	295	294
38	016 1974	2392	2810	3229	3647	4065	4483	4901	5319	5737	8	338	338	337	336
39	6155	6573	6991	7409	7827	8245	8663	9080	9498	9916	9	381	380	379	378
1040	017 0333	0751	1168	1586	2003	2421	2838	3256	3673	4090		419	418	417	416
41	4507	4924	5342	5759	6176	6593	7010	7427	7844	8260	1	42	42	42	42
42	8677	9094	9511	9927	0344	0761	1177	1594	2010	2427	2	84	84	83	83
43	018 2843	3259	3676	4092	4508	4925	5341	5757	6173	6589	3	126	125	125	125
44	7005	7421	7837	8253	8669	9084	9500	9916	0332	0747	4	168	167	167	166
1045	019 1163	1578	1994	2410	2825	3240	3656	4071	4486	4902	5	210	209	209	208
46	5317	5732	6147	6562	6977	7392	7807	8222	8637	9052	6	251	251	250	250
47	9467	9882	0296	0711	1126	1540	1955	2369	2784	3198	7	293	293	292	291
48	020 3613	4027	4442	4856	5270	5684	6099	6513	6927	7341	8	335	334	334	333
49	7755	8169	8583	8997	9411	9824	0238	0652	1066	1479	9	377	376	375	374
1050	021 1893	2307	2720	3134	3547	3961	4374	4787	5201	5614		415	414	413	412
51	6027	6440	6854	7267	7680	8093	8506	8919	9332	9745	1	42	41	41	41
52	022 0157	0570	0983	1396	1808	2221	2634	3046	3459	3871	2	83	83	83	82
53	4284	4696	5109	5521	5933	6345	6758	7170	7582	7994	3	125	124	124	124
54	8406	8818	9230	9642	0054	0466	0878	1289	1701	2113	4	166	166	165	165
1055	023 2525	2936	3348	3759	4171	4582	4994	5405	5817	6228	5	208	207	207	206
56	6639	7050	7462	7873	8284	8695	9106	9517	9928	0339	6	249	248	248	247
57	024 0750	1161	1572	1982	2393	2804	3214	3625	4036	4446	7	291	290	289	288
58	4857	5267	5678	6088	6498	6909	7319	7729	8139	8549	8	332	331	330	330
59	8960	9370	9780	0190	0600	1010	1419	1829	2239	2649	9	374	373	372	371
1060	025 3059	3468	3878	4288	4697	5107	5516	5926	6335	6744		411	410	409	408
61	7154	7563	7972	8382	8791	9200	9609	0018	0427	0836	1	41	41	41	41
62	026 1245	1654	2063	2472	2881	3289	3698	4107	4515	4924	2	82	82	82	82
63	5333	5741	6150	6558	6967	7375	7783	8192	8600	9008	3	123	123	123	122
64	9416	9824	0233	0641	1049	1457	1865	2273	2680	3088	4	164	164	164	163
1065	027 3496	3904	4312	4719	5127	5535	5942	6350	6757	7165	5	206	205	205	204
66	7572	7979	8387	8794	9201	9609	0016	0423	0830	1237	6	247	246	245	245
67	028 1644	2051	2458	2865	3272	3679	4086	4492	4899	5306	7	288	287	286	286
68	5713	6119	6526	6932	7339	7745	8152	8558	8964	9371	8	329	328	327	326
69	9777	0183	0590	0996	1402	1808	2214	2620	3026	3432	9	370	369	368	367
N.	0	1	2	3	4	5	6	7	8	9	Dif. & Pro. Parts				

Number 10700 *to* 11399
Logarithm 029 3838 *to* 056 8668

N.	0	1	2	3	4	5	6	7	8	9	Dif. & Pro. Parts				
1070	029 3838	4244	4649	5055	5461	5867	6272	6678	7084	7489		407	406	405	404
71	7895	8300	8706	9111	9516	9922	0327	0732	1138	1543	1	41	41	41	40
72	030 1948	2353	2758	3163	3568	3973	4378	4783	5188	5592	2	81	81	81	81
73	5997	6402	6807	7211	7616	8020	8425	8830	9234	9638	3	122	122	122	121
74	031 0043	0447	0851	1256	1660	2064	2468	2872	3277	3681	4	163	162	162	162
1075	4085	4489	4893	5296	5700	6104	6508	6912	7315	7719	5	204	203	203	202
76	8123	8526	8930	9333	9737	0140	0544	0947	1350	1754	6	244	244	243	242
77	032 2157	2560	2963	3367	3770	4173	4576	4979	5382	5785	7	285	284	284	283
78	6188	6590	6993	7396	7799	8201	8604	9007	9409	9812	8	326	325	324	323
79	033 0214	0617	1019	1422	1824	2226	2629	3031	3433	3835	9	366	365	365	364
1080	4238	4640	5042	5444	5846	6248	6650	7052	7453	7855		403	402	401	400
81	8257	8659	9060	9462	9864	0265	0667	1068	1470	1871	1	40	40	40	40
82	034 2273	2674	3075	3477	3878	4279	4680	5081	5482	5884	2	81	80	80	80
83	6285	6686	7087	7487	7888	8289	8690	9091	9491	9892	3	121	121	120	120
84	035 0293	0693	1094	1495	1895	2296	2696	3096	3497	3897	4	161	161	160	160
1085	4297	4698	5098	5498	5898	6298	6698	7098	7498	7898	5	202	201	201	200
86	8298	8698	9098	9498	9898	0297	0697	1097	1496	1896	6	242	241	241	240
87	036 2295	2695	3094	3494	3893	4293	4692	5091	5491	5890	7	282	281	281	280
88	6289	6688	7087	7486	7885	8284	8683	9082	9481	9880	8	322	322	321	320
89	037 0279	0678	1076	1475	1874	2272	2671	3070	3468	3867	9	363	362	361	360
1090	4265	4663	5062	5460	5858	6257	6655	7053	7451	7849		399	398	397	396
91	8248	8646	9044	9442	9839	0237	0635	1033	1431	1829	1	40	40	40	40
92	038 2226	2624	3022	3419	3817	4214	4612	5009	5407	5804	2	80	80	79	79
93	6202	6599	6996	7393	7791	8188	8585	8982	9379	9776	3	120	119	119	119
94	039 0173	0570	0967	1364	1761	2158	2554	2951	3348	3745	4	160	159	159	158
1095	4141	4538	4934	5331	5727	6124	6520	6917	7313	7709	5	200	199	199	198
96	8106	8502	8898	9294	9690	0086	0482	0878	1274	1670	6	239	239	238	238
97	040 2066	2462	2858	3254	3650	4045	4441	4837	5232	5628	7	279	279	278	277
98	6023	6419	6814	7210	7605	8001	8396	8791	9187	9582	8	319	318	318	317
99	9977	0372	0767	1162	1557	1952	2347	2742	3137	3532	9	359	358	357	356
1100	041 3927	4322	4716	5111	5506	5900	6295	6690	7084	7479		395	394	393	392
01	7873	8268	8662	9056	9451	9845	0239	0633	1028	1422	1	40	39	39	39
02	042 1816	2210	2604	2998	3392	3786	4180	4574	4968	5361	2	79	79	79	78
03	5755	6149	6543	6936	7330	7723	8117	8510	8904	9297	3	119	118	118	118
04	9691	0084	0477	0871	1264	1657	2050	2444	2837	3230	4	158	158	157	157
1105	043 3623	4016	4409	4802	5195	5587	5980	6373	6766	7159	5	198	197	197	196
06	7551	7944	8337	8729	9122	9514	9907	0299	0692	1084	6	237	236	236	235
07	044 1476	1869	2261	2653	3045	3437	3829	4222	4614	5006	7	277	276	275	274
08	5398	5790	6181	6573	6965	7357	7749	8140	8532	8924	8	316	315	314	314
09	9315	9707	0099	0490	0882	1273	1664	2056	2447	2839	9	356	355	354	353
1110	045 3230	3621	4012	4403	4795	5186	5577	5968	6359	6750		391	390	389	388
11	7141	7531	7922	8313	8704	9095	9485	9876	0267	0657	1	39	39	39	39
12	046 1048	1438	1829	2219	2610	3000	3391	3781	4171	4561	2	78	78	78	78
13	4952	5342	5732	6122	6512	6902	7292	7682	8072	8462	3	117	117	117	116
14	8852	9242	9632	0021	0411	0801	1190	1580	1970	2359	4	156	156	156	155
1115	047 2749	3138	3528	3917	4306	4696	5085	5474	5864	6253	5	196	195	195	194
16	6642	7031	7420	7809	8198	8587	8976	9365	9754	0143	6	235	234	233	233
17	048 0532	0921	1309	1698	2087	2475	2864	3253	3641	4030	7	274	273	272	272
18	4418	4806	5195	5583	5972	6360	6748	7136	7525	7913	8	313	312	311	310
19	8301	8689	9077	9465	9853	0241	0629	1017	1405	1792	9	352	351	350	349
1120	049 2180	2568	2956	3343	3731	4119	4506	4894	5281	5669		387	386	385	384
21	6056	6444	6831	7218	7606	7993	8380	8767	9154	9541	1	39	39	39	38
22	9929	0316	0703	1090	1477	1863	2250	2637	3024	3411	2	77	77	77	77
23	050 3798	4184	4571	4958	5344	5731	6117	6504	6890	7277	3	116	116	116	115
24	7663	8049	8436	8822	9208	9595	9981	0367	0753	1139	4	155	154	154	154
1125	051 1525	1911	2297	2683	3069	3455	3841	4227	4612	4998	5	194	193	193	192
26	5384	5770	6155	6541	6926	7312	7697	8083	8468	8854	6	232	232	231	230
27	9239	9624	0010	0395	0780	1166	1551	1936	2321	2706	7	271	270	270	269
28	052 3091	3476	3861	4246	4631	5016	5400	5785	6170	6555	8	310	309	308	307
29	6939	7324	7709	8093	8478	8862	9247	9631	0016	0400	9	348	347	347	346
1130	053 0784	1169	1553	1937	2321	2706	3090	3474	3858	4242		383	382	381	
31	4626	5010	5394	5778	6162	6546	6929	7313	7697	8081	1	38	38	38	
32	8464	8848	9232	9615	9999	0382	0766	1149	1532	1916	2	77	76	76	
33	054 2299	2682	3066	3449	3832	4215	4598	4981	5365	5748	3	115	115	114	
34	6131	6514	6896	7279	7662	8045	8428	8811	9193	9576	4	153	153	152	
1135	9959	0341	0724	1106	1489	1871	2254	2636	3019	3401	5	192	191	191	
36	055 3783	4166	4548	4930	5312	5694	6077	6459	6841	7223	6	230	229	229	
37	7605	7987	8369	8750	9132	9514	9896	0278	0659	1041	7	268	267	267	
38	056 1423	1804	2186	2567	2949	3330	3712	4093	4475	4856	8	306	306	305	
39	5237	5619	6000	6381	6762	7143	7524	7905	8287	8668	9	345	344	343	
N.	0	1	2	3	4	5	6	7	8	9	Dif. & Pro. Parts				

Number 11400 *to* 12099
Logarithm 056 9049 *to* 082 7495

N.	0	1	2	3	4	5	6	7	8	9	Dif. & Pro. Parts				
1140	056 9049	9429	9810	0191	0572	0953	1334	1714	2095	2476		381	380	379	378
41	057 2856	3237	3618	3998	4379	4759	5140	5520	5900	6281	1	38	38	38	38
42	6661	7041	7422	7802	8182	8562	8942	9322	9702	0082	2	76	76	76	76
43	058 0462	0842	1222	1602	1982	2362	2741	3121	3501	3881	3	114	114	114	113
44	4260	4640	5019	5399	5778	6158	6537	6917	7296	7676	4	152	152	152	151
1145	8055	8434	8813	9193	9572	9951	0330	0709	1088	1467	5	191	190	190	189
46	059 1846	2225	2604	2983	3362	3741	4119	4498	4877	5256	6	229	228	227	227
47	5634	6013	6391	6770	7148	7527	7905	8284	8662	9041	7	267	266	265	265
48	9419	9797	0175	0554	0932	1310	1688	2066	2444	2822	8	305	304	303	302
49	060 3200	3578	3956	4334	4712	5090	5468	5845	6223	6601	9	343	342	341	340
1150	6978	7356	7734	8111	8489	8866	9244	9621	9999	0376		377	376	375	374
51	061 0753	1131	1508	1885	2262	2639	3017	3394	3771	4148	1	38	38	38	37
52	4525	4902	5279	5656	6032	6409	6786	7163	7540	7916	2	75	75	75	75
53	8293	8670	9046	9423	9799	0176	0552	0929	1305	1682	3	113	113	113	112
54	062 2058	2434	2811	3187	3563	3939	4316	4692	5068	5444	4	151	150	150	150
1155	5820	6196	6572	6948	7324	7699	8075	8451	8827	9203	5	189	188	188	187
56	9578	9954	0330	0705	1081	1456	1832	2207	2583	2958	6	226	226	225	224
57	063 3334	3709	4084	4460	4835	5210	5585	5960	6335	6711	7	264	263	263	262
58	7086	7461	7836	8211	8585	8960	9335	9710	0085	0460	8	302	301	300	299
59	064 0834	1209	1584	1958	2333	2708	3082	3457	3831	4205	9	339	338	338	337
1160	4580	4954	5329	5703	6077	6451	6826	7200	7574	7948		374	373	372	371
61	8322	8696	9070	9444	9818	0192	0566	0940	1314	1688	1	37	37	37	37
62	065 2061	2435	2809	3182	3556	3930	4303	4677	5050	5424	2	75	75	74	74
63	5797	6171	6544	6917	7291	7664	8037	8410	8784	9157	3	112	112	112	111
64	9530	9903	0276	0649	1022	1395	1768	2141	2514	2886	4	150	149	149	148
1165	066 3259	3632	4005	4377	4750	5123	5495	5868	6241	6613	5	187	187	186	186
66	6986	7358	7730	8103	8475	8847	9220	9592	9964	0336	6	224	224	223	223
67	067 0709	1081	1453	1825	2197	2569	2941	3313	3685	4057	7	262	261	260	260
68	4428	4800	5172	5544	5915	6287	6659	7030	7402	7774	8	299	298	298	297
69	8145	8517	8888	9259	9631	0002	0374	0745	1116	1487	9	337	336	335	334
1170	068 1859	2230	2601	2972	3343	3714	4085	4456	4827	5198		371	370	369	368
71	5569	5940	6311	6681	7052	7423	7794	8164	8535	8906	1	37	37	37	37
72	9276	9647	0017	0388	0758	1129	1499	1869	2240	2610	2	74	74	74	74
73	069 2980	3350	3721	4091	4461	4831	5201	5571	5941	6311	3	111	111	111	110
74	6681	7051	7421	7791	8160	8530	8900	9270	9639	0009	4	148	148	148	147
1175	070 0379	0748	1118	1487	1857	2226	2596	2965	3335	3704	5	186	185	185	184
76	4073	4442	4812	5181	5550	5919	6288	6658	7027	7396	6	223	222	221	221
77	7765	8134	8503	8871	9240	9609	9978	0347	0715	1084	7	260	259	258	258
78	071 1453	1822	2190	2559	2927	3296	3664	4033	4401	4770	8	297	296	295	294
79	5138	5506	5875	6243	6611	6979	7348	7716	8084	8452	9	334	333	332	331
1180	8820	9188	9556	9924	0292	0660	1028	1396	1763	2131		368	367	366	365
81	072 2499	2867	3234	3602	3970	4337	4705	5072	5440	5807	1	37	37	37	37
82	6175	6542	6910	7277	7644	8011	8379	8746	9113	9480	2	74	73	73	73
83	9847	0215	0582	0949	1316	1683	2050	2416	2783	3150	3	110	110	110	110
84	073 3517	3884	4251	4617	4984	5351	5717	6084	6450	6817	4	147	147	146	146
1185	7184	7550	7916	8283	8649	9016	9382	9748	0114	0481	5	184	184	183	183
86	074 0847	1213	1579	1945	2311	2677	3043	3409	3775	4141	6	221	220	220	219
87	4507	4873	5239	5605	5970	6336	6702	7068	7433	7799	7	258	257	256	256
88	8164	8530	8895	9261	9626	9992	0357	0723	1088	1453	8	294	294	293	292
89	075 1819	2184	2549	2914	3279	3644	4010	4375	4740	5105	9	331	330	329	329
1190	5470	5835	6199	6564	6929	7294	7659	8024	8388	8753		365	364	363	362
91	9118	9482	9847	0211	0576	0940	1305	1669	2034	2398	1	37	36	36	36
92	076 2763	3127	3491	3855	4220	4584	4948	5312	5676	6040	2	73	73	73	72
93	6404	6768	7132	7496	7860	8224	8588	8952	9316	9680	3	110	109	109	109
94	077 0043	0407	0771	1134	1498	1862	2225	2589	2952	3316	4	146	146	145	145
1195	3679	4042	4406	4769	5133	5496	5859	6222	6585	6949	5	183	182	182	181
96	7312	7675	8038	8401	8764	9127	9490	9853	0216	0579	6	219	218	218	217
97	078 0942	1304	1667	2030	2393	2755	3118	3480	3843	4206	7	256	255	254	253
98	4568	4931	5293	5656	6018	6380	6743	7105	7467	7830	8	292	291	290	290
99	8192	8554	8916	9278	9640	0003	0365	0727	1089	1451	9	329	328	327	326
1200	079 1812	2174	2536	2898	3260	3622	3983	4345	4707	5068		362	361	360	359
01	5430	5792	6153	6515	6876	7238	7599	7961	8322	8683	1	36	36	36	36
02	9045	9406	9767	0128	0490	0851	1212	1573	1934	2295	2	72	72	72	72
03	080 2656	3017	3378	3739	4100	4461	4822	5183	5543	5904	3	109	108	108	108
04	6265	6626	6986	7347	7707	8068	8429	8789	9150	9510	4	145	144	144	144
1205	9870	0231	0591	0952	1312	1672	2032	2393	2753	3113	5	181	181	180	180
06	081 3473	3833	4193	4553	4913	5273	5633	5993	6353	6713	6	217	217	216	215
07	7073	7432	7792	8152	8512	8871	9231	9591	9950	0310	7	253	253	252	251
08	082 0669	1029	1388	1748	2107	2467	2826	3185	3545	3904	8	290	289	288	287
09	4263	4622	4981	5341	5700	6059	6418	6777	7136	7495	9	326	325	324	323
N.	0	1	2	3	4	5	6	7	8	9	Dif. & Pro. Parts				

Number 12100 *to* 12799
Logarithm 082 7854 *to* 107 1760

N.	0	1	2	3	4	5	6	7	8	9	Dif. & Pro. Parts				
1210	082 7854	8213	8571	8930	9289	9648	0007	0365	0724	1083		359	358	357	356
11	083 1441	1800	2159	2517	2876	3234	3593	3951	4309	4668	1	36	36	36	36
12	5026	5385	5743	6101	6459	6817	7176	7534	7892	8250	2	72	72	71	71
13	8608	8966	9324	9682	0040	0398	0756	1114	1471	1829	3	108	107	107	107
14	084 2187	2545	2902	3260	3618	3975	4333	4690	5048	5405	4	144	143	143	142
1215	5763	6120	6478	6835	7192	7550	7907	8264	8621	8979	5	180	179	179	178
16	9336	9693	0050	0407	0764	1121	1478	1835	2192	2549	6	215	215	214	214
17	085 2906	3263	3619	3976	4333	4690	5046	5403	5760	6116	7	251	251	250	249
18	6473	6829	7186	7542	7899	8255	8612	8968	9324	9681	8	287	286	286	285
19	086 0037	0393	0750	1106	1462	1818	2174	2530	2886	3242	9	323	322	321	320
1220	3598	3954	4310	4666	5022	5378	5734	6089	6445	6801		356	355	354	353
21	7157	7512	7868	8224	8579	8935	9290	9646	0001	0357	1	36	36	35	35
22	087 0712	1067	1423	1778	2133	2489	2844	3199	3554	3909	2	71	71	71	71
23	4265	4620	4975	5330	5685	6040	6395	6750	7104	7459	3	107	107	106	106
24	7814	8169	8524	8878	9233	9588	9943	0297	0652	1006	4	142	142	142	141
1225	088 1361	1715	2070	2424	2779	3133	3488	3842	4196	4550	5	178	178	177	177
26	4905	5259	5613	5967	6321	6676	7030	7384	7738	8092	6	214	213	212	212
27	8446	8800	9153	9507	9861	0215	0569	0923	1276	1630	7	249	249	248	247
28	089 1984	2337	2691	3045	3398	3752	4105	4459	4812	5165	8	285	284	283	282
29	5519	5872	6226	6579	6932	7285	7639	7992	8345	8698	9	320	320	319	318
1230	9051	9404	9757	0110	0463	0816	1169	1522	1875	2228		353	352	351	350
31	090 2581	2933	3286	3639	3991	4344	4697	5049	5402	5755	1	35	35	35	35
32	6107	6460	6812	7164	7517	7869	8222	8574	8926	9279	2	71	70	70	70
33	9631	9983	0335	0687	1039	1392	1744	2096	2448	2800	3	106	106	105	105
34	091 3152	3504	3855	4207	4559	4911	5263	5614	5966	6318	4	141	141	140	140
1235	6670	7021	7373	7724	8076	8427	8779	9130	9482	9833	5	177	176	176	175
36	092 0185	0536	0887	1239	1590	1941	2292	2644	2995	3346	6	212	211	211	210
37	3697	4048	4399	4750	5101	5452	5803	6154	6505	6856	7	247	246	246	245
38	7206	7557	7908	8259	8609	8960	9311	9661	0012	0363	8	282	282	281	280
39	093 0713	1064	1414	1764	2115	2465	2816	3166	3516	3867	9	318	317	316	315
1240	4217	4567	4917	5267	5618	5968	6318	6668	7018	7368		350	349	348	347
41	7718	8068	8418	8768	9117	9467	9817	0167	0517	0866	1	35	35	35	35
42	094 1216	1566	1915	2265	2614	2964	3313	3663	4012	4362	2	70	70	70	69
43	4711	5061	5410	5759	6109	6458	6807	7156	7506	7855	3	105	105	104	104
44	8204	8553	8902	9251	9600	9949	0298	0647	0996	1345	4	140	140	139	139
1245	095 1694	2042	2391	2740	3089	3437	3786	4135	4483	4832	5	175	175	174	174
46	5180	5529	5877	6226	6574	6923	7271	7620	7968	8316	6	210	209	209	208
47	8665	9013	9361	9709	0057	0406	0754	1102	1450	1798	7	245	244	244	243
48	096 2146	2494	2842	3190	3538	3885	4233	4581	4929	5277	8	280	279	278	278
49	5624	5972	6320	6667	7015	7363	7710	8058	8405	8753	9	315	314	313	312
1250	9100	9448	9795	0142	0490	0837	1184	1531	1879	2226		347	346	345	344
51	097 2573	2920	3267	3614	3962	4309	4656	5003	5349	5696	1	35	35	35	34
52	6043	6390	6737	7084	7431	7777	8124	8471	8817	9164	2	69	69	69	69
53	9511	9857	0204	0550	0897	1243	1590	1936	2283	2629	3	104	104	104	103
54	098 2975	3322	3668	4014	4360	4707	5053	5399	5745	6091	4	139	138	138	138
1255	6437	6783	7129	7475	7821	8167	8513	8859	9205	9551	5	174	173	173	172
56	9896	0242	0588	0934	1279	1625	1971	2316	2662	3007	6	208	208	207	206
57	099 3353	3698	4044	4389	4735	5080	5425	5771	6116	6461	7	243	242	242	241
58	6806	7152	7497	7842	8187	8532	8877	9222	9567	9912	8	278	277	276	275
59	100 0257	0602	0947	1292	1637	1982	2327	2671	3016	3361	9	312	311	311	310
1260	3705	4050	4395	4739	5084	5429	5773	6118	6462	6806		345	344	343	342
61	7151	7495	7840	8184	8528	8873	9217	9561	9905	0249	1	35	34	34	34
62	101 0594	0938	1282	1626	1970	2314	2658	3002	3346	3690	2	69	69	69	68
63	4034	4377	4721	5065	5409	5752	6096	6440	6784	7127	3	104	103	103	103
64	7471	7814	8158	8501	8845	9188	9532	9875	0219	0562	4	138	138	137	137
1265	102 0905	1249	1592	1935	2278	2621	2965	3308	3651	3994	5	173	172	172	171
66	4337	4680	5023	5366	5709	6052	6395	6738	7081	7423	6	207	206	206	205
67	7766	8109	8452	8794	9137	9480	9822	0165	0507	0850	7	242	241	240	239
68	103 1193	1535	1877	2220	2562	2905	3247	3589	3932	4274	8	276	275	274	274
69	4616	4958	5301	5643	5985	6327	6669	7011	7353	7695	9	311	310	309	308
1270	8037	8379	8721	9063	9405	9747	0089	0430	0772	1114		342	341	340	339
71	104 1456	1797	2139	2480	2822	3164	3505	3847	4188	4530	1	34	34	34	34
72	4871	5213	5554	5895	6237	6578	6919	7260	7602	7943	2	68	68	68	68
73	8284	8625	8966	9307	9648	9989	0331	0671	1012	1353	3	103	102	102	102
74	105 1694	2035	2376	2717	3058	3398	3739	4080	4421	4761	4	137	136	136	136
1275	5102	5442	5783	6124	6464	6805	7145	7486	7826	8166	5	171	171	170	170
76	8507	8847	9187	9528	9868	0208	0548	0889	1229	1569	6	205	205	204	203
77	106 1909	2249	2589	2929	3269	3609	3949	4289	4629	4969	7	239	239	238	237
78	5309	5648	5988	6328	6668	7007	7347	7687	8026	8366	8	274	273	272	271
79	8705	9045	9385	9724	0063	0403	0742	1082	1421	1760	9	308	307	306	305
N.	0	1	2	3	4	5	6	7	8	9	Dif. & Pro. Parts				

Number 12800 *to* 13499
Logarithm 107 2100 *to* 130 3016

N.		0	1	2	3	4	5	6	7	8	9	Dif. & Pro. Parts				
1280	107	2100	2439	2778	3117	3457	3796	4135	4474	4813	5152		340	339	338	337
81		5491	5830	6169	6508	6847	7186	7525	7864	8203	8541	1	34	34	34	34
82		8880	9219	9558	9896	0235	0574	0912	1251	1590	1928	2	68	68	68	67
83	108	2267	2605	2944	3282	3620	3959	4297	4635	4974	5312	3	102	102	101	101
84		5650	5988	6327	6665	7003	7341	7679	8017	8355	8693	4	136	136	135	135
1285		9031	9369	9707	0045	0383	0721	1059	1396	1734	2072	5	170	170	169	169
86	109	2410	2747	3085	3423	3760	4098	4435	4773	5111	5448	6	204	203	203	202
87		5785	6123	6460	6798	7135	7472	7810	8147	8484	8821	7	238	237	237	236
88		9159	9496	9833	0170	0507	0844	1181	1518	1855	2192	8	272	271	270	270
89	110	2529	2866	3203	3540	3877	4213	4550	4887	5224	5560	9	306	305	304	303
1290		5897	6234	6570	6907	7244	7580	7917	8253	8590	8926		337	336	335	334
91		9262	9599	9935	0272	0608	0944	1280	1617	1953	2289	1	34	34	34	33
92	111	2625	2961	3297	3633	3969	4306	4642	4977	5313	5649	2	67	67	67	67
93		5985	6321	6657	6993	7329	7664	8000	8336	8671	9007	3	101	101	101	100
94		9343	9678	0014	0350	0685	1021	1356	1691	2027	2362	4	135	134	134	134
1295	112	2698	3033	3368	3704	4039	4374	4709	5045	5380	5715	5	169	168	168	167
96		6050	6385	6720	7055	7390	7725	8060	8395	8730	9065	6	202	202	201	200
97		9400	9735	0069	0404	0739	1074	1408	1743	2078	2412	7	236	235	235	234
98	113	2747	3081	3416	3751	4085	4420	4754	5088	5423	5757	8	270	269	268	267
99		6092	6426	6760	7094	7429	7763	8097	8431	8765	9099	9	303	302	302	301
1300		9434	9768	0102	0436	0770	1104	1437	1771	2105	2439		334	333	332	331
01	114	2773	3107	3441	3774	4108	4442	4775	5109	5443	5776	1	33	33	33	33
02		6110	6443	6777	7110	7444	7777	8111	8444	8777	9111	2	67	67	66	66
03		9444	9777	0111	0444	0777	1110	1444	1777	2110	2443	3	100	100	100	99
04	115	2776	3109	3442	3775	4108	4441	4774	5107	5439	5772	4	134	133	133	132
1305		6105	6438	6771	7103	7436	7769	8101	8434	8767	9099	5	167	167	166	166
06		9432	9764	0097	0429	0762	1094	1427	1759	2091	2424	6	200	200	199	199
07	116	2756	3088	3420	3753	4085	4417	4749	5081	5413	5745	7	234	233	232	232
08		6077	6409	6741	7073	7405	7737	8069	8401	8733	9065	8	267	266	266	265
09		9396	9728	0060	0392	0723	1055	1387	1718	2050	2381	9	301	300	299	298
1310	117	2713	3044	3376	3707	4039	4370	4702	5033	5364	5696		332	331	330	329
11		6027	6358	6689	7021	7352	7683	8014	8345	8676	9007	1	33	33	33	33
12		9338	9669	0000	0331	0662	0993	1324	1655	1986	2316	2	66	66	66	66
13	118	2647	2978	3309	3639	3970	4301	4631	4962	5293	5623	3	100	99	99	99
14		5954	6284	6615	6945	7276	7606	7936	8267	8597	8927	4	133	132	132	132
1315		9258	9588	9918	0248	0578	0909	1239	1569	1899	2229	5	166	166	165	165
16	119	2559	2889	3219	3549	3879	4209	4539	4868	5198	5528	6	199	199	198	197
17		5858	6187	6517	6847	7177	7506	7836	8165	8495	8825	7	232	232	231	230
18		9154	9484	9813	0143	0472	0801	1131	1460	1789	2119	8	266	265	264	263
19	120	2448	2777	3106	3436	3765	4094	4423	4752	5081	5410	9	299	298	297	296
1320		5739	6068	6397	6726	7055	7384	7713	8042	8371	8699		329	328	327	326
21		9028	9357	9686	0014	0343	0672	1000	1329	1657	1986	1	33	33	33	33
22	121	2315	2643	2972	3300	3628	3957	4285	4614	4942	5270	2	66	66	65	65
23		5598	5927	6255	6583	6911	7239	7568	7896	8224	8552	3	99	98	98	98
24		8880	9208	9536	9864	0192	0520	0848	1175	1503	1831	4	132	131	131	130
1325	122	2159	2487	2814	3142	3470	3797	4125	4453	4780	5108	5	165	164	164	163
26		5435	5763	6090	6418	6745	7073	7400	7727	8055	8382	6	197	197	196	196
27		8709	9036	9364	9691	0018	0345	0672	1000	1327	1654	7	230	230	229	228
28	123	1981	2308	2635	2962	3289	3616	3942	4269	4596	4923	8	263	262	262	261
29		5250	5577	5903	6230	6557	6883	7210	7537	7863	8190	9	296	295	294	293
1330		8516	8843	9169	9496	9822	0149	0475	0802	1128	1454		327	326	325	324
31	124	1781	2107	2433	2759	3086	3412	3738	4064	4390	4716	1	33	33	33	32
32		5042	5368	5694	6020	6346	6672	6998	7324	7650	7976	2	65	65	65	65
33		8301	8627	8953	9279	9605	9930	0256	0582	0907	1233	3	98	98	98	97
34	125	1558	1884	2209	2535	2860	3186	3511	3837	4162	4487	4	131	130	130	130
1335		4813	5138	5463	5788	6114	6439	6764	7089	7414	7739	5	164	163	163	162
36		8065	8390	8715	9040	9365	9690	0015	0339	0664	0989	6	196	196	195	194
37	126	1314	1639	1964	2288	2613	2938	3263	3587	3912	4237	7	229	228	228	227
38		4561	4886	5210	5535	5859	6184	6508	6833	7157	7481	8	262	261	260	259
39		7806	8130	8454	8779	9103	9427	9751	0076	0400	0724	9	294	293	293	292
1340	127	1048	1372	1696	2020	2344	2668	2992	3316	3640	3964		324	323	322	321
41		4288	4612	4935	5259	5583	5907	6230	6554	6878	7202	1	32	32	32	32
42		7525	7849	8172	8496	8819	9143	9466	9790	0113	0437	2	65	65	64	64
43	128	0760	1083	1407	1730	2053	2377	2700	3023	3346	3670	3	97	97	97	96
44		3993	4316	4639	4962	5285	5608	5931	6254	6577	6900	4	130	129	129	128
1345		7223	7546	7869	8191	8514	8837	9160	9483	9805	0128	5	162	162	161	161
46	129	0451	0773	1096	1418	1741	2064	2386	2709	3031	3354	6	194	194	193	193
47		3676	3998	4321	4643	4965	5288	5610	5932	6255	6577	7	227	226	225	225
48		6899	7221	7543	7865	8187	8510	8832	9154	9476	9798	8	259	258	258	257
49	130	0119	0441	0763	1085	1407	1729	2051	2372	2694	3016	9	292	291	290	289
N.		0	1	2	3	4	5	6	7	8	9	Dif. & Pro. Parts				

Number 13500 *to* 14199
Logarithm 130 3338 *to* 152 2578

N.		0	1	2	3	4	5	6	7	8	9	Dif. & Pro. Parts				
1350	130	3338	3659	3981	4303	4624	4946	5267	5589	5911	6232		322	321	320	319
51		6553	6875	7196	7518	7839	8161	8482	8803	9124	9446	1	32	32	32	32
52		9767	0088	0409	0730	1052	1373	1694	2015	2336	2657	2	64	64	64	64
53	131	2978	3299	3620	3941	4262	4583	4903	5224	5545	5866	3	97	96	96	96
54		6187	6507	6828	7149	7469	7790	8111	8431	8752	9072	4	129	128	128	128
1355		9393	9713	0034	0354	0675	0995	1316	1636	1956	2277	5	161	161	160	160
56	132	2597	2917	3237	3558	3878	4198	4518	4838	5158	5478	6	193	193	192	191
57		5798	6119	6439	6758	7078	7398	7718	8038	8358	8678	7	225	225	224	223
58		8998	9317	9637	9957	0277	0596	0916	1236	1555	1875	8	258	257	256	255
59	133	2195	2514	2834	3153	3473	3792	4112	4431	4750	5070	9	290	289	288	287
1360		5389	5708	6028	6347	6666	6985	7305	7624	7943	8262		320	319	318	317
61		8581	8900	9219	9538	9857	0176	0495	0814	1133	1452	1	32	32	32	32
62	134	1771	2090	2409	2728	3046	3365	3684	4003	4321	4640	2	64	64	64	63
63		4959	5277	5596	5914	6233	6551	6870	7188	7507	7825	3	96	96	95	95
64		8144	8462	8780	9099	9417	9735	0054	0372	0690	1008	4	128	128	127	127
1365	135	1327	1645	1963	2281	2599	2917	3235	3553	3871	4189	5	160	160	159	159
66		4507	4825	5143	5461	5779	6096	6414	6732	7050	7367	6	192	191	191	190
67		7685	8003	8320	8638	8956	9273	9591	9908	0226	0543	7	224	223	223	222
68	136	0861	1178	1496	1813	2131	2448	2765	3083	3400	3717	8	256	255	254	254
69		4034	4352	4669	4986	5303	5620	5937	6255	6572	6889	9	288	287	286	285
1370		7206	7523	7840	8157	8473	8790	9107	9424	9741	0058		317	316	315	314
71	137	0375	0691	1008	1325	1641	1958	2275	2591	2908	3225	1	32	32	32	31
72		3541	3858	4174	4491	4807	5124	5440	5756	6073	6389	2	63	63	63	63
73		6705	7022	7338	7654	7970	8287	8603	8919	9235	9551	3	95	95	95	94
74		9867	0183	0499	0815	1131	1447	1763	2079	2395	2711	4	127	126	126	126
1375	138	3027	3343	3659	3974	4290	4606	4922	5237	5553	5869	5	159	158	158	157
76		6184	6500	6816	7131	7447	7762	8078	8393	8709	9024	6	190	190	189	188
77		9339	9655	9970	0285	0601	0916	1231	1547	1862	2177	7	222	221	221	220
78	139	2492	2807	3122	3438	3753	4068	4383	4698	5013	5328	8	254	253	252	251
79		5643	5958	6272	6587	6902	7217	7532	7847	8161	8476	9	285	284	284	283
1380		8791	9106	9420	9735	0050	0364	0679	0993	1308	1622		315	314	313	312
81	140	1937	2251	2566	2880	3195	3509	3823	4138	4452	4766	1	32	31	31	31
82		5080	5395	5709	6023	6337	6651	6966	7280	7594	7908	2	63	63	63	62
83		8222	8536	8850	9164	9478	9792	0106	0419	0733	1047	3	95	94	94	94
84	141	1361	1675	1988	2302	2616	2930	3243	3557	3871	4184	4	126	126	125	125
1385		4498	4811	5125	5438	5752	6065	6379	6692	7006	7319	5	158	157	157	156
86		7632	7946	8259	8572	8885	9199	9512	9825	0138	0451	6	189	188	188	187
87	142	0765	1078	1391	1704	2017	2330	2643	2956	3269	3582	7	221	220	219	218
88		3895	4208	4520	4833	5146	5459	5772	6084	6397	6710	8	252	251	250	250
89		7022	7335	7648	7960	8273	8586	8898	9211	9523	9836	9	284	283	282	281
1390	143	0148	0460	0773	1085	1398	1710	2022	2335	2647	2959		313	312	311	310
91		3271	3584	3896	4208	4520	4832	5144	5456	5768	6080	1	31	31	31	31
92		6392	6704	7016	7328	7640	7952	8264	8576	8888	9199	2	63	62	62	62
93		9511	9823	0135	0446	0758	1070	1381	1693	2005	2316	3	94	94	93	93
94	144	2628	2939	3251	3562	3874	4185	4497	4808	5119	5431	4	125	125	124	124
1395		5742	6053	6365	6676	6987	7298	7610	7921	8232	8543	5	157	156	156	155
96		8854	9165	9476	9787	0098	0409	0720	1031	1342	1653	6	188	187	187	186
97	145	1964	2275	2586	2897	3207	3518	3829	4140	4450	4761	7	219	218	218	217
98		5072	5382	5693	6004	6314	6625	6935	7246	7556	7867	8	250	250	249	248
99		8177	8488	8798	9108	9419	9729	0039	0350	0660	0970	9	282	281	280	279
1400	146	1280	1591	1901	2211	2521	2831	3141	3451	3761	4071		311	310	309	308
01		4381	4691	5001	5311	5621	5931	6241	6551	6861	7170	1	31	31	31	31
02		7480	7790	8100	8409	8719	9029	9338	9648	9958	0267	2	62	62	62	62
03	147	0577	0886	1196	1505	1815	2124	2434	2743	3052	3362	3	93	93	93	92
04		3671	3980	4290	4599	4908	5217	5527	5836	6145	6454	4	124	124	124	123
1405		6763	7072	7381	7690	7999	8308	8617	8926	9235	9544	5	156	155	155	154
06		9853	0162	0471	0780	1089	1397	1706	2015	2324	2632	6	187	186	185	185
07	148	2941	3250	3558	3867	4175	4484	4793	5101	5410	5718	7	218	217	216	216
08		6027	6335	6643	6952	7260	7569	7877	8185	8493	8802	8	249	248	247	246
09		9110	9418	9726	0035	0343	0651	0959	1267	1575	1883	9	280	279	278	277
1410	149	2191	2499	2807	3115	3423	3731	4039	4347	4655	4962		309	308	307	306
11		5270	5578	5886	6193	6501	6809	7116	7424	7732	8039	1	31	31	31	31
12		8347	8655	8962	9270	9577	9885	0192	0499	0807	1114	2	62	62	61	61
13	150	1422	1729	2036	2344	2651	2958	3265	3573	3880	4187	3	93	92	92	92
14		4494	4801	5108	5415	5722	6030	6337	6644	6951	7257	4	124	123	123	122
1415		7564	7871	8178	8485	8792	9099	9406	9712	0019	0326	5	155	154	154	153
16	151	0633	0939	1246	1553	1859	2166	2472	2779	3085	3392	6	185	185	184	184
17		3699	4005	4311	4618	4924	5231	5537	5843	6150	6456	7	216	216	215	214
18		6762	7069	7375	7681	7987	8293	8600	8906	9212	9518	8	247	246	246	245
19		9824	0130	0436	0742	1048	1354	1660	1966	2272	2578	9	278	277	276	275
N.		0	1	2	3	4	5	6	7	8	9	Dif. & Pro. Parts				

Number 14200 *to* 14899
Logarithm 152 2883 *to* 173 1571

N.		0	1	2	3	4	5	6	7	8	9	Dif. & Pro. Parts				
1420	152	2883	3189	3495	3801	4107	4412	4718	5024	5329	5635		306	305	304	303
21		5941	6246	6552	6858	7163	7469	7774	8080	8385	8691	1	31	31	30	30
22		8996	9301	9607	9912	0217	0523	0828	1133	1439	1744	2	61	61	61	61
23	153	2049	2354	2659	2964	3270	3575	3880	4185	4490	4795	3	92	92	91	91
24		5100	5405	5710	6015	6320	6625	6929	7234	7539	7844	4	122	122	122	121
1425		8149	8453	8758	9063	9368	9672	9977	0281	0586	0891	5	153	153	152	152
26	154	1195	1500	1804	2109	2413	2718	3022	3327	3631	3935	6	184	183	182	182
27		4240	4544	4848	5153	5457	5761	6065	6370	6674	6978	7	214	214	213	212
28		7282	7586	7890	8194	8498	8802	9106	9410	9714	0018	8	245	244	243	242
29	155	0322	0626	0930	1234	1538	1842	2145	2449	2753	3057	9	275	275	274	273
1430		3360	3664	3968	4271	4575	4879	5182	5486	5789	6093		304	303	302	301
31		6396	6700	7003	7307	7610	7914	8217	8520	8824	9127	1	30	30	30	30
32		9430	9733	0037	0340	0643	0946	1249	1553	1856	2159	2	61	61	60	60
33	156	2462	2765	3068	3371	3674	3977	4280	4583	4886	5189	3	91	91	91	90
34		5492	5794	6097	6400	6703	7006	7308	7611	7914	8216	4	122	121	121	120
1435		8519	8822	9124	9427	9729	0032	0334	0637	0939	1242	5	152	152	151	151
36	157	1544	1847	2149	2452	2754	3056	3359	3661	3963	4265	6	182	182	181	181
37		4568	4870	5172	5474	5776	6079	6381	6683	6985	7287	7	213	212	211	211
38		7589	7891	8193	8495	8797	9099	9401	9702	0004	0306	8	243	242	242	241
39	158	0608	0910	1212	1513	1815	2117	2418	2720	3022	3323	9	274	273	272	271
1440		3625	3927	4228	4530	4831	5133	5434	5736	6037	6338		302	301	300	299
41		6640	6941	7243	7544	7845	8146	8448	8749	9050	9351	1	30	30	30	30
42		9653	9954	0255	0556	0857	1158	1459	1760	2061	2362	2	60	60	60	60
43	159	2663	2964	3265	3566	3867	4168	4469	4770	5070	5371	3	91	90	90	90
44		5672	5973	6273	6574	6875	7175	7476	7777	8077	8378	4	121	120	120	120
1445		8678	8979	9280	9580	9881	0181	0481	0782	1082	1383	5	151	151	150	150
46	160	1683	1983	2284	2584	2884	3184	3485	3785	4085	4385	6	181	181	180	179
47		4685	4985	5286	5586	5886	6186	6486	6786	7086	7386	7	211	211	210	209
48		7686	7986	8285	8585	8885	9185	9485	9785	0084	0384	8	242	241	240	239
49	161	0684	0984	1283	1583	1883	2182	2482	2781	3081	3380	9	272	271	270	269
1450		3680	3980	4279	4578	4878	5177	5477	5776	6075	6375		300	299	298	297
51		6674	6973	7273	7572	7871	8170	8470	8769	9068	9367	1	30	30	30	30
52		9666	9965	0264	0563	0862	1161	1460	1759	2058	2357	2	60	60	60	59
53	162	2656	2955	3254	3553	3852	4150	4449	4748	5047	5345	3	90	90	89	89
54		5644	5943	6241	6540	6839	7137	7436	7734	8033	8331	4	120	120	119	119
1455		8630	8928	9227	9525	9824	0122	0420	0719	1017	1315	5	150	150	149	149
56	163	1614	1912	2210	2508	2807	3105	3403	3701	3999	4297	6	180	179	179	178
57		4596	4894	5192	5490	5788	6086	6384	6682	6979	7277	7	210	209	209	208
58		7575	7873	8171	8469	8767	9064	9362	9660	9958	0255	8	240	239	238	238
59	164	0553	0851	1148	1446	1743	2041	2339	2636	2934	3231	9	270	269	268	267
1460		3529	3826	4123	4421	4718	5016	5313	5610	5908	6205		298	297	296	295
61		6502	6799	7097	7394	7691	7988	8285	8582	8880	9177	1	30	30	30	30
62		9474	9771	0068	0365	0662	0959	1256	1553	1850	2146	2	60	59	59	59
63	165	2443	2740	3037	3334	3631	3927	4224	4521	4817	5114	3	89	89	89	89
64		5411	5707	6004	6301	6597	6894	7190	7487	7783	8080	4	119	119	118	118
1465		8376	8673	8969	9265	9562	9858	0155	0451	0747	1043	5	149	149	148	148
66	166	1340	1636	1932	2228	2525	2821	3117	3413	3709	4005	6	179	178	178	177
67		4301	4597	4893	5189	5485	5781	6077	6373	6669	6965	7	209	208	207	207
68		7261	7556	7852	8148	8444	8740	9035	9331	9627	9922	8	238	238	237	236
69	167	0218	0514	0809	1105	1400	1696	1991	2287	2582	2878	9	268	267	266	266
1470		3173	3469	3764	4060	4355	4650	4946	5241	5536	5831		296	295	294	293
71		6127	6422	6717	7012	7308	7603	7898	8193	8488	8783	1	30	30	29	29
72		9078	9373	9668	9963	0258	0553	0848	1143	1438	1733	2	59	59	59	59
73	168	2027	2322	2617	2912	3207	3501	3796	4091	4386	4680	3	89	89	88	88
74		4975	5269	5564	5859	6153	6448	6742	7037	7331	7626	4	118	118	118	117
1475		7920	8215	8509	8803	9098	9392	9686	9981	0275	0569	5	148	148	147	147
76	169	0864	1158	1452	1746	2040	2335	2629	2923	3217	3511	6	178	177	176	176
77		3805	4099	4393	4687	4981	5275	5569	5863	6157	6450	7	207	207	206	205
78		6744	7038	7332	7626	7920	8213	8507	8801	9094	9388	8	237	236	235	234
79		9682	9975	0269	0563	0856	1150	1443	1737	2030	2324	9	266	266	265	264
1480	170	2617	2911	3204	3497	3791	4084	4377	4671	4964	5257		294	293	292	291
81		5551	5844	6137	6430	6723	7017	7310	7603	7896	8189	1	29	29	29	29
82		8482	8775	9068	9361	9654	9947	0240	0533	0826	1119	2	59	59	58	58
83	171	1412	1704	1997	2290	2583	2876	3168	3461	3754	4046	3	88	88	88	87
84		4339	4632	4924	5217	5509	5802	6095	6387	6680	6972	4	118	117	117	116
1485		7265	7557	7849	8142	8434	8727	9019	9311	9604	9896	5	147	147	146	146
86	172	0188	0480	0773	1065	1357	1649	1941	2233	2526	2818	6	176	176	175	175
87		3110	3402	3694	3986	4278	4570	4862	5154	5446	5737	7	206	205	204	204
88		6029	6321	6613	6905	7197	7488	7780	8072	8364	8655	8	235	234	234	233
89		8947	9239	9530	9822	0113	0405	0697	0988	1280	1571	9	265	264	263	262
N.		0	1	2	3	4	5	6	7	8	9	Dif. & Pro. Parts				

Number 14900 *to* 15599
Logarithm 173 1863 *to* 193 0968

N.		0	1	2	3	4	5	6	7	8	9	Dif. & Pro. Parts				
1490	173	1863	2154	2446	2737	3028	3320	3611	3903	4194	4485		292	291	290	289
91		4776	5068	5359	5650	5941	6233	6524	6815	7106	7397	1	29	29	29	29
92		7688	7979	8270	8561	8852	9143	9434	9725	0016	0307	2	58	58	58	58
93	174	0598	0889	1180	1471	1761	2052	2343	2634	2925	3215	3	88	87	87	87
94		3506	3797	4087	4378	4669	4959	5250	5540	5831	6121	4	117	116	116	116
1495		6412	6702	6993	7283	7574	7864	8155	8445	8735	9026	5	146	146	145	145
96		9316	9606	9897	0187	0477	0767	1057	1348	1638	1928	6	175	175	174	173
97	175	2218	2508	2798	3088	3378	3668	3958	4248	4538	4828	7	204	204	203	202
98		5118	5408	5698	5988	6278	6567	6857	7147	7437	7727	8	234	233	232	231
99		8016	8306	8596	8885	9175	9465	9754	0044	0333	0623	9	263	262	261	260
1500	176	0913	1202	1492	1781	2071	2360	2649	2939	3228	3518		290	289	288	287
01		3807	4096	4386	4675	4964	5253	5543	5832	6121	6410	1	29	29	29	29
02		6699	6988	7278	7567	7856	8145	8434	8723	9012	9301	2	58	58	58	57
03		9590	9879	0168	0457	0745	1034	1323	1612	1901	2190	3	87	87	86	86
04	177	2478	2767	3056	3345	3633	3922	4211	4499	4788	5076	4	116	116	115	115
1505		5365	5654	5942	6231	6519	6808	7096	7385	7673	7961	5	145	145	144	144
06		8250	8538	8826	9115	9403	9691	9980	0268	0556	0844	6	174	173	173	172
07	178	1133	1421	1709	1997	2285	2573	2861	3149	3437	3725	7	203	202	202	201
08		4013	4301	4589	4877	5165	5453	5741	6029	6317	6605	8	232	231	230	230
09		6892	7180	7468	7756	8043	8331	8619	8907	9194	9482	9	261	260	259	258
1510		9769	0057	0345	0632	0920	1207	1495	1782	2070	2357		288	287	286	285
11	179	2645	2932	3219	3507	3794	4082	4369	4656	4943	5231	1	29	29	29	29
12		5518	5805	6092	6380	6667	6954	7241	7528	7815	8102	2	58	57	57	57
13		8389	8676	8963	9250	9537	9824	0111	0398	0685	0972	3	86	86	86	86
14	180	1259	1546	1832	2119	2406	2693	2980	3266	3553	3840	4	115	115	114	114
1515		4126	4413	4700	4986	5273	5559	5846	6133	6419	6706	5	144	144	143	143
16		6992	7278	7565	7851	8138	8424	8711	8997	9283	9570	6	173	172	172	171
17		9856	0142	0428	0715	1001	1287	1573	1859	2145	2432	7	202	201	200	200
18	181	2718	3004	3290	3576	3862	4148	4434	4720	5006	5292	8	230	230	229	228
19		5578	5864	6150	6435	6721	7007	7293	7579	7864	8150	9	259	258	257	257
1520		8436	8722	9007	9293	9579	9864	0150	0435	0721	1007		286	285	284	283
21	182	1292	1578	1863	2149	2434	2720	3005	3290	3576	3861	1	29	29	28	28
22		4147	4432	4717	5002	5288	5573	5858	6143	6429	6714	2	57	57	57	57
23		6999	7284	7569	7854	8140	8425	8710	8995	9280	9565	3	86	86	85	85
24		9850	0135	0420	0704	0989	1274	1559	1844	2129	2414	4	114	114	114	113
1525	183	2698	2983	3268	3553	3837	4122	4407	4691	4976	5261	5	143	143	142	142
26		5545	5830	6114	6399	6684	6968	7253	7537	7822	8106	6	172	171	170	170
27		8390	8675	8959	9244	9528	9812	0096	0381	0665	0949	7	200	200	199	198
28	184	1234	1518	1802	2086	2370	2654	2939	3223	3507	3791	8	229	228	227	226
29		4075	4359	4643	4927	5211	5495	5779	6063	6347	6630	9	257	257	256	255
1530		6914	7198	7482	7766	8050	8333	8617	8901	9185	9468		284	283	282	281
31		9752	0036	0319	0603	0886	1170	1454	1737	2021	2304	1	28	28	28	28
32	185	2588	2871	3155	3438	3721	4005	4288	4572	4855	5138	2	57	57	56	56
33		5422	5705	5988	6271	6555	6838	7121	7404	7687	7970	3	85	85	85	84
34		8254	8537	8820	9103	9386	9669	9952	0235	0518	0801	4	114	113	113	112
1535	186	1084	1367	1650	1932	2215	2498	2781	3064	3347	3629	5	142	142	141	141
36		3912	4195	4478	4760	5043	5326	5608	5891	6174	6456	6	170	170	169	169
37		6739	7021	7304	7586	7869	8151	8434	8716	8999	9281	7	199	198	197	197
38		9563	9846	0128	0410	0693	0975	1257	1540	1822	2104	8	227	226	226	225
39	187	2386	2668	2951	3233	3515	3797	4079	4361	4643	4925	9	256	255	254	253
1540		5207	5489	5771	6053	6335	6617	6899	7181	7463	7745		282	281	280	279
41		8026	8308	8590	8872	9154	9435	9717	9999	0280	0562	1	28	28	28	28
42	188	0844	1125	1407	1689	1970	2252	2533	2815	3096	3378	2	56	56	56	56
43		3659	3941	4222	4504	4785	5066	5348	5629	5910	6192	3	85	84	84	84
44		6473	6754	7035	7317	7598	7879	8160	8441	8723	9004	4	113	112	112	112
1545		9285	9566	9847	0128	0409	0690	0971	1252	1533	1814	5	141	141	140	140
46	189	2095	2376	2657	2938	3218	3499	3780	4061	4342	4622	6	169	169	168	167
47		4903	5184	5465	5745	6026	6307	6587	6868	7148	7429	7	197	197	196	195
48		7710	7990	8271	8551	8832	9112	9393	9673	9953	0234	8	226	225	224	223
49	190	0514	0795	1075	1355	1636	1916	2196	2476	2757	3037	9	254	253	252	251
1550		3317	3597	3877	4157	4438	4718	4998	5278	5558	5838		281	280	279	278
51		6118	6398	6678	6958	7238	7518	7798	8078	8357	8637	1	28	28	28	28
52		8917	9197	9477	9757	0036	0316	0596	0876	1155	1435	2	56	56	56	56
53	191	1715	1994	2274	2553	2833	3113	3392	3672	3951	4231	3	84	84	84	83
54		4510	4790	5069	5348	5628	5907	6187	6466	6745	7025	4	112	112	112	111
1555		7304	7583	7862	8142	8421	8700	8979	9259	9538	9817	5	141	140	140	139
56	192	0096	0375	0654	0933	1212	1491	1770	2049	2328	2607	6	169	168	167	167
57		2886	3165	3444	3723	4002	4281	4559	4838	5117	5396	7	197	196	195	195
58		5675	5953	6232	6511	6789	7068	7347	7625	7904	8183	8	225	224	223	222
59		8461	8740	9018	9297	9575	9854	0132	0411	0689	0968	9	253	252	251	250
N.		0	1	2	3	4	5	6	7	8	9	Dif. & Pro. Parts				

Number 15600 *to* 16299
Logarithm 193 1246 *to* 212 1610

N.		0	1	2	3	4	5	6	7	8	9	D.&Pro.Pts			
1560	193	1246	1524	1803	2081	2359	2638	2916	3194	3473	3751		279	278	277
61		4029	4307	4585	4864	5142	5420	5698	5976	6254	6532	1	28	28	28
62		6810	7088	7366	7644	7922	8200	8478	8756	9034	9312	2	56	56	55
63		9590	9868	0145	0423	0701	0979	1257	1534	1812	2090	3	84	83	83
64	194	2367	2645	2923	3200	3478	3756	4033	4311	4588	4866	4	112	111	111
1565		5143	5421	5698	5976	6253	6531	6808	7086	7363	7640	5	140	139	139
66		7918	8195	8472	8749	9027	9304	9581	9858	0136	0413	6	167	167	166
67	195	0690	0967	1244	1521	1798	2075	2353	2630	2907	3184	7	195	195	194
68		3461	3738	4014	4291	4568	4845	5122	5399	5676	5953	8	223	222	222
69		6229	6506	6783	7060	7336	7613	7890	8167	8443	8720	9	251	250	249
1570		8997	9273	9550	9826	0103	0379	0656	0932	1209	1485		277	276	275
71	196	1762	2038	2315	2591	2867	3144	3420	3697	3973	4249	1	28	28	28
72		4525	4802	5078	5354	5630	5907	6183	6459	6735	7011	2	55	55	55
73		7287	7563	7839	8115	8391	8667	8943	9219	9495	9771	3	83	83	83
74	197	0047	0323	0599	0875	1151	1427	1702	1978	2254	2530	4	111	110	110
1575		2806	3081	3357	3633	3908	4184	4460	4735	5011	5287	5	139	138	138
76		5562	5838	6113	6389	6664	6940	7215	7491	7766	8042	6	166	166	165
77		8317	8592	8868	9143	9418	9694	9969	0244	0520	0795	7	194	193	193
78	198	1070	1345	1620	1896	2171	2446	2721	2996	3271	3546	8	222	221	220
79		3821	4096	4371	4646	4921	5196	5471	5746	6021	6296	9	249	248	248
1580		6571	6846	7121	7395	7670	7945	8220	8495	8769	9044		275	274	273
81		9319	9593	9868	0143	0417	0692	0967	1241	1516	1790	1	28	27	27
82	199	2065	2339	2614	2888	3163	3437	3712	3986	4260	4535	2	55	55	55
83		4809	5083	5358	5632	5906	6181	6455	6729	7003	7278	3	83	82	82
84		7552	7826	8100	8374	8648	8922	9197	9471	9745	0019	4	110	110	109
1585	200	0293	0567	0841	1115	1389	1662	1936	2210	2484	2758	5	138	137	137
86		3032	3306	3579	3853	4127	4401	4674	4948	5222	5496	6	165	164	164
87		5769	6043	6317	6590	6864	7137	7411	7684	7958	8231	7	193	192	191
88		8505	8778	9052	9325	9599	9872	0146	0419	0692	0966	8	220	219	218
89	201	1239	1512	1786	2059	2332	2605	2879	3152	3425	3698	9	248	247	246
1590		3971	4244	4517	4791	5064	5337	5610	5883	6156	6429		273	272	271
91		6702	6975	7248	7521	7794	8066	8339	8612	8885	9158	1	27	27	27
92		9431	9703	9976	0249	0522	0794	1067	1340	1612	1885	2	55	54	54
93	202	2158	2430	2703	2976	3248	3521	3793	4066	4338	4611	3	82	82	81
94		4883	5156	5428	5700	5973	6245	6518	6790	7062	7335	4	109	109	108
1595		7607	7879	8151	8424	8696	8968	9240	9512	9785	0057	5	137	136	136
96	203	0329	0601	0873	1145	1417	1689	1961	2233	2505	2777	6	164	163	163
97		3049	3321	3593	3865	4137	4409	4681	4952	5224	5496	7	191	190	190
98		5768	6040	6311	6583	6855	7126	7398	7670	7941	8213	8	218	218	217
99		8485	8756	9028	9299	9571	9842	0114	0385	0657	0928	9	246	245	244
1600	204	1200	1471	1743	2014	2285	2557	2828	3099	3371	3642		271	270	269
01		3913	4185	4456	4727	4998	5269	5541	5812	6083	6354	1	27	27	27
02		6625	6896	7167	7438	7709	7980	8251	8522	8793	9064	2	54	54	54
03		9335	9606	9877	0148	0419	0690	0960	1231	1502	1773	3	81	81	81
04	205	2044	2314	2585	2856	3127	3397	3668	3939	4209	4480	4	108	108	108
1605		4750	5021	5292	5562	5833	6103	6374	6644	6915	7185	5	136	135	135
06		7455	7726	7996	8267	8537	8807	9078	9348	9618	9889	6	163	162	161
07	206	0159	0429	0699	0969	1240	1510	1780	2050	2320	2590	7	190	189	188
08		2860	3131	3401	3671	3941	4211	4481	4751	5021	5291	8	217	216	215
09		5560	5830	6100	6370	6640	6910	7180	7449	7719	7989	9	244	243	242
1610		8259	8529	8798	9068	9338	9607	9877	0147	0416	0686		270	269	268
11	207	0955	1225	1495	1764	2034	2303	2573	2842	3112	3381	1	27	27	27
12		3650	3920	4189	4459	4728	4997	5267	5536	5805	6074	2	54	54	54
13		6344	6613	6882	7151	7421	7690	7959	8228	8497	8766	3	81	81	80
14		9035	9304	9573	9842	0111	0380	0649	0918	1187	1456	4	108	108	107
1615	208	1725	1994	2263	2532	2801	3070	3338	3607	3876	4145	5	135	135	134
16		4414	4682	4951	5220	5488	5757	6026	6294	6563	6832	6	162	161	161
17		7100	7369	7637	7906	8174	8443	8711	8980	9248	9517	7	189	188	188
18		9785	0054	0322	0590	0859	1127	1395	1664	1932	2200	8	216	215	214
19	209	2468	2737	3005	3273	3541	3810	4078	4346	4614	4882	9	243	242	241
1620		5150	5418	5686	5954	6222	6490	6758	7026	7294	7562		268	267	266
21		7830	8098	8366	8634	8902	9170	9437	9705	9973	0241	1	27	27	27
22	210	0508	0776	1044	1312	1579	1847	2115	2382	2650	2918	2	54	53	53
23		3185	3453	3720	3988	4255	4523	4790	5058	5325	5593	3	80	80	80
24		5860	6128	6395	6662	6930	7197	7464	7732	7999	8266	4	107	107	106
1625		8534	8801	9068	9335	9603	9870	0137	0404	0671	0938	5	134	134	133
26	211	1205	1472	1740	2007	2274	2541	2808	3075	3342	3609	6	161	160	160
27		3876	4142	4409	4676	4943	5210	5477	5744	6010	6277	7	188	187	186
28		6544	6811	7078	7344	7611	7878	8144	8411	8678	8944	8	214	214	213
29		9211	9477	9744	0011	0277	0544	0810	1077	1343	1610	9	241	240	239
N.		0	1	2	3	4	5	6	7	8	9	D.&Pro.Pts			

Number 16300 *to* 16999
Logarithm 212 1876 *to* 230 4234

N.		0	1	2	3	4	5	6	7	8	9	D.&Pro.Pts			
1630	212	1876	2142	2409	2675	2942	3208	3474	3741	4007	4273		267	266	265
31		4540	4806	5072	5338	5605	5871	6137	6403	6669	6935	1	27	27	27
32		7202	7468	7734	8000	8266	8532	8798	9064	9330	9596	2	53	53	53
33		9862	0128	0394	0660	0926	1191	1457	1723	1989	2255	3	80	80	80
34	213	2521	2786	3052	3318	3584	3849	4115	4381	4646	4912	4	107	106	106
1635		5178	5443	5709	5974	6240	6505	6771	7037	7302	7568	5	134	133	133
36		7833	8098	8364	8629	8895	9160	9425	9691	9956	0221	6	160	160	159
37	214	0487	0752	1017	1283	1548	1813	2078	2343	2609	2874	7	187	186	186
38		3139	3404	3669	3934	4199	4464	4730	4995	5260	5525	8	214	213	212
39		5790	6055	6319	6584	6849	7114	7379	7644	7909	8174	9	240	239	239
1640		8438	8703	8968	9233	9498	9762	0027	0292	0556	0821		265	264	263
41	215	1086	1350	1615	1880	2144	2409	2673	2938	3203	3467	1	27	26	26
42		3732	3996	4260	4525	4789	5054	5318	5583	5847	6111	2	53	53	53
43		6376	6640	6904	7169	7433	7697	7961	8226	8490	8754	3	80	79	79
44		9018	9282	9546	9811	0075	0339	0603	0867	1131	1395	4	106	106	105
1645	216	1659	1923	2187	2451	2715	2979	3243	3507	3771	4034	5	133	132	132
46		4298	4562	4826	5090	5354	5617	5881	6145	6409	6672	6	159	158	158
47		6936	7200	7463	7727	7991	8254	8518	8781	9045	9309	7	186	185	184
48		9572	9836	0099	0363	0626	0890	1153	1416	1680	1943	8	212	211	210
49	217	2207	2470	2733	2997	3260	3523	3786	4050	4313	4576	9	239	238	237
1650		4839	5103	5366	5629	5892	6155	6418	6682	6945	7208		263	262	261
51		7471	7734	7997	8260	8523	8786	9049	9312	9575	9838	1	26	26	26
52	218	0100	0363	0626	0889	1152	1415	1677	1940	2203	2466	2	53	52	52
53		2729	2991	3254	3517	3779	4042	4305	4567	4830	5092	3	79	79	78
54		5355	5618	5880	6143	6405	6668	6930	7193	7455	7718	4	105	105	104
1655		7980	8242	8505	8767	9030	9292	9554	9816	0079	0341	5	132	131	131
56	219	0603	0866	1128	1390	1652	1914	2177	2439	2701	2963	6	158	157	157
57		3225	3487	3749	4011	4273	4535	4797	5059	5321	5583	7	184	183	183
58		5845	6107	6369	6631	6893	7155	7417	7678	7940	8202	8	210	210	209
59		8464	8726	8987	9249	9511	9773	0034	0296	0558	0819	9	237	236	235
1660	220	1081	1342	1604	1866	2127	2389	2650	2912	3173	3435		262	261	260
61		3696	3958	4219	4481	4742	5003	5265	5526	5788	6049	1	26	26	26
62		6310	6571	6833	7094	7355	7617	7878	8139	8400	8661	2	52	52	52
63		8922	9184	9445	9706	9967	0228	0489	0750	1011	1272	3	79	78	78
64	221	1533	1794	2055	2316	2577	2838	3099	3360	3621	3882	4	105	104	104
1665		4142	4403	4664	4925	5186	5446	5707	5968	6229	6489	5	131	131	130
66		6750	7011	7271	7532	7793	8053	8314	8574	8835	9095	6	157	157	156
67		9356	9617	9877	0138	0398	0658	0919	1179	1440	1700	7	183	183	182
68	222	1960	2221	2481	2741	3002	3262	3522	3783	4043	4303	8	210	209	208
69		4563	4824	5084	5344	5604	5864	6124	6384	6645	6905	9	236	235	234
1670		7165	7425	7685	7945	8205	8465	8725	8985	9245	9505		260	259	258
71		9764	0024	0284	0544	0804	1064	1324	1583	1843	2103	1	26	26	26
72	223	2363	2622	2882	3142	3402	3661	3921	4181	4440	4700	2	52	52	52
73		4959	5219	5479	5738	5998	6257	6517	6776	7036	7295	3	78	78	77
74		7555	7814	8073	8333	8592	8852	9111	9370	9630	9889	4	104	104	103
1675	224	0148	0407	0667	0926	1185	1444	1704	1963	2222	2481	5	130	130	129
76		2740	2999	3258	3517	3777	4036	4295	4554	4813	5072	6	156	155	155
77		5331	5590	5849	6107	6366	6625	6884	7143	7402	7661	7	182	181	181
78		7920	8178	8437	8696	8955	9213	9472	9731	9990	0248	8	208	207	206
79	225	0507	0766	1024	1283	1541	1800	2059	2317	2576	2834	9	234	233	232
1680		3093	3351	3610	3868	4127	4385	4644	4902	5160	5419		259	258	257
81		5677	5935	6194	6452	6710	6969	7227	7485	7743	8002	1	26	26	26
82		8260	8518	8776	9034	9293	9551	9809	0067	0325	0583	2	52	52	51
83	226	0841	1099	1357	1615	1873	2131	2389	2647	2905	3163	3	78	77	77
84		3421	3679	3937	4194	4452	4710	4968	5226	5484	5741	4	104	103	103
1685		5999	6257	6515	6772	7030	7288	7545	7803	8060	8318	5	130	129	129
86		8576	8833	9091	9348	9606	9863	0121	0378	0636	0893	6	155	155	154
87	227	1151	1408	1666	1923	2180	2438	2695	2953	3210	3467	7	181	181	180
88		3724	3982	4239	4496	4753	5011	5268	5525	5782	6039	8	207	206	206
89		6296	6554	6811	7068	7325	7582	7839	8096	8353	8610	9	233	232	231
1690		8867	9124	9381	9638	9895	0152	0409	0666	0922	1179		257	256	255
91	228	1436	1693	1950	2206	2463	2720	2977	3233	3490	3747	1	26	26	26
92		4004	4260	4517	4774	5030	5287	5543	5800	6057	6313	2	51	51	51
93		6570	6826	7083	7339	7596	7852	8108	8365	8621	8878	3	77	77	77
94		9134	9390	9647	9903	0159	0416	0672	0928	1185	1441	4	103	102	102
1695	229	1697	1953	2209	2466	2722	2978	3234	3490	3746	4002	5	129	128	128
96		4258	4515	4771	5027	5283	5539	5795	6051	6307	6562	6	154	154	153
97		6818	7074	7330	7586	7842	8098	8354	8609	8865	9121	7	180	179	179
98		9377	9633	9888	0144	0400	0656	0911	1167	1423	1678	8	206	205	204
99	230	1934	2189	2445	2701	2956	3212	3467	3723	3978	4234	9	231	230	230
N.		0	1	2	3	4	5	6	7	8	9	D.&Pro.Pts			

Number 17000 *to* 17669
Logarithm 230 4489 *to* 247 9487

N.		0	1	2	3	4	5	6	7	8	9	D.&Pro.Pts			
1700	230	4489	4745	5000	5256	5511	5766	6022	6277	6532	6788		256	255	254
01		7043	7298	7554	7809	8064	8320	8575	8830	9085	9340	1	26	26	25
02		9596	9851	0106	0361	0616	0871	1126	1381	1636	1891	2	51	51	51
03	231	2146	2401	2656	2911	3166	3421	3676	3931	4186	4441	3	77	77	76
04		4696	4951	5206	5460	5715	5970	6225	6480	6734	6989	4	102	102	102
1705		7244	7499	7753	8008	8263	8517	8772	9026	9281	9536	5	128	128	127
06		9790	0045	0299	0554	0808	1063	1317	1572	1826	2081	6	154	153	152
07	232	2335	2590	2844	3098	3353	3607	3861	4116	4370	4624	7	179	179	178
08		4879	5133	5387	5641	5896	6150	6404	6658	6912	7166	8	205	204	203
09		7421	7675	7929	8183	8437	8691	8945	9199	9453	9707	9	230	230	229
1710		9961	0215	0469	0723	0977	1231	1485	1739	1992	2246		254	253	252
11	233	2500	2754	3008	3262	3515	3769	4023	4277	4530	4784	1	25	25	25
12		5038	5291	5545	5799	6052	6306	6559	6813	7067	7320	2	51	51	50
13		7574	7827	8081	8334	8588	8841	9095	9348	9601	9855	3	76	76	76
14	234	0108	0362	0615	0868	1122	1375	1628	1881	2135	2388	4	102	101	101
1715		2641	2894	3148	3401	3654	3907	4160	4414	4667	4920	5	127	127	126
16		5173	5426	5679	5932	6185	6438	6691	6944	7197	7450	6	152	152	151
17		7703	7956	8209	8462	8715	8967	9220	9473	9726	9979	7	178	177	176
18	235	0232	0484	0737	0990	1243	1495	1748	2001	2253	2506	8	203	202	202
19		2759	3011	3264	3517	3769	4022	4274	4527	4779	5032	9	229	228	227
1720		5284	5537	5789	6042	6294	6547	6799	7052	7304	7556		253	252	251
21		7809	8061	8313	8566	8818	9070	9323	9575	9827	0079	1	25	25	25
22	236	0331	0584	0836	1088	1340	1592	1844	2097	2349	2601	2	51	50	50
23		2853	3105	3357	3609	3861	4113	4365	4617	4869	5121	3	76	76	75
24		5373	5625	5876	6128	6380	6632	6884	7136	7387	7639	4	101	101	100
1725		7891	8143	8394	8646	8898	9150	9401	9653	9905	0156	5	127	126	126
26	237	0408	0660	0911	1163	1414	1666	1917	2169	2420	2672	6	152	151	151
27		2923	3175	3426	3678	3929	4181	4432	4683	4935	5186	7	177	176	176
28		5437	5689	5940	6191	6443	6694	6945	7196	7448	7699	8	202	202	201
29		7950	8201	8452	8703	8955	9206	9457	9708	9959	0210	9	228	227	226
1730	238	0461	0712	0963	1214	1465	1716	1967	2218	2469	2720		251	250	249
31		2971	3222	3472	3723	3974	4225	4476	4727	4977	5228	1	25	25	25
32		5479	5730	5980	6231	6482	6732	6983	7234	7484	7735	2	50	50	50
33		7986	8236	8487	8737	8988	9238	9489	9739	9990	0240	3	75	75	75
34	239	0491	0741	0992	1242	1493	1743	1993	2244	2494	2744	4	100	100	100
1735		2995	3245	3495	3746	3996	4246	4496	4747	4997	5247	5	126	125	125
36		5497	5747	5998	6248	6498	6748	6998	7248	7498	7748	6	151	150	149
37		7998	8248	8498	8748	8998	9248	9498	9748	9998	0248	7	176	175	174
38	240	0498	0748	0997	1247	1497	1747	1997	2247	2496	2746	8	201	200	199
39		2996	3246	3495	3745	3995	4244	4494	4744	4993	5243	9	226	225	224
1740		5492	5742	5992	6241	6491	6740	6990	7239	7489	7738		250	249	248
41		7988	8237	8487	8736	8985	9235	9484	9734	9983	0232	1	25	25	25
42	241	0482	0731	0980	1229	1479	1728	1977	2226	2476	2725	2	50	50	50
43		2974	3223	3472	3721	3970	4220	4469	4718	4967	5216	3	75	75	74
44		5465	5714	5963	6212	6461	6710	6959	7208	7457	7705	4	100	100	99
1745		7954	8203	8452	8701	8950	9199	9447	9696	9945	0194	5	125	125	124
46	242	0442	0691	0940	1189	1437	1686	1935	2183	2432	2680	6	150	149	149
47		2929	3178	3426	3675	3923	4172	4420	4669	4917	5166	7	175	174	174
48		5414	5663	5911	6160	6408	6656	6905	7153	7401	7650	8	200	199	198
49		7898	8146	8395	8643	8891	9139	9388	9636	9884	0132	9	225	224	223
1750	243	0380	0629	0877	1125	1373	1621	1869	2117	2365	2613		248	247	246
51		2861	3109	3357	3605	3853	4101	4349	4597	4845	5093	1	25	25	25
52		5341	5589	5837	6085	6332	6580	6828	7076	7324	7571	2	50	49	49
53		7819	8067	8315	8562	8810	9058	9305	9553	9801	0048	3	74	74	74
54	244	0296	0543	0791	1039	1286	1534	1781	2029	2276	2524	4	99	99	98
1755		2771	3019	3266	3514	3761	4008	4256	4503	4750	4998	5	124	124	123
56		5245	5492	5740	5987	6234	6482	6729	6976	7223	7470	6	149	148	148
57		7718	7965	8212	8459	8706	8953	9200	9448	9695	9942	7	174	173	172
58	245	0189	0436	0683	0930	1177	1424	1671	1918	2165	2411	8	198	198	197
59		2658	2905	3152	3399	3646	3893	4140	4386	4633	4880	9	223	222	221
1760		5127	5373	5620	5867	6114	6360	6607	6854	7100	7347		247	246	245
61		7594	7840	8087	8333	8580	8826	9073	9320	9566	9813	1	25	25	25
62	246	0059	0306	0552	0798	1045	1291	1538	1784	2030	2277	2	49	49	49
63		2523	2769	3016	3262	3508	3755	4001	4247	4493	4740	3	74	74	74
64		4986	5232	5478	5724	5970	6217	6463	6709	6955	7201	4	99	98	98
1765		7447	7693	7939	8185	8431	8677	8923	9169	9415	9661	5	124	123	123
66		9907	0153	0399	0645	0891	1136	1382	1628	1874	2120	6	148	148	147
67	247	2365	2611	2857	3103	3349	3594	3840	4086	4331	4577	7	173	172	172
68		4823	5068	5314	5559	5805	6051	6296	6542	6787	7033	8	198	197	196
69		7278	7524	7769	8015	8260	8506	8751	8997	9242	9487	9	222	221	221
N.		0	1	2	3	4	5	6	7	8	9	D.&Pro.Pts			

Number 17700 *to* 18399
Logarithm 247 9733 *to* 264 7942

N.		0	1	2	3	4	5	6	7	8	9	D.&Pro.Pts			
1770	247	9733	9978	0223	0469	0714	0959	1205	1450	1695	1940		246	245	244
71	248	2186	2431	2676	2921	3166	3412	3657	3902	4147	4392	1	25	25	24
72		4637	4882	5127	5372	5617	5862	6107	6352	6597	6842	2	49	49	49
73		7087	7332	7577	7822	8067	8312	8557	8802	9047	9291	3	74	74	73
74		9536	9781	0026	0271	0515	0760	1005	1249	1494	1739	4	98	98	98
1775	249	1984	2228	2473	2718	2962	3207	3451	3696	3941	4185	5	123	123	122
76		4430	4674	4919	5163	5408	5652	5897	6141	6385	6630	6	148	147	146
77		6874	7119	7363	7607	7852	8096	8340	8585	8829	9073	7	172	172	171
78		9318	9562	9806	0050	0294	0539	0783	1027	1271	1515	8	197	196	195
79	250	1759	2004	2248	2492	2736	2980	3224	3468	3712	3956	9	221	221	220
1780		4200	4444	4688	4932	5176	5420	5664	5908	6151	6395		244	243	242
81		6639	6883	7127	7371	7614	7858	8102	8346	8590	8833	1	24	24	24
82		9077	9321	9564	9808	0052	0295	0539	0783	1026	1270	2	49	49	48
83	251	1513	1757	2001	2244	2488	2731	2975	3218	3462	3705	3	73	73	73
84		3949	4192	4435	4679	4922	5166	5409	5652	5896	6139	4	98	97	97
1785		6382	6625	6869	7112	7355	7599	7842	8085	8328	8571	5	122	122	121
86		8815	9058	9301	9544	9787	0030	0273	0516	0759	1002	6	146	146	145
87	252	1246	1489	1732	1975	2218	2461	2703	2946	3189	3432	7	171	170	169
88		3675	3918	4161	4404	4647	4889	5132	5375	5618	5861	8	195	194	194
89		6103	6346	6589	6832	7074	7317	7560	7802	8045	8288	9	220	219	218
1790		8530	8773	9016	9258	9501	9743	9986	0228	0471	0713		243	242	241
91	253	0956	1198	1441	1683	1926	2168	2411	2653	2895	3138	1	24	24	24
92		3380	3622	3865	4107	4349	4592	4834	5076	5318	5561	2	49	48	48
93		5803	6045	6287	6529	6772	7014	7256	7498	7740	7982	3	73	73	72
94		8224	8466	8709	8951	9193	9435	9677	9919	0161	0403	4	97	97	96
1795	254	0645	0886	1128	1370	1612	1854	2096	2338	2580	2822	5	122	121	121
96		3063	3305	3547	3789	4030	4272	4514	4756	4997	5239	6	146	145	145
97		5481	5722	5964	6206	6447	6689	6931	7172	7414	7655	7	170	169	169
98		7897	8138	8380	8621	8863	9104	9346	9587	9829	0070	8	194	194	193
99	255	0312	0553	0794	1036	1277	1519	1760	2001	2242	2484	9	219	218	217
1800		2725	2966	3208	3449	3690	3931	4172	4414	4655	4896		242	241	240
01		5137	5378	5619	5860	6102	6343	6584	6825	7066	7307	1	24	24	24
02		7548	7789	8030	8271	8512	8753	8994	9235	9475	9716	2	48	48	48
03		9957	0198	0439	0680	0921	1161	1402	1643	1884	2125	3	73	72	72
04	256	2365	2606	2847	3087	3328	3569	3810	4050	4291	4531	4	97	96	96
1805		4772	5013	5253	5494	5734	5975	6215	6456	6696	6937	5	121	121	120
06		7177	7418	7658	7899	8139	8380	8620	8860	9101	9341	6	145	145	144
07		9582	9822	0062	0302	0543	0783	1023	1264	1504	1744	7	169	169	168
08	257	1984	2224	2465	2705	2945	3185	3425	3665	3905	4146	8	194	193	192
09		4386	4626	4866	5106	5346	5586	5826	6066	6306	6546	9	218	217	216
1810		6786	7026	7266	7506	7745	7985	8225	8465	8705	8945		240	239	238
11		9185	9424	9664	9904	0144	0383	0623	0863	1103	1342	1	24	24	24
12	258	1582	1822	2061	2301	2541	2780	3020	3259	3499	3738	2	48	48	48
13		3978	4218	4457	4697	4936	5176	5415	5655	5894	6133	3	72	72	71
14		6373	6612	6852	7091	7330	7570	7809	8048	8288	8527	4	96	96	95
1815		8766	9006	9245	9484	9723	9963	0202	0441	0680	0919	5	120	120	119
16	259	1158	1398	1637	1876	2115	2354	2593	2832	3071	3310	6	144	143	143
17		3549	3788	4027	4266	4505	4744	4983	5222	5461	5700	7	168	167	167
18		5939	6178	6417	6655	6894	7133	7372	7611	7849	8088	8	192	191	190
19		8327	8566	8804	9043	9282	9521	9759	9998	0237	0475	9	216	215	214
1820	260	0714	0952	1191	1430	1668	1907	2145	2384	2622	2861		239	238	237
21		3099	3338	3576	3815	4053	4292	4530	4769	5007	5245	1	24	24	24
22		5484	5722	5960	6199	6437	6675	6914	7152	7390	7628	2	48	48	47
23		7867	8105	8343	8581	8820	9058	9296	9534	9772	0010	3	72	71	71
24	261	0248	0486	0725	0963	1201	1439	1677	1915	2153	2391	4	96	95	95
1825		2629	2867	3105	3343	3580	3818	4056	4294	4532	4770	5	120	119	119
26		5008	5246	5483	5721	5959	6197	6435	6672	6910	7148	6	143	143	142
27		7385	7623	7861	8099	8336	8574	8811	9049	9287	9524	7	167	167	166
28		9762	9999	0237	0475	0712	0950	1187	1425	1662	1900	8	191	190	190
29	262	2137	2374	2612	2849	3087	3324	3562	3799	4036	4274	9	215	214	213
1830		4511	4748	4986	5223	5460	5697	5935	6172	6409	6646		238	237	236
31		6883	7121	7358	7595	7832	8069	8306	8543	8781	9018	1	24	24	24
32		9255	9492	9729	9966	0203	0440	0677	0914	1151	1388	2	48	47	47
33	263	1625	1862	2098	2335	2572	2809	3046	3283	3520	3757	3	71	71	71
34		3993	4230	4467	4704	4940	5177	5414	5651	5887	6124	4	95	95	94
1835		6361	6597	6834	7071	7307	7544	7780	8017	8254	8490	5	119	119	118
36		8727	8963	9200	9436	9673	9909	0146	0382	0619	0855	6	143	142	142
37	264	1092	1328	1564	1801	2037	2273	2510	2746	2982	3219	7	167	166	165
38		3455	3691	3928	4164	4400	4636	4873	5109	5345	5581	8	190	190	189
39		5817	6053	6290	6526	6762	6998	7234	7470	7706	7942	9	214	213	212
N.		0	1	2	3	4	5	6	7	8	9	D.&Pro.Pts			

Number 18400 *to* 19099
Logarithm 264 8178 *to* 281 0106

N.	0	1	2	3	4	5	6	7	8	9	D.&Pro.Pts			
1840	264 8178	8414	8650	8886	9122	9358	9594	9830	0066	0302		236	235	234
41	265 0538	0774	1010	1246	1481	1717	1953	2189	2425	2660	1	24	24	23
42	2896	3132	3368	3604	3839	4075	4311	4546	4782	5018	2	47	47	47
43	5253	5489	5725	5960	6196	6431	6667	6903	7138	7374	3	71	71	70
44	7609	7845	8080	8316	8551	8787	9022	9257	9493	9728	4	94	94	94
1845	9964	0199	0434	0670	0905	1140	1376	1611	1846	2082	5	118	118	117
46	266 2317	2552	2787	3023	3258	3493	3728	3963	4199	4434	6	142	141	140
47	4669	4904	5139	5374	5609	5844	6080	6315	6550	6785	7	165	165	164
48	7020	7255	7490	7725	7960	8195	8429	8664	8899	9134	8	189	188	187
49	9369	9604	9839	0074	0309	0543	0778	1013	1248	1482	9	212	212	211
1850	267 1717	1952	2187	2421	2656	2891	3126	3360	3595	3830		235	234	233
51	4064	4299	4533	4768	5003	5237	5472	5706	5941	6175	1	24	23	23
52	6410	6644	6879	7113	7348	7582	7817	8051	8285	8520	2	47	47	47
53	8754	8989	9223	9457	9692	9926	0160	0394	0629	0863	3	71	70	70
54	268 1097	1332	1566	1800	2034	2268	2503	2737	2971	3205	4	94	94	93
1855	3439	3673	3907	4141	4376	4610	4844	5078	5312	5546	5	118	117	117
56	5780	6014	6248	6482	6716	6950	7183	7417	7651	7885	6	141	140	140
57	8119	8353	8587	8821	9054	9288	9522	9756	9990	0223	7	165	164	163
58	269 0457	0691	0925	1158	1392	1626	1859	2093	2327	2560	8	188	187	186
59	2794	3028	3261	3495	3728	3962	4195	4429	4662	4896	9	212	211	210
1860	5129	5363	5596	5830	6063	6297	6530	6764	6997	7230		234	233	232
61	7464	7697	7930	8164	8397	8630	8864	9097	9330	9564	1	23	23	23
62	9797	0030	0263	0496	0730	0963	1196	1429	1662	1895	2	47	47	46
63	270 2129	2362	2595	2828	3061	3294	3527	3760	3993	4226	3	70	70	70
64	4459	4692	4925	5158	5391	5624	5857	6090	6323	6555	4	94	93	93
1865	6788	7021	7254	7487	7720	7953	8185	8418	8651	8884	5	117	117	116
66	9116	9349	9582	9815	0047	0280	0513	0745	0978	1211	6	140	140	139
67	271 1443	1676	1908	2141	2374	2606	2839	3071	3304	3536	7	164	163	162
68	3769	4001	4234	4466	4699	4931	5163	5396	5628	5861	8	187	186	186
69	6093	6325	6558	6790	7022	7255	7487	7719	7952	8184	9	211	210	209
1870	8416	8648	8881	9113	9345	9577	9809	0041	0274	0506		233	232	231
71	272 0738	0970	1202	1434	1666	1898	2130	2362	2594	2826	1	23	23	23
72	3058	3290	3522	3754	3986	4218	4450	4682	4914	5146	2	47	46	46
73	5378	5610	5841	6073	6305	6537	6769	7001	7232	7464	3	70	70	69
74	7696	7928	8159	8391	8623	8854	9086	9318	9549	9781	4	93	93	92
1875	273 0013	0244	0476	0708	0939	1171	1402	1634	1865	2097	5	117	116	116
76	2328	2560	2791	3023	3254	3486	3717	3949	4180	4411	6	140	139	139
77	4643	4874	5105	5337	5568	5799	6031	6262	6493	6725	7	163	162	162
78	6956	7187	7418	7650	7881	8112	8343	8574	8806	9037	8	186	186	185
79	9268	9499	9730	9961	0192	0423	0654	0885	1116	1347	9	210	209	208
1880	274 1578	1809	2040	2271	2502	2733	2964	3195	3426	3657		231	230	229
81	3888	4119	4350	4581	4811	5042	5273	5504	5735	5965	1	23	23	23
82	6196	6427	6658	6888	7119	7350	7581	7811	8042	8273	2	46	46	46
83	8503	8734	8964	9195	9426	9656	9887	0117	0348	0578	3	69	69	69
84	275 0809	1039	1270	1500	1731	1961	2192	2422	2653	2883	4	92	92	92
1885	3114	3344	3574	3805	4035	4265	4496	4726	4956	5187	5	116	115	115
86	5417	5647	5877	6108	6338	6568	6798	7028	7259	7489	6	139	138	137
87	7719	7949	8179	8409	8640	8870	9100	9330	9560	9790	7	162	161	160
88	276 0020	0250	0480	0710	0940	1170	1400	1630	1860	2090	8	185	184	183
89	2320	2549	2779	3009	3239	3469	3699	3929	4158	4388	9	208	207	206
1890	4618	4848	5078	5307	5537	5767	5997	6226	6456	6686		230	229	228
91	6915	7145	7375	7604	7834	8063	8293	8523	8752	8982	1	23	23	23
92	9211	9441	9670	9900	0129	0359	0588	0818	1047	1277	2	46	46	46
93	277 1506	1736	1965	2194	2424	2653	2882	3112	3341	3570	3	69	69	68
94	3800	4029	4258	4488	4717	4946	5175	5405	5634	5863	4	92	92	91
1895	6092	6321	6550	6780	7009	7238	7467	7696	7925	8154	5	115	115	114
96	8383	8612	8841	9070	9299	9528	9757	9986	0215	0444	6	138	137	137
97	278 0673	0902	1131	1360	1589	1818	2047	2276	2504	2733	7	161	160	160
98	2962	3191	3420	3648	3877	4106	4335	4564	4792	5021	8	184	183	182
99	5250	5478	5707	5936	6164	6393	6622	6850	7079	7307	9	207	206	205
1900	7536	7765	7993	8222	8450	8679	8907	9136	9364	9593		229	228	227
01	9821	0050	0278	0506	0735	0963	1192	1420	1648	1877	1	23	23	23
02	279 2105	2333	2562	2790	3018	3247	3475	3703	3931	4160	2	46	46	45
03	4388	4616	4844	5072	5301	5529	5757	5985	6213	6441	3	69	68	68
04	6669	6898	7126	7354	7582	7810	8038	8266	8494	8722	4	92	91	91
1905	8950	9178	9406	9634	9862	0090	0317	0545	0773	1001	5	115	114	114
06	280 1229	1457	1685	1912	2140	2368	2596	2824	3051	3279	6	137	137	136
07	3507	3735	3962	4190	4418	4645	4873	5101	5328	5556	7	160	160	159
08	5784	6011	6239	6467	6694	6922	7149	7377	7604	7832	8	183	182	182
09	8059	8287	8514	8742	8969	9197	9424	9651	9879	0106	9	206	205	204
N.	0	1	2	3	4	5	6	7	8	9	D.&Pro.Pts			

Number 19100 *to* 19799
Logarithm 281 0334 *to* 296 6433

N.	0	1	2	3	4	5	6	7	8	9	D.&Pro.Pts			
1910	281 0334	0561	0788	1016	1243	1470	1698	1925	2152	2380		228	227	226
11	2607	2834	3061	3289	3516	3743	3970	4197	4425	4652	1	23	23	23
12	4879	5106	5333	5560	5787	6014	6242	6469	6696	6923	2	46	45	45
13	7150	7377	7604	7831	8058	8285	8512	8739	8966	9192	3	68	68	68
14	9419	9646	9873	0100	0327	0554	0781	1007	1234	1461	4	91	91	90
1915	282 1688	1915	2141	2368	2595	2822	3048	3275	3502	3728	5	114	114	113
16	3955	4182	4408	4635	4862	5088	5315	5541	5768	5995	6	137	136	136
17	6221	6448	6674	6901	7127	7354	7580	7807	8033	8260	7	160	159	158
18	8486	8712	8939	9165	9392	9618	9844	0071	0297	0523	8	182	182	181
19	283 0750	0976	1202	1429	1655	1881	2107	2334	2560	2786	9	205	204	203
1920	3012	3238	3465	3691	3917	4143	4369	4595	4821	5048		227	226	225
21	5274	5500	5726	5952	6178	6404	6630	6856	7082	7308	1	23	23	23
22	7534	7760	7986	8212	8438	8663	8889	9115	9341	9567	2	45	45	45
23	9793	0019	0245	0470	0696	0922	1148	1373	1599	1825	3	68	68	68
24	284 2051	2276	2502	2728	2953	3179	3405	3630	3856	4082	4	91	90	90
1925	4307	4533	4759	4984	5210	5435	5661	5886	6112	6337	5	114	113	113
26	6563	6788	7014	7239	7465	7690	7916	8141	8366	8592	6	136	136	135
27	8817	9043	9268	9493	9719	9944	0169	0394	0620	0845	7	159	158	158
28	285 1070	1296	1521	1746	1971	2196	2422	2647	2872	3097	8	182	181	180
29	3322	3547	3773	3998	4223	4448	4673	4898	5123	5348	9	204	203	203
1930	5573	5798	6023	6248	6473	6698	6923	7148	7373	7598		225	224	223
31	7823	8048	8273	8497	8722	8947	9172	9397	9622	9846	1	23	22	22
32	286 0071	0296	0521	0746	0970	1195	1420	1644	1869	2094	2	45	45	45
33	2319	2543	2768	2993	3217	3442	3666	3891	4116	4340	3	68	67	67
34	4565	4789	5014	5238	5463	5687	5912	6136	6361	6585	4	90	90	89
1935	6810	7034	7259	7483	7707	7932	8156	8381	8605	8829	5	113	112	112
36	9054	9278	9502	9726	9951	0175	0399	0624	0848	1072	6	135	134	134
37	287 1296	1520	1745	1969	2193	2417	2641	2865	3090	3314	7	158	157	156
38	3538	3762	3986	4210	4434	4658	4882	5106	5330	5554	8	180	179	178
39	5778	6002	6226	6450	6674	6898	7122	7346	7570	7793	9	203	202	201
1940	8017	8241	8465	8689	8913	9136	9360	9584	9808	0032		224	223	222
41	288 0255	0479	0703	0927	1150	1374	1598	1821	2045	2269	1	22	22	22
42	2492	2716	2939	3163	3387	3610	3834	4057	4281	4504	2	45	45	44
43	4728	4952	5175	5399	5622	5845	6069	6292	6516	6739	3	67	67	67
44	6963	7186	7409	7633	7856	8079	8303	8526	8749	8973	4	90	89	89
1945	9196	9419	9643	9866	0089	0312	0536	0759	0982	1205	5	112	112	111
46	289 1428	1652	1875	2098	2321	2544	2767	2990	3213	3436	6	134	134	133
47	3660	3883	4106	4329	4552	4775	4998	5221	5444	5667	7	157	156	155
48	5890	6112	6335	6558	6781	7004	7227	7450	7673	7896	8	179	178	178
49	8118	8341	8564	8787	9010	9232	9455	9678	9901	0123	9	202	201	200
1950	290 0346	0569	0792	1014	1237	1460	1682	1905	2127	2350		223	222	221
51	2573	2795	3018	3240	3463	3686	3908	4131	4353	4576	1	22	22	22
52	4798	5021	5243	5466	5688	5910	6133	6355	6578	6800	2	45	44	44
53	7022	7245	7467	7690	7912	8134	8356	8579	8801	9023	3	67	67	66
54	9246	9468	9690	9912	0135	0357	0579	0801	1023	1245	4	89	89	88
1955	291 1468	1690	1912	2134	2356	2578	2800	3022	3244	3466	5	112	111	111
56	3689	3911	4133	4355	4577	4799	5020	5242	5464	5686	6	134	133	133
57	5908	6130	6352	6574	6796	7018	7240	7461	7683	7905	7	156	155	155
58	8127	8349	8570	8792	9014	9236	9458	9679	9901	0123	8	178	178	177
59	292 0344	0566	0788	1009	1231	1453	1674	1896	2118	2339	9	201	200	199
1960	2561	2782	3004	3225	3447	3668	3890	4111	4333	4554		222	221	220
61	4776	4997	5219	5440	5662	5883	6105	6326	6547	6769	1	22	22	22
62	6990	7211	7433	7654	7875	8097	8318	8539	8760	8982	2	44	44	44
63	9203	9424	9645	9867	0088	0309	0530	0751	0973	1194	3	67	66	66
64	293 1415	1636	1857	2078	2299	2520	2741	2962	3183	3405	4	89	88	88
1965	3626	3847	4068	4289	4510	4730	4951	5172	5393	5614	5	111	111	110
66	5835	6056	6277	6498	6719	6940	7160	7381	7602	7823	6	133	133	132
67	8044	8264	8485	8706	8927	9147	9368	9589	9810	0030	7	155	155	154
68	294 0251	0472	0692	0913	1134	1354	1575	1795	2016	2237	8	178	177	176
69	2457	2678	2898	3119	3339	3560	3780	4001	4221	4442	9	200	199	198
1970	4662	4883	5103	5324	5544	5764	5985	6205	6426	6646		221	220	219
71	6866	7087	7307	7527	7748	7968	8188	8408	8629	8849	1	22	22	22
72	9069	9289	9510	9730	9950	0170	0390	0610	0831	1051	2	44	44	44
73	295 1271	1491	1711	1931	2151	2371	2591	2811	3031	3251	3	66	66	66
74	3471	3691	3911	4131	4351	4571	4791	5011	5231	5451	4	88	88	88
1975	5671	5891	6111	6331	6550	6770	6990	7210	7430	7650	5	111	110	110
76	7869	8089	8309	8529	8748	8968	9188	9408	9627	9847	6	133	132	131
77	296 0067	0286	0506	0726	0945	1165	1385	1604	1824	2043	7	155	154	153
78	2263	2482	2702	2922	3141	3361	3580	3800	4019	4238	8	177	176	175
79	4458	4677	4897	5116	5336	5555	5774	5994	6213	6433	9	199	198	197
N.	0	1	2	3	4	5	6	7	8	9	D.&Pro.Pts			

Number 19800 *to* 20499
Logarithm 296 6652 *to* 311 7327

N.		0	1	2	3	4	5	6	7	8	9	D.&Pro.Pts			
1980	296	6652	6871	7091	7310	7529	7748	7968	8187	8406	8626		220	219	218
81		8845	9064	9283	9502	9722	9941	0160	0379	0598	0817	1	22	22	22
82	297	1037	1256	1475	1694	1913	2132	2351	2570	2789	3008	2	44	44	44
83		3227	3446	3665	3884	4103	4322	4541	4760	4979	5198	3	66	66	65
84		5417	5636	5854	6073	6292	6511	6730	6949	7168	7386	4	88	88	87
1985		7605	7824	8043	8261	8480	8699	8918	9136	9355	9574	5	110	110	109
86		9792	0011	0230	0448	0667	0886	1104	1323	1542	1760	6	132	131	131
87	298	1979	2197	2416	2634	2853	3071	3290	3508	3727	3945	7	154	153	153
88		4164	4382	4601	4819	5038	5256	5474	5693	5911	6129	8	176	175	174
89		6348	6566	6785	7003	7221	7439	7658	7876	8094	8313	9	198	197	196
1990		8531	8749	8967	9185	9404	9622	9840	0058	0276	0494		219	218	217
91	299	0713	0931	1149	1367	1585	1803	2021	2239	2457	2675	1	22	22	22
92		2893	3111	3329	3547	3765	3983	4201	4419	4637	4855	2	44	44	43
93		5073	5291	5509	5727	5945	6162	6380	6598	6816	7034	3	66	65	65
94		7252	7469	7687	7905	8123	8340	8558	8776	8994	9211	4	88	87	87
1995		9429	9647	9864	0082	0300	0517	0735	0953	1170	1388	5	110	109	109
96	300	1605	1823	2041	2258	2476	2693	2911	3128	3346	3563	6	131	131	130
97		3781	3998	4216	4433	4650	4868	5085	5303	5520	5737	7	153	153	152
98		5955	6172	6390	6607	6824	7042	7259	7476	7693	7911	8	175	174	174
99		8128	8345	8562	8780	8997	9214	9431	9648	9866	0083	9	197	196	195
2000	301	0300	0517	0734	0951	1168	1386	1603	1820	2037	2254		218	217	216
01		2471	2688	2905	3122	3339	3556	3773	3990	4207	4424	1	22	22	22
02		4641	4858	5075	5291	5508	5725	5942	6159	6376	6593	2	44	43	43
03		6809	7026	7243	7460	7677	7893	8110	8327	8544	8760	3	65	65	65
04		8977	9194	9411	9627	9844	0061	0277	0494	0711	0927	4	87	87	86
2005	302	1144	1360	1577	1794	2010	2227	2443	2660	2876	3093	5	109	109	108
06		3309	3526	3742	3959	4175	4392	4608	4825	5041	5257	6	131	130	130
07		5474	5690	5906	6123	6339	6556	6772	6988	7204	7421	7	153	152	151
08		7637	7853	8070	8286	8502	8718	8935	9151	9367	9583	8	174	174	173
09		9799	0016	0232	0448	0664	0880	1096	1312	1528	1745	9	196	195	194
2010	303	1961	2177	2393	2609	2825	3041	3257	3473	3689	3905		217	216	215
11		4121	4337	4553	4769	4984	5200	5416	5632	5848	6064	1	22	22	22
12		6280	6496	6711	6927	7143	7359	7575	7790	8006	8222	2	43	43	43
13		8438	8653	8869	9085	9301	9516	9732	9948	0163	0379	3	65	65	65
14	304	0595	0810	1026	1242	1457	1673	1888	2104	2319	2535	4	87	86	86
2015		2751	2966	3182	3397	3613	3828	4043	4259	4474	4690	5	109	108	108
16		4905	5121	5336	5552	5767	5982	6198	6413	6628	6844	6	130	130	129
17		7059	7274	7490	7705	7920	8135	8351	8566	8781	8996	7	152	151	151
18		9212	9427	9642	9857	0072	0288	0503	0718	0933	1148	8	174	173	172
19	305	1363	1578	1793	2008	2224	2439	2654	2869	3084	3299	9	195	194	194
2020		3514	3729	3944	4159	4374	4589	4803	5018	5233	5448		215	214	213
21		5663	5878	6093	6308	6523	6737	6952	7167	7382	7597	1	22	21	21
22		7812	8026	8241	8456	8671	8885	9100	9315	9529	9744	2	43	43	43
23		9959	0174	0388	0603	0817	1032	1247	1461	1676	1891	3	65	64	64
24	306	2105	2320	2534	2749	2963	3178	3392	3607	3821	4036	4	86	86	85
2025		4250	4465	4679	4894	5108	5322	5537	5751	5966	6180	5	108	107	107
26		6394	6609	6823	7037	7252	7466	7680	7895	8109	8323	6	129	128	128
27		8537	8752	8966	9180	9394	9609	9823	0037	0251	0465	7	151	150	149
28	307	0680	0894	1108	1322	1536	1750	1964	2178	2392	2606	8	172	171	170
29		2820	3035	3249	3463	3677	3891	4105	4319	4532	4746	9	194	193	192
2030		4960	5174	5388	5602	5816	6030	6244	6458	6672	6885		215	214	213
31		7099	7313	7527	7741	7954	8168	8382	8596	8810	9023	1	22	21	21
32		9237	9451	9664	9878	0092	0306	0519	0733	0947	1160	2	43	43	43
33	308	1374	1587	1801	2015	2228	2442	2655	2869	3082	3296	3	65	64	64
34		3509	3723	3936	4150	4363	4577	4790	5004	5217	5431	4	86	86	85
2035		5644	5858	6071	6284	6498	6711	6924	7138	7351	7564	5	108	107	107
36		7778	7991	8204	8418	8631	8844	9057	9271	9484	9697	6	129	128	128
37		9910	0123	0337	0550	0763	0976	1189	1402	1616	1829	7	151	150	149
38	309	2042	2255	2468	2681	2894	3107	3320	3533	3746	3959	8	172	171	170
39		4172	4385	4598	4811	5024	5237	5450	5663	5876	6089	9	194	193	192
2040		6302	6515	6727	6940	7153	7366	7579	7792	8004	8217		213	212	211
41		8430	8643	8856	9068	9281	9494	9707	9919	0132	0345	1	21	21	21
42	310	0557	0770	0983	1195	1408	1621	1833	2046	2258	2471	2	43	42	42
43		2684	2896	3109	3321	3534	3746	3959	4171	4384	4596	3	64	64	63
44		4809	5021	5234	5446	5659	5871	6084	6296	6508	6721	4	85	85	84
2045		6933	7145	7358	7570	7783	7995	8207	8419	8632	8844	5	107	106	106
46		9056	9269	9481	9693	9905	0117	0330	0542	0754	0966	6	128	127	127
47	311	1178	1391	1603	1815	2027	2239	2451	2663	2875	3087	7	149	148	148
48		3300	3512	3724	3936	4148	4360	4572	4784	4996	5208	8	170	170	169
49		5420	5632	5843	6055	6267	6479	6691	6903	7115	7327	9	192	191	190
N.		0	1	2	3	4	5	6	7	8	9	D.&Pro.Pts			

Number 20500 *to* 21199
Logarithm 311 7539 *to* 326 3154

N.		0	1	2	3	4	5	6	7	8	9	D.&Pro.Pts			
2050	311	7539	7750	7962	8174	8386	8598	8810	9021	9233	9445		212	211	210
51		9657	9868	0080	0292	0504	0715	0927	1139	1350	1562	1	21	21	21
52	312	1774	1985	2197	2408	2620	2832	3043	3255	3466	3678	2	42	42	42
53		3889	4101	4313	4524	4736	4947	5159	5370	5581	5793	3	64	63	63
54		6004	6216	6427	6639	6850	7061	7273	7484	7696	7907	4	85	84	84
2055		8118	8330	8541	8752	8964	9175	9386	9597	9809	0020	5	106	106	105
56	313	0231	0442	0654	0865	1076	1287	1498	1709	1921	2132	6	127	127	126
57		2343	2554	2765	2976	3187	3398	3610	3821	4032	4243	7	148	148	147
58		4454	4665	4876	5087	5298	5509	5720	5931	6142	6353	8	170	169	168
59		6563	6774	6985	7196	7407	7618	7829	8040	8251	8461	9	191	190	189
2060		8672	8883	9094	9305	9515	9726	9937	0148	0358	0569		211	210	209
61	314	0780	0991	1201	1412	1623	1833	2044	2255	2465	2676	1	21	21	21
62		2887	3097	3308	3518	3729	3940	4150	4361	4571	4782	2	42	42	42
63		4992	5203	5413	5624	5834	6045	6255	6466	6676	6887	3	63	63	63
64		7097	7307	7518	7728	7939	8149	8359	8570	8780	8990	4	84	84	84
2065		9201	9411	9621	9831	0042	0252	0462	0672	0883	1093	5	106	105	105
66	315	1303	1513	1724	1934	2144	2354	2564	2774	2985	3195	6	127	126	125
67		3405	3615	3825	4035	4245	4455	4665	4875	5085	5295	7	148	147	146
68		5505	5715	5925	6135	6345	6555	6765	6975	7185	7395	8	169	168	167
69		7605	7815	8025	8235	8444	8654	8864	9074	9284	9494	9	190	189	188
2070		9703	9913	0123	0333	0543	0752	0962	1172	1382	1591		210	209	208
71	316	1801	2011	2220	2430	2640	2849	3059	3269	3478	3688	1	21	21	21
72		3898	4107	4317	4526	4736	4945	5155	5364	5574	5784	2	42	42	42
73		5993	6203	6412	6621	6831	7040	7250	7459	7669	7878	3	63	63	62
74		8088	8297	8506	8716	8925	9134	9344	9553	9762	9972	4	84	84	83
2075	317	0181	0390	0600	0809	1018	1227	1437	1646	1855	2064	5	105	105	104
76		2273	2483	2692	2901	3110	3319	3528	3738	3947	4156	6	126	125	125
77		4365	4574	4783	4992	5201	5410	5619	5828	6037	6246	7	147	146	146
78		6455	6664	6873	7082	7291	7500	7709	7918	8127	8336	8	168	167	166
79		8545	8754	8963	9172	9380	9589	9798	0007	0216	0425	9	189	188	187
2080	318	0633	0842	1051	1260	1468	1677	1886	2095	2303	2512		209	208	207
81		2721	2929	3138	3347	3556	3764	3973	4181	4390	4599	1	21	21	21
82		4807	5016	5224	5433	5642	5850	6059	6267	6476	6684	2	42	42	41
83		6893	7101	7310	7518	7727	7935	8143	8352	8560	8769	3	63	62	62
84		8977	9186	9394	9602	9811	0019	0227	0436	0644	0852	4	84	83	83
2085	319	1061	1269	1477	1685	1894	2102	2310	2518	2727	2935	5	105	104	104
86		3143	3351	3559	3768	3976	4184	4392	4600	4808	5016	6	125	125	124
87		5224	5433	5641	5849	6057	6265	6473	6681	6889	7097	7	146	146	145
88		7305	7513	7721	7929	8137	8345	8553	8761	8969	9176	8	167	166	166
89		9384	9592	9800	0008	0216	0424	0632	0839	1047	1255	9	188	187	186
2090	320	1463	1671	1878	2086	2294	2502	2709	2917	3125	3333		208	207	206
91		3540	3748	3956	4163	4371	4579	4786	4994	5202	5409	1	21	21	21
92		5617	5824	6032	6240	6447	6655	6862	7070	7277	7485	2	42	41	41
93		7692	7900	8107	8315	8522	8730	8937	9145	9352	9559	3	62	62	62
94		9767	9974	0182	0389	0596	0804	1011	1218	1426	1633	4	83	83	82
2095	321	1840	2048	2255	2462	2669	2877	3084	3291	3498	3706	5	104	104	103
96		3913	4120	4327	4534	4742	4949	5156	5363	5570	5777	6	125	124	124
97		5984	6191	6398	6606	6813	7020	7227	7434	7641	7848	7	146	145	144
98		8055	8262	8469	8676	8883	9090	9297	9504	9711	9917	8	166	166	165
99	322	0124	0331	0538	0745	0952	1159	1366	1572	1779	1986	9	187	186	185
2100		2193	2400	2607	2813	3020	3227	3434	3640	3847	4054		207	206	205
01		4261	4467	4674	4881	5087	5294	5501	5707	5914	6121	1	21	21	21
02		6327	6534	6740	6947	7153	7360	7567	7773	7980	8186	2	41	41	41
03		8393	8599	8806	9012	9219	9425	9632	9838	0045	0251	3	62	62	62
04	323	0457	0664	0870	1077	1283	1489	1696	1902	2108	2315	4	83	82	82
2105		2521	2727	2934	3140	3346	3552	3759	3965	4171	4377	5	104	103	103
06		4584	4790	4996	5202	5408	5615	5821	6027	6233	6439	6	124	124	123
07		6645	6851	7058	7264	7470	7676	7882	8088	8294	8500	7	145	144	144
08		8706	8912	9118	9324	9530	9736	9942	0148	0354	0560	8	166	165	164
09	324	0766	0972	1178	1384	1589	1795	2001	2207	2413	2619	9	186	185	185
2110		2825	3030	3236	3442	3648	3854	4059	4265	4471	4677		206	205	204
11		4882	5088	5294	5499	5705	5911	6117	6322	6528	6734	1	21	21	20
12		6939	7145	7350	7556	7762	7967	8173	8378	8584	8789	2	41	41	41
13		8995	9201	9406	9612	9817	0023	0228	0433	0639	0844	3	62	62	61
14	325	1050	1255	1461	1666	1872	2077	2282	2488	2693	2898	4	82	82	82
2115		3104	3309	3514	3720	3925	4130	4336	4541	4746	4951	5	103	103	102
16		5157	5362	5567	5772	5978	6183	6388	6593	6798	7003	6	124	123	122
17		7209	7414	7619	7824	8029	8234	8439	8644	8849	9055	7	144	144	143
18		9260	9465	9670	9875	0080	0285	0490	0695	0900	1105	8	165	164	163
19	326	1310	1515	1719	1924	2129	2334	2539	2744	2949	3154	9	185	185	184
N.		0	1	2	3	4	5	6	7	8	9	D.&Pro.Pts			

Number 21200 *to* 21899
Logarithm 326 3359 *to* 340 4243

N.		0	1	2	3	4	5	6	7	8	9	D&P	Pts
2120	326	3359	3563	3768	3973	4178	4383	4588	4792	4997	5202	205	204
21		5407	5611	5816	6021	6226	6430	6635	6840	7044	7249	1 21	20
22		7454	7658	7863	8068	8272	8477	8682	8886	9091	9295	2 41	41
23		9500	9705	9909	0114	0318	0523	0727	0932	1136	1341	3 62	61
24	327	1545	1750	1954	2158	2363	2567	2772	2976	3181	3385	4 82	82
2125		3589	3794	3998	4202	4407	4611	4815	5020	5224	5428	5 103	102
26		5633	5837	6041	6245	6450	6654	6858	7062	7267	7471	6 123	122
27		7675	7879	8083	8287	8492	8696	8900	9104	9308	9512	7 144	143
28		9716	9920	0124	0328	0533	0737	0941	1145	1349	1553	8 164	163
29	328	1757	1961	2165	2369	2572	2776	2980	3184	3388	3592	9 185	184
2130		3796	4000	4204	4408	4612	4815	5019	5223	5427	5631	204	203
31		5834	6038	6242	6446	6650	6853	7057	7261	7465	7668	1 20	20
32		7872	8076	8279	8483	8687	8890	9094	9298	9501	9705	2 41	41
33		9909	0112	0316	0519	0723	0926	1130	1334	1537	1741	3 61	61
34	329	1944	2148	2351	2555	2758	2962	3165	3369	3572	3775	4 82	81
2135		3979	4182	4386	4589	4792	4996	5199	5402	5606	5809	5 102	102
36		6012	6216	6419	6622	6826	7029	7232	7436	7639	7842	6 122	122
37		8045	8248	8452	8655	8858	9061	9264	9468	9671	9874	7 143	142
38	330	0077	0280	0483	0686	0889	1093	1296	1499	1702	1905	8 163	162
39		2108	2311	2514	2717	2920	3123	3326	3529	3732	3935	9 184	183
2140		4138	4341	4544	4747	4949	5152	5355	5558	5761	5964	203	202
41		6167	6370	6572	6775	6978	7181	7384	7586	7789	7992	1 20	20
42		8195	8397	8600	8803	9006	9208	9411	9614	9816	0019	2 41	40
43	331	0222	0424	0627	0830	1032	1235	1437	1640	1843	2045	3 61	61
44		2248	2450	2653	2855	3058	3261	3463	3666	3868	4070	4 81	81
2145		4273	4475	4678	4880	5083	5285	5488	5690	5892	6095	5 102	101
46		6297	6500	6702	6904	7107	7309	7511	7714	7916	8118	6 122	121
47		8320	8523	8725	8927	9129	9332	9534	9736	9938	0141	7 142	141
48	332	0343	0545	0747	0949	1151	1354	1556	1758	1960	2162	8 162	162
49		2364	2566	2768	2970	3172	3374	3577	3779	3981	4183	9 183	182
2150		4385	4587	4789	4991	5193	5394	5596	5798	6000	6202	202	201
51		6404	6606	6808	7010	7212	7414	7615	7817	8019	8221	1 20	20
52		8423	8624	8826	9028	9230	9432	9633	9835	0037	0239	2 40	40
53	333	0440	0642	0844	1045	1247	1449	1650	1852	2054	2255	3 61	60
54		2457	2659	2860	3062	3263	3465	3667	3868	4070	4271	4 81	80
2155		4473	4674	4876	5077	5279	5480	5682	5883	6085	6286	5 101	101
56		6488	6689	6890	7092	7293	7495	7696	7897	8099	8300	6 121	121
57		8501	8703	8904	9105	9307	9508	9709	9911	0112	0313	7 141	141
58	334	0514	0716	0917	1118	1319	1521	1722	1923	2124	2325	8 162	161
59		2526	2728	2929	3130	3331	3532	3733	3934	4135	4336	9 182	181
2160		4538	4739	4940	5141	5342	5543	5744	5945	6146	6347	201	200
61		6548	6749	6950	7151	7351	7552	7753	7954	8155	8356	1 20	20
62		8557	8758	8959	9159	9360	9561	9762	9963	0164	0364	2 40	40
63	335	0565	0766	0967	1168	1368	1569	1770	1970	2171	2372	3 60	60
64		2573	2773	2974	3175	3375	3576	3777	3977	4178	4378	4 80	80
2165		4579	4780	4980	5181	5381	5582	5782	5983	6183	6384	5 101	100
66		6585	6785	6986	7186	7386	7587	7787	7988	8188	8389	6 121	120
67		8589	8790	8990	9190	9391	9591	9791	9992	0192	0392	7 141	140
68	336	0593	0793	0993	1194	1394	1594	1795	1995	2195	2395	8 161	160
69		2596	2796	2996	3196	3396	3597	3797	3997	4197	4397	9 181	180
2170		4597	4797	4998	5198	5398	5598	5798	5998	6198	6398	200	199
71		6598	6798	6998	7198	7398	7598	7798	7998	8198	8398	1 20	20
72		8598	8798	8998	9198	9398	9598	9798	9998	0198	0397	2 40	40
73	337	0597	0797	0997	1197	1397	1596	1796	1996	2196	2396	3 60	60
74		2595	2795	2995	3195	3394	3594	3794	3994	4193	4393	4 80	80
2175		4593	4792	4992	5192	5391	5591	5791	5990	6190	6389	5 100	100
76		6589	6788	6988	7188	7387	7587	7786	7986	8185	8385	6 120	119
77		8584	8784	8983	9183	9382	9582	9781	9981	0180	0379	7 140	139
78	338	0579	0778	0978	1177	1376	1576	1775	1974	2174	2373	8 160	159
79		2572	2772	2971	3170	3369	3569	3768	3967	4166	4366	9 180	179
2180		4565	4764	4963	5163	5362	5561	5760	5959	6158	6358	199	198
81		6557	6756	6955	7154	7353	7552	7751	7950	8149	8348	1 20	20
82		8547	8746	8946	9145	9344	9543	9742	9940	0139	0338	2 40	40
83	339	0537	0736	0935	1134	1333	1532	1731	1930	2129	2327	3 60	59
84		2526	2725	2924	3123	3322	3520	3719	3918	4117	4316	4 80	79
2185		4514	4713	4912	5111	5309	5508	5707	5906	6104	6303	5 100	99
86		6502	6700	6899	7098	7296	7495	7693	7892	8091	8289	6 119	119
87		8488	8686	8885	9084	9282	9481	9679	9878	0076	0275	7 139	139
88	340	0473	0672	0870	1069	1267	1466	1664	1862	2061	2259	8 159	158
89		2458	2656	2854	3053	3251	3449	3648	3846	4045	4243	9 179	178
N.		0	1	2	3	4	5	6	7	8	9	D&P	Pts

Number 21900 *to* 22599
Logarithm 340 4441 *to* 354 0892

N.		0	1	2	3	4	5	6	7	8	9	D&P	Pts
2190	340	4441	4639	4838	5036	5234	5433	5631	5829	6027	6226	199	198
91		6424	6622	6820	7018	7217	7415	7613	7811	8009	8207	1 20	20
92		8405	8604	8802	9000	9198	9396	9594	9792	9990	0188	2 40	40
93	341	0386	0584	0782	0980	1178	1376	1574	1772	1970	2168	3 60	59
94		2366	2564	2762	2960	3158	3356	3554	3752	3950	4147	4 80	79
2195		4345	4543	4741	4939	5137	5334	5532	5730	5928	6126	5 100	99
96		6323	6521	6719	6917	7114	7312	7510	7708	7905	8103	6 119	119
97		8301	8498	8696	8894	9091	9289	9486	9684	9882	0079	7 139	139
98	342	0277	0474	0672	0870	1067	1265	1462	1660	1857	2055	8 159	158
99		2252	2450	2647	2845	3042	3240	3437	3635	3832	4029	9 179	178
2200		4227	4424	4622	4819	5016	5214	5411	5608	5806	6003	197	196
01		6200	6398	6595	6792	6990	7187	7384	7581	7779	7976	1 20	20
02		8173	8370	8568	8765	8962	9159	9356	9554	9751	9948	2 39	39
03	343	0145	0342	0539	0736	0933	1131	1328	1525	1722	1919	3 59	59
04		2116	2313	2510	2707	2904	3101	3298	3495	3692	3889	4 79	78
2205		4086	4283	4480	4677	4874	5071	5268	5464	5661	5858	5 99	98
06		6055	6252	6449	6646	6842	7039	7236	7433	7630	7827	6 118	118
07		8023	8220	8417	8614	8810	9007	9204	9401	9597	9794	7 138	137
08		9991	0187	0384	0581	0777	0974	1171	1367	1564	1761	8 158	157
09	344	1957	2154	2350	2547	2743	2940	3137	3333	3530	3726	9 177	176
2210		3923	4119	4316	4512	4709	4905	5102	5298	5495	5691	196	195
11		5887	6084	6280	6477	6673	6869	7066	7262	7459	7655	1 20	20
12		7851	8048	8244	8440	8636	8833	9029	9225	9422	9618	2 39	39
13		9814	0010	0207	0403	0599	0795	0991	1188	1384	1580	3 59	59
14	345	1776	1972	2168	2365	2561	2757	2953	3149	3345	3541	4 78	78
2215		3737	3933	4129	4325	4522	4718	4914	5110	5306	5502	5 98	98
16		5698	5894	6090	6285	6481	6677	6873	7069	7265	7461	6 118	117
17		7657	7853	8049	8245	8440	8636	8832	9028	9224	9420	7 137	137
18		9615	9811	0007	0203	0399	0594	0790	0986	1182	1377	8 157	156
19	346	1573	1769	1964	2160	2356	2551	2747	2943	3138	3334	9 176	176
2220		3530	3725	3921	4117	4312	4508	4703	4899	5094	5290	196	195
21		5486	5681	5877	6072	6268	6463	6659	6854	7050	7245	1 20	20
22		7441	7636	7831	8027	8222	8418	8613	8808	9004	9199	2 39	39
23		9395	9590	9785	9981	0176	0371	0567	0762	0957	1153	3 59	59
24	347	1348	1543	1738	1934	2129	2324	2519	2715	2910	3105	4 78	78
2225		3300	3495	3691	3886	4081	4276	4471	4666	4861	5056	5 98	98
26		5252	5447	5642	5837	6032	6227	6422	6617	6812	7007	6 118	117
27		7202	7397	7592	7787	7982	8177	8372	8567	8762	8957	7 137	137
28		9152	9347	9542	9737	9931	0126	0321	0516	0711	0906	8 157	156
29	348	1101	1296	1490	1685	1880	2075	2270	2464	2659	2854	9 176	176
2230		3049	3243	3438	3633	3828	4022	4217	4412	4606	4801	195	194
31		4996	5190	5385	5580	5774	5969	6164	6358	6553	6747	1 20	19
32		6942	7136	7331	7526	7720	7915	8109	8304	8498	8693	2 39	39
33		8887	9082	9276	9471	9665	9860	0054	0248	0443	0637	3 59	58
34	349	0832	1026	1220	1415	1609	1804	1998	2192	2387	2581	4 78	78
2235		2775	2970	3164	3358	3552	3747	3941	4135	4330	4524	5 98	97
36		4718	4912	5106	5301	5495	5689	5883	6077	6272	6466	6 117	116
37		6660	6854	7048	7242	7436	7630	7825	8019	8213	8407	7 137	136
38		8601	8795	8989	9183	9377	9571	9765	9959	0153	0347	8 156	155
39	350	0541	0735	0929	1123	1317	1511	1705	1898	2092	2286	9 176	175
2240		2480	2674	2868	3062	3256	3449	3643	3837	4031	4225	194	193
41		4419	4612	4806	5000	5194	5387	5581	5775	5969	6162	1 19	19
42		6356	6550	6743	6937	7131	7325	7518	7712	7905	8099	2 39	39
43		8293	8486	8680	8874	9067	9261	9454	9648	9841	0035	3 58	58
44	351	0229	0422	0616	0809	1003	1196	1390	1583	1777	1970	4 78	77
2245		2163	2357	2550	2744	2937	3131	3324	3517	3711	3904	5 97	97
46		4098	4291	4484	4678	4871	5064	5258	5451	5644	5837	6 116	116
47		6031	6224	6417	6611	6804	6997	7190	7383	7577	7770	7 136	135
48		7963	8156	8349	8543	8736	8929	9122	9315	9508	9701	8 155	154
49		9895	0088	0281	0474	0667	0860	1053	1246	1439	1632	9 175	174
2250	352	1825	2018	2211	2404	2597	2790	2983	3176	3369	3562	193	192
51		3755	3948	4141	4334	4527	4720	4912	5105	5298	5491	1 19	19
52		5684	5877	6070	6262	6455	6648	6841	7034	7226	7419	2 39	38
53		7612	7805	7997	8190	8383	8576	8768	8961	9154	9346	3 58	58
54		9539	9732	9924	0117	0310	0502	0695	0888	1080	1273	4 77	77
2255	353	1465	1658	1851	2043	2236	2428	2621	2813	3006	3198	5 97	96
56		3391	3583	3776	3968	4161	4353	4546	4738	4931	5123	6 116	115
57		5316	5508	5700	5893	6085	6278	6470	6662	6855	7047	7 135	134
58		7239	7432	7624	7816	8009	8201	8393	8586	8778	8970	8 154	154
59		9162	9355	9547	9739	9931	0123	0316	0508	0700	0892	9 174	173
N.		0	1	2	3	4	5	6	7	8	9	D&P	Pts

Number 22600 *to* 23299
Logarithm 354 1084 *to* 367 3373

N.		0	1	2	3	4	5	6	7	8	9	D&P	Pts
2260	354	1084	1277	1469	1661	1853	2045	2237	2429	2621	2814	193	192
61		3006	3198	3390	3582	3774	3966	4158	4350	4542	4734	1 19	19
62		4926	5118	5310	5502	5694	5886	6078	6270	6462	6654	2 39	38
63		6846	7037	7229	7421	7613	7805	7997	8189	8381	8572	3 58	58
64		8764	8956	9148	9340	9531	9723	9915	0107	0299	0490	4 77	77
2265	355	0682	0874	1066	1257	1449	1641	1832	2024	2216	2407	5 97	96
66		2599	2791	2982	3174	3366	3557	3749	3940	4132	4324	6 116	115
67		4515	4707	4898	5090	5281	5473	5664	5856	6048	6239	7 135	134
68		6431	6622	6813	7005	7196	7388	7579	7771	7962	8154	8 154	154
69		8345	8536	8728	8919	9111	9302	9493	9685	9876	0067	9 174	173
2270	356	0259	0450	0641	0832	1024	1215	1406	1598	1789	1980	191	190
71		2171	2363	2554	2745	2936	3127	3319	3510	3701	3892	1 19	19
72		4083	4274	4466	4657	4848	5039	5230	5421	5612	5803	2 38	38
73		5994	6185	6376	6568	6759	6950	7141	7332	7523	7714	3 57	57
74		7905	8096	8287	8478	8668	8859	9050	9241	9432	9623	4 76	76
2275		9814	0005	0196	0387	0578	0768	0959	1150	1341	1532	5 96	95
76	357	1723	1913	2104	2295	2486	2677	2867	3058	3249	3440	6 115	114
77		3630	3821	4012	4202	4393	4584	4775	4965	5156	5347	7 134	133
78		5537	5728	5918	6109	6300	6490	6681	6872	7062	7253	8 153	152
79		7443	7634	7824	8015	8205	8396	8586	8777	8967	9158	9 172	171
2280		9348	9539	9729	9920	0110	0301	0491	0682	0872	1062	190	189
81	358	1253	1443	1634	1824	2014	2205	2395	2585	2776	2966	1 19	19
82		3156	3347	3537	3727	3918	4108	4298	4488	4679	4869	2 38	38
83		5059	5249	5440	5630	5820	6010	6200	6391	6581	6771	3 57	57
84		6961	7151	7341	7531	7722	7912	8102	8292	8482	8672	4 76	76
2285		8862	9052	9242	9432	9622	9812	0002	0192	0382	0572	5 95	95
86	359	0762	0952	1142	1332	1522	1712	1902	2092	2282	2472	6 114	113
87		2662	2852	3041	3231	3421	3611	3801	3991	4181	4370	7 133	132
88		4560	4750	4940	5130	5319	5509	5699	5889	6078	6268	8 152	151
89		6458	6648	6837	7027	7217	7406	7596	7786	7976	8165	9 171	170
2299		8355	8544	8734	8924	9113	9303	9493	9682	9872	0061	190	189
91	360	0251	0440	0630	0820	1009	1199	1388	1578	1767	1957	1 19	19
92		2146	2336	2525	2715	2904	3093	3283	3472	3662	3851	2 38	38
93		4041	4230	4419	4609	4798	4987	5177	5366	5555	5745	3 57	57
94		5934	6123	6313	6502	6691	6881	7070	7259	7448	7638	4 76	76
2295		7827	8016	8205	8395	8584	8773	8962	9151	9341	9530	5 95	95
96		9719	9908	0097	0286	0475	0664	0854	1043	1232	1421	6 114	113
97	361	1610	1799	1988	2177	2366	2555	2744	2933	3122	3311	7 133	132
98		3500	3689	3878	4067	4256	4445	4634	4823	5012	5201	8 152	151
99		5390	5579	5768	5956	6145	6334	6523	6712	6901	7090	9 171	170
2300		7278	7467	7656	7845	8034	8222	8411	8600	8789	8977	189	188
01		9166	9355	9544	9732	9921	0110	0298	0487	0676	0865	1 19	19
02	362	1053	1242	1430	1619	1808	1996	2185	2374	2562	2751	2 38	38
03		2939	3128	3317	3505	3694	3882	4071	4259	4448	4636	3 57	56
04		4825	5013	5202	5390	5579	5767	5956	6144	6332	6521	4 76	75
2305		6709	6898	7086	7275	7463	7651	7840	8028	8216	8405	5 95	94
06		8593	8781	8970	9158	9346	9535	9723	9911	0099	0288	6 113	113
07	363	0476	0664	0852	1041	1229	1417	1605	1794	1982	2170	7 132	132
08		2358	2546	2734	2923	3111	3299	3487	3675	3863	4051	8 151	150
09		4239	4427	4615	4804	4992	5180	5368	5556	5744	5932	9 170	169
2310		6120	6308	6496	6684	6872	7060	7248	7436	7624	7812	188	187
11		7999	8187	8375	8563	8751	8939	9127	9315	9503	9690	1 19	19
12		9878	0066	0254	0442	0630	0817	1005	1193	1381	1569	2 38	37
13	364	1756	1944	2132	2320	2507	2695	2883	3070	3258	3446	3 56	56
14		3634	3821	4009	4197	4384	4572	4759	4947	5135	5322	4 75	75
2315		5510	5698	5885	6073	6260	6448	6635	6823	7010	7198	5 94	94
16		7386	7573	7761	7948	8136	8323	8511	8698	8885	9073	6 113	112
17		9260	9448	9635	9823	0010	0197	0385	0572	0760	0947	7 132	131
18	365	1134	1322	1509	1696	1884	2071	2258	2446	2633	2820	8 150	150
19		3007	3195	3382	3569	3757	3944	4131	4318	4505	4693	9 169	168
2320		4880	5067	5254	5441	5629	5816	6003	6190	6377	6564	187	186
21		6751	6939	7126	7313	7500	7687	7874	8061	8248	8435	1 19	19
22		8622	8809	8996	9183	9370	9557	9744	9931	0118	0305	2 37	37
23	366	0492	0679	0866	1053	1240	1427	1614	1801	1987	2174	3 56	56
24		2361	2548	2735	2922	3109	3296	3482	3669	3856	4043	4 75	74
2325		4230	4416	4603	4790	4977	5163	5350	5537	5724	5910	5 94	93
26		6097	6284	6471	6657	6844	7031	7217	7404	7591	7777	6 112	112
27		7964	8150	8337	8524	8710	8897	9083	9270	9457	9643	7 131	130
28		9830	0016	0203	0389	0576	0762	0949	1135	1322	1508	8 150	149
29	367	1695	1881	2068	2254	2441	2627	2814	3000	3186	3373	9 168	167
N.		0	1	2	3	4	5	6	7	8	9	D&P	Pts

Number 23300 *to* 23999
Logarithm 367 3559 *to* 380 1931

N.		0	1	2	3	4	5	6	7	8	9	D&P	Pts
2330	367	3559	3746	3932	4118	4305	4491	4677	4864	5050	5236	187	186
31		5423	5609	5795	5982	6168	6354	6540	6727	6913	7099	1 19	19
32		7285	7472	7658	7844	8030	8217	8403	8589	8775	8961	2 37	37
33		9147	9334	9520	9706	9892	0078	0264	0450	0636	0822	3 56	56
34	368	1009	1195	1381	1567	1753	1939	2125	2311	2497	2683	4 75	74
2335		2869	3055	3241	3427	3613	3799	3985	4171	4357	4542	5 94	93
36		4728	4914	5100	5286	5472	5658	5844	6030	6215	6401	6 112	112
37		6587	6773	6959	7145	7330	7516	7702	7888	8074	8259	7 131	130
38		8445	8631	8817	9002	9188	9374	9559	9745	9931	0117	8 150	149
39	369	0302	0488	0674	0859	1045	1230	1416	1602	1787	1973	9 168	167
2340		2159	2344	2530	2715	2901	3086	3272	3458	3643	3829	186	185
41		4014	4200	4385	4571	4756	4942	5127	5313	5498	5683	1 19	19
42		5869	6054	6240	6425	6611	6796	6981	7167	7352	7538	2 37	37
43		7723	7908	8094	8279	8464	8650	8835	9020	9205	9391	3 56	56
44		9576	9761	9947	0132	0317	0502	0688	0873	1058	1243	4 74	74
2345	370	1428	1614	1799	1984	2169	2354	2540	2725	2910	3095	5 93	93
46		3280	3465	3650	3835	4020	4206	4391	4576	4761	4946	6 112	111
47		5131	5316	5501	5686	5871	6056	6241	6426	6611	6796	7 130	130
48		6981	7166	7351	7536	7721	7906	8091	8275	8460	8645	8 149	148
49		8830	9015	9200	9385	9570	9754	9939	0124	0309	0494	9 167	167
2350	371	0679	0863	1048	1233	1418	1603	1787	1972	2157	2342	185	184
51		2526	2711	2896	3080	3265	3450	3635	3819	4004	4189	1 19	18
52		4373	4558	4742	4927	5112	5296	5481	5666	5850	6035	2 37	37
53		6219	6404	6588	6773	6957	7142	7327	7511	7696	7880	3 56	55
54		8065	8249	8434	8618	8802	8987	9171	9356	9540	9725	4 74	74
2355		9909	0094	0278	0462	0647	0831	1015	1200	1384	1569	5 93	92
56	372	1753	1937	2122	2306	2490	2674	2859	3043	3227	3412	6 111	110
57		3596	3780	3964	4149	4333	4517	4701	4885	5070	5254	7 130	129
58		5438	5622	5806	5991	6175	6359	6543	6727	6911	7095	8 148	147
59		7279	7464	7648	7832	8016	8200	8384	8568	8752	8936	9 167	166
2360		9120	9304	9488	9672	9856	0040	0224	0408	0592	0776	184	183
61	373	0960	1144	1328	1512	1696	1879	2063	2247	2431	2615	1 18	18
62		2799	2983	3167	3350	3534	3718	3902	4086	4270	4453	2 37	37
63		4637	4821	5005	5189	5372	5556	5740	5924	6107	6291	3 55	55
64		6475	6658	6842	7026	7210	7393	7577	7761	7944	8128	4 74	73
2365		8311	8495	8679	8862	9046	9230	9413	9597	9780	9964	5 92	92
66	374	0147	0331	0515	0698	0882	1065	1249	1432	1616	1799	6 110	110
67		1983	2166	2350	2533	2716	2900	3083	3267	3450	3634	7 129	128
68		3817	4000	4184	4367	4551	4734	4917	5101	5284	5467	8 147	146
69		5651	5834	6017	6201	6384	6567	6750	6934	7117	7300	9 166	165
2370		7483	7667	7850	8033	8216	8400	8583	8766	8949	9132	183	182
71		9316	9499	9682	9865	0048	0231	0414	0598	0781	0964	1 18	18
72	375	1147	1330	1513	1696	1879	2062	2245	2428	2611	2794	2 37	36
73		2977	3160	3343	3526	3709	3892	4075	4258	4441	4624	3 55	55
74		4807	4990	5173	5356	5539	5722	5905	6088	6270	6453	4 73	73
2375		6636	6819	7002	7185	7368	7550	7733	7916	8099	8282	5 92	91
76		8464	8647	8830	9013	9195	9378	9561	9744	9926	0109	6 110	109
77	376	0292	0475	0657	0840	1023	1205	1388	1571	1753	1936	7 128	127
78		2119	2301	2484	2666	2849	3032	3214	3397	3579	3762	8 146	146
79		3944	4127	4310	4492	4675	4857	5040	5222	5405	5587	9 165	164
2380		5770	5952	6135	6317	6499	6682	6864	7047	7229	7412	183	182
81		7594	7776	7959	8141	8323	8506	8688	8871	9053	9235	1 18	18
82		9418	9600	9782	9965	0147	0329	0511	0694	0876	1058	2 37	36
83	377	1240	1423	1605	1787	1969	2152	2334	2516	2698	2880	3 55	55
84		3063	3245	3427	3609	3791	3973	4155	4338	4520	4702	4 73	73
2385		4884	5066	5248	5430	5612	5794	5976	6158	6340	6522	5 92	91
86		6704	6886	7068	7250	7432	7614	7796	7978	8160	8342	6 110	109
87		8524	8706	8888	9070	9252	9434	9616	9798	9979	0161	7 128	127
88	378	0343	0525	0707	0889	1071	1252	1434	1616	1798	1980	8 146	146
89		2161	2343	2525	2707	2889	3070	3252	3434	3616	3797	9 165	164
2390		3979	4161	4342	4524	4706	4887	5069	5251	5432	5614	181	180
91		5796	5977	6159	6341	6522	6704	6885	7067	7249	7430	1 18	18
92		7612	7793	7975	8156	8338	8519	8701	8882	9064	9245	2 36	36
93		9427	9608	9790	9971	0153	0334	0516	0697	0879	1060	3 54	54
94	379	1241	1423	1604	1786	1967	2148	2330	2511	2692	2874	4 72	72
2395		3055	3237	3418	3599	3780	3962	4143	4324	4506	4687	5 91	90
96		4868	5049	5231	5412	5593	5774	5956	6137	6318	6499	6 109	108
97		6680	6862	7043	7224	7405	7586	7767	7948	8130	8311	7 127	126
98		8492	8673	8854	9035	9216	9397	9578	9759	9940	0121	8 145	144
99	380	0302	0484	0665	0846	1027	1208	1389	1570	1750	1931	9 163	162
N.		0	1	2	3	4	5	6	7	8	9	D&P	Pts

Number 24000 *to* 24699
Logarithm 380 2112 *to* 392 6794

N.		0	1	2	3	4	5	6	7	8	9	D&PPts		
2400	380	2112	2293	2474	2655	2836	3017	3198	3379	3560	3741		181	180
01		3922	4102	4283	4464	4645	4826	5007	5188	5368	5549	1	18	18
02		5730	5911	6092	6272	6453	6634	6815	6995	7176	7357	2	36	36
03		7538	7718	7899	8080	8261	8441	8622	8803	8983	9164	3	54	54
04		9345	9525	9706	9887	0067	0248	0428	0609	0790	0970	4	72	72
2405	381	1151	1331	1512	1693	1873	2054	2234	2415	2595	2776	5	91	90
06		2956	3137	3317	3498	3678	3859	4039	4220	4400	4580	6	109	108
07		4761	4941	5122	5302	5483	5663	5843	6024	6204	6384	7	127	126
08		6565	6745	6926	7106	7286	7467	7647	7827	8007	8188	8	145	144
09		8368	8548	8729	8909	9089	9269	9450	9630	9810	9990	9	163	162
2410	382	0170	0351	0531	0711	0891	1071	1252	1432	1612	1792		180	179
11		1972	2152	2332	2512	2693	2873	3053	3233	3413	3593	1	18	18
12		3773	3953	4133	4313	4493	4673	4853	5033	5213	5393	2	36	36
13		5573	5753	5933	6113	6293	6473	6653	6833	7013	7193	3	54	54
14		7373	7553	7732	7912	8092	8272	8452	8632	8812	8992	4	72	72
2415		9171	9351	9531	9711	9891	0070	0250	0430	0610	0790	5	90	90
16	383	0969	1149	1329	1509	1688	1868	2048	2227	2407	2587	6	108	107
17		2767	2946	3126	3306	3485	3665	3844	4024	4204	4383	7	126	125
18		4563	4743	4922	5102	5281	5461	5640	5820	6000	6179	8	144	143
19		6359	6538	6718	6897	7077	7256	7436	7615	7795	7974	9	162	161
2420		8154	8333	8513	8692	8871	9051	9230	9410	9589	9769		180	179
21		9948	0127	0307	0486	0665	0845	1024	1203	1383	1562	1	18	18
22	384	1741	1921	2100	2279	2459	2638	2817	2996	3176	3355	2	36	36
23		3534	3713	3893	4072	4251	4430	4609	4789	4968	5147	3	54	54
24		5326	5505	5684	5864	6043	6222	6401	6580	6759	6938	4	72	72
2425		7117	7297	7476	7655	7834	8013	8192	8371	8550	8729	5	90	90
26		8908	9087	9266	9445	9624	9803	9982	0161	0340	0519	6	108	107
27	385	0698	0877	1056	1235	1413	1592	1771	1950	2129	2308	7	126	125
28		2487	2666	2845	3023	3202	3381	3560	3739	3918	4096	8	144	143
29		4275	4454	4633	4812	4990	5169	5348	5527	5705	5884	9	162	161
2430		6063	6241	6420	6599	6778	6956	7135	7314	7492	7671		179	178
31		7850	8028	8207	8386	8564	8743	8921	9100	9279	9457	1	18	18
32		9636	9814	9993	0171	0350	0528	0707	0886	1064	1243	2	36	36
33	386	1421	1600	1778	1957	2135	2314	2492	2670	2849	3027	3	54	53
34		3206	3384	3563	3741	3919	4098	4276	4455	4633	4811	4	72	71
2435		4990	5168	5346	5525	5703	5881	6060	6238	6416	6595	5	90	89
36		6773	6951	7129	7308	7486	7664	7842	8021	8199	8377	6	107	107
37		8555	8733	8912	9090	9268	9446	9624	9803	9981	0159	7	125	125
38	387	0337	0515	0693	0871	1049	1228	1406	1584	1762	1940	8	143	142
39		2118	2296	2474	2652	2830	3008	3186	3364	3542	3720	9	161	160
2440		3898	4076	4254	4432	4610	4788	4966	5144	5322	5500		178	177
41		5678	5856	6034	6212	6389	6567	6745	6923	7101	7279	1	18	18
42		7457	7634	7812	7990	8168	8346	8524	8701	8879	9057	2	36	35
43		9235	9412	9590	9768	9946	0123	0301	0479	0657	0834	3	53	53
44	388	1012	1190	1367	1545	1723	1900	2078	2256	2433	2611	4	71	71
2445		2789	2966	3144	3321	3499	3677	3854	4032	4209	4387	5	89	89
46		4565	4742	4920	5097	5275	5452	5630	5807	5985	6162	6	107	106
47		6340	6517	6695	6872	7050	7227	7404	7582	7759	7937	7	125	124
48		8114	8292	8469	8646	8824	9001	9178	9356	9533	9711	8	142	142
49		9888	0065	0243	0420	0597	0774	0952	1129	1306	1484	9	160	159
2450	389	1661	1838	2015	2193	2370	2547	2724	2902	3079	3256		177	176
51		3433	3610	3787	3965	4142	4319	4496	4673	4850	5028	1	18	18
52		5205	5382	5559	5736	5913	6090	6267	6444	6621	6798	2	35	35
53		6975	7153	7330	7507	7684	7861	8038	8215	8392	8569	3	53	53
54		8746	8923	9100	9276	9453	9630	9807	9984	0161	0338	4	71	70
2455	390	0515	0692	0869	1046	1223	1399	1576	1753	1930	2107	5	89	88
56		2284	2460	2637	2814	2991	3168	3344	3521	3698	3875	6	106	106
57		4052	4228	4405	4582	4759	4935	5112	5289	5465	5642	7	124	123
58		5819	5995	6172	6349	6525	6702	6879	7055	7232	7409	8	142	141
59		7585	7762	7939	8115	8292	8468	8645	8821	8998	9175	9	159	158
2460		9351	9528	9704	9881	0057	0234	0410	0587	0763	0940		176	175
61	391	1116	1293	1469	1646	1822	1998	2175	2351	2528	2704	1	18	18
62		2880	3057	3233	3410	3586	3762	3939	4115	4291	4468	2	35	35
63		4644	4820	4997	5173	5349	5526	5702	5878	6055	6231	3	53	53
64		6407	6583	6760	6936	7112	7288	7464	7641	7817	7993	4	70	70
2465		8169	8345	8522	8698	8874	9050	9226	9402	9578	9755	5	88	88
66		9931	0107	0283	0459	0635	0811	0987	1163	1339	1515	6	106	105
67	392	1691	1868	2044	2220	2396	2572	2748	2924	3100	3276	7	123	123
68		3452	3628	3803	3979	4155	4331	4507	4683	4859	5035	8	141	140
69		5211	5387	5563	5739	5914	6090	6266	6442	6618	6794	9	158	158
N.		0	1	2	3	4	5	6	7	8	9	D&PPts		

Number 24700 *to* 25399
Logarithm 392 6970 *to* 404 8166

N.		0	1	2	3	4	5	6	7	8	9	D&PPts		
2470	392	6970	7145	7321	7497	7673	7849	8024	8200	8376	8552		176	175
71		8727	8903	9079	9255	9430	9606	9782	9958	0133	0309	1	18	18
72	393	0485	0660	0836	1012	1187	1363	1539	1714	1890	2066	2	35	35
73		2241	2417	2592	2768	2944	3119	3295	3470	3646	3821	3	53	53
74		3997	4172	4348	4524	4699	4875	5050	5226	5401	5577	4	70	70
2475		5752	5928	6103	6278	6454	6629	6805	6980	7156	7331	5	88	88
76		7506	7682	7857	8033	8208	8383	8559	8734	8909	9085	6	106	105
77		9260	9435	9611	9786	9961	0137	0312	0487	0662	0838	7	123	123
78	394	1013	1188	1364	1539	1714	1889	2064	2240	2415	2590	8	141	140
79		2765	2940	3116	3291	3466	3641	3816	3991	4167	4342	9	158	158
2480		4517	4692	4867	5042	5217	5392	5567	5742	5918	6093		175	174
81		6268	6443	6618	6793	6968	7143	7318	7493	7668	7843	1	18	17
82		8018	8193	8368	8543	8718	8893	9068	9242	9417	9592	2	35	35
83		9767	9942	0117	0292	0467	0642	0817	0991	1166	1341	3	53	52
84	395	1516	1691	1866	2040	2215	2390	2565	2740	2914	3089	4	70	70
2485		3264	3439	3613	3788	3963	4138	4312	4487	4662	4837	5	88	87
86		5011	5186	5361	5535	5710	5885	6059	6234	6409	6583	6	105	104
87		6758	6932	7107	7282	7456	7631	7805	7980	8155	8329	7	123	122
88		8504	8678	8853	9027	9202	9376	9551	9725	9900	0074	8	140	139
89	396	0249	0423	0598	0772	0947	1121	1296	1470	1645	1819	9	158	157
2490		1993	2168	2342	2517	2691	2865	3040	3214	3389	3563		175	174
91		3737	3912	4086	4260	4435	4609	4783	4958	5132	5306	1	18	17
92		5480	5655	5829	6003	6177	6352	6526	6700	6874	7049	2	35	35
93		7223	7397	7571	7745	7920	8094	8268	8442	8616	8790	3	53	52
94		8964	9139	9313	9487	9661	9835	0009	0183	0357	0531	4	70	70
2495	397	0705	0880	1054	1228	1402	1576	1750	1924	2098	2272	5	88	87
96		2446	2620	2794	2968	3142	3316	3490	3664	3838	4011	6	105	104
97		4185	4359	4533	4707	4881	5055	5229	5403	5577	5750	7	123	122
98		5924	6098	6272	6446	6620	6794	6967	7141	7315	7489	8	140	139
99		7663	7836	8010	8184	8358	8531	8705	8879	9053	9226	9	158	157
2500		9400	9574	9748	9921	0095	0269	0442	0616	0790	0963		174	173
01	398	1137	1311	1484	1658	1831	2005	2179	2352	2526	2699	1	17	17
02		2873	3047	3220	3394	3567	3741	3914	4088	4261	4435	2	35	35
03		4608	4782	4956	5129	5302	5476	5649	5823	5996	6170	3	52	52
04		6343	6517	6690	6864	7037	7210	7384	7557	7731	7904	4	70	69
2505		8077	8251	8424	8597	8771	8944	9117	9291	9464	9637	5	87	87
06		9811	9984	0157	0331	0504	0677	0850	1024	1197	1370	6	104	104
07	399	1543	1717	1890	2063	2236	2409	2583	2756	2929	3102	7	122	121
08		3275	3448	3622	3795	3968	4141	4314	4487	4660	4834	8	139	138
09		5007	5180	5353	5526	5699	5872	6045	6218	6391	6564	9	157	156
2510		6737	6910	7083	7256	7429	7602	7775	7948	8121	8294		173	172
11		8467	8640	8813	8986	9159	9332	9505	9678	9851	0023	1	17	17
12	400	0196	0369	0542	0715	0888	1061	1234	1406	1579	1752	2	35	34
13		1925	2098	2271	2443	2616	2789	2962	3134	3307	3480	3	52	52
14		3653	3825	3998	4171	4344	4516	4689	4862	5035	5207	4	69	69
2515		5380	5553	5725	5898	6071	6243	6416	6588	6761	6934	5	87	86
16		7106	7279	7452	7624	7797	7969	8142	8314	8487	8660	6	104	103
17		8832	9005	9177	9350	9522	9695	9867	0040	0212	0385	7	121	120
18	401	0557	0730	0902	1075	1247	1420	1592	1764	1937	2109	8	138	138
19		2282	2454	2626	2799	2971	3144	3316	3488	3661	3833	9	156	155
2520		4005	4178	4350	4522	4695	4867	5039	5212	5384	5556		173	172
21		5728	5901	6073	6245	6417	6590	6762	6934	7106	7279	1	17	17
22		7451	7623	7795	7967	8140	8312	8484	8656	8828	9000	2	35	34
23		9173	9345	9517	9689	9861	0033	0205	0377	0549	0721	3	52	52
24	402	0894	1066	1238	1410	1582	1754	1926	2098	2270	2442	4	69	69
2525		2614	2786	2958	3130	3302	3474	3646	3818	3990	4162	5	87	86
26		4333	4505	4677	4849	5021	5193	5365	5537	5709	5881	6	104	103
27		6052	6224	6396	6568	6740	6912	7083	7255	7427	7599	7	121	120
28		7771	7942	8114	8286	8458	8630	8801	8973	9145	9317	8	138	138
29		9488	9660	9832	0003	0175	0347	0519	0690	0862	1034	9	156	155
2530	403	1205	1377	1549	1720	1892	2063	2235	2407	2578	2750		172	171
31		2921	3093	3265	3436	3608	3779	3951	4122	4294	4465	1	17	17
32		4637	4809	4980	5152	5323	5495	5666	5838	6009	6180	2	34	34
33		6352	6523	6695	6866	7038	7209	7381	7552	7723	7895	3	52	51
34		8066	8237	8409	8580	8752	8923	9094	9266	9437	9608	4	69	68
2535		9780	9951	0122	0294	0465	0636	0807	0979	1150	1321	5	86	86
36	404	1492	1664	1835	2006	2177	2349	2520	2691	2862	3033	6	103	103
37		3205	3376	3547	3718	3889	4061	4232	4403	4574	4745	7	120	120
38		4916	5087	5258	5429	5601	5772	5943	6114	6285	6456	8	138	137
39		6627	6798	6969	7140	7311	7482	7653	7824	7995	8166	9	155	154
N.		0	1	2	3	4	5	6	7	8	9	D&PPts		

Number 25400 *to* 26099
Logarithm 404 8337 *to* 416 6239

N.	0	1	2	3	4	5	6	7	8	9	D&P	Pts
2540	404 8337	8508	8679	8850	9021	9192	9363	9534	9705	9876	171	170
41	405 0047	0218	0388	0559	0730	0901	1072	1243	1414	1585	1 17	17
42	1755	1926	2097	2268	2439	2610	2780	2951	3122	3293	2 34	34
43	3464	3634	3805	3976	4147	4317	4488	4659	4830	5000	3 51	51
44	5171	5342	5512	5683	5854	6025	6195	6366	6537	6707	4 68	68
2545	6878	7049	7219	7390	7560	7731	7902	8072	8243	8413	5 86	85
46	8584	8755	8925	9096	9266	9437	9607	9778	9948	0119	6 103	102
47	406 0289	0460	0630	0801	0971	1142	1312	1483	1653	1824	7 120	119
48	1994	2165	2335	2506	2676	2846	3017	3187	3358	3528	8 137	136
49	3698	3869	4039	4209	4380	4550	4721	4891	5061	5231	9 154	153
2550	5402	5572	5742	5913	6083	6253	6424	6594	6764	6934	170	169
51	7105	7275	7445	7615	7786	7956	8126	8296	8466	8637	1 17	17
52	8807	8977	9147	9317	9487	9658	9828	9998	0168	0338	2 34	34
53	407 0508	0678	0848	1018	1189	1359	1529	1699	1869	2039	3 51	51
54	2209	2379	2549	2719	2889	3059	3229	3399	3569	3739	4 68	68
2555	3909	4079	4249	4419	4589	4759	4929	5099	5269	5439	5 85	85
56	5608	5778	5948	6118	6288	6458	6628	6798	6968	7137	6 102	101
57	7307	7477	7647	7817	7987	8156	8326	8496	8666	8836	7 119	118
58	9005	9175	9345	9515	9684	9854	0024	0194	0363	0533	8 136	135
59	408 0703	0873	1042	1212	1382	1551	1721	1891	2060	2230	9 153	152
2560	2400	2569	2739	2909	3078	3248	3417	3587	3757	3926	170	169
61	4096	4265	4435	4604	4774	4944	5113	5283	5452	5622	1 17	17
62	5791	5961	6130	6300	6469	6639	6808	6978	7147	7317	2 34	34
63	7486	7656	7825	7994	8164	8333	8503	8672	8841	9011	3 51	51
64	9180	9350	9519	9688	9858	0027	0196	0366	0535	0704	4 68	68
2565	409 0874	1043	1212	1382	1551	1720	1889	2059	2228	2397	5 85	85
66	2567	2736	2905	3074	3243	3413	3582	3751	3920	4089	6 102	101
67	4259	4428	4597	4766	4935	5105	5274	5443	5612	5781	7 119	118
68	5950	6119	6288	6458	6627	6796	6965	7134	7303	7472	8 136	135
69	7641	7810	7979	8148	8317	8486	8655	8824	8993	9162	9 153	152
2570	9331	9500	9669	9838	0007	0176	0345	0514	0683	0852	169	168
71	410 1021	1190	1359	1527	1696	1865	2034	2203	2372	2541	1 17	17
72	2710	2878	3047	3216	3385	3554	3723	3891	4060	4229	2 34	34
73	4398	4567	4735	4904	5073	5242	5410	5579	5748	5917	3 51	50
74	6085	6254	6423	6592	6760	6929	7098	7266	7435	7604	4 68	67
2575	7772	7941	8110	8278	8447	8616	8784	8953	9121	9290	5 85	84
76	9459	9627	9796	9964	0133	0301	0470	0639	0807	0976	6 101	101
77	411 1144	1313	1481	1650	1818	1987	2155	2324	2492	2661	7 118	118
78	2829	2998	3166	3334	3503	3671	3840	4008	4177	4345	8 135	134
79	4513	4682	4850	5019	5187	5355	5524	5692	5860	6029	9 152	151
2580	6197	6365	6534	6702	6870	7039	7207	7375	7544	7712	168	167
81	7880	8048	8217	8385	8553	8721	8890	9058	9226	9394	1 17	17
82	9562	9731	9899	0067	0235	0403	0571	0740	0908	1076	2 34	33
83	412 1244	1412	1580	1748	1917	2085	2253	2421	2589	2757	3 50	50
84	2925	3093	3261	3429	3597	3765	3933	4101	4269	4437	4 67	67
2585	4605	4773	4941	5109	5277	5445	5613	5781	5949	6117	5 84	84
86	6285	6453	6621	6789	6957	7125	7293	7461	7629	7796	6 101	100
87	7964	8132	8300	8468	8636	8804	8971	9139	9307	9475	7 118	117
88	9643	9811	9978	0146	0314	0482	0649	0817	0985	1153	8 134	134
89	413 1321	1488	1656	1824	1991	2159	2327	2495	2662	2830	9 151	150
2590	2998	3165	3333	3501	3668	3836	4004	4171	4339	4507	168	167
91	4674	4842	5009	5177	5345	5512	5680	5847	6015	6182	1 17	17
92	6350	6518	6685	6853	7020	7188	7355	7523	7690	7858	2 34	33
93	8025	8193	8360	8528	8695	8863	9030	9197	9365	9532	3 50	50
94	9700	9867	0035	0202	0369	0537	0704	0872	1039	1206	4 67	67
2595	414 1374	1541	1708	1876	2043	2210	2378	2545	2712	2880	5 84	84
96	3047	3214	3381	3549	3716	3883	4051	4218	4385	4552	6 101	100
97	4719	4887	5054	5221	5388	5556	5723	5890	6057	6224	7 118	117
98	6391	6559	6726	6893	7060	7227	7394	7561	7729	7896	8 134	134
99	8063	8230	8397	8564	8731	8898	9065	9232	9399	9566	9 151	150
2600	9733	9901	0068	0235	0402	0569	0736	0903	1070	1237	167	166
01	415 1404	1570	1737	1904	2071	2238	2405	2572	2739	2906	1 17	17
02	3073	3240	3407	3574	3741	3907	4074	4241	4408	4575	2 33	33
03	4742	4909	5075	5242	5409	5576	5743	5909	6076	6243	3 50	50
04	6410	6577	6743	6910	7077	7244	7410	7577	7744	7911	4 67	66
2605	8077	8244	8411	8577	8744	8911	9077	9244	9411	9577	5 84	83
06	9744	9911	0077	0244	0411	0577	0744	0911	1077	1244	6 100	100
07	416 1410	1577	1743	1910	2077	2243	2410	2576	2743	2909	7 117	116
08	3076	3242	3409	3575	3742	3908	4075	4241	4408	4574	8 134	133
09	4741	4907	5074	5240	5407	5573	5739	5906	6072	6239	9 150	149
N.	0	1	2	3	4	5	6	7	8	9	D&P	Pts

Number 26100 *to* 26799
Logarithm 416 6405 *to* 428 1186

N.	0	1	2	3	4	5	6	7	8	9	D&P	Pts
2610	416 6405	6571	6738	6904	7071	7237	7403	7570	7736	7902	167	166
11	8069	8235	8401	8568	8734	8900	9067	9233	9399	9565	1 17	17
12	9732	9898	0064	0231	0397	0563	0729	0895	1062	1228	2 33	33
13	417 1394	1560	1726	1893	2059	2225	2391	2557	2724	2890	3 50	50
14	3056	3222	3388	3554	3720	3886	4053	4219	4385	4551	4 67	66
2615	4717	4883	5049	5215	5381	5547	5713	5879	6045	6211	5 84	83
16	6377	6543	6709	6875	7041	7207	7373	7539	7705	7871	6 100	100
17	8037	8203	8369	8535	8701	8867	9033	9199	9365	9531	7 117	116
18	9696	9862	0028	0194	0360	0526	0692	0857	1023	1189	8 134	133
19	418 1355	1521	1687	1852	2018	2184	2350	2516	2681	2847	9 150	149
2620	3013	3179	3344	3510	3676	3842	4007	4173	4339	4505	166	165
21	4670	4836	5002	5167	5333	5499	5664	5830	5996	6161	1 17	17
22	6327	6493	6658	6824	6989	7155	7321	7486	7652	7817	2 33	33
23	7983	8148	8314	8480	8645	8811	8976	9142	9307	9473	3 50	50
24	9638	9804	9969	0135	0300	0466	0631	0797	0962	1128	4 66	66
2625	419 1293	1459	1624	1789	1955	2120	2286	2451	2616	2782	5 83	83
26	2947	3113	3278	3443	3609	3774	3939	4105	4270	4435	6 100	99
27	4601	4766	4931	5097	5262	5427	5593	5758	5923	6088	7 116	116
28	6254	6419	6584	6749	6915	7080	7245	7410	7575	7741	8 133	132
29	7906	8071	8236	8401	8567	8732	8897	9062	9227	9392	9 149	149
2630	9557	9723	9888	0053	0218	0383	0548	0713	0878	1043	165	164
31	420 1208	1374	1539	1704	1869	2034	2199	2364	2529	2694	1 17	16
32	2859	3024	3189	3354	3519	3684	3849	4014	4179	4344	2 33	33
33	4509	4674	4838	5003	5168	5333	5498	5663	5828	5993	3 50	49
34	6158	6323	6487	6652	6817	6982	7147	7312	7477	7641	4 66	66
2635	7806	7971	8136	8301	8465	8630	8795	8960	9125	9289	5 83	82
36	9454	9619	9784	9948	0113	0278	0442	0607	0772	0937	6 99	98
37	421 1101	1266	1431	1595	1760	1925	2089	2254	2419	2583	7 116	115
38	2748	2913	3077	3242	3406	3571	3736	3900	4065	4229	8 132	131
39	4394	4558	4723	4888	5052	5217	5381	5546	5710	5875	9 149	148
2640	6039	6204	6368	6533	6697	6862	7026	7191	7355	7520	165	164
41	7684	7848	8013	8177	8342	8506	8671	8835	8999	9164	1 17	16
42	9328	9493	9657	9821	9986	0150	0314	0479	0643	0807	2 33	33
43	422 0972	1136	1300	1465	1629	1793	1957	2122	2286	2450	3 50	49
44	2615	2779	2943	3107	3271	3436	3600	3764	3928	4093	4 66	66
2645	4257	4421	4585	4749	4913	5078	5242	5406	5570	5734	5 83	82
46	5898	6063	6227	6391	6555	6719	6883	7047	7211	7375	6 99	98
47	7539	7703	7868	8032	8196	8360	8524	8688	8852	9016	7 116	115
48	9180	9344	9508	9672	9836	0000	0164	0328	0492	0656	8 132	131
49	423 0820	0984	1147	1311	1475	1639	1803	1967	2131	2295	9 149	148
2650	2459	2623	2786	2950	3114	3278	3442	3606	3770	3933	164	163
51	4097	4261	4425	4589	4753	4916	5080	5244	5408	5571	1 16	16
52	5735	5899	6063	6226	6390	6554	6718	6881	7045	7209	2 33	33
53	7372	7536	7700	7864	8027	8191	8355	8518	8682	8846	3 49	49
54	9009	9173	9336	9500	9664	9827	9991	0154	0318	0482	4 66	65
2655	424 0645	0809	0972	1136	1300	1463	1627	1790	1954	2117	5 82	82
56	2281	2444	2608	2771	2935	3098	3262	3425	3589	3752	6 98	98
57	3916	4079	4242	4406	4569	4733	4896	5060	5223	5386	7 115	114
58	5550	5713	5877	6040	6203	6367	6530	6693	6857	7020	8 131	130
59	7183	7347	7510	7673	7837	8000	8163	8327	8490	8653	9 148	147
2660	8816	8980	9143	9306	9469	9633	9796	9959	0122	0286	163	162
61	425 0449	0612	0775	0938	1102	1265	1428	1591	1754	1917	1 16	16
62	2081	2244	2407	2570	2733	2896	3059	3222	3385	3549	2 33	32
63	3712	3875	4038	4201	4364	4527	4690	4853	5016	5179	3 49	49
64	5342	5505	5668	5831	5994	6157	6320	6483	6646	6809	4 65	65
2665	6972	7135	7298	7461	7624	7787	7950	8113	8276	8439	5 82	81
66	8601	8764	8927	9090	9253	9416	9579	9742	9904	0067	6 98	97
67	426 0230	0393	0556	0719	0881	1044	1207	1370	1533	1695	7 114	113
68	1858	2021	2184	2347	2509	2672	2835	2998	3160	3323	8 130	130
69	3486	3648	3811	3974	4137	4299	4462	4625	4787	4950	9 147	146
2670	5113	5275	5438	5601	5763	5926	6088	6251	6414	6576	163	162
71	6739	6901	7064	7227	7389	7552	7714	7877	8039	8202	1 16	16
72	8365	8527	8690	8852	9015	9177	9340	9502	9665	9827	2 33	32
73	9990	0152	0315	0477	0639	0802	0964	1127	1289	1452	3 49	49
74	427 1614	1776	1939	2101	2264	2426	2588	2751	2913	3076	4 65	65
2675	3238	3400	3563	3725	3887	4050	4212	4374	4536	4699	5 82	81
76	4861	5023	5186	5348	5510	5672	5835	5997	6159	6321	6 98	97
77	6484	6646	6808	6970	7133	7295	7457	7619	7781	7944	7 114	113
78	8106	8268	8430	8592	8754	8917	9079	9241	9403	9565	8 130	130
79	9727	9889	0051	0213	0376	0538	0700	0862	1024	1186	9 147	146
N.	0	1	2	3	4	5	6	7	8	9	D&P	Pts

Number 26800 *to* 27499
Logarithm 428 1348 *to* 439 3169

N.		0	1	2	3	4	5	6	7	8	9	D&P	Pts
2680	428	1348	1510	1672	1834	1996	2158	2320	2482	2644	2806	162	161
81		2968	3130	3292	3454	3616	3778	3940	4102	4264	4426	1 16	16
82		4588	4750	4912	5073	5235	5397	5559	5721	5883	6045	2 32	32
83		6207	6369	6530	6692	6854	7016	7178	7340	7501	7663	3 49	48
84		7825	7987	8149	8311	8472	8634	8796	8958	9119	9281	4 65	64
2685		9443	9605	9766	9928	0090	0252	0413	0575	0737	0898	5 81	81
86	429	1060	1222	1383	1545	1707	1868	2030	2192	2353	2515	6 97	97
87		2677	2838	3009	3162	3323	3485	3646	3808	3969	4131	7 113	113
88		4293	4454	4616	4777	4939	5100	5262	5423	5585	5747	8 130	129
89		5908	6070	6231	6393	6554	6715	6877	7038	7200	7361	9 146	145
2690		7523	7684	7846	8007	8169	8330	8491	8653	8814	8976	161	160
91		9137	9298	9460	9621	9782	9944	0105	0267	0428	0589	1 16	16
92	430	0751	0912	1073	1235	1396	1557	1718	1880	2041	2202	2 32	32
93		2364	2525	2686	2847	3009	3170	3331	3492	3653	3815	3 48	48
94		3976	4137	4298	4460	4621	4782	4943	5104	5265	5427	4 64	64
2695		5588	5749	5910	6071	6232	6393	6554	6716	6877	7038	5 81	80
96		7199	7360	7521	7682	7843	8004	8165	8326	8487	8648	6 97	96
97		8809	8970	9132	9293	9454	9615	9776	9937	0098	0258	7 113	112
98	431	0419	0580	0741	0902	1063	1224	1385	1546	1707	1868	8 129	128
99		2029	2190	2351	2512	2672	2833	2994	3155	3316	3477	9 145	144
2700		3638	3798	3959	4120	4281	4442	4603	4763	4924	5085	161	160
01		5246	5407	5567	5728	5889	6050	6210	6371	6532	6693	1 16	16
02		6853	7014	7175	7336	7496	7657	7818	7978	8139	8300	2 32	32
03		8460	8621	8782	8942	9103	9264	9424	9585	9746	9906	3 48	48
04	432	0067	0227	0388	0549	0709	0870	1030	1191	1352	1512	4 64	64
2705		1673	1833	1994	2154	2315	2475	2636	2796	2957	3117	5 81	80
06		3278	3438	3599	3759	3920	4080	4241	4401	4562	4722	6 97	96
07		4883	5043	5203	5364	5524	5685	5845	6005	6166	6326	7 113	112
08		6487	6647	6807	6968	7128	7288	7449	7609	7769	7930	8 129	128
09		8090	8250	8411	8571	8731	8892	9052	9212	9372	9533	9 145	144
2710		9693	9853	0013	0174	0334	0494	0654	0815	0975	1135	160	159
11	433	1295	1455	1616	1776	1936	2096	2256	2416	2577	2737	1 16	16
12		2897	3057	3217	3377	3537	3697	3858	4018	4178	4338	2 32	32
13		4498	4658	4818	4978	5138	5298	5458	5618	5778	5938	3 48	48
14		6098	6258	6418	6578	6738	6898	7058	7218	7378	7538	4 64	64
2715		7698	7858	8018	8178	8338	8498	8658	8818	8978	9138	5 80	80
16		9298	9458	9617	9777	9937	0097	0257	0417	0577	0737	6 96	95
17	434	0896	1056	1216	1376	1536	1696	1855	2015	2175	2335	7 112	111
18		2495	2654	2814	2974	3134	3293	3453	3613	3773	3932	8 128	127
19		4092	4252	4412	4571	4731	4891	5050	5210	5370	5529	9 144	143
2720		5689	5849	6008	6168	6328	6487	6647	6807	6966	7126	160	159
21		7285	7445	7605	7764	7924	8083	8243	8403	8562	8722	1 16	16
22		8881	9041	9200	9360	9519	9679	9838	9998	0157	0317	2 32	32
23	435	0476	0636	0795	0955	1114	1274	1433	1593	1752	1912	3 48	48
24		2071	2230	2390	2549	2709	2868	3028	3187	3346	3506	4 64	64
2725		3665	3824	3984	4143	4303	4462	4621	4781	4940	5099	5 80	80
26		5259	5418	5577	5736	5896	6055	6214	6374	6533	6692	6 96	95
27		6851	7011	7170	7329	7488	7648	7807	7966	8125	8284	7 112	111
28		8444	8603	8762	8921	9080	9240	9399	9558	9717	9876	8 128	127
29	436	0035	0194	0354	0513	0672	0831	0990	1149	1308	1467	9 144	143
2730		1626	1786	1945	2104	2263	2422	2581	2740	2899	3058	159	158
31		3217	3376	3535	3694	3853	4012	4171	4330	4489	4648	1 16	16
32		4807	4966	5125	5284	5443	5602	5761	5920	6078	6237	2 32	32
33		6396	6555	6714	6873	7032	7191	7350	7509	7667	7826	3 48	47
34		7985	8144	8303	8462	8620	8779	8938	9097	9256	9415	4 64	63
2735		9573	9732	9891	0050	0208	0367	0526	0685	0843	1002	5 80	79
36	437	1161	1320	1478	1637	1796	1955	2113	2272	2431	2589	6 95	95
37		2748	2907	3065	3224	3383	3541	3700	3859	4017	4176	7 111	111
38		4334	4493	4652	4810	4969	5127	5286	5445	5603	5762	8 127	126
39		5920	6079	6237	6396	6555	6713	6872	7030	7189	7347	9 143	142
2740		7506	7664	7823	7981	8140	8298	8457	8615	8773	8932	159	158
41		9090	9249	9407	9566	9724	9883	0041	0199	0358	0516	1 16	16
42	438	0675	0833	0991	1150	1308	1466	1625	1783	1941	2100	2 32	32
43		2258	2416	2575	2733	2891	3050	3208	3366	3525	3683	3 48	47
44		3841	3999	4158	4316	4474	4632	4791	4949	5107	5265	4 64	63
2745		5423	5582	5740	5898	6056	6214	6373	6531	6689	6847	5 80	79
46		7005	7163	7322	7480	7638	7796	7954	8112	8270	8428	6 95	95
47		8587	8745	8903	9061	9219	9377	9535	9693	9851	0009	7 111	111
48	439	0167	0325	0483	0641	0799	0957	1115	1273	1431	1589	8 127	126
49		1747	1905	2063	2221	2379	2537	2695	2853	3011	3169	9 143	142
N.		0	1	2	3	4	5	6	7	8	9	D&P	Pts

Number 27500 *to* 28199
Logarithm 439 3327 *to* 450 2337

N.		0	1	2	3	4	5	6	7	8	9	D&P	Pts
2750	439	3327	3485	3643	3801	3959	4116	4274	4432	4590	4748	158	157
51		4906	5064	5222	5379	5537	5695	5853	6011	6169	6326	1 16	16
52		6484	6642	6800	6958	7115	7273	7431	7589	7747	7904	2 32	31
53		8062	8220	8378	8535	8693	8851	9009	9166	9324	9482	3 47	47
54		9639	9797	9955	0112	0270	0428	0585	0743	0901	1058	4 63	63
2755	440	1216	1374	1531	1689	1847	2004	2162	2319	2477	2635	5 79	79
56		2792	2950	3107	3265	3422	3580	3738	3895	4053	4210	6 95	94
57		4368	4525	4683	4840	4998	5155	5313	5470	5628	5785	7 111	110
58		5943	6100	6258	6415	6572	6730	6887	7045	7202	7360	8 126	126
59		7517	7674	7832	7989	8147	8304	8461	8619	8776	8933	9 142	141
2760		9091	9248	9406	9563	9720	9878	0035	0192	0349	0507	158	157
61	441	0664	0821	0979	1136	1293	1450	1608	1765	1922	2080	1 16	16
62		2237	2394	2551	2708	2866	3023	3180	3337	3494	3652	2 32	31
63		3809	3966	4123	4280	4438	4595	4752	4909	5066	5223	3 47	47
64		5380	5538	5695	5852	6009	6166	6323	6480	6637	6794	4 63	63
2765		6951	7108	7265	7423	7580	7737	7894	8051	8208	8365	5 79	79
66		8522	8679	8836	8993	9150	9307	9464	9621	9778	9935	6 95	94
67	442	0092	0249	0405	0562	0719	0876	1033	1190	1347	1504	7 111	110
68		1661	1818	1975	2132	2288	2445	2602	2759	2916	3073	8 126	126
69		3230	3386	3543	3700	3857	4014	4171	4327	4484	4641	9 142	141
2770		4798	4954	5111	5268	5425	5582	5738	5895	6052	6209	157	156
71		6365	6522	6679	6835	6992	7149	7306	7462	7619	7776	1 16	16
72		7932	8089	8246	8402	8559	8716	8872	9029	9185	9342	2 31	31
73		9499	9655	9812	9969	0125	0282	0438	0595	0751	0908	3 47	47
74	443	1065	1221	1378	1534	1691	1847	2004	2160	2317	2473	4 63	62
2775		2630	2786	2943	3099	3256	3412	3569	3725	3882	4038	5 79	78
76		4195	4351	4507	4664	4820	4977	5133	5290	5446	5602	6 94	94
77		5759	5915	6072	6228	6384	6541	6697	6853	7010	7166	7 110	109
78		7322	7479	7635	7791	7948	8104	8260	8417	8573	8729	8 126	125
79		8885	9042	9198	9354	9511	9667	9823	9979	0136	0292	9 141	140
2780	444	0448	0604	0760	0917	1073	1229	1385	1541	1698	1854	156	155
81		2010	2166	2322	2478	2635	2791	2947	3103	3259	3415	1 16	16
82		3571	3727	3883	4040	4196	4352	4508	4664	4820	4976	2 31	31
83		5132	5288	5444	5600	5756	5912	6068	6224	6380	6536	3 47	47
84		6692	6848	7004	7160	7316	7472	7628	7784	7940	8096	4 62	62
2785		8252	8408	8564	8720	8876	9032	9188	9343	9499	9655	5 78	78
86		9811	9967	0123	0279	0435	0590	0746	0902	1058	1214	6 94	93
87	445	1370	1526	1681	1837	1993	2149	2305	2460	2616	2772	7 109	109
88		2928	3083	3239	3395	3551	3706	3862	4018	4174	4329	8 125	124
89		4485	4641	4797	4952	5108	5264	5419	5575	5731	5886	9 140	140
2790		6042	6198	6353	6509	6665	6820	6976	7132	7287	7443	156	155
91		7598	7754	7910	8065	8221	8376	8532	8687	8843	8999	1 16	16
92		9154	9310	9465	9621	9776	9932	0087	0243	0398	0554	2 31	31
93	446	0709	0865	1020	1176	1331	1487	1642	1798	1953	2109	3 47	47
94		2264	2419	2575	2730	2886	3041	3197	3352	3507	3663	4 62	62
2795		3818	3974	4129	4284	4440	4595	4750	4906	5061	5216	5 78	78
96		5372	5527	5682	5838	5993	6148	6304	6459	6614	6769	6 94	93
97		6925	7080	7235	7390	7546	7701	7856	8011	8167	8322	7 109	109
98		8477	8632	8788	8943	9098	9253	9408	9563	9719	9874	8 125	124
99	447	0029	0184	0339	0494	0650	0805	0960	1115	1270	1425	9 140	140
2800		1580	1735	1891	2046	2201	2356	2511	2666	2821	2976	155	154
01		3131	3286	3441	3596	3751	3906	4061	4216	4371	4526	1 16	15
02		4681	4836	4991	5146	5301	5456	5611	5766	5921	6076	2 31	31
03		6231	6386	6541	6696	6851	7006	7161	7315	7470	7625	3 47	46
04		7780	7935	8090	8245	8400	8554	8709	8864	9019	9174	4 62	62
2805		9329	9483	9638	9793	9948	0103	0258	0412	0567	0722	5 78	77
06	448	0877	1031	1186	1341	1496	1650	1805	1960	2115	2269	6 93	92
07		2424	2579	2734	2888	3043	3198	3352	3507	3662	3816	7 109	108
08		3971	4126	4280	4435	4590	4744	4899	5054	5208	5363	8 124	123
09		5517	5672	5827	5981	6136	6290	6445	6600	6754	6909	9 140	139
2810		7063	7218	7372	7527	7681	7836	7990	8145	8299	8454	155	154
11		8608	8763	8917	9072	9226	9381	9535	9690	9844	9999	1 16	15
12	449	0153	0308	0462	0616	0771	0925	1080	1234	1389	1543	2 31	31
13		1697	1852	2006	2160	2315	2469	2624	2778	2932	3087	3 47	46
14		3241	3395	3550	3704	3858	4013	4167	4321	4475	4630	4 62	62
2815		4784	4938	5093	5247	5401	5555	5710	5864	6018	6172	5 78	77
16		6327	6481	6635	6789	6943	7098	7252	7406	7560	7714	6 93	92
17		7868	8023	8177	8331	8485	8639	8793	8948	9102	9256	7 109	108
18		9410	9564	9718	9872	0026	0180	0334	0489	0643	0797	8 124	123
19	450	0951	1105	1259	1413	1567	1721	1875	2029	2183	2337	9 140	139
N.		0	1	2	3	4	5	6	7	8	9	D&P	Pts

Number 28200 *to* 28899
Logarithm 450 2491 *to* 460 8828

N.		0	1	2	3	4	5	6	7	8	9	D&PPts	
2820	450	2491	2645	2799	2953	3107	3261	3415	3569	3723	3877	154	153
21		4031	4185	4339	4493	4647	4801	4954	5108	5262	5416	1 15	15
22		5570	5724	5878	6032	6186	6340	6493	6647	6801	6955	2 31	31
23		7109	7263	7416	7570	7724	7878	8032	8186	8339	8493	3 46	46
24		8647	8801	8954	9108	9262	9416	9570	9723	9877	0031	4 62	61
2825	451	0185	0338	0492	0646	0799	0953	1107	1261	1414	1568	5 77	77
26		1722	1875	2029	2183	2336	2490	2644	2797	2951	3104	6 92	92
27		3258	3412	3565	3719	3873	4026	4180	4333	4487	4640	7 108	107
28		4794	4948	5101	5255	5408	5562	5715	5869	6022	6176	8 123	122
29		6329	6483	6636	6790	6943	7097	7250	7404	7557	7711	9 139	138
2830		7864	8018	8171	8325	8478	8632	8785	8938	9092	9245	154	153
31		9399	9552	9705	9859	0012	0166	0319	0472	0626	0779	1 15	15
32	452	0932	1086	1239	1393	1546	1699	1853	2006	2159	2312	2 31	31
33		2466	2619	2772	2926	3079	3232	3385	3539	3692	3845	3 46	46
34		3998	4152	4305	4458	4611	4765	4918	5071	5224	5377	4 62	61
2835		5531	5684	5837	5990	6143	6297	6450	6603	6756	6909	5 77	77
36		7062	7215	7369	7522	7675	7828	7981	8134	8287	8440	6 92	92
37		8593	8746	8900	9053	9206	9359	9512	9665	9818	9971	7 108	107
38	453	0124	0277	0430	0583	0736	0889	1042	1195	1348	1501	8 123	122
39		1654	1807	1960	2113	2266	2419	2572	2725	2878	3030	9 139	138
2840		3183	3336	3489	3642	3795	3948	4101	4254	4407	4559	153	152
41		4712	4865	5018	5171	5324	5477	5629	5782	5935	6088	1 15	15
42		6241	6394	6546	6699	6852	7005	7158	7310	7463	7616	2 31	30
43		7769	7921	8074	8227	8380	8532	8685	8838	8990	9143	3 46	46
44		9296	9449	9601	9754	9907	0059	0212	0365	0517	0670	4 61	61
2845	454	0823	0975	1128	1281	1433	1586	1739	1891	2044	2196	5 77	76
46		2349	2502	2654	2807	2959	3112	3264	3417	3570	3722	6 92	91
47		3875	4027	4180	4332	4485	4637	4790	4942	5095	5247	7 107	106
48		5400	5552	5705	5857	6010	6162	6315	6467	6620	6772	8 122	122
49		6924	7077	7229	7382	7534	7687	7839	7991	8144	8296	9 138	137
2850		8449	8601	8753	8906	9058	9210	9363	9515	9668	9820	153	152
51		9972	0125	0277	0429	0581	0734	0886	1038	1191	1343	1 15	15
52	455	1495	1647	1800	1952	2104	2257	2409	2561	2713	2865	2 31	30
53		3018	3170	3322	3474	3627	3779	3931	4083	4235	4388	3 46	46
54		4540	4692	4844	4996	5148	5300	5453	5605	5757	5909	4 61	61
2855		6061	6213	6365	6517	6670	6822	6974	7126	7278	7430	5 77	76
56		7582	7734	7886	8038	8190	8342	8494	8646	8798	8950	6 92	91
57		9102	9254	9406	9558	9710	9862	0014	0166	0318	0470	7 107	106
58	456	0622	0774	0926	1078	1230	1382	1534	1686	1838	1990	8 122	122
59		2142	2293	2445	2597	2749	2901	3053	3205	3357	3508	9 138	137
2860		3660	3812	3964	4116	4268	4420	4571	4723	4875	5027	152	151
61		5179	5330	5482	5634	5786	5938	6089	6241	6393	6545	1 15	15
62		6696	6848	7000	7152	7303	7455	7607	7758	7910	8062	2 30	30
63		8213	8365	8517	8669	8820	8972	9124	9275	9427	9578	3 46	45
64		9730	9882	0033	0185	0337	0488	0640	0791	0943	1095	4 61	60
2865	457	1246	1398	1549	1701	1853	2004	2156	2307	2459	2610	5 76	76
66		2762	2913	3065	3216	3368	3519	3671	3822	3974	4125	6 91	91
67		4277	4428	4580	4731	4883	5034	5186	5337	5489	5640	7 106	106
68		5791	5943	6094	6246	6397	6549	6700	6851	7003	7154	8 122	121
69		7305	7457	7608	7760	7911	8062	8214	8365	8516	8668	9 137	136
2870		8819	8970	9122	9273	9424	9576	9727	9878	0029	0181	152	151
71	458	0332	0483	0634	0786	0937	1088	1239	1391	1542	1693	1 15	15
72		1844	1996	2147	2298	2449	2600	2752	2903	3054	3205	2 30	30
73		3356	3507	3659	3810	3961	4112	4263	4414	4565	4717	3 46	45
74		4868	5019	5170	5321	5472	5623	5774	5925	6076	6227	4 61	60
2875		6378	6530	6681	6832	6983	7134	7285	7436	7587	7738	5 76	76
76		7889	8040	8191	8342	8493	8644	8795	8946	9097	9248	6 91	91
77		9399	9550	9701	9851	0002	0153	0304	0455	0606	0757	7 106	106
78	459	0908	1059	1210	1361	1511	1662	1813	1964	2115	2266	8 122	121
79		2417	2567	2718	2869	3020	3171	3322	3472	3623	3774	9 137	136
2880		3925	4076	4226	4377	4528	4679	4830	4980	5131	5282	151	150
81		5433	5583	5734	5885	6036	6186	6337	6488	6638	6789	1 15	15
82		6940	7090	7241	7392	7542	7693	7844	7994	8145	8296	2 30	30
83		8446	8597	8748	8898	9049	9200	9350	9501	9651	9802	3 45	45
84		9953	0103	0254	0404	0555	0705	0856	1007	1157	1308	4 60	60
2885	460	1458	1609	1759	1910	2060	2211	2361	2512	2662	2813	5 76	75
86		2963	3114	3264	3415	3565	3716	3866	4017	4167	4317	6 91	90
87		4468	4618	4769	4919	5070	5220	5370	5521	5671	5822	7 106	105
88		5972	6122	6273	6423	6573	6724	6874	7024	7175	7325	8 121	120
89		7475	7626	7776	7926	8077	8227	8377	8528	8678	8828	9 136	135
N.		0	1	2	3	4	5	6	7	8	9	D&PPts	

Number 28900 *to* 29599
Logarithm 460 8978 *to* 471 2770

N.		0	1	2	3	4	5	6	7	8	9	D&PPts	
2890	460	8978	9129	9279	9429	9579	9730	9880	0030	0180	0331	151	150
91	461	0481	0631	0781	0932	1082	1232	1382	1532	1683	1833	1 15	15
92		1983	2133	2283	2433	2584	2734	2884	3034	3184	3334	2 30	30
93		3484	3634	3785	3935	4085	4235	4385	4535	4685	4835	3 45	45
94		4985	5135	5285	5435	5585	5736	5886	6036	6186	6336	4 60	60
2895		6486	6636	6786	6936	7086	7236	7386	7536	7686	7836	5 76	75
96		7986	8136	8285	8435	8585	8735	8885	9035	9185	9335	6 91	90
97		9485	9635	9785	9935	0085	0234	0384	0534	0684	0834	7 106	105
98	462	0984	1134	1284	1433	1583	1733	1883	2033	2183	2332	8 121	120
99		2482	2632	2782	2932	3081	3231	3381	3531	3680	3830	9 136	135
2900		3980	4130	4279	4429	4579	4729	4878	5028	5178	5328	150	149
01		5477	5627	5777	5926	6076	6226	6375	6525	6675	6824	1 15	15
02		6974	7124	7273	7423	7573	7722	7872	8022	8171	8321	2 30	30
03		8470	8620	8770	8919	9069	9218	9368	9517	9667	9817	3 45	45
04		9966	0116	0265	0415	0564	0714	0863	1013	1162	1312	4 60	60
2905	463	1461	1611	1760	1910	2059	2209	2358	2508	2657	2807	5 75	75
06		2956	3106	3255	3404	3554	3703	3853	4002	4152	4301	6 90	89
07		4450	4600	4749	4898	5048	5197	5347	5496	5645	5795	7 105	104
08		5944	6093	6243	6392	6541	6691	6840	6989	7139	7288	8 120	119
09		7437	7587	7736	7885	8034	8184	8333	8482	8631	8781	9 135	134
2910		8930	9079	9228	9378	9527	9676	9825	9974	0124	0273	149	148
11	464	0422	0571	0720	0870	1019	1168	1317	1466	1615	1765	1 15	15
12		1914	2063	2212	2361	2510	2659	2808	2958	3107	3256	2 30	30
13		3405	3554	3703	3852	4001	4150	4299	4448	4597	4746	3 45	44
14		4895	5045	5194	5343	5492	5641	5790	5939	6088	6237	4 60	59
2915		6386	6535	6684	6833	6981	7130	7279	7428	7577	7726	5 75	74
16		7875	8024	8173	8322	8471	8620	8769	8918	9067	9215	6 89	89
17		9364	9513	9662	9811	9960	0109	0258	0406	0555	0704	7 104	104
18	465	0853	1002	1151	1299	1448	1597	1746	1895	2043	2192	8 119	118
19		2341	2490	2639	2787	2936	3085	3234	3382	3531	3680	9 134	133
2920		3829	3977	4126	4275	4423	4572	4721	4870	5018	5167	149	148
21		5316	5464	5613	5762	5910	6059	6208	6356	6505	6653	1 15	15
22		6802	6951	7099	7248	7397	7545	7694	7842	7991	8140	2 30	30
23		8288	8437	8585	8734	8882	9031	9180	9328	9477	9625	3 45	44
24		9774	9922	0071	0219	0368	0516	0665	0813	0962	1110	4 60	59
2925	466	1259	1407	1556	1704	1853	2001	2149	2298	2446	2595	5 75	74
26		2743	2892	3040	3188	3337	3485	3634	3782	3930	4079	6 89	89
27		4227	4376	4524	4672	4821	4969	5117	5266	5414	5562	7 104	104
28		5711	5859	6007	6156	6304	6452	6601	6749	6897	7045	8 119	118
29		7194	7342	7490	7639	7787	7935	8083	8232	8380	8528	9 134	133
2930		8676	8824	8973	9121	9269	9417	9565	9714	9862	0010	148	147
31	467	0158	0306	0455	0603	0751	0899	1047	1195	1343	1492	1 15	15
32		1640	1788	1936	2084	2232	2380	2528	2676	2824	2973	2 30	29
33		3121	3269	3417	3565	3713	3861	4009	4157	4305	4453	3 44	44
34		4601	4749	4897	5045	5193	5341	5489	5637	5785	5933	4 59	59
2935		6081	6229	6377	6525	6673	6821	6969	7117	7265	7413	5 74	74
36		7561	7708	7856	8004	8152	8300	8448	8596	8744	8892	6 89	88
37		9039	9187	9335	9483	9631	9779	9927	0074	0222	0370	7 104	103
38	468	0518	0666	0814	0961	1109	1257	1405	1553	1700	1848	8 118	118
39		1996	2144	2291	2439	2587	2735	2882	3030	3178	3326	9 133	132
2940		3473	3621	3769	3916	4064	4212	4360	4507	4655	4803	148	147
41		4950	5098	5246	5393	5541	5689	5836	5984	6131	6279	1 15	15
42		6427	6574	6722	6870	7017	7165	7312	7460	7607	7755	2 30	29
43		7903	8050	8198	8345	8493	8640	8788	8935	9083	9231	3 44	44
44		9378	9526	9673	9821	9968	0116	0263	0411	0558	0706	4 59	59
2945	469	0853	1000	1148	1295	1443	1590	1738	1885	2033	2180	5 74	74
46		2327	2475	2622	2770	2917	3064	3212	3359	3507	3654	6 89	88
47		3801	3949	4096	4243	4391	4538	4685	4833	4980	5127	7 104	103
48		5275	5422	5569	5717	5864	6011	6159	6306	6453	6600	8 118	118
49		6748	6895	7042	7190	7337	7484	7631	7778	7926	8073	9 133	132
2950		8220	8367	8515	8662	8809	8956	9103	9251	9398	9545	147	146
51		9692	9839	9986	0134	0281	0428	0575	0722	0869	1016	1 15	15
52	470	1164	1311	1458	1605	1752	1899	2046	2193	2340	2487	2 29	29
53		2634	2782	2929	3076	3223	3370	3517	3664	3811	3958	3 44	44
54		4105	4252	4399	4546	4693	4840	4987	5134	5281	5428	4 59	58
2955		5575	5722	5869	6016	6163	6310	6457	6604	6750	6897	5 74	73
56		7044	7191	7338	7485	7632	7779	7926	8073	8219	8366	6 88	88
57		8513	8660	8807	8954	9101	9248	9394	9541	9688	9835	7 103	102
58		9982	0129	0275	0422	0569	0716	0863	1009	1156	1303	8 118	117
59	471	1450	1596	1743	1890	2037	2183	2330	2477	2624	2770	9 132	131
N.		0	1	2	3	4	5	6	7	8	9	D&PPts	

Number 29600 *to* 30299

Logarithm 471 2917 *to* 481 4283

N.		0	1	2	3	4	5	6	7	8	9	D&PPts		
2960	471	2917	3064	3211	3357	3504	3651	3797	3944	4091	4237			
61		4384	4531	4677	4824	4971	5117	5264	5411	5557	5704			
62		5851	5997	6144	6290	6437	6584	6730	6877	7023	7170			
63		7317	7463	7610	7756	7903	8049	8196	8342	8489	8635			
64		8782	8929	9075	9222	9368	9515	9661	9808	9954	0101	147	146	
2965	472	0247	0393	0540	0686	0833	0979	1126	1272	1419	1565	1	15	15
66		1711	1858	2004	2151	2297	2444	2590	2736	2883	3029	2	29	29
67		3175	3322	3468	3615	3761	3907	4054	4200	4346	4493	3	44	44
68		4639	4785	4932	5078	5224	5371	5517	5663	5809	5956	4	59	58
69		6102	6248	6395	6541	6687	6833	6980	7126	7272	7418	5	74	73
2970		7564	7711	7857	8003	8149	8296	8442	8588	8734	8880	6	88	88
71		9027	9173	9319	9465	9611	9757	9903	0050	0196	0342	7	103	102
72	473	0488	0634	0780	0926	1073	1219	1365	1511	1657	1803	8	118	117
73		1949	2095	2241	2387	2533	2679	2825	2972	3118	3264	9	132	131
74		3410	3556	3702	3848	3994	4140	4286	4432	4578	4724	146		
2975		4870	5016	5162	5308	5454	5600	5746	5891	6037	6183	1	15	
76		6329	6475	6621	6767	6913	7059	7205	7351	7497	7642	2	29	
77		7788	7934	8080	8226	8372	8518	8664	8809	8955	9101	3	44	
78		9247	9393	9539	9684	9830	9976	0122	0268	0413	0559	4	58	
79	474	0705	0851	0997	1142	1288	1434	1580	1725	1871	2017	5	73	
2980		2163	2308	2454	2600	2746	2891	3037	3183	3328	3474	6	88	
81		3620	3765	3911	4057	4202	4348	4494	4639	4785	4931	7	102	
82		5076	5222	5368	5513	5659	5805	5950	6096	6241	6387	8	117	
83		6533	6678	6824	6969	7115	7260	7406	7552	7697	7843	9	131	
84		7988	8134	8279	8425	8570	8716	8861	9007	9152	9298	146	145	
2985		9443	9589	9734	9880	0025	0171	0316	0462	0607	0753	1	15	15
86	475	0898	1043	1189	1334	1480	1625	1771	1916	2061	2207	2	29	29
87		2352	2498	2643	2788	2934	3079	3225	3370	3515	3661	3	44	44
88		3806	3951	4097	4242	4387	4533	4678	4823	4969	5114	4	58	58
89		5259	5404	5550	5695	5840	5986	6131	6276	6421	6567	5	73	73
2990		6712	6857	7002	7148	7293	7438	7583	7729	7874	8019	6	88	87
91		8164	8309	8455	8600	8745	8890	9035	9180	9326	9471	7	102	102
92		9616	9761	9906	0051	0196	0342	0487	0632	0777	0922	8	117	116
93	476	1067	1212	1357	1502	1648	1793	1938	2083	2228	2373	9	131	131
94		2518	2663	2808	2953	3098	3243	3388	3533	3678	3823			
2995		3968	4113	4258	4403	4548	4693	4838	4983	5128	5273	145		
96		5418	5563	5708	5853	5998	6143	6288	6433	6578	6723	1	15	
97		6867	7012	7157	7302	7447	7592	7737	7882	8027	8171	2	29	
98		8316	8461	8606	8751	8896	9041	9185	9330	9475	9620	3	44	
99		9765	9909	0054	0199	0344	0489	0633	0778	0923	1068	4	58	
3000	477	1213	1357	1502	1647	1792	1936	2081	2226	2371	2515	5	73	
01		2660	2805	2949	3094	3239	3383	3528	3673	3818	3962	6	87	
02		4107	4252	4396	4541	4686	4830	4975	5119	5264	5409	7	102	
03		5553	5698	5843	5987	6132	6276	6421	6566	6710	6855	8	116	
04		6999	7144	7288	7433	7578	7722	7867	8011	8156	8300	9	131	
3005		8445	8589	8734	8878	9023	9167	9312	9456	9601	9745	145	144	
06		9890	0034	0179	0323	0468	0612	0757	0901	1045	1190	1	15	14
07	478	1334	1479	1623	1768	1912	2056	2201	2345	2490	2634	2	29	29
08		2778	2923	3067	3211	3356	3500	3645	3789	3933	4078	3	44	43
09		4222	4366	4511	4655	4799	4943	5088	5232	5376	5521	4	58	58
3010		5665	5809	5954	6098	6242	6386	6531	6675	6819	6963	5	73	72
11		7108	7252	7396	7540	7684	7829	7973	8117	8261	8405	6	87	86
12		8550	8694	8838	8982	9126	9271	9415	9559	9703	9847	7	102	101
13		9991	0135	0280	0424	0568	0712	0856	1000	1144	1288	8	116	115
14	479	1432	1577	1721	1865	2009	2153	2297	2441	2585	2729	9	131	130
3015		2873	3017	3161	3305	3449	3593	3737	3881	4025	4169	144	143	
16		4313	4457	4601	4745	4889	5033	5177	5321	5465	5609	1	14	14
17		5753	5897	6041	6185	6329	6473	6617	6761	6905	7048	2	29	29
18		7192	7336	7480	7624	7768	7912	8056	8200	8343	8487	3	43	43
19		8631	8775	8919	9063	9207	9350	9494	9638	9782	9926	4	58	57
3020	480	0069	0213	0357	0501	0645	0788	0932	1076	1220	1363	5	72	72
21		1507	1651	1795	1939	2082	2226	2370	2513	2657	2801	6	86	86
22		2945	3088	3232	3376	3519	3663	3807	3950	4094	4238	7	101	100
23		4381	4525	4669	4812	4956	5100	5243	5387	5531	5674	8	115	114
24		5818	5961	6105	6249	6392	6536	6679	6823	6967	7110	9	130	129
3025		7254	7397	7541	7684	7828	7972	8115	8259	8402	8546			
26		8689	8833	8976	9120	9263	9407	9550	9694	9837	9981			
27	481	0124	0268	0411	0555	0698	0842	0985	1128	1272	1415			
28		1559	1702	1846	1989	2132	2276	2419	2563	2706	2849			
29		2993	3136	3279	3423	3566	3710	3853	3996	4140	4283			
N.		0	1	2	3	4	5	6	7	8	9	D&PPts		

Number 30300 *to* 30999

Logarithm 481 4426 *to* 491 3477

N.		0	1	2.	3	4	5	6	7	8	9	D&PPts		
3030	481	4426	4570	4713	4856	5000	5143	5286	5429	5573	5716			
31		5859	6003	6146	6289	6432	6576	6719	6862	7005	7149			
32		7292	7435	7578	7722	7865	8008	8151	8295	8438	8581			
33		8724	8867	9010	9154	9297	9440	9583	9726	9869	0013			
34	482	0156	0299	0442	0585	0728	0871	1015	1158	1301	1444			
3035		1587	1730	1873	2016	2159	2302	2445	2589	2732	2875			
36		3018	3161	3304	3447	3590	3733	3876	4019	4162	4305			
37		4448	4591	4734	4877	5020	5163	5306	5449	5592	5735	144	143	
38		5878	6021	6164	6307	6449	6592	6735	6878	7021	7164	1	14	14
39		7307	7450	7593	7736	7879	8021	8164	8307	8450	8593	2	29	29
3040		8736	8879	9022	9164	9307	9450	9593	9736	9879	0021	3	43	43
41	483	0164	0307	0450	0593	0735	0878	1021	1164	1307	1449	4	58	57
42		1592	1735	1878	2020	2163	2306	2449	2591	2734	2877	5	72	72
43		3020	3162	3305	3448	3590	3733	3876	4018	4161	4304	6	86	86
44		4446	4589	4732	4874	5017	5160	5302	5445	5588	5730	7	101	100
3045		5873	6016	6158	6301	6443	6586	6729	6871	7014	7156	8	115	114
46		7299	7442	7584	7727	7869	8012	8154	8297	8439	8582	9	130	129
47		8725	8867	9010	9152	9295	9437	9580	9722	9865	0007	143	142	
48	484	0150	0292	0435	0577	0720	0862	1004	1147	1289	1432	1	14	14
49		1574	1717	1859	2002	2144	2286	2429	2571	2714	2856	2	29	28
3050		2998	3141	3283	3426	3568	3710	3853	3995	4137	4280	3	43	43
51		4422	4564	4707	4849	4991	5134	5276	5418	5561	5703	4	57	57
52		5845	5988	6130	6272	6414	6557	6699	6841	6984	7126	5	72	71
53		7268	7410	7553	7695	7837	7979	8121	8264	8406	8548	6	86	85
54		8690	8833	8975	9117	9259	9401	9543	9686	9828	9970	7	100	99
3055	485	0112	0254	0396	0539	0681	0823	0965	1107	1249	1391	8	114	114
56		1533	1676	1818	1960	2102	2244	2386	2528	2670	2812	9	129	128
57		2954	3096	3239	3381	3523	3665	3807	3949	4091	4233			
58		4375	4517	4659	4801	4943	5085	5227	5369	5511	5653	142		
59		5795	5937	6079	6221	6363	6505	6647	6788	6930	7072	1	14	
3060		7214	7356	7498	7640	7782	7924	8066	8208	8350	8491	2	28	
61		8633	8775	8917	9059	9201	9343	9484	9626	9768	9910	3	43	
62	486	0052	0194	0336	0477	0619	0761	0903	1045	1186	1328	4	57	
63		1470	1612	1754	1895	2037	2179	2321	2462	2604	2746	5	71	
64		2888	3029	3171	3313	3455	3596	3738	3880	4021	4163	6	85	
3065		4305	4446	4588	4730	4872	5013	5155	5297	5438	5580	7	99	
66		5722	5863	6005	6146	6288	6430	6571	6713	6855	6996	8	114	
67		7138	7279	7421	7563	7704	7846	7987	8129	8270	8412	9	128	
68		8554	8695	8837	8978	9120	9261	9403	9544	9686	9827			
69		9969	0110	0252	0393	0535	0676	0818	0959	1101	1242	142	141	
3070	487	1384	1525	1667	1808	1950	2091	2232	2374	2515	2657	1	14	14
71		2798	2940	3081	3222	3364	3505	3647	3788	3929	4071	2	28	28
72		4212	4353	4495	4636	4778	4919	5060	5202	5343	5484	3	43	42
73		5626	5767	5908	6050	6191	6332	6473	6615	6756	6897	4	57	56
74		7039	7180	7321	7462	7604	7745	7886	8027	8169	8310	5	71	71
3075		8451	8592	8734	8875	9016	9157	9299	9440	9581	9722	6	85	85
76		9863	0004	0146	0287	0428	0569	0710	0852	0993	1134	7	99	99
77	488	1275	1416	1557	1698	1839	1981	2122	2263	2404	2545	8	114	113
78		2686	2827	2968	3109	3251	3392	3533	3674	3815	3956	9	128	127
79		4097	4238	4379	4520	4661	4802	4943	5084	5225	5366			
3080		5507	5648	5789	5930	6071	6212	6353	6494	6635	6776	141		
81		6917	7058	7199	7340	7481	7622	7763	7904	8045	8185	1	14	
82		8326	8467	8608	8749	8890	9031	9172	9313	9454	9594	2	28	
83		9735	9876	0017	0158	0299	0440	0580	0721	0862	1003	3	42	
84	489	1144	1285	1425	1566	1707	1848	1989	2129	2270	2411	4	56	
3085		2552	2692	2833	2974	3115	3256	3396	3537	3678	3818	5	71	
86		3959	4100	4241	4381	4522	4663	4804	4944	5085	5226	6	85	
87		5366	5507	5648	5788	5929	6070	6210	6351	6492	6632	7	99	
88		6773	6914	7054	7195	7335	7476	7617	7757	7898	8038	8	113	
89		8179	8320	8460	8601	8741	8882	9023	9163	9304	9444	9	127	
3090		9585	9725	9866	0006	0147	0287	0428	0569	0709	0850	141	140	
91	490	0990	1131	1271	1412	1552	1693	1833	1973	2114	2254	1	14	14
92		2395	2535	2676	2816	2957	3097	3238	3378	3518	3659	2	28	28
93		3799	3940	4080	4220	4361	4501	4642	4782	4922	5063	3	42	42
94		5203	5343	5484	5624	5765	5905	6045	6186	6326	6466	4	56	56
3095		6607	6747	6887	7027	7168	7308	7448	7589	7729	7869	5	71	70
96		8010	8150	8290	8430	8571	8711	8851	8991	9132	9272	6	85	84
97		9412	9552	9693	9833	9973	0113	0253	0394	0534	0674	7	99	98
98	491	0814	0954	1094	1235	1375	1515	1655	1795	1935	2076	8	113	112
99		2216	2356	2496	2636	2776	2916	3057	3197	3337	3477	9	127	126
N.		0	1	2	3	4	5	6	7	8	9	D&PPts		

Number 31000 *to* 31699
Logarithm 491 3617 *to* 501 0456

N.		0	1	2	3	4	5	6	7	8	9	D&PPts		
3100	491	3617	3757	3897	4037	4177	4317	4457	4597	4738	4878			
01		5018	5158	5298	5438	5578	5718	5858	5998	6138	6278			
02		6418	6558	6698	6838	6978	7118	7258	7398	7538	7678		141	140
03		7818	7958	8098	8238	8378	8517	8657	8797	8937	9077	1	14	14
04		9217	9357	9497	9637	9777	9917	0057	0196	0336	0476	2	28	28
3105	492	0616	0756	0896	1036	1175	1315	1455	1595	1735	1875	3	42	42
06		2015	2154	2294	2434	2574	2714	2853	2993	3133	3273	4	56	56
07		3413	3552	3692	3832	3972	4111	4251	4391	4531	4670	5	71	70
08		4810	4950	5090	5229	5369	5509	5648	5788	5928	6068	6	85	84
09		6207	6347	6487	6626	6766	6906	7045	7185	7325	7464	7	99	98
3110		7604	7744	7883	8023	8162	8302	8442	8581	8721	8861	8	113	112
11		9000	9140	9279	9419	9558	9698	9838	9977	0117	0256	9	127	126
12	493	0396	0535	0675	0815	0954	1094	1233	1373	1512	1652			
13		1791	1931	2070	2210	2349	2489	2628	2768	2907	3047		140	139
14		3186	3326	3465	3604	3744	3883	4023	4162	4302	4441	1	14	14
3115		4581	4720	4859	4999	5138	5278	5417	5556	5696	5835	2	28	28
16		5974	6114	6253	6393	6532	6671	6811	6950	7089	7229	3	42	42
17		7368	7507	7647	7786	7925	8065	8204	8343	8483	8622	4	56	56
18		8761	8900	9040	9179	9318	9457	9597	9736	9875	0015	5	70	70
19	494	0154	0293	0432	0571	0711	0850	0989	1128	1268	1407	6	84	83
3120		1546	1685	1824	1964	2103	2242	2381	2520	2659	2799	7	98	97
21		2938	3077	3216	3355	3494	3633	3773	3912	4051	4190	8	112	111
22		4329	4468	4607	4746	4885	5024	5164	5303	5442	5581	9	126	125
23		5720	5859	5998	6137	6276	6415	6554	6693	6832	6971			
24		7110	7249	7388	7527	7666	7805	7944	8083	8222	8361		139	
3125		8500	8639	8778	8917	9056	9195	9334	9473	9612	9751	1	14	
26		9890	0029	0168	0307	0445	0584	0723	0862	1001	1140	2	28	
27	495	1279	1418	1557	1695	1834	1973	2112	2251	2390	2529	3	42	
28		2667	2806	2945	3084	3223	3362	3500	3639	3778	3917	4	56	
29		4056	4194	4333	4472	4611	4750	4888	5027	5166	5305	5	70	
3130		5443	5582	5721	5860	5998	6137	6276	6415	6553	6692	6	83	
31		6831	6969	7108	7247	7385	7524	7663	7802	7940	8079	7	97	
32		8218	8356	8495	8634	8772	8911	9049	9188	9327	9465	8	111	
33		9604	9743	9881	0020	0158	0297	0436	0574	0713	0851	9	125	
34	496	0990	1128	1267	1406	1544	1683	1821	1960	2098	2237			
3135		2375	2514	2653	2791	2930	3068	3207	3345	3484	3622		139	138
36		3761	3899	4038	4176	4314	4453	4591	4730	4868	5007	1	14	14
37		5145	5284	5422	5560	5699	5837	5976	6114	6253	6391	2	28	28
38		6529	6668	6806	6945	7083	7221	7360	7498	7636	7775	3	42	41
39		7913	8052	8190	8328	8467	8605	8743	8882	9020	9158	4	56	55
3140		9296	9435	9573	9711	9850	9988	0126	0265	0403	0541	5	70	69
41	497	0679	0818	0956	1094	1232	1371	1509	1647	1785	1924	6	83	83
42		2062	2200	2338	2476	2615	2753	2891	3029	3167	3306	7	97	97
43		3444	3582	3720	3858	3996	4135	4273	4411	4549	4687	8	111	110
44		4825	4964	5102	5240	5378	5516	5654	5792	5930	6068	9	125	124
3145		6206	6345	6483	6621	6759	6897	7035	7173	7311	7449			
46		7587	7725	7863	8001	8139	8277	8415	8553	8691	8829			
47		8967	9105	9243	9381	9519	9657	9795	9933	0071	0209		138	
48	498	0347	0485	0623	0761	0899	1037	1175	1313	1451	1589	1	14	
49		1727	1865	2002	2140	2278	2416	2554	2692	2830	2968	2	28	
3150		3106	3243	3381	3519	3657	3795	3933	4071	4208	4346	3	41	
51		4484	4622	4760	4897	5035	5173	5311	5449	5587	5724	4	55	
52		5862	6000	6138	6275	6413	6551	6689	6826	6964	7102	5	69	
53		7240	7377	7515	7653	7791	7928	8066	8204	8341	8479	6	83	
54		8617	8755	8892	9030	9168	9305	9443	9581	9718	9856	7	97	
3155		9994	0131	0269	0407	0544	0682	0819	0957	1095	1232	8	110	
56	499	1370	1508	1645	1783	1920	2058	2196	2333	2471	2608	9	124	
57		2746	2883	3021	3158	3296	3434	3571	3709	3846	3984			
58		4121	4259	4396	4534	4671	4809	4946	5084	5221	5359		138	137
59		5496	5634	5771	5909	6046	6184	6321	6459	6596	6733	1	14	14
3160		6871	7008	7146	7283	7421	7558	7695	7833	7970	8108	2	28	27
61		8245	8382	8520	8657	8794	8932	9069	9207	9344	9481	3	41	41
62		9619	9756	9893	0031	0168	0305	0443	0580	0717	0855	4	55	55
63	500	0992	1129	1267	1404	1541	1678	1816	1953	2090	2227	5	69	69
64		2365	2502	2639	2777	2914	3051	3188	3325	3463	3600	6	83	82
3165		3737	3874	4012	4149	4286	4423	4560	4698	4835	4972	7	97	96
66		5109	5246	5383	5521	5658	5795	5932	6069	6206	6344	8	110	110
67		6481	6618	6755	6892	7029	7166	7303	7440	7578	7715	9	124	123
68		7852	7989	8126	8263	8400	8537	8674	8811	8948	9085			
69		9222	9359	9496	9634	9771	9908	0045	0182	0319	0456			
N.		0	1	2	3	4	5	6	7	8	9	D&PPts		

Number 31700 *to* 32399
Logarithm 501 0593 *to* 510 5316

N.		0	1	2	3	4	5	6	7	8	9	D&PPts		
3170	501	0593	0730	0867	1004	1141	1278	1415	1552	1688	1825		137	
71		1962	2099	2236	2373	2510	2647	2784	2921	3058	3195	1	14	
72		3332	3469	3606	3743	3879	4016	4153	4290	4427	4564	2	27	
73		4701	4838	4974	5111	5248	5385	5522	5659	5796	5932	3	41	
74		6069	6206	6343	6480	6617	6753	6890	7027	7164	7301	4	55	
3175		7437	7574	7711	7848	7984	8121	8258	8395	8531	8668	5	69	
76		8805	8942	9078	9215	9352	9489	9625	9762	9899	0035	6	82	
77	502	0172	0309	0446	0582	0719	0856	0992	1129	1266	1402	7	96	
78		1539	1676	1812	1949	2086	2222	2359	2495	2632	2769	8	110	
79		2905	3042	3178	3315	3452	3588	3725	3861	3998	4135	9	123	
3180		4271	4408	4544	4681	4817	4954	5091	5227	5364	5500			
81		5637	5773	5910	6046	6183	6319	6456	6592	6729	6865		137	136
82		7002	7138	7275	7411	7548	7684	7821	7957	8093	8230	1	14	14
83		8366	8503	8639	8776	8912	9049	9185	9321	9458	9594	2	27	27
84		9731	9867	0003	0140	0276	0413	0549	0685	9822	0958	3	41	41
3185	503	1094	1231	1367	1503	1640	1776	1912	2049	2185	2321	4	55	54
86		2458	2594	2730	2867	3003	3139	3276	3412	3548	3684	5	69	68
87		3821	3957	4093	4229	4366	4502	4638	4774	4911	5047	6	82	82
88		5183	5319	5456	5592	5728	5864	6000	6137	6273	6409	7	96	95
89		6545	6681	6818	6954	7090	7226	7362	7498	7635	7771	8	110	109
3190		7907	8043	8179	8315	8451	8587	8724	8860	8996	9132	9	123	122
91		9268	9404	9540	9676	9812	9948	0085	0221	0357	0493			
92	504	0629	0765	0901	1037	1173	1309	1445	1581	1717	1853			
93		1989	2125	2261	2397	2533	2669	2805	2941	3077	3213		136	
94		3349	3485	3621	3757	3893	4029	4165	4301	4437	4573	1	14	
3195		4709	4845	4980	5116	5252	5388	5524	5660	5796	5932	2	27	
96		6068	6204	6339	6475	6611	6747	6883	7019	7155	7291	3	41	
97		7426	7562	7698	7834	7970	8106	8241	8377	8513	8649	4	54	
98		8785	8920	9056	9192	9328	9464	9599	9735	9871	0007	5	68	
99	505	0142	0278	0414	0550	0685	0821	0957	1093	1228	1364	6	82	
3200		1500	1635	1771	1907	2043	2178	2314	2450	2585	2721	7	95	
01		2857	2992	3128	3264	3399	3535	3671	3806	3942	4078	8	109	
02		4213	4349	4485	4620	4756	4891	5027	5163	5298	5434	9	122	
03		5569	5705	5841	5976	6112	6247	6383	6518	6654	6790			
04		6925	7061	7196	7332	7467	7603	7738	7874	8009	8145			
3205		8280	8416	8551	8687	8822	8958	9093	9229	9364	9500		136	135
06		9635	9771	9906	0042	0177	0312	0448	0583	0719	0854	1	14	14
07	506	0990	1125	1260	1396	1531	1667	1802	1937	2073	2208	2	27	27
08		2344	2479	2614	2750	2885	3020	3156	3291	3426	3562	3	41	41
09		3697	3833	3968	4103	4238	4374	4509	4644	4780	4915	4	54	54
3210		5050	5186	5321	5456	5591	5727	5862	5997	6133	6268	5	68	68
11		6403	6538	6674	6809	6944	7079	7214	7350	7485	7620	6	82	81
12		7755	7891	8026	8161	8296	8431	8567	8702	8837	8972	7	95	95
13		9107	9242	9378	9513	9648	9783	9918	0053	0188	0324	8	109	108
14	507	0459	0594	0729	0864	0999	1134	1269	1405	1540	1675	9	122	122
3215		1810	1945	2080	2215	2350	2485	2620	2755	2890	3025			
16		3160	3295	3430	3566	3701	3836	3971	4106	4241	4376			
17		4511	4646	4781	4916	5051	5186	5321	5456	5590	5725		135	
18		5860	5995	6130	6265	6400	6535	6670	6805	6940	7075	1	14	
19		7210	7345	7480	7614	7749	7884	8019	8154	8289	8424	2	27	
3220		8559	8694	8828	8963	9098	9233	9368	9503	9638	9772	3	41	
21		9907	0042	0177	0312	0447	0581	0716	0851	0986	1121	4	54	
22	508	1255	1390	1525	1660	1794	1929	2064	2199	2334	2468	5	68	
23		2603	2738	2873	3007	3142	3277	3411	3546	3681	3816	6	81	
24		3950	4085	4220	4354	4489	4624	4758	4893	5028	5163	7	95	
3225		5297	5432	5567	5701	5836	5970	6105	6240	6374	6509	8	108	
26		6644	6778	6913	7047	7182	7317	7451	7586	7720	7855	9	122	
27		7990	8124	8259	8393	8528	8663	8797	8932	9066	9201			
28		9335	9470	9604	9739	9873	0008	0142	0277	0411	0546		135	134
29	509	0680	0815	0949	1084	1218	1353	1487	1622	1756	1891	1	14	13
3230		2025	2160	2294	2429	2563	2697	2832	2966	3101	3235	2	27	27
31		3370	3504	3638	3773	3907	4042	4176	4310	4445	4579	3	41	40
32		4714	4848	4982	5117	5251	5385	5520	5654	5788	5923	4	54	54
33		6057	6191	6326	6460	6594	6729	6863	6997	7132	7266	5	68	67
34		7400	7534	7669	7803	7937	8072	8206	8340	8474	8609	6	81	80
3235		8743	8877	9011	9146	9280	9414	9548	9682	9817	9951	7	95	94
36	510	0085	0219	0354	0488	0622	0756	0890	1024	1159	1293	8	108	107
37		1427	1561	1695	1829	1964	2098	2232	2366	2500	2634	9	122	121
38		2768	2903	3037	3171	3305	3439	3573	3707	3841	3975			
39		4109	4244	4378	4512	4646	4780	4914	5048	5182	5316			
N.		0	1	2	3	4	5	6	7	8	9	D&PPts		

Number 32400 *to* 33099

Logarithm 510 5450 *to* 519 8149

N.		0	1	2	3	4	5	6	7	8	9
3240	510	5450	5584	5718	5852	5986	6120	6254	6388	6522	6656
41		6790	6924	7058	7192	7326	7460	7594	7728	7862	7996
42		8130	8264	8398	8532	8666	8800	8934	9068	9202	9336
43		9469	9603	9737	9871	0005	0139	0273	0407	0541	0675
44	511	0808	0942	1076	1210	1344	1478	1612	1745	1879	2013
3245		2147	2281	2415	2548	2682	2816	2950	3084	3218	3351
46		3485	3619	3753	3887	4020	4154	4288	4422	4555	4689
47		4823	4957	5090	5224	5358	5492	5625	5759	5893	6026
48		6160	6294	6428	6561	6695	6829	6962	7096	7230	7363
49		7497	7631	7764	7898	8032	8165	8299	8433	8566	8700
3250		8834	8967	9101	9234	9368	9502	9635	9769	9903	0036
51	512	0170	0303	0437	0570	0704	0838	0971	1105	1238	1372
52		1505	1639	1772	1906	2040	2173	2307	2440	2574	2707
53		2841	2974	3108	3241	3375	3508	3642	3775	3909	4042
54		4175	4309	4442	4576	4709	4843	4976	5110	5243	5377
3255		5510	5643	5777	5910	6044	6177	6310	6444	6577	6711
56		6844	6977	7111	7244	7377	7511	7644	7778	7911	8044
57		8178	8311	8444	8578	8711	8844	8978	9111	9244	9377
58		9511	9644	9777	9911	0044	0177	0311	0444	0577	0710
59	513	0844	0977	1110	1243	1377	1510	1643	1776	1910	2043
3260		2176	2309	2442	2576	2709	2842	2975	3108	3242	3375
61		3508	3641	3774	3908	4041	4174	4307	4440	4573	4706
62		4840	4973	5106	5239	5372	5505	5638	5771	5905	6038
63		6171	6304	6437	6570	6703	6836	6969	7102	7235	7368
64		7502	7635	7768	7901	8034	8167	8300	8433	8566	8699
3265		8832	8965	9098	9231	9364	9497	9630	9763	9896	0029
66	514	0162	0295	0428	0561	0694	0827	0960	1093	1225	1358
67		1491	1624	1757	1890	2023	2156	2289	2422	2555	2688
68		2820	2953	3086	3219	3352	3485	3618	3751	3883	4016
69		4149	4282	4415	4548	4681	4813	4946	5079	5212	5345
3270		5478	5610	5743	5876	6009	6142	6274	6407	6540	6673
71		6805	6938	7071	7204	7336	7469	7602	7735	7867	8000
72		8133	8266	8398	8531	8664	8797	8929	9062	9195	9327
73		9460	9593	9725	9858	9991	0123	0256	0389	0521	0654
74	515	0787	0919	1052	1185	1317	1450	1583	1715	1848	1980
3275		2113	2246	2378	2511	2643	2776	2909	3041	3174	3306
76		3439	3571	3704	3837	3969	4102	4234	4367	4499	4632
77		4764	4897	5029	5162	5294	5427	5560	5692	5825	5957
78		6089	6222	6354	6487	6619	6752	6884	7017	7149	7282
79		7414	7547	7679	7811	7944	8076	8209	8341	8474	8606
3280		8738	8871	9003	9136	9268	9400	9533	9665	9798	9930
81	516	0062	0195	0327	0459	0592	0724	0856	0989	1121	1253
82		1386	1518	1650	1783	1915	2047	2180	2312	2444	2577
83		2709	2841	2973	3106	3238	3370	3502	3635	3767	3899
84		4031	4164	4296	4428	4560	4693	4825	4957	5089	5222
3285		5354	5486	5618	5750	5883	6015	6147	6279	6411	6543
86		6676	6808	6940	7072	7204	7336	7469	7601	7733	7865
87		7997	8129	8261	8393	8526	8658	8790	8922	9054	9186
88		9318	9450	9582	9714	9846	9978	0111	0243	0375	0507
89	517	0639	0771	0903	1035	1167	1299	1431	1563	1695	1827
3290		1959	2091	2223	2355	2487	2619	2751	2883	3015	3147
91		3279	3411	3543	3675	3807	3939	4071	4202	4334	4466
92		4598	4730	4862	4994	5126	5258	5390	5522	5654	5785
93		5917	6049	6181	6313	6445	6577	6709	6840	6972	7104
94		7236	7368	7500	7631	7763	7895	8027	8159	8291	8422
3295		8554	8686	8818	8950	9081	9213	9345	9477	9608	9740
96		9872	0004	0136	0267	0399	0531	0663	0794	0926	1058
97	518	1189	1321	1453	1585	1716	1848	1980	2111	2243	2375
98		2507	2638	2770	2902	3033	3165	3297	3428	3560	3692
99		3823	3955	4086	4218	4350	4481	4613	4745	4876	5008
3300		5139	5271	5403	5534	5666	5797	5929	6061	6192	6324
01		6455	6587	6718	6850	6981	7113	7245	7376	7508	7639
02		7771	7902	8034	8165	8297	8428	8560	8691	8823	8954
03		9086	9217	9349	9480	9612	9743	9875	0006	0137	0269
04	519	0400	0532	0663	0795	0926	1058	1189	1320	1452	1583
3305		1715	1846	1977	2109	2240	2372	2503	2634	2766	2897
06		3028	3160	3291	3423	3554	3685	3817	3948	4079	4211
07		4342	4473	4605	4736	4867	4999	5130	5261	5392	5524
08		5655	5786	5918	6049	6180	6311	6443	6574	6705	6836
09		6968	7099	7230	7361	7493	7624	7755	7886	8018	8149
N.		0	1	2	3	4	5	6	7	8	9

D&PPts

	134	
1	13	
2	27	
3	40	
4	54	
5	67	
6	80	
7	94	
8	107	
9	121	
	134	133
1	13	13
2	27	27
3	40	40
4	54	53
5	67	67
6	80	80
7	94	93
8	107	106
9	121	120
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5	67	
6	80	
7	93	
8	106	
9	120	
	133	132
1	13	13
2	27	26
3	40	40
4	53	53
5	67	66
6	80	79
7	93	92
8	106	106
9	120	119
	132	
1	13	
2	26	
3	40	
4	53	
5	66	
6	79	
7	92	
8	106	
9	119	
	132	131
1	13	13
2	26	26
3	40	39
4	53	52
5	66	66
6	79	79
7	92	92
8	106	105
9	119	118

Number 33100 *to* 33799

Logarithm 519 8280 *to* 528 9039

N.		0	1	2	3	4	5	6	7	8	9
3310	519	8280	8411	8542	8674	8805	8936	9067	9198	9329	9461
11		9592	9723	9854	9985	0116	0248	0379	0510	0641	0772
12	520	0903	1034	1166	1297	1428	1559	1690	1821	1952	2083
13		2214	2345	2477	2608	2739	2870	3001	3132	3263	3394
14		3525	3656	3787	3918	4049	4180	4311	4442	4573	4704
3315		4835	4966	5097	5228	5359	5490	5621	5752	5883	6014
16		6145	6276	6407	6538	6669	6800	6931	7062	7193	7324
17		7455	7586	7717	7847	7978	8109	8240	8371	8502	8633
18		8764	8895	9026	9156	9287	9418	9549	9680	9811	9942
19	521	0073	0203	0334	0465	0596	0727	0858	0988	1119	1250
3320		1381	1512	1642	1773	1904	2035	2166	2296	2427	2558
21		2689	2820	2950	3081	3212	3343	3473	3604	3735	3866
22		3996	4127	4258	4388	4519	4650	4781	4911	5042	5173
23		5303	5434	5565	5695	5826	5957	6088	6218	6349	6479
24		6610	6741	6871	7002	7133	7263	7394	7525	7655	7786
3325		7916	8047	8178	8308	8439	8570	8700	8831	8961	9092
26		9222	9353	9484	9614	9745	9875	0006	0136	0267	0397
27	522	0528	0659	0789	0920	1050	1181	1311	1442	1572	1703
28		1833	1964	2094	2225	2355	2486	2616	2747	2877	3007
29		3138	3268	3399	3529	3660	3790	3921	4051	4181	4312
3330		4442	4573	4703	4834	4964	5094	5225	5355	5486	5616
31		5746	5877	6007	6137	6268	6398	6529	6659	6789	6920
32		7050	7180	7311	7441	7571	7702	7832	7962	8093	8223
33		8353	8483	8614	8744	8874	9005	9135	9265	9395	9526
34		9656	9786	9916	0047	0177	0307	0437	0568	0698	0828
3335	523	0958	1089	1219	1349	1479	1609	1740	1870	2000	2130
36		2260	2391	2521	2651	2781	2911	3041	3172	3302	3432
37		3562	3692	3822	3952	4083	4213	4343	4473	4603	4733
38		4863	4993	5124	5254	5384	5514	5644	5774	5904	6034
39		6164	6294	6424	6554	6684	6814	6945	7075	7205	7335
3340		7465	7595	7725	7855	7985	8115	8245	8375	8505	8635
41		8765	8895	9025	9155	9285	9415	9545	9675	9805	9935
42	524	0064	0194	0324	0454	0584	0714	0844	0974	1104	1234
43		1364	1494	1624	1753	1883	2013	2143	2273	2403	2533
44		2663	2793	2922	3052	3182	3312	3442	3572	3702	3831
3345		3961	4091	4221	4351	4481	4610	4740	4870	5000	5130
46		5259	5389	5519	5649	5779	5908	6038	6168	6298	6427
47		6557	6687	6817	6946	7076	7206	7336	7465	7595	7725
48		7854	7984	8114	8244	8373	8503	8633	8762	8892	9022
49		9151	9281	9411	9540	9670	9800	9929	0059	0189	0318
3350	525	0448	0578	0707	0837	0967	1096	1226	1355	1485	1615
51		1744	1874	2003	2133	2263	2392	2522	2651	2781	2911
52		3040	3170	3299	3429	3558	3688	3817	3947	4076	4206
53		4336	4465	4595	4724	4854	4983	5113	5242	5372	5501
54		5631	5760	5890	6019	6148	6278	6407	6537	6666	6796
3355		6925	7055	7184	7314	7443	7572	7702	7831	7961	8090
56		8220	8349	8478	8608	8737	8867	8996	9125	9255	9384
57		9513	9643	9772	9902	0031	0160	0290	0419	0548	0678
58	526	0807	0936	1066	1195	1324	1454	1583	1712	1841	1971
59		2100	2229	2359	2488	2617	2746	2876	3005	3134	3264
3360		3393	3522	3651	3781	3910	4039	4168	4297	4427	4556
61		4685	4814	4944	5073	5202	5331	5460	5590	5719	5848
62		5977	6106	6235	6365	6494	6623	6752	6881	7010	7140
63		7269	7398	7527	7656	7785	7914	8043	8173	8302	8431
64		8560	8689	8818	8947	9076	9205	9334	9463	9593	9722
3365		9851	9980	0109	0238	0367	0496	0625	0754	0883	1012
66	527	1141	1270	1399	1528	1657	1786	1915	2044	2173	2302
67		2431	2560	2689	2818	2947	3076	3205	3334	3463	3592
68		3721	3850	3979	4108	4237	4366	4494	4623	4752	4881
69		5010	5139	5268	5397	5526	5655	5783	5912	6041	6170
3370		6299	6428	6557	6686	6814	6943	7072	7201	7330	7459
71		7588	7716	7845	7974	8103	8232	8360	8489	8618	8747
72		8876	9004	9133	9262	9391	9520	9648	9777	9906	0035
73	528	0163	0292	0421	0550	0678	0807	0936	1065	1193	1322
74		1451	1579	1708	1837	1966	2094	2223	2352	2480	2609
3375		2738	2866	2995	3124	3252	3381	3510	3638	3767	3896
76		4024	4153	4282	4410	4539	4668	4796	4925	5053	5182
77		5311	5439	5568	5696	5825	5954	6082	6211	6339	6468
78		6596	6725	6854	6982	7111	7239	7368	7496	7625	7753
79		7882	8010	8139	8267	8396	8525	8653	8782	8910	9039
N.		0	1	2	3	4	5	6	7	8	9

D&PPts

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3	40	39
4	53	52
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6	79	79
7	92	92
8	106	105
9	119	118
	131	130
1	13	13
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7	91	91
8	105	104
9	118	117
	130	
1	13	
2	26	
3	39	
4	52	
5	65	
6	78	
7	91	
8	104	
9	117	
	130	129
1	13	13
2	26	26
3	39	39
4	52	52
5	65	65
6	78	77
7	91	90
8	104	103
9	117	116
	129	128
1	13	13
2	26	26
3	39	38
4	52	51
5	65	64
6	77	77
7	90	90
8	103	102
9	116	115

Number 33800 *to* 34499
Logarithm 528 9167 *to* 537 8065

N.		0	1	2	3	4	5	6	7	8	9	D&PPts		
3380	528	9167	9295	9424	9552	9681	9809	9938	0066	0195	0323		129	128
81	529	0452	0580	0709	0837	0965	1094	1222	1351	1479	1608	1	13	13
82		1736	1864	1993	2121	2250	2378	2506	2635	2763	2892	2	26	26
83		3020	3148	3277	3405	3533	3662	3790	3919	4047	4175	3	39	38
84		4304	4432	4560	4689	4817	4945	5074	5202	5330	5458	4	52	51
3385		5587	5715	5843	5972	6100	6228	6356	6485	6613	6741	5	65	64
86		6870	6998	7126	7254	7383	7511	7639	7767	7896	8024	6	77	77
87		8152	8280	8408	8537	8665	8793	8921	9049	9178	9306	7	90	90
88		9434	9562	9690	9819	9947	0075	0203	0331	0459	0588	8	103	102
89	530	0716	0844	0972	1100	1228	1356	1485	1613	1741	1869	9	116	115
3390		1997	2125	2253	2381	2509	2637	2766	2894	3022	3150			
91		3278	3406	3534	3662	3790	3918	4046	4174	4302	4430			
92		4558	4686	4814	4943	5071	5199	5327	5455	5583	5711		128	
93		5839	5967	6095	6223	6351	6479	6607	6734	6862	6990	1	13	
94		7118	7246	7374	7502	7630	7758	7886	8014	8142	8270	2	26	
3395		8398	8526	8654	8782	8909	9037	9165	9293	9421	9549	3	38	
96		9677	9805	9933	0060	0188	0316	0444	0572	0700	0828	4	51	
97	531	0955	1083	1211	1339	1467	1595	1722	1850	1978	2106	5	64	
98		2234	2362	2489	2617	2745	2873	3001	3128	3256	3384	6	77	
99		3512	3639	3767	3895	4023	4150	4278	4406	4534	4661	7	90	
3400		4789	4917	5045	5172	5300	5428	5556	5683	5811	5939	8	102	
01		6066	6194	6322	6449	6577	6705	6832	6960	7088	7215	9	115	
02		7343	7471	7598	7726	7854	7981	8109	8237	8364	8492			
03		8619	8747	8875	9002	9130	9258	9385	9513	9640	9768			
04		9896	0023	0151	0278	0406	0533	0661	0789	0916	1044			
3405	532	1171	1299	1426	1554	1681	1809	1936	2064	2191	2319			
06		2446	2574	2701	2829	2956	3084	3211	3339	3466	3594		128	127
07		3721	3849	3976	4104	4231	4359	4486	4614	4741	4868	1	13	13
08		4996	5123	5251	5378	5506	5633	5760	5888	6015	6143	2	26	25
09		6270	6397	6525	6652	6780	6907	7034	7162	7289	7416	3	38	38
3410		7544	7671	7799	7926	8053	8181	8308	8435	8563	8690	4	51	51
11		8817	8945	9072	9199	9326	9454	9581	9708	9836	9963	5	64	64
12	533	0090	0218	0345	0472	0599	0727	0854	0981	1108	1236	6	77	76
13		1363	1490	1617	1745	1872	1999	2126	2254	2381	2508	7	90	89
14		2635	2762	2890	3017	3144	3271	3398	3526	3653	3780	8	102	102
3415		3907	4034	4161	4289	4416	4543	4670	4797	4924	5051	9	115	114
16		5179	5306	5433	5560	5687	5814	5941	6068	6196	6323			
17		6450	6577	6704	6831	6958	7085	7212	7339	7466	7594			
18		7721	7848	7975	8102	8229	8356	8483	8610	8737	8864			
19		8991	9118	9245	9372	9499	9626	9753	9880	0007	0134		127	
3420	534	0261	0388	0515	0642	0769	0896	1023	1150	1277	1404	1	13	
21		1531	1658	1785	1912	2039	2165	2292	2419	2546	2673	2	25	
22		2800	2927	3054	3181	3308	3435	3561	3688	3815	3942	3	38	
23		4069	4196	4323	4450	4576	4703	4830	4957	5084	5211	4	51	
24		5338	5464	5591	5718	5845	5972	6099	6225	6352	6479	5	64	
3425		6606	6733	6859	6986	7113	7240	7366	7493	7620	7747	6	76	
26		7874	8000	8127	8254	8381	8507	8634	8761	8888	9014	7	89	
27		9141	9268	9394	9521	9648	9775	9901	0028	0155	0281	8	102	
28	535	0408	0535	0662	0788	0915	1042	1168	1295	1422	1548	9	114	
29		1675	1802	1928	2055	2181	2308	2435	2561	2688	2815			
3430		2941	3068	3194	3321	3448	3574	3701	3827	3954	4081		127	126
31		4207	4334	4460	4587	4713	4840	4967	5093	5220	5346	1	13	13
32		5473	5599	5726	5852	5979	6105	6232	6359	6485	6612	2	25	25
33		6738	6865	6991	7118	7244	7371	7497	7623	7750	7876	3	38	38
34		8003	8129	8256	8382	8509	8635	8762	8888	9015	9141	4	51	50
3435		9267	9394	9520	9647	9773	9900	0026	0152	0279	0405	5	64	63
36	536	0532	0658	0784	0911	1037	1163	1290	1416	1543	1669	6	76	76
37		1795	1922	2048	2174	2301	2427	2553	2680	2806	2932	7	89	88
38		3059	3185	3311	3438	3564	3690	3817	3943	4069	4195	8	102	101
39		4322	4448	4574	4701	4827	4953	5079	5206	5332	5458	9	114	113
3440		5584	5711	5837	5963	6089	6216	6342	6468	6594	6721		126	125
41		6847	6973	7099	7225	7352	7478	7604	7730	7856	7982	1	13	13
42		8109	8235	8361	8487	8613	8739	8866	8992	9118	9244	2	25	25
43		9370	9496	9622	9749	9875	0001	0127	0253	0379	0505	3	38	38
44	537	0631	0758	0884	1010	1136	1262	1388	1514	1640	1766	4	50	50
3445		1892	2018	2144	2270	2396	2523	2649	2775	2901	3027	5	63	63
46		3153	3279	3405	3531	3657	3783	3909	4035	4161	4287	6	76	75
47		4413	4539	4665	4791	4917	5043	5169	5295	5421	5547	7	88	88
48		5673	5799	5924	6050	6176	6302	6428	6554	6680	6806	8	101	100
49		6932	7058	7184	7310	7436	7561	7687	7813	7939	8065	9	113	113
N.		0	1	2	3	4	5	6	7	8	9	D&PPts		

Number 34500 *to* 35199
Logarithm 537 8191 *to* 546 5303

N.		0	1	2	3	4	5	6	7	8	9	D&PPts		
3450	537	8191	8317	8443	8569	8694	8820	8946	9072	9198	9324		126	
51		9450	9575	9701	9827	9953	0079	0205	0330	0456	0582	1	13	
52	538	0708	0834	0959	1085	1211	1337	1463	1588	1714	1840	2	25	
53		1966	2092	2217	2343	2469	2595	2720	2846	2972	3098	3	38	
54		3223	3349	3475	3601	3726	3852	3978	4103	4229	4355	4	50	
3455		4481	4606	4732	4858	4983	5109	5235	5360	5486	5612	5	63	
56		5737	5863	5989	6114	6240	6366	6491	6617	6743	6868	6	76	
57		6994	7119	7245	7371	7496	7622	7747	7873	7999	8124	7	88	
58		8250	8375	8501	8627	8752	8878	9003	9129	9255	9380	8	101	
59		9506	9631	9757	9882	0008	0133	0259	0384	0510	0635	9	113	
3460	539	0761	0887	1012	1138	1263	1389	1514	1640	1765	1891		126	125
61		2016	2141	2267	2392	2518	2643	2769	2894	3020	3145	1	13	13
62		3271	3396	3522	3647	3772	3898	4023	4149	4274	4400	2	25	25
63		4525	4650	4776	4901	5027	5152	5277	5403	5528	5653	3	38	38
64		5779	5904	6030	6155	6280	6406	6531	6656	6782	6907	4	50	50
3465		7032	7158	7283	7408	7534	7659	7784	7910	8035	8160	5	63	63
66		8286	8411	8536	8661	8787	8912	9037	9163	9288	9413	6	76	75
67		9538	9664	9789	9914	0039	0165	0290	0415	0540	0666	7	88	88
68	540	0791	0916	1041	1167	1292	1417	1542	1667	1793	1918	8	101	100
69		2043	2168	2293	2419	2544	2669	2794	2919	3044	3170	9	113	113
3470		3295	3420	3545	3670	3795	3920	4046	4171	4296	4421			
71		4546	4671	4796	4921	5047	5172	5297	5422	5547	5672			
72		5797	5922	6047	6172	6297	6423	6548	6673	6798	6923			
73		7048	7173	7298	7423	7548	7673	7798	7923	8048	8173			
74		8298	8423	8548	8673	8798	8923	9048	9173	9298	9423		125	
3475		9548	9673	9798	9923	0048	0173	0298	0423	0548	0673	1	13	
76	541	0798	0923	1048	1172	1297	1422	1547	1672	1797	1922	2	25	
77		2047	2172	2297	2422	2546	2671	2796	2921	3046	3171	3	38	
78		3296	3421	3546	3670	3795	3920	4045	4170	4295	4419	4	50	
79		4544	4669	4794	4919	5044	5168	5293	5418	5543	5668	5	63	
3480		5792	5917	6042	6167	6292	6416	6541	6666	6791	6915	6	75	
81		7040	7165	7290	7415	7539	7664	7789	7913	8038	8163	7	88	
82		8288	8412	8537	8662	8787	8911	9036	9161	9285	9410	8	100	
83		9535	9659	9784	9909	0033	0158	0283	0407	0532	0657	9	113	
84	542	0781	0906	1031	1155	1280	1405	1529	1654	1779	1903			
3485		2028	2152	2277	2402	2526	2651	2775	2900	3025	3149			
86		3274	3398	3523	3648	3772	3897	4021	4146	4270	4395			
87		4519	4644	4769	4893	5018	5142	5267	5391	5516	5640			
88		5765	5889	6014	6138	6263	6387	6512	6636	6761	6885		125	124
89		7010	7134	7259	7383	7508	7632	7756	7881	8005	8130	1	13	12
3490		8254	8379	8503	8628	8752	8876	9001	9125	9250	9374	2	25	25
91		9498	9623	9747	9872	9996	0120	0245	0369	0494	0618	3	38	37
92	543	0742	0867	0991	1115	1240	1364	1488	1613	1737	1862	4	50	50
93		1986	2110	2235	2359	2483	2607	2732	2856	2980	3105	5	63	62
94		3229	3353	3478	3602	3726	3850	3975	4099	4223	4348	6	75	74
3495		4472	4596	4720	4845	4969	5093	5217	5342	5466	5590	7	88	87
96		5714	5838	5963	6087	6211	6335	6460	6584	6708	6832	8	100	99
97		6956	7081	7205	7329	7453	7577	7701	7826	7950	8074	9	113	112
98		8198	8322	8446	8571	8695	8819	8943	9067	9191	9315			
99		9439	9564	9688	9812	9936	0060	0184	0308	0432	0556			
3500	544	0680	0805	0929	1053	1177	1301	1425	1549	1673	1797		124	
01		1921	2045	2169	2293	2417	2541	2665	2789	2913	3037	1	12	
02		3161	3285	3409	3533	3657	3781	3905	4029	4153	4277	2	25	
03		4401	4525	4649	4773	4897	5021	5145	5269	5393	5517	3	37	
04		5641	5765	5889	6013	6137	6261	6385	6508	6632	6756	4	50	
3505		6880	7004	7128	7252	7376	7500	7624	7747	7871	7995	5	62	
06		8119	8243	8367	8491	8615	8738	8862	8986	9110	9234	6	74	
07		9358	9481	9605	9729	9853	9977	0101	0224	0348	0472	7	87	
08	545	0596	0720	0843	0967	1091	1215	1339	1462	1586	1710	8	99	
09		1834	1957	2081	2205	2329	2452	2576	2700	2824	2947	9	112	
3510		3071	3195	3319	3442	3566	3690	3813	3937	4061	4185		124	123
11		4308	4432	4556	4679	4803	4927	5050	5174	5298	5421	1	12	12
12		5545	5669	5792	5916	6040	6163	6287	6411	6534	6658	2	25	25
13		6781	6905	7029	7152	7276	7400	7523	7647	7770	7894	3	37	37
14		8018	8141	8265	8388	8512	8635	8759	8883	9006	9130	4	50	49
3515		9253	9377	9500	9624	9747	9871	9995	0118	0242	0365	5	62	62
16	546	0489	0612	0736	0859	0983	1106	1230	1353	1477	1600	6	74	74
17		1724	1847	1971	2094	2218	2341	2465	2588	2711	2835	7	87	86
18		2958	3082	3205	3329	3452	3576	3699	3822	3946	4069	8	99	98
19		4193	4316	4439	4563	4686	4810	4933	5056	5180	5303	9	112	111
N.		0	1	2	3	4	5	6	7	8	9	D&PPts		

Number 35200 *to* 35899

Logarithm 546 5427 *to* 555 0824

N.		0	1	2	3	4	5	6	7	8	9	D&PPts		
3520	546	5427	5550	5673	5797	5920	6043	6167	6290	6414	6537	124	123	
21		6660	6784	6907	7030	7154	7277	7400	7524	7647	7770	1	12	12
22		7894	8017	8140	8263	8387	8510	8633	8757	8880	9003	2	25	25
23		9126	9250	9373	9496	9620	9743	9866	9989	0113	0236	3	37	37
24	547	0359	0482	0605	0729	0852	0975	1098	1222	1345	1468	4	50	49
3525		1591	1714	1838	1961	2084	2207	2330	2454	2577	2700	5	62	62
26		2823	2946	3069	3193	3316	3439	3562	3685	3808	3931	6	74	74
27		4055	4178	4301	4424	4547	4670	4793	4916	5040	5163	7	87	86
28		5286	5409	5532	5655	5778	5901	6024	6147	6270	6394	8	99	98
29		6517	6640	6763	6886	7009	7132	7255	7378	7501	7624	9	112	111
3530		7747	7870	7993	8116	8239	8362	8485	8608	8731	8854	123		
31		8977	9100	9223	9346	9469	9592	9715	9838	9961	0084	1	12	
32	548	0207	0330	0453	0576	0699	0822	0945	1068	1191	1313	2	25	
33		1436	1559	1682	1805	1928	2051	2174	2297	2420	2543	3	37	
34		2665	2788	2911	3034	3157	3280	3403	3526	3648	3771	4	49	
3535		3894	4017	4140	4263	4386	4508	4631	4754	4877	5000	5	62	
36		5123	5245	5368	5491	5614	5737	5859	5982	6105	6228	6	74	
37		6351	6473	6596	6719	6842	6964	7087	7210	7333	7456	7	86	
38		7578	7701	7824	7947	8069	8192	8315	8437	8560	8683	8	98	
39		8806	8928	9051	9174	9296	9419	9542	9665	9787	9910	9	111	
3540	549	0033	0155	0278	0401	0523	0646	0769	0891	1014	1137			
41		1259	1382	1505	1627	1750	1872	1995	2118	2240	2363			
42		2486	2608	2731	2853	2976	3099	3221	3344	3466	3589			
43		3712	3834	3957	4079	4202	4324	4447	4569	4692	4815			
44		4937	5060	5182	5305	5427	5550	5672	5795	5917	6040			
3545		6162	6285	6407	6530	6652	6775	6897	7020	7142	7265	123	122	
46		7387	7510	7632	7755	7877	8000	8122	8245	8367	8489	1	12	12
47		8612	8734	8857	8979	9102	9224	9346	9469	9591	9714	2	25	24
48		9836	9959	0081	0203	0326	0448	0570	0693	0815	0938	3	37	37
49	550	1060	1182	1305	1427	1549	1672	1794	1917	2039	2161	4	49	49
3550		2284	2406	2528	2651	2773	2895	3017	3140	3262	3384	5	62	61
51		3507	3629	3751	3874	3996	4118	4240	4363	4485	4607	6	74	73
52		4730	4852	4974	5096	5219	5341	5463	5585	5708	5830	7	86	85
53		5952	6074	6197	6319	6441	6563	6685	6808	6930	7052	8	98	98
54		7174	7296	7419	7541	7663	7785	7907	8030	8152	8274	9	111	110
3555		8396	8518	8640	8763	8885	9007	9129	9251	9373	9495			
56		9618	9740	9862	9984	0106	0228	0350	0472	0594	0717			
57	551	0839	0961	1083	1205	1327	1449	1571	1693	1815	1937			
58		2059	2181	2304	2426	2548	2670	2792	2914	3036	3158			
59		3280	3402	3524	3646	3768	3890	4012	4134	4256	4378	122		
3560		4500	4622	4744	4866	4988	5110	5232	5354	5476	5598	1	12	
61		5720	5842	5964	6086	6208	6329	6451	6573	6695	6817	2	24	
62		6939	7061	7183	7305	7427	7549	7671	7793	7914	8036	3	37	
63		8158	8280	8402	8524	8646	8768	8890	9011	9133	9255	4	49	
64		9377	9499	9621	9743	9864	9986	0108	0230	0352	0474	5	61	
3565	552	0595	0717	0839	0961	1083	1204	1326	1448	1570	1692	6	73	
66		1813	1935	2057	2179	2301	2422	2544	2666	2788	2909	7	85	
67		3031	3153	3275	3396	3518	3640	3762	3883	4005	4127	8	98	
68		4248	4370	4492	4614	4735	4857	4979	5100	5222	5344	9	110	
69		5465	5587	5709	5831	5952	6074	6196	6317	6439	6561			
3570		6682	6804	6925	7047	7169	7290	7412	7534	7655	7777			
71		7899	8020	8142	8263	8385	8507	8628	8750	8871	8993			
72		9115	9236	9358	9479	9601	9722	9844	9965	0087	0209			
73	553	0330	0452	0573	0695	0816	0938	1059	1181	1302	1424			
74		1545	1667	1789	1910	2032	2153	2275	2396	2517	2639	122	121	
3575		2760	2882	3003	3125	3246	3368	3489	3611	3732	3854	1	12	12
76		3975	4097	4218	4339	4461	4582	4704	4825	4947	5068	2	24	24
77		5189	5311	5432	5554	5675	5796	5918	6039	6161	6282	3	37	36
78		6403	6525	6646	6767	6889	7010	7132	7253	7374	7496	4	49	48
79		7617	7738	7860	7981	8102	8224	8345	8466	8588	8709	5	61	61
3580		8830	8952	9073	9194	9315	9437	9558	9679	9801	9922	6	73	73
81	554	0043	0164	0286	0407	0528	0650	0771	0892	1013	1135	7	85	85
82		1256	1377	1498	1620	1741	1862	1983	2104	2226	2347	8	98	97
83		2468	2589	2710	2832	2953	3074	3195	3316	3438	3559	9	110	109
84		3680	3801	3922	4044	4165	4286	4407	4528	4649	4770			
3585		4892	5013	5134	5255	5376	5497	5618	5740	5861	5982			
86		6103	6224	6345	6466	6587	6708	6829	6951	7072	7193			
87		7314	7435	7556	7677	7798	7919	8040	8161	8282	8403			
88		8524	8645	8766	8887	9008	9130	9251	9372	9493	9614			
89		9735	9856	9977	0098	0219	0340	0461	0582	0703	0824			
N.		0	1	2	3	4	5	6	7	8	9	D&PPts		

Number 35900 *to* 36599

Logarithm 555 0944 *to* 563 4692

N.		0	1	2	3	4	5	6	7	8	9	D&PPts		
3590	555	0944	1065	1186	1307	1428	1549	1670	1791	1912	2033	121		
91		2154	2275	2396	2517	2638	2759	2880	3001	3121	3242	1	12	
92		3363	3484	3605	3726	3847	3968	4089	4210	4330	4451	2	24	
93		4572	4693	4814	4935	5056	5176	5297	5418	5539	5660	3	36	
94		5781	5902	6022	6143	6264	6385	6506	6627	6747	6868	4	48	
3595		6989	7110	7231	7351	7472	7593	7714	7835	7955	8076	5	61	
96		8197	8318	8438	8559	8680	8801	8921	9042	9163	9284	6	73	
97		9404	9525	9646	9767	9887	0008	0129	0249	0370	0491	7	85	
98	556	0612	0732	0853	0974	1094	1215	1336	1456	1577	1698	8	97	
99		1818	1939	2060	2180	2301	2422	2542	2663	2784	2904	9	109	
3600		3025	3146	3266	3387	3508	3628	3749	3869	3990	4111			
01		4231	4352	4472	4593	4714	4834	4955	5075	5196	5317			
02		5437	5558	5678	5799	5919	6040	6160	6281	6402	6522			
03		6643	6763	6884	7004	7125	7245	7366	7486	7607	7727			
04		7848	7968	8089	8209	8330	8450	8571	8691	8812	8932	121	120	
3605		9053	9173	9294	9414	9535	9655	9775	9896	0016	0137	1	12	12
06	557	0257	0378	0498	0619	0739	0859	0980	1100	1221	1341	2	24	24
07		1461	1582	1702	1823	1943	2063	2184	2304	2425	2545	3	36	36
08		2665	2786	2906	3026	3147	3267	3387	3508	3628	3748	4	48	48
09		3869	3989	4109	4230	4350	4470	4591	4711	4831	4952	5	61	60
3610		5072	5192	5313	5433	5553	5673	5794	5914	6034	6155	6	73	72
11		6275	6395	6515	6636	6756	6876	6996	7117	7237	7357	7	85	84
12		7477	7598	7718	7838	7958	8079	8199	8319	8439	8559	8	97	96
13		8680	8800	8920	9040	9160	9281	9401	9521	9641	9761	9	109	108
14		9881	0002	0122	0242	0362	0482	0602	0723	0843	0963			
3615	558	1083	1203	1323	1443	1564	1684	1804	1924	2044	2164			
16		2284	2404	2524	2645	2765	2885	3005	3125	3245	3365			
17		3485	3605	3725	3845	3965	4085	4205	4325	4446	4566			
18		4686	4806	4926	5046	5166	5286	5406	5526	5646	5766			
19		5886	6006	6126	6246	6366	6486	6606	6726	6846	6966	120		
3620		7086	7206	7326	7446	7566	7686	7805	7925	8045	8165	1	12	
21		8285	8405	8525	8645	8765	8885	9005	9125	9245	9365	2	24	
22		9484	9604	9724	9844	9964	0084	0204	0324	0444	0563	3	36	
23	559	0683	0803	0923	1043	1163	1283	1403	1522	1642	1762	4	48	
24		1882	2002	2122	2241	2361	2481	2601	2721	2840	2960	5	60	
3625		3080	3200	3320	3440	3559	3679	3799	3919	4038	4158	6	72	
26		4278	4398	4518	4637	4757	4877	4997	5116	5236	5356	7	84	
27		5476	5595	5715	5835	5954	6074	6194	6314	6433	6553	8	96	
28		6673	6792	6912	7032	7152	7271	7391	7511	7630	7750	9	108	
29		7870	7989	8109	8229	8348	8468	8588	8707	8827	8947			
3630		9066	9186	9306	9425	9545	9664	9784	9904	0023	0143			
31	560	0262	0382	0502	0621	0741	0860	0980	1100	1219	1339			
32		1458	1578	1698	1817	1937	2056	2176	2295	2415	2534			
33		2654	2774	2893	3013	3132	3252	3371	3491	3610	3730			
34		3849	3969	4088	4208	4327	4447	4566	4686	4805	4925	120	119	
3635		5044	5164	5283	5403	5522	5641	5761	5880	6000	6119	1	12	12
36		6239	6358	6478	6597	6716	6836	6955	7075	7194	7314	2	24	24
37		7433	7552	7672	7791	7911	8030	8149	8269	8388	8508	3	36	36
38		8627	8746	8866	8985	9104	9224	9343	9463	9582	9701	4	48	48
39		9821	9940	0059	0179	0298	0417	0537	0656	0775	0895	5	60	60
3640	561	1014	1133	1252	1372	1491	1610	1730	1849	1968	2088	6	72	71
41		2207	2326	2445	2565	2684	2803	2922	3042	3161	3280	7	84	83
42		3399	3519	3638	3757	3876	3996	4115	4234	4353	4472	8	96	95
43		4592	4711	4830	4949	5069	5188	5307	5426	5545	5665	9	108	107
44		5784	5903	6022	6141	6260	6380	6499	6618	6737	6856			
3645		6975	7094	7214	7333	7452	7571	7690	7809	7928	8048			
46		8167	8286	8405	8524	8643	8762	8881	9000	9119	9239			
47		9358	9477	9596	9715	9834	9953	0072	0191	0310	0429			
48	562	0548	0667	0786	0905	1024	1144	1263	1382	1501	1620			
49		1739	1858	1977	2096	2215	2334	2453	2572	2691	2810	119	118	
3650		2929	3048	3167	3286	3405	3524	3642	3761	3880	3999	1	12	12
51		4118	4237	4356	4475	4594	4713	4832	4951	5070	5189	2	24	24
52		5308	5427	5546	5664	5783	5902	6021	6140	6259	6378	3	36	35
53		6497	6616	6734	6853	6972	7091	7210	7329	7448	7567	4	48	47
54		7685	7804	7923	8042	8161	8280	8398	8517	8636	8755	5	60	59
3655		8874	8993	9111	9230	9349	9468	9587	9705	9824	9943	6	71	71
56	563	0062	0181	0299	0418	0537	0656	0775	0893	1012	1131	7	83	83
57		1250	1368	1487	1606	1725	1843	1962	2081	2200	2318	8	95	94
58		2437	2556	2674	2793	2912	3031	3149	3268	3387	3505	9	107	106
59		3624	3743	3861	3980	4099	4218	4336	4455	4574	4692			
N.		0	1	2	3	4	5	6	7	8	9	D&PPts		

Number 36600 *to* 37299
Logarithm 563 4811 *to* 571 6972

N.	0	1	2	3	4	5	6	7	8	9	D&P Pts		
3660	563 4811	4930	5048	5167	5285	5404	5523	5641	5760	5879			
61	5997	6116	6235	6353	6472	6590	6709	6828	6946	7065			
62	7183	7302	7421	7539	7658	7776	7895	8013	8132	8251			
63	8369	8488	8606	8725	8843	8962	9081	9199	9318	9436			
64	9555	9673	9792	9910	0029	0147	0266	0384	0503	0621	119	118	
3665	564 0740	0858	0977	1095	1214	1332	1451	1569	1688	1806	1	12	12
66	1925	2043	2162	2280	2398	2517	2635	2754	2872	2991	2	24	24
67	3109	3228	3346	3464	3583	3701	3820	3938	4056	4175	3	36	35
68	4293	4412	4530	4648	4767	4885	5004	5122	5240	5359	4	48	47
69	5477	5595	5714	5832	5951	6069	6187	6306	6424	6542	5	60	59
3670	6661	6779	6897	7016	7134	7252	7371	7489	7607	7726	6	71	71
71	7844	7962	8080	8199	8317	8435	8554	8672	8790	8908	7	83	83
72	9027	9145	9263	9382	9500	9618	9736	9855	9973	0091	8	95	94
73	565 0209	0328	0446	0564	0682	0800	0919	1037	1155	1273	9	107	106
74	1392	1510	1628	1746	1864	1983	2101	2219	2337	2455			
3675	2573	2692	2810	2928	3046	3164	3282	3401	3519	3637			
76	3755	3873	3991	4109	4228	4346	4464	4582	4700	4818			
77	4936	5054	5173	5291	5409	5527	5645	5763	5881	5999			
78	6117	6235	6353	6471	6590	6708	6826	6944	7062	7180			
79	7298	7416	7534	7652	7770	7888	8006	8124	8242	8360			
3680	8478	8596	8714	8832	8950	9068	9186	9304	9422	9540	118		
81	9658	9776	9894	0012	0130	0248	0366	0484	0602	0720	1	12	
82	566 0838	0956	1074	1192	1310	1428	1545	1663	1781	1899	2	24	
83	2017	2135	2253	2371	2489	2607	2725	2843	2960	3078	3	35	
84	3196	3314	3432	3550	3668	3786	3903	4021	4139	4257	4	47	
3685	4375	4493	4611	4728	4846	4964	5082	5200	5318	5435	5	59	
86	5553	5671	5789	5907	6025	6142	6260	6378	6496	6614	6	71	
87	6731	6849	6967	7085	7203	7320	7438	7556	7674	7791	7	83	
88	7909	8027	8145	8262	8380	8498	8616	8733	8851	8969	8	94	
89	9087	9204	9322	9440	9557	9675	9793	9911	0028	0146	9	106	
3690	567 0264	0381	0499	0617	0734	0852	0970	1087	1205	1323			
91	1440	1558	1676	1793	1911	2029	2146	2264	2382	2499			
92	2617	2735	2852	2970	3087	3205	3323	3440	3558	3675			
93	3793	3911	4028	4146	4263	4381	4499	4616	4734	4851			
94	4969	5086	5204	5322	5439	5557	5674	5792	5909	6027			
3695	6144	6262	6379	6497	6615	6732	6850	6967	7085	7202			
96	7320	7437	7555	7672	7790	7907	8025	8142	8260	8377	118	117	
97	8495	8612	8729	8847	8964	9082	9199	9317	9434	9552	1	12	12
98	9669	9787	9904	0021	0139	0256	0374	0491	0608	0726	2	24	23
99	568 0843	0961	1078	1196	1313	1430	1548	1665	1782	1900	3	35	35
3700	2017	2135	2252	2369	2487	2604	2721	2839	2956	3074	4	47	47
01	3191	3308	3426	3543	3660	3778	3895	4012	4130	4247	5	59	59
02	4364	4481	4599	4716	4833	4951	5068	5185	5303	5420	6	71	70
03	5537	5654	5772	5889	6006	6123	6241	6358	6475	6593	7	83	82
04	6710	6827	6944	7062	7179	7296	7413	7530	7648	7765	8	94	94
3705	7882	7999	8117	8234	8351	8468	8585	8703	8820	8937	9	106	105
06	9054	9171	9289	9406	9523	9640	9757	9874	9992	0109			
07	569 0226	0343	0460	0577	0694	0812	0929	1046	1163	1280			
08	1397	1514	1631	1749	1866	1983	2100	2217	2334	2451			
09	2568	2685	2803	2920	3037	3154	3271	3388	3505	3622			
3710	3739	3856	3973	4090	4207	4324	4441	4558	4675	4793	117		
11	4910	5027	5144	5261	5378	5495	5612	5729	5846	5963	1	12	
12	6080	6197	6314	6431	6548	6665	6782	6899	7016	7133	2	23	
13	7249	7366	7483	7600	7717	7834	7951	8068	8185	8302	3	35	
14	8419	8536	8653	8770	8887	9004	9121	9237	9354	9471	4	47	
3715	9588	9705	9822	9939	0056	0173	0290	0406	0523	0640	5	59	
16	570 0757	0874	0991	1108	1225	1341	1458	1575	1692	1809	6	70	
17	1926	2042	2159	2276	2393	2510	2627	2743	2860	2977	7	82	
18	3094	3211	3327	3444	3561	3678	3795	3911	4028	4145	8	94	
19	4262	4379	4495	4612	4729	4846	4962	5079	5196	5313	9	105	
3720	5429	5546	5663	5780	5896	6013	6130	6247	6363	6480	117	116	
21	6597	6713	6830	6947	7064	7180	7297	7414	7530	7647	1	12	12
22	7764	7880	7997	8114	8230	8347	8464	8580	8697	8814	2	23	23
23	8930	9047	9164	9280	9397	9514	9630	9747	9863	9980	3	35	35
24	571 0097	0213	0330	0447	0563	0680	0796	0913	1030	1146	4	47	46
3725	1263	1379	1496	1613	1729	1846	1962	2079	2195	2312	5	59	58
26	2429	2545	2662	2778	2895	3011	3128	3244	3361	3477	6	70	70
27	3594	3710	3827	3943	4060	4177	4293	4410	4526	4643	7	82	81
28	4759	4876	4992	5109	5225	5341	5458	5574	5691	5807	8	94	93
29	5924	6040	6157	6273	6390	6506	6623	6739	6855	6972	9	105	104
N.	0	1	2	3	4	5	6	7	8	9	D&P Pts		

Number 37300 *to* 37999
Logarithm 571 7088 *to* 579 7722

N.	0	1	2	3	4	5	6	7	8	9	D&P Pts		
3730	571 7088	7205	7321	7438	7554	7670	7787	7903	8020	8136	117	116	
31	8252	8369	8485	8602	8718	8834	8951	9067	9184	9300	1	12	12
32	9416	9533	9649	9765	9882	9998	0115	0231	0347	0464	2	23	23
33	572 0580	0696	0813	0929	1045	1162	1278	1394	1511	1627	3	35	35
34	1743	1859	1976	2092	2208	2325	2441	2557	2674	2790	4	47	46
3735	2906	3022	3139	3255	3371	3487	3604	3720	3836	3952	5	59	58
36	4069	4185	4301	4417	4534	4650	4766	4882	4999	5115	6	70	70
37	5231	5347	5463	5580	5696	5812	5928	6044	6161	6277	7	82	81
38	6393	6509	6625	6742	6858	6974	7090	7206	7322	7438	8	94	93
39	7555	7671	7787	7903	8019	8135	8252	8368	8484	8600	9	105	104
3740	8716	8832	8948	9064	9180	9297	9413	9529	9645	9761			
41	9877	9993	0109	0225	0341	0457	0574	0690	0806	0922			
42	573 1038	1154	1270	1386	1502	1618	1734	1850	1966	2082			
43	2198	2314	2430	2546	2662	2778	2894	3010	3126	3242	116		
44	3358	3474	3590	3706	3822	3938	4054	4170	4286	4402	1	12	
3745	4518	4634	4750	4866	4982	5098	5214	5330	5446	5562	2	23	
46	5678	5794	5910	6026	6141	6257	6373	6489	6605	6721	3	35	
47	6837	6953	7069	7185	7301	7416	7532	7648	7764	7880	4	46	
48	7996	8112	8228	8343	8459	8575	8691	8807	8923	9039	5	58	
49	9154	9270	9386	9502	9618	9734	9849	9965	0081	0197	6	70	
3750	574 0313	0428	0544	0660	0776	0892	1007	1123	1239	1355	7	81	
51	1471	1586	1702	1818	1934	2050	2165	2281	2397	2513	8	93	
52	2628	2744	2860	2976	3091	3207	3323	3438	3554	3670	9	104	
53	3786	3901	4017	4133	4248	4364	4480	4596	4711	4827			
54	4943	5058	5174	5290	5405	5521	5637	5752	5868	5984			
3755	6099	6215	6331	6446	6562	6678	6793	6909	7025	7140			
56	7256	7371	7487	7603	7718	7834	7950	8065	8181	8296			
57	8412	8528	8643	8759	8874	8990	9105	9221	9337	9452			
58	9568	9683	9799	9914	0030	0146	0261	0377	0492	0608			
59	575 0723	0839	0954	1070	1185	1301	1416	1532	1647	1763			
3760	1878	1994	2109	2225	2340	2456	2571	2687	2802	2918	116	115	
61	3033	3149	3264	3380	3495	3611	3726	3842	3957	4072	1	12	12
62	4188	4303	4419	4534	4650	4765	4881	4996	5111	5227	2	23	23
63	5342	5458	5573	5688	5804	5919	6035	6150	6265	6381	3	35	35
64	6496	6612	6727	6842	6958	7073	7188	7304	7419	7534	4	46	46
3765	7650	7765	7881	7996	8111	8227	8342	8457	8573	8688	5	58	58
66	8803	8918	9034	9149	9264	9380	9495	9610	9726	9841	6	70	69
67	9956	0071	0187	0302	0417	0533	0648	0763	0878	0994	7	81	81
68	576 1109	1224	1339	1455	1570	1685	1800	1916	2031	2146	8	93	92
69	2261	2377	2492	2607	2722	2837	2953	3068	3183	3298	9	104	104
3770	3414	3529	3644	3759	3874	3989	4105	4220	4335	4450			
71	4565	4680	4796	4911	5026	5141	5256	5371	5487	5602			
72	5717	5832	5947	6062	6177	6292	6408	6523	6638	6753			
73	6868	6983	7098	7213	7328	7444	7559	7674	7789	7904			
74	8019	8134	8249	8364	8479	8594	8709	8824	8939	9055			
3775	9170	9285	9400	9515	9630	9745	9860	9975	0090	0205			
76	577 0320	0435	0550	0665	0780	0895	1010	1125	1240	1355	115		
77	1470	1585	1700	1815	1930	2045	2160	2275	2390	2505	1	12	
78	2620	2734	2849	2964	3079	3194	3309	3424	3539	3654	2	23	
79	3769	3884	3999	4114	4229	4343	4458	4573	4688	4803	3	35	
3780	4918	5033	5148	5263	5378	5492	5607	5722	5837	5952	4	46	
81	6067	6182	6296	6411	6526	6641	6756	6871	6986	7100	5	58	
82	7215	7330	7445	7560	7675	7789	7904	8019	8134	8249	6	69	
83	8363	8478	8593	8708	8823	8937	9052	9167	9282	9397	7	81	
84	9511	9626	9741	9856	9970	0085	0200	0315	0429	0544	8	92	
3785	578 0659	0774	0888	1003	1118	1233	1347	1462	1577	1691	9	104	
86	1806	1921	2036	2150	2265	2380	2494	2609	2724	2838			
87	2953	3068	3182	3297	3412	3526	3641	3756	3870	3985			
88	4100	4214	4329	4444	4558	4673	4788	4902	5017	5131			
89	5246	5361	5475	5590	5705	5819	5934	6048	6163	6278			
3790	6392	6507	6621	6736	6850	6965	7080	7194	7309	7423	115	114	
91	7538	7652	7767	7882	7996	8111	8225	8340	8454	8569	1	12	11
92	8683	8798	8912	9027	9141	9256	9370	9485	9599	9714	2	23	23
93	9828	9943	0057	0172	0286	0401	0515	0630	0744	0859	3	35	34
94	579 0973	1088	1202	1317	1431	1546	1660	1774	1889	2003	4	46	46
3795	2118	2232	2347	2461	2576	2690	2804	2919	3033	3148	5	58	57
96	3262	3376	3491	3605	3720	3834	3948	4063	4177	4292	6	69	68
97	4406	4520	4635	4749	4863	4978	5092	5207	5321	5435	7	81	80
98	5550	5664	5778	5893	6007	6121	6236	6350	6464	6579	8	92	91
99	6693	6807	6922	7036	7150	7264	7379	7493	7607	7722	9	104	103
N.	0	1	2	3	4	5	6	7	8	9	D&P Pts		

Number 38000 *to* 38699
Logarithm 579 7836 *to* 587 6997

N.		0	1	2	3	4	5	6	7	8	9	D&PPts		
3800	579	7836	7950	8065	8179	8293	8407	8522	8636	8750	8864		115	114
01		8979	9093	9207	9321	9436	9550	9664	9778	9893	0007	1	12	11
02	580	0121	0235	0350	0464	0578	0692	0806	0921	1035	1149	2	23	23
03		1263	1377	1492	1606	1720	1834	1948	2063	2177	2291	3	35	34
04		2405	2519	2633	2748	2862	2976	3090	3204	3318	3432	4	46	46
3805		3547	3661	3775	3889	4003	4117	4231	4346	4460	4574	5	58	57
06		4688	4802	4916	5030	5144	5258	5372	5487	5601	5715	6	69	68
07		5829	5943	6057	6171	6285	6399	6513	6627	6741	6855	7	81	80
08		6969	7083	7197	7312	7426	7540	7654	7768	7882	7996	8	92	91
09		8110	8224	8338	8452	8566	8680	8794	8908	9022	9136	9	104	103
3810		9250	9364	9478	9592	9706	9820	9934	0048	0162	0276		114	
11	581	0389	0503	0617	0731	0845	0959	1073	1187	1301	1415	1	11	
12		1529	1643	1757	1871	1985	2099	2212	2326	2440	2554	2	23	
13		2668	2782	2896	3010	3124	3238	3351	3465	3579	3693	3	34	
14		3807	3921	4035	4148	4262	4376	4490	4604	4718	4832	4	46	
3815		4945	5059	5173	5287	5401	5515	5628	5742	5856	5970	5	57	
•16		6084	6197	6311	6425	6539	6653	6766	6880	6994	7108	6	68	
17		7222	7335	7449	7563	7677	7790	7904	8018	8132	8245	7	80	
18		8359	8473	8587	8700	8814	8928	9042	9155	9269	9383	8	91	
19		9497	9610	9724	9838	9951	0065	0179	0293	0406	0520	9	103	
3820	582	0634	0747	0861	0975	1088	1202	1316	1429	1543	1657			
21		1770	1884	1998	2111	2225	2339	2452	2566	2680	2793			
22		2907	3020	3134	3248	3361	3475	3589	3702	3816	3929			
23		4043	4157	4270	4384	4497	4611	4725	4838	4952	5065			
24		5179	5292	5406	5520	5633	5747	5860	5974	6087	6201			
3825		6314	6428	6541	6655	6769	6882	6996	7109	7223	7336			
26		7450	7563	7677	7790	7904	8017	8131	8244	8358	8471		114	113
27		8585	8698	8812	8925	9039	9152	9265	9379	9492	9606	1	11	11
28		9719	9833	9946	0060	0173	0287	0400	0513	0627	0740	2	23	23
29	583	0854	0967	1081	1194	1307	1421	1534	1648	1761	1874	3	34	34
3830		1988	2101	2215	2328	2441	2555	2668	2781	2895	3008	4	46	45
31		3122	3235	3348	3462	3575	3688	3802	3915	4028	4142	5	57	57
32		4255	4368	4482	4595	4708	4822	4935	5048	5162	5275	6	68	68
33		5388	5501	5615	5728	5841	5955	6068	6181	6295	6408	7	80	79
34		6521	6634	6748	6861	6974	7087	7201	7314	7427	7540	8	91	90
3835		7654	7767	7880	7993	8107	8220	8333	8446	8560	8673	9	103	102
36		8786	8899	9012	9126	9239	9352	9465	9578	9692	9805			
37		9918	0031	0144	0258	0371	0484	0597	0710	0823	0937			
38	584	1050	1163	1276	1389	1502	1615	1729	1842	1955	2068			
39		2181	2294	2407	2520	2634	2747	2860	2973	3086	3199			
3840		3312	3425	3538	3652	3765	3878	3991	4104	4217	4330			
41		4443	4556	4669	4782	4895	5008	5121	5234	5348	5461			
42		5574	5687	5800	5913	6026	6139	6252	6365	6478	6591			
43		6704	6817	6930	7043	7156	7269	7382	7495	7608	7721		113	
44		7834	7947	8060	8173	8286	8399	8512	8625	8738	8850	1	11	
3845		8963	9076	9189	9302	9415	9528	9641	9754	9867	9980	2	23	
46	585	0093	0206	0319	0432	0544	0657	0770	0883	0996	1109	3	34	
47		1222	1335	1448	1561	1673	1786	1899	2012	2125	2238	4	45	
48		2351	2463	2576	2689	2802	2915	3028	3141	3253	3366	5	57	
49		3479	3592	3705	3818	3930	4043	4156	4269	4382	4494	6	68	
3850		4607	4720	4833	4946	5058	5171	5284	5397	5510	5622	7	79	
51		5735	5848	5961	6073	6186	6299	6412	6525	6637	6750	8	90	
52		6863	6976	7088	7201	7314	7426	7539	7652	7765	7877	9	102	
53		7990	8103	8216	8328	8441	8554	8666	8779	8892	9004			
54		9117	9230	9342	9455	9568	9681	9793	9906	0019	0131			
3855	586	0244	0356	0469	0582	0694	0807	0920	1032	1145	1258			
56		1370	1483	1596	1708	1821	1933	2046	2159	2271	2384			
57		2496	2609	2722	2834	2947	3059	3172	3285	3397	3510			
58		3622	3735	3847	3960	4072	4185	4298	4410	4523	4635			
59		4748	4860	4973	5085	5198	5310	5423	5535	5648	5761			
3860		5873	5986	6098	6211	6323	6436	6548	6661	6773	6886		113	112
61		6998	7110	7223	7335	7448	7560	7673	7785	7898	8010	1	11	11
62		8123	8235	8348	8460	8572	8685	8797	8910	9022	9135	2	23	22
63		9247	9360	9472	9584	9697	9809	9922	0034	0146	0259	3	34	34
64	587	0371	0484	0596	0708	0821	0933	1045	1158	1270	1383	4	45	45
3865		1495	1607	1720	1832	1944	2057	2169	2281	2394	2506	5	57	56
66		2618	2731	2843	2955	3068	3180	3292	3405	3517	3629	6	68	67
67		3742	3854	3966	4079	4191	4303	4416	4528	4640	4752	7	79	78
68		4865	4977	5089	5201	5314	5426	5538	5651	5763	5875	8	90	90
69		5987	6100	6212	6324	6436	6549	6661	6773	6885	6997	9	102	101
N.		0	1	2	3	4	5	6	7	8	9	D&PPts		

Number 38700 *to* 39399
Logarithm 587 7110 *to* 595 4852

N.		0	1	2	3	4	5	6	7	8	9	D&PPts		
3870	587	7110	7222	7334	7446	7559	7671	7783	7895	8007	8120		113	112
71		8232	8344	8456	8568	8680	8793	8905	9017	9129	9241	1	11	11
72		9353	9466	9578	9690	9802	9914	0026	0139	0251	0363	2	23	22
73	588	0475	0587	0699	0811	0923	1036	1148	1260	1372	1484	3	34	34
74		1596	1708	1820	1932	2045	2157	2269	2381	2493	2605	4	45	45
3875		2717	2829	2941	3053	3165	3277	3389	3502	3614	3726	5	57	56
76		3838	3950	4062	4174	4286	4398	4510	4622	4734	4846	6	68	67
77		4958	5070	5182	5294	5406	5518	5630	5742	5854	5966	7	79	78
78		6078	6190	6302	6414	6526	6638	6750	6862	6974	7086	8	90	90
79		7198	7310	7422	7534	7646	7758	7870	7981	8093	8205	9	102	101
3880		8317	8429	8541	8653	8765	8877	8989	9101	9213	9325		112	
81		9436	9548	9660	9772	9884	9996	0108	0220	0332	0443	1	11	
82	589	0555	0667	0779	0891	1003	1115	1227	1338	1450	1562	2	22	
83		1674	1786	1898	2009	2121	2233	2345	2457	2569	2680	3	34	
84		2792	2904	3016	3128	3239	3351	3463	3575	3687	3798	4	45	
3885		3910	4022	4134	4246	4357	4469	4581	4693	4804	4916	5	56	
86		5028	5140	5251	5363	5475	5587	5698	5810	5922	6034	6	67	
87		6145	6257	6369	6481	6592	6704	6816	6927	7039	7151	7	78	
88		7263	7374	7486	7598	7709	7821	7933	8044	8156	8268	8	90	
89		8379	8491	8603	8714	8826	8938	9049	9161	9273	9384	9	101	
3890		9496	9608	9719	9831	9943	0054	0166	0277	0389	0501			
91	590	0612	0724	0836	0947	1059	1170	1282	1394	1505	1617			
92		1728	1840	1951	2063	2175	2286	2398	2509	2621	2732			
93		2844	2956	3067	3179	3290	3402	3513	3625	3736	3848			
94		3959	4071	4183	4294	4406	4517	4629	4740	4852	4963			
3895		5075	5186	5298	5409	5521	5632	5744	5855	5967	6078		112	111
96		6189	6301	6413	6524	6635	6747	6858	6970	7081	7193	1	11	11
97		7304	7415	7527	7638	7750	7861	7973	8084	8196	8307	2	22	22
98		8418	8530	8641	8753	8864	8975	9087	9198	9310	9421	3	34	33
99		9532	9644	9755	9866	9978	0089	0201	0312	0423	0535	4	45	44
3900	591	0646	0757	0869	0980	1091	1203	1314	1426	1537	1648	5	56	56
01		1760	1871	1982	2093	2205	2316	2427	2539	2650	2761	6	67	67
02		2873	2984	3095	3207	3318	3429	3540	3652	3763	3874	7	78	78
03		3986	4097	4208	4319	4431	4542	4653	4764	4876	4987	8	90	89
04		5098	5209	5321	5432	5543	5654	5765	5877	5988	6099	9	101	100
3905		6210	6322	6433	6544	6655	6766	6878	6989	7100	7211			
06		7322	7434	7545	7656	7767	7878	7989	8101	8212	8323			
07		8434	8545	8656	8768	8879	8990	9101	9212	9323	9434			
08		9546	9657	9768	9879	9990	0101	0212	0323	0434	0546			
09	592	0657	0768	0879	0990	1101	1212	1323	1434	1545	1656			
3910		1768	1879	1990	2101	2212	2323	2434	2545	2656	2767			
11		2878	2989	3100	3211	3322	3433	3544	3655	3766	3877			
12		3988	4099	4210	4321	4433	4544	4655	4766	4876	4987		111	
13		5098	5209	5320	5431	5542	5653	5764	5875	5986	6097	1	11	
14		6208	6319	6430	6541	6652	6763	6874	6985	7096	7207	2	22	
3915		7318	7429	7540	7650	7761	7872	7983	8094	8205	8316	3	33	
16		8427	8538	8649	8760	8870	8981	9092	9203	9314	9425	4	44	
17		9536	9647	9757	9868	9979	0090	0201	0312	0423	0533	5	56	
18	593	0644	0755	0866	0977	1088	1199	1309	1420	1531	1642	6	67	
19		1753	1863	1974	2085	2196	2307	2417	2528	2639	2750	7	78	
3920		2861	2971	3082	3193	3304	3415	3525	3636	3747	3858	8	8[illegible]	
21		3968	4079	4190	4301	4411	4522	4633	4744	4854	4965	9	100	
22		5076	5187	5297	5408	5519	5630	5740	5851	5962	6072			
23		6183	6294	6404	6515	6626	6737	6847	6958	7069	7179			
24		7290	7401	7511	7622	7733	7843	7954	8065	8175	8286			
3925		8397	8507	8618	8729	8839	8950	9060	9171	9282	9392			
26		9503	9614	9724	9835	9945	0056	0167	0277	0388	0498			
27	594	0609	0720	0830	0941	1051	1162	1273	1383	1494	1604			
28		1715	1825	1936	2046	2157	2268	2378	2489	2599	2710			
29		2820	2931	3041	3152	3262	3373	3483	3594	3704	3815			
3930		3926	4036	4147	4257	4368	4478	4588	4699	4809	4920		111	110
31		5030	5141	5251	5362	5472	5583	5693	5804	5914	6025	1	11	11
32		6135	6246	6356	6466	6577	6687	6798	6908	7019	7129	2	22	22
33		7239	7350	7460	7571	7681	7792	7902	8012	8123	8233	3	33	33
34		8344	8454	8564	8675	8785	8895	9006	9116	9227	9337	4	44	44
3935		9447	9558	9668	9778	9889	9999	0110	0220	0330	0441	5	56	55
36	595	0551	0661	0772	0882	0992	1103	1213	1323	1434	1544	6	67	66
37		1654	1764	1875	1985	2095	2206	2316	2426	2537	2647	7	78	77
38		2757	2867	2978	3088	3198	3308	3419	3529	3639	3750	8	89	88
39		3860	3970	4080	4191	4301	4411	4521	4632	4742	4852	9	100	99
N.		0	1	2	3	4	5	6	7	8	9	D&PPts		

Number 39400 *to* 40099
Logarithm 595 4962 *to* 603 1335

N.		0	1	2	3	4	5	6	7	8	9	D&P Pts		
3940	595	4962	5072	5183	5293	5403	5513	5624	5734	5844	5954		111	110
41		6064	6175	6285	6395	6505	6615	6725	6836	6946	7056	1	11	11
42		7166	7276	7387	7497	7607	7717	7827	7937	8047	8158	2	22	22
43		8268	8378	8488	8598	8708	8818	8929	9039	9149	9259	3	33	33
44		9369	9479	9589	9699	9810	9920	0030	0140	0250	0360	4	44	44
3945	596	0470	0580	0690	0800	0910	1020	1131	1241	1351	1461	5	56	55
46		1571	1681	1791	1901	2011	2121	2231	2341	2451	2561	6	67	66
47		2671	2781	2891	3001	3111	3221	3331	3441	3551	3661	7	78	77
48		3771	3881	3991	4101	4211	4321	4431	4541	4651	4761	8	89	88
49		4871	4981	5091	5201	5311	5421	5531	5641	5751	5861	9	100	99
3950		5971	6081	6191	6301	6411	6521	6631	6741	6850	6960		110	
51		7070	7180	7290	7400	7510	7620	7730	7840	7950	8059	1	11	
52		8169	8279	8389	8499	8609	8719	8829	8939	9048	9158	2	22	
53		9268	9378	9488	9598	9708	9817	9927	0037	0147	0257	3	33	
54	597	0367	0476	0586	0696	0806	0916	1026	1135	1245	1355	4	44	
3955		1465	1575	1684	1794	1904	2014	2124	2233	2343	2453	5	55	
56		2563	2673	2782	2892	3002	3112	3221	3331	3441	3551	6	66	
57		3661	3770	3880	3990	4099	4209	4319	4429	4538	4648	7	77	
58		4758	4868	4977	5087	5197	5306	5416	5526	5636	5745	8	88	
59		5855	5965	6074	6184	6294	6403	6513	6623	6733	6842	9	99	
3960		6952	7062	7171	7281	7391	7500	7610	7719	7829	7939			
61		8048	8158	8268	8377	8487	8597	8706	8816	8925	9035			
62		9145	9254	9364	9474	9583	9693	9802	9912	0022	0131			
63	598	0241	0350	0460	0569	0679	0789	0898	1008	1117	1227			
64		1336	1446	1556	1665	1775	1884	1994	2103	2213	2322			
3965		2432	2541	2651	2761	2870	2980	3089	3199	3308	3418			
66		3527	3637	3746	3856	3965	4075	4184	4294	4403	4513		110	109
67		4622	4731	4841	4950	5060	5169	5279	5388	5498	5607	1	11	11
68		5717	5826	5936	6045	6154	6264	6373	6483	6592	6702	2	22	22
69		6811	6920	7030	7139	7249	7358	7467	7577	7686	7796	3	33	33
3970		7905	8014	8124	8233	8343	8452	8561	8671	8780	8890	4	44	44
71		8999	9108	9218	9327	9436	9546	9655	9764	9874	9983	5	55	55
72	599	0092	0202	0311	0420	0530	0639	0748	0858	0967	1076	6	66	65
73		1186	1295	1404	1514	1623	1732	1841	1951	2060	2169	7	77	76
74		2279	2388	2497	2606	2716	2825	2934	3044	3153	3262	8	88	87
3975		3371	3481	3590	3699	3808	3918	4027	4136	4245	4355	9	99	98
76		4464	4573	4682	4791	4901	5010	5119	5228	5338	5447			
77		5556	5665	5774	5884	5993	6102	6211	6320	6429	6539			
78		6648	6757	6866	6975	7084	7194	7303	7412	7521	7630			
79		7739	7849	7958	8067	8176	8285	8394	8503	8612	8722			
3980		8831	8940	9049	9158	9267	9376	9485	9594	9704	9813			
81		9922	0031	0140	0249	0358	0467	0576	0685	0794	0903			
82	600	1013	1122	1231	1340	1449	1558	1667	1776	1885	1994			
83		2103	2212	2321	2430	2539	2648	2757	2866	2975	3084			
84		3193	3302	3411	3520	3629	3738	3847	3956	4065	4174		109	
3985		4283	4392	4501	4610	4719	4828	4937	5046	5155	5264	1	11	
86		5373	5482	5591	5700	5809	5918	6027	6136	6244	6353	2	22	
87		6462	6571	6680	6789	6898	7007	7116	7225	7334	7443	3	33	
88		7551	7660	7769	7878	7987	8096	8205	8314	8423	8531	4	44	
89		8640	8749	8858	8967	9076	9185	9294	9402	9511	9620	5	55	
3990		9729	9838	9947	0055	0164	0273	0382	0491	0600	0708	6	65	
91	601	0817	0926	1035	1144	1253	1361	1470	1579	1688	1797	7	76	
92		1905	2014	2123	2232	2340	2449	2558	2667	2776	2884	8	87	
93		2993	3102	3211	3319	3428	3537	3646	3754	3863	3972	9	98	
94		4081	4189	4298	4407	4516	4624	4733	4842	4950	5059			
3995		5168	5277	5385	5494	5603	5711	5820	5929	6037	6146			
96		6255	6363	6472	6581	6690	6798	6907	7016	7124	7233			
97		7341	7450	7559	7667	7776	7885	7993	8102	8211	8319			
98		8428	8537	8645	8754	8862	8971	9080	9188	9297	9405			
99		9514	9623	9731	9840	9948	0057	0166	0274	0383	0491			
4000	602	0600	0708	0817	0926	1034	1143	1251	1360	1468	1577		109	108
01		1686	1794	1903	2011	2120	2228	2337	2445	2554	2662	1	11	11
02		2771	2879	2988	3096	3205	3313	3422	3530	3639	3747	2	22	22
03		3856	3964	4073	4181	4290	4398	4507	4615	4724	4832	3	33	32
04		4941	5049	5158	5266	5375	5483	5591	5700	5808	5917	4	44	43
4005		6025	6134	6242	6351	6459	6567	6676	6784	6893	7001	5	55	54
06		7109	7218	7326	7435	7543	7651	7760	7868	7977	8085	6	65	65
07		8193	8302	8410	8519	8627	8735	8844	8952	9060	9169	7	76	76
08		9277	9385	9494	9602	9711	9819	9927	0036	0144	0252	8	87	86
09	603	0361	0469	0577	0686	0794	0902	1010	1119	1227	1335	9	98	97
N.		0	1	2	3	4	5	6	7	8	9	D&P Pts		

Number 40100 *to* 40799
Logarithm 603 1444 *to* 610 6495

N.		0	1	2	3	4	5	6	7	8	9	D&P Pts		
4010	603	1444	1552	1660	1769	1877	1985	2093	2202	2310	2418		109	108
11		2527	2635	2743	2851	2960	3068	3176	3284	3393	3501	1	11	11
12		3609	3717	3826	3934	4042	4150	4259	4367	4475	4583	2	22	22
13		4692	4800	4908	5016	5124	5233	5341	5449	5557	5665	3	33	32
14		5774	5882	5990	6098	6206	6315	6423	6531	6639	6747	4	44	43
4015		6855	6964	7072	7180	7288	7396	7504	7613	7721	7829	5	55	54
16		7937	8045	8153	8261	8370	8478	8586	8694	8802	8910	6	65	65
17		9018	9126	9235	9343	9451	9559	9667	9775	9883	9991	7	76	76
18	604	0099	0207	0315	0424	0532	0640	0748	0856	0964	1072	8	87	86
19		1180	1288	1396	1504	1612	1720	1828	1936	2044	2152	9	98	97
4020		2261	2369	2477	2585	2693	2801	2909	3017	3125	3233			
21		3341	3449	3557	3665	3773	3881	3989	4097	4205	4313		108	
22		4421	4529	4637	4745	4853	4961	5068	5176	5284	5392	1	11	
23		5500	5608	5716	5824	5932	6040	6148	6256	6364	6472	2	22	
24		6580	6688	6796	6903	7011	7119	7227	7335	7443	7551	3	32	
4025		7659	7767	7875	7983	8090	8198	8306	8414	8522	8630	4	43	
26		8738	8846	8953	9061	9169	9277	9385	9493	9601	9708	5	54	
27		9816	9924	0032	0140	0248	0355	0463	0571	0679	0787	6	65	
28	605	0895	1002	1110	1218	1326	1434	1541	1649	1757	1865	7	76	
29		1973	2080	2188	2296	2404	2512	2619	2727	2835	2943	8	86	
4030		3050	3158	3266	3374	3482	3589	3697	3805	3912	4020	9	97	
31		4128	4236	4343	4451	4559	4667	4774	4882	4990	5098			
32		5205	5313	5421	5528	5636	5744	5851	5959	6067	6175			
33		6282	6390	6498	6605	6713	6821	6928	7036	7144	7251			
34		7359	7467	7574	7682	7790	7897	8005	8112	8220	8328			
4035		8435	8543	8651	8758	8866	8974	9081	9189	9296	9404			
36		9512	9619	9727	9834	9942	0050	0157	0265	0372	0480			
37	606	0587	0695	0803	0910	1018	1125	1233	1340	1448	1556			
38		1663	1771	1878	1986	2093	2201	2308	2416	2523	2631			
39		2739	2846	2954	3061	3169	3276	3384	3491	3599	3706			
4040		3814	3921	4029	4136	4244	4351	4459	4566	4674	4781		108	107
41		4889	4996	5103	5211	5318	5426	5533	5641	5748	5856	1	11	11
42		5963	6071	6178	6285	6393	6500	6608	6715	6823	6930	2	22	21
43		7037	7145	7252	7360	7467	7574	7682	7789	7897	8004	3	32	32
44		8111	8219	8326	8434	8541	8648	8756	8863	8971	9078	4	43	43
4045		9185	9293	9400	9507	9615	9722	9829	9937	0044	0151	5	54	54
46	607	0259	0366	0473	0581	0688	0795	0903	1010	1117	1225	6	65	64
47		1332	1439	1547	1654	1761	1869	1976	2083	2190	2298	7	76	75
48		2405	2512	2620	2727	2834	2941	3049	3156	3263	3371	8	86	86
49		3478	3585	3692	3800	3907	4014	4121	4229	4336	4443	9	97	96
4050		4550	4657	4765	4872	4979	5086	5194	5301	5408	5515			
51		5622	5730	5837	5944	6051	6158	6266	6373	6480	6587			
52		6694	6802	6909	7016	7123	7230	7337	7445	7552	7659			
53		7766	7873	7980	8087	8195	8302	8409	8516	8623	8730			
54		8837	8945	9052	9159	9266	9373	9480	9587	9694	9801			
4055		9909	0016	0123	0230	0337	0444	0551	0658	0765	0872			
56	608	0979	1087	1194	1301	1408	1515	1622	1729	1836	1943			
57		2050	2157	2264	2371	2478	2585	2692	2799	2906	3013			
58		3120	3227	3334	3441	3548	3656	3763	3870	3977	4084		107	
59		4191	4298	4404	4511	4618	4725	4832	4939	5046	5153	1	11	
4060		5260	5367	5474	5581	5688	5795	5902	6009	6116	6223	2	21	
61		6330	6437	6544	6651	6758	6865	6972	7078	7185	7292	3	32	
62		7399	7506	7613	7720	7827	7934	8041	8148	8254	8361	4	43	
63		8468	8575	8682	8789	8896	9003	9110	9216	9323	9430	5	54	
64		9537	9644	9751	9858	9964	0071	0178	0285	0392	0499	6	64	
4065	609	0605	0712	0819	0926	1033	1140	1246	1353	1460	1567	7	75	
66		1674	1781	1887	1994	2101	2208	2315	2421	2528	2635	8	86	
67		2742	2849	2955	3062	3169	3276	3382	3489	3596	3703	9	96	
68		3809	3916	4023	4130	4236	4343	4450	4557	4663	4770			
69		4877	4984	5090	5197	5304	5411	5517	5624	5731	5837			
4070		5944	6051	6157	6264	6371	6478	6584	6691	6798	6904		107	106
71		7011	7118	7224	7331	7438	7544	7651	7758	7864	7971	1	11	11
72		8078	8184	8291	8398	8504	8611	8718	8824	8931	9037	2	21	21
73		9144	9251	9357	9464	9571	9677	9784	9890	9997	0104	3	32	32
74	610	0210	0317	0423	0530	0637	0743	0850	0956	1063	1170	4	43	42
4075		1276	1383	1489	1596	1702	1809	1916	2022	2129	2235	5	54	53
76		2342	2448	2555	2661	2768	2874	2981	3088	3194	3301	6	64	64
77		3407	3514	3620	3727	3833	3940	4046	4153	4259	4366	7	75	74
78		4472	4579	4685	4792	4898	5005	5111	5218	5324	5431	8	86	85
79		5537	5644	5750	5856	5963	6069	6176	6282	6389	6495	9	96	95
N.		0	1	2	3	4	5	6	7	8	9	D&P Pts		

Number 40800 *to* 41499
Logarithm 610 6602 *to* 618 0376

N.	0	1	2	3	4	5	6	7	8	9	D&PPts		
4080	610 6602	6708	6815	6921	7027	7134	7240	7347	7453	7560		107	106
81	7666	7772	7879	7985	8092	8198	8304	8411	8517	8624	1	11	11
82	8730	8836	8943	9049	9156	9262	9368	9475	9581	9687	2	21	21
83	9794	9900	0007	0113	0219	0326	0432	0538	0645	0751	3	32	32
84	611 0857	0964	1070	1176	1283	1389	1495	1602	1708	1814	4	43	42
4085	1921	2027	2133	2240	2346	2452	2558	2665	2771	2877	5	54	53
86	2984	3090	3196	3302	3409	3515	3621	3728	3834	3940	6	64	64
87	4046	4153	4259	4365	4471	4578	4684	4790	4896	5003	7	75	74
88	5109	5215	5321	5428	5534	5640	5746	5852	5959	6065	8	86	85
89	6171	6277	6384	6490	6596	6702	6808	6915	7021	7127	9	96	95
4090	7233	7339	7445	7552	7658	7764	7870	7976	8082	8189			
91	8295	8401	8507	8613	8719	8826	8932	9038	9144	9250			
92	9356	9462	9569	9675	9781	9887	9993	0099	0205	0311			
93	612 0417	0524	0630	0736	0842	0948	1054	1160	1266	1372			
94	1478	1584	1691	1797	1903	2009	2115	2221	2327	2433			
4095	2539	2645	2751	2857	2963	3069	3175	3281	3387	3493			
96	3599	3706	3812	3918	4024	4130	4236	4342	4448	4554			
97	4660	4766	4872	4978	5084	5190	5296	5402	5508	5614		106	
98	5720	5826	5931	6037	6143	6249	6355	6461	6567	6673	1	11	
99	6779	6885	6991	7097	7203	7309	7415	7521	7627	7733	2	21	
4100	7839	7944	8050	8156	8262	8368	8474	8580	8686	8792	3	32	
01	8898	9004	9109	9215	9321	9427	9533	9639	9745	9851	4	42	
02	9957	0062	0168	0274	0380	0486	0592	0698	0803	0909	5	53	
03	613 1015	1121	1227	1333	1439	1544	1650	1756	1862	1968	6	64	
04	2074	2179	2285	2391	2497	2603	2708	2814	2920	3026	7	74	
4105	3132	3237	3343	3449	3555	3661	3766	3872	3978	4084	8	85	
06	4189	4295	4401	4507	4613	4718	4824	4930	5036	5141	9	95	
07	5247	5353	5459	5564	5670	5776	5881	5987	6093	6199			
08	6304	6410	6516	6621	6727	6833	6939	7044	7150	7256			
09	7361	7467	7573	7678	7784	7890	7996	8101	8207	8313			
4110	8418	8524	8630	8735	8841	8947	9052	9158	9263	9369			
11	9475	9580	9686	9792	9897	0003	0109	0214	0320	0425			
12	614 0531	0637	0742	0848	0954	1059	1165	1270	1376	1482			
13	1587	1693	1798	1904	2009	2115	2221	2326	2432	2537			
14	2643	2748	2854	2960	3065	3171	3276	3382	3487	3593			
4115	3698	3804	3909	4015	4121	4226	4332	4437	4543	4648			
16	4754	4859	4965	5070	5176	5281	5387	5492	5598	5703		106	105
17	5809	5914	6020	6125	6231	6336	6442	6547	6652	6758	1	11	11
18	6863	6969	7074	7180	7285	7391	7496	7602	7707	7812	2	21	21
19	7918	8023	8129	8234	8340	8445	8550	8656	8761	8867	3	32	32
4120	8972	9078	9183	9288	9394	9499	9605	9710	9815	9921	4	42	42
21	615 0026	0132	0237	0342	0448	0553	0658	0764	0869	0975	5	53	53
22	1080	1185	1291	1396	1501	1607	1712	1817	1923	2028	6	64	63
23	2133	2239	2344	2449	2555	2660	2765	2871	2976	3081	7	74	74
24	3187	3292	3397	3502	3608	3713	3818	3924	4029	4134	8	85	84
4125	4240	4345	4450	4555	4661	4766	4871	4976	5082	5187	9	95	95
26	5292	5397	5503	5608	5713	5818	5924	6029	6134	6239			
27	6345	6450	6555	6660	6766	6871	6976	7081	7186	7292			
28	7397	7502	7607	7712	7818	7923	8028	8133	8238	8344			
29	8449	8554	8659	8764	8870	8975	9080	9185	9290	9395			
4130	9501	9606	9711	9816	9921	0026	0131	0237	0342	0447			
31	616 0552	0657	0762	0867	0972	1078	1183	1288	1393	1498			
32	1603	1708	1813	1918	2024	2129	2234	2339	2444	2549			
33	2654	2759	2864	2969	3074	3179	3284	3390	3495	3600			
34	3705	3810	3915	4020	4125	4230	4335	4440	4545	4650			
4135	4755	4860	4965	5070	5175	5280	5385	5490	5595	5700			
36	5805	5910	6015	6120	6225	6330	6435	6540	6645	6750		105	104
37	6855	6960	7065	7170	7275	7380	7485	7590	7695	7800	1	11	10
38	7905	8010	8115	8220	8325	8430	8535	8639	8744	8849	2	21	21
39	8954	9059	9164	9269	9374	9479	9584	9689	9794	9899	3	32	31
4140	617 0003	0108	0213	0318	0423	0528	0633	0738	0843	0947	4	42	42
41	1052	1157	1262	1367	1472	1577	1682	1786	1891	1996	5	53	52
42	2101	2206	2311	2415	2520	2625	2730	2835	2940	3045	6	63	62
43	3149	3254	3359	3464	3569	3673	3778	3883	3988	4093	7	74	73
44	4197	4302	4407	4512	4617	4721	4826	4931	5036	5141	8	84	83
4145	5245	5350	5455	5560	5664	5769	5874	5979	6083	6188	9	95	94
46	6293	6398	6502	6607	6712	6817	6921	7026	7131	7236			
47	7340	7445	7550	7655	7759	7864	7969	8073	8178	8283			
48	8387	8492	8597	8702	8806	8911	9016	9120	9225	9330			
49	9434	9539	9644	9748	9853	9958	0062	0167	0272	0376			
N.	0	1	2	3	4	5	6	7	8	9	D&PPts		

Number 41500 *to* 42199
Logarithm 618 0481 *to* 625 3022

N.	0	1	2	3	4	5	6	7	8	9	D&PPts		
4150	618 0481	0586	0690	0795	0900	1004	1109	1213	1318	1423			
51	1527	1632	1737	1841	1946	2050	2155	2260	2364	2469			
52	2573	2678	2783	2887	2992	3096	3201	3306	3410	3515			
53	3619	3724	3828	3933	4038	4142	4247	4351	4456	4560			
54	4665	4769	4874	4979	5083	5188	5292	5397	5501	5606			
4155	5710	5815	5919	6024	6128	6233	6337	6442	6546	6651			
56	6755	6860	6964	7069	7173	7278	7382	7487	7591	7696		105	104
57	7800	7905	8009	8114	8218	8323	8427	8531	8636	8740	1	11	10
58	8845	8949	9054	9158	9263	9367	9471	9576	9680	9785	2	21	21
59	9889	9994	0098	0202	0307	0411	0516	0620	0725	0829	3	32	31
4160	619 0933	1038	1142	1246	1351	1455	1560	1664	1768	1873	4	42	42
61	1977	2082	2186	2290	2395	2499	2603	2708	2812	2916	5	53	52
62	3021	3125	3229	3334	3438	3542	3647	3751	3855	3960	6	63	62
63	4064	4168	4273	4377	4481	4586	4690	4794	4899	5003	7	74	73
64	5107	5212	5316	5420	5524	5629	5733	5837	5942	6046	8	84	83
4165	6150	6254	6359	6463	6567	6671	6776	6880	6984	7088	9	95	94
66	7193	7297	7401	7505	7610	7714	7818	7922	8027	8131			
67	8235	8339	8443	8548	8652	8756	8860	8964	9069	9173			
68	9277	9381	9485	9590	9694	9798	9902	0006	0111	0215			
69	620 0319	0423	0527	0631	0736	0840	0944	1048	1152	1256			
4170	1361	1465	1569	1673	1777	1881	1985	2090	2194	2298			
71	2402	2506	2610	2714	2818	2922	3027	3131	3235	3339			
72	3443	3547	3651	3755	3859	3963	4068	4172	4276	4380			
73	4484	4588	4692	4796	4900	5004	5108	5212	5316	5420			
74	5524	5628	5733	5837	5941	6045	6149	6253	6357	6461			
4175	6565	6669	6773	6877	6981	7085	7189	7293	7397	7501		104	
76	7605	7709	7813	7917	8021	8125	8229	8333	8437	8541	1	10	
77	8645	8749	8853	8957	9061	9165	9269	9373	9476	9580	2	21	
78	9684	9788	9892	9996	0100	0204	0308	0412	0516	0620	3	31	
79	621 0724	0828	0932	1035	1139	1243	1347	1451	1555	1659	4	42	
4180	1763	1867	1971	2075	2178	2282	2386	2490	2594	2698	5	52	
81	2802	2906	3009	3113	3217	3321	3425	3529	3633	3736	6	62	
82	3840	3944	4048	4152	4256	4359	4463	4567	4671	4775	7	73	
83	4879	4982	5086	5190	5294	5398	5502	5605	5709	5813	8	83	
84	5917	6021	6124	6228	6332	6436	6540	6643	6747	6851	9	94	
4185	6955	7058	7162	7266	7370	7473	7577	7681	7785	7888			
86	7992	8096	8200	8303	8407	8511	8615	8718	8822	8926			
87	9030	9133	9237	9341	9444	9548	9652	9756	9859	9963			
88	622 0067	0170	0274	0378	0482	0585	0689	0793	0896	1000			
89	1104	1207	1311	1415	1518	1622	1726	1829	1933	2037			
4190	2140	2244	2348	2451	2555	2658	2762	2866	2969	3073			
91	3177	3280	3384	3487	3591	3695	3798	3902	4006	4109			
92	4213	4316	4420	4524	4627	4731	4834	4938	5041	5145			
93	5249	5352	5456	5559	5663	5766	5870	5974	6077	6181			
94	6284	6388	6491	6595	6698	6802	6906	7009	7113	7216			
4195	7320	7423	7527	7630	7734	7837	7941	8044	8148	8251			
96	8355	8458	8562	8665	8769	8872	8976	9079	9183	9286		104	103
97	9390	9493	9597	9700	9804	9907	0011	0114	0217	0321	1	10	10
98	623 0424	0528	0631	0735	0838	0942	1045	1148	1252	1355	2	21	21
99	1459	1562	1666	1769	1872	1976	2079	2183	2286	2389	3	31	31
4200	2493	2596	2700	2803	2906	3010	3113	3217	3320	3423	4	42	41
01	3527	3630	3734	3837	3940	4044	4147	4250	4354	4457	5	52	52
02	4560	4664	4767	4871	4974	5077	5181	5284	5387	5491	6	62	62
03	5594	5697	5801	5904	6007	6111	6214	6317	6420	6524	7	73	72
04	6627	6730	6834	6937	7040	7144	7247	7350	7453	7557	8	83	82
4205	7660	7763	7867	7970	8073	8176	8280	8383	8486	8589	9	94	93
06	8693	8796	8899	9002	9106	9209	9312	9415	9519	9622			
07	9725	9828	9932	0035	0138	0241	0344	0448	0551	0654			
08	624 0757	0861	0964	1067	1170	1273	1377	1480	1583	1686			
09	1789	1892	1996	2099	2202	2305	2408	2511	2615	2718			
4210	2821	2924	3027	3130	3234	3337	3440	3543	3646	3749		103	
11	3852	3956	4059	4162	4265	4368	4471	4574	4677	4781	1	10	
12	4884	4987	5090	5193	5296	5399	5502	5605	5708	5812	2	21	
13	5915	6018	6121	6224	6327	6430	6533	6636	6739	6842	3	31	
14	6945	7048	7151	7254	7358	7461	7564	7667	7770	7873	4	41	
4215	7976	8079	8182	8285	8388	8491	8594	8697	8800	8903	5	52	
16	9006	9109	9212	9315	9418	9521	9624	9727	9830	9933	6	62	
17	625 0036	0139	0242	0345	0448	0551	0654	0757	0860	0963	7	72	
18	1066	1169	1272	1375	1478	1581	1683	1786	1889	1992	8	82	
19	2095	2198	2301	2404	2507	2610	2713	2816	2919	3022	9	93	
N.	0	1	2	3	4	5	6	7	8	9	D&PPts		

Number 42200 *to* 42899
Logarithm 625 3125 *to* 632 4472

N.	0	1	2	3	4	5	6	7	8	9	D&PPts
4220	625 3125	3227	3330	3433	3536	3639	3742	3845	3948	4051	103
21	4154	4256	4359	4462	4565	4668	4771	4874	4977	5079	1 10
22	5182	5285	5388	5491	5594	5697	5799	5902	6005	6108	2 21
23	6211	6314	6416	6519	6622	6725	6828	6931	7033	7136	3 31
24	7239	7342	7445	7548	7650	7753	7856	7959	8062	8164	4 41
4225	8267	8370	8473	8575	8678	8781	8884	8987	9089	9192	5 52
26	9295	9398	9500	9603	9706	9809	9911	0014	0117	0220	6 62
27	626 0322	0425	0528	0631	0733	0836	0939	1042	1144	1247	7 72
28	1350	1453	1555	1658	1761	1863	1966	2069	2171	2274	8 82
29	2377	2480	2582	2685	2788	2890	2993	3096	3198	3301	9 93
4230	3404	3506	3609	3712	3814	3917	4020	4122	4225	4328	
31	4430	4533	4636	4738	4841	4943	5046	5149	5251	5354	
32	5457	5559	5662	5764	5867	5970	6072	6175	6277	6380	
33	6483	6585	6688	6790	6893	6996	7098	7201	7303	7406	
34	7509	7611	7714	7816	7919	8021	8124	8226	8329	8432	
4235	8534	8637	8739	8842	8944	9047	9149	9252	9354	9457	
36	9560	9662	9765	9867	9970	0072	0175	0277	0380	0482	
37	627 0585	0687	0790	0892	0995	1097	1200	1302	1405	1507	103 102
38	1610	1712	1814	1917	2019	2122	2224	2327	2429	2532	1 10 10
39	2634	2737	2839	2942	3044	3146	3249	3351	3454	3556	2 21 20
4240	3659	3761	3863	3966	4068	4171	4273	4376	4478	4580	3 31 31
41	4683	4785	4888	4990	5092	5195	5297	5399	5502	5604	4 41 41
42	5707	5809	5911	6014	6116	6219	6321	6423	6526	6628	5 52 51
43	6730	6833	6935	7037	7140	7242	7344	7447	7549	7651	6 62 61
44	7754	7856	7958	8061	8163	8265	8368	8470	8572	8675	7 72 71
4245	8777	8879	8982	9084	9186	9288	9391	9493	9595	9698	8 82 82
46	9800	9902	0004	0107	0209	0311	0414	0516	0618	0720	9 93 92
47	628 0823	0925	1027	1129	1232	1334	1436	1538	1641	1743	
48	1845	1947	2050	2152	2254	2356	2458	2561	2663	2765	
49	2867	2970	3072	3174	3276	3378	3481	3583	3685	3787	
4250	3889	3991	4094	4196	4298	4400	4502	4605	4707	4809	
51	4911	5013	5115	5218	5320	5422	5524	5626	5728	5830	
52	5933	6035	6137	6239	6341	6443	6545	6647	6750	6852	
53	6954	7056	7158	7260	7362	7464	7566	7669	7771	7873	
54	7975	8077	8179	8281	8383	8485	8587	8689	8792	8894	
4255	8996	9098	9200	9302	9404	9506	9608	9710	9812	9914	
56	629 0016	0118	0220	0322	0424	0526	0628	0730	0832	0934	
57	1037	1139	1241	1343	1445	1547	1649	1751	1853	1955	102
58	2057	2159	2261	2363	2465	2567	2668	2770	2872	2974	1 10
59	3076	3178	3280	3382	3484	3586	3688	3790	3892	3994	2 20
4260	4096	4198	4300	4402	4504	4606	4708	4810	4911	5013	3 31
61	5115	5217	5319	5421	5523	5625	5727	5829	5931	6033	4 41
62	6134	6236	6338	6440	6542	6644	6746	6848	6950	7051	5 51
63	7153	7255	7357	7459	7561	7663	7765	7866	7968	8070	6 61
64	8172	8274	8376	8478	8579	8681	8783	8885	8987	9089	7 71
4265	9190	9292	9394	9496	9598	9699	9801	9903	0005	0107	8 82
66	630 0209	0310	0412	0514	0616	0717	0819	0921	1023	1125	9 92
67	1226	1328	1430	1532	1634	1735	1837	1939	2041	2142	
68	2244	2346	2448	2549	2651	2753	2855	2956	3058	3160	
69	3262	3363	3465	3567	3668	3770	3872	3974	4075	4177	
4270	4279	4380	4482	4584	4686	4787	4889	4991	5092	5194	
71	5296	5397	5499	5601	5702	5804	5906	6007	6109	6211	
72	6312	6414	6516	6617	6719	6821	6922	7024	7126	7227	
73	7329	7431	7532	7634	7735	7837	7939	8040	8142	8244	
74	8345	8447	8548	8650	8752	8853	8955	9056	9158	9260	
4275	9361	9463	9564	9666	9768	9869	9971	0072	0174	0275	
76	631 0377	0479	0580	0682	0783	0885	0986	1088	1189	1291	
77	1393	1494	1596	1697	1799	1900	2002	2103	2205	2306	
78	2408	2509	2611	2712	2814	2915	3017	3118	3220	3321	102 101
79	3423	3524	3626	3727	3829	3930	4032	4133	4235	4336	1 10 10
4280	4438	4539	4641	4742	4844	4945	5046	5148	5249	5351	2 20 20
81	5452	5554	5655	5757	5858	5959	6061	6162	6264	6365	3 31 30
82	6467	6568	6669	6771	6872	6974	7075	7177	7278	7379	4 41 40
83	7481	7582	7684	7785	7886	7988	8089	8190	8292	8393	5 51 51
84	8495	8596	8697	8799	8900	9001	9103	9204	9306	9407	6 61 61
4285	9508	9610	9711	9812	9914	0015	0116	0218	0319	0420	7 71 71
86	632 0522	0623	0724	0826	0927	1028	1130	1231	1332	1434	8 82 81
87	1535	1636	1737	1839	1940	2041	2143	2244	2345	2446	9 92 91
88	2548	2649	2750	2852	2953	3054	3155	3257	3358	3459	
89	3560	3662	3763	3864	3965	4067	4168	4269	4370	4472	
N.	0	1	2	3	4	5	6	7	8	9	D&PPts

Number 42900 *to* 43599
Logarithm 632 4573 *to* 639 4765

N.	0	1	2	3	4	5	6	7	8	9	D&PPts
4290	632 4573	4674	4775	4877	4978	5079	5180	5282	5383	5484	102
91	5585	5686	5788	5889	5990	6091	6192	6294	6395	6496	1 10
92	6597	6698	6800	6901	7002	7103	7204	7305	7407	7508	2 20
93	7609	7710	7811	7912	8014	8115	8216	8317	8418	8519	3 31
94	8620	8722	8823	8924	9025	9126	9227	9328	9429	9531	4 41
4295	9632	9733	9834	9935	0036	0137	0238	0339	0441	0542	5 51
96	633 0643	0744	0845	0946	1047	1148	1249	1350	1451	1552	6 61
97	1654	1755	1856	1957	2058	2159	2260	2361	2462	2563	7 71
98	2664	2765	2866	2967	3068	3169	3270	3371	3472	3573	8 82
99	3674	3775	3876	3978	4079	4180	4281	4382	4483	4584	9 92
4300	4685	4786	4887	4988	5089	5190	5291	5391	5492	5593	101
01	5694	5795	5896	5997	6098	6199	6300	6401	6502	6603	1 10
02	6704	6805	6906	7007	7108	7209	7310	7411	7512	7613	2 20
03	7713	7814	7915	8016	8117	8218	8319	8420	8521	8622	3 30
04	8723	8824	8924	9025	9126	9227	9328	9429	9530	9631	4 40
4305	9732	9832	9933	0034	0135	0236	0337	0438	0539	0639	5 51
06	634 0740	0841	0942	1043	1144	1245	1345	1446	1547	1648	6 61
07	1749	1850	1950	2051	2152	2253	2354	2455	2555	2656	7 71
08	2757	2858	2959	3059	3160	3261	3362	3463	3563	3664	8 81
09	3765	3866	3967	4067	4168	4269	4370	4470	4571	4672	9 91
4310	4773	4873	4974	5075	5176	5276	5377	5478	5579	5679	
11	5780	5881	5982	6082	6183	6284	6385	6485	6586	6687	
12	6788	6888	6989	7090	7190	7291	7392	7492	7593	7694	
13	7795	7895	7996	8097	8197	8298	8399	8499	8600	8701	
14	8801	8902	9003	9103	9204	9305	9405	9506	9607	9707	
4315	9808	9909	0009	0110	0211	0311	0412	0512	0613	0714	
16	635 0814	0915	1016	1116	1217	1317	1418	1519	1619	1720	
17	1820	1921	2022	2122	2223	2323	2424	2525	2625	2726	
18	2826	2927	3028	3128	3229	3329	3430	3530	3631	3731	
19	3832	3933	4033	4134	4234	4335	4435	4536	4636	4737	
4320	4837	4938	5039	5139	5240	5340	5441	5541	5642	5742	
21	5843	5943	6044	6144	6245	6345	6446	6546	6647	6747	101 100
22	6848	6948	7049	7149	7250	7350	7450	7551	7651	7752	1 10 10
23	7852	7953	8053	8154	8254	8355	8455	8556	8656	8756	2 20 20
24	8857	8957	9058	9158	9259	9359	9459	9560	9660	9761	3 30 30
4325	9861	9962	0062	0162	0263	0363	0464	0564	0664	0765	4 40 40
26	636 0865	0966	1066	1166	1267	1367	1467	1568	1668	1769	5 51 50
27	1869	1969	2070	2170	2270	2371	2471	2571	2672	2772	6 61 60
28	2873	2973	3073	3174	3274	3374	3475	3575	3675	3776	7 71 70
29	3876	3976	4076	4177	4277	4377	4478	4578	4678	4779	8 81 80
4330	4879	4979	5080	5180	5280	5380	5481	5581	5681	5782	9 91 90
31	5882	5982	6082	6183	6283	6383	6483	6584	6684	6784	
32	6884	6985	7085	7185	7285	7386	7486	7586	7686	7787	
33	7887	7987	8087	8188	8288	8388	8488	8588	8689	8789	
34	8889	8989	9089	9190	9290	9390	9490	9590	9691	9791	
4335	9891	9991	0091	0192	0292	0392	0492	0592	0692	0793	
36	637 0893	0993	1093	1193	1293	1394	1494	1594	1694	1794	
37	1894	1994	2094	2195	2295	2395	2495	2595	2695	2795	
38	2895	2996	3096	3196	3296	3396	3496	3596	3696	3796	
39	3897	3997	4097	4197	4297	4397	4497	4597	4697	4797	
4340	4897	4997	5097	5197	5298	5398	5498	5598	5698	5798	100
41	5898	5998	6098	6198	6298	6398	6498	6598	6698	6798	1 10
42	6898	6998	7098	7198	7298	7398	7498	7598	7698	7798	2 20
43	7898	7998	8098	8198	8298	8398	8498	8598	8698	8798	3 30
44	8898	8998	9098	9198	9298	9398	9498	9598	9698	9798	4 40
4345	9898	9998	0098	0198	0298	0398	0497	0597	0697	0797	5 50
46	638 0897	0997	1097	1197	1297	1397	1497	1597	1697	1796	6 60
47	1896	1996	2096	2196	2296	2396	2496	2596	2696	2795	7 70
48	2895	2995	3095	3195	3295	3395	3495	3594	3694	3794	8 80
49	3894	3994	4094	4194	4294	4393	4493	4593	4693	4793	9 90
4350	4893	4992	5092	5192	5292	5392	5492	5591	5691	5791	99
51	5891	5991	6090	6190	6290	6390	6490	6589	6689	6789	1 10
52	6889	6989	7088	7188	7288	7388	7488	7587	7687	7787	2 20
53	7887	7986	8086	8186	8286	8385	8485	8585	8685	8784	3 30
54	8884	8984	9084	9183	9283	9383	9483	9582	9682	9782	4 40
4355	9882	9981	0081	0181	0280	0380	0480	0580	0679	0779	5 50
56	639 0879	0978	1078	1178	1277	1377	1477	1577	1676	1776	6 59
57	1876	1975	2075	2175	2274	2374	2474	2573	2673	2773	7 69
58	2872	2972	3072	3171	3271	3371	3470	3570	3669	3769	8 79
59	3869	3968	4068	4168	4267	4367	4466	4566	4666	4765	9 89
N.	0	1	2	3	4	5	6	7	8	9	D&PPts

Number 43600 *to* 44299
Logarithm 639 4865 *to* 646 3939

N.		0	1	2	3	4	5	6	7	8	9	Diff.
4360	639	4865	4965	5064	5164	5263	5363	5463	5562	5662	5761	99
61		5861	5960	6060	6160	6259	6359	6458	6558	6657	6757	1 10
62		6857	6956	7056	7155	7255	7354	7454	7553	7653	7753	2 20
63		7852	7952	8051	8151	8250	8350	8449	8549	8648	8748	3 30
64		8847	8947	9046	9146	9245	9345	9444	9544	9643	9743	4 40
4365		9842	9942	0041	0141	0240	0340	0439	0539	0638	0738	5 50
66	640	0837	0937	1036	1136	1235	1335	1434	1534	1633	1732	6 59
67		1832	1931	2031	2130	2230	2329	2429	2528	2627	2727	7 69
68		2826	2926	3025	3125	3224	3323	3423	3522	3622	3721	8 79
69		3820	3920	4019	4119	4218	4317	4417	4516	4616	4715	9 89
4370		4814	4914	5013	5113	5212	5311	5411	5510	5609	5709	
71		5808	5907	6007	6106	6205	6305	6404	6504	6603	6702	
72		6802	6901	7000	7100	7199	7298	7398	7497	7596	7695	100
73		7795	7894	7993	8093	8192	8291	8391	8490	8589	8688	1 10
74		8788	8887	8986	9086	9185	9284	9383	9483	9582	9681	2 20
4375		9781	9880	9979	0078	0178	0277	0376	0475	0575	0674	3 30
76	641	0773	0872	0972	1071	1170	1269	1369	1468	1567	1666	4 40
77		1765	1865	1964	2063	2162	2262	2361	2460	2559	2658	5 50
78		2758	2857	2956	3055	3154	3254	3353	3452	3551	3650	6 60
79		3749	3849	3948	4047	4146	4245	4344	4444	4543	4642	7 70
4380		4741	4840	4939	5039	5138	5237	5336	5435	5534	5633	8 80
81		5733	5832	5931	6030	6129	6228	6327	6426	6526	6625	9 90
82		6724	6823	6922	7021	7120	7219	7318	7417	7517	7616	
83		7715	7814	7913	8012	8111	8210	8309	8408	8507	8606	
84		8705	8805	8904	9003	9102	9201	9300	9399	9498	9597	99
4385		9696	9795	9894	9993	0092	0191	0290	0389	0488	0587	1 10
86	642	0686	0785	0884	0983	1082	1181	1280	1379	1478	1577	2 20
87		1676	1775	1874	1973	2072	2171	2270	2369	2468	2567	3 30
88		2666	2765	2864	2963	3062	3161	3260	3359	3458	3557	4 40
89		3656	3755	3854	3953	4052	4151	4249	4348	4447	4546	5 50
4390		4645	4744	4843	4942	5041	5140	5239	5338	5437	5535	6 59
91		5634	5733	5832	5931	6030	6129	6228	6327	6426	6524	7 69
92		6623	6722	6821	6920	7019	7118	7217	7315	7414	7513	8 79
93		7612	7711	7810	7909	8007	8106	8205	8304	8403	8502	9 89
94		8601	8699	8798	8897	8996	9095	9194	9292	9391	9490	
4395		9589	9688	9786	9885	9984	0083	0182	0280	0379	0478	
96	643	0577	0676	0774	0873	0972	1071	1170	1268	1367	1466	98
97		1565	1663	1762	1861	1960	2058	2157	2256	2355	2454	1 10
98		2552	2651	2750	2848	2947	3046	3145	3243	3342	3441	2 20
99		3540	3638	3737	3836	3935	4033	4132	4231	4329	4428	3 29
4400		4527	4625	4724	4823	4922	5020	5119	5218	5316	5415	4 39
01		5514	5612	5711	5810	5908	6007	6106	6204	6303	6402	5 49
02		6500	6599	6698	6796	6895	6994	7092	7191	7290	7388	6 59
03		7487	7585	7684	7783	7881	7980	8079	8177	8276	8374	7 69
04		8473	8572	8670	8769	8868	8966	9065	9163	9262	9361	8 78
4405		9459	9558	9656	9755	9853	9952	0051	0149	0248	0346	9 88
06	644	0445	0543	0642	0741	0839	0938	1036	1135	1233	1332	
07		1431	1529	1628	1726	1825	1923	2022	2120	2219	2317	
08		2416	2514	2613	2711	2810	2908	3007	3105	3204	3302	99
09		3401	3499	3598	3696	3795	3893	3992	4090	4189	4287	1 10
4410		4386	4484	4583	4681	4780	4878	4977	5075	5174	5272	2 20
11		5371	5469	5567	5666	5764	5863	5961	6060	6158	6257	3 30
12		6355	6453	6552	6650	6749	6847	6946	7044	7142	7241	4 40
13		7339	7438	7536	7635	7733	7831	7930	8028	8127	8225	5 50
14		8323	8422	8520	8618	8717	8815	8914	9012	9110	9209	6 59
4415		9307	9405	9504	9602	9701	9799	9897	9996	0094	0192	7 69
16	645	0291	0389	0487	0586	0684	0782	0881	0979	1077	1176	8 79
17		1274	1372	1471	1569	1667	1766	1864	1962	2061	2159	9 89
18		2257	2355	2454	2552	2650	2749	2847	2945	3043	3142	
19		3240	3338	3437	3535	3633	3731	3830	3928	4026	4124	
4420		4223	4321	4419	4517	4616	4714	4812	4910	5009	5107	98
21		5205	5303	5402	5500	5598	5696	5795	5893	5991	6089	1 10
22		6187	6286	6384	6482	6580	6678	6777	6875	6973	7071	2 20
23		7169	7268	7366	7464	7562	7660	7758	7857	7955	8053	3 29
24		8151	8249	8348	8446	8544	8642	8740	8838	8936	9035	4 39
4425		9133	9231	9329	9427	9525	9623	9722	9820	9918	0016	5 49
26	646	0114	0212	0310	0408	0507	0605	0703	0801	0899	0997	6 59
27		1095	1193	1291	1390	1488	1586	1684	1782	1880	1978	7 69
28		2076	2174	2272	2370	2468	2566	2665	2763	2861	2959	8 78
29		3057	3155	3253	3351	3449	3547	3645	3743	3841	3939	9 88
N.		0	1	2	3	4	5	6	7	8	9	Diff.

Number 44300 *to* 44999
Logarithm 646 4037 *to* 653 2029

N.		0	1	2	3	4	5	6	7	8	9	Diff.
4430	646	4037	4135	4233	4331	4429	4527	4625	4723	4821	4919	98
31		5018	5116	5214	5312	5410	5508	5606	5704	5802	5900	1 10
32		5998	6096	6193	6291	6389	6487	6585	6683	6781	6879	2 20
33		6977	7075	7173	7271	7369	7467	7565	7663	7761	7859	3 29
34		7957	8055	8153	8251	8349	8447	8545	8642	8740	8838	4 39
4435		8936	9034	9132	9230	9328	9426	9524	9622	9720	9817	5 49
36		9915	0013	0111	0209	0307	0405	0503	0601	0699	0796	6 59
37	647	0894	0992	1090	1188	1286	1384	1482	1579	1677	1775	7 69
38		1873	1971	2069	2167	2264	2362	2460	2558	2656	2754	8 78
39		2851	2949	3047	3145	3243	3341	3438	3536	3634	3732	9 88
4440		3830	3928	4025	4123	4221	4319	4417	4514	4612	4710	
41		4808	4906	5003	5101	5199	5297	5394	5492	5590	5688	
42		5786	5883	5981	6079	6177	6274	6372	6470	6568	6665	
43		6763	6861	6959	7056	7154	7252	7350	7447	7545	7643	97
44		7741	7838	7936	8034	8131	8229	8327	8425	8522	8620	1 10
4445		8718	8815	8913	9011	9108	9206	9304	9402	9499	9597	2 19
46		9695	9792	9890	9988	0085	0183	0281	0378	0476	0574	3 29
47	648	0671	0769	0867	0964	1062	1160	1257	1355	1453	1550	4 39
48		1648	1745	1843	1941	2038	2136	2234	2331	2429	2526	5 49
49		2624	2722	2819	2917	3015	3112	3210	3307	3405	3503	6 58
4450		3600	3698	3795	3893	3990	4088	4186	4283	4381	4478	7 68
51		4576	4674	4771	4869	4966	5064	5161	5259	5356	5454	8 78
52		5552	5649	5747	5844	5942	6039	6137	6234	6332	6429	9 87
53		6527	6624	6722	6820	6917	7015	7112	7210	7307	7405	
54		7502	7600	7697	7795	7892	7990	8087	8185	8282	8380	
4455		8477	8575	8672	8770	8867	8964	9062	9159	9257	9354	98
56		9452	9549	9647	9744	9842	9939	0037	0134	0231	0329	1 10
57	649	0426	0524	0621	0719	0816	0914	1011	1108	1206	1303	2 20
58		1401	1498	1595	1693	1790	1888	1985	2083	2180	2277	3 29
59		2375	2472	2570	2667	2764	2862	2959	3056	3154	3251	4 39
4460		3349	3446	3543	3641	3738	3835	3933	4030	4128	4225	5 49
61		4322	4420	4517	4614	4712	4809	4906	5004	5101	5198	6 59
62		5296	5393	5490	5588	5685	5782	5880	5977	6074	6172	7 69
63		6269	6366	6463	6561	6658	6755	6853	6950	7047	7145	8 78
64		7242	7339	7436	7534	7631	7728	7826	7923	8020	8117	9 88
4465		8215	8312	8409	8506	8604	8701	8798	8895	8993	9090	
66		9187	9284	9382	9479	9576	9673	9771	9868	9965	0062	97
67	650	0160	0257	0354	0451	0548	0646	0743	0840	0937	1034	1 10
68		1132	1229	1326	1423	1520	1618	1715	1812	1909	2006	2 19
69		2104	2201	2298	2395	2492	2589	2687	2784	2881	2978	3 29
4470		3075	3172	3270	3367	3464	3561	3658	3755	3852	3950	4 39
71		4047	4144	4241	4338	4435	4532	4629	4727	4824	4921	5 49
72		5018	5115	5212	5309	5406	5503	5601	5698	5795	5892	6 58
73		5989	6086	6183	6280	6377	6474	6571	6669	6766	6863	7 68
74		6960	7057	7154	7251	7348	7445	7542	7639	7736	7833	8 78
4475		7930	8027	8124	8222	8319	8416	8513	8610	8707	8804	9 87
76		8901	8998	9095	9192	9289	9386	9483	9580	9677	9774	
77		9871	9968	0065	0162	0259	0356	0453	0550	0647	0744	
78	651	0841	0938	1035	1132	1229	1326	1423	1520	1617	1714	97
79		1811	1908	2005	2102	2198	2295	2392	2489	2586	2683	1 10
4480		2780	2877	2974	3071	3168	3265	3362	3459	3556	3653	2 19
81		3749	3846	3943	4040	4137	4234	4331	4428	4525	4622	3 29
82		4719	4815	4912	5009	5106	5203	5300	5397	5494	5591	4 39
83		5687	5784	5881	5978	6075	6172	6269	6365	6462	6559	5 49
84		6656	6753	6850	6947	7043	7140	7237	7334	7431	7528	6 58
4485		7624	7721	7818	7915	8012	8109	8205	8302	8399	8496	7 68
86		8593	8690	8786	8883	8980	9077	9174	9270	9367	9464	8 78
87		9561	9657	9754	9851	9948	0045	0141	0238	0335	0432	9 87
88	652	0528	0625	0722	0819	0916	1012	1109	1206	1303	1399	
89		1496	1593	1690	1786	1883	1980	2076	2173	2270	2367	
4490		2463	2560	2657	2754	2850	2947	3044	3140	3237	3334	96
91		3431	3527	3624	3721	3817	3914	4011	4107	4204	4301	1 10
92		4397	4494	4591	4688	4784	4881	4978	5074	5171	5268	2 19
93		5364	5461	5558	5654	5751	5847	5944	6041	6137	6234	3 29
94		6331	6427	6524	6621	6717	6814	6910	7007	7104	7200	4 38
4495		7297	7394	7490	7587	7683	7780	7877	7973	8070	8166	5 48
96		8263	8360	8456	8553	8649	8746	8843	8939	9036	9132	6 58
97		9229	9325	9422	9519	9615	9712	9808	9905	0001	0098	7 67
98	653	0195	0291	0388	0484	0581	0677	0774	0870	0967	1063	8 77
99		1160	1256	1353	1450	1546	1643	1739	1836	1932	2029	9 86
N.		0	1	2	3	4	5	6	7	8	9	Diff.

Number 45000 *to* 45699
Logarithm 653 2125 *to* 659 9067

N.	0	1	2	3	4	5	6	7	8	9	Diff.
4500	653 2125	2222	2318	2415	2511	2608	2704	2801	2897	2994	96
01	3090	3187	3283	3380	3476	3573	3669	3765	3862	3958	1 10
02	4055	4151	4248	4344	4441	4537	4634	4730	4827	4923	2 19
03	5019	5116	5212	5309	5405	5502	5598	5695	5791	5887	3 29
04	5984	6080	6177	6273	6369	6466	6562	6659	6755	6852	4 38
4505	6948	7044	7141	7237	7334	7430	7526	7623	7719	7815	5 48
06	7912	8008	8105	8201	8297	8394	8490	8586	8683	8779	6 58
07	8876	8972	9068	9165	9261	9357	9454	9550	9646	9743	7 67
08	9839	9935	0032	0128	0224	0321	0417	0513	0610	0706	8 77
09	654 0802	0899	0995	1091	1188	1284	1380	1477	1573	1669	9 86
4510	1765	1862	1958	2054	2151	2247	2343	2439	2536	2632	
11	2728	2825	2921	3017	3113	3210	3306	3402	3498	3595	
12	3691	3787	3883	3980	4076	4172	4268	4365	4461	4557	
13	4653	4750	4846	4942	5038	5134	5231	5327	5423	5519	97
14	5616	5712	5808	5904	6000	6097	6193	6289	6385	6481	1 10
4515	6578	6674	6770	6866	6962	7058	7155	7251	7347	7443	2 19
16	7539	7635	7732	7828	7924	8020	8116	8212	8309	8405	3 29
17	8501	8597	8693	8789	8885	8982	9078	9174	9270	9366	4 39
18	9462	9558	9655	9751	9847	9943	0039	0135	0231	0327	5 49
19	655 0423	0520	0616	0712	0808	0904	1000	1096	1192	1288	6 58
4520	1384	1480	1577	1673	1769	1865	1961	2057	2153	2249	7 68
21	2345	2441	2537	2633	2729	2825	2921	3017	3113	3210	8 78
22	3306	3402	3498	3594	3690	3786	3882	3978	4074	4170	9 87
23	4266	4362	4458	4554	4650	4746	4842	4938	5034	5130	
24	5226	5322	5418	5514	5610	5706	5802	5898	5994	6090	96
4525	6186	6282	6378	6474	6570	6666	6762	6858	6954	7050	1 10
26	7145	7241	7337	7433	7529	7625	7721	7817	7913	8009	2 19
27	8105	8201	8297	8393	8489	8585	8681	8776	8872	8968	3 29
28	9064	9160	9256	9352	9448	9544	9640	9736	9831	9927	4 38
29	656 0023	0119	0215	0311	0407	0503	0599	0694	0790	0886	5 48
4530	0982	1078	1174	1270	1365	1461	1557	1653	1749	1845	6 58
31	1941	2036	2132	2228	2324	2420	2516	2612	2707	2803	7 67
32	2899	2995	3091	3186	3282	3378	3474	3570	3666	3761	8 77
33	3857	3953	4049	4145	4240	4336	4432	4528	4624	4719	9 86
34	4815	4911	5007	5103	5198	5294	5390	5486	5581	5677	
4535	5773	5869	5964	6060	6156	6252	6347	6443	6539	6635	
36	6730	6826	6922	7018	7113	7209	7305	7401	7496	7592	95
37	7688	7784	7879	7975	8071	8166	8262	8358	8454	8549	1 10
38	8645	8741	8836	8932	9028	9123	9219	9315	9410	9506	2 19
39	9602	9698	9793	9889	9985	0080	0176	0272	0367	0463	3 29
4540	657 0559	0654	0750	0845	0941	1037	1132	1228	1324	1419	4 38
41	1515	1611	1706	1802	1898	1993	2089	2184	2280	2376	5 48
42	2471	2567	2663	2758	2854	2949	3045	3141	3236	3332	6 57
43	3427	3523	3619	3714	3810	3905	4001	4096	4192	4288	7 67
44	4383	4479	4574	4670	4766	4861	4957	5052	5148	5243	8 76
4545	5339	5434	5530	5626	5721	5817	5912	6008	6103	6199	9 86
46	6294	6390	6485	6581	6676	6772	6867	6963	7059	7154	
47	7250	7345	7441	7536	7632	7727	7823	7918	8014	8109	
48	8205	8300	8396	8491	8587	8682	8777	8873	8968	9064	96
49	9159	9255	9350	9446	9541	9637	9732	9828	9923	0019	1 10
4550	658 0114	0209	0305	0400	0496	0591	0687	0782	0877	0973	2 19
51	1068	1164	1259	1355	1450	1545	1641	1736	1832	1927	3 29
52	2023	2118	2213	2309	2404	2500	2595	2690	2786	2881	4 38
53	2977	3072	3167	3263	3358	3453	3549	3644	3740	3835	5 48
54	3930	4026	4121	4216	4312	4407	4502	4598	4693	4788	6 58
4555	4884	4979	5074	5170	5265	5361	5456	5551	5647	5742	7 67
56	5837	5932	6028	6123	6218	6314	6409	6504	6600	6695	8 77
57	6790	6886	6981	7076	7171	7267	7362	7457	7553	7648	9 86
58	7743	7838	7934	8029	8124	8220	8315	8410	8505	8601	
59	8696	8791	8886	8982	9077	9172	9267	9363	9458	9553	
4560	9648	9744	9839	9934	0029	0125	0220	0315	0410	0506	95
61	659 0601	0696	0791	0886	0982	1077	1172	1267	1362	1458	1 10
62	1553	1648	1743	1838	1934	2029	2124	2219	2314	2410	2 19
63	2505	2600	2695	2790	2885	2981	3076	3171	3266	3361	3 29
64	3456	3552	3647	3742	3837	3932	4027	4122	4218	4313	4 38
4565	4408	4503	4598	4693	4788	4883	4979	5074	5169	5264	5 48
66	5359	5454	5549	5644	5740	5835	5930	6025	6120	6215	6 57
67	6310	6405	6500	6595	6690	6786	6881	6976	7071	7166	7 67
68	7261	7356	7451	7546	7641	7736	7831	7926	8021	8117	8 76
69	8212	8307	8402	8497	8592	8687	8782	8877	8972	9067	9 86
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 45700 *to* 46399
Logarithm 659 9162 *to* 666 5086

N.	0	1	2	3	4	5	6	7	8	9	Diff.
4570	659 9162	9257	9352	9447	9542	9637	9732	9827	9922	0017	95
71	660 0112	0207	0302	0397	0492	0587	0682	0777	0872	0967	1 10
72	1062	1157	1252	1347	1442	1537	1632	1727	1822	1917	2 19
73	2012	2107	2202	2297	2392	2487	2582	2677	2772	2867	3 29
74	2962	3057	3151	3246	3341	3436	3531	3626	3721	3816	4 38
4575	3911	4006	4101	4196	4291	4386	4481	4575	4670	4765	5 48
76	4860	4955	5050	5145	5240	5335	5430	5524	5619	5714	6 57
77	5809	5904	5999	6094	6189	6284	6378	6473	6568	6663	7 67
78	6758	6853	6948	7042	7137	7232	7327	7422	7517	7612	8 76
79	7706	7801	7896	7991	8086	8181	8275	8370	8465	8560	9 86
4580	8655	8750	8844	8939	9034	9129	9224	9318	9413	9508	
81	9603	9698	9793	9887	9982	0077	0172	0266	0361	0456	
82	661 0551	0646	0740	0835	0930	1025	1120	1214	1309	1404	94
83	1499	1593	1688	1783	1878	1972	2067	2162	2257	2351	1 9
84	2446	2541	2636	2730	2825	2920	3015	3109	3204	3299	2 19
4585	3393	3488	3583	3678	3772	3867	3962	4056	4151	4246	3 28
86	4341	4435	4530	4625	4719	4814	4909	5003	5098	5193	4 38
87	5287	5382	5477	5571	5666	5761	5855	5950	6045	6139	5 47
88	6234	6329	6423	6518	6613	6707	6802	6897	6991	7086	6 56
89	7181	7275	7370	7464	7559	7654	7748	7843	7938	8032	7 66
4590	8127	8221	8316	8411	8505	8600	8695	8789	8884	8978	8 75
91	9073	9168	9262	9357	9451	9546	9640	9735	9830	9924	9 85
92	662 0019	0113	0208	0303	0397	0492	0586	0681	0775	0870	
93	0964	1059	1154	1248	1343	1437	1532	1626	1721	1815	
94	1910	2004	2099	2194	2288	2383	2477	2572	2666	2761	95
4595	2855	2950	3044	3139	3233	3328	3422	3517	3611	3706	1 10
96	3800	3895	3989	4084	4178	4273	4367	4462	4556	4651	2 19
97	4745	4840	4934	5028	5123	5217	5312	5406	5501	5595	3 29
98	5690	5784	5879	5973	6067	6162	6256	6351	6445	6540	4 38
99	6634	6729	6823	6917	7012	7106	7201	7295	7389	7484	5 48
4600	7578	7673	7767	7862	7956	8050	8145	8239	8334	8428	6 57
01	8522	8617	8711	8805	8900	8994	9089	9183	9277	9372	7 67
02	9466	9561	9655	9749	9844	9938	0032	0127	0221	0315	8 76
03	663 0410	0504	0598	0693	0787	0881	0976	1070	1164	1259	9 86
04	1353	1447	1542	1636	1730	1825	1919	2013	2108	2202	
4605	2296	2391	2485	2579	2674	2768	2862	2956	3051	3145	
06	3239	3334	3428	3522	3616	3711	3805	3899	3994	4088	94
07	4182	4276	4371	4465	4559	4653	4748	4842	4936	5030	1 9
08	5125	5219	5313	5407	5502	5596	5690	5784	5879	5973	2 19
09	6067	6161	6256	6350	6444	6538	6632	6727	6821	6915	3 28
4610	7009	7103	7198	7292	7386	7480	7574	7669	7763	7857	4 38
11	7951	8045	8140	8234	8328	8422	8516	8610	8705	8799	5 47
12	8893	8987	9081	9175	9270	9364	9458	9552	9646	9740	6 56
13	9835	9929	0023	0117	0211	0305	0399	0494	0588	0682	7 66
14	664 0776	0870	0964	1058	1152	1247	1341	1435	1529	1623	8 75
4615	1717	1811	1905	1999	2093	2188	2282	2376	2470	2564	9 85
16	2658	2752	2846	2940	3034	3128	3222	3317	3411	3505	
17	3599	3693	3787	3881	3975	4069	4163	4257	4351	4445	
18	4539	4633	4727	4821	4915	5009	5104	5198	5292	5386	94
19	5480	5574	5668	5762	5856	5950	6044	6138	6232	6326	1 9
4620	6420	6514	6608	6702	6796	6890	6984	7078	7172	7266	2 19
21	7360	7454	7548	7642	7736	7830	7924	8018	8111	8205	3 28
22	8299	8393	8487	8581	8675	8769	8863	8957	9051	9145	4 38
23	9239	9333	9427	9521	9615	9709	9803	9896	9990	0084	5 47
24	665 0178	0272	0366	0460	0554	0648	0742	0836	0930	1023	6 56
4625	1117	1211	1305	1399	1493	1587	1681	1775	1869	1962	7 66
26	2056	2150	2244	2338	2432	2526	2620	2713	2807	2901	8 75
27	2995	3089	3183	3277	3370	3464	3558	3652	3746	3840	9 85
28	3934	4027	4121	4215	4309	4403	4497	4590	4684	4778	
29	4872	4966	5059	5153	5247	5341	5435	5529	5622	5716	
4630	5810	5904	5998	6091	6185	6279	6373	6466	6560	6654	93
31	6748	6842	6935	7029	7123	7217	7310	7404	7498	7592	1 9
32	7686	7779	7873	7967	8061	8154	8248	8342	8436	8529	2 19
33	8623	8717	8810	8904	8998	9092	9185	9279	9373	9467	3 28
34	9560	9654	9748	9841	9935	0029	0123	0216	0310	0404	4 37
4635	666 0497	0591	0685	0778	0872	0966	1060	1153	1247	1341	5 47
36	1434	1528	1622	1715	1809	1903	1996	2090	2184	2277	6 56
37	2371	2465	2558	2652	2746	2839	2933	3027	3120	3214	7 65
38	3307	3401	3495	3588	3682	3776	3869	3963	4056	4150	8 74
39	4244	4337	4431	4525	4618	4712	4805	4899	4993	5086	9 84
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 46400 *to* 47099
Logarithm 666 5180 *to* 673 0117

N.		0	1	2	3	4	5	6	7	8	9	Diff.
4640	666	5180	5273	5367	5461	5554	5648	5741	5835	5929	6022	93
41		6116	6209	6303	6396	6490	6584	6677	6771	6864	6958	1 9
42		7051	7145	7238	7332	7426	7519	7613	7706	7800	7893	2 19
43		7987	8080	8174	8267	8361	8454	8548	8642	8735	8829	3 28
44		8922	9016	9109	9203	9296	9390	9483	9577	9670	9764	4 37
4645		9857	9951	0044	0138	0231	0325	0418	0512	0605	0699	5 47
46	667	0792	0886	0979	1072	1166	1259	1353	1446	1540	1633	6 56
47		1727	1820	1914	2007	2101	2194	2287	2381	2474	2568	7 65
48		2661	2755	2848	2941	3035	3128	3222	3315	3409	3502	8 74
49		3595	3689	3782	3876	3969	4063	4156	4249	4343	4436	9 84
4650		4530	4623	4716	4810	4903	4996	5090	5183	5277	5370	
51		5463	5557	5650	5744	5837	5930	6024	6117	6210	6304	
52		6397	6490	6584	6677	6770	6864	6957	7051	7144	7237	94
53		7331	7424	7517	7611	7704	7797	7891	7984	8077	8170	1 9
54		8264	8357	8450	8544	8637	8730	8824	8917	9010	9104	2 19
4655		9197	9290	9383	9477	9570	9663	9757	9850	9943	0036	3 28
56	668	0130	0223	0316	0410	0503	0596	0689	0783	0876	0969	4 38
57		1062	1156	1249	1342	1435	1529	1622	1715	1808	1902	5 47
58		1995	2088	2181	2275	2368	2461	2554	2647	2741	2834	6 56
59		2927	3020	3114	3207	3300	3393	3486	3580	3673	3766	7 66
4660		3859	3952	4046	4139	4232	4325	4418	4511	4605	4698	8 75
61		4791	4884	4977	5071	5164	5257	5350	5443	5536	5630	9 85
62		5723	5816	5909	6002	6095	6188	6282	6375	6468	6561	
63		6654	6747	6840	6934	7027	7120	7213	7306	7399	7492	
64		7585	7679	7772	7865	7958	8051	8144	8237	8330	8423	93
4665		8516	8610	8703	8796	8889	8982	9075	9168	9261	9354	1 9
66		9447	9540	9633	9727	9820	9913	0006	0099	0192	0285	2 19
67	669	0378	0471	0564	0657	0750	0843	0936	1029	1122	1215	3 28
68		1308	1402	1495	1588	1681	1774	1867	1960	2053	2146	4 37
69		2239	2332	2425	2518	2611	2704	2797	2890	2983	3076	5 47
4670		3169	3262	3355	3448	3541	3634	3727	3820	3913	4006	6 56
71		4099	4192	4285	4378	4471	4564	4656	4749	4842	4935	7 65
72		5028	5121	5214	5307	5400	5493	5586	5679	5772	5865	8 74
73		5958	6051	6144	6237	6330	6422	6515	6608	6701	6794	9 84
74		6887	6980	7073	7166	7259	7352	7445	7537	7630	7723	
4675		7816	7909	8002	8095	8188	8281	8373	8466	8559	8652	
76		8745	8838	8931	9024	9117	9209	9302	9395	9488	9581	92
77		9674	9767	9859	9952	0045	0138	0231	0324	0416	0509	1 9
78	670	0602	0695	0788	0881	0974	1066	1159	1252	1345	1438	2 18
79		1530	1623	1716	1809	1902	1995	2087	2180	2273	2366	3 28
4680		2459	2551	2644	2737	2830	2922	3015	3108	3201	3294	4 37
81		3386	3479	3572	3665	3758	3850	3943	4036	4129	4221	5 46
82		4314	4407	4500	4592	4685	4778	4871	4963	5056	5149	6 55
83		5242	5334	5427	5520	5613	5705	5798	5891	5983	6076	7 64
84		6169	6262	6354	6447	6540	6632	6725	6818	6911	7003	8 74
4685		7096	7189	7281	7374	7467	7559	7652	7745	7837	7930	9 83
86		8023	8116	8208	8301	8394	8486	8579	8672	8764	8857	
87		8950	9042	9135	9228	9320	9413	9505	9598	9691	9783	
88		9876	9969	0061	0154	0247	0339	0432	0524	0617	0710	93
89	671	0802	0895	0988	1080	1173	1265	1358	1451	1543	1636	1 9
4690		1728	1821	1914	2006	2099	2191	2284	2377	2469	2562	2 19
91		2654	2747	2839	2932	3025	3117	3210	3302	3395	3487	3 28
92		3580	3673	3765	3858	3950	4043	4135	4228	4320	4413	4 37
93		4506	4598	4691	4783	4876	4968	5061	5153	5246	5338	5 47
94		5431	5523	5616	5708	5801	5893	5986	6078	6171	6263	6 56
4695		6356	6448	6541	6633	6726	6818	6911	7003	7096	7188	7 65
96		7281	7373	7466	7558	7651	7743	7836	7928	8021	8113	8 74
97		8206	8298	8391	8483	8575	8668	8760	8853	8945	9038	9 84
98		9130	9223	9315	9407	9500	9592	9685	9777	9870	9962	
99	672	0054	0147	0239	0332	0424	0517	0609	0701	0794	0886	
4700		0979	1071	1163	1256	1348	1441	1533	1625	1718	1810	92
01		1903	1995	2087	2180	2272	2364	2457	2549	2642	2734	1 9
02		2826	2919	3011	3103	3196	3288	3380	3473	3565	3657	2 18
03		3750	3842	3934	4027	4119	4211	4304	4396	4488	4581	3 28
04		4673	4765	4858	4950	5042	5135	5227	5319	5412	5504	4 37
4705		5596	5689	5781	5873	5965	6058	6150	6242	6335	6427	5 46
06		6519	6612	6704	6796	6888	6981	7073	7165	7257	7350	6 55
07		7442	7534	7627	7719	7811	7903	7996	8088	8180	8272	7 64
08		8365	8457	8549	8641	8734	8826	8918	9010	9102	9195	8 74
09		9287	9379	9471	9564	9656	9748	9840	9932	0025	0117	9 83
N.		0	1	2	3	4	5	6	7	8	9	Diff.

Number 47100 *to* 47799
Logarithm 673 0209 *to* 679 4188

N.		0	1	2	3	4	5	6	7	8	9	Diff.
4710	673	0209	0301	0393	0486	0578	0670	0762	0854	0947	1039	93
11		1131	1223	1315	1408	1500	1592	1684	1776	1868	1961	1 9
12		2053	2145	2237	2329	2421	2514	2606	2698	2790	2882	2 19
13		2974	3067	3159	3251	3343	3435	3527	3619	3712	3804	3 28
14		3896	3988	4080	4172	4264	4356	4449	4541	4633	4725	4 37
4715		4817	4909	5001	5093	5185	5277	5370	5462	5554	5646	5 47
16		5738	5830	5922	6014	6106	6198	6290	6383	6475	6567	6 56
17		6659	6751	6843	6935	7027	7119	7211	7303	7395	7487	7 65
18		7579	7671	7763	7856	7948	8040	8132	8224	8316	8408	8 74
19		8500	8592	8684	8776	8868	8960	9052	9144	9236	9328	9 84
4720		9420	9512	9604	9696	9788	9880	9972	0064	0156	0248	
21	674	0340	0432	0524	0616	0708	0800	0892	0984	1076	1168	
22		1260	1352	1444	1536	1628	1720	1812	1904	1996	2088	
23		2179	2271	2363	2455	2547	2639	2731	2823	2915	3007	92
24		3099	3191	3283	3375	3467	3559	3650	3742	3834	3926	1 9
4725		4018	4110	4202	4294	4386	4478	4570	4661	4753	4845	2 18
26		4937	5029	5121	5213	5305	5397	5489	5580	5672	5764	3 28
27		5856	5948	6040	6132	6224	6315	6407	6499	6591	6683	4 37
28		6775	6867	6958	7050	7142	7234	7326	7418	7509	7601	5 46
29		7693	7785	7877	7969	8060	8152	8244	8336	8428	8520	6 55
4730		8611	8703	8795	8887	8979	9070	9162	9254	9346	9438	7 64
31		9529	9621	9713	9805	9897	9988	0080	0172	0264	0356	8 74
32	675	0447	0539	0631	0723	0814	0906	0998	1090	1182	1273	9 83
33		1365	1457	1549	1640	1732	1824	1916	2007	2099	2191	
34		2283	2374	2466	2558	2649	2741	2833	2925	3016	3108	91
4735		3200	3292	3383	3475	3567	3658	3750	3842	3934	4025	1 9
36		4117	4209	4300	4392	4484	4575	4667	4759	4850	4942	2 18
37		5034	5126	5217	5309	5401	5492	5584	5676	5767	5859	3 27
38		5951	6042	6134	6226	6317	6409	6501	6592	6684	6775	4 36
39		6867	6959	7050	7142	7234	7325	7417	7509	7600	7692	5 46
4740		7783	7875	7967	8058	8150	8242	8333	8425	8516	8608	6 55
41		8700	8791	8883	8974	9066	9158	9249	9341	9432	9524	7 64
42		9615	9707	9799	9890	9982	0073	0165	0257	0348	0440	8 73
43	676	0531	0623	0714	0806	0897	0989	1081	1172	1264	1355	9 82
44		1447	1538	1630	1721	1813	1905	1996	2088	2179	2271	
4745		2362	2454	2545	2637	2728	2820	2911	3003	3094	3186	
46		3277	3369	3460	3552	3643	3735	3826	3918	4009	4101	91
47		4192	4284	4375	4467	4558	4650	4741	4833	4924	5016	1 9
48		5107	5199	5290	5382	5473	5564	5656	5747	5839	5930	2 18
49		6022	6113	6205	6296	6387	6479	6570	6662	6753	6845	3 27
4750		6936	7028	7119	7210	7302	7393	7485	7576	7667	7759	4 36
51		7850	7942	8033	8125	8216	8307	8399	8490	8582	8673	5 46
52		8764	8856	8947	9038	9130	9221	9313	9404	9495	9587	6 55
53		9678	9770	9861	9952	0044	0135	0226	0318	0409	0500	7 64
54	677	0592	0683	0774	0866	0957	1049	1140	1231	1323	1414	8 73
4755		1505	1597	1688	1779	1871	1962	2053	2145	2236	2327	9 82
56		2418	2510	2601	2692	2784	2875	2966	3058	3149	3240	
57		3332	3423	3514	3605	3697	3788	3879	3971	4062	4153	
58		4244	4336	4427	4518	4609	4701	4792	4883	4975	5066	92
59		5157	5248	5340	5431	5522	5613	5705	5796	5887	5978	1 9
4760		6070	6161	6252	6343	6434	6526	6617	6708	6799	6891	2 18
61		6982	7073	7164	7255	7347	7438	7529	7620	7712	7803	3 28
62		7894	7985	8076	8168	8259	8350	8441	8532	8623	8715	4 37
63		8806	8897	8988	9079	9171	9262	9353	9444	9535	9626	5 46
64		9718	9809	9900	9991	0082	0173	0264	0356	0447	0538	6 55
4765	678	0629	0720	0811	0902	0994	1085	1176	1267	1358	1449	7 64
66		1540	1632	1723	1814	1905	1996	2087	2178	2269	2360	8 74
67		2452	2543	2634	2725	2816	2907	2998	3089	3180	3271	9 83
68		3362	3454	3545	3636	3727	3818	3909	4000	4091	4182	
69		4273	4364	4455	4546	4637	4729	4820	4911	5002	5093	
4770		5184	5275	5366	5457	5548	5639	5730	5821	5912	6003	91
71		6094	6185	6276	6367	6458	6549	6640	6731	6822	6913	1 9
72		7004	7095	7186	7277	7368	7459	7550	7641	7732	7823	2 18
73		7914	8005	8096	8187	8278	8369	8460	8551	8642	8733	3 27
74		8824	8915	9006	9097	9188	9279	9370	9461	9552	9643	4 36
4775		9734	9825	9916	0007	0098	0188	0279	0370	0461	0552	5 46
76	679	0643	0734	0825	0916	1007	1098	1189	1280	1371	1461	6 55
77		1552	1643	1734	1825	1916	2007	2098	2189	2280	2371	7 64
78		2461	2552	2643	2734	2825	2916	3007	3098	3189	3279	8 73
79		3370	3461	3552	3643	3734	3825	3916	4006	4097	4188	9 82
N.		0	1	2	3	4	5	6	7	8	9	Diff.

Number 47800 *to* 48499
Logarithm 679 4279 *to* 685 7328

N.		0	1	2	3	4	5	6	7	8	9	Diff.
4780	679	4279	4370	4461	4552	4642	4733	4824	4915	5006	5097	91
81		5187	5278	5369	5460	5551	5642	5732	5823	5914	6005	1 9
82		6096	6187	6277	6368	6459	6550	6641	6731	6822	6913	2 18
83		7004	7095	7185	7276	7367	7458	7549	7639	7730	7821	3 27
84		7912	8002	8093	8184	8275	8366	8456	8547	8638	8729	4 36
4785		8819	8910	9001	9092	9182	9273	9364	9455	9545	9636	5 46
86		9727	9818	9908	9999	0090	0181	0271	0362	0453	0544	6 55
87	680	0634	0725	0816	0906	0997	1088	1179	1269	1360	1451	7 64
88		1541	1632	1723	1814	1904	1995	2086	2176	2267	2358	8 73
89		2448	2539	2630	2720	2811	2902	2992	3083	3174	3264	9 82
4790		3355	3446	3536	3627	3718	3808	3899	3990	4080	4171	
91		4262	4352	4443	4534	4624	4715	4806	4896	4987	5077	
92		5168	5259	5349	5440	5531	5621	5712	5802	5893	5984	
93		6074	6165	6256	6346	6437	6527	6618	6709	6799	6890	90
94		6980	7071	7161	7252	7343	7433	7524	7614	7705	7796	1 9
4795		7886	7977	8067	8158	8248	8339	8430	8520	8611	8701	2 18
96		8792	8882	8973	9063	9154	9244	9335	9426	9516	9607	3 27
97		9697	9788	9878	9969	0059	0150	0240	0331	0421	0512	4 36
98	681	0602	0693	0783	0874	0964	1055	1145	1236	1327	1417	5 45
99		1507	1598	1688	1779	1869	1960	2050	2141	2231	2322	6 54
4800		2412	2503	2593	2684	2774	2865	2955	3046	3136	3227	7 63
01		3317	3408	3498	3588	3679	3769	3860	3950	4041	4131	8 72
02		4222	4312	4402	4493	4583	4674	4764	4855	4945	5035	9 81
03		5126	5216	5307	5397	5488	5578	5668	5759	5849	5940	
04		6030	6120	6211	6301	6392	6482	6572	6663	6753	6844	91
4805		6934	7024	7115	7205	7295	7386	7476	7567	7657	7747	1 9
06		7838	7928	8018	8109	8199	8289	8380	8470	8561	8651	2 18
07		8741	8832	8922	9012	9103	9193	9283	9374	9464	9554	3 27
08		9645	9735	9825	9916	0006	0096	0187	0277	0367	0457	4 36
09	682	0548	0638	0728	0819	0909	0999	1090	1180	1270	1360	5 46
4810		1451	1541	1631	1722	1812	1902	1992	2083	2173	2263	6 55
11		2354	2444	2534	2624	2715	2805	2895	2985	3076	3166	7 64
12		3256	3346	3437	3527	3617	3707	3798	3888	3978	4068	8 73
13		4159	4249	4339	4429	4520	4610	4700	4790	4880	4971	9 82
14		5061	5151	5241	5331	5422	5512	5602	5692	5783	5873	
4815		5963	6053	6143	6233	6324	6414	6504	6594	6684	6775	
16		6865	6955	7045	7135	7225	7316	7406	7496	7586	7676	90
17		7766	7857	7947	8037	8127	8217	8307	8398	8488	8578	1 9
18		8668	8758	8848	8938	9029	9119	9209	9299	9389	9479	2 18
19		9569	9659	9750	9840	9930	0020	0110	0200	0290	0380	3 27
4820	683	0470	0560	0651	0741	0831	0921	1011	1101	1191	1281	4 36
21		1371	1461	1551	1642	1732	1822	1912	2002	2092	2182	5 45
22		2272	2362	2452	2542	2632	2722	2812	2902	2993	3083	6 54
23		3173	3263	3353	3443	3533	3623	3713	3803	3893	3983	7 63
24		4073	4163	4253	4343	4433	4523	4613	4703	4793	4883	8 72
4825		4973	5063	5153	5243	5333	5423	5513	5603	5693	5783	9 81
26		5873	5963	6053	6143	6233	6323	6413	6503	6593	6683	
27		6773	6863	6953	7043	7133	7223	7313	7403	7493	7583	
28		7673	7763	7853	7942	8032	8122	8212	8302	8392	8482	90
29		8572	8662	8752	8842	8932	9022	9112	9202	9291	9381	1 9
4830		9471	9561	9651	9741	9831	9921	0011	0101	0191	0280	2 18
31	684	0370	0460	0550	0640	0730	0820	0910	1000	1089	1179	3 27
32		1269	1359	1449	1539	1629	1719	1808	1898	1988	2078	4 36
33		2168	2258	2348	2438	2527	2617	2707	2797	2887	2977	5 45
34		3066	3156	3246	3336	3426	3516	3605	3695	3785	3875	6 54
4835		3965	4055	4144	4234	4324	4414	4504	4594	4683	4773	7 63
36		4863	4953	5043	5132	5222	5312	5402	5492	5581	5671	8 72
37		5761	5851	5940	6030	6120	6210	6300	6389	6479	6569	9 81
38		6659	6748	6838	6928	7018	7107	7197	7287	7377	7466	
39		7556	7646	7736	7825	7915	8005	8095	8184	8274	8364	
4840		8454	8543	8633	8723	8813	8902	8992	9082	9171	9261	89
41		9351	9441	9530	9620	9710	9799	9889	9979	0068	0158	1 9
42	685	0248	0338	0427	0517	0607	0696	0786	0876	0965	1055	2 18
43		1145	1234	1324	1414	1503	1593	1683	1772	1862	1952	3 27
44		2041	2131	2221	2310	2400	2490	2579	2669	2759	2848	4 36
4845		2938	3027	3117	3207	3296	3386	3476	3565	3655	3744	5 45
46		3834	3924	4013	4103	4193	4282	4372	4461	4551	4641	6 53
47		4730	4820	4909	4999	5089	5178	5268	5357	5447	5537	7 62
48		5626	5716	5805	5895	5984	6074	6164	6253	6343	6432	8 71
49		6522	6611	6701	6791	6880	6970	7059	7149	7238	7328	9 80
N.		0	1	2	3	4	5	6	7	8	9	Diff.

Number 48500 *to* 49199
Logarithm 685 7417 *to* 691 9563

N.		0	1	2	3	4	5	6	7	8	9	Diff.
4850	685	7417	7507	7596	7686	7776	7865	7955	8044	8134	8223	89
51		8313	8402	8492	8581	8671	8760	8850	8939	9029	9118	1 9
52		9208	9297	9387	9476	9566	9655	9745	9834	9924	0013	2 18
53	686	0103	0192	0282	0371	0461	0550	0640	0729	0819	0908	3 27
54		0998	1087	1177	1266	1356	1445	1535	1624	1713	1803	4 36
4855		1892	1982	2071	2161	2250	2340	2429	2518	2608	2697	5 45
56		2787	2876	2966	3055	3145	3234	3323	3413	3502	3592	6 53
57		3681	3770	3860	3949	4039	4128	4217	4307	4396	4486	7 62
58		4575	4665	4754	4843	4933	5022	5111	5201	5290	5380	8 71
59		5469	5558	5648	5737	5826	5916	6005	6095	6184	6273	9 80
4860		6363	6452	6541	6631	6720	6809	6899	6988	7078	7167	
61		7256	7346	7435	7524	7614	7703	7792	7882	7971	8060	
62		8150	8239	8328	8418	8507	8596	8685	8775	8864	8953	
63		9043	9132	9221	9311	9400	9489	9578	9668	9757	9846	90
64		9936	0025	0114	0204	0293	0382	0471	0561	0650	0739	1 9
4865	687	0828	0918	1007	1096	1186	1275	1364	1453	1543	1632	2 18
66		1721	1810	1900	1989	2078	2167	2257	2346	2435	2524	3 27
67		2613	2703	2792	2881	2970	3060	3149	3238	3327	3416	4 36
68		3506	3595	3684	3773	3863	3952	4041	4130	4219	4309	5 45
69		4398	4487	4576	4665	4755	4844	4933	5022	5111	5200	6 54
4870		5290	5379	5468	5557	5646	5735	5825	5914	6003	6092	7 63
71		6181	6270	6360	6449	6538	6627	6716	6805	6895	6984	8 72
72		7073	7162	7251	7340	7429	7518	7608	7697	7786	7875	9 81
73		7964	8053	8142	8231	8321	8410	8499	8588	8677	8766	
74		8855	8944	9033	9123	9212	9301	9390	9479	9568	9657	89
4875		9746	9835	9924	0013	0103	0192	0281	0370	0459	0548	1 9
76	688	0637	0726	0815	0904	0993	1082	1171	1260	1349	1439	2 18
77		1528	1617	1706	1795	1884	1973	2062	2151	2240	2329	3 27
78		2418	2507	2596	2685	2774	2863	2952	3041	3130	3219	4 36
79		3308	3397	3486	3575	3664	3753	3842	3931	4020	4109	5 45
4880		4198	4287	4376	4465	4554	4643	4732	4821	4910	4999	6 53
81		5088	5177	5266	5355	5444	5533	5622	5711	5800	5889	7 62
82		5978	6067	6156	6245	6334	6423	6511	6600	6689	6778	8 71
83		6867	6956	7045	7134	7223	7312	7401	7490	7579	7668	9 80
84		7757	7845	7934	8023	8112	8201	8290	8379	8468	8557	
4885		8646	8735	8823	8912	9001	9090	9179	9268	9357	9446	
86		9535	9624	9712	9801	9890	9979	0068	0157	0246	0335	88
87	689	0423	0512	0601	0690	0779	0868	0957	1045	1134	1223	1 9
88		1312	1401	1490	1579	1667	1756	1845	1934	2023	2112	2 18
89		2200	2289	2378	2467	2556	2645	2733	2822	2911	3000	3 26
4890		3089	3177	3266	3355	3444	3533	3621	3710	3799	3888	4 35
91		3977	4065	4154	4243	4332	4421	4509	4598	4687	4776	5 44
92		4864	4953	5042	5131	5220	5308	5397	5486	5575	5663	6 53
93		5752	5841	5930	6018	6107	6196	6285	6373	6462	6551	7 62.
94		6640	6728	6817	6906	6995	7083	7172	7261	7350	7438	8 70
4895		7527	7616	7704	7793	7882	7971	8059	8148	8237	8325	9 79
96		8414	8503	8591	8680	8769	8858	8946	9035	9124	9212	
97		9301	9390	9478	9567	9656	9744	9833	9922	0010	0099	
98	690	0188	0276	0365	0454	0542	0631	0720	0808	0897	0986	89
99		1074	1163	1252	1340	1429	1518	1606	1695	1784	1872	1 9
4900		1961	2049	2138	2227	2315	2404	2493	2581	2670	2758	2 18
01		2847	2936	3024	3113	3201	3290	3379	3467	3556	3644	3 27
02		3733	3822	3910	3999	4087	4176	4265	4353	4442	4530	4 36
03		4619	4708	4796	4885	4973	5062	5150	5239	5327	5416	5 45
04		5505	5593	5682	5770	5859	5947	6036	6124	6213	6302	6 53
4905		6390	6479	6567	6656	6744	6833	6921	7010	7098	7187	7 62
06		7275	7364	7452	7541	7630	7718	7807	7895	7984	8072	8 71
07		8161	8249	8338	8426	8515	8603	8692	8780	8869	8957	9 80
08		9046	9134	9223	9311	9399	9488	9576	9665	9753	9842	
09		9930	0019	0107	0196	0284	0373	0461	0550	0638	0726	
4910	691	0815	0903	0992	1080	1169	1257	1346	1434	1522	1611	88
11		1699	1788	1876	1965	2053	2141	2230	2318	2407	2495	1 9
12		2584	2672	2760	2849	2937	3026	3114	3202	3291	3379	2 18
13		3468	3556	3644	3733	3821	3910	3998	4086	4175	4263	3 26
14		4352	4440	4528	4617	4705	4793	4882	4970	5058	5147	4 35
4915		5235	5324	5412	5500	5589	5677	5765	5854	5942	6030	5 44
16		6119	6207	6295	6384	6472	6560	6649	6737	6825	6914	6 53
17		7002	7090	7179	7267	7355	7444	7532	7620	7709	7797	7 62
18		7885	7974	8062	8150	8238	8327	8415	8503	8592	8680	8 70
19		8768	8857	8945	9033	9121	9210	9298	9386	9474	9563	9 79
N.		0	1	2	3	4	5	6	7	8	9	Diff.

Number 49200 *to* 49899
Logarithm 691 9651 *to* 698 0918

N.		0	1	2	3	4	5	6	7	8	9	Diff.
4920	691	9651	9739	9828	9916	0004	0092	0181	0269	0357	0445	89
21	692	0534	0622	0710	0798	0887	0975	1063	1151	1240	1328	1 9
22		1416	1504	1593	1681	1769	1857	1945	2034	2122	2210	2 18
23		2298	2387	2475	2563	2651	2739	2828	2916	3004	3092	3 27
24		3180	3269	3357	3445	3533	3621	3710	3798	3886	3974	4 36
4925		4062	4151	4239	4327	4415	4503	4591	4680	4768	4856	5 45
26		4944	5032	5120	5209	5297	5385	5473	5561	5649	5737	6 53
27		5826	5914	6002	6090	6178	6266	6354	6443	6531	6619	7 62
28		6707	6795	6883	6971	7059	7148	7236	7324	7412	7500	8 71
29		7588	7676	7764	7853	7941	8029	8117	8205	8293	8381	9 80
4930		8469	8557	8645	8733	8822	8910	8998	9086	9174	9262	
31		9350	9438	9526	9614	9702	9790	9878	9967	0055	0143	
32	693	0231	0319	0407	0495	0583	0671	0759	0847	0935	1023	88
33		1111	1199	1287	1375	1463	1551	1639	1727	1815	1903	1 9
34		1991	2079	2167	2256	2344	2432	2520	2608	2696	2784	2 18
4935		2872	2960	3048	3136	3224	3312	3400	3488	3576	3664	3 26
36		3752	3839	3927	4015	4103	4191	4279	4367	4455	4543	4 35
37		4631	4719	4807	4895	4983	5071	5159	5247	5335	5423	5 44
38		5511	5599	5687	5775	5863	5951	6039	6126	6214	6302	6 53
39		6390	6478	6566	6654	6742	6830	6918	7006	7094	7182	7 62
4940		7269	7357	7445	7533	7621	7709	7797	7885	7973	8061	8 70
41		8149	8236	8324	8412	8500	8588	8676	8764	8852	8940	9 79
42		9027	9115	9203	9291	9379	9467	9555	9643	9730	9818	
43		9906	9994	0082	0170	0258	0345	0433	0521	0609	0697	
44	694	0785	0872	0960	1048	1136	1224	1312	1399	1487	1575	87
4945		1663	1751	1839	1926	2014	2102	2190	2278	2366	2453	1 9
46		2541	2629	2717	2805	2892	2980	3068	3156	3244	3331	2 17
47		3419	3507	3595	3682	3770	3858	3946	4034	4121	4209	3 26
48		4297	4385	4472	4560	4648	4736	4824	4911	4999	5087	4 35
49		5175	5262	5350	5438	5526	5613	5701	5789	5877	5964	5 44
4950		6052	6140	6227	6315	6403	6491	6578	6666	6754	6842	6 52
51		6929	7017	7105	7192	7280	7368	7456	7543	7631	7719	7 61
52		7806	7894	7982	8069	8157	8245	8333	8420	8508	8596	8 70
53		8683	8771	8859	8946	9034	9122	9209	9297	9385	9472	9 78
54		9560	9648	9735	9823	9911	9998	0086	0174	0261	0349	
4955	695	0437	0524	0612	0700	0787	0875	0962	1050	1138	1225	
56		1313	1401	1488	1576	1663	1751	1839	1926	2014	2102	88
57		2189	2277	2364	2452	2540	2627	2715	2802	2890	2978	1 9
58		3065	3153	3240	3328	3416	3503	3591	3678	3766	3854	2 18
59		3941	4029	4116	4204	4291	4379	4467	4554	4642	4729	3 26
4960		4817	4904	4992	5079	5167	5255	5342	5430	5517	5605	4 35
61		5692	5780	5867	5955	6042	6130	6217	6305	6393	6480	5 44
62		6568	6655	6743	6830	6918	7005	7093	7180	7268	7355	6 53
63		7443	7530	7618	7705	7793	7880	7968	8055	8143	8230	7 62
64		8318	8405	8493	8580	8668	8755	8843	8930	9018	9105	8 70
4965		9193	9280	9367	9455	9542	9630	9717	9805	9892	9980	9 79
66	696	0067	0155	0242	0330	0417	0504	0592	0679	0767	0854	
67		0942	1029	1116	1204	1291	1379	1466	1554	1641	1728	
68		1816	1903	1991	2078	2166	2253	2340	2428	2515	2603	87
69		2690	2777	2865	2952	3040	3127	3214	3302	3389	3477	1 9
4970		3564	3651	3739	3826	3913	4001	4088	4176	4263	4350	2 17
71		4438	4525	4612	4700	4787	4874	4962	5049	5137	5224	3 26
72		5311	5399	5486	5573	5661	5748	5835	5923	6010	6097	4 35
73		6185	6272	6359	6447	6534	6621	6709	6796	6883	6970	5 44
74		7058	7145	7232	7320	7407	7494	7582	7669	7756	7844	6 52
4975		7931	8018	8105	8193	8280	8367	8455	8542	8629	8716	7 61
76		8804	8891	8978	9066	9153	9240	9327	9415	9502	9589	8 70
77		9676	9764	9851	9938	0025	0113	0200	0287	0374	0462	9 78
78	697	0549	0636	0723	0811	0898	0985	1072	1160	1247	1334	
79		1421	1508	1596	1683	1770	1857	1945	2032	2119	2206	
4980		2293	2381	2468	2555	2642	2729	2817	2904	2991	3078	87
81		3165	3253	3340	3427	3514	3601	3689	3776	3863	3950	1 9
82		4037	4124	4212	4299	4386	4473	4560	4647	4735	4822	2 17
83		4909	4996	5083	5170	5257	5345	5432	5519	5606	5693	3 26
84		5780	5867	5955	6042	6129	6216	6303	6390	6477	6565	4 35
4985		6652	6739	6826	6913	7000	7087	7174	7261	7349	7436	5 44
86		7523	7610	7697	7784	7871	7958	8045	8132	8220	8307	6 52
87		8394	8481	8568	8655	8742	8829	8916	9003	9090	9177	7 61
88		9264	9352	9439	9526	9613	9700	9787	9874	9961	0048	8 70
89	698	0135	0222	0309	0396	0483	0570	0657	0744	0831	0918	9 78
N.		0	1	2	3	4	5	6	7	8	9	Diff.

Number 49900 *to* 50599
Logarithm 698 1005 *to* 704 1419

N.		0	1	2	3	4	5	6	7	8	9	Diff.
4990	698	1005	1092	1180	1267	1354	1441	1528	1615	1702	1789	87
91		1876	1963	2050	2137	2224	2311	2398	2485	2572	2659	1 9
92		2746	2833	2920	3007	3094	3181	3268	3355	3442	3529	2 17
93		3616	3703	3790	3877	3964	4051	4138	4224	4311	4398	3 26
94		4485	4572	4659	4746	4833	4920	5007	5094	5181	5268	4 35
4995		5355	5442	5529	5616	5703	5790	5877	5964	6050	6137	5 44
96		6224	6311	6398	6485	6572	6659	6746	6833	6920	7007	6 52
97		7093	7180	7267	7354	7441	7528	7615	7702	7789	7876	7 61
98		7963	8049	8136	8223	8310	8397	8484	8571	8658	8744	8 70
99		8831	8918	9005	9092	9179	9266	9353	9439	9526	9613	9 78
5000		9700	9787	9874	9961	0047	0134	0221	0308	0395	0482	
01	699	0569	0655	0742	0829	0916	1003	1090	1176	1263	1350	
02		1437	1524	1611	1697	1784	1871	1958	2045	2131	2218	88
03		2305	2392	2479	2565	2652	2739	2826	2913	2999	3086	1 9
04		3173	3260	3347	3433	3520	3607	3694	3780	3867	3954	2 18
5005		4041	4128	4214	4301	4388	4475	4561	4648	4735	4822	3 26
06		4908	4995	5082	5169	5255	5342	5429	5516	5602	5689	4 35
07		5776	5863	5949	6036	6123	6210	6296	6383	6470	6556	5 44
08		6643	6730	6817	6903	6990	7077	7163	7250	7337	7424	6 53
09		7510	7597	7684	7770	7857	7944	8031	8117	8204	8291	7 62
5010		8377	8464	8551	8637	8724	8811	8897	8984	9071	9157	8 70
11		9244	9331	9417	9504	9591	9677	9764	9851	9937	0024	9 79
12	700	0111	0197	0284	0371	0457	0544	0630	0717	0804	0890	
13		0977	1064	1150	1237	1324	1410	1497	1583	1670	1757	
14		1843	1930	2017	2103	2190	2276	2363	2450	2536	2623	87
5015		2709	2796	2883	2969	3056	3142	3229	3316	3402	3489	1 9
16		3575	3662	3748	3835	3922	4008	4095	4181	4268	4354	2 17
17		4441	4528	4614	4701	4787	4874	4960	5047	5133	5220	3 26
18		5307	5393	5480	5566	5653	5739	5826	5912	5999	6085	4 35
19		6172	6258	6345	6432	6518	6605	6691	6778	6864	6951	5 44
5020		7037	7124	7210	7297	7383	7470	7556	7643	7729	7816	6 52
21		7902	7989	8075	8162	8248	8335	8421	8508	8594	8681	7 61
22		8767	8854	8940	9027	9113	9199	9286	9372	9459	9545	8 70
23		9632	9718	9805	9891	9978	0064	0151	0237	0323	0410	9 78
24	701	0496	0583	0669	0756	0842	0929	1015	1101	1188	1274	
5025		1361	1447	1534	1620	1706	1793	1879	1966	2052	2138	
26		2225	2311	2398	2484	2570	2657	2743	2830	2916	3002	86
27		3089	3175	3262	3348	3434	3521	3607	3694	3780	3866	1 9
28		3953	4039	4125	4212	4298	4385	4471	4557	4644	4730	2 17
29		4816	4903	4989	5075	5162	5248	5334	5421	5507	5594	3 26
5030		5680	5766	5853	5939	6025	6112	6198	6284	6371	6457	4 34
31		6543	6629	6716	6802	6888	6975	7061	7147	7234	7320	5 43
32		7406	7493	7579	7665	7752	7838	7924	8010	8097	8183	6 52
33		8269	8356	8442	8528	8614	8701	8787	8873	8960	9046	7 60
34		9132	9218	9305	9391	9477	9563	9650	9736	9822	9908	8 69
5035		9995	0081	0167	0254	0340	0426	0512	0598	0685	0771	9 77
36	702	0857	0943	1030	1116	1202	1288	1375	1461	1547	1633	
37		1720	1806	1892	1978	2064	2151	2237	2323	2409	2495	
38		2582	2668	2754	2840	2926	3013	3099	3185	3271	3357	86
39		3444	3530	3616	3702	3788	3874	3961	4047	4133	4219	1 9
5040		4305	4392	4478	4564	4650	4736	4822	4909	4995	5081	2 17
41		5167	5253	5339	5425	5512	5598	5684	5770	5856	5942	3 26
42		6028	6115	6201	6287	6373	6459	6545	6631	6717	6804	4 34
43		6890	6976	7062	7148	7234	7320	7406	7492	7579	7665	5 43
44		7751	7837	7923	8009	8095	8181	8267	8353	8440	8526	6 52
5045		8612	8698	8784	8870	8956	9042	9128	9214	9300	9386	7 60
46		9472	9559	9645	9731	9817	9903	9989	0075	0161	0247	8 69
47	703	0333	0419	0505	0591	0677	0763	0849	0935	1021	1107	9 77
48		1193	1279	1366	1452	1538	1624	1710	1796	1882	1968	
49		2054	2140	2226	2312	2398	2484	2570	2656	2742	2828	
5050		2914	3000	3086	3172	3258	3344	3430	3516	3602	3688	85
51		3774	3860	3946	4032	4118	4204	4290	4376	4461	4547	1 9
52		4633	4719	4805	4891	4977	5063	5149	5235	5321	5407	2 17
53		5493	5579	5665	5751	5837	5923	6009	6095	6181	6266	3 26
54		6352	6438	6524	6610	6696	6782	6868	6954	7040	7126	4 34
5055		7212	7298	7383	7469	7555	7641	7727	7813	7899	7985	5 43
56		8071	8157	8242	8328	8414	8500	8586	8672	8758	8844	6 51
57		8930	9015	9101	9187	9273	9359	9445	9531	9617	9702	7 60
58		9788	9874	9960	0046	0132	0218	0303	0389	0475	0561	8 68
59	704	0647	0733	0818	0904	0990	1076	1162	1248	1334	1419	9 77
N.		0	1	2	3	4	5	6	7	8	9	Diff.

Number 50600 *to* 51299
Logarithm 704 1505 *to* 710 1089

N.	0	1	2	3	4	5	6	7	8	9	Diff.
5060	704 1505	1591	1677	1763	1848	1934	2020	2106	2192	2278	86
61	2363	2449	2535	2621	2707	2792	2878	2964	3050	3136	1 9
62	3221	3307	3393	3479	3565	3650	3736	3822	3908	3993	2 17
63	4079	4165	4251	4337	4422	4508	4594	4680	4765	4851	3 26
64	4937	5023	5108	5194	5280	5366	5452	5537	5623	5709	4 34
5065	5794	5880	5966	6052	6137	6223	6309	6395	6480	6566	5 43
66	6652	6738	6823	6909	6995	7080	7166	7252	7338	7423	6 52
67	7509	7595	7680	7766	7852	7938	8023	8109	8195	8280	7 60
68	8366	8452	8537	8623	8709	8795	8880	8966	9052	9137	8 69
69	9223	9309	9394	9480	9566	9651	9737	9823	9908	9994	9 77
5070	705 0080	0165	0251	0337	0422	0508	0594	0679	0765	0850	
71	0936	1022	1107	1193	1279	1364	1450	1536	1621	1707	
72	1792	1878	1964	2049	2135	2221	2306	2392	2477	2563	85
73	2649	2734	2820	2905	2991	3077	3162	3248	3333	3419	1 9
74	3505	3590	3676	3761	3847	3933	4018	4104	4189	4275	2 17
5075	4360	4446	4532	4617	4703	4788	4874	4959	5045	5131	3 26
76	5216	5302	5387	5473	5558	5644	5729	5815	5901	5986	4 34
77	6072	6157	6243	6328	6414	6499	6585	6670	6756	6841	5 43
78	6927	7012	7098	7184	7269	7355	7440	7526	7611	7697	6 51
79	7782	7868	7953	8039	8124	8210	8295	8381	8466	8552	7 60
5080	8637	8723	8808	8894	8979	9065	9150	9236	9321	9406	8 68
81	9492	9577	9663	9748	9834	9919	0005	0090	0176	0261	9 77
82	706 0347	0432	0518	0603	0688	0774	0859	0945	1030	1116	
83	1201	1287	1372	1457	1543	1628	1714	1799	1885	1970	
84	2055	2141	2226	2312	2397	2483	2568	2653	2739	2824	86
5085	2910	2995	3080	3166	3251	3337	3422	3507	3593	3678	1 9
86	3764	3849	3934	4020	4105	4190	4276	4361	4447	4532	2 17
87	4617	4703	4788	4873	4959	5044	5130	5215	5300	5386	3 26
88	5471	5556	5642	5727	5812	5898	5983	6068	6154	6239	4 34
89	6325	6410	6495	6581	6666	6751	6837	6922	7007	7092	5 43
5090	7178	7263	7348	7434	7519	7604	7690	7775	7860	7946	6 52
91	8031	8116	8202	8287	8372	8457	8543	8628	8713	8799	7 60
92	8884	8969	9055	9140	9225	9310	9396	9481	9566	9651	8 69
93	9737	9822	9907	9993	0078	0163	0248	0334	0419	0504	9 77
94	707 0589	0675	0760	0845	0930	1016	1101	1186	1271	1357	
5095	1442	1527	1612	1698	1783	1868	1953	2039	2124	2209	
96	2294	2379	2465	2550	2635	2720	2805	2891	2976	3061	85
97	3146	3232	3317	3402	3487	3572	3658	3743	3828	3913	1 9
98	3998	4083	4169	4254	4339	4424	4509	4595	4680	4765	2 17
99	4850	4935	5020	5106	5191	5276	5361	5446	5531	5617	3 26
5100	5702	5787	5872	5957	6042	6128	6213	6298	6383	6468	4 34
01	6553	6638	6724	6809	6894	6979	7064	7149	7234	7319	5 43
02	7405	7490	7575	7660	7745	7830	7915	8000	8085	8171	6 51
03	8256	8341	8426	8511	8596	8681	8766	8851	8936	9022	7 60
04	9107	9192	9277	9362	9447	9532	9617	9702	9787	9872	8 68
5105	9957	0043	0128	0213	0298	0383	0468	0553	0638	0723	9 77
06	708 0808	0893	0978	1063	1148	1233	1318	1403	1488	1574	
07	1659	1744	1829	1914	1999	2084	2169	2254	2339	2424	
08	2509	2594	2679	2764	2849	2934	3019	3104	3189	3274	85
09	3359	3444	3529	3614	3699	3784	3869	3954	4039	4124	1 9
5110	4209	4294	4379	4464	4549	4634	4719	4804	4889	4974	2 17
11	5059	5144	5229	5314	5399	5484	5569	5654	5739	5823	3 26
12	5908	5993	6078	6163	6248	6333	6418	6503	6588	6673	4 34
13	6758	6843	6928	7013	7098	7183	7268	7352	7437	7522	5 43
14	7607	7692	7777	7862	7947	8032	8117	8202	8287	8371	6 51
5115	8456	8541	8626	8711	8796	8881	8966	9051	9136	9220	7 60
16	9305	9390	9475	9560	9645	9730	9815	9900	9984	0069	8 68
17	709 0154	0239	0324	0409	0494	0579	0663	0748	0833	0918	9 77
18	1003	1088	1173	1257	1342	1427	1512	1597	1682	1766	
19	1851	1936	2021	2106	2191	2275	2360	2445	2530	2615	
5120	2700	2784	2869	2954	3039	3124	3209	3293	3378	3463	84
21	3548	3633	3717	3802	3887	3972	4057	4141	4226	4311	1 8
22	4396	4481	4565	4650	4735	4820	4904	4989	5074	5159	2 17
23	5244	5328	5413	5498	5583	5667	5752	5837	5922	6006	3 25
24	6091	6176	6261	6345	6430	6515	6600	6684	6769	6854	4 34
5125	6939	7023	7108	7193	7278	7362	7447	7532	7617	7701	5 42
26	7786	7871	7955	8040	8125	8210	8294	8379	8464	8548	6 50
27	8633	8718	8803	8887	8972	9057	9141	9226	9311	9395	7 59
28	9480	9565	9650	9734	9819	9904	9988	0073	0158	0242	8 67
29	710 0327	0412	0496	0581	0666	0750	0835	0920	1004	1089	9 76
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 51300 *to* 51999
Logarithm 710 1174 *to* 715 9950

N.	0	1	2	3	4	5	6	7	8	9	Diff.
5130	710 1174	1258	1343	1428	1512	1597	1682	1766	1851	1936	85
31	2020	2105	2189	2274	2359	2443	2528	2613	2697	2782	1 9
32	2866	2951	3036	3120	3205	3290	3374	3459	3543	3628	2 17
33	3713	3797	3882	3966	4051	4136	4220	4305	4389	4474	3 26
34	4559	4643	4728	4812	4897	4982	5066	5151	5235	5320	4 34
5135	5404	5489	5574	5658	5743	5827	5912	5996	6081	6166	5 43
36	6250	6335	6419	6504	6588	6673	6757	6842	6927	7011	6 51
37	7096	7180	7265	7349	7434	7518	7603	7687	7772	7856	7 60
38	7941	8026	8110	8195	8279	8364	8448	8533	8617	8702	8 68
39	8786	8871	8955	9040	9124	9209	9293	9378	9462	9547	9 77
5140	9631	9716	9800	9885	9969	0054	0138	0223	0307	0392	
41	711 0476	0561	0645	0729	0814	0898	0983	1067	1152	1236	
42	1321	1405	1490	1574	1659	1743	1827	1912	1996	2081	84
43	2165	2250	2334	2419	2503	2587	2672	2756	2841	2925	1 8
44	3010	3094	3178	3263	3347	3432	3516	3601	3685	3769	2 17
5145	3854	3938	4023	4107	4191	4276	4360	4445	4529	4613	3 25
46	4698	4782	4867	4951	5035	5120	5204	5289	5373	5457	4 34
47	5542	5626	5710	5795	5879	5964	6048	6132	6217	6301	5 42
48	6385	6470	6554	6638	6723	6807	6892	6976	7060	7145	6 50
49	7229	7313	7398	7482	7566	7651	7735	7819	7904	7988	7 59
5150	8072	8157	8241	8325	8410	8494	8578	8663	8747	8831	8 67
51	8915	9000	9084	9168	9253	9337	9421	9506	9590	9674	9 76
52	9759	9843	9927	0011	0096	0180	0264	0349	0433	0517	
53	712 0601	0686	0770	0854	0939	1023	1107	1191	1276	1360	
54	1444	1528	1613	1697	1781	1865	1950	2034	2118	2202	85
5155	2287	2371	2455	2539	2624	2708	2792	2876	2961	3045	1 9
56	3129	3213	3298	3382	3466	3550	3634	3719	3803	3887	2 17
57	3971	4056	4140	4224	4308	4392	4477	4561	4645	4729	3 26
58	4813	4898	4982	5066	5150	5234	5319	5403	5487	5571	4 34
59	5655	5739	5824	5908	5992	6076	6160	6245	6329	6413	5 43
5160	6497	6581	6665	6750	6834	6918	7002	7086	7170	7254	6 51
61	7339	7423	7507	7591	7675	7759	7843	7928	8012	8096	7 60
62	8180	8264	8348	8432	8517	8601	8685	8769	8853	8937	8 68
63	9021	9105	9189	9274	9358	9442	9526	9610	9694	9778	9 77
64	9862	9946	0031	0115	0199	0283	0367	0451	0535	0619	
5165	713 0703	0787	0871	0956	1040	1124	1208	1292	1376	1460	
66	1544	1628	1712	1796	1880	1964	2048	2132	2217	2301	84
67	2385	2469	2553	2637	2721	2805	2889	2973	3057	3141	1 8
68	3225	3309	3393	3477	3561	3645	3729	3813	3897	3981	2 17
69	4065	4149	4233	4317	4401	4485	4569	4653	4737	4821	3 25
5170	4905	4989	5073	5157	5241	5325	5409	5493	5577	5661	4 34
71	5745	5829	5913	5997	6081	6165	6249	6333	6417	6501	5 42
72	6585	6669	6753	6837	6921	7005	7089	7173	7257	7341	6 50
73	7425	7509	7593	7677	7761	7845	7928	8012	8096	8180	7 59
74	8264	8348	8432	8516	8600	8684	8768	8852	8936	9020	8 67
5175	9104	9187	9271	9355	9439	9523	9607	9691	9775	9859	9 76
76	9943	0027	0110	0194	0278	0362	0446	0530	0614	0698	
77	714 0782	0866	0949	1033	1117	1201	1285	1369	1453	1537	
78	1620	1704	1788	1872	1956	2040	2124	2208	2291	2375	83
79	2459	2543	2627	2711	2795	2878	2962	3046	3130	3214	1 8
5180	3298	3381	3465	3549	3633	3717	3801	3884	3968	4052	2 17
81	4136	4220	4304	4387	4471	4555	4639	4723	4806	4890	3 25
82	4974	5058	5142	5226	5309	5393	5477	5561	5645	5728	4 33
83	5812	5896	5980	6063	6147	6231	6315	6399	6482	6566	5 42
84	6650	6734	6817	6901	6985	7069	7153	7236	7320	7404	6 50
5185	7488	7571	7655	7739	7823	7906	7990	8074	8158	8241	7 58
86	8325	8409	8493	8576	8660	8744	8828	8911	8995	9079	8 66
87	9162	9246	9330	9414	9497	9581	9665	9749	9832	9916	9 75
88	715 0000	0083	0167	0251	0335	0418	0502	0586	0669	0753	
89	0837	0920	1004	1088	1171	1255	1339	1423	1506	1590	
5190	1674	1757	1841	1925	2008	2092	2176	2259	2343	2427	84
91	2510	2594	2678	2761	2845	2929	3012	3096	3180	3263	1 8
92	3347	3430	3514	3598	3681	3765	3849	3932	4016	4100	2 17
93	4183	4267	4350	4434	4518	4601	4685	4769	4852	4936	3 25
94	5019	5103	5187	5270	5354	5438	5521	5605	5688	5772	4 34
5195	5856	5939	6023	6106	6190	6273	6357	6441	6524	6608	5 42
96	6691	6775	6859	6942	7026	7109	7193	7276	7360	7444	6 50
97	7527	7611	7694	7778	7861	7945	8029	8112	8196	8279	7 59
98	8363	8446	8530	8613	8697	8780	8864	8948	9031	9115	8 67
99	9198	9282	9365	9449	9532	9616	9699	9783	9866	9950	9 76
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 52000 *to* 52699
Logarithm 716 0033 *to* 721 8024

N.	0	1	2	3	4	5	6	7	8	9	Diff.
5200	716 0033	0117	0200	0284	0367	0451	0535	0618	0702	0785	83
01	0869	0952	1036	1119	1203	1286	1370	1453	1537	1620	1 8
02	1703	1787	1870	1954	2037	2121	2204	2288	2371	2455	2 17
03	2538	2622	2705	2789	2872	2956	3039	3123	3206	3289	3 25
04	3373	3456	3540	3623	3707	3790	3874	3957	4040	4124	4 33
5205	4207	4291	4374	4458	4541	4625	4708	4791	4875	4958	5 42
06	5042	5125	5208	5292	5375	5459	5542	5626	5709	5792	6 50
07	5876	5959	6043	6126	6209	6293	6376	6460	6543	6626	7 58
08	6710	6793	6877	6960	7043	7127	7210	7293	7377	7460	8 66
09	7544	7627	7710	7794	7877	7960	8044	8127	8211	8294	9 75
5210	8377	8461	8544	8627	8711	8794	8877	8961	9044	9127	
11	9211	9294	9377	9461	9544	9627	9711	9794	9877	9961	
12	717 0044	0127	0211	0294	0377	0461	0544	0627	0711	0794	84
13	0877	0961	1044	1127	1210	1294	1377	1460	1544	1627	1 8
14	1710	1794	1877	1960	2043	2127	2210	2293	2377	2460	2 17
5215	2543	2626	2710	2793	2876	2959	3043	3126	3209	3293	3 25
16	3376	3459	3542	3626	3709	3792	3875	3959	4042	4125	4 34
17	4208	4292	4375	4458	4541	4625	4708	4791	4874	4958	5 42
18	5041	5124	5207	5290	5374	5457	5540	5623	5707	5790	6 50
19	5873	5956	6039	6123	6206	6289	6372	6455	6539	6622	7 59
5220	6705	6788	6871	6955	7038	7121	7204	7287	7371	7454	8 67
21	7537	7620	7703	7786	7870	7953	8036	8119	8202	8286	9 76
22	8369	8452	8535	8618	8701	8784	8868	8951	9034	9117	
23	9200	9283	9367	9450	9533	9616	9699	9782	9865	9949	
24	718 0032	0115	0198	0281	0364	0447	0530	0614	0697	0780	83
5225	0863	0946	1029	1112	1195	1279	1362	1445	1528	1611	1 8
26	1694	1777	1860	1943	2026	2110	2193	2276	2359	2442	2 17
27	2525	2608	2691	2774	2857	2940	3023	3107	3190	3273	3 25
28	3356	3439	3522	3605	3688	3771	3854	3937	4020	4103	4 33
29	4186	4269	4353	4436	4519	4602	4685	4768	4851	4934	5 42
5230	5017	5100	5183	5266	5349	5432	5515	5598	5681	5764	6 50
31	5847	5930	6013	6096	6179	6262	6345	6428	6511	6594	7 58
32	6677	6760	6843	6926	7009	7092	7175	7258	7341	7424	8 66
33	7507	7590	7673	7756	7839	7922	8005	8088	8171	8254	9 75
34	8337	8420	8503	8586	8669	8752	8835	8918	9001	9084	
5235	9167	9250	9333	9416	9499	9582	9665	9748	9830	9913	
36	9996	0079	0162	0245	0328	0411	0494	0577	0660	0743	83
37	719 0826	0909	0992	1075	1157	1240	1323	1406	1489	1572	1 8
38	1655	1738	1821	1904	1987	2069	2152	2235	2318	2401	2 17
39	2484	2567	2650	2733	2816	2898	2981	3064	3147	3230	3 25
5240	3313	3396	3479	3562	3644	3727	3810	3893	3976	4059	4 33
41	4142	4224	4307	4390	4473	4556	4639	4722	4804	4887	5 42
42	4970	5053	5136	5219	5302	5384	5467	5550	5633	5716	6 50
43	5799	5881	5964	6047	6130	6213	6296	6378	6461	6544	7 58
44	6627	6710	6792	6875	6958	7041	7124	7207	7289	7372	8 66
5245	7455	7538	7621	7703	7786	7869	7952	8034	8117	8200	9 75
46	8283	8366	8448	8531	8614	8697	8780	8862	8945	9028	
47	9111	9193	9276	9359	9442	9524	9607	9690	9773	9856	
48	9938	0021	0104	0187	0269	0352	0435	0518	0600	0683	82
49	720 0766	0848	0931	1014	1097	1179	1262	1345	1428	1510	1 8
5250	1593	1676	1758	1841	1924	2007	2089	2172	2255	2337	2 16
51	2420	2503	2586	2668	2751	2834	2916	2999	3082	3164	3 25
52	3247	3330	3413	3495	3578	3661	3743	3826	3909	3991	4 33
53	4074	4157	4239	4322	4405	4487	4570	4653	4735	4818	5 41
54	4901	4983	5066	5149	5231	5314	5397	5479	5562	5645	6 49
5255	5727	5810	5892	5975	6058	6140	6223	6306	6388	6471	7 57
56	6554	6636	6719	6801	6884	6967	7049	7132	7215	7297	8 66
57	7380	7462	7545	7628	7710	7793	7875	7958	8041	8123	9 74
58	8206	8288	8371	8454	8536	8619	8701	8784	8867	8949	
59	9032	9114	9197	9279	9362	9445	9527	9610	9692	9775	
5260	9857	9940	0023	0105	0188	0270	0353	0435	0518	0600	83
61	721 0683	0766	0848	0931	1013	1096	1178	1261	1343	1426	1 8
62	1508	1591	1674	1756	1839	1921	2004	2086	2169	2251	2 17
63	2334	2416	2499	2581	2664	2746	2829	2911	2994	3076	3 25
64	3159	3241	3324	3406	3489	3571	3654	3736	3819	3901	4 33
5265	3984	4066	4149	4231	4314	4396	4479	4561	4644	4726	5 42
66	4809	4891	4973	5056	5138	5221	5303	5386	5468	5551	6 50
67	5633	5716	5798	5881	5963	6045	6128	6210	6293	6375	7 58
68	6458	6540	6623	6705	6787	6870	6952	7035	7117	7200	8 66
69	7282	7364	7447	7529	7612	7694	7777	7859	7941	8024	9 75
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 52700 *to* 53399
Logarithm 721 8106 *to* 727 5331

N.	0	1	2	3	4	5	6	7	8	9	Diff.
5270	721 8106	8189	8271	8353	8436	8518	8601	8683	8765	8848	82
71	8930	9013	9095	9177	9260	9342	9424	9507	9589	9672	1 8
72	9754	9836	9919	0001	0084	0166	0248	0331	0413	0495	2 16
73	722 0578	0660	0742	0825	0907	0990	1072	1154	1237	1319	3 25
74	1401	1484	1566	1648	1731	1813	1895	1978	2060	2142	4 33
5275	2225	2307	2389	2472	2554	2636	2719	2801	2883	2966	5 41
76	3048	3130	3212	3295	3377	3459	3542	3624	3706	3789	6 49
77	3871	3953	4036	4118	4200	4282	4365	4447	4529	4612	7 57
78	4694	4776	4858	4941	5023	5105	5188	5270	5352	5434	8 66
79	5517	5599	5681	5763	5846	5928	6010	6092	6175	6257	9 74
5280	6339	6421	6504	6586	6668	6750	6833	6915	6997	7079	
81	7162	7244	7326	7408	7491	7573	7655	7737	7820	7902	
82	7984	8066	8148	8231	8313	8395	8477	8559	8642	8724	83
83	8806	8888	8971	9053	9135	9217	9299	9382	9464	9546	1 8
84	9628	9710	9792	9875	9957	0039	0121	0203	0286	0368	2 17
5285	723 0450	0532	0614	0696	0779	0861	0943	1025	1107	1189	3 25
86	1272	1354	1436	1518	1600	1682	1765	1847	1929	2011	4 33
87	2093	2175	2257	2340	2422	2504	2586	2668	2750	2832	5 42
88	2914	2997	3079	3161	3243	3325	3407	3489	3571	3654	6 50
89	3736	3818	3900	3982	4064	4146	4228	4310	4393	4475	7 58
5290	4557	4639	4721	4803	4885	4967	5049	5131	5213	5296	8 66
91	5378	5460	5542	5624	5706	5788	5870	5952	6034	6116	9 75
92	6198	6280	6362	6445	6527	6609	6691	6773	6855	6937	
93	7019	7101	7183	7265	7347	7429	7511	7593	7675	7757	
94	7839	7921	8003	8086	8167	8250	8332	8414	8496	8578	82
5295	8660	8742	8824	8906	8988	9070	9152	9234	9316	9398	1 8
96	9480	9562	9644	9726	9808	9890	9972	0054	0136	0218	2 16
97	724 0300	0382	0464	0546	0628	0710	0792	0874	0956	1038	3 25
98	1120	1202	1283	1365	1447	1529	1611	1693	1775	1857	4 33
99	1939	2021	2103	2185	2267	2349	2431	2513	2595	2677	5 41
5300	2759	2841	2923	3005	3086	3168	3250	3332	3414	3496	6 49
01	3578	3660	3742	3824	3906	3988	4070	4151	4233	4315	7 57
02	4397	4479	4561	4643	4725	4807	4889	4971	5052	5134	8 66
03	5216	5298	5380	5462	5544	5626	5708	5790	5871	5953	9 74
04	6035	6117	6199	6281	6363	6445	6526	6608	6690	6772	
5305	6854	6936	7018	7099	7181	7263	7345	7427	7509	7591	
06	7672	7754	7836	7918	8000	8082	8164	8245	8327	8409	81
07	8491	8573	8655	8736	8818	8900	8982	9064	9146	9227	1 8
08	9309	9391	9473	9555	9636	9718	9800	9882	9964	0045	2 16
09	725 0127	0209	0291	0373	0454	0536	0618	0700	0782	0863	3 24
5310	0945	1027	1109	1191	1272	1354	1436	1518	1599	1681	4 32
11	1763	1845	1927	2008	2090	2172	2254	2335	2417	2499	5 41
12	2581	2662	2744	2826	2908	2989	3071	3153	3235	3316	6 49
13	3398	3480	3562	3643	3725	3807	3889	3970	4052	4134	7 57
14	4216	4297	4379	4461	4542	4624	4706	4788	4869	4951	8 65
5315	5033	5114	5196	5278	5360	5441	5523	5605	5686	5768	9 73
16	5850	5931	6013	6095	6176	6258	6340	6422	6503	6585	
17	6667	6748	6830	6912	6993	7075	7157	7238	7320	7402	
18	7483	7565	7647	7728	7810	7892	7973	8055	8137	8218	82
19	8300	8382	8463	8545	8626	8708	8790	8871	8953	9035	1 8
5320	9116	9198	9280	9361	9443	9524	9606	9688	9769	9851	2 16
21	9933	0014	0096	0177	0259	0341	0422	0504	0585	0667	3 25
22	726 0749	0830	0912	0994	1075	1157	1238	1320	1401	1483	4 33
23	1565	1646	1728	1809	1891	1973	2054	2136	2217	2299	5 41
24	2380	2462	2544	2625	2707	2788	2870	2951	3033	3115	6 49
5325	3196	3278	3359	3441	3522	3604	3685	3767	3849	3930	7 57
26	4012	4093	4175	4256	4338	4419	4501	4582	4664	4745	8 66
27	4827	4908	4990	5072	5153	5235	5316	5398	5479	5561	9 74
28	5642	5724	5805	5887	5968	6050	6131	6213	6294	6376	
29	6457	6539	6620	6702	6783	6865	6946	7028	7109	7191	
5330	7272	7354	7435	7517	7598	7679	7761	7842	7924	8005	81
31	8087	8168	8250	8331	8413	8494	8576	8657	8739	8820	1 8
32	8901	8983	9064	9146	9227	9309	9390	9472	9553	9634	2 16
33	9716	9797	9879	9960	0042	0123	0204	0286	0367	0449	3 24
34	727 0530	0612	0693	0774	0856	0937	1019	1100	1181	1263	4 32
5335	1344	1426	1507	1588	1670	1751	1833	1914	1995	2077	5 41
36	2158	2240	2321	2402	2484	2565	2647	2728	2809	2891	6 49
37	2972	3053	3135	3216	3298	3379	3460	3542	3623	3704	7 57
38	3786	3867	3948	4030	4111	4192	4274	4355	4437	4518	8 65
39	4599	4681	4762	4843	4925	5006	5087	5169	5250	5331	9 73
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 53400 *to* 54099
Logarithm 727 5413 *to* 733 1892

N.		0	1	2	3	4	5	6	7	8	9	Diff.
5340	727	5413	5494	5575	5657	5738	5819	5901	5982	6063	6144	82
41		6226	6307	6388	6470	6551	6632	6714	6795	6876	6958	1 8
42		7039	7120	7201	7283	7364	7445	7527	7608	7689	7770	2 16
43		7852	7933	8014	8096	8177	8258	8339	8421	8502	8583	3 25
44		8664	8746	8827	8908	8990	9071	9152	9233	9315	9396	4 33
5345		9477	9558	9640	9721	9802	9883	9965	0046	0127	0208	5 41
46	728	0290	0371	0452	0533	0614	0696	0777	0858	0939	1021	6 49
47		1102	1183	1264	1346	1427	1508	1589	1670	1752	1833	7 57
48		1914	1995	2076	2158	2239	2320	2401	2482	2564	2645	8 66
49		2726	2807	2888	2970	3051	3132	3213	3294	3375	3457	9 74
5350		3538	3619	3700	3781	3863	3944	4025	4106	4187	4268	
51		4350	4431	4512	4593	4674	4755	4836	4918	4999	5080	
52		5161	5242	5323	5404	5486	5567	5648	5729	5810	5891	81
53		5972	6054	6135	6216	6297	6378	6459	6540	6621	6703	1 8
54		6784	6865	6946	7027	7108	7189	7270	7351	7433	7514	2 16
5355		7595	7676	7757	7838	7919	8000	8081	8162	8244	8325	3 24
56		8406	8487	8568	8649	8730	8811	8892	8973	9054	9135	4 32
57		9216	9298	9379	9460	9541	9622	9703	9784	9865	9946	5 41
58	729	0027	0108	0189	0270	0351	0432	0513	0594	0675	0757	6 49
59		0838	0919	1000	1081	1162	1243	1324	1405	1486	1567	7 57
5360		1648	1729	1810	1891	1972	2053	2134	2215	2296	2377	8 65
61		2458	2539	2620	2701	2782	2863	2944	3025	3106	3187	9 73
62		3268	3349	3430	3511	3592	3673	3754	3835	3916	3997	
63		4078	4159	4240	4321	4402	4483	4564	4645	4726	4807	
64		4888	4969	5050	5131	5212	5292	5373	5454	5535	5616	81
5365		5697	5778	5859	5940	6021	6102	6183	6264	6345	6426	1 8
66		6507	6588	6669	6749	6830	6911	6992	7073	7154	7235	2 16
67		7316	7397	7478	7559	7640	7721	7801	7882	7963	8044	3 24
68		8125	8206	8287	8368	8449	8530	8610	8691	8772	8853	4 32
69		8934	9015	9096	9177	9258	9338	9419	9500	9581	9662	5 41
5370		9743	9824	9905	9985	0066	0147	0228	0309	0390	0471	6 49
71	730	0552	0632	0713	0794	0875	0956	1037	1118	1198	1279	7 57
72		1360	1441	1522	1603	1683	1764	1845	1926	2007	2088	8 65
73		2168	2249	2330	2411	2492	2573	2653	2734	2815	2896	9 73
74		2977	3057	3138	3219	3300	3381	3461	3542	3623	3704	
5375		3785	3865	3946	4027	4108	4189	4269	4350	4431	4512	
76		4593	4673	4754	4835	4916	4997	5077	5158	5239	5320	80
77		5400	5481	5562	5643	5723	5804	5885	5966	6046	6127	1 8
78		6208	6289	6369	6450	6531	6612	6692	6773	6854	6935	2 16
79		7015	7096	7177	7258	7338	7419	7500	7581	7661	7742	3 24
5380		7823	7903	7984	8065	8146	8226	8307	8388	8468	8549	4 32
81		8630	8711	8791	8872	8953	9033	9114	9195	9276	9356	5 40
82		9437	9518	9598	9679	9760	9840	9921	0002	0082	0163	6 48
83	731	0244	0324	0405	0486	0567	0647	0728	0809	0889	0970	7 56
84		1051	1131	1212	1292	1373	1454	1534	1615	1696	1776	8 64
5385		1857	1938	2018	2099	2180	2260	2341	2422	2502	2583	9 72
86		2663	2744	2825	2905	2986	3067	3147	3228	3309	3389	
87		3470	3550	3631	3712	3792	3873	3953	4034	4115	4195	
88		4276	4356	4437	4518	4598	4679	4759	4840	4921	5001	81
89		5082	5162	5243	5324	5404	5485	5565	5646	5727	5807	1 8
5390		5888	5968	6049	6129	6210	6291	6371	6452	6532	6613	2 16
91		6693	6774	6854	6935	7016	7096	7177	7257	7338	7418	3 24
92		7499	7579	7660	7740	7821	7902	7982	8063	8143	8224	4 32
93		8304	8385	8465	8546	8626	8707	8787	8868	8948	9029	5 41
94		9109	9190	9270	9351	9431	9512	9592	9673	9753	9834	6 49
5395		9914	9995	0075	0156	0236	0317	0397	0478	0558	0639	7 57
96	732	0719	0800	0880	0961	1041	1122	1202	1283	1363	1444	8 65
97		1524	1605	1685	1766	1846	1927	2007	2087	2168	2248	9 73
98		2329	2409	2490	2570	2651	2731	2812	2892	2972	3053	
99		3133	3214	3294	3375	3455	3535	3616	3696	3777	3857	
5400		3938	4018	4098	4179	4259	4340	4420	4501	4581	4661	80
01		4742	4822	4903	4983	5063	5144	5224	5305	5385	5465	1 8
02		5546	5626	5707	5787	5867	5948	6028	6109	6189	6269	2 16
03		6350	6430	6510	6591	6671	6752	6832	6912	6993	7073	3 24
04		7153	7234	7314	7394	7475	7555	7636	7716	7796	7877	4 32
5405		7957	8037	8118	8198	8278	8359	8439	8519	8600	8680	5 40
06		8760	8841	8921	9001	9082	9162	9242	9323	9403	9483	6 48
07		9564	9644	9724	9805	9885	9965	0046	0126	0206	0287	7 56
08	733	0367	0447	0527	0608	0688	0768	0849	0929	1009	1090	8 64
09		1170	1250	1330	1411	1491	1571	1652	1732	1812	1892	9 72
N.		0	1	2	3	4	5	6	7	8	9	Diff.

Number 54100 *to* 54799
Logarithm 733 1973 *to* 738 7726

N.		0	1	2	3	4	5	6	7	8	9	Diff.
5410	733	1973	2053	2133	2213	2294	2374	2454	2535	2615	2695	81
11		2775	2856	2936	3016	3096	3177	3257	3337	3417	3498	1 8
12		3578	3658	3738	3819	3899	3979	4059	4140	4220	4300	2 16
13		4380	4461	4541	4621	4701	4781	4862	4942	5022	5102	3 24
14		5183	5263	5343	5423	5503	5584	5664	5744	5824	5904	4 32
5415		5985	6065	6145	6225	6305	6386	6466	6546	6626	6706	5 41
16		6787	6867	6947	7027	7107	7187	7268	7348	7428	7508	6 49
17		7588	7669	7749	7829	7909	7989	8069	8150	8230	8310	7 57
18		8390	8470	8550	8630	8711	8791	8871	8951	9031	9111	8 65
19		9192	9272	9352	9432	9512	9592	9672	9752	9833	9913	9 73
5420		9993	0073	0153	0233	0313	0393	0474	0554	0634	0714	
21	734	0794	0874	0954	1034	1115	1195	1275	1355	1435	1515	
22		1595	1675	1755	1835	1916	1996	2076	2156	2236	2316	80
23		2396	2476	2556	2636	2716	2796	2877	2957	3037	3117	1 8
24		3197	3277	3357	3437	3517	3597	3677	3757	3837	3917	2 16
5425		3997	4077	4158	4238	4318	4398	4478	4558	4638	4718	3 24
26		4798	4878	4958	5038	5118	5198	5278	5358	5438	5518	4 32
27		5598	5678	5758	5838	5918	5998	6078	6158	6238	6318	5 40
28		6398	6478	6558	6638	6718	6798	6878	6958	7038	7118	6 48
29		7198	7278	7358	7438	7518	7598	7678	7758	7838	7918	7 56
5430		7998	8078	8158	8238	8318	8398	8478	8558	8638	8718	8 64
31		8798	8878	8958	9038	9118	9198	9278	9358	9438	9518	9 72
32		9598	9678	9758	9837	9917	9997	0077	0157	0237	0317	
33	735	0397	0477	0557	0637	0717	0797	0877	0957	1036	1116	
34		1196	1276	1356	1436	1516	1596	1676	1756	1836	1916	80
5435		1995	2075	2155	2235	2315	2395	2475	2555	2635	2715	1 8
36		2794	2874	2954	3034	3114	3194	3274	3354	3434	3513	2 16
37		3593	3673	3753	3833	3913	3993	4073	4152	4232	4312	3 24
38		4392	4472	4552	4632	4711	4791	4871	4951	5031	5111	4 32
39		5191	5270	5350	5430	5510	5590	5670	5749	5829	5909	5 40
5440		5989	6069	6149	6228	6308	6388	6468	6548	6628	6707	6 48
41		6787	6867	6947	7027	7107	7186	7266	7346	7426	7506	7 56
42		7585	7665	7745	7825	7905	7984	8064	8144	8224	8304	8 64
43		8383	8463	8543	8623	8702	8782	8862	8942	9022	9101	9 72
44		9181	9261	9341	9420	9500	9580	9660	9740	9819	9899	
5445		9979	0059	0138	0218	0298	0378	0457	0537	0617	0697	
46	736	0776	0856	0936	1016	1095	1175	1255	1335	1414	1494	79
47		1574	1653	1733	1813	1893	1972	2052	2132	2212	2291	1 8
48		2371	2451	2530	2610	2690	2770	2849	2929	3009	3088	2 16
49		3168	3248	3327	3407	3487	3567	3646	3726	3806	3885	3 24
5450		3965	4045	4124	4204	4284	4363	4443	4523	4602	4682	4 32
51		4762	4841	4921	5001	5080	5160	5240	5319	5399	5479	5 40
52		5558	5638	5718	5797	5877	5957	6036	6116	6196	6275	6 47
53		6355	6435	6514	6594	6674	6753	6833	6912	6992	7072	7 55
54		7151	7231	7311	7390	7470	7549	7629	7709	7788	7868	8 63
5455		7948	8027	8107	8186	8266	8346	8425	8505	8584	8664	9 71
56		8744	8823	8903	8982	9062	9142	9221	9301	9380	9460	
57		9540	9619	9699	9778	9858	9937	0017	0097	0176	0256	
58	737	0335	0415	0494	0574	0654	0733	0813	0892	0972	1051	80
59		1131	1210	1290	1370	1449	1529	1608	1688	1767	1847	1 8
5460		1926	2006	2086	2165	2245	2324	2404	2483	2563	2642	2 16
61		2722	2801	2881	2960	3040	3119	3199	3278	3358	3437	3 24
62		3517	3596	3676	3755	3835	3914	3994	4074	4153	4233	4 32
63		4312	4392	4471	4550	4630	4709	4789	4868	4948	5027	5 40
64		5107	5186	5266	5345	5425	5504	5584	5663	5743	5822	6 48
5465		5902	5981	6061	6140	6220	6299	6378	6458	6537	6617	7 56
66		6696	6776	6855	6935	7014	7094	7173	7252	7332	7411	8 64
67		7491	7570	7650	7729	7808	7888	7967	8047	8126	8206	9 72
68		8285	8364	8444	8523	8603	8682	8762	8841	8920	9000	
69		9079	9159	9238	9317	9397	9476	9556	9635	9714	9794	
5470		9873	9953	0032	0111	0191	0270	0350	0429	0508	0588	79
71	738	0667	0747	0826	0905	0985	1064	1143	1223	1302	1382	1 8
72		1461	1540	1620	1699	1778	1858	1937	2016	2096	2175	2 16
73		2254	2334	2413	2493	2572	2651	2731	2810	2889	2969	3 24
74		3048	3127	3207	3286	3365	3445	3524	3603	3683	3762	4 32
5475		3841	3921	4000	4079	4159	4238	4317	4396	4476	4555	5 40
76		4634	4714	4793	4872	4952	5031	5110	5190	5269	5348	6 47
77		5427	5507	5586	5665	5745	5824	5903	5982	6062	6141	7 55
78		6220	6300	6379	6458	6537	6617	6696	6775	6854	6934	8 63
79		7013	7092	7172	7251	7330	7409	7489	7568	7647	7726	9 71
N.		0	1	2	3	4	5	6	7	8	9	Diff.

Number 54800 *to* 55499
Logarithm 738 7806 *to* 744 2852

N.		0	1	2	3	4	5	6	7	8	9	Diff.
5480	738	7806	7885	7964	8043	8123	8202	8281	8360	8440	8519	80
81		8598	8677	8756	8836	8915	8994	9073	9153	9232	9311	1 8
82		9390	9470	9549	9628	9707	9786	9866	9945	0024	0103	2 16
83	739	0182	0262	0341	0420	0499	0578	0658	0737	0816	0895	3 24
84		0974	1054	1133	1212	1291	1370	1450	1529	1608	1687	4 32
5485		1766	1845	1925	2004	2083	2162	2241	2321	2400	2479	5 40
86		2558	2637	2716	2796	2875	2954	3033	3112	3191	3270	6 48
87		3350	3429	3508	3587	3666	3745	3824	3904	3983	4062	7 56
88		4141	4220	4299	4378	4458	4537	4616	4695	4774	4853	8 64
89		4932	5011	5091	5170	5249	5328	5407	5486	5565	5644	9 72
5490		5723	5803	5882	5961	6040	6119	6198	6277	6356	6435	
91		6514	6594	6673	6752	6831	6910	6989	7068	7147	7226	
92		7305	7384	7463	7543	7622	7701	7780	7859	7938	8017	
93		8096	8175	8254	8333	8412	8491	8570	8649	8728	8808	79
94		8887	8966	9045	9124	9203	9282	9361	9440	9519	9598	1 8
5495		9677	9756	9835	9914	9993	0072	0151	0230	0309	0388	2 16
96	740	0467	0546	0625	0704	0783	0862	0941	1020	1099	1178	3 24
97		1257	1336	1415	1494	1573	1652	1731	1810	1889	1968	4 32
98		2047	2126	2205	2284	2363	2442	2521	2600	2679	2758	5 40
99		2837	2916	2995	3074	3153	3232	3311	3390	3469	3548	6 47
5500		3627	3706	3785	3864	3943	4022	4101	4180	4259	4338	7 55
01		4416	4495	4574	4653	4732	4811	4890	4969	5048	5127	8 63
02		5206	5285	5364	5443	5522	5601	5679	5758	5837	5916	9 71
03		5995	6074	6153	6232	6311	6390	6469	6548	6626	6705	
04		6784	6863	6942	7021	7100	7179	7258	7337	7415	7494	79
5505		7573	7652	7731	7810	7889	7968	8047	8125	8204	8283	1 8
06		8362	8441	8520	8599	8678	8756	8835	8914	8993	9072	2 16
07		9151	9230	9308	9387	9466	9545	9624	9703	9782	9860	3 24
08		9939	0018	0097	0176	0255	0334	0412	0491	0570	0649	4 32
09	741	0728	0807	0885	0964	1043	1122	1201	1280	1358	1437	5 40
5510		1516	1595	1674	1752	1831	1910	1989	2068	2146	2225	6 47
11		2304	2383	2462	2541	2619	2698	2777	2856	2935	3013	7 55
12		3092	3171	3250	3328	3407	3486	3565	3644	3722	3801	8 63
13		3880	3959	4037	4116	4195	4274	4353	4431	4510	4589	9 71
14		4668	4746	4825	4904	4983	5061	5140	5219	5298	5376	
5515		5455	5534	5613	5691	5770	5849	5928	6006	6085	6164	
16		6243	6321	6400	6479	6557	6636	6715	6794	6872	6951	78
17		7030	7109	7187	7266	7345	7423	7502	7581	7660	7738	1 8
18		7817	7896	7974	8053	8132	8210	8289	8368	8447	8525	2 16
19		8604	8683	8761	8840	8919	8997	9076	9155	9233	9312	3 23
5520		9391	9469	9548	9627	9705	9784	9863	9941	0020	0099	4 31
21	742	0177	0256	0335	0413	0492	0571	0649	0728	0807	0885	5 39
22		0964	1043	1121	1200	1279	1357	1436	1515	1593	1672	6 47
23		1750	1829	1908	1986	2065	2144	2222	2301	2379	2458	7 55
24		2537	2615	2694	2773	2851	2930	3008	3087	3166	3244	8 62
5525		3323	3401	3480	3559	3637	3716	3794	3873	3952	4030	9 70
26		4109	4187	4266	4345	4423	4502	4580	4659	4737	4816	
27		4895	4973	5052	5130	5209	5288	5366	5445	5523	5602	
28		5680	5759	5837	5916	5995	6073	6152	6230	6309	6387	79
29		6466	6544	6623	6702	6780	6859	6937	7016	7094	7173	1 8
5530		7251	7330	7408	7487	7565	7644	7722	7801	7880	7958	2 16
31		8037	8115	8194	8272	8351	8429	8508	8586	8665	8743	3 24
32		8822	8900	8979	9057	9136	9214	9293	9371	9450	9528	4 32
33		9607	9685	9764	9842	9921	9999	0078	0156	0235	0313	5 40
34	743	0392	0470	0549	0627	0705	0784	0862	0941	1019	1098	6 47
5535		1176	1255	1333	1412	1490	1569	1647	1725	1804	1882	7 55
36		1961	2039	2118	2196	2275	2353	2431	2510	2588	2667	8 63
37		2745	2824	2902	2981	3059	3137	3216	3294	3373	3451	9 71
38		3530	3608	3686	3765	3843	3922	4000	4078	4157	4235	
39		4314	4392	4470	4549	4627	4706	4784	4862	4941	5019	
5540		5098	5176	5254	5333	5411	5490	5568	5646	5725	5803	78
41		5882	5960	6038	6117	6195	6273	6352	6430	6508	6587	1 8
42		6665	6744	6822	6900	6979	7057	7135	7214	7292	7370	2 16
43		7449	7527	7605	7684	7762	7841	7919	7997	8076	8154	3 23
44		8232	8311	8389	8467	8546	8624	8702	8781	8859	8937	4 31
5545		9016	9094	9172	9250	9329	9407	9485	9564	9642	9720	5 39
46		9799	9877	9955	0034	0112	0190	0268	0347	0425	0503	6 47
47	744	0582	0660	0738	0817	0895	0973	1051	1130	1208	1286	7 55
48		1365	1443	1521	1599	1678	1756	1834	1912	1991	2069	8 62
49		2147	2226	2304	2382	2460	2539	2617	2695	2773	2852	9 70
N.		0	1	2	3	4	5	6	7	8	9	Diff.

Number 55500 *to* 56199
Logarithm 744 2930 *to* 749 7286

N.		0	1	2	3	4	5	6	7	8	9	Diff.
5550	744	2930	3008	3086	3165	3243	3321	3399	3478	3556	3634	79
51		3712	3791	3869	3947	4025	4103	4182	4260	4338	4416	1 8
52		4495	4573	4651	4729	4807	4886	4964	5042	5120	5199	2 16
53		5277	5355	5433	5511	5590	5668	5746	5824	5902	5981	3 24
54		6059	6137	6215	6293	6372	6450	6528	6606	6684	6762	4 32
5555		6841	6919	6997	7075	7153	7232	7310	7388	7466	7544	5 40
56		7622	7701	7779	7857	7935	8013	8091	8170	8248	8326	6 47
57		8404	8482	8560	8638	8717	8795	8873	8951	9029	9107	7 55
58		9185	9264	9342	9420	9498	9576	9654	9732	9810	9889	8 63
59		9967	0045	0123	0201	0279	0357	0435	0514	0592	0670	9 71
5560	745	0748	0826	0904	0982	1060	1138	1217	1295	1373	1451	
61		1529	1607	1685	1763	1841	1919	1998	2076	2154	2232	
62		2310	2388	2466	2544	2622	2700	2778	2856	2934	3013	78
63		3091	3169	3247	3325	3403	3481	3559	3637	3715	3793	1 8
64		3871	3949	4027	4105	4183	4261	4340	4418	4496	4574	2 16
5565		4652	4730	4808	4886	4964	5042	5120	5198	5276	5354	3 23
66		5432	5510	5588	5666	5744	5822	5900	5978	6056	6134	4 31
67		6212	6290	6368	6446	6524	6602	6680	6758	6836	6914	5 39
68		6992	7070	7148	7226	7304	7382	7460	7538	7616	7694	6 47
69		7772	7850	7928	8006	8084	8162	8240	8318	8396	8474	7 55
5570		8552	8630	8708	8786	8864	8942	9020	9098	9176	9254	8 62
71		9332	9410	9487	9565	9643	9721	9799	9877	9955	0033	9 70
72	746	0111	0189	0267	0345	0423	0501	0579	0657	0735	0813	
73		0890	0968	1046	1124	1202	1280	1358	1436	1514	1592	
74		1670	1748	1825	1903	1981	2059	2137	2215	2293	2371	78
5575		2449	2527	2605	2682	2760	2838	2916	2994	3072	3150	1 8
76		3228	3306	3383	3461	3539	3617	3695	3773	3851	3929	2 16
77		4006	4084	4162	4240	4318	4396	4474	4552	4629	4707	3 23
78		4785	4863	4941	5019	5097	5174	5252	5330	5408	5486	4 31
79		5564	5641	5719	5797	5875	5953	6031	6108	6186	6264	5 39
5580		6342	6420	6498	6575	6653	6731	6809	6887	6965	7042	6 47
81		7120	7198	7276	7354	7431	7509	7587	7665	7743	7821	7 55
82		7898	7976	8054	8132	8210	8287	8365	8443	8521	8598	8 62
83		8676	8754	8832	8910	8987	9065	9143	9221	9299	9376	9 70
84		9454	9532	9610	9687	9765	9843	9921	9998	0076	0154	
5585	747	0232	0310	0387	0465	0543	0621	0698	0776	0854	0932	
86		1009	1087	1165	1243	1320	1398	1476	1554	1631	1709	77
87		1787	1864	1942	2020	2098	2175	2253	2331	2409	2486	1 8
88		2564	2642	2719	2797	2875	2953	3030	3108	3186	3263	2 15
89		3341	3419	3497	3574	3652	3730	3807	3885	3963	4040	3 23
5590		4118	4196	4273	4351	4429	4507	4584	4662	4740	4817	4 31
91		4895	4973	5050	5128	5206	5283	5361	5439	5516	5594	5 39
92		5672	5749	5827	5905	5982	6060	6138	6215	6293	6371	6 46
93		6448	6526	6603	6681	6759	6836	6914	6992	7069	7147	7 54
94		7225	7302	7380	7458	7535	7613	7690	7768	7846	7923	8 62
5595		8001	8079	8156	8234	8311	8389	8467	8544	8622	8699	9 69
96		8777	8855	8932	9010	9087	9165	9243	9320	9398	9475	
97		9553	9631	9708	9786	9863	9941	0019	0096	0174	0251	
98	748	0329	0407	0484	0562	0639	0717	0794	0872	0950	1027	78
99		1105	1182	1260	1337	1415	1492	1570	1648	1725	1803	1 8
5600		1880	1958	2035	2113	2190	2268	2346	2423	2501	2578	2 16
01		2656	2733	2811	2888	2966	3043	3121	3198	3276	3354	3 23
02		3431	3509	3586	3664	3741	3819	3896	3974	4051	4129	4 31
03		4206	4284	4361	4439	4516	4594	4671	4749	4826	4904	5 39
04		4981	5059	5136	5214	5291	5369	5446	5524	5601	5679	6 47
5605		5756	5834	5911	5989	6066	6144	6221	6299	6376	6453	7 55
06		6531	6608	6686	6763	6841	6918	6996	7073	7151	7228	8 62
07		7306	7383	7460	7538	7615	7693	7770	7848	7925	8003	9 70
08		8080	8157	8235	8312	8390	8467	8545	8622	8700	8777	
09		8854	8932	9009	9087	9164	9242	9319	9396	9474	9551	
5610		9629	9706	9783	9861	9938	0016	0093	0170	0248	0325	77
11	749	0403	0480	0557	0635	0712	0790	0867	0944	1022	1099	1 8
12		1177	1254	1331	1409	1486	1564	1641	1718	1796	1873	2 15
13		1950	2028	2105	2183	2260	2337	2415	2492	2569	2647	3 23
14		2724	2801	2879	2956	3034	3111	3188	3266	3343	3420	4 31
5615		3498	3575	3652	3730	3807	3884	3962	4039	4116	4194	5 39
16		4271	4348	4426	4503	4580	4658	4735	4812	4890	4967	6 46
17		5044	5122	5199	5276	5353	5431	5508	5585	5663	5740	7 54
18		5817	5895	5972	6049	6127	6204	6281	6358	6436	6513	8 62
19		6590	6668	6745	6822	6899	6977	7054	7131	7209	7286	9 69
N.		0	1	2	3	4	5	6	7	8	9	Diff.

Number 56200 *to* 56899
Logarithm 749 7363 *to* 755 1046

N.	0	1	2	3	4	5	6	7	8	9	Diff.
5620	749 7363	7440	7518	7595	7672	7750	7827	7904	7981	8059	78
21	8136	8213	8290	8368	8445	8522	8599	8677	8754	8831	1 8
22	8908	8986	9063	9140	9217	9295	9372	9449	9526	9604	2 16
23	9681	9758	9835	9913	9990	0067	0144	0221	0299	0376	3 23
24	750 0453	0530	0608	0685	0762	0839	0916	0994	1071	1148	4 31
5625	1225	1302	1380	1457	1534	1611	1688	1766	1843	1920	5 39
26	1997	2074	2152	2229	2306	2383	2460	2538	2615	2692	6 47
27	2769	2846	2924	3001	3078	3155	3232	3309	3387	3464	7 55
28	3541	3618	3695	3772	3850	3927	4004	4081	4158	4235	8 62
29	4312	4390	4467	4544	4621	4698	4775	4853	4930	5007	9 70
5630	5084	5161	5238	5315	5392	5470	5547	5624	5701	5778	
31	5855	5932	6010	6087	6164	6241	6318	6395	6472	6549	
32	6626	6704	6781	6858	6935	7012	7089	7166	7243	7320	77
33	7398	7475	7552	7629	7706	7783	7860	7937	8014	8091	1 8
34	8168	8246	8323	8400	8477	8554	8631	8708	8785	8862	2 15
5635	8939	9016	9093	9170	9247	9325	9402	9479	9556	9633	3 23
36	9710	9787	9864	9941	0018	0095	0172	0249	0326	0403	4 31
37	751 0480	0557	0634	0711	0789	0866	0943	1020	1097	1174	5 39
38	1251	1328	1405	1482	1559	1636	1713	1790	1867	1944	6 46
39	2021	2098	2175	2252	2329	2406	2483	2560	2637	2714	7 54
5640	2791	2868	2945	3022	3099	3176	3253	3330	3407	3484	8 62
41	3561	3638	3715	3792	3869	3946	4023	4100	4177	4254	9 69
42	4331	4408	4485	4562	4639	4716	4793	4870	4947	5024	
43	5101	5177	5254	5331	5408	5485	5562	5639	5716	5793	
44	5870	5947	6024	6101	6178	6255	6332	6409	6486	6563	77
5645	6639	6716	6793	6870	6947	7024	7101	7178	7255	7332	1 8
46	7409	7486	7563	7639	7716	7793	7870	7947	8024	8101	2 15
47	8178	8255	8332	8409	8485	8562	8639	8716	8793	8870	3 23
48	8947	9024	9101	9178	9254	9331	9408	9485	9562	9639	4 31
49	9716	9793	9870	9946	0023	0100	0177	0254	0331	0408	5 39
5650	752 0484	0561	0638	0715	0792	0869	0946	1023	1099	1176	6 46
51	1253	1330	1407	1484	1560	1637	1714	1791	1868	1945	7 54
52	2022	2098	2175	2252	2329	2406	2483	2559	2636	2713	8 62
53	2790	2867	2944	3020	3097	3174	3251	3328	3404	3481	9 69
54	3558	3635	3712	3788	3865	3942	4019	4096	4172	4249	
5655	4326	4403	4480	4556	4633	4710	4787	4864	4940	5017	
56	5094	5171	5248	5324	5401	5478	5555	5631	5708	5785	76
57	5862	5939	6015	6092	6169	6246	6322	6399	6476	6553	1 8
58	6629	6706	6783	6860	6936	7013	7090	7167	7243	7320	2 15
59	7397	7474	7550	7627	7704	7781	7857	7934	8011	8088	3 23
5660	8164	8241	8318	8394	8471	8548	8625	8701	8778	8855	4 30
61	8932	9008	9085	9162	9238	9315	9392	9469	9545	9622	5 38
62	9699	9775	9852	9929	0005	0082	0159	0236	0312	0389	6 46
63	753 0466	0542	0619	0696	0772	0849	0926	1002	1079	1156	7 53
64	1232	1309	1386	1462	1539	1616	1692	1769	1846	1922	8 61
5665	1999	2076	2152	2229	2306	2382	2459	2536	2612	2689	9 68
66	2766	2842	2919	2996	3072	3149	3226	3302	3379	3455	
67	3532	3609	3685	3762	3839	3915	3992	4069	4145	4222	
68	4298	4375	4452	4528	4605	4682	4758	4835	4911	4988	77
69	5065	5141	5218	5294	5371	5448	5524	5601	5677	5754	1 8
5670	5831	5907	5984	6060	6137	6214	6290	6367	6443	6520	2 15
71	6596	6673	6750	6826	6903	6979	7056	7133	7209	7286	3 23
72	7362	7439	7515	7592	7668	7745	7822	7898	7975	8051	4 31
73	8128	8204	8281	8357	8434	8511	8587	8664	8740	8817	5 39
74	8893	8970	9046	9123	9199	9276	9353	9429	9506	9582	6 46
5675	9659	9735	9812	9888	9965	0041	0118	0194	0271	0347	7 54
76	754 0424	0500	0577	0653	0730	0806	0883	0959	1036	1112	8 62
77	1189	1265	1342	1418	1495	1571	1648	1724	1801	1877	9 69
78	1954	2030	2107	2183	2260	2336	2413	2489	2566	2642	
79	2719	2795	2872	2948	3025	3101	3178	3254	3330	3407	
5680	3483	3560	3636	3713	3789	3866	3942	4019	4095	4171	76
81	4248	4324	4401	4477	4554	4630	4707	4783	4859	4936	1 8
82	5012	5089	5165	5242	5318	5394	5471	5547	5624	5700	2 15
83	5777	5853	5929	6006	6082	6159	6235	6311	6388	6464	3 23
84	6541	6617	6694	6770	6846	6923	6999	7076	7152	7228	4 30
5685	7305	7381	7457	7534	7610	7687	7763	7839	7916	7992	5 38
86	8069	8145	8221	8298	8374	8450	8527	8603	8680	8756	6 46
87	8832	8909	8985	9061	9138	9214	9290	9367	9443	9520	7 53
88	9596	9672	9749	9825	9901	9978	0054	0130	0207	0283	8 61
89	755 0359	0436	0512	0588	0665	0741	0817	0894	0970	1046	9 68
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 56900 *to* 57599
Logarithm 755 1123 *to* 760 4149

N.	0	1	2	3	4	5	6	7	8	9	Diff.
5690	755 1123	1199	1275	1352	1428	1504	1581	1657	1733	1810	77
91	1886	1962	2038	2115	2191	2267	2344	2420	2496	2573	1 8
92	2649	2725	2802	2878	2954	3030	3107	3183	3259	3336	2 15
93	3412	3488	3564	3641	3717	3793	3870	3946	4022	4098	3 23
94	4175	4251	4327	4403	4480	4556	4632	4709	4785	4861	4 31
5695	4937	5014	5090	5166	5242	5319	5395	5471	5547	5624	5 39
96	5700	5776	5852	5929	6005	6081	6157	6233	6310	6386	6 46
97	6462	6538	6615	6691	6767	6843	6920	6996	7072	7148	7 54
98	7224	7301	7377	7453	7529	7606	7682	7758	7834	7910	8 62
99	7987	8063	8139	8215	8291	8368	8444	8520	8596	8672	9 69
5700	8749	8825	8901	8977	9053	9130	9206	9282	9358	9434	
01	9510	9587	9663	9739	9815	9891	9967	0044	0120	0196	
02	756 0272	0348	0424	0501	0577	0653	0729	0805	0881	0958	76
03	1034	1110	1186	1262	1338	1414	1491	1567	1643	1719	1 8
04	1795	1871	1947	2024	2100	2176	2252	2328	2404	2480	2 15
5705	2556	2633	2709	2785	2861	2937	3013	3089	3165	3242	3 23
06	3318	3394	3470	3546	3622	3698	3774	3850	3927	4003	4 30
07	4079	4155	4231	4307	4383	4459	4535	4611	4687	4764	5 38
08	4840	4916	4992	5068	5144	5220	5296	5372	5448	5524	6 46
09	5600	5677	5753	5829	5905	5981	6057	6133	6209	6285	7 53
5710	6361	6437	6513	6589	6665	6741	6817	6893	6970	7046	8 61
11	7122	7198	7274	7350	7426	7502	7578	7654	7730	7806	9 68
12	7882	7958	8034	8110	8186	8262	8338	8414	8490	8566	
13	8642	8718	8794	8870	8946	9022	9098	9174	9250	9326	
14	9402	9478	9554	9630	9706	9782	9858	9934	0010	0086	76
5715	757 0162	0238	0314	0390	0466	0542	0618	0694	0770	0846	1 8
16	0922	0998	1074	1150	1226	1302	1378	1454	1530	1606	2 15
17	1682	1758	1834	1910	1986	2062	2138	2214	2290	2366	3 23
18	2442	2517	2593	2669	2745	2821	2897	2973	3049	3125	4 30
19	3201	3277	3353	3429	3505	3581	3657	3733	3808	3884	5 38
5720	3960	4036	4112	4188	4264	4340	4416	4492	4568	4044	6 46
21	4719	4795	4871	4947	5023	5099	5175	5251	5327	5403	7 53
22	5479	5554	5630	5706	5782	5858	5934	6010	6086	6162	8 61
23	6237	6313	6389	6465	6541	6617	6693	6769	6845	6920	9 68
24	6996	7072	7148	7224	7300	7376	7451	7527	7603	7679	
5725	7755	7831	7907	7982	8058	8134	8210	8286	8362	8438	
26	8513	8589	8665	8741	8817	8893	8968	9044	9120	9196	75
27	9272	9348	9423	9499	9575	9651	9727	9803	9878	9954	1 8
28	758 0030	0106	0182	0258	0333	0409	0485	0561	0637	0712	2 15
29	0788	0864	0940	1016	1091	1167	1243	1319	1395	1470	3 23
5730	1546	1622	1698	1774	1849	1925	2001	2077	2153	2228	4 30
31	2304	2380	2456	2531	2607	2683	2759	2835	2910	2986	5 38
32	3062	3138	3213	3289	3365	3441	3516	3592	3668	3744	6 45
33	3819	3895	3971	4047	4122	4198	4274	4350	4425	4501	7 53
34	4577	4653	4728	4804	4880	4956	5031	5107	5183	5258	8 60
5735	5334	5410	5486	5561	5637	5713	5789	5864	5940	6016	9 68
36	6091	6167	6243	6319	6394	6470	6546	6621	6697	6773	
37	6848	6924	7000	7076	7151	7227	7303	7378	7454	7530	
38	7605	7681	7757	7832	7908	7984	8060	8135	8211	8287	76
39	8362	8438	8514	8589	8665	8741	8816	8892	8968	9043	1 8
5740	9119	9195	9270	9346	9422	9497	9573	9649	9724	9800	2 15
41	9875	9951	0027	0102	0178	0254	0329	0405	0481	0556	3 23
42	759 0632	0708	0783	0859	0934	1010	1086	1161	1237	1313	4 30
43	1388	1464	1539	1615	1691	1766	1842	1917	1993	2069	5 38
44	2144	2220	2296	2371	2447	2522	2598	2674	2749	2825	6 46
5745	2900	2976	3052	3127	3203	3278	3354	3429	3505	3581	7 53
46	3656	3732	3807	3883	3959	4034	4110	4185	4261	4336	8 61
47	4412	4488	4563	4639	4714	4790	4865	4941	5016	5092	9 68
48	5168	5243	5319	5394	5470	5545	5621	5696	5772	5848	
49	5923	5999	6074	6150	6225	6301	6376	6452	6527	6603	
5750	6678	6754	6830	6905	6981	7056	7132	7207	7283	7358	75
51	7434	7509	7585	7660	7736	7811	7887	7962	8038	8113	1 8
52	8189	8264	8340	8415	8491	8566	8642	8717	8793	8868	2 15
53	8944	9019	9095	9170	9246	9321	9397	9472	9548	9623	3 23
54	9699	9774	9850	9925	0000	0076	0151	0227	0302	0378	4 30
5755	760 0453	0529	0604	0680	0755	0831	0906	0981	1057	1132	5 38
56	1208	1283	1359	1434	1510	1585	1661	1736	1811	1887	6 45
57	1962	2038	2113	2189	2264	2339	2415	2490	2566	2641	7 53
58	2717	2792	2867	2943	3018	3094	3169	3245	3320	3395	8 60
59	3471	3546	3622	3697	3772	3848	3923	3999	4074	4149	9 68
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 57600 *to* 58299
Logarithm. 760 4225 *to* 765 6611

N.	0	1	2	3	4	5	6	7	8	9	Diff.
5760	760 4225	4300	4376	4451	4526	4602	4677	4753	4828	4903	76
61	4979	5054	5130	5205	5280	5356	5431	5506	5582	5657	1 8
62	5733	5808	5883	5959	6034	6109	6185	6260	6336	6410	2 15
63	6486	6562	6637	6712	6788	6863	6938	7014	7089	7164	3 23
64	7240	7315	7390	7466	7541	7616	7692	7767	7842	7918	4 30
5765	7993	8068	8144	8219	8294	8370	8445	8520	8596	8671	5 38
66	8746	8822	8897	8972	9048	9123	9198	9274	9349	9424	6 46
67	9500	9575	9650	9725	9801	9876	9951	0027	0102	0177	7 53
68	761 0253	0328	0403	0478	0554	0629	0704	0780	0855	0930	8 61
69	1005	1081	1156	1231	1307	1382	1457	1532	1608	1683	9 68
5770	1758	1833	1909	1984	2059	2134	2210	2285	2360	2435	
71	2511	2586	2661	2737	2812	2887	2962	3037	3113	3188	
72	3263	3338	3414	3489	3564	3639	3715	3790	3865	3940	
73	4016	4091	4166	4241	4316	4392	4467	4542	4617	4693	
74	4768	4843	4918	4993	5069	5144	5219	5294	5369	5445	
5775	5520	5595	5670	5745	5821	5896	5971	6046	6121	6197	75
76	6272	6347	6422	6497	6573	6648	6723	6798	6873	6948	1 8
77	7024	7099	7174	7249	7324	7400	7475	7550	7625	7700	2 15
78	7775	7851	7926	8001	8076	8151	8226	8301	8377	8452	3 23
79	8527	8602	8677	8752	8828	8903	8978	9053	9128	9203	4 30
5780	9278	9354	9429	9504	9579	9654	9729	9804	9879	9955	5 38
81	762 0030	0105	0180	0255	0330	0405	0480	0556	0631	0706	6 45
82	0781	0856	0931	1006	1081	1156	1232	1307	1382	1457	7 53
83	1532	1607	1682	1757	1832	1907	1982	2058	2133	2208	8 60
84	2283	2358	2433	2508	2583	2658	2733	2808	2883	2959	9 68
5785	3034	3109	3184	3259	3334	3409	3484	3559	3634	3709	
86	3784	3859	3934	4009	4085	4160	4235	4310	4385	4460	
87	4535	4610	4685	4760	4835	4910	4985	5060	5135	5210	
88	5285	5360	5435	5510	5585	5660	5735	5810	5885	5960	
89	6035	6111	6186	6261	6336	6411	6486	6561	6636	6711	
5790	6786	6861	6936	7011	7086	7161	7236	7311	7386	7461	75
91	7536	7611	7686	7761	7836	7911	7986	8061	8136	8211	1 8
92	8286	8361	8435	8510	8585	8660	8735	8810	8885	8960	2 15
93	9035	9110	9185	9260	9335	9410	9485	9560	9635	9710	3 23
94	9785	9860	9935	0010	0085	0160	0235	0310	0385	0459	4 30
5795	763 0534	0609	0684	0759	0834	0909	0984	1059	1134	1209	5 38
96	1284	1359	1434	1509	1583	1658	1733	1808	1883	1958	6 45
97	2033	2108	2183	2258	2333	2408	2482	2557	2632	2707	7 53
98	2782	2857	2932	3007	3082	3157	3232	3306	3381	3456	8 60
99	3531	3606	3681	3756	3831	3906	3980	4055	4130	4205	9 68
5800	4280	4355	4430	4505	4579	4654	4729	4804	4879	4954	
01	5029	5104	5178	5253	5328	5403	5478	5553	5628	5702	
02	5777	5852	5927	6002	6077	6151	6226	6301	6376	6451	
03	6526	6601	6675	6750	6825	6900	6975	7050	7124	7199	
04	7274	7349	7424	7499	7573	7648	7723	7798	7873	7947	
5805	8022	8097	8172	8247	8321	8396	8471	8546	8621	8696	74
06	8770	8845	8920	8995	9070	9144	9219	9294	9369	9443	1 7
07	9518	9593	9668	9743	9817	9892	9967	0042	0117	0191	2 15
08	764 0266	0341	0416	0490	0565	0640	0715	0789	0864	0939	3 22
09	1014	1089	1163	1238	1313	1388	1462	1537	1612	1687	4 30
5810	1761	1836	1911	1986	2060	2135	2210	2285	2359	2434	5 37
11	2509	2583	2658	2733	2808	2882	2957	3032	3107	3181	6 44
12	3256	3331	3406	3480	3555	3630	3704	3779	3854	3929	7 52
13	4003	4078	4153	4227	4302	4377	4451	4526	4601	4676	8 59
14	4750	4825	4900	4974	5049	5124	5198	5273	5348	5423	9 67
5815	5497	5572	5647	5721	5796	5871	5945	6020	6095	6169	
16	6244	6319	6393	6468	6543	6617	6692	6767	6841	6916	
17	6991	7065	7140	7215	7289	7364	7439	7513	7588	7663	
18	7737	7812	7886	7961	8036	8110	8185	8260	8334	8409	
19	8484	8558	8633	8707	8782	8857	8931	9006	9081	9155	
5820	9230	9304	9379	9454	9528	9603	9678	9752	9827	9901	75
21	9976	0051	0125	0200	0274	0349	0424	0498	0573	0647	1 8
22	765 0722	0797	0871	0946	1020	1095	1170	1244	1319	1393	2 15
23	1468	1542	1617	1692	1766	1841	1915	1990	2065	2139	3 23
24	2214	2288	2363	2437	2512	2586	2661	2736	2810	2885	4 30
5825	2959	3034	3108	3183	3258	3332	3407	3481	3556	3630	5 38
26	3705	3779	3854	3928	4003	4078	4152	4227	4301	4376	6 45
27	4450	4525	4599	4674	4748	4823	4897	4972	5046	5121	7 53
28	5195	5270	5344	5419	5493	5568	5643	5717	5792	5866	8 60
29	5941	6015	6090	6164	6239	6313	6388	6462	6537	6611	9 68
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 58300 *to* 58999
Logarithm 765 6686 *to* 770 8447

N.	0	1	2	3	4	5	6	7	8	9	Diff.
5830	765 6686	6760	6835	6909	6984	7058	7132	7207	7281	7356	74
31	7430	7505	7579	7654	7728	7803	7877	7952	8026	8101	1 7
32	8175	8250	8324	8399	8473	8547	8622	8696	8771	8845	2 15
33	8920	8994	9069	9143	9218	9292	9366	9441	9515	9590	3 22
34	9664	9739	9813	9888	9962	0036	0111	0185	0260	0334	4 30
5835	766 0409	0483	0557	0632	0706	0781	0855	0930	1004	1078	5 37
36	1153	1227	1302	1376	1450	1525	1599	1674	1748	1823	6 44
37	1897	1971	2046	2120	2195	2269	2343	2418	2492	2567	7 52
38	2641	2715	2790	2864	2938	3013	3087	3162	3236	3310	8 59
39	3385	3459	3534	3608	3682	3757	3831	3905	3980	4054	9 67
5840	4128	4203	4277	4352	4426	4500	4575	4649	4723	4798	
41	4872	4946	5021	5095	5169	5244	5318	5393	5467	5541	
42	5616	5690	5764	5839	5913	5987	6062	6136	6210	6285	
43	6359	6433	6508	6582	6656	6730	6805	6879	6953	7028	
44	7102	7176	7251	7325	7399	7474	7548	7622	7697	7771	
5845	7845	7919	7994	8068	8142	8217	8291	8365	8440	8514	75
46	8588	8662	8737	8811	8885	8960	9034	9108	9182	9257	1 8
47	9331	9405	9479	9554	9628	9702	9777	9851	9925	9999	2 15
48	767 0074	0148	0222	0296	0371	0445	0519	0593	0668	0742	3 23
49	0816	0890	0965	1039	1113	1187	1262	1336	1410	1484	4 30
5850	1559	1633	1707	1781	1856	1930	2004	2078	2153	2227	5 38
51	2301	2375	2449	2524	2598	2672	2746	2821	2895	2969	6 45
52	3043	3117	3192	3266	3340	3414	3488	3563	3637	3711	7 53
53	3785	3859	3934	4008	4082	4156	4230	4305	4379	4453	8 60
54	4527	4601	4676	4750	4824	4898	4972	5046	5121	5195	9 68
5855	5269	5343	5417	5492	5566	5640	5714	5788	5862	5937	
56	6011	6085	6159	6233	6307	6381	6456	6530	6604	6678	
57	6752	6826	6901	6975	7049	7123	7197	7271	7345	7420	
58	7494	7568	7642	7716	7790	7864	7938	8013	8087	8161	
59	8235	8309	8383	8457	8531	8606	8680	8754	8828	8902	
5860	8976	9050	9124	9198	9273	9347	9421	9495	9569	9643	74
61	9717	9791	9865	9940	0014	0088	0162	0236	0310	0384	1 7
62	768 0458	0532	0606	0680	0754	0829	0903	0977	1051	1125	2 15
63	1199	1273	1347	1421	1495	1569	1643	1717	1791	1866	3 22
64	1940	2014	2088	2162	2236	2310	2384	2458	2532	2606	4 30
5865	2680	2754	2828	2902	2976	3050	3124	3198	3273	3347	5 37
66	3421	3495	3569	3643	3717	3791	3865	3939	4013	4087	6 44
67	4161	4235	4309	4383	4457	4531	4605	4679	4753	4827	7 52
68	4901	4975	5049	5123	5197	5271	5345	5419	5493	5567	8 59
69	5641	5715	5789	5863	5937	6011	6085	6159	6233	6307	9 67
5870	6381	6455	6529	6603	6677	6751	6825	6899	6973	7047	
71	7121	7195	7269	7343	7417	7491	7565	7639	7713	7787	
72	7860	7934	8008	8082	8156	8230	8304	8378	8452	8526	
73	8600	8674	8748	8822	8896	8970	9044	9118	9192	9265	
74	9339	9413	9487	9561	9635	9709	9783	9857	9931	0005	
5875	769 0079	0153	0227	0300	0374	0448	0522	0596	0670	0744	74
76	0818	0892	0966	1040	1114	1187	1261	1335	1409	1483	1 7
77	1557	1631	1705	1779	1852	1926	2000	2074	2148	2222	2 15
78	2296	2370	2444	2517	2591	2665	2739	2813	2887	2961	3 22
79	3035	3108	3182	3256	3330	3404	3478	3552	3626	3699	4 30
5880	3773	3847	3921	3995	4069	4143	4216	4290	4364	4438	5 37
81	4512	4586	4659	4733	4807	4881	4955	5029	5103	5176	6 44
82	5250	5324	5398	5472	5546	5619	5693	5767	5841	5915	7 52
83	5988	6062	6136	6210	6284	6358	6431	6505	6579	6653	8 59
84	6727	6800	6874	6948	7022	7096	7169	7243	7317	7391	9 67
5885	7465	7538	7612	7686	7760	7834	7907	7981	8055	8129	
86	8203	8276	8350	8424	8498	8571	8645	8719	8793	8867	
87	8940	9014	9088	9162	9235	9309	9383	9457	9530	9604	
88	9678	9752	9826	9899	9973	0047	0121	0194	0268	0342	
89	770 0416	0489	0563	0637	0711	0784	0858	0932	1005	1079	
5890	1153	1227	1300	1374	1448	1522	1595	1669	1743	1817	73
91	1890	1964	2038	2111	2185	2259	2333	2406	2480	2554	1 7
92	2627	2701	2775	2849	2922	2996	3070	3143	3217	3291	2 15
93	3364	3438	3512	3585	3659	3733	3807	3880	3954	4028	3 22
94	4101	4175	4249	4322	4396	4470	4543	4617	4691	4764	4 29
5895	4838	4912	4985	5059	5133	5206	5280	5354	5427	5501	5 37
96	5575	5648	5722	5796	5869	5943	6017	6090	6164	6238	6 44
97	6311	6385	6459	6532	6606	6679	6753	6827	6900	6974	7 51
98	7048	7121	7195	7269	7342	7416	7489	7563	7637	7710	8 58
99	7784	7858	7931	8005	8078	8152	8226	8299	8373	8447	9 66
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 59000 *to* 59699
Logarithm 770 8520 *to* 775 9671

N.	0	1	2	3	4	5	6	7	8	9	Diff.		
5900	770 8520	8594	8667	8741	8815	8888	8962	9035	9109	9183			74
01	9256	9330	9403	9477	9551	9624	9698	9771	9845	9918		1	7
02	9992	0066	0139	0213	0286	0360	0434	0507	0581	0654		2	15
03	771 0728	0801	0875	0949	1022	1096	1169	1243	1316	1390		3	22
04	1463	1537	1611	1684	1758	1831	1905	1978	2052	2125		4	30
5905	2199	2273	2346	2420	2493	2567	2640	2714	2787	2861		5	37
06	2934	3008	3081	3155	3229	3302	3376	3449	3523	3596		6	44
07	3670	3743	3817	3890	3964	4037	4111	4184	4258	4331		7	52
08	4405	4478	4552	4625	4699	4772	4846	4919	4993	5066		8	59
09	5140	5213	5287	5360	5434	5507	5581	5654	5728	5801		9	67
5910	5875	5948	6022	6095	6169	6242	6316	6389	6463	6536			
11	6610	6683	6757	6830	6903	6977	7050	7124	7197	7271			
12	7344	7418	7491	7565	7638	7712	7785	7858	7932	8005			
13	8079	8152	8226	8299	8373	8446	8519	8593	8666	8740			
14	8813	8887	8960	9034	9107	9180	9254	9327	9401	9474			
5915	9547	9621	9694	9768	9841	9915	9988	0061	0135	0208			73
16	772 0282	0355	0428	0502	0575	0649	0722	0795	0869	0942		1	7
17	1016	1089	1162	1236	1309	1383	1456	1529	1603	1676		2	15
18	1750	1823	1896	1970	2043	2117	2190	2263	2337	2410		3	22
19	2483	2557	2630	2704	2777	2850	2924	2997	3070	3144		4	29
5920	3217	3290	3364	3437	3510	3584	3657	3731	3804	3877		5	37
21	3951	4024	4097	4171	4244	4317	4391	4464	4537	4611		6	44
22	4684	4757	4831	4904	4977	5051	5124	5197	5271	5344		7	51
23	5417	5491	5564	5637	5711	5784	5857	5931	6004	6077		8	58
24	6150	6224	6297	6370	6444	6517	6590	6664	6737	6810		9	66
5925	6884	6957	7030	7103	7177	7250	7323	7397	7470	7543			
26	7616	7690	7763	7836	7910	7983	8056	8129	8203	8276			
27	8349	8423	8496	8569	8642	8716	8789	8862	8935	9009			
28	9082	9155	9228	9302	9375	9448	9521	9595	9668	9741			
29	9815	9888	9961	0034	0107	0181	0254	0327	0400	0474			
5930	773 0547	0620	0693	0767	0840	0913	0986	1060	1133	1206			74
31	1279	1352	1426	1499	1572	1645	1719	1792	1865	1938		1	7
32	2011	2085	2158	2231	2304	2377	2451	2524	2597	2670		2	15
33	2743	2817	2890	2963	3036	3109	3183	3256	3329	3402		3	22
34	3475	3549	3622	3695	3768	3841	3915	3988	4061	4134		4	30
5935	4207	4280	4354	4427	4500	4573	4646	4719	4793	4866		5	37
36	4939	5012	5085	5158	5232	5305	5378	5451	5524	5597		6	44
37	5670	5744	5817	5890	5963	6036	6109	6183	6256	6329		7	52
38	6402	6475	6548	6621	6694	6768	6841	6914	6987	7060		8	59
39	7133	7206	7280	7353	7426	7499	7572	7645	7718	7791		9	67
5940	7864	7938	8011	8084	8157	8230	8303	8376	8449	8522			
41	8596	8669	8742	8815	8888	8961	9034	9107	9180	6253			
42	9326	9400	9473	9546	9619	9692	9765	9838	9911	9984			
43	774 0057	0130	0203	0277	0350	0423	0496	0569	0642	0715			
44	0788	0861	0934	1007	1080	1153	1226	1299	1372	1446			
5945	1519	1592	1665	1738	1811	1884	1957	2030	2103	2176			73
46	2249	2322	2395	2468	2541	2614	2687	2760	2833	2906		1	7
47	2979	3052	3125	3198	3271	3345	3418	3491	3564	3637		2	15
48	3710	3783	3856	3929	4002	4075	4148	4221	4294	4367		3	22
49	4440	4513	4586	4659	4732	4805	4878	4951	5024	5097		4	29
5950	5170	5243	5316	5389	5462	5535	5608	5681	5754	5827		5	37
51	5900	5972	6045	6118	6191	6264	6337	6410	6483	6556		6	44
52	6629	6702	6775	6848	6921	6994	7067	7140	7213	7286		7	51
53	7359	7432	7505	7578	7651	7724	7797	7869	7942	8015		8	58
54	8088	8161	8234	8307	8380	8453	8526	8599	8672	8745		9	66
5955	8818	8891	8964	9036	9109	9182	9255	9328	9401	9474			
56	9547	9620	9693	9766	9839	9911	9984	0057	0130	0203			
57	775 0276	0349	0422	0495	0568	0641	0713	0786	0859	0932			
58	1005	1078	1151	1224	1297	1369	1442	1515	1588	1661			
59	1734	1807	1880	1952	2025	2098	2171	2244	2317	2390			
5960	2463	2535	2608	2681	2754	2827	2900	2973	3046	3118			72
61	3191	3264	3337	3410	3483	3555	3628	3701	3774	3847		1	7
62	3920	3993	4065	4138	4211	4284	4357	4430	4502	4575		2	14
63	4648	4721	4794	4867	4939	5012	5085	5158	5231	5304		3	22
64	5376	5449	5522	5595	5668	5740	5813	5886	5959	6032		4	29
5965	6104	6177	6250	6323	6396	6469	6541	6614	6687	6760		5	36
66	6832	6905	6978	7051	7124	7196	7269	7342	7415	7488		6	43
67	7560	7633	7706	7779	7851	7924	7997	8070	8143	8215		7	50
68	8288	8361	8434	8506	8579	8652	8725	8798	8870	8943		8	58
69	9016	9089	9161	9234	9307	9380	9452	9525	9598	9671		9	65
N.	0	1	2	3	4	5	6	7	8	9	Diff.		

Number 59700 *to* 60399
Logarithm 775 9743 *to* 781 0297

N.	0	1	2	3	4	5	6	7	8	9	Diff.		
5970	775 9743	9816	9889	9962	0034	0107	0180	0253	0325	0398			73
71	776 0471	0543	0616	0689	0762	0834	0907	0980	1053	1125		1	7
72	1198	1271	1343	1416	1489	1562	1634	1707	1780	1852		2	15
73	1925	1998	2071	2143	2216	2289	2361	2434	2507	2579		3	22
74	2652	2725	2798	2870	2943	3016	3088	3161	3234	3306		4	29
5975	3379	3452	3524	3597	3670	3743	3815	3888	3961	4033		5	37
76	4106	4179	4251	4324	4397	4469	4542	4615	4687	4760		6	44
77	4833	4905	4978	5051	5123	5196	5269	5341	5414	5486		7	51
78	5559	5632	5704	5777	5850	5922	5995	6068	6140	6213		8	58
79	6286	6358	6431	6503	6576	6649	6721	6794	6867	6939		9	66
5980	7012	7084	7157	7230	7302	7375	7448	7520	7593	7665			
81	7738	7811	7883	7956	8028	8101	8174	8246	8319	8391			
82	8464	8537	8609	8682	8754	8827	8900	8972	9045	9117			
83	9190	9263	9335	9408	9480	9553	9626	9698	9771	9843			
84	9916	9988	0061	0134	0206	0279	0351	0424	0496	0569			
5985	777 0642	0714	0787	0859	0932	1004	1077	1149	1222	1295			72
86	1367	1440	1512	1585	1657	1730	1802	1875	1947	2020		1	7
87	2093	2165	2238	2310	2383	2455	2528	2600	2673	2745		2	14
88	2818	2890	2963	3035	3108	3181	3253	3326	3398	3471		3	22
89	3543	3616	3688	3761	3833	3906	3978	4051	4123	4196		4	29
5990	4268	4341	4413	4486	4558	4631	4703	4776	4848	4921		5	36
91	4993	5066	5138	5211	5283	5356	5428	5501	5573	5646		6	43
92	5718	5791	5863	5935	6008	6080	6153	6225	6298	6370		7	50
93	6443	6515	6588	6660	6733	6805	6878	6950	7022	7095		8	58
94	7167	7240	7312	7385	7457	7530	7602	7675	7747	7819		9	65
5995	7892	7964	8037	8109	8182	8254	8327	8399	8471	8544			
96	8616	8689	8761	8834	8906	8978	9051	9123	9196	9268			
97	9340	9413	9485	9558	9630	9703	9775	9847	9920	9992			
98	778 0065	0137	0209	0282	0354	0427	0499	0571	0644	0716			
99	0789	0861	0933	1006	1078	1151	1223	1295	1368	1440			
6000	1513	1585	1657	1730	1802	1874	1947	2019	2092	2164			73
01	2236	2309	2381	2453	2526	2598	2670	2743	2815	2888		1	7
02	2960	3032	3105	3177	3249	3322	3394	3466	3539	3611		2	15
03	3683	3756	3828	3900	3973	4045	4117	4190	4262	4335		3	22
04	4407	4479	4552	4624	4696	4768	4841	4913	4985	5058		4	29
6005	5130	5202	5275	5347	5419	5492	5564	5636	5709	5781		5	37
06	5853	5926	5998	6070	6143	6215	6287	6359	6432	6504		6	44
07	6576	6649	6721	6793	6866	6938	7010	7082	7155	7227		7	51
08	7299	7372	7444	7516	7588	7661	7733	7805	7877	7950		8	58
09	8022	8094	8167	8239	8311	8383	8456	8528	8600	8672		9	66
6010	8745	8817	8889	8962	9034	9106	9178	9251	9323	9395			
11	9467	9540	9612	9684	9756	9829	9901	9973	0045	0117			
12	779 0190	0262	0334	0406	0479	0551	0623	0695	0768	0840			
13	0912	0984	1056	1129	1201	1273	1345	1418	1490	1562			
14	1634	1706	1779	1851	1923	1995	2067	2140	2212	2284			
6015	2356	2429	2501	2573	2645	2717	2790	2862	2934	3006			72
16	3078	3150	3223	3295	3367	3439	3511	3584	3656	3728		1	7
17	3800	3872	3944	4017	4089	4161	4233	4305	4377	4450		2	14
18	4522	4594	4666	4738	4810	4883	4955	5027	5099	5171		3	22
19	5243	5316	5388	5460	5532	5604	5676	5748	5821	5893		4	29
6020	5965	6037	6109	6181	6253	6326	6398	6470	6542	6614		5	36
21	6686	6758	6831	6903	6975	7047	7119	7191	7263	7335		6	43
22	7408	7480	7552	7624	7696	7768	7840	7912	7984	8057		7	50
23	8129	8201	8273	8345	8417	8489	8561	8633	8705	8778		8	58
24	8850	8922	8994	9066	9138	9210	9282	9354	9426	9498		9	65
6025	9571	9643	9715	9787	9859	9931	0003	0075	0147	0219			
26	780 0291	0363	0435	0507	0580	0652	0724	0796	0868	0940			
27	1012	1084	1156	1228	1300	1372	1444	1516	1588	1660			
28	1732	1804	1877	1949	2021	2093	2165	2237	2309	2381			
29	2453	2525	2597	2669	2741	2813	2885	2957	3029	3101			
6030	3173	3245	3317	3389	3461	3533	3605	3677	3749	3821			71
31	3893	3965	4037	4109	4181	4253	4325	4397	4469	4541		1	7
32	4613	4685	4757	4829	4901	4973	5045	5117	5189	5261		2	14
33	5333	5405	5477	5549	5621	5693	5765	5837	5909	5981		3	21
34	6053	6125	6197	6269	6341	6413	6485	6557	6629	6701		4	28
6035	6773	6845	6917	6989	7061	7133	7204	7276	7348	7420		5	36
36	7492	7564	7636	7708	7780	7852	7924	7996	8068	8140		6	43
37	8212	8284	8356	8428	8500	8571	8643	8715	8787	8859		7	50
38	8931	9003	9075	9147	9219	9291	9363	9435	9506	9578		8	57
39	9650	9722	9794	9866	9938	0010	0082	0154	0226	0297		9	64
N.	0	1	2	3	4	5	6	7	8	9	Diff.		

Number 60400 *to* 61099
Logarithm 781 0369 *to* 786 0341

N.	0	1	2	3	4	5	6	7	8	9	Diff.
6040	781 0369	0441	0513	0585	0657	0729	0801	0873	0945	1016	72
41	1088	1160	1232	1304	1376	1448	1520	1592	1663	1735	1 7
42	1807	1879	1951	2023	2095	2167	2238	2310	2382	2454	2 14
43	2526	2598	2670	2742	2813	2885	2957	3029	3101	3173	3 22
44	3245	3316	3388	3460	3532	3604	3676	3748	3819	3891	4 29
6045	3963	4035	4107	4179	4250	4322	4394	4466	4538	4610	5 36
46	4681	4753	4825	4897	4969	5041	5112	5184	5256	5328	6 43
47	5400	5472	5543	5615	5687	5759	5831	5902	5974	6046	7 50
48	6118	6190	6261	6333	6405	6477	6549	6620	6692	6764	8 58
49	6836	6908	6979	7051	7123	7195	7267	7338	7410	7482	9 65
6050	7554	7626	7697	7769	7841	7913	7984	8056	8128	8200	
51	8272	8343	8415	8487	8559	8630	8702	8774	8846	8917	
52	8989	9061	9133	9204	9276	9348	9420	9491	9563	9635	
53	9707	9778	9850	9922	9994	0065	0137	0209	0281	0352	
54	782 0424	0496	0568	0639	0711	0783	0855	0926	0998	1070	
6055	1141	1213	1285	1357	1428	1500	1572	1644	1715	1787	71
56	1859	1930	2002	2074	2146	2217	2289	2361	2432	2504	1 7
57	2576	2647	2719	2791	2863	2934	3006	3078	3149	3221	2 14
58	3293	3364	3436	3508	3579	3651	3723	3794	3866	3938	3 21
59	4010	4081	4153	4225	4296	4368	4440	4511	4583	4655	4 28
6060	4726	4798	4870	4941	5013	5085	5156	5228	5300	5371	5 36
61	5443	5514	5586	5658	5729	5801	5873	5944	6016	6088	6 43
62	6159	6231	6303	6374	6446	6518	6589	6661	6732	6804	7 50
63	6876	6947	7019	7091	7162	7234	7305	7377	7449	7520	8 57
64	7592	7664	7735	7807	7878	7950	8022	8093	8165	8236	9 64
6065	8308	8380	8451	8523	8594	8666	8738	8809	8881	8952	
66	9024	9096	9167	9239	9310	9382	9454	9525	9597	9668	
67	9740	9812	9883	9955	0026	0098	0169	0241	0313	0384	
68	783 0456	0527	0599	0670	0742	0814	0885	0957	1028	1100	
69	1171	1243	1314	1386	1458	1529	1601	1672	1744	1815	
6070	1887	1958	2030	2102	2173	2245	2316	2388	2459	2531	72
71	2602	2674	2745	2817	2888	2960	3032	3103	3175	3246	1 7
72	3318	3389	3461	3532	3604	3675	3747	3818	3890	3961	2 14
73	4033	4104	4176	4247	4319	4390	4462	4533	4605	4676	3 22
74	4748	4819	4891	4962	5034	5105	5177	5248	5320	5391	4 29
6075	5463	5534	5606	5677	5749	5820	5892	5963	6035	6106	5 36
76	6178	6249	6321	6392	6464	6535	6606	6678	6749	6821	6 43
77	6892	6964	7035	7107	7178	7250	7321	7393	7464	7536	7 50
78	7607	7678	7750	7821	7893	7964	8036	8107	8179	8250	8 58
79	8321	8393	8464	8536	8607	8679	8750	8821	8893	8964	9 65
6080	9036	9107	9179	9250	9322	9393	9464	9536	9607	9679	
81	9750	9821	9893	9964	0036	0107	0179	0250	0321	0393	
82	784 0464	0536	0607	0678	0750	0821	0893	0964	1035	1107	
83	1178	1250	1321	1392	1464	1535	1607	1678	1749	1821	
84	1892	1963	2035	2106	2178	2249	2320	2392	2463	2534	
6085	2606	2677	2749	2820	2891	2963	3034	3105	3177	3248	71
86	3319	3391	3462	3534	3605	3676	3748	3819	3890	3962	1 7
87	4033	4104	4176	4247	4318	4390	4461	4532	4604	4675	2 14
88	4746	4818	4889	4960	5032	5103	5174	5246	5317	5388	3 21
89	5460	5531	5602	5674	5745	5816	5888	5959	6030	6102	4 28
6090	6173	6244	6316	6387	6458	6529	6601	6672	6743	6815	5 36
91	6886	6957	7029	7100	7171	7242	7314	7385	7456	7528	6 43
92	7599	7670	7742	7813	7884	7955	8027	8098	8169	8241	7 50
93	8312	8383	8454	8526	8597	8668	8739	8811	8882	8953	8 57
94	9024	9096	9167	9238	9310	9381	9452	9523	9595	9666	9 64
6095	9737	9808	9880	9951	0022	0093	0165	0236	0307	0378	
96	785 0450	0521	0592	0663	0735	0806	0877	0948	1019	1091	
97	1162	1233	1304	1376	1447	1518	1589	1661	1732	1803	
98	1874	1945	2017	2088	2159	2230	2301	2373	2444	2515	
99	2586	2658	2729	2800	2871	2942	3014	3085	3156	3227	
6100	3298	3370	3441	3512	3583	3654	3726	3797	3868	3939	72
01	4010	4081	4153	4224	4295	4366	4437	4509	4580	4651	1 7
02	4722	4793	4864	4936	5007	5078	5149	5220	5291	5363	2 14
03	5434	5505	5576	5647	5718	5789	5861	5932	6003	6074	3 22
04	6145	6216	6288	6359	6430	6501	6572	6643	6714	6786	4 29
6105	6857	6928	6999	7070	7141	7212	7283	7355	7426	7497	5 36
06	7568	7639	7710	7781	7852	7924	7995	8066	8137	8208	6 43
07	8279	8350	8421	8493	8564	8635	8706	8777	8848	8919	7 50
08	8990	9061	9132	9204	9275	9346	9417	9488	9559	9630	8 58
09	9701	9772	9843	9915	9986	0057	0128	0199	0270	0341	9 65
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 61100 *to* 61799
Logarithm 786 0412 *to* 790 9814

N.	0	1	2	3	4	5	6	7	8	9	Diff.
6110	786 0412	0483	0554	0625	0696	0767	0839	0910	0981	1052	71
11	1123	1194	1265	1336	1407	1478	1549	1620	1691	1762	1 7
12	1833	1905	1976	2047	2118	2189	2260	2331	2402	2473	2 14
13	2544	2615	2686	2757	2828	2899	2970	3041	3112	3183	3 21
14	3254	3325	3396	3467	3538	3609	3681	3752	3823	3894	4 28
6115	3965	4036	4107	4178	4249	4320	4391	4462	4533	4604	5 36
16	4675	4746	4817	4888	4959	5030	5101	5172	5243	5314	6 43
17	5385	5456	5527	5598	5669	5740	5811	5882	5953	6024	7 50
18	6095	6166	6237	6308	6379	6450	6521	6592	6663	6734	8 57
19	6805	6876	6946	7017	7088	7159	7230	7301	7372	7443	9 64
6120	7514	7585	7656	7727	7798	7869	7940	8011	8082	8153	
21	8224	8295	8366	8437	8508	8579	8649	8720	8791	8862	
22	8933	9004	9075	9146	9217	9288	9359	9430	9501	9572	
23	9643	9714	9784	9855	9926	9997	0068	0139	0210	0281	
24	787 0352	0423	0494	0565	0635	0706	0777	0848	0919	0990	
6125	1061	1132	1203	1274	1345	1415	1486	1557	1628	1699	70
26	1770	1841	1912	1983	2053	2124	2195	2266	2337	2408	1 7
27	2479	2550	2621	2691	2762	2833	2904	2975	3046	3117	2 14
28	3188	3258	3329	3400	3471	3542	3613	3684	3754	3825	3 21
29	3896	3967	4038	4109	4180	4250	4321	4392	4463	4534	4 28
6130	4605	4676	4746	4817	4888	4959	5030	5101	5171	5242	5 35
31	5313	5384	5455	5526	5596	5667	5738	5809	5880	5951	6 42
32	6021	6092	6163	6234	6305	6376	6446	6517	6588	6659	7 49
33	6730	6800	6871	6942	7013	7084	7155	7225	7296	7367	8 56
34	7438	7509	7579	7650	7721	7792	7863	7933	8004	8075	9 63
6135	8146	8216	8287	8358	8429	8500	8570	8641	8712	8783	
36	8854	8924	8995	9066	9137	9207	9278	9349	9420	9490	
37	9561	9632	9703	9774	9844	9915	9986	0057	0127	0198	
38	788 0269	0340	0410	0481	0552	0623	0693	0764	0835	0906	
39	0976	1047	1118	1189	1259	1330	1401	1472	1542	1613	
6140	1684	1754	1825	1896	1967	2037	2108	2179	2250	2320	71
41	2391	2462	2532	2603	2674	2745	2815	2886	2957	3027	1 7
42	3098	3169	3240	3310	3381	3452	3522	3593	3664	3734	2 14
43	3805	3876	3947	4017	4088	4159	4229	4300	4371	4441	3 21
44	4512	4583	4653	4724	4795	4865	4936	5007	5078	5148	4 28
6145	5219	5290	5360	5431	5502	5572	5643	5714	5784	5855	5 36
46	5926	5996	6067	6138	6208	6279	6350	6420	6491	6561	6 43
47	6632	6703	6773	6844	6915	6985	7056	7127	7197	7268	7 50
48	7339	7409	7480	7551	7621	7692	7762	7833	7904	7974	8 57
49	8045	8116	8186	8257	8327	8398	8469	8539	8610	8681	9 64
6150	8751	8822	8892	8963	9034	9104	9175	9245	9316	9387	
51	9457	9528	9598	9669	9740	9810	9881	9951	0022	0093	
52	789 0163	0234	0304	0375	0446	0516	0587	0657	0728	0799	
53	0869	0940	1010	1081	1151	1222	1293	1363	1434	1504	
54	1575	1645	1716	1787	1857	1928	1998	2069	2139	2210	
6155	2281	2351	2422	2492	2563	2633	2704	2774	2845	2916	70
56	2986	3057	3127	3198	3268	3339	3409	3480	3550	3621	1 7
57	3692	3762	3833	3903	3974	4044	4115	4185	4256	4326	2 14
58	4397	4467	4538	4608	4679	4749	4820	4890	4961	5032	3 21
59	5102	5173	5243	5314	5384	5455	5525	5596	5666	5737	4 28
6160	5807	5878	5948	6019	6089	6160	6230	6301	6371	6442	5 35
61	6512	6583	6653	6724	6794	6865	6935	7005	7076	7146	6 42
62	7217	7287	7358	7428	7499	7569	7640	7710	7781	7851	7 49
63	7922	7992	8063	8133	8204	8274	8344	8415	8485	8556	8 56
64	8626	8697	8767	8838	8908	8979	9049	9119	9190	9260	9 63
6165	9331	9401	9472	9542	9613	9683	9753	9824	9894	9965	
66	790 0035	0106	0176	0247	0317	0387	0458	0528	0599	0669	
67	0739	0810	0880	0951	1021	1092	1162	1232	1303	1373	
68	1444	1514	1584	1655	1725	1796	1866	1936	2007	2077	
69	2148	2218	2288	2359	2429	2500	2570	2640	2711	2781	
6170	2852	2922	2992	3063	3133	3204	3274	3344	3415	3485	71
71	3555	3626	3696	3767	3837	3907	3978	4048	4118	4189	1 7
72	4259	4330	4400	4470	4541	4611	4681	4752	4822	4892	2 14
73	4963	5033	5103	5174	5244	5315	5385	5455	5526	5596	3 21
74	5666	5737	5807	5877	5948	6018	6088	6159	6229	6299	4 28
6175	6370	6440	6510	6581	6651	6721	6792	6862	6932	7003	5 36
76	7073	7143	7214	7284	7354	7424	7495	7565	7635	7706	6 43
77	7776	7846	7917	7987	8057	8128	8198	8268	8338	8409	7 50
78	8479	8549	8620	8690	8760	8831	8901	8971	9041	9112	8 57
79	9182	9252	9323	9393	9463	9533	9604	9674	9744	9814	9 64
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 61800 *to* 62499
Logarithm 790 9885 *to* 795 8731

N.	0	1	2	3	4	5	6	7	8	9	Diff.
6180	790 9885	9955	0025	0096	0166	0236	0306	0377	0447	0517	71
81	791 0587	0658	0728	0798	0868	0939	1009	1079	1150	1220	1 7
82	1290	1360	1431	1501	1571	1641	1711	1782	1852	1922	2 14
83	1992	2063	2133	2203	2273	2344	2414	2484	2554	2625	3 21
84	2695	2765	2835	2905	2976	3046	3116	3186	3257	3327	4 28
6185	3397	3467	3537	3608	3678	3748	3818	3889	3959	4029	5 36
86	4099	4169	4240	4310	4380	4450	4520	4591	4661	4731	6 43
87	4801	4871	4942	5012	5082	5152	5222	5292	5363	5433	7 50
88	5503	5573	5643	5714	5784	5854	5924	5994	6064	6135	8 57
89	6205	6275	6345	6415	6486	6556	6626	6696	6766	6836	9 64
6190	6906	6977	7047	7117	7187	7257	7327	7398	7468	7538	
91	7608	7678	7748	7818	7889	7959	8029	8099	8169	8239	
92	8309	8380	8450	8520	8590	8660	8730	8800	8871	8941	
93	9011	9081	9151	9221	9291	9361	9432	9502	9572	9642	
94	9712	9782	9852	9922	9992	0063	0133	0203	0273	0343	
6195	792 0413	0483	0553	0623	0694	0764	0834	0904	0974	1044	70
96	1114	1184	1254	1324	1394	1465	1535	1605	1675	1745	1 7
97	1815	1885	1955	2025	2095	2165	2235	2306	2376	2446	2 14
98	2516	2586	2656	2726	2796	2866	2936	3006	3076	3146	3 21
99	3216	3286	3356	3427	3497	3567	3637	3707	3777	3847	4 28
6200	3917	3987	4057	4127	4197	4267	4337	4407	4477	4547	5 35
01	4617	4687	4757	4827	4897	4967	5038	5108	5178	5248	6 42
02	5318	5388	5458	5528	5598	5668	5738	5808	5878	5948	7 49
03	6018	6088	6158	6228	6298	6368	6438	6508	6578	6648	8 56
04	6718	6788	6858	6928	6998	7068	7138	7208	7278	7348	9 63
6205	7418	7488	7558	7628	7698	7768	7838	7908	7978	8048	
06	8118	8188	8258	8328	8398	8468	8538	8608	8678	8747	
07	8817	8887	8957	9027	9097	9167	9237	9307	9377	9447	
08	9517	9587	9657	9727	9797	9867	9937	0007	0077	0147	
09	793 0217	0287	0356	0426	0496	0566	0636	0706	0776	0846	
6210	0916	0986	1056	1126	1196	1266	1336	1406	1475	1545	70
11	1615	1685	1755	1825	1895	1965	2035	2105	2175	2245	1 7
12	2314	2384	2454	2524	2594	2664	2734	2804	2874	2944	2 14
13	3014	3083	3153	3223	3293	3363	3433	3503	3573	3643	3 21
14	3712	3782	3852	3922	3992	4062	4132	4202	4272	4341	4 28
6215	4411	4481	4551	4621	4691	4761	4831	4900	4970	5040	5 35
16	5110	5180	5250	5320	5390	5459	5529	5599	5669	5739	6 42
17	5809	5879	5948	6018	6088	6158	6228	6298	6367	6437	7 49
18	6507	6577	6647	6717	6787	6856	6926	6996	7066	7136	8 56
19	7206	7275	7345	7415	7485	7555	7625	7694	7764	7834	9 63
6220	7904	7974	8043	8113	8183	8253	8323	8393	8462	8532	
21	8602	8672	8742	8811	8881	8951	9021	9091	9160	9230	
22	9300	9370	9440	9509	9579	9649	9719	9789	9858	9928	
23	9998	0068	0138	0207	0277	0347	0417	0487	0556	0626	
24	794 0696	0766	0835	0905	0975	1045	1114	1184	1254	1324	
6225	1394	1463	1533	1603	1673	1742	1812	1882	1952	2021	69
26	2091	2161	2231	2300	2370	2440	2510	2579	2649	2719	1 7
27	2789	2858	2928	2998	3068	3137	3207	3277	3347	3416	2 14
28	3486	3556	3626	3695	3765	3835	3904	3974	4044	4114	3 21
29	4183	4253	4323	4392	4462	4532	4602	4671	4741	4811	4 28
6230	4880	4950	5020	5090	5159	5229	5299	5368	5438	5508	5 35
31	5578	5647	5717	5787	5856	5926	5996	6065	6135	6205	6 41
32	6274	6344	6414	6484	6553	6623	6693	6762	6832	6902	7 48
33	6971	7041	7111	7180	7250	7320	7389	7459	7529	7598	8 55
34	7668	7738	7807	7877	7947	8016	8086	8156	8225	8295	9 62
6235	8365	8434	8504	8574	8643	8713	8782	8852	8922	8991	
36	9061	9131	9200	9270	9340	9409	9479	9549	9618	9688	
37	9757	9827	9897	9966	0036	0106	0175	0245	0314	0384	
38	795 0454	0523	0593	0663	0732	0802	0871	0941	1011	1080	
39	1150	1219	1289	1359	1428	1498	1567	1637	1707	1776	
6240	1846	1915	1985	2055	2124	2194	2263	2333	2403	2472	70
41	2542	2611	2681	2751	2820	2890	2959	3029	3098	3168	1 7
42	3238	3307	3377	3446	3516	3586	3655	3725	3794	3864	2 14
43	3933	4003	4072	4142	4212	4281	4351	4420	4490	4559	3 21
44	4629	4698	4768	4838	4907	4977	5046	5116	5185	5255	4 28
6245	5324	5394	5464	5533	5603	5672	5742	5811	5881	5950	5 35
46	6020	6089	6159	6228	6298	6367	6437	6506	6576	6646	6 42
47	6715	6785	6854	6924	6993	7063	7132	7202	7271	7341	7 49
48	7410	7480	7549	7619	7688	7758	7827	7897	7966	8036	8 56
49	8105	8175	8244	8314	8383	8453	8522	8592	8661	8731	9 63
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 62500 *to* 63199
Logarithm 795 8800 *to* 800 7102

N.	0	1	2	3	4	5	6	7	8	9	Diff.
6250	795 8800	8870	8939	9009	9078	9148	9217	9287	9356	9426	69
51	9495	9564	9634	9703	9773	9842	9912	9981	0051	0120	1 7
52	796 0190	0259	0329	0398	0468	0537	0606	0676	0745	0815	2 14
53	0884	0954	1023	1093	1162	1232	1301	1370	1440	1509	3 21
54	1579	1648	1718	1787	1857	1926	1995	2065	2134	2204	4 28
6255	2273	2343	2412	2481	2551	2620	2690	2759	2829	2898	5 35
56	2967	3037	3106	3176	3245	3314	3384	3453	3523	3592	6 41
57	3662	3731	3800	3870	3939	4009	4078	4147	4217	4286	7 48
58	4356	4425	4494	4564	4633	4703	4772	4841	4911	4980	8 55
59	5050	5119	5188	5258	5327	5396	5466	5535	5605	5674	9 62
6260	5743	5813	5882	5951	6021	6090	6160	6229	6298	6368	
61	6437	6506	6576	6645	6714	6784	6853	6923	6992	7061	
62	7131	7200	7269	7339	7408	7477	7547	7616	7685	7755	
63	7824	7893	7963	8032	8101	8171	8240	8309	8379	8448	
64	8517	8587	8656	8725	8795	8864	8933	9003	9072	9141	
6265	9211	9280	9349	9419	9488	9557	9627	9696	9765	9835	70
66	9904	9973	0043	0112	0181	0250	0320	0389	0458	0528	1 7
67	797 0597	0666	0736	0805	0874	0943	1013	1082	1151	1221	2 14
68	1290	1359	1428	1498	1567	1636	1706	1775	1844	1913	3 21
69	1983	2052	2121	2191	2260	2329	2398	2468	2537	2606	4 28
6270	2675	2745	2814	2883	2952	3022	3091	3160	3229	3299	5 35
71	3368	3437	3507	3576	3645	3714	3784	3853	3922	3991	6 42
72	4060	4130	4199	4268	4337	4407	4476	4545	4614	4684	7 49
73	4753	4822	4891	4961	5030	5099	5168	5237	5307	5376	8 56
74	5445	5514	5584	5653	5722	5791	5860	5930	5999	6068	9 63
6275	6137	6207	6276	6345	6414	6483	6553	6622	6691	6760	
76	6829	6899	6968	7037	7106	7175	7245	7314	7383	7452	
77	7521	7590	7660	7729	7798	7867	7936	8006	8075	8144	
78	8213	8282	8351	8421	8490	8559	8628	8697	8766	8836	
79	8905	8974	9043	9112	9181	9251	9320	9389	9458	9527	
6280	9596	9666	9735	9804	9873	9942	0011	0080	0150	0219	69
81	798 0288	0357	0426	0495	0565	0634	0703	0772	0841	0910	1 7
82	0979	1048	1118	1187	1256	1325	1394	1463	1532	1601	2 14
83	1671	1740	1809	1878	1947	2016	2085	2154	2224	2293	3 21
84	2362	2431	2500	2569	2638	2707	2776	2846	2915	2984	4 28
6285	3053	3122	3191	3260	3329	3398	3467	3536	3606	3675	5 35
86	3744	3813	3882	3951	4020	4089	4158	4227	4296	4366	6 41
87	4435	4504	4573	4642	4711	4780	4849	4918	4987	5056	7 48
88	5125	5194	5263	5333	5402	5471	5540	5609	5678	5747	8 55
89	5816	5885	5954	6023	6092	6161	6230	6299	6368	6437	9 62
6290	6506	6575	6645	6714	6783	6852	6921	6990	7059	7128	
91	7197	7266	7335	7404	7473	7542	7611	7680	7749	7818	
92	7887	7956	8025	8094	8163	8232	8301	8370	8439	8508	
93	8577	8646	8715	8784	8853	8922	8991	9060	9129	9198	
94	9267	9336	9405	9474	9543	9612	9681	9750	9819	9888	
6295	9957	0026	0095	0164	0233	0302	0371	0440	0509	0578	69
96	799 0647	0716	0785	0854	0923	0992	1061	1130	1199	1268	1 7
97	1337	1406	1475	1544	1613	1682	1751	1820	1889	1958	2 14
98	2027	2096	2164	2233	2302	2371	2440	2509	2578	2647	3 21
99	2716	2785	2854	2923	2992	3061	3130	3199	3268	3337	4 28
6300	3405	3474	3543	3612	3681	3750	3819	3888	3957	4026	5 35
01	4095	4164	4233	4302	4370	4439	4508	4577	4646	4715	6 41
02	4784	4853	4922	4991	5060	5129	5197	5266	5335	5404	7 48
03	5473	5542	5611	5680	5749	5818	5886	5955	6024	6093	8 55
04	6162	6231	6300	6369	6438	6506	6575	6644	6713	6782	9 62
6305	6851	6920	6989	7058	7126	7195	7264	7333	7402	7471	
06	7540	7609	7677	7746	7815	7884	7953	8022	8091	8159	
07	8228	8297	8366	8435	8504	8573	8641	8710	8779	8848	
08	8917	8986	9055	9123	9192	9261	9330	9399	9468	9536	
09	9605	9674	9743	9812	9881	9949	0018	0087	0156	0225	
6310	800 0294	0362	0431	0500	0569	0638	0707	0775	0844	0913	68
11	0982	1051	1119	1188	1257	1326	1395	1463	1532	1601	1 7
12	1670	1739	1808	1876	1945	2014	2083	2152	2220	2289	2 14
13	2358	2427	2495	2564	2633	2702	2771	2839	2908	2977	3 20
14	3046	3115	3183	3252	3321	3390	3458	3527	3596	3665	4 27
6315	3734	3802	3871	3940	4009	4077	4146	4215	4284	4352	5 34
16	4421	4490	4559	4627	4696	4765	4834	4903	4971	5040	6 41
17	5109	5178	5246	5315	5384	5453	5521	5590	5659	5727	7 48
18	5796	5865	5934	6002	6071	6140	6209	6277	6346	6415	8 54
19	6484	6552	6621	6690	6758	6827	6896	6965	7033	7102	9 61
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 63200 *to* 63899
Logarithm 800 7171 *to* 805 4941

N.		0	1	2	3	4	5	6	7	8	9	Diff.
6320	800	7171	7239	7308	7377	7446	7514	7583	7652	7720	7789	68
21		7858	7927	7995	8064	8133	8201	8270	8339	8408	8476	1 7
22		8545	8614	8682	8751	8820	8888	8957	9026	9094	9163	2 14
23		9232	9301	9369	9438	9507	9575	9644	9713	9781	9850	3 20
24		9919	9987	0056	0125	0193	0262	0331	0399	0468	0537	4 27
6325	801	0605	0674	0743	0811	0880	0949	1017	1086	1155	1223	5 34
26		1292	1361	1429	1498	1566	1635	1704	1772	1841	1910	6 41
27		1978	2047	2116	2184	2253	2322	2390	2459	2527	2596	7 48
28		2665	2733	2802	2871	2939	3008	3076	3145	3214	3282	8 54
29		3351	3420	3488	3557	3625	3694	3763	3831	3900	3968	9 61
6330		4037	4106	4174	4243	4312	4380	4449	4517	4586	4655	
31		4723	4792	4860	4929	4998	5066	5135	5203	5272	5340	
32		5409	5478	5546	5615	5683	5752	5821	5889	5958	6026	
33		6095	6163	6232	6301	6369	6438	6506	6575	6643	6712	
34		6781	6849	6918	6986	7055	7123	7192	7261	7329	7398	
6335		7466	7535	7603	7672	7740	7809	7878	7946	8015	8083	69
36		8152	8220	8289	8357	8426	8494	8563	8631	8700	8769	1 7
37		8837	8906	8974	9043	9111	9180	9248	9317	9385	9454	2 14
38		9522	9591	9659	9728	9796	9865	9933	0002	0070	0139	3 21
39	802	0208	0276	0345	0413	0482	0550	0619	0687	0756	0824	4 28
6340		0893	0961	1030	1098	1167	1235	1304	1372	1441	1509	5 35
41		1578	1646	1715	1783	1851	1920	1988	2057	2125	2194	6 41
42		2262	2331	2399	2468	2536	2605	2673	2742	2810	2879	7 48
43		2947	3016	3084	3153	3221	3289	3358	3426	3495	3563	8 55
44		3632	3700	3769	3837	3906	3974	4042	4111	4179	4248	9 62
6345		4316	4385	4453	4522	4590	4658	4727	4795	4864	4932	
46		5001	5069	5138	5206	5274	5343	5411	5480	5548	5617	
47		5685	5753	5822	5890	5959	6027	6096	6164	6232	6301	
48		6369	6438	6506	6574	6643	6711	6780	6848	6916	6985	
49		7053	7122	7190	7258	7327	7395	7464	7532	7600	7669	
6350		7737	7806	7874	7942	8011	8079	8148	8216	8284	8353	68
51		8421	8490	8558	8626	8695	8763	8831	8900	8968	9037	1 7
52		9105	9173	9242	9310	9378	9447	9515	9583	9652	9720	2 14
53		9789	9857	9925	9994	0062	0130	0199	0267	0335	0404	3 20
54	803	0472	0540	0609	0677	0745	0814	0882	0951	1019	1087	4 27
6355		1156	1224	1292	1361	1429	1497	1566	1634	1702	1771	5 34
56		1839	1907	1976	2044	2112	2181	2249	2317	2385	2454	6 41
57		2522	2590	2659	2727	2795	2864	2932	3000	3069	3137	7 48
58		3205	3274	3342	3410	3478	3547	3615	3683	3752	3820	8 54
59		3888	3957	4025	4093	4161	4230	4298	4366	4435	4503	9 61
6360		4571	4639	4708	4776	4844	4913	4981	5049	5117	5186	
61		5254	5322	5391	5459	5527	5595	5664	5732	5800	5868	
62		5937	6005	6073	6141	6210	6278	6346	6414	6483	6551	
63		6619	6687	6756	6824	6892	6960	7029	7097	7165	7233	
64		7302	7370	7438	7506	7575	7643	7711	7779	7848	7916	
6365		7984	8052	8121	8189	8257	8325	8393	8462	8530	8598	69
66		8666	8735	8803	8871	8939	9007	9076	9144	9212	9280	1 7
67		9348	9417	9485	9553	9621	9690	9758	9826	9894	9962	2 14
68	804	0031	0099	0167	0235	0303	0372	0440	0508	0576	0644	3 21
69		0712	0781	0849	0917	0985	1053	1122	1190	1258	1326	4 28
6370		1394	1463	1531	1599	1667	1735	1803	1872	1940	2008	5 35
71		2076	2144	2212	2281	2349	2417	2485	2553	2621	2690	6 41
72		2758	2826	2894	2962	3030	3098	3167	3235	3303	3371	7 48
73		3439	3507	3575	3644	3712	3780	3848	3916	3984	4052	8 55
74		4121	4189	4257	4325	4393	4461	4529	4597	4666	4734	9 62
6375		4802	4870	4938	5006	5074	5143	5211	5279	5347	5415	
76		5483	5551	5619	5687	5756	5824	5892	5960	6028	6096	
77		6164	6232	6300	6368	6437	6505	6573	6641	6709	6777	
78		6845	6913	6981	7049	7118	7186	7254	7322	7390	7458	
79		7526	7594	7662	7730	7798	7866	7934	8003	8071	8139	
6380		8207	8275	8343	8411	8479	8547	8615	8683	8751	8819	68
81		8887	8956	9024	9092	9160	9228	9296	9364	9432	9500	1 7
82		9568	9636	9704	9772	9840	9908	9976	0044	0112	0180	2 14
83	805	0248	0316	0385	0453	0521	0589	0657	0725	0793	0861	3 20
84		0929	0997	1065	1133	1201	1269	1337	1405	1473	1541	4 27
6385		1609	1677	1745	1813	1881	1949	2017	2085	2153	2221	5 34
86		2289	2357	2425	2493	2561	2629	2697	2765	2833	2901	6 41
87		2969	3037	3105	3173	3241	3309	3377	3445	3513	3581	7 48
88		3649	3717	3785	3853	3921	3989	4057	4125	4193	4261	8 54
89		4329	4397	4465	4533	4601	4669	4737	4805	4873	4941	9 61
N.		0	1	2	3	4	5	6	7	8	9	Diff.

Number 63900 *to* 64599
Logarithm 805 5009 *to* 810 2258

N.		0	1	2	3	4	5	6	7	8	9	Diff.
6390	805	5009	5077	5145	5212	5280	5348	5416	5484	5552	5620	68
91		5688	5756	5824	5892	5960	6028	6096	6164	6232	6300	1 7
92		6368	6436	6504	6571	6639	6707	6775	6843	6911	6979	2 14
93		7047	7115	7183	7251	7319	7387	7455	7523	7590	7658	3 20
94		7726	7794	7862	7930	7998	8066	8134	8202	8270	8338	4 27
6395		8405	8473	8541	8609	8677	8745	8813	8881	8949	9017	5 34
96		9085	9152	9220	9288	9356	9424	9492	9560	9628	9696	6 41
97		9764	9831	9899	9967	0035	0103	0171	0239	0307	0374	7 48
98	806	0442	0510	0578	0646	0714	0782	0850	0917	0985	1053	8 54
99		1121	1189	1257	1325	1393	1460	1528	1596	1664	1732	9 61
6400		1800	1868	1935	2003	2071	2139	2207	2275	2343	2410	
01		2478	2546	2614	2682	2750	2817	2885	2953	3021	3089	
02		3157	3225	3292	3360	3428	3496	3564	3632	3699	3767	
03		3835	3903	3971	4038	4106	4174	4242	4310	4378	4445	
04		4513	4581	4649	4717	4784	4852	4920	4988	5056	5124	
6405		5191	5259	5327	5395	5463	5530	5598	5666	5734	5802	67
06		5869	5937	6005	6073	6141	6208	6276	6344	6412	6479	1 7
07		6547	6615	6683	6751	6818	6886	6954	7022	7089	7157	2 13
08		7225	7293	7361	7428	7496	7564	7632	7699	7767	7835	3 20
09		7903	7970	8038	8106	8174	8242	8309	8377	8445	8513	4 27
6410		8580	8648	8716	8784	8851	8919	8987	9055	9122	9190	5 34
11		9258	9326	9393	9461	9529	9596	9664	9732	9800	9867	6 40
12		9935	0003	0071	0138	0206	0274	0342	0409	0477	0545	7 47
13	807	0612	0680	0748	0816	0883	0951	1019	1086	1154	1222	8 54
14		1290	1357	1425	1493	1560	1628	1696	1764	1831	1899	9 60
6415		1967	2034	2102	2170	2237	2305	2373	2440	2508	2576	
16		2644	2711	2779	2847	2914	2982	3050	3117	3185	3253	
17		3320	3388	3456	3523	3591	3659	3726	3794	3862	3929	
18		3997	4065	4132	4200	4268	4335	4403	4471	4538	4606	
19		4674	4741	4809	4877	4944	5012	5080	5147	5215	5283	
6420		5350	5418	5486	5553	5621	5689	5756	5824	5891	5959	68
21		6027	6094	6162	6230	6297	6365	6432	6500	6568	6635	1 7
22		6703	6771	6838	6906	6974	7041	7109	7176	7244	7312	2 14
23		7379	7447	7514	7582	7650	7717	7785	7853	7920	7988	3 20
24		8055	8123	8191	8258	8326	8393	8461	8529	8596	8664	4 27
6425		8731	8799	8867	8934	9002	9069	9137	9204	9272	9340	5 34
26		9407	9475	9542	9610	9678	9745	9813	9880	9948	0015	6 41
27	808	0083	0151	0218	0286	0353	0421	0488	0556	0624	0691	7 48
28		0759	0826	0894	0961	1029	1096	1164	1232	1299	1367	8 54
29		1434	1502	1569	1637	1704	1772	1840	1907	1975	2042	9 61
6430		2110	2177	2245	2312	2380	2447	2515	2582	2650	2718	
31		2785	2853	2920	2988	3055	3123	3190	3258	3325	3393	
32		3460	3528	3595	3663	3730	3798	3865	3933	4000	4068	
33		4136	4203	4271	4338	4406	4473	4541	4608	4676	4743	
34		4811	4878	4946	5013	5081	5148	5216	5283	5351	5418	
6435		5486	5553	5620	5688	5755	5823	5890	5958	6025	6093	67
36		6160	6228	6295	6363	6480	6498	6565	6633	6700	6768	1 7
37		6835	6903	6970	7037	7105	7172	7240	7307	7375	7442	2 13
38		7510	7577	7645	7712	7780	7847	7914	7982	8049	8117	3 20
39		8184	8252	8319	8387	8454	8521	8589	8656	8724	8791	4 27
6440		8859	8926	8994	9061	9128	9196	9263	9331	9398	9466	5 34
41		9533	9600	9668	9735	9803	9870	9938	0005	0072	0140	6 40
42	809	0207	0275	0342	0409	0477	0544	0612	0679	0747	0814	7 47
43		0881	0949	1016	1084	1151	1218	1286	1353	1421	1488	8 54
44		1555	1623	1690	1757	1825	1892	1960	2027	2094	2162	9 60
6445		2229	2297	2364	2431	2499	2566	2634	2701	2768	2836	
46		2903	2970	3038	3105	3173	3240	3307	3375	3442	3509	
47		3577	3644	3711	3779	3846	3914	3981	4048	4116	4183	
48		4250	4318	4385	4452	4520	4587	4654	4722	4789	4856	
49		4924	4991	5058	5126	5193	5260	5328	5395	5462	5530	
6450		5597	5664	5732	5799	5866	5934	6001	6068	6136	6203	68
51		6270	6338	6405	6472	6540	6607	6674	6742	6809	6876	1 7
52		6944	7011	7078	7146	7213	7280	7347	7415	7482	7549	2 14
53		7617	7684	7751	7819	7886	7953	8020	8088	8155	8222	3 20
54		8290	8357	8424	8491	8559	8626	8693	8761	8828	8895	4 27
6455		8962	9030	9097	9164	9232	9299	9366	9433	9501	9568	5 34
56		9635	9702	9770	9837	9904	9972	0039	0106	0173	0241	6 41
57	810	0308	0375	0442	0510	0577	0644	0711	0779	0846	0913	7 48
58		0980	1048	1115	1182	1249	1317	1384	1451	1518	1586	8 54
59		1653	1720	1787	1855	1922	1989	2056	2123	2191	2258	9 61
N.		0	1	2	3	4	5	6	7	8	9	Diff.

Number 64600 *to* 65299
Logarithm 810 2325 *to* 814 9065

N.		0	1	2	3	4	5	6	7	8	9	Diff.	
6460	810	2325	2392	2460	2527	2594	2661	2729	2796	2863	2930	68	
61		2997	3065	3132	3199	3266	3333	3401	3468	3535	3602	1	7
62		3670	3737	3804	3871	3938	4006	4073	4140	4207	4274	2	14
63		4342	4409	4476	4543	4610	4678	4745	4812	4879	4946	3	20
64		5013	5081	5148	5215	5282	5349	5417	5484	5551	5618	4	27
6465		5685	5752	5820	5887	5954	6021	6088	6156	6223	6290	5	34
66		6357	6424	6491	6558	6626	6693	6760	6827	6894	6961	6	41
67		7029	7096	7163	7230	7297	7364	7432	7499	7566	7633	7	48
68		7700	7767	7834	7902	7969	8036	8103	8170	8237	8304	8	54
69		8372	8439	8506	8573	8640	8707	8774	8841	8909	8976	9	61
6470		9043	9110	9177	9244	9311	9378	9446	9513	9580	9647		
71		9714	9781	9848	9915	9982	0050	0117	0184	0251	0318		
72	811	0385	0452	0519	0586	0653	0721	0788	0855	0922	0989		
73		1056	1123	1190	1257	1324	1392	1459	1526	1593	1660		
74		1727	1794	1861	1928	1995	2062	2129	2197	2264	2331		
6475		2398	2465	2532	2599	2666	2733	2800	2867	2934	3001	67	
76		3068	3135	3203	3270	3337	3404	3471	3538	3605	3672	1	7
77		3739	3806	3873	3940	4007	4074	4141	4208	4275	4342	2	13
78		4409	4476	4544	4611	4678	4745	4812	4879	4946	5013	3	20
79		5080	5147	5214	5281	5348	5415	5482	5549	5616	5683	4	27
6480		5750	5817	5884	5951	6018	6085	6152	6219	6286	6353	5	34
81		6420	6487	6554	6621	6688	6755	6822	6889	6956	7023	6	40
82		7090	7157	7224	7291	7358	7425	7492	7559	7626	7693	7	47
83		7760	7827	7894	7961	8028	8095	8162	8229	8296	8363	8	54
84		8430	8497	8564	8631	8698	8765	8832	8899	8966	9033	9	60
6485		9100	9167	9234	9301	9368	9435	9502	9569	9636	9702		
86		9769	9836	9903	9970	0037	0104	0171	0238	0305	0372		
87	812	0439	0506	0573	0640	0707	0774	0841	0908	0975	1041		
88		1108	1175	1242	1309	1376	1443	1510	1577	1644	1711		
89		1778	1845	1912	1979	2045	2112	2179	2246	2313	2380		
6490		2447	2514	2581	2648	2715	2782	2848	2915	2982	3049	67	
91		3116	3183	3250	3317	3384	3451	3518	3584	3651	3718	1	7
92		3785	3852	3919	3986	4053	4120	4186	4253	4320	4387	2	13
93		4454	4521	4588	4655	4722	4788	4855	4922	4989	5056	3	20
94		5123	5190	5257	5323	5390	5457	5524	5591	5658	5725	4	27
6495		5792	5858	5925	5992	6059	6126	6193	6260	6326	6393	5	34
96		6460	6527	6594	6661	6728	6794	6861	6928	6995	7062	6	40
97		7129	7196	7262	7329	7396	7463	7530	7597	7663	7730	7	47
98		7797	7864	7931	7998	8064	8131	8198	8265	8332	8399	8	54
99		8465	8532	8599	8666	8733	8799	8866	8933	9000	9067	9	60
6500		9134	9200	9267	9334	9401	9468	9534	9601	9668	9735		
01		9802	9868	9935	0002	0069	0136	0202	0269	0336	0403		
02	813	0470	0536	0603	0670	0737	0804	0870	0937	1004	1071		
03		1138	1204	1271	1338	1405	1471	1538	1605	1672	1739		
04		1805	1872	1939	2006	2072	2139	2206	2273	2339	2406		
6505		2473	2540	2607	2673	2740	2807	2874	2940	3007	3074	66	
06		3141	3207	3274	3341	3408	3474	3541	3608	3675	3741	1	7
07		3808	3875	3942	4008	4075	4142	4209	4275	4342	4409	2	13
08		4475	4542	4609	4676	4742	4809	4876	4943	5009	5076	3	20
09		5143	5209	5276	5343	5410	5476	5543	5610	5676	5743	4	26
6510		5810	5877	5943	6010	6077	6143	6210	6277	6344	6410	5	33
11		6477	6544	6610	6677	6744	6810	6877	6944	7011	7077	6	40
12		7144	7211	7277	7344	7411	7477	7544	7611	7677	7744	7	46
13		7811	7877	7944	8011	8077	8144	8211	8278	8344	8411	8	53
14		8478	8544	8611	8678	8744	8811	8878	8944	9011	9078	9	59
6515		9144	9211	9278	9344	9411	9477	9544	9611	9677	9744		
16		9811	9877	9944	0011	0077	0144	0211	0277	0344	0411		
17	814	0477	0544	0610	0677	0744	0810	0877	0944	1010	1077		
18		1144	1210	1277	1343	1410	1477	1543	1610	1677	1743		
19		1810	1876	1943	2010	2076	2143	2210	2276	2343	2409		
6520		2476	2543	2609	2676	2742	2809	2876	2942	3009	3075	67	
21		3142	3209	3275	3342	3408	3475	3542	3608	3675	3741	1	7
22		3808	3875	3941	4008	4074	4141	4207	4274	4341	4407	2	13
23		4474	4540	4607	4674	4740	4807	4873	4940	5006	5073	3	20
24		5140	5206	5273	5339	5406	5472	5539	5605	5672	5739	4	27
6525		5805	5872	5938	6005	6071	6138	6204	6271	6338	6404	5	34
26		6471	6537	6604	6670	6737	6803	6870	6937	7003	7070	6	40
27		7136	7203	7269	7336	7402	7469	7535	7602	7668	7735	7	47
28		7801	7868	7935	8001	8068	8134	8201	8267	8334	8400	8	54
29		8467	8533	8600	8666	8733	8799	8866	8932	8999	9065	9	60
N.		0	1	2	3	4	5	6	7	8	9	Diff.	

Number 65300 *to* 65999
Logarithm 814 9132 *to* 819 5374

N.		0	1	2	3	4	5	6	7	8	9	Diff.	
6530	814	9132	9198	9265	9331	9398	9464	9531	9597	9664	9730	67	
31		9797	9863	9930	9996	0063	0129	0196	0262	0329	0395	1	7
32	815	0462	0528	0595	0661	0728	0794	0861	0927	0994	1060	2	13
33		1127	1193	1260	1326	1392	1459	1525	1592	1658	1725	3	20
34		1791	1858	1924	1991	2057	2124	2190	2257	2323	2389	4	27
6535		2456	2522	2589	2655	2722	2788	2855	2921	2988	3054	5	34
36		3120	3187	3253	3320	3386	3453	3519	3586	3652	3718	6	40
37		3785	3851	3918	3984	4051	4117	4183	4250	4316	4383	7	47
38		4449	4516	4582	4648	4715	4781	4848	4914	4981	5047	8	54
39		5113	5180	5246	5313	5379	5445	5512	5578	5645	5711	9	60
6540		5777	5844	5910	5977	6043	6109	6176	6242	6309	6375		
41		6441	6508	6574	6641	6707	6773	6840	6906	6973	7039		
42		7105	7172	7238	7305	7371	7437	7504	7570	7636	7703		
43		7769	7836	7902	7968	8035	8101	8167	8234	8300	8367		
44		8433	8499	8566	8632	8698	8765	8831	8897	8964	9030		
6545		9097	9163	9229	9296	9362	9428	9495	9561	9627	9694	66	
46		9760	9826	9893	9959	0025	0092	0158	0224	0291	0357	1	7
47	816	0423	0490	0556	0622	0689	0755	0821	0888	0954	1020	2	13
48		1087	1153	1219	1286	1352	1418	1485	1551	1617	1684	3	20
49		1750	1816	1883	1949	2015	2081	2148	2214	2280	2347	4	26
6550		2413	2479	2546	2612	2678	2745	2811	2877	2943	3010	5	33
51		3076	3142	3209	3275	3341	3407	3474	3540	3606	3673	6	40
52		3739	3805	3871	3938	4004	4070	4137	4203	4269	4335	7	46
53		4402	4468	4534	4600	4667	4733	4799	4866	4932	4998	8	53
54		5064	5131	5197	5263	5329	5396	5462	5528	5594	5661	9	59
6555		5727	5793	5859	5926	5992	6058	6124	6191	6257	6323		
56		6389	6456	6522	6588	6654	6721	6787	6853	6919	6986		
57		7052	7118	7184	7251	7317	7383	7449	7515	7582	7648		
58		7714	7780	7847	7913	7979	8045	8111	8178	8244	8310		
59		8376	8443	8509	8575	8641	8707	8774	8840	8906	8972		
6560		9038	9105	9171	9237	9303	9369	9436	9502	9568	9634	67	
61		9700	9767	9833	9899	9965	0031	0098	0164	0230	0296	1	7
62	817	0362	0428	0495	0561	0627	0693	0759	0826	0892	0958	2	13
63		1024	1090	1156	1223	1289	1355	1421	1487	1553	1620	3	20
64		1686	1752	1818	1884	1950	2017	2083	2149	2215	2281	4	27
6565		2347	2413	2480	2546	2612	2678	2744	2810	2876	2943	5	34
66		3009	3075	3141	3207	3273	3339	3406	3472	3538	3604	6	40
67		3670	3736	3802	3869	3935	4001	4067	4133	4199	4265	7	47
68		4331	4398	4464	4530	4596	4662	4728	4794	4860	4927	8	54
69		4993	5059	5125	5191	5257	5323	5389	5455	5521	5588	9	60
6570		5654	5720	5786	5852	5918	5984	6050	6116	6182	6249		
71		6315	6381	6447	6513	6579	6645	6711	6777	6843	6909		
72		6976	7042	7108	7174	7240	7306	7372	7438	7504	7570		
73		7636	7702	7768	7835	7901	7967	8033	8099	8165	8231		
74		8297	8363	8429	8495	8561	8627	8693	8759	8825	8892		
6575		8958	9024	9090	9156	9222	9288	9354	9420	9486	9552	66	
76		9618	9684	9750	9816	9882	9948	0014	0080	0146	0212	1	7
77	818	0278	0344	0410	0477	0543	0609	0675	0741	0807	0873	2	13
78		0939	1005	1071	1137	1203	1269	1335	1401	1467	1533	3	20
79		1599	1665	1731	1797	1863	1929	1995	2061	2127	2193	4	26
6580		2259	2325	2391	2457	2523	2589	2655	2721	2787	2853	5	33
81		2919	2985	3051	3117	3183	3249	3315	3381	3447	3513	6	40
82		3579	3645	3711	3777	3843	3909	3975	4041	4107	4173	7	46
83		4239	4305	4370	4436	4502	4568	4634	4700	4766	4832	8	53
84		4898	4964	5030	5096	5162	5228	5294	5360	5426	5492	9	59
6585		5558	5624	5690	5756	5822	5888	5953	6019	6085	6151		
86		6217	6283	6349	6415	6481	6547	6613	6679	6745	6811		
87		6877	6943	7008	7074	7140	7206	7272	7338	7404	7470		
88		7536	7602	7668	7734	7800	7866	7931	7997	8063	8129		
89		8195	8261	8327	8393	8459	8525	8591	8656	8722	8788		
6590		8854	8920	8986	9052	9118	9184	9250	9315	9381	9447	65	
91		9513	9579	9645	9711	9777	9843	9908	9974	0040	0106	1	7
92	819	0172	0238	0304	0370	0436	0501	0567	0633	0699	0765	2	13
93		0831	0897	0962	1028	1094	1160	1226	1292	1358	1424	3	20
94		1489	1555	1621	1687	1753	1819	1885	1950	2016	2082	4	26
6595		2148	2214	2280	2346	2411	2477	2543	2609	2675	2741	5	33
96		2806	2872	2938	3004	3070	3136	3202	3267	3333	3399	6	39
97		3465	3531	3597	3662	3728	3794	3860	3926	3991	4057	7	46
98		4123	4189	4255	4321	4386	4452	4518	4584	4650	4715	8	52
99		4781	4847	4913	4979	5045	5110	5176	5242	5308	5374	9	59
N.		0	1	2	3	4	5	6	7	8	9	Diff.	

Number 66000 *to* 66699

Logarithm 819 5439 *to* 824 1193

N.	0	1	2	3	4	5	6	7	8	9	Diff.
6600	819 5439	5505	5571	5637	5703	5768	5834	5900	5966	6032	65
01	6097	6163	6229	6295	6360	6426	6492	6558	6624	6689	1 7
02	6755	6821	6887	6953	7018	7084	7150	7216	7281	7347	2 13
03	7413	7479	7545	7610	7676	7742	7808	7873	7939	8005	3 20
04	8071	8136	8202	8268	8334	8399	8465	8531	8597	8662	4 26
6605	8728	8794	8860	8925	8991	9057	9123	9188	9254	9320	5 33
06	9386	9451	9517	9583	9649	9714	9780	9846	9912	9977	6 39
07	820 0043	0109	0175	0240	0306	0372	0437	0503	0569	0635	7 46
08	0700	0766	0832	0898	0963	1029	1095	1160	1226	1292	8 52
09	1358	1423	1489	1555	1620	1686	1752	1817	1883	1949	9 59
6610	2015	2080	2146	2212	2277	2343	2409	2474	2540	2606	
11	2672	2737	2803	2869	2934	3000	3066	3131	3197	3263	
12	3328	3394	3460	3525	3591	3657	3723	3788	3854	3920	
13	3985	4051	4117	4182	4248	4314	4379	4445	4511	4576	
14	4642	4708	4773	4839	4905	4970	5036	5102	5167	5233	
6615	5298	5364	5430	5495	5561	5627	5692	5758	5824	5889	66
16	5955	6021	6086	6152	6218	6283	6349	6414	6480	6546	1 7
17	6611	6677	6743	6808	6874	6939	7005	7071	7136	7202	2 13
18	7268	7333	7399	7464	7530	7596	7661	7727	7793	7858	3 20
19	7924	7989	8055	8121	8186	8252	8317	8383	8449	8514	4 26
6620	8580	8645	8711	8777	8842	8908	8973	9039	9105	9170	5 33
21	9236	9301	9367	9433	9498	9564	9629	9695	9761	9826	6 40
22	9892	9957	0023	0089	0154	0220	0285	0351	0416	0482	7 46
23	821 0548	0613	0679	0744	0810	0875	0941	1007	1072	1138	8 53
24	1203	1269	1334	1400	1465	1531	1597	1662	1728	1793	9 59
6625	1859	1924	1990	2055	2121	2187	2252	2318	2383	2449	
26	2514	2580	2645	2711	2776	2842	2908	2973	3039	3104	
27	3170	3235	3301	3366	3432	3497	3563	3628	3694	3759	
28	3825	3891	3956	4022	4087	4153	4218	4284	4349	4415	
29	4480	4546	4611	4677	4742	4808	4873	4939	5004	5070	
6630	5135	5201	5266	5332	5397	5463	5528	5594	5659	5725	65
31	5790	5856	5921	5987	6052	6118	6183	6249	6314	6380	1 7
32	6445	6511	6576	6642	6707	6773	6838	6904	6969	7034	2 13
33	7100	7165	7231	7296	7362	7427	7493	7558	7624	7689	3 20
34	7755	7820	7886	7951	8017	8082	8147	8213	8278	8344	4 26
6635	8409	8475	8540	8606	8671	8737	8802	8867	8933	8998	5 33
36	9064	9129	9195	9260	9326	9391	9456	9522	9587	9653	6 39
37	9718	9784	9849	9914	9980	0045	0111	0176	0242	0307	7 46
38	822 0372	0438	0503	0569	0634	0700	0765	0830	0896	0961	8 52
39	1027	1092	1158	1223	1288	1354	1419	1485	1550	1615	9 59
6640	1681	1746	1812	1877	1942	2008	2073	2139	2204	2269	
41	2335	2400	2466	2531	2596	2662	2727	2793	2858	2923	
42	2989	3054	3119	3185	3250	3316	3381	3446	3512	3577	
43	3643	3708	3773	3839	3904	3969	4035	4100	4166	4231	
44	4296	4362	4427	4492	4558	4623	4688	4754	4819	4884	
6645	4950	5015	5081	5146	5211	5277	5342	5407	5473	5538	66
46	5603	5669	5734	5799	5865	5930	5995	6061	6126	6191	1 7
47	6257	6322	6387	6453	6518	6583	6649	6714	6779	6845	2 13
48	6910	6975	7041	7106	7171	7237	7302	7367	7433	7498	3 20
49	7563	7629	7694	7759	7825	7890	7955	8021	8086	8151	4 26
6650	8216	8282	8347	8412	8478	8543	8608	8674	8739	8804	5 33
51	8869	8935	9000	9065	9131	9196	9261	9327	9392	9457	6 40
52	9522	9588	9653	9718	9784	9849	9914	9979	0045	0110	7 46
53	823 0175	0241	0306	0371	0436	0502	0567	0632	0697	0763	8 53
54	0828	0893	0958	1024	1089	1154	1220	1285	1350	1415	9 59
6655	1481	1546	1611	1676	1742	1807	1872	1937	2003	2068	
56	2133	2198	2264	2329	2394	2459	2525	2590	2655	2720	
57	2786	2851	2916	2981	3047	3112	3177	3242	3307	3373	
58	3438	3503	3568	3634	3699	3764	3829	3894	3960	4025	
59	4090	4155	4221	4286	4351	4416	4481	4547	4612	4677	
6660	4742	4808	4873	4938	5003	5068	5134	5199	5264	5329	65
61	5394	5460	5525	5590	5655	5720	5786	5851	5916	5981	1 7
62	6046	6111	6177	6242	6307	6372	6437	6503	6568	6633	2 13
63	6698	6763	6828	6894	6959	7024	7089	7154	7220	7285	3 20
64	7350	7415	7480	7545	7611	7676	7741	7806	7871	7936	4 26
6665	8002	8067	8132	8197	8262	8327	8392	8458	8523	8588	5 33
66	8653	8718	8783	8849	8914	8979	9044	9109	9174	9239	6 39
67	9305	9370	9435	9500	9565	9630	9695	9761	9826	9891	7 46
68	9956	0021	0086	0151	0216	0282	0347	0412	0477	0542	8 52
69	824 0607	0672	0737	0803	0868	0933	0998	1063	1128	1193	9 59
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 66700 *to* 67399

Logarithm 824 1258 *to* 828 6535

N.	0	1	2	3	4	5	6	7	8	9	Diff.
6670	824 1258	1323	1389	1454	1519	1584	1649	1714	1779	1844	66
71	1909	1975	2040	2105	2170	2235	2300	2365	2430	2495	1 7
72	2560	2625	2691	2756	2821	2886	2951	3016	3081	3146	2 13
73	3211	3276	3341	3406	3472	3537	3602	3667	3732	3797	3 20
74	3862	3927	3992	4057	4122	4187	4252	4318	4383	4448	4 26
6675	4513	4578	4643	4708	4773	4838	4903	4968	5033	5098	5 33
76	5163	5228	5293	5358	5423	5489	5554	5619	5684	5749	6 40
77	5814	5879	5944	6009	6074	6139	6204	6269	6334	6399	7 46
78	6464	6529	6594	6659	6724	6789	6854	6919	6984	7049	8 53
79	7114	7179	7244	7310	7375	7440	7505	7570	7635	7700	9 59
6680	7765	7830	7895	7960	8025	8090	8155	8220	8285	8350	
81	8415	8480	8545	8610	8675	8740	8805	8870	8935	9000	
82	9065	9130	9195	9260	9325	9390	9455	9520	9585	9650	
83	9715	9780	9845	9910	9975	0040	0105	0169	0234	0299	
84	825 0364	0429	0494	0559	0624	0689	0754	0819	0884	0949	
6685	1014	1079	1144	1209	1274	1339	1404	1469	1534	1599	65
86	1664	1729	1794	1859	1924	1988	2053	2118	2183	2248	1 7
87	2313	2378	2443	2508	2573	2638	2703	2768	2833	2898	2 13
88	2963	3028	3093	3157	3222	3287	3352	3417	3482	3547	3 20
89	3612	3677	3742	3807	3872	3937	4002	4066	4131	4196	4 26
6690	4261	4326	4391	4456	4521	4586	4651	4716	4780	4845	5 33
91	4910	4975	5040	5105	5170	5235	5300	5365	5430	5494	6 39
92	5559	5624	5689	5754	5819	5884	5949	6014	6078	6143	7 46
93	6208	6273	6338	6403	6468	6533	6598	6662	6727	6792	8 52
94	6857	6922	6987	7052	7117	7181	7246	7311	7376	7441	9 59
6695	7506	7571	7636	7700	7765	7830	7895	7960	8025	8090	
96	8154	8219	8284	8349	8414	8479	8544	8608	8673	8738	
97	8803	8868	8933	8998	9062	9127	9192	9257	9322	9387	
98	9451	9516	9581	9646	9711	9776	9840	9905	9970	0035	
99	826 0100	0165	0229	0294	0359	0424	0489	0554	0618	0683	
6700	0748	0813	0878	0942	1007	1072	1137	1202	1267	1331	64
01	1396	1461	1526	1591	1655	1720	1785	1850	1915	1979	1 6
02	2044	2109	2174	2239	2303	2368	2433	2498	2563	2627	2 13
03	2692	2757	2822	2887	2951	3016	3081	3146	3210	3275	3 19
04	3340	3405	3470	3534	3599	3664	3729	3794	3858	3923	4 26
6705	3988	4053	4117	4182	4247	4312	4376	4441	4506	4571	5 32
06	4635	4700	4765	4830	4895	4959	5024	5089	5154	5218	6 38
07	5283	5348	5413	5477	5542	5607	5672	5736	5801	5866	7 45
08	5931	5995	6060	6125	6190	6254	6319	6384	6448	6513	8 51
09	6578	6643	6707	6772	6837	6902	6966	7031	7096	7160	9 58
6710	7225	7290	7355	7419	7484	7549	7614	7678	7743	7808	
11	7872	7937	8002	8067	8131	8196	8261	8325	8390	8455	
12	8519	8584	8649	8714	8778	8843	8908	8972	9037	9102	
13	9166	9231	9296	9361	9425	9490	9555	9619	9684	9749	
14	9813	9878	9943	0007	0072	0137	0201	0266	0331	0395	
6715	827 0460	0525	0590	0654	0719	0784	0848	0913	0978	1042	65
16	1107	1172	1236	1301	1366	1430	1495	1560	1624	1689	1 7
17	1753	1818	1883	1947	2012	2077	2141	2206	2271	2335	2 13
18	2400	2465	2529	2594	2659	2723	2788	2852	2917	2982	3 20
19	3046	3111	3176	3240	3305	3370	3434	3499	3563	3628	4 26
6720	3693	3757	3822	3887	3951	4016	4080	4145	4210	4274	5 33
21	4339	4404	4468	4533	4597	4662	4727	4791	4856	4920	6 39
22	4985	5050	5114	5179	5244	5308	5373	5437	5502	5567	7 46
23	5631	5696	5760	5825	5889	5954	6019	6083	6148	6212	8 52
24	6277	6342	6406	6471	6535	6600	6665	6729	6794	6858	9 59
6725	6923	6987	7052	7117	7181	7246	7310	7375	7439	7504	
26	7569	7633	7698	7762	7827	7891	7956	8021	8085	8150	
27	8214	8279	8343	8408	8473	8537	8602	8666	8731	8795	
28	8860	8924	8989	9053	9118	9183	9247	9312	9376	9441	
29	9505	9570	9634	9699	9763	9828	9893	9957	0022	0086	
6730	828 0151	0215	0280	0344	0409	0473	0538	0602	0667	0731	64
31	0796	0860	0925	0989	1054	1119	1183	1248	1312	1377	1 6
32	1441	1506	1570	1635	1699	1764	1828	1893	1957	2022	2 13
33	2086	2151	2215	2280	2344	2409	2473	2538	2602	2667	3 19
34	2731	2796	2860	2925	2989	3054	3118	3183	3247	3312	4 26
6735	3376	3440	3505	3569	3634	3698	3763	3827	3892	3956	5 32
36	4021	4085	4150	4214	4279	4343	4408	4472	4537	4601	6 38
37	4665	4730	4794	4859	4923	4988	5052	5117	5181	5246	7 45
38	5310	5375	5439	5503	5568	5632	5697	5761	5826	5890	8 51
39	5955	6019	6083	6148	6212	6277	6341	6406	6470	6535	9 58
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 67400 *to* 68099
Logarithm 828 6599 *to* 833 1407

N.		0	1	2	3	4	5	6	7	8	9	Diff.	
6740	828	6599	6663	6728	6792	6857	6921	6986	7050	7114	7179	65	
41		7243	7308	7372	7437	7501	7565	7630	7694	7759	7823	1	7
42		7887	7952	8016	8081	8145	8210	8274	8338	8403	8467	2	13
43		8532	8596	8660	8725	8789	8854	8918	8982	9047	9111	3	20
44		9176	9240	9304	9369	9433	9498	9562	9626	9691	9755	4	26
6745		9820	9884	9948	0013	0077	0141	0206	0270	0335	0399	5	33
46	829	0463	0528	0592	0656	0721	0785	0850	0914	0978	1043	6	39
47		1107	1171	1236	1300	1365	1429	1493	1558	1622	1686	7	46
48		1751	1815	1879	1944	2008	2073	2137	2201	2266	2330	8	52
49		2394	2459	2523	2587	2652	2716	2780	2845	2909	2973	9	59
6750		3038	3102	3166	3231	3295	3359	3424	3488	3552	3617		
51		3681	3745	3810	3874	3938	4003	4067	4131	4196	4260		
52		4324	4389	4453	4517	4582	4646	4710	4775	4839	4903		
53		4967	5032	5096	5160	5225	5289	5353	5418	5482	5546		
54		5611	5675	5739	5803	5868	5932	5996	6061	6125	6189		
6755		6254	6318	6382	6446	6511	6575	6639	6704	6768	6832	64	
56		6896	6961	7025	7089	7154	7218	7282	7346	7411	7475	1	6
57		7539	7603	7668	7732	7796	7861	7925	7989	8053	8118	2	13
58		8182	8246	8310	8375	8439	8503	8567	8632	8696	8760	3	19
59		8824	8889	8953	9017	9081	9146	9210	9274	9338	9403	4	26
6760		9467	9531	9595	9660	9724	9788	9852	9917	9981	0045	5	32
61	830	0109	0174	0238	0302	0366	0431	0495	0559	0623	0687	6	38
62		0752	0816	0880	0944	1009	1073	1137	1201	1265	1330	7	45
63		1394	1458	1522	1587	1651	1715	1779	1843	1908	1972	8	51
64		2036	2100	2164	2229	2293	2357	2421	2485	2550	2614	9	58
6765		2678	2742	2806	2871	2935	2999	3063	3127	3192	3256		
66		3320	3384	3448	3512	3577	3641	3705	3769	3833	3898		
67		3962	4026	4090	4154	4218	4283	4347	4411	4475	4539		
68		4604	4668	4732	4796	4860	4924	4988	5053	5117	5181		
69		5245	5309	5373	5438	5502	5566	5630	5694	5758	5823		
6770		5887	5951	6015	6079	6143	6207	6272	6336	6400	6464	65	
71		6528	6592	6656	6721	6785	6849	6913	6977	7041	7105	1	7
72		7169	7234	7298	7362	7426	7490	7554	7618	7683	7747	2	13
73		7811	7875	7939	8003	8067	8131	8195	8260	8324	8388	3	20
74		8452	8516	8580	8644	8708	8772	8837	8901	8965	9029	4	26
6775		9093	9157	9221	9285	9349	9413	9478	9542	9606	9670	5	33
76		9734	9798	9862	9926	9990	0054	0119	0183	0247	0311	6	39
77	831	0375	0439	0503	0567	0631	0695	0759	0823	0887	0952	7	46
78		1016	1080	1144	1208	1272	1336	1400	1464	1528	1592	8	52
79		1656	1720	1784	1849	1913	1977	2041	2105	2169	2233	9	59
6780		2297	2361	2425	2489	2553	2617	2681	2745	2809	2873		
81		2937	3001	3066	3130	3194	3258	3322	3386	3450	3514		
82		3578	3642	3706	3770	3834	3898	3962	4026	4090	4154		
83		4218	4282	4346	4410	4474	4538	4602	4666	4730	4794		
84		4858	4922	4986	5050	5114	5178	5242	5306	5371	5435		
6785		5499	5563	5627	5691	5755	5819	5883	5947	6011	6075	64	
86		6139	6203	6267	6331	6395	6459	6523	6587	6651	6715	1	6
87		6778	6842	6906	6970	7034	7098	7162	7226	7290	7354	2	13
88		7418	7482	7546	7610	7674	7738	7802	7866	7930	7994	3	19
89		8058	8122	8186	8250	8314	8378	8442	8506	8570	8634	4	26
6790		8698	8762	8826	8890	8954	9018	9081	9145	9209	9273	5	32
91		9337	9401	9465	9529	9593	9657	9721	9785	9849	9913	6	38
92		9977	0041	0105	0169	0233	0296	0360	0424	0488	0552	7	45
93	832	0616	0680	0744	0808	0872	0936	1000	1064	1128	1192	8	51
94		1255	1319	1383	1447	1511	1575	1639	1703	1767	1831	9	58
6795		1895	1958	2022	2086	2150	2214	2278	2342	2406	2470		
96		2534	2598	2662	2725	2789	2853	2917	2981	3045	3109		
97		3173	3237	3300	3364	3428	3492	3556	3620	3684	3748		
98		3812	3875	3939	4003	4067	4131	4195	4259	4323	4387		
99		4450	4514	4578	4642	4706	4770	4834	4898	4961	5025		
6800		5089	5153	5217	5281	5345	5408	5472	5536	5600	5664	63	
01		5728	5792	5855	5919	5983	6047	6111	6175	6239	6302	1	6
02		6366	6430	6494	6558	6622	6686	6749	6813	6877	6941	2	13
03		7005	7069	7132	7196	7260	7324	7388	7452	7515	7579	3	19
04		7643	7707	7771	7835	7898	7962	8026	8090	8154	8217	4	25
6805		8281	8345	8409	8473	8537	8600	8664	8728	8792	8856	5	32
06		8919	8983	9047	9111	9175	9238	9302	9366	9430	9494	6	38
07		9558	9621	9685	9749	9813	9877	9940	0004	0068	0132	7	44
08	833	0195	0259	0323	0387	0451	0514	0578	0642	0706	0770	8	50
09		0833	0897	0961	1025	1088	1152	1216	1280	1344	1407	9	57
N.		0	1	2	3	4	5	6	7	8	9	Diff.	

Number 68100 *to* 68799
Logarithm 833 1471 *to* 837 5821

N.		0	1	2	3	4	5	6	7	8	9	Diff.	
6810	833	1471	1535	1599	1662	1726	1790	1854	1918	1981	2045	64	
11		2109	2173	2236	2300	2364	2428	2491	2555	2619	2683	1	6
12		2746	2810	2874	2938	3001	3065	3129	3193	3256	3320	2	13
13		3384	3448	3511	3575	3639	3703	3766	3830	3894	3958	3	19
14		4021	4085	4149	4212	4276	4340	4404	4467	4531	4595	4	26
6815		4659	4722	4786	4850	4913	4977	5041	5105	5168	5232	5	32
16		5296	5360	5423	5487	5551	5614	5678	5742	5806	5869	6	38
17		5933	5997	6060	6124	6188	6251	6315	6379	6443	6506	7	45
18		6570	6634	6697	6761	6825	6888	6952	7016	7080	7143	8	51
19		7207	7271	7334	7398	7462	7525	7589	7653	7716	7780	9	58
6820		7844	7907	7971	8035	8098	8162	8226	8289	8353	8417		
21		8480	8544	8608	8672	8735	8799	8862	8926	8990	9053		
22		9117	9181	9244	9308	9372	9435	9499	9563	9626	9690		
23		9754	9817	9881	9945	0008	0072	0136	0199	0263	0327		
24	834	0390	0454	0517	0581	0645	0708	0772	0836	0899	0963		
6825		1027	1090	1154	1217	1281	1345	1408	1472	1536	1599	63	
26		1663	1726	1790	1854	1917	1981	2045	2108	2172	2235	1	6
27		2299	2363	2426	2490	2553	2617	2681	2744	2808	2872	2	13
28		2935	2999	3062	3126	3190	3253	3317	3380	3444	3508	3	19
29		3571	3635	3698	3762	3826	3889	3953	4016	4080	4143	4	25
6830		4207	4271	4334	4398	4461	4525	4589	4652	4716	4779	5	32
31		4843	4906	4970	5034	5097	5161	5224	5288	5351	5415	6	38
32		5479	5542	5606	5669	5733	5796	5860	5924	5987	6051	7	44
33		6114	6178	6241	6305	6368	6432	6496	6559	6623	6686	8	50
34		6750	6813	6877	6940	7004	7067	7131	7195	7258	7322	9	57
6835		7385	7449	7512	7576	7639	7703	7766	7830	7893	7957		
36		8021	8084	8148	8211	8275	8338	8402	8465	8529	8592		
37		8656	8719	8783	8846	8910	8973	9037	9100	9164	9227		
38		9291	9354	9418	9481	9545	9609	9672	9736	9799	9863		
39		9926	9990	0053	0117	0180	0244	0307	0371	0434	0498		
6840	835	0561	0625	0688	0751	0815	0878	0942	1005	1069	1132	64	
41		1196	1259	1323	1386	1450	1513	1577	1640	1704	1767	1	6
42		1831	1894	1958	2021	2085	2148	2212	2275	2338	2402	2	13
43		2465	2529	2592	2656	2719	2783	2846	2910	2973	3037	3	19
44		3100	3163	3227	3290	3354	3417	3481	3544	3608	3671	4	26
6845		3735	3798	3861	3925	3988	4052	4115	4179	4242	4306	5	32
46		4369	4432	4496	4559	4623	4686	4750	4813	4876	4940	6	38
47		5003	5067	5130	5194	5257	5320	5384	5447	5511	5574	7	45
48		5638	5701	5764	5828	5891	5955	6018	6081	6145	6208	8	51
49		6272	6335	6398	6462	6525	6589	6652	6716	6779	6842	9	58
6850		6906	6969	7033	7096	7159	7223	7286	7349	7413	7476		
51		7540	7603	7666	7730	7793	7857	7920	7983	8047	8110		
52		8174	8237	8300	8364	8427	8490	8554	8617	8681	8744		
53		8807	8871	8934	8997	9061	9124	9188	9251	9314	9378		
54		9441	9504	9568	9631	9694	9758	9821	9885	9948	0011		
6855	836	0075	0138	0201	0265	0328	0391	0455	0518	0581	0645	63	
56		0708	0771	0835	0898	0961	1025	1088	1151	1215	1278	1	6
57		1341	1405	1468	1531	1595	1658	1721	1785	1848	1911	2	13
58		1975	2038	2101	2165	2228	2291	2355	2418	2481	2545	3	19
59		2608	2671	2735	2798	2861	2925	2988	3051	3115	3178	4	25
6860		3241	3304	3368	3431	3494	3558	3621	3684	3748	3811	5	32
61		3874	3937	4001	4064	4127	4191	4254	4317	4381	4444	6	38
62		4507	4570	4634	4697	4760	4824	4887	4950	5013	5077	7	44
63		5140	5203	5267	5330	5393	5456	5520	5583	5646	5709	8	50
64		5773	5836	5899	5963	6026	6089	6152	6216	6279	6342	9	57
6865		6405	6469	6532	6595	6658	6722	6785	6848	6911	6975		
66		7038	7101	7164	7228	7291	7354	7417	7481	7544	7607		
67		7670	7734	7797	7860	7923	7987	8050	8113	8176	8240		
68		8303	8366	8429	8493	8556	8619	8682	8745	8809	8872		
69		8935	8998	9062	9125	9188	9251	9314	9378	9441	9504		
6870		9567	9631	9694	9757	9820	9883	9947	0010	0073	0136	64	
71	837	0199	0263	0326	0389	0452	0516	0579	0642	0705	0768	1	6
72		0832	0895	0958	1021	1084	1147	1211	1274	1337	1400	2	13
73		1463	1527	1590	1653	1716	1779	1843	1906	1969	2032	3	19
74		2095	2158	2222	2285	2348	2411	2474	2538	2601	2664	4	26
6875		2727	2790	2853	2917	2980	3043	3106	3169	3232	3296	5	32
76		3359	3422	3485	3548	3611	3674	3738	3801	3864	3927	6	38
77		3990	4053	4117	4180	4243	4306	4369	4432	4495	4559	7	45
78		4622	4685	4748	4811	4874	4937	5001	5064	5127	5190	8	51
79		5253	5316	5379	5442	5506	5569	5632	5695	5758	5821	9	58
N.		0	1	2	3	4	5	6	7	8	9	Diff.	

Number 68800 *to* 69499
Logarithm 837 5884 *to* 841 9786

N.	0	1	2	3	4	5	6	7	8	9	Diff.
6880	837 5884	5948	6011	6074	6137	6200	6263	6326	6389	6452	64
81	6516	6579	6642	6705	6768	6831	6894	6957	7020	7084	1 6
82	7147	7210	7273	7336	7399	7462	7525	7588	7652	7715	2 13
83	7778	7841	7904	7967	8030	8093	8156	8219	8282	8346	3 19
84	8409	8472	8535	8598	8661	8724	8787	8850	8913	8976	4 26
6885	9039	9103	9166	9229	9292	9355	9418	9481	9544	9607	5 32
86	9670	9733	9796	9859	9922	9986	0049	0112	0175	0238	6 38
87	838 0301	0364	0427	0490	0553	0616	0679	0742	0805	0868	7 45
88	0931	0994	1057	1121	1184	1247	1310	1373	1436	1499	8 51
89	1562	1625	1688	1751	1814	1877	1940	2003	2066	2129	9 58
6890	2192	2255	2318	2381	2444	2507	2570	2633	2696	2759	
91	2822	2886	2949	3012	3075	3138	3201	3264	3327	3390	
92	3453	3516	3579	3642	3705	3768	3831	3894	3957	4020	
93	4083	4146	4209	4272	4335	4398	4461	4524	4587	4650	
94	4713	4776	4839	4902	4965	5028	5091	5154	5217	5280	
6895	5343	5406	5469	5532	5595	5658	5721	5784	5847	5910	63
96	5973	6036	6098	6161	6224	6287	6350	6413	6476	6539	1 6
97	6602	6665	6728	6791	6854	6917	6980	7043	7106	7169	2 13
98	7232	7295	7358	7421	7484	7547	7610	7673	7736	7798	3 19
99	7861	7924	7987	8050	8113	8176	8239	8302	8365	8428	4 25
6900	8491	8554	8617	8680	8743	8806	8869	8931	8994	9057	5 32
01	9120	9183	9246	9309	9372	9435	9498	9561	9624	9687	6 38
02	9750	9812	9875	9938	0001	0064	0127	0190	0253	0316	7 44
03	839 0379	0442	0505	0567	0630	0693	0756	0819	0882	0945	8 50
04	1008	1071	1134	1197	1259	1322	1385	1448	1511	1574	9 57
6905	1637	1700	1763	1826	1888	1951	2014	2077	2140	2203	
06	2266	2329	2392	2454	2517	2580	2643	2706	2769	2832	
07	2895	2957	3020	3083	3146	3209	3272	3335	3398	3460	
08	3523	3586	3649	3712	3775	3838	3900	3963	4026	4089	
09	4152	4215	4278	4341	4403	4466	4529	4592	4655	4718	
6910	4780	4843	4906	4969	5032	5095	5158	5220	5283	5346	62
11	5409	5472	5535	5597	5660	5723	5786	5849	5912	5974	1 6
12	6037	6100	6163	6226	6289	6351	6414	6477	6540	6603	2 12
13	6666	6728	6791	6854	6917	6980	7042	7105	7168	7231	3 19
14	7294	7357	7419	7482	7545	7608	7671	7733	7796	7859	4 25
6915	7922	7985	8047	8110	8173	8236	8299	8361	8424	8487	5 31
16	8550	8613	8675	8738	8801	8864	8927	8989	9052	9115	6 37
17	9178	9241	9303	9366	9429	9492	9554	9617	9680	9743	7 43
18	9806	9868	9931	9994	0057	0119	0182	0245	0308	0371	8 50
19	840 0433	0496	0559	0622	0684	0747	0810	0873	0935	0998	9 56
6920	1061	1124	1186	1249	1312	1375	1437	1500	1563	1626	
21	1688	1751	1814	1877	1939	2002	2065	2128	2190	2253	
22	2316	2379	2441	2504	2567	2630	2692	2755	2818	2881	
23	2943	3006	3069	3132	3194	3257	3320	3382	3445	3508	
24	3571	3633	3696	3759	3821	3884	3947	4010	4072	4135	
6925	4198	4260	4323	4386	4449	4511	4574	4637	4699	4762	63
26	4825	4888	4950	5013	5076	5138	5201	5264	5326	5389	1 6
27	5452	5515	5577	5640	5703	5765	5828	5891	5953	6016	2 13
28	6079	6141	6204	6267	6330	6392	6455	6518	6580	6643	3 19
29	6706	6768	6831	6894	6956	7019	7082	7144	7207	7270	4 25
6930	7332	7395	7458	7520	7583	7646	7708	7771	7834	7896	5 32
31	7959	8022	8084	8147	8210	8272	8335	8398	8460	8523	6 38
32	8586	8648	8711	8773	8836	8899	8961	9024	9087	9149	7 44
33	9212	9275	9337	9400	9463	9525	9588	9650	9713	9776	8 50
34	9838	9901	9964	0026	0089	0152	0214	0277	0339	0402	9 57
6935	841 0465	0527	0590	0653	0715	0778	0840	0903	0966	1028	
36	1091	1153	1216	1279	1341	1404	1467	1529	1592	1654	
37	1717	1780	1842	1905	1967	2030	2093	2155	2218	2280	
38	2343	2406	2468	2531	2593	2656	2719	2781	2844	2906	
39	2969	3031	3094	3157	3219	3282	3344	3407	3470	3532	
6940	3595	3657	3720	3782	3845	3908	3970	4033	4095	4158	62
41	4220	4283	4346	4408	4471	4533	4596	4658	4721	4784	1 6
42	4846	4909	4971	5034	5096	5159	5221	5284	5347	5409	2 12
43	5472	5534	5597	5659	5722	5784	5847	5909	5972	6035	3 19
44	6097	6160	6222	6285	6347	6410	6472	6535	6597	6660	4 25
6945	6723	6785	6848	6910	6973	7035	7098	7160	7223	7285	5 31
46	7348	7410	7473	7535	7598	7660	7723	7785	7848	7910	6 37
47	7973	8036	8098	8161	8223	8286	8348	8411	8473	8536	7 43
48	8598	8661	8723	8786	8848	8911	8973	9036	9098	9161	8 50
49	9223	9286	9348	9411	9473	9536	9598	9661	9723	9786	9 56
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 69500 *to* 70199
Logarithm 841 9848 *to* 846 3309

N.	0	1	2	3	4	5	6	7	8	9	Diff.
6950	841 9848	9911	9973	0036	0098	0160	0223	0285	0348	0410	63
51	842 0473	0535	0598	0660	0723	0785	0848	0910	0973	1035	1 6
52	1098	1160	1223	1285	1348	1410	1472	1535	1597	1660	2 13
53	1722	1785	1847	1910	1972	2035	2097	2160	2222	2284	3 19
54	2347	2409	2472	2534	2597	2659	2722	2784	2846	2909	4 25
6955	2971	3034	3096	3159	3221	3284	3346	3408	3471	3533	5 32
56	3596	3658	3721	3783	3845	3908	3970	4033	4095	4158	6 38
57	4220	4282	4345	4407	4470	4532	4595	4657	4719	4782	7 44
58	4844	4907	4969	5031	5094	5156	5219	5281	5344	5406	8 50
59	5468	5531	5593	5656	5718	5780	5843	5905	5968	6030	9 57
6960	6092	6155	6217	6280	6342	6404	6467	6529	6592	6654	
61	6716	6779	6841	6904	6966	7028	7091	7153	7215	7278	
62	7340	7403	7465	7527	7590	7652	7714	7777	7839	7902	
63	7964	8026	8089	8151	8213	8276	8338	8401	8463	8525	
64	8588	8650	8712	8775	8837	8899	8962	9024	9086	9149	
6965	9211	9274	9336	9398	9461	9523	9585	9648	9710	9772	62
66	9835	9897	9959	0022	0084	0146	0209	0271	0333	0396	1 6
67	843 0458	0520	0583	0645	0707	0770	0832	0894	0957	1019	2 12
68	1081	1144	1206	1268	1331	1393	1455	1518	1580	1642	3 19
69	1705	1767	1829	1892	1954	2016	2079	2141	2203	2265	4 25
6970	2328	2390	2452	2515	2577	2639	2702	2764	2826	2889	5 31
71	2951	3013	3075	3138	3200	3262	3325	3387	3449	3511	6 37
72	3574	3636	3698	3761	3823	3885	3948	4010	4072	4134	7 43
73	4197	4259	4321	4383	4446	4508	4570	4633	4695	4757	8 50
74	4819	4882	4944	5006	5069	5131	5193	5255	5318	5380	9 56
6975	5442	5504	5567	5629	5691	5753	5816	5878	5940	6002	
76	6065	6127	6189	6251	6314	6376	6438	6500	6563	6625	
77	6687	6749	6812	6874	6936	6998	7061	7123	7185	7247	
78	7310	7372	7434	7496	7559	7621	7683	7745	7808	7870	
79	7932	7994	8056	8119	8181	8243	8305	8368	8430	8492	
6980	8554	8616	8679	8741	8803	8865	8928	8990	9052	9114	63
81	9176	9239	9301	9363	9425	9487	9550	9612	9674	9736	1 6
82	9798	9861	9923	9985	0047	0109	0172	0234	0296	0358	2 13
83	844 0420	0483	0545	0607	0669	0731	0794	0856	0918	0980	3 19
84	1042	1104	1167	1229	1291	1353	1415	1478	1540	1602	4 25
6985	1664	1726	1788	1851	1913	1975	2037	2099	2161	2224	5 32
86	2286	2348	2410	2472	2534	2597	2659	2721	2783	2845	6 38
87	2907	2970	3032	3094	3156	3218	3280	3343	3405	3467	7 44
88	3529	3591	3653	3715	3778	3840	3902	3964	4026	4088	8 50
89	4150	4213	4275	4337	4399	4461	4523	4585	4647	4710	9 57
6990	4772	4834	4896	4958	5020	5082	5145	5207	5269	5331	
91	5393	5455	5517	5579	5642	5704	5766	5828	5890	5952	
92	6014	6076	6138	6201	6263	6325	6387	6449	6511	6573	
93	6635	6697	6759	6822	6884	6946	7008	7070	7132	7194	
94	7256	7318	7380	7443	7505	7567	7629	7691	7753	7815	
6995	7877	7939	8001	8063	8126	8188	8250	8312	8374	8436	62
96	8498	8560	8622	8684	8746	8808	8870	8933	8995	9057	1 6
97	9119	9181	9243	9305	9367	9429	9491	9553	9615	9677	2 12
98	9739	9801	9863	9926	9988	0050	0112	0174	0236	0298	3 19
99	845 0360	0422	0484	0546	0608	0670	0732	0794	0856	0918	4 25
7000	0980	1042	1104	1167	1229	1291	1353	1415	1477	1539	5 31
01	1601	1663	1725	1787	1849	1911	1973	2035	2097	2159	6 37
02	2221	2283	2345	2407	2469	2531	2593	2655	2717	2779	7 43
03	2841	2903	2965	3027	3089	3151	3213	3275	3337	3399	8 50
04	3461	3523	3585	3647	3709	3771	3833	3895	3957	4019	9 56
7005	4081	4143	4205	4267	4329	4391	4453	4515	4577	4639	
06	4701	4763	4825	4887	4949	5011	5073	5135	5197	5259	
07	5321	5383	5445	5507	5569	5631	5693	5755	5817	5879	
08	5941	6003	6065	6127	6189	6251	6313	6375	6437	6499	
09	6561	6623	6685	6746	6808	6870	6932	6994	7056	7118	
7010	7180	7242	7304	7366	7428	7490	7552	7614	7676	7738	61
11	7800	7862	7924	7986	8047	8109	8171	8233	8295	8357	1 6
12	8419	8481	8543	8605	8667	8729	8791	8853	8915	8976	2 12
13	9038	9100	9162	9224	9286	9348	9410	9472	9534	9596	3 18
14	9658	9720	9781	9843	9905	9967	0029	0091	0153	0215	4 24
7015	846 0277	0339	0401	0462	0524	0586	0648	0710	0772	0834	5 31
16	0896	0958	1020	1082	1143	1205	1267	1329	1391	1453	6 37
17	1515	1577	1639	1700	1762	1824	1886	1948	2010	2072	7 43
18	2134	2196	2257	2319	2381	2443	2505	2567	2629	2691	8 49
19	2752	2814	2876	2938	3000	3062	3124	3186	3247	3309	9 55
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 70200 *to* 70899
Logarithm 846 3371 *to* 850 6401

N.		0	1	2	3	4	5	6	7	8	9	Diff.	
7020	846	3371	3433	3495	3557	3619	3680	3742	3804	3866	3928	62	
21		3990	4052	4113	4175	4237	4299	4361	4423	4485	4546	1	6
22		4608	4670	4732	4794	4856	4917	4979	5041	5103	5165	2	12
23		5227	5289	5350	5412	5474	5536	5598	5660	5721	5783	3	19
24		5845	5907	5969	6031	6092	6154	6216	6278	6340	6401	4	25
7025		6463	6525	6587	6649	6711	6772	6834	6896	6958	7020	5	31
26		7081	7143	7205	7267	7329	7391	7452	7514	7576	7638	6	37
27		7700	7761	7823	7885	7947	8009	8070	8132	8194	8256	7	43
28		8318	8379	8441	8503	8565	8626	8688	8750	8812	8874	8	50
29		8935	8997	9059	9121	9183	9244	9306	9368	9430	9491	9	56
7030		9553	9615	9677	9739	9800	9862	9924	9986	0047	0109		
31	847	0171	0233	0295	0356	0418	0480	0542	0603	0665	0727		
32		0789	0850	0912	0974	1036	1097	1159	1221	1283	1344		
33		1406	1468	1530	1591	1653	1715	1777	1838	1900	1962		
34		2024	2085	2147	2209	2271	2332	2394	2456	2518	2579		
7035		2641	2703	2764	2826	2888	2950	3011	3073	3135	3197	61	
36		3258	3320	3382	3443	3505	3567	3629	3690	3752	3814	1	6
37		3876	3937	3999	4061	4122	4184	4246	4307	4369	4431	2	12
38		4493	4554	4616	4678	4739	4801	4863	4925	4986	5048	3	18
39		5110	5171	5233	5295	5356	5418	5480	5542	5603	5665	4	24
7040		5727	5788	5850	5912	5973	6035	6097	6158	6220	6282	5	31
41		6343	6405	6467	6528	6590	6652	6714	6775	6837	6899	6	37
42		6960	7022	7084	7145	7207	7269	7330	7392	7454	7515	7	43
43		7577	7639	7700	7762	7824	7885	7947	8009	8070	8132	8	49
44		8193	8255	8317	8378	8440	8502	8563	8625	8687	8748	9	55
7045		8810	8872	8933	8995	9057	9118	9180	9241	9303	9365		
46		9426	9488	9550	9611	9673	9735	9796	9858	9919	9981		
47	848	0043	0104	0166	0228	0289	0351	0412	0474	0536	0597		
48		0659	0721	0782	0844	0905	0967	1029	1090	1152	1213		
49		1275	1337	1398	1460	1522	1583	1645	1706	1768	1830		
7050		1891	1953	2014	2076	2138	2199	2261	2322	2384	2446	62	
51		2507	2569	2630	2692	2754	2815	2877	2938	3000	3061	1	6
52		3123	3185	3246	3308	3369	3431	3493	3554	3616	3677	2	12
53		3739	3800	3862	3924	3985	4047	4108	4170	4231	4293	3	19
54		4355	4416	4478	4539	4601	4662	4724	4786	4847	4909	4	25
7055		4970	5032	5093	5155	5216	5278	5340	5401	5463	5524	5	31
56		5586	5647	5709	5770	5832	5893	5955	6017	6078	6140	6	37
57		6201	6263	6324	6386	6447	6509	6570	6632	6693	6755	7	43
58		6817	6878	6940	7001	7063	7124	7186	7247	7309	7370	8	50
59		7432	7493	7555	7616	7678	7739	7801	7862	7924	7985	9	56
7060		8047	8109	8170	8232	8293	8355	8416	8478	8539	8601		
61		8662	8724	8785	8847	8908	8970	9031	9093	9154	9216		
62		9277	9339	9400	9462	9523	9585	9646	9708	9769	9831		
63		9892	9954	0015	0077	0138	0199	0261	0322	0384	0445		
64	849	0507	0568	0630	0691	0753	0814	0876	0937	0999	1060		
7065		1122	1183	1245	1306	1368	1429	1490	1552	1613	1675	61	
66		1736	1798	1859	1921	1982	2044	2105	2167	2228	2289	1	6
67		2351	2412	2474	2535	2597	2658	2720	2781	2843	2904	2	12
68		2965	3027	3088	3150	3211	3273	3334	3396	3457	3518	3	18
69		3580	3641	3703	3764	3826	3887	3948	4010	4071	4133	4	24
7070		4194	4256	4317	4378	4440	4501	4563	4624	4686	4747	5	31
71		4808	4870	4931	4993	5054	5115	5177	5238	5300	5361	6	37
72		5423	5484	5545	5607	5668	5730	5791	5852	5914	5975	7	43
73		6037	6098	6159	6221	6282	6344	6405	6466	6528	6589	8	49
74		6651	6712	6773	6835	6896	6958	7019	7080	7142	7203	9	55
7075		7264	7326	7387	7449	7510	7571	7633	7694	7755	7817		
76		7878	7940	8001	8062	8124	8185	8246	8308	8369	8431		
77		8492	8553	8615	8676	8737	8799	8860	8922	8983	9044		
78		9106	9167	9228	9290	9351	9412	9474	9535	9596	9658		
79		9719	9780	9842	9903	9965	0026	0087	0149	0210	0271		
7080	850	0333	0394	0455	0517	0578	0639	0701	0762	0823	0885	62	
81		0946	1007	1069	1130	1191	1253	1314	1375	1437	1498	1	6
82		1559	1621	1682	1743	1805	1866	1927	1988	2050	2111	2	12
83		2172	2234	2295	2356	2418	2479	2540	2602	2663	2724	3	19
84		2786	2847	2908	2969	3031	3092	3153	3215	3276	3337	4	25
7085		3399	3460	3521	3582	3644	3705	3766	3828	3889	3950	5	31
86		4011	4073	4134	4195	4257	4318	4379	4440	4502	4563	6	37
87		4624	4686	4747	4808	4869	4931	4992	5053	5115	5176	7	43
88		5237	5298	5360	5421	5482	5543	5605	5666	5727	5788	8	50
89		5850	5911	5972	6034	6095	6156	6217	6279	6340	6401	9	56
N.		0	1	2	3	4	5	6	7	8	9	Diff.	

Number 70900 *to* 71599
Logarithm 850 6462 *to* 854 9070

N.		0	1	2	3	4	5	6	7	8	9	Diff.	
7090	850	6462	6524	6585	6646	6707	6769	6830	6891	6952	7014	61	
91		7075	7136	7197	7259	7320	7381	7442	7504	7565	7626	1	6
92		7687	7749	7810	7871	7932	7993	8055	8116	8177	8238	2	12
93		8300	8361	8422	8483	8545	8606	8667	8728	8789	8851	3	18
94		8912	8973	9034	9095	9157	9218	9279	9340	9402	9463	4	24
7095		9524	9585	9646	9708	9769	9830	9891	9952	0014	0075	5	31
96	851	0136	0197	0258	0320	0381	0442	0503	0564	0626	0687	6	37
97		0748	0809	0870	0932	0993	1054	1115	1176	1238	1299	7	43
98		1360	1421	1482	1544	1605	1666	1727	1788	1849	1911	8	49
99		1972	2033	2094	2155	2216	2278	2339	2400	2461	2522	9	55
7100		2583	2645	2706	2767	2828	2889	2950	3012	3073	3134		
01		3195	3256	3317	3379	3440	3501	3562	3623	3684	3746		
02		3807	3868	3929	3990	4051	4112	4174	4235	4296	4357		
03		4418	4479	4540	4602	4663	4724	4785	4846	4907	4968		
04		5030	5091	5152	5213	5274	5335	5396	5457	5519	5580		
7105		5641	5702	5763	5824	5885	5946	6008	6069	6130	6191	62	
06		6252	6313	6374	6435	6496	6558	6619	6680	6741	6802	1	6
07		6863	6924	6985	7046	7108	7169	7230	7291	7352	7413	2	12
08		7474	7535	7596	7657	7719	7780	7841	7902	7963	8024	3	19
09		8085	8146	8207	8268	8329	8391	8452	8513	8574	8635	4	25
7110		8696	8757	8818	8879	8940	9001	9062	9124	9185	9246	5	31
11		9307	9368	9429	9490	9551	9612	9673	9734	9795	9856	6	37
12		9917	9979	0040	0101	0162	0223	0284	0345	0406	0467	7	43
13	852	0528	0589	0650	0711	0772	0833	0894	0955	1017	1078	8	50
14		1139	1200	1261	1322	1383	1444	1505	1566	1627	1688	9	56
7115		1749	1810	1871	1932	1993	2054	2115	2176	2237	2298		
16		2359	2420	2481	2542	2604	2665	2726	2787	2848	2909		
17		2970	3031	3092	3153	3214	3275	3336	3397	3458	3519		
18		3580	3641	3702	3763	3824	3885	3946	4007	4068	4129		
19		4190	4251	4312	4373	4434	4495	4556	4617	4678	4739		
7120		4800	4861	4922	4983	5044	5105	5166	5227	5288	5349	61	
21		5410	5471	5532	5593	5654	5715	5776	5837	5898	5959	1	6
22		6020	6081	6142	6203	6264	6325	6386	6447	6508	6568	2	12
23		6629	6690	6751	6812	6873	6934	6995	7056	7117	7178	3	18
24		7239	7300	7361	7422	7483	7544	7605	7666	7727	7788	4	24
7125		7849	7910	7971	8032	8092	8153	8214	8275	8336	8397	5	31
26		8458	8519	8580	8641	8702	8763	8824	8885	8946	9007	6	37
27		9068	9129	9189	9250	9311	9372	9433	9494	9555	9616	7	43
28		9677	9738	9799	9860	9921	9982	0042	0103	0164	0225	8	49
29	853	0286	0347	0408	0469	0530	0591	0652	0713	0773	0834	9	55
7130		0895	0956	1017	1078	1139	1200	1261	1322	1383	1443		
31		1504	1565	1626	1687	1748	1809	1870	1931	1992	2052		
32		2113	2174	2235	2296	2357	2418	2479	2540	2600	2661		
33		2722	2783	2844	2905	2966	3027	3088	3148	3209	3270		
34		3331	3392	3453	3514	3575	3635	3696	3757	3818	3879		
7135		3940	4001	4062	4122	4183	4244	4305	4366	4427	4488	60	
36		4548	4609	4670	4731	4792	4853	4914	4974	5035	5096	1	6
37		5157	5218	5279	5340	5400	5461	5522	5583	5644	5705	2	12
38		5765	5826	5887	5948	6009	6070	6130	6191	6252	6313	3	18
39		6374	6435	6495	6556	6617	6678	6739	6800	6860	6921	4	24
7140		6982	7043	7104	7165	7225	7286	7347	7408	7469	7530	5	30
41		7590	7651	7712	7773	7834	7894	7955	8016	8077	8138	6	36
42		8198	8259	8320	8381	8442	8502	8563	8624	8685	8746	7	42
43		8807	8867	8928	8989	9050	9110	9171	9232	9293	9354	8	48
44		9414	9475	9536	9597	9658	9718	9779	9840	9901	9962	9	54
7145	854	0022	0083	0144	0205	0265	0326	0387	0448	0509	0569		
46		0630	0691	0752	0812	0873	0934	0995	1056	1116	1177		
47		1238	1299	1359	1420	1481	1542	1602	1663	1724	1785		
48		1845	1906	1967	2028	2088	2149	2210	2271	2331	2392		
49		2453	2514	2574	2635	2696	2757	2817	2878	2939	3000		
7150		3060	3121	3182	3243	3303	3364	3425	3486	3546	3607	61	
51		3668	3729	3789	3850	3911	3971	4032	4093	4154	4214	1	6
52		4275	4336	4397	4457	4518	4579	4639	4700	4761	4822	2	12
53		4882	4943	5004	5064	5125	5186	5247	5307	5368	5429	3	18
54		5489	5550	5611	5671	5732	5793	5854	5914	5975	6036	4	24
7155		6096	6157	6218	6278	6339	6400	6461	6521	6582	6643	5	31
56		6703	6764	6825	6885	6946	7007	7067	7128	7189	7249	6	37
57		7310	7371	7432	7492	7553	7614	7674	7735	7796	7856	7	43
58		7917	7978	8038	8099	8160	8220	8281	8342	8402	8463	8	49
59		8524	8584	8645	8706	8766	8827	8888	8948	9009	9070	9	55
N.		0	1	2	3	4	5	6	7	8	9	Diff.	

Number 71600 *to* 72299
Logarithm 854 9130 *to* 859 1323

N.		0	1	2	3	4	5	6	7	8	9	Diff.	
7160	854	9130	9191	9252	9312	9373	9433	9494	9555	9615	9676	60	
61		9737	9797	9858	9919	9979	0040	0101	0161	0222	0283	1	6
62	855	0343	0404	0464	0525	0586	0646	0707	0768	0828	0889	2	12
63		0950	1010	1071	1131	1192	1253	1313	1374	1435	1495	3	18
64		1556	1616	1677	1738	1798	1859	1919	1980	2041	2101	4	24
7165		2162	2223	2283	2344	2404	2465	2526	2586	2647	2707	5	30
66		2768	2829	2889	2950	3010	3071	3132	3192	3253	3313	6	36
67		3374	3435	3495	3556	3616	3677	3738	3798	3859	3919	7	42
68		3980	4041	4101	4162	4222	4283	4343	4404	4465	4525	8	48
69		4586	4646	4707	4768	4828	4889	4949	5010	5070	5131	9	54
7170		5192	5252	5313	5373	5434	5494	5555	5616	5676	5737		
71		5797	5858	5918	5979	6039	6100	6161	6221	6282	6342		
72		6403	6463	6524	6584	6645	6706	6766	6827	6887	6948		
73		7008	7069	7129	7190	7250	7311	7372	7432	7493	7553		
74		7614	7674	7735	7795	7856	7916	7977	8037	8098	8159		
7175		8219	8280	8340	8401	8461	8522	8582	8643	8703	8764	61	
76		8824	8885	8945	9006	9066	9127	9187	9248	9308	9369	1	6
77		9429	9490	9550	9611	9672	9732	9793	9853	9914	9974	2	12
78	856	0035	0095	0156	0216	0277	0337	0398	0458	0519	0579	3	18
79		0640	0700	0761	0821	0882	0942	1002	1063	1123	1184	4	24
7180		1244	1305	1365	1426	1486	1547	1607	1668	1728	1789	5	31
81		1849	1910	1970	2031	2091	2152	2212	2273	2333	2394	6	37
82		2454	2514	2575	2635	2696	2756	2817	2877	2938	2998	7	43
83		3059	3119	3180	3240	3301	3361	3421	3482	3542	3603	8	49
84		3663	3724	3784	3845	3905	3965	4026	4086	4147	4207	9	55
7185		4268	4328	4389	4449	4509	4570	4630	4691	4751	4812		
86		4872	4933	4993	5053	5114	5174	5235	5295	5356	5416		
87		5476	5537	5597	5658	5718	5779	5839	5899	5960	6020		
88		6081	6141	6202	6262	6322	6383	6443	6504	6564	6624		
89		6685	6745	6806	6866	6926	6987	7047	7108	7168	7229		
7190		7289	7349	7410	7470	7531	7591	7651	7712	7772	7832	60	
91		7893	7953	8014	8074	8134	8195	8255	8316	8376	8436	1	6
92		8497	8557	8618	8678	8738	8799	8859	8919	8980	9040	2	12
93		9101	9161	9221	9282	9342	9402	9463	9523	9584	9644	3	18
94		9704	9765	9825	9885	9946	0006	0067	0127	0187	0248	4	24
7195	857	0308	0368	0429	0489	0549	0610	0670	0730	0791	0851	5	30
96		0912	0972	1032	1093	1153	1213	1274	1334	1394	1455	6	36
97		1515	1575	1636	1696	1756	1817	1877	1937	1998	2058	7	42
98		2118	2179	2239	2299	2360	2420	2480	2541	2601	2661	8	48
99		2722	2782	2842	2903	2963	3023	3084	3144	3204	3265	9	54
7200		3325	3385	3446	3506	3566	3627	3687	3747	3807	3868		
01		3928	3988	4049	4109	4169	4230	4290	4350	4411	4471		
02		4531	4591	4652	4712	4772	4833	4893	4953	5014	5074		
03		5134	5194	5255	5315	5375	5436	5496	5556	5616	5677		
04		5737	5797	5858	5918	5978	6038	6099	6159	6219	6280		
7205		6340	6400	6460	6521	6581	6641	6701	6762	6822	6882	61	
06		6943	7003	7063	7123	7184	7244	7304	7364	7425	7485	1	6
07		7545	7605	7666	7726	7786	7847	7907	7967	8027	8088	2	12
08		8148	8208	8268	8329	8389	8449	8509	8570	8630	8690	3	18
09		8750	8810	8871	8931	8991	9051	9112	9172	9232	9292	4	24
7210		9353	9413	9473	9533	9594	9654	9714	9774	9835	9895	5	31
11		9955	0015	0075	0136	0196	0256	0316	0377	0437	0497	6	37
12	858	0557	0617	0678	0738	0798	0858	0918	0979	1039	1099	7	43
13		1159	1220	1280	1340	1400	1460	1521	1581	1641	1701	8	49
14		1761	1822	1882	1942	2002	2062	2123	2183	2243	2303	9	55
7215		2363	2424	2484	2544	2604	2664	2724	2785	2845	2905		
16		2965	3025	3086	3146	3206	3266	3326	3387	3447	3507		
17		3567	3627	3687	3748	3808	3868	3928	3988	4048	4109		
18		4169	4229	4289	4349	4409	4470	4530	4590	4650	4710		
19		4770	4831	4891	4951	5011	5071	5131	5192	5252	5312		
7220		5372	5432	5492	5552	5613	5673	5733	5793	5853	5913	60	
21		5973	6034	6094	6154	6214	6274	6334	6394	6455	6515	1	6
22		6575	6635	6695	6755	6815	6876	6936	6996	7056	7116	2	12
23		7176	7236	7296	7357	7417	7477	7537	7597	7657	7717	3	18
24		7777	7837	7898	7958	8018	8078	8138	8198	8258	8318	4	24
7225		8379	8439	8499	8559	8619	8679	8739	8799	8859	8919	5	30
26		8980	9040	9100	9160	9220	9280	9340	9400	9460	9520	6	36
27		9581	9641	9701	9761	9821	9881	9941	0001	0061	0121	7	42
28	859	0181	0242	0302	0362	0422	0482	0542	0602	0662	0722	8	48
29		0782	0842	0902	0962	1023	1083	1143	1203	1263	1323	9	54
N.		0	1	2	3	4	5	6	7	8	9	Diff.	

Number 72300 *to* 72999
Logarithm 859 1383 *to* 863 3169

N.		0	1	2	3	4	5	6	7	8	9	Diff.	
7230	859	1383	1443	1503	1563	1623	1683	1743	1803	1863	1924	60	
31		1984	2044	2104	2164	2224	2284	2344	2404	2464	2524	1	6
32		2584	2644	2704	2764	2824	2884	2944	3005	3065	3125	2	12
33		3185	3245	3305	3365	3425	3485	3545	3605	3665	3725	3	18
34		3785	3845	3905	3965	4025	4085	4145	4205	4265	4325	4	24
7235		4385	4445	4505	4565	4625	4685	4746	4806	4866	4926	5	30
36		4986	5046	5106	5166	5226	5286	5346	5406	5466	5526	6	36
37		5586	5646	5706	5766	5826	5886	5946	6006	6066	6126	7	42
38		6186	6246	6306	6366	6426	6486	6546	6606	6666	6726	8	48
39		6786	6846	6906	6966	7026	7086	7146	7206	7266	7326	9	54
7240		7386	7446	7506	7566	7626	7686	7746	7806	7866	7925		
41		7985	8045	8105	8165	8225	8285	8345	8405	8465	8525		
42		8585	8645	8705	8765	8825	8885	8945	9005	9065	9125		
43		9185	9245	9305	9365	9425	9485	9545	9605	9665	9724		
44		9784	9844	9904	9964	0024	0084	0144	0204	0264	0324		
7245	860	0384	0444	0504	0564	0624	0684	0744	0803	0863	0923	60	
46		0983	1043	1103	1163	1223	1283	1343	1403	1463	1523	1	6
47		1583	1643	1702	1762	1822	1882	1942	2002	2062	2122	2	12
48		2182	2242	2302	2362	2422	2481	2541	2601	2661	2721	3	18
49		2781	2841	2901	2961	3021	3081	3140	3200	3260	3320	4	24
7250		3380	3440	3500	3560	3620	3680	3739	3799	3859	3919	5	30
51		3979	4039	4099	4159	4219	4279	4338	4398	4458	4518	6	36
52		4578	4638	4698	4758	4817	4877	4937	4997	5057	5117	7	42
53		5177	5237	5297	5356	5416	5476	5536	5596	5656	5716	8	48
54		5776	5835	5895	5955	6015	6075	6135	6195	6254	6314	9	54
7255		6374	6434	6494	6554	6614	6673	6733	6793	6853	6913		
56		6973	7033	7092	7152	7212	7272	7332	7392	7452	7511		
57		7571	7631	7691	7751	7811	7870	7930	7990	8050	8110		
58		8170	8229	8289	8349	8409	8469	8529	8588	8648	8708		
59		8768	8828	8888	8947	9007	9067	9127	9187	9247	9306		
7260		9366	9426	9486	9546	9605	9665	9725	9785	9845	9905	59	
61		9964	0024	0084	0144	0204	0263	0323	0383	0443	0503	1	6
62	861	0562	0622	0682	0742	0802	0861	0921	0981	1041	1101	2	12
63		1160	1220	1280	1340	1400	1459	1519	1579	1639	1699	3	18
64		1758	1818	1878	1938	1997	2057	2117	2177	2237	2296	4	24
7265		2356	2416	2476	2536	2595	2655	2715	2775	2834	2894	5	30
66		2954	3014	3073	3133	3193	3253	3313	3372	3432	3492	6	35
67		3552	3611	3671	3731	3791	3850	3910	3970	4030	4089	7	41
68		4149	4209	4269	4328	4388	4448	4508	4567	4627	4687	8	47
69		4747	4806	4866	4926	4986	5045	5105	5165	5225	5284	9	53
7270		5344	5404	5464	5523	5583	5643	5703	5762	5822	5882		
71		5941	6001	6061	6121	6180	6240	6300	6360	6419	6479		
72		6539	6598	6658	6718	6778	6837	6897	6957	7016	7076		
73		7136	7196	7255	7315	7375	7434	7494	7554	7614	7673		
74		7733	7793	7852	7912	7972	8031	8091	8151	8211	8270		
7275		8330	8390	8449	8509	8569	8628	8688	8748	8808	8867	60	
76		8927	8987	9046	9106	9166	9225	9285	9345	9404	9464	1	6
77		9524	9583	9643	9703	9762	9822	9882	9941	0001	0061	2	12
78	862	0121	0180	0240	0300	0359	0419	0479	0538	0598	0658	3	18
79		0717	0777	0837	0896	0956	1016	1075	1135	1194	1254	4	24
7280		1314	1373	1433	1493	1552	1612	1672	1731	1791	1851	5	30
81		1910	1970	2030	2089	2149	2209	2268	2328	2387	2447	6	36
82		2507	2566	2626	2686	2745	2805	2865	2924	2984	3043	7	42
83		3103	3163	3222	3282	3342	3401	3461	3520	3580	3640	8	48
84		3699	3759	3819	3878	3938	3997	4057	4117	4176	4236	9	54
7285		4296	4355	4415	4474	4534	4594	4653	4713	4772	4832		
86		4892	4951	5011	5070	5130	5190	5249	5309	5368	5428		
87		5488	5547	5607	5666	5726	5786	5845	5905	5964	6024		
88		6084	6143	6203	6262	6322	6382	6441	6501	6560	6620		
89		6680	6739	6799	6858	6918	6977	7037	7097	7156	7216		
7290		7275	7335	7394	7454	7514	7573	7633	7692	7752	7811	59	
91		7871	7931	7990	8050	8109	8169	8228	8288	8347	8407	1	6
92		8467	8526	8586	8645	8705	8764	8824	8883	8943	9003	2	12
93		9062	9122	9181	9241	9300	9360	9419	9479	9539	9598	3	18
94		9658	9717	9777	9836	9896	9955	0015	0074	0134	0193	4	24
7295	863	0253	0312	0372	0432	0491	0551	0610	0670	0729	0789	5	30
96		0848	0908	0967	1027	1086	1146	1205	1265	1324	1384	6	35
97		1443	1503	1562	1622	1682	1741	1801	1860	1920	1979	7	41
98		2039	2098	2158	2217	2277	2336	2396	2455	2515	2574	8	47
99		2634	2693	2753	2812	2872	2931	2991	3050	3110	3169	9	53
N.		0.	1	2	3	4	5	6	7	8	9	Diff.	

Number 73000 *to* 73699
Logarithm 863 3229 *to* 867 4616

N.	0	1	2	3	4	5	6	7	8	9	Diff.
7300	863 3229	3288	3348	3407	3467	3526	3586	3645	3705	3764	59
01	3823	3883	3942	4002	4061	4121	4180	4240	4299	4359	1 6
02	4418	4478	4537	4597	4656	4716	4775	4835	4894	4954	2 12
03	5013	5072	5132	5191	5251	5310	5370	5429	5489	5548	3 18
04	5608	5667	5727	5786	5845	5905	5964	6024	6083	6143	4 24
7305	6202	6262	6321	6381	6440	6499	6559	6618	6678	6737	5 30
06	6797	6856	6916	6975	7034	7094	7153	7213	7272	7332	6 35
07	7391	7451	7510	7569	7629	7688	7748	7807	7867	7926	7 41
08	7985	8045	8104	8164	8223	8283	8342	8401	8461	8520	8 47
09	8580	8639	8698	8758	8817	8877	8936	8996	9055	9114	9 53
7310	9174	9233	9293	9352	9411	9471	9530	9590	9649	9708	
11	9768	9827	9887	9946	0005	0065	0124	0184	0243	0302	
12	864 0362	0421	0481	0540	0599	0659	0718	0778	0837	0896	
13	0956	1015	1075	1134	1193	1253	1312	1371	1431	1490	
14	1550	1609	1668	1728	1787	1846	1906	1965	2025	2084	
7315	2143	2203	2262	2321	2381	2440	2500	2559	2618	2678	60
16	2737	2796	2856	2915	2974	3034	3093	3152	3212	3271	1 6
17	3331	3390	3449	3509	3568	3627	3687	3746	3805	3865	2 12
18	3924	3983	4043	4102	4161	4221	4280	4339	4399	4458	3 18
19	4517	4577	4636	4695	4755	4814	4873	4933	4992	5051	4 24
7320	5111	5170	5229	5289	5348	5407	5467	5526	5585	5645	5 30
21	5704	5763	5823	5882	5941	6001	6060	6119	6179	6238	6 36
22	6297	6357	6416	6475	6534	6594	6653	6712	6772	6831	7 42
23	6890	6950	7009	7068	7128	7187	7246	7305	7365	7424	8 48
24	7483	7543	7602	7661	7721	7780	7839	7898	7958	8017	9 54
7325	8076	8136	8195	8254	8313	8373	8432	8491	8551	8610	
26	8669	8728	8788	8847	8906	8966	9025	9084	9143	9203	
27	9262	9321	9380	9440	9499	9558	9618	9677	9736	9795	
28	9855	9914	9973	0032	0092	0151	0210	0269	0329	0388	
29	865 0447	0506	0566	0625	0684	0743	0803	0862	0921	0980	
7330	1040	1099	1158	1217	1277	1336	1395	1454	1514	1573	59
31	1632	1691	1751	1810	1869	1928	1988	2047	2106	2165	1 6
32	2225	2284	2343	2402	2461	2521	2580	2639	2698	2758	2 12
33	2817	2876	2935	2995	3054	3113	3172	3231	3291	3350	3 18
34	3409	3468	3527	3587	3646	3705	3764	3824	3883	3942	4 24
7335	4001	4060	4120	4179	4238	4297	4356	4416	4475	4534	5 30
36	4593	4652	4712	4771	4830	4889	4948	5008	5067	5126	6 35
37	5185	5244	5304	5363	5422	5481	5540	5600	5659	5718	7 41
38	5777	5836	5895	5955	6014	6073	6132	6191	6251	6310	8 47
39	6369	6428	6487	6546	6606	6665	6724	6783	6842	6901	9 53
7340	6961	7020	7079	7138	7197	7256	7316	7375	7434	7493	
41	7552	7611	7671	7730	7789	7848	7907	7966	8025	8085	
42	8144	8203	8262	8321	8380	8440	8499	8558	8617	8676	
43	8735	8794	8854	8913	8972	9031	9090	9149	9208	9268	
44	9327	9386	9445	9504	9563	9622	9681	9741	9800	9859	
7345	9918	9977	0036	0095	0155	0214	0273	0332	0391	0450	60
46	866 0509	0568	0627	0687	0746	0805	0864	0923	0982	1041	1 6
47	1100	1160	1219	1278	1337	1396	1455	1514	1573	1632	2 12
48	1691	1751	1810	1869	1928	1987	2046	2105	2164	2223	3 18
49	2282	2342	2401	2460	2519	2578	2637	2696	2755	2814	4 24
7350	2873	2932	2992	3051	3110	3169	3228	3287	3346	3405	5 30
51	3464	3523	3582	3641	3701	3760	3819	3878	3937	3996	6 36
52	4055	4114	4173	4232	4291	4350	4409	4468	4528	4587	7 42
53	4646	4705	4764	4823	4882	4941	5000	5059	5118	5177	8 48
54	5236	5295	5354	5413	5472	5532	5591	5650	5709	5768	9 54
7355	5827	5886	5945	6004	6063	6122	6181	6240	6299	6358	
56	6417	6476	6535	6594	6653	6712	6771	6830	6889	6949	
57	7008	7067	7126	7185	7244	7303	7362	7421	7480	7539	
58	7598	7657	7716	7775	7834	7893	7952	8011	8070	8129	
59	8188	8247	8306	8365	8424	8483	8542	8601	8660	8719	
7360	8778	8837	8896	8955	9014	9073	9132	9191	9250	9309	59
61	9368	9427	9486	9545	9604	9663	9722	9781	9840	9899	1 6
62	9958	0017	0076	0135	0194	0253	0312	0371	0430	0489	2 12
63	867 0548	0607	0666	0725	0784	0843	0902	0961	1020	1079	3 18
64	1138	1197	1256	1315	1374	1433	1492	1551	1610	1669	4 24
7365	1728	1786	1845	1904	1963	2022	2081	2140	2199	2258	5 30
66	2317	2376	2435	2494	2553	2612	2671	2730	2789	2848	6 35
67	2907	2966	3025	3084	3142	3201	3260	3319	3378	3437	7 41
68	3496	3555	3614	3673	3732	3791	3850	3909	3968	4027	8 47
69	4086	4145	4203	4262	4321	4380	4439	4498	4557	4616	9 53
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 73700 *to* 74399
Logarithm 867 4675 *to* 871 5671

N.	0	1	2	3	4	5	6	7	8	9	Diff.
7370	867 4675	4734	4793	4852	4911	4970	5028	5087	5146	5205	58
71	5264	5323	5382	5441	5500	5559	5618	5677	5735	5794	1 6
72	5853	5912	5971	6030	6089	6148	6207	6266	6325	6383	2 12
73	6442	6501	6560	6619	6678	6737	6796	6855	6914	6972	3 17
74	7031	7090	7149	7208	7267	7326	7385	7444	7502	7561	4 23
7375	7620	7679	7738	7797	7856	7915	7974	8032	8091	8150	5 29
76	8209	8268	8327	8386	8445	8503	8562	8621	8680	8739	6 35
77	8798	8857	8916	8974	9033	9092	9151	9210	9269	9328	7 41
78	9387	9445	9504	9563	9622	9681	9740	9799	9857	9916	8 46
79	9975	0034	0093	0152	0211	0269	0328	0387	0446	0505	9 52
7380	868 0564	0622	0681	0740	0799	0858	0917	0976	1034	1093	
81	1152	1211	1270	1329	1387	1446	1505	1564	1623	1682	
82	1740	1799	1858	1917	1976	2035	2093	2152	2211	2270	
83	2329	2388	2446	2505	2564	2623	2682	2740	2799	2858	
84	2917	2976	3035	3093	3152	3211	3270	3329	3387	3446	
7385	3505	3564	3623	3681	3740	3799	3858	3917	3975	4034	59
86	4093	4152	4211	4269	4328	4387	4446	4505	4563	4622	1 6
87	4681	4740	4799	4857	4916	4975	5034	5093	5151	5210	2 12
88	5269	5328	5386	5445	5504	5563	5622	5680	5739	5798	3 18
89	5857	5915	5974	6033	6092	6151	6209	6268	6327	6386	4 24
7390	6444	6503	6562	6621	6679	6738	6797	6856	6915	6973	5 30
91	7032	7091	7150	7208	7267	7326	7385	7443	7502	7561	6 35
92	7620	7678	7737	7796	7855	7913	7972	8031	8090	8148	7 41
93	8207	8266	8325	8383	8442	8501	8560	8618	8677	8736	8 47
94	8794	8853	8912	8971	9029	9088	9147	9206	9264	9323	9 53
7395	9382	9441	9499	9558	9617	9675	9734	9793	9852	9910	
96	9969	0028	0086	0145	0204	0263	0321	0380	0439	0497	
97	869 0556	0615	0674	0732	0791	0850	0908	0967	1026	1085	
98	1143	1202	1261	1319	1378	1437	1495	1554	1613	1672	
99	1730	1789	1848	1906	1965	2024	2082	2141	2200	2259	
7400	2317	2376	2435	2493	2552	2611	2669	2728	2787	2845	58
01	2904	2963	3021	3080	3139	3197	3256	3315	3373	3432	1 6
02	3491	3549	3608	3667	3725	3784	3843	3901	3960	4019	2 12
03	4077	4136	4195	4253	4312	4371	4429	4488	4547	4605	3 17
04	4664	4723	4781	4840	4899	4957	5016	5075	5133	5192	4 23
7405	5251	5309	5368	5427	5485	5544	5603	5661	5720	5778	5 29
06	5837	5896	5954	6013	6072	6130	6189	6248	6306	6365	6 35
07	6423	6482	6541	6599	6658	6717	6775	6834	6892	6951	7 41
08	7010	7068	7127	7186	7244	7303	7361	7420	7479	7537	8 46
09	7596	7655	7713	7772	7830	7889	7948	8006	8065	8123	9 52
7410	8182	8241	8299	8358	8417	8475	8534	8592	8651	8710	
11	8768	8827	8885	8944	9003	9061	9120	9178	9237	9296	
12	9354	9413	9471	9530	9588	9647	9706	9764	9823	9881	
13	9940	9999	0057	0116	0174	0233	0292	0350	0409	0467	
14	870 0526	0584	0643	0702	0760	0819	0877	0936	0994	1053	
7415	1112	1170	1229	1287	1346	1404	1463	1522	1580	1639	59
16	1697	1756	1814	1873	1931	1990	2049	2107	2166	2224	1 6
17	2283	2341	2400	2458	2517	2576	2634	2693	2751	2810	2 12
18	2868	2927	2985	3044	3102	3161	3220	3278	3337	3395	3 18
19	3454	3512	3571	3629	3688	3746	3805	3863	3922	3981	4 24
7420	4039	4098	4156	4215	4273	4332	4390	4449	4507	4566	5 30
21	4624	4683	4741	4800	4858	4917	4975	5034	5092	5151	6 35
22	5210	5268	5327	5385	5444	5502	5561	5619	5678	5736	7 41
23	5795	5853	5912	5970	6029	6087	6146	6204	6263	6321	8 47
24	6380	6438	6497	6555	6614	6672	6731	6789	6848	6906	9 53
7425	6965	7023	7082	7140	7199	7257	7316	7374	7432	7491	
26	7549	7608	7666	7725	7783	7842	7900	7959	8017	8076	
27	8134	8193	8251	8310	8368	8427	8485	8544	8602	8660	
28	8719	8777	8836	8894	8953	9011	9070	9128	9187	9245	
29	9304	9362	9421	9479	9537	9596	9654	9713	9771	9830	
7430	9888	9947	0005	0063	0122	0180	0239	0297	0356	0414	58
31	871 0473	0531	0589	0648	0706	0765	0823	0882	0940	0999	1 6
32	1057	1115	1174	1232	1291	1349	1408	1466	1524	1583	2 12
33	1641	1700	1758	1817	1875	1933	1992	2050	2109	2167	3 17
34	2226	2284	2342	2401	2459	2518	2576	2634	2693	2751	4 23
7435	2810	2868	2927	2985	3043	3102	3160	3219	3277	3335	5 29
36	3394	3452	3511	3569	3627	3686	3744	3803	3861	3919	6 35
37	3978	4036	4095	4153	4211	4270	4328	4387	4445	4503	7 41
38	4562	4620	4679	4737	4795	4854	4912	4970	5029	5087	8 46
39	5146	5204	5262	5321	5379	5437	5496	5554	5613	5671	9 52
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 74400 *to* 75099
Logarithm 871 5729 *to* 875 6342

N.	0	1	2	3	4	5	6	7	8	9	Diff.
7440	871 5729	5788	5846	5904	5963	6021	6080	6138	6196	6255	59
41	6313	6371	6430	6488	6546	6605	6663	6722	6780	6838	1 6
42	6897	6955	7013	7072	7130	7188	7247	7305	7363	7422	2 12
43	7480	7539	7597	7655	7714	7772	7830	7889	7947	8005	3 18
44	8064	8122	8180	8239	8297	8355	8414	8472	8530	8589	4 24
7445	8647	8705	8764	8822	8880	8939	8997	9055	9114	9172	5 30
46	9230	9289	9347	9405	9464	9522	9580	9639	9697	9755	6 35
47	9814	9872	9930	9988	0047	0105	0163	0222	0280	0338	7 41
48	872 0397	0455	0513	0572	0630	0688	0747	0805	0863	0921	8 47
49	0980	1038	1096	1155	1213	1271	1330	1388	1446	1504	9 53
7450	1563	1621	1679	1738	1796	1854	1912	1971	2029	2087	
51	2146	2204	2262	2320	2379	2437	2495	2554	2612	2670	
52	2728	2787	2845	2903	2962	3020	3078	3136	3195	3253	
53	3311	3369	3428	3486	3544	3603	3661	3719	3777	3836	
54	3894	3952	4010	4069	4127	4185	4243	4302	4360	4418	
7455	4476	4535	4593	4651	4709	4768	4826	4884	4942	5001	58
56	5059	5117	5175	5234	5292	5350	5408	5467	5525	5583	1 6
57	5641	5700	5758	5816	5874	5933	5991	6049	6107	6166	2 12
58	6224	6282	6340	6398	6457	6515	6573	6631	6690	6748	3 17
59	6806	6864	6923	6981	7039	7097	7155	7214	7272	7330	4 23
7460	7388	7446	7505	7563	7621	7679	7738	7796	7854	7912	5 29
61	7970	8029	8087	8145	8203	8261	8320	8378	8436	8494	6 35
62	8552	8611	8669	8727	8785	8843	8902	8960	9018	9076	7 41
63	9134	9193	9251	9309	9367	9425	9484	9542	9600	9658	8 46
64	9716	9774	9833	9891	9949	0007	0065	0124	0182	0240	9 52
7465	873 0298	0356	0414	0473	0531	0589	0647	0705	0764	0822	
66	0880	0938	0996	1054	1113	1171	1229	1287	1345	1403	
67	1462	1520	1578	1636	1694	1752	1810	1869	1927	1985	
68	2043	2101	2159	2218	2276	2334	2392	2450	2508	2566	
69	2625	2683	2741	2799	2857	2915	2973	3032	3090	3148	
7470	3206	3264	3322	3380	3439	3497	3555	3613	3671	3729	59
71	3787	3845	3904	3962	4020	4078	4136	4194	4252	4311	1 6
72	4369	4427	4485	4543	4601	4659	4717	4775	4834	4892	2 12
73	4950	5008	5066	5124	5182	5240	5298	5357	5415	5473	3 18
74	5531	5589	5647	5705	5763	5821	5880	5938	5996	6054	4 24
7475	6112	6170	6228	6286	6344	6402	6461	6519	6577	6635	5 30
76	6693	6751	6809	6867	6925	6983	7041	7100	7158	7216	6 35
77	7274	7332	7390	7448	7506	7564	7622	7680	7738	7797	7 41
78	7855	7913	7971	8029	8087	8145	8203	8261	8319	8377	8 47
79	8435	8493	8551	8610	8668	8726	8784	8842	8900	8958	9 53
7480	9016	9074	9132	9190	9248	9306	9364	9422	9480	9538	
81	9597	9655	9713	9771	9829	9887	9945	0003	0061	0119	
82	874 0177	0235	0293	0351	0409	0467	0525	0583	0641	0699	
83	0757	0815	0874	0932	0990	1048	1106	1164	1222	1280	
84	1338	1396	1454	1512	1570	1628	1686	1744	1802	1860	
7485	1918	1976	2034	2092	2150	2208	2266	2324	2382	2440	58
86	2498	2556	2614	2672	2730	2788	2846	2904	2962	3020	1 6
87	3078	3136	3194	3252	3310	3368	3426	3484	3542	3600	2 12
88	3658	3716	3774	3832	3890	3948	4006	4064	4122	4180	3 17
89	4238	4296	4354	4412	4470	4528	4586	4644	4702	4760	4 23
7490	4818	4876	4934	4992	5050	5108	5166	5224	5282	5340	5 29
91	5398	5456	5514	5572	5630	5688	5746	5804	5862	5920	6 35
92	5978	6036	6094	6152	6210	6268	6325	6383	6441	6499	7 41
93	6557	6615	6673	6731	6789	6847	6905	6963	7021	7079	8 46
94	7137	7195	7253	7311	7369	7427	7485	7543	7600	7658	9 52
7495	7716	7774	7832	7890	7948	8006	8064	8122	8180	8238	
96	8296	8354	8412	8470	8528	8585	8643	8701	8759	8817	
97	8875	8933	8991	9049	9107	9165	9223	9281	9339	9396	
98	9454	9512	9570	9628	9686	9744	9802	9860	9918	9976	
99	875 0034	0091	0149	0207	0265	0323	0381	0439	0497	0555	
7500	0613	0671	0728	0786	0844	0902	0960	1018	1076	1134	57
01	1192	1250	1307	1365	1423	1481	1539	1597	1655	1713	1 6
02	1771	1828	1886	1944	2002	2060	2118	2176	2234	2292	2 11
03	2349	2407	2465	2523	2581	2639	2697	2755	2813	2870	3 17
04	2928	2986	3044	3102	3160	3218	3275	3333	3391	3449	4 23
7505	3507	3565	3623	3681	3738	3796	3854	3912	3970	4028	5 29
06	4086	4143	4201	4259	4317	4375	4433	4491	4548	4606	6 34
07	4664	4722	4780	4838	4896	4953	5011	5069	5127	5185	7 40
08	5243	5300	5358	5416	5474	5532	5590	5648	5705	5763	8 46
09	5821	5879	5937	5995	6052	6110	6168	6226	6284	6342	9 51
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 75100 *to* 75799
Logarithm 875 6399 *to* 879 6635

N.	0	1	2	3	4	5	6	7	8	9	Diff.
7510	875 6399	6457	6515	6573	6631	6689	6746	6804	6862	6920	58
11	6978	7035	7093	7151	7209	7267	7325	7382	7440	7498	1 6
12	7556	7614	7671	7729	7787	7845	7903	7960	8018	8076	2 12
13	8134	8192	8249	8307	8365	8423	8481	8539	8596	8654	3 17
14	8712	8770	8828	8885	8943	9001	9059	9116	9174	9232	4 23
7515	9290	9348	9405	9463	9521	9579	9637	9694	9752	9810	5 29
16	9868	9925	9983	0041	0099	0157	0214	0272	0330	0388	6 35
17	876 0446	0503	0561	0619	0677	0734	0792	0850	0908	0965	7 41
18	1023	1081	1139	1197	1254	1312	1370	1428	1485	1543	8 46
19	1601	1659	1716	1774	1832	1890	1947	2005	2063	2121	9 52
7520	2178	2236	2294	2352	2409	2467	2525	2583	2640	2698	
21	2756	2814	2871	2929	2987	3045	3102	3160	3218	3276	
22	3333	3391	3449	3506	3564	3622	3680	3737	3795	3853	
23	3911	3968	4026	4084	4142	4199	4257	4315	4372	4430	
24	4488	4546	4603	4661	4719	4776	4834	4892	4950	5007	
7525	5065	5123	5180	5238	5296	5354	5411	5469	5527	5584	57
26	5642	5700	5758	5815	5873	5931	5988	6046	6104	6161	1 6
27	6219	6277	6335	6392	6450	6508	6565	6623	6681	6738	2 11
28	6796	6854	6911	6969	7027	7085	7142	7200	7258	7315	3 17
29	7373	7431	7488	7546	7604	7661	7719	7777	7834	7892	4 23
7530	7950	8007	8065	8123	8180	8238	8296	8353	8411	8469	5 29
31	8526	8584	8642	8699	8757	8815	8872	8930	8988	9045	6 34
32	9103	9161	9218	9276	9334	9391	9449	9507	9564	9622	7 40
33	9680	9737	9795	9853	9910	9968	0026	0083	0141	0199	8 46
34	877 0256	0314	0371	0429	0487	0544	0602	0660	0717	0775	9 51
7535	0833	0890	0948	1005	1063	1121	1178	1236	1294	1351	
36	1409	1467	1524	1582	1639	1697	1755	1812	1870	1928	
37	1985	2043	2100	2158	2216	2273	2331	2388	2446	2504	
38	2561	2619	2677	2734	2792	2849	2907	2965	3022	3080	
39	3137	3195	3253	3310	3368	3425	3483	3541	3598	3656	
7540	3713	3771	3829	3886	3944	4001	4059	4117	4174	4232	58
41	4289	4347	4405	4462	4520	4577	4635	4693	4750	4808	1 6
42	4865	4923	4980	5038	5096	5153	5211	5268	5326	5384	2 12
43	5441	5499	5556	5614	5671	5729	5787	5844	5902	5959	3 17
44	6017	6074	6132	6189	6247	6305	6362	6420	6477	6535	4 23
7545	6592	6650	6708	6765	6823	6880	6938	6995	7053	7110	5 29
46	7168	7226	7283	7341	7398	7456	7513	7571	7628	7686	6 35
47	7743	7801	7859	7916	7974	8031	8089	8146	8204	8261	7 41
48	8319	8376	8434	8492	8549	8607	8664	8722	8779	8837	8 46
49	8894	8952	9009	9067	9124	9182	9239	9297	9354	9412	9 52
7550	9470	9527	9585	9642	9700	9757	9815	9872	9930	9987	
51	878 0045	0102	0160	0217	0275	0332	0390	0447	0505	0562	
52	0620	0677	0735	0792	0850	0907	0965	1022	1080	1137	
53	1195	1252	1310	1367	1425	1482	1540	1597	1655	1712	
54	1770	1827	1885	1942	2000	2057	2115	2172	2230	2287	
7555	2345	2402	2460	2517	2575	2632	2690	2747	2805	2862	57
56	2919	2977	3034	3092	3149	3207	3264	3322	3379	3437	1 6
57	3494	3552	3609	3667	3724	3782	3839	3896	3954	4011	2 11
58	4069	4126	4184	4241	4299	4356	4414	4471	4529	4586	3 17
59	4643	4701	4758	4816	4873	4931	4988	5046	5103	5161	4 23
7560	5218	5275	5333	5390	5448	5505	5563	5620	5678	5735	5 29
61	5792	5850	5907	5965	6022	6080	6137	6194	6252	6309	6 34
62	6367	6424	6482	6539	6596	6654	6711	6769	6826	6884	7 40
63	6941	6998	7056	7113	7171	7228	7286	7343	7400	7458	8 46
64	7515	7573	7630	7687	7745	7802	7860	7917	7975	8032	9 51
7565	8089	8147	8204	8262	8319	8376	8434	8491	8549	8606	
66	8663	8721	8778	8836	8893	8950	9008	9065	9123	9180	
67	9237	9295	9352	9410	9467	9524	9582	9639	9696	9754	
68	9811	9869	9926	9983	0041	0098	0156	0213	0270	0328	
69	879 0385	0442	0500	0557	0615	0672	0729	0787	0844	0901	
7570	0959	1016	1074	1131	1188	1246	1303	1360	1418	1475	58
71	1532	1590	1647	1705	1762	1819	1877	1934	1991	2049	1 6
72	2106	2163	2221	2278	2335	2393	2450	2508	2565	2622	2 12
73	2680	2737	2794	2852	2909	2966	3024	3081	3138	3196	3 17
74	3253	3310	3368	3425	3482	3540	3597	3654	3712	3769	4 23
7575	3826	3884	3941	3998	4056	4113	4170	4228	4285	4342	5 29
76	4400	4457	4514	4572	4629	4686	4744	4801	4858	4916	6 35
77	4973	5030	5088	5145	5202	5259	5317	5374	5431	5489	7 41
78	5546	5603	5661	5718	5775	5833	5890	5947	6004	6062	8 46
79	6119	6176	6234	6291	6348	6406	6463	6520	6577	6635	9 52
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 75800 *to* 76499
Logarithm 879 6692 *to* 883 6558

N.		0	1	2	3	4	5	6	7	8	9	Diff.	
7580	879	6692	6749	6807	6864	6921	6979	7036	7093	7150	7208	57	
81		7265	7322	7380	7437	7494	7551	7609	7666	7723	7781	1	6
82		7838	7895	7952	8010	8067	8124	8181	8239	8296	8353	2	11
83		8411	8468	8525	8582	8640	8697	8754	8811	8869	8926	3	17
84		8983	9041	9098	9155	9212	9270	9327	9384	9441	9499	4	23
7585		9556	9613	9670	9728	9785	9842	9899	9957	0014	0071	5	29
86	880	0128	0186	0243	0300	0357	0415	0472	0529	0586	0644	6	34
87		0701	0758	0815	0873	0930	0987	1044	1102	1159	1216	7	40
88		1273	1330	1388	1445	1502	1559	1617	1674	1731	1788	8	46
89		1846	1903	1960	2017	2074	2132	2189	2246	2303	2361	9	51
7590		2418	2475	2532	2589	2647	2704	2761	2818	2875	2933		
91		2990	3047	3104	3162	3219	3276	3333	3390	3448	3505		
92		3562	3619	3676	3734	3791	3848	3905	3962	4020	4077		
93		4134	4191	4248	4306	4363	4420	4477	4534	4592	4649		
94		4706	4763	4820	4877	4935	4992	5049	5106	5163	5221		
7595		5278	5335	5392	5449	5507	5564	5621	5678	5735	5792	58	
96		5850	5907	5964	6021	6078	6135	6193	6250	6307	6364	1	6
97		6421	6478	6536	6593	6650	6707	6764	6821	6879	6936	2	12
98		6993	7050	7107	7164	7222	7279	7336	7393	7450	7507	3	17
99		7564	7622	7679	7736	7793	7850	7907	7964	8022	8079	4	23
7600		8136	8193	8250	8307	8364	8422	8479	8536	8593	8650	5	29
01		8707	8764	8822	8879	8936	8993	9050	9107	9164	9222	6	35
02		9279	9336	9393	9450	9507	9564	9621	9679	9736	9793	7	41
03		9850	9907	9964	0021	0078	0136	0193	0250	0307	0364	8	46
04	881	0421	0478	0535	0592	0650	0707	0764	0821	0878	0935	9	52
7605		0992	1049	1106	1163	1221	1278	1335	1392	1449	1506		
06		1563	1620	1677	1735	1792	1849	1906	1963	2020	2077		
07		2134	2191	2248	2305	2363	2420	2477	2534	2591	2648		
08		2705	2762	2819	2876	2933	2990	3048	3105	3162	3219		
09		3276	3333	3390	3447	3504	3561	3618	3675	3732	3789		
7610		3847	3904	3961	4018	4075	4132	4189	4246	4303	4360	57	
11		4417	4474	4531	4588	4645	4703	4760	4817	4874	4931	1	6
12		4988	5045	5102	5159	5216	5273	5330	5387	5444	5501	2	11
13		5558	5615	5672	5729	5786	5844	5901	5958	6015	6072	3	17
14		6129	6186	6243	6300	6357	6414	6471	6528	6585	6642	4	23
7615		6699	6756	6813	6870	6927	6984	7041	7098	7155	7212	5	29
16		7269	7326	7383	7440	7497	7554	7611	7669	7726	7783	6	34
17		7840	7897	7954	8011	8068	8125	8182	8239	8296	8353	7	40
18		8410	8467	8524	8581	8638	8695	8752	8809	8866	8923	8	46
19		8980	9037	9094	9151	9208	9265	9322	9379	9436	9493	9	51
7620		9550	9607	9664	9721	9778	9835	9892	9949	0006	0063		
21	882	0120	0177	0234	0291	0348	0405	0462	0519	0575	0632		
22		0689	0746	0803	0860	0917	0974	1031	1088	1145	1202		
23		1259	1316	1373	1430	1487	1544	1601	1658	1715	1772		
24		1829	1886	1943	2000	2057	2114	2171	2228	2285	2342		
7625		2398	2455	2512	2569	2626	2683	2740	2797	2854	2911	56	
26		2968	3025	3082	3139	3196	3253	3310	3367	3424	3481	1	6
27		3537	3594	3651	3708	3765	3822	3879	3936	3993	4050	2	11
28		4107	4164	4221	4278	4335	4392	4448	4505	4562	4619	3	17
29		4676	4733	4790	4847	4904	4961	5018	5075	5132	5188	4	22
7630		5245	5302	5359	5416	5473	5530	5587	5644	5701	5758	5	28
31		5815	5871	5928	5985	6042	6099	6156	6213	6270	6327	6	34
32		6384	6441	6497	6554	6611	6668	6725	6782	6839	6896	7	39
33		6953	7010	7066	7123	7180	7237	7294	7351	7408	7465	8	45
34		7522	7578	7635	7692	7749	7806	7863	7920	7977	8034	9	50
7635		8090	8147	8204	8261	8318	8375	8432	8489	8545	8602		
36		8659	8716	8773	8830	8887	8944	9000	9057	9114	9171		
37		9228	9285	9342	9399	9455	9512	9569	9626	9683	9740		
38		9797	9853	9910	9967	0024	0081	0138	0195	0251	0308		
39	883	0365	0422	0479	0536	0593	0649	0706	0763	0820	0877		
7640		0934	0990	1047	1104	1161	1218	1275	1331	1388	1445	57	
41		1502	1559	1616	1673	1729	1786	1843	1900	1957	2014	1	6
42		2070	2127	2184	2241	2298	2354	2411	2468	2525	2582	2	11
43		2639	2695	2752	2809	2866	2923	2980	3036	3093	3150	3	17
44		3207	3264	3320	3377	3434	3491	3548	3604	3661	3718	4	23
7645		3775	3832	3889	3945	4002	4059	4116	4173	4229	4286	5	29
46		4343	4400	4457	4513	4570	4627	4684	4741	4797	4854	6	34
47		4911	4968	5024	5081	5138	5195	5252	5308	5365	5422	7	40
48		5479	5536	5592	5649	5706	5763	5819	5876	5933	5990	8	46
49		6047	6103	6160	6217	6274	6330	6387	6444	6501	6558	9	51
N.		0	1	2	3	4	5	6	7	8	9	Diff.	

Number 76500 *to* 77199
Logarithm 883 6614 *to* 887 6117

N.		0	1	2	3	4	5	6	7	8	9	Diff.	
7650	883	6614	6671	6728	6785	6841	6898	6955	7012	7068	7125	56	
51		7182	7239	7296	7352	7409	7466	7523	7579	7636	7693	1	6
52		7750	7806	7863	7920	7977	8033	8090	8147	8204	8260	2	11
53		8317	8374	8431	8487	8544	8601	8658	8714	8771	8828	3	17
54		8885	8941	8998	9055	9112	9168	9225	9282	9338	9395	4	22
7655		9452	9509	9565	9622	9679	9736	9792	9849	9906	9963	5	28
56	884	0019	0076	0133	0189	0246	0303	0360	0416	0473	0530	6	34
57		0586	0643	0700	0757	0813	0870	0927	0983	1040	1097	7	39
58		1154	1210	1267	1324	1380	1437	1494	1551	1607	1664	8	45
59		1721	1777	1834	1891	1948	2004	2061	2118	2174	2231	9	50
7660		2288	2344	2401	2458	2514	2571	2628	2685	2741	2798		
61		2855	2911	2968	3025	3081	3138	3195	3251	3308	3365		
62		3421	3478	3535	3592	3648	3705	3762	3818	3875	3932		
63		3988	4045	4102	4158	4215	4272	4328	4385	4442	4498		
64		4555	4612	4668	4725	4782	4838	4895	4952	5008	5065		
7665		5122	5178	5235	5292	5348	5405	5462	5518	5575	5631	57	
66		5688	5745	5801	5858	5915	5971	6028	6085	6141	6198	1	6
67		6255	6311	6368	6425	6481	6538	6594	6651	6708	6764	2	11
68		6821	6878	6934	6991	7048	7104	7161	7217	7274	7331	3	17
69		7387	7444	7501	7557	7614	7671	7727	7784	7840	7897	4	23
7670		7954	8010	8067	8124	8180	8237	8293	8350	8407	8463	5	29
71		8520	8576	8633	8690	8746	8803	8860	8916	8973	9029	6	34
72		9086	9143	9199	9256	9312	9369	9426	9482	9539	9595	7	40
73		9652	9709	9765	9822	9878	9935	9992	0048	0105	0161	8	46
74	885	0218	0275	0331	0388	0444	0501	0557	0614	0671	0727	9	51
7675		0784	0840	0897	0954	1010	1067	1123	1180	1237	1293		
76		1350	1406	1463	1519	1576	1633	1689	1746	1802	1859		
77		1915	1972	2029	2085	2142	2198	2255	2311	2368	2425		
78		2481	2538	2594	2651	2707	2764	2820	2877	2934	2990		
79		3047	3103	3160	3216	3273	3329	3386	3443	3499	3556		
7680		3612	3669	3725	3782	3838	3895	3951	4008	4065	4121	56	
81		4178	4234	4291	4347	4404	4460	4517	4573	4630	4686	1	6
82		4743	4800	4856	4913	4969	5026	5082	5139	5195	5252	2	11
83		5308	5365	5421	5478	5534	5591	5647	5704	5761	5817	3	17
84		5874	5930	5987	6043	6100	6156	6213	6269	6326	6382	4	22
7685		6439	6495	6552	6608	6665	6721	6778	6834	6891	6947	5	28
86		7004	7060	7117	7173	7230	7286	7343	7399	7456	7512	6	34
87		7569	7625	7682	7738	7795	7851	7908	7964	8021	8077	7	39
88		8134	8190	8247	8303	8360	8416	8473	8529	8586	8642	8	45
89		8699	8755	8812	8868	8925	8981	9037	9094	9150	9207	9	50
7690		9263	9320	9376	9433	9489	9546	9602	9659	9715	9772		
91		9828	9885	9941	9998	0054	0110	0167	0223	0280	0336		
92	886	0393	0449	0506	0562	0619	0675	0732	0788	0844	0901		
93		0957	1014	1070	1127	1183	1240	1296	1352	1409	1465		
94		1522	1578	1635	1691	1748	1804	1860	1917	1973	2030		
7695		2086	2143	2199	2256	2312	2368	2425	2481	2538	2594	57	
96		2651	2707	2763	2820	2876	2933	2989	3046	3102	3158	1	6
97		3215	3271	3328	3384	3441	3497	3553	3610	3666	3723	2	11
98		3779	3835	3892	3948	4005	4061	4118	4174	4230	4287	3	17
99		4343	4400	4456	4512	4569	4625	4682	4738	4794	4851	4	23
7700		4907	4964	5020	5076	5133	5189	5246	5302	5358	5415	5	29
01		5471	5528	5584	5640	5697	5753	5810	5866	5922	5979	6	34
02		6035	6092	6148	6204	6261	6317	6373	6430	6486	6543	7	40
03		6599	6655	6712	6768	6824	6881	6937	6994	7050	7106	8	46
04		7163	7219	7275	7332	7388	7445	7501	7557	7614	7670	9	51
7705		7726	7783	7839	7896	7952	8008	8065	8121	8177	8234		
06		8290	8346	8403	8459	8515	8572	8628	8685	8741	8797		
07		8854	8910	8966	9023	9079	9135	9192	9248	9304	9361		
08		9417	9473	9530	9586	9642	9699	9755	9811	9868	9924		
09		9980	0037	0093	0149	0206	0262	0318	0375	0431	0487		
7710	887	0544	0600	0656	0713	0769	0825	0882	0938	0994	1051	56	
11		1107	1163	1220	1276	1332	1389	1445	1501	1558	1614	1	6
12		1670	1727	1783	1839	1895	1952	2008	2064	2121	2177	2	11
13		2233	2290	2346	2402	2459	2515	2571	2627	2684	2740	3	17
14		2796	2853	2909	2965	3022	3078	3134	3190	3247	3303	4	22
7715		3359	3416	3472	3528	3584	3641	3697	3753	3810	3866	5	28
16		3922	3978	4035	4091	4147	4204	4260	4316	4372	4429	6	34
17		4485	4541	4598	4654	4710	4766	4823	4879	4935	4991	7	39
18		5048	5104	5160	5217	5273	5329	5385	5442	5498	5554	8	45
19		5610	5667	5723	5779	5835	5892	5948	6004	6060	6117	9	50
N.		0	1	2	3	4	5	6	7	8	9	Diff.	

Number 77200 *to* 77899
Logarithm 887 6173 *to* 891 5319

N.		0	1	2	3	4	5	6	7	8	9	Diff.
7720	887	6173	6229	6286	6342	6398	6454	6511	6567	6623	6679	56
21		6736	6792	6848	6904	6961	7017	7073	7129	7185	7242	1 6
22		7298	7354	7410	7467	7523	7579	7635	7692	7748	7804	2 11
23		7860	7917	7973	8029	8085	8142	8198	8254	8310	8366	3 17
24		8423	8479	8535	8591	8648	8704	8760	8816	8872	8929	4 22
7725		8985	9041	9097	9154	9210	9266	9322	9378	9435	9491	5 28
26		9547	9603	9659	9716	9772	9828	9884	9941	9997	0053	6 34
27	888	0109	0165	0222	0278	0334	0390	0446	0503	0559	0615	7 39
28		0671	0727	0784	0840	0896	0952	1008	1064	1121	1177	8 45
29		1233	1289	1345	1402	1458	1514	1570	1626	1683	1739	9 50
7730		1795	1851	1907	1963	2020	2076	2132	2188	2244	2301	
31		2357	2413	2469	2525	2581	2638	2694	2750	2806	2862	
32		2918	2975	3031	3087	3143	3199	3255	3312	3368	3424	
33		3480	3536	3592	3649	3705	3761	3817	3873	3929	3986	
34		4042	4098	4154	4210	4266	4322	4379	4435	4491	4547	
7735		4603	4659	4715	4772	4828	4884	4940	4996	5052	5108	57
36		5165	5221	5277	5333	5389	5445	5501	5558	5614	5670	1 6
37		5726	5782	5838	5894	5950	6007	6063	6119	6175	6231	2 11
38		6287	6343	6400	6456	6512	6568	6624	6680	6736	6792	3 17
39		6848	6905	6961	7017	7073	7129	7185	7241	7297	7353	4 23
7740		7410	7466	7522	7578	7634	7690	7746	7802	7858	7915	5 29
41		7971	8027	8083	8139	8195	8251	8307	8363	8419	8476	6 34
42		8532	8588	8644	8700	8756	8812	8868	8924	8980	9037	7 40
43		9093	9149	9205	9261	9317	9373	9429	9485	9541	9597	8 46
44		9653	9710	9766	9822	9878	9934	9990	0046	0102	0158	9 51
7745	889	0214	0270	0326	0382	0439	0495	0551	0607	0663	0719	
46		0775	0831	0887	0943	0999	1055	1111	1167	1223	1279	
47		1336	1392	1448	1504	1560	1616	1672	1728	1784	1840	
48		1896	1952	2008	2064	2120	2176	2232	2288	2345	2401	
49		2457	2513	2569	2625	2681	2737	2793	2849	2905	2961	
7750		3017	3073	3129	3185	3241	3297	3353	3409	3465	3521	56
51		3577	3633	3689	3745	3801	3858	3914	3970	4026	4082	1 6
52		4138	4194	4250	4306	4362	4418	4474	4530	4586	4642	2 11
53		4698	4754	4810	4866	4922	4978	5034	5090	5146	5202	3 17
54		5258	5314	5370	5426	5482	5538	5594	5650	5706	5762	4 22
7755		5818	5874	5930	5986	6042	6098	6154	6210	6266	6322	5 28
56		6378	6434	6490	6546	6602	6658	6714	6770	6826	6882	6 34
57		6938	6994	7050	7106	7162	7218	7274	7330	7386	7442	7 39
58		7498	7554	7610	7666	7722	7778	7834	7890	7946	8002	8 45
59		8058	8113	8169	8225	8281	8337	8393	8449	8505	8561	9 50
7760		8617	8673	8729	8785	8841	8897	8953	9009	9065	9121	
61		9177	9233	9289	9345	9401	9457	9513	9569	9624	9680	
62		9736	9792	9848	9904	9960	0016	0072	0128	0184	0240	
63	890	0296	0352	0408	0464	0520	0576	0632	0687	0743	0799	
64		0855	0911	0967	1023	1079	1135	1191	1247	1303	1359	
7765		1415	1471	1526	1582	1638	1694	1750	1806	1862	1918	55
66		1974	2030	2086	2142	2198	2253	2309	2365	2421	2477	1 6
67		2533	2589	2645	2701	2757	2813	2869	2924	2980	3036	2 11
68		3092	3148	3204	3260	3316	3372	3428	3484	3539	3595	3 17
69		3651	3707	3763	3819	3875	3931	3987	4043	4098	4154	4 22
7770		4210	4266	4322	4378	4434	4490	4546	4601	4657	4713	5 28
71		4769	4825	4881	4937	4993	5049	5104	5160	5216	5272	6 33
72		5328	5384	5440	5496	5551	5607	5663	5719	5775	5831	7 39
73		5887	5943	5998	6054	6110	6166	6222	6278	6334	6389	8 44
74		6445	6501	6557	6613	6669	6725	6781	6836	6892	6948	9 50
7775		7004	7060	7116	7172	7227	7283	7339	7395	7451	7507	
76		7563	7618	7674	7730	7786	7842	7898	7953	8009	8065	
77		8121	8177	8233	8289	8344	8400	8456	8512	8568	8624	
78		8679	8735	8791	8847	8903	8959	9014	9070	9126	9182	
79		9238	9294	9349	9405	9461	9517	9573	9629	9684	9740	
7780		9796	9852	9908	9963	0019	0075	0131	0187	0243	0298	56
81	891	0354	0410	0466	0522	0577	0633	0689	0745	0801	0856	1 6
82		0912	0968	1024	1080	1135	1191	1247	1303	1359	1415	2 11
83		1470	1526	1582	1638	1694	1749	1805	1861	1917	1972	3 17
84		2028	2084	2140	2196	2251	2307	2363	2419	2475	2530	4 22
7785		2586	2642	2698	2754	2809	2865	2921	2977	3032	3088	5 28
86		3144	3200	3256	3311	3367	3423	3479	3534	3590	3646	6 34
87		3702	3758	3813	3869	3925	3981	4036	4092	4148	4204	7 39
88		4259	4315	4371	4427	4482	4538	4594	4650	4706	4761	8 45
89		4817	4873	4929	4984	5040	5096	5152	5207	5263	5319	9 50
N.		0	1	2	3	4	5	6	7	8	9	Diff.

Number 77900 *to* 78599
Logarithm 891 5375 *to* 895 4170

N.		0	1	2	3	4	5	6	7	8	9	Diff.
7790	891	5375	5430	5486	5542	5598	5653	5709	5765	5821	5876	55
91		5932	5988	6044	6099	6155	6211	6266	6322	6378	6434	1 6
92		6489	6545	6601	6657	6712	6768	6824	6880	6935	6991	2 11
93		7047	7102	7158	7214	7270	7325	7381	7437	7493	7548	3 17
94		7604	7660	7715	7771	7827	7883	7938	7994	8050	8105	4 22
7795		8161	8217	8273	8328	8384	8440	8495	8551	8607	8663	5 28
96		8718	8774	8830	8885	8941	8997	9053	9108	9164	9220	6 33
97		9275	9331	9387	9442	9498	9554	9610	9665	9721	9777	7 39
98		9832	9888	9944	9999	0055	0111	0166	0222	0278	0334	8 44
99	892	0389	0445	0501	0556	0612	0668	0723	0779	0835	0890	9 50
7800		0946	1002	1057	1113	1169	1224	1280	1336	1391	1447	
01		1503	1558	1614	1670	1725	1781	1837	1892	1948	2004	
02		2059	2115	2171	2226	2282	2338	2393	2449	2505	2560	
03		2616	2672	2727	2783	2839	2894	2950	3006	3061	3117	
04		3173	3228	3284	3340	3395	3451	3506	3562	3618	3673	
7805		3729	3785	3840	3896	3952	4007	4063	4119	4174	4230	56
06		4285	4341	4397	4452	4508	4564	4619	4675	4731	4786	1 6
07		4842	4897	4953	5009	5064	5120	5176	5231	5287	5342	2 11
08		5398	5454	5509	5565	5621	5676	5732	5787	5843	5899	3 17
09		5954	6010	6065	6121	6177	6232	6288	6344	6399	6455	4 22
7810		6510	6566	6622	6677	6733	6788	6844	6900	6955	7011	5 28
11		7066	7122	7178	7233	7289	7344	7400	7456	7511	7567	6 34
12		7622	7678	7734	7789	7845	7900	7956	8011	8067	8123	7 39
13		8178	8234	8289	8345	8401	8456	8512	8567	8623	8678	8 45
14		8734	8790	8845	8901	8956	9012	9068	9123	9179	9234	9 50
7815		9290	9345	9401	9457	9512	9568	9623	9679	9734	9790	
16		9846	9901	9957	0012	0068	0123	0179	0234	0290	0346	
17	893	0401	0457	0512	0568	0623	0679	0734	0790	0846	0901	
18		0957	1012	1068	1123	1179	1234	1290	1345	1401	1457	
19		1512	1568	1623	1679	1734	1790	1845	1901	1956	2012	
7820		2068	2123	2179	2234	2290	2345	2401	2456	2512	2567	55
21		2623	2678	2734	2789	2845	2900	2956	3012	3067	3123	1 6
22		3178	3234	3289	3345	3400	3456	3511	3567	3622	3678	2 11
23		3733	3789	3844	3900	3955	4011	4066	4122	4177	4233	3 17
24		4288	4344	4399	4455	4510	4566	4621	4677	4732	4788	4 22
7825		4843	4899	4954	5010	5065	5121	5176	5232	5287	5343	5 28
26		5398	5454	5509	5565	5620	5676	5731	5787	5842	5898	6 33
27		5953	6009	6064	6120	6175	6231	6286	6342	6397	6453	7 39
28		6508	6564	6619	6675	6730	6786	6841	6897	6952	7007	8 44
29		7063	7118	7174	7229	7285	7340	7396	7451	7507	7562	9 50
7830		7618	7673	7729	7784	7839	7895	7950	8006	8061	8117	
31		8172	8228	8283	8339	8394	8450	8505	8560	8616	8671	
32		8727	8782	8838	8893	8949	9004	9059	9115	9170	9226	
33		9281	9337	9392	9448	9503	9558	9614	9669	9725	9780	
34		9836	9891	9947	0002	0057	0113	0168	0224	0279	0335	
7835	894	0390	0445	0501	0556	0612	0667	0723	0778	0833	0889	56
36		0944	1000	1055	1111	1166	1221	1277	1332	1388	1443	1 6
37		1498	1554	1609	1665	1720	1776	1831	1886	1942	1997	2 11
38		2053	2108	2163	2219	2274	2330	2385	2440	2496	2551	3 17
39		2607	2662	2717	2773	2828	2884	2939	2994	3050	3105	4 22
7840		3161	3216	3271	3327	3382	3438	3493	3548	3604	3659	5 28
41		3715	3770	3825	3881	3936	3991	4047	4102	4158	4213	6 34
42		4268	4324	4379	4435	4490	4545	4601	4656	4711	4767	7 39
43		4822	4878	4933	4988	5044	5099	5154	5210	5265	5320	8 45
44		5376	5431	5487	5542	5597	5653	5708	5763	5819	5874	9 50
7845		5929	5985	6040	6096	6151	6206	6262	6317	6372	6428	
46		6483	6538	6594	6649	6704	6760	6815	6870	6926	6981	
47		7037	7092	7147	7203	7258	7313	7369	7424	7479	7535	
48		7590	7645	7701	7756	7811	7867	7922	7977	8033	8088	
49		8143	8199	8254	8309	8365	8420	8475	8531	8586	8641	
7850		8697	8752	8807	8863	8918	8973	9028	9084	9139	9194	55
51		9250	9305	9360	9416	9471	9526	9582	9637	9692	9748	1 6
52		9803	9858	9914	9969	0024	0079	0135	0190	0245	0301	2 11
53	895	0356	0411	0467	0522	0577	0632	0688	0743	0798	0854	3 17
54		0909	0964	1020	1075	1130	1185	1241	1296	1351	1407	4 22
7855		1462	1517	1572	1628	1683	1738	1794	1849	1904	1959	5 28
56		2015	2070	2125	2181	2236	2291	2346	2402	2457	2512	6 33
57		2568	2623	2678	2733	2789	2844	2899	2954	3010	3065	7 39
58		3120	3176	3231	3286	3341	3397	3452	3507	3562	3618	8 44
59		3673	3728	3783	3839	3894	3949	4004	4060	4115	4170	9 50
N.		0	1	2	3	4	5	6	7	8	9	Diff.

Number 78600 *to* 79299
Logarithm 895 4225 *to* 899 2677

N.	0	1	2	3	4	5	6	7	8	9	Diff.
7860	895 4225	4281	4336	4391	4446	4502	4557	4612	4667	4723	55
61	4778	4833	4888	4944	4999	5054	5109	5165	5220	5275	1 6
62	5330	5386	5441	5496	5551	5607	5662	5717	5772	5828	2 11
63	5883	5938	5993	6048	6104	6159	6214	6269	6325	6380	3 17
64	6435	6490	6545	6601	6656	6711	6766	6822	6877	6932	4 22
7865	6987	7042	7098	7153	7208	7263	7319	7374	7429	7484	5 28
66	7539	7595	7650	7705	7760	7815	7871	7926	7981	8036	6 33
67	8092	8147	8202	8257	8312	8368	8423	8478	8533	8588	7 39
68	8644	8699	8754	8809	8864	8919	8975	9030	9085	9140	8 44
69	9195	9251	9306	9361	9416	9471	9527	9582	9637	9692	9 50
7870	9747	9803	9858	9913	9968	0023	0078	0134	0189	0244	
71	896 0299	0354	0409	0465	0520	0575	0630	0685	0741	0796	
72	0851	0906	0961	1016	1072	1127	1182	1237	1292	1347	
73	1403	1458	1513	1568	1623	1678	1733	1789	1844	1899	
74	1954	2009	2064	2120	2175	2230	2285	2340	2395	2450	
7875	2506	2561	2616	2671	2726	2781	2837	2892	2947	3002	56
76	3057	3112	3167	3222	3278	3333	3388	3443	3498	3553	1 6
77	3608	3664	3719	3774	3829	3884	3939	3994	4050	4105	2 11
78	4160	4215	4270	4325	4380	4435	4491	4546	4601	4656	3 17
79	4711	4766	4821	4876	4931	4987	5042	5097	5152	5207	4 22
7880	5262	5317	5372	5428	5483	5538	5593	5648	5703	5758	5 28
81	5813	5868	5923	5979	6034	6089	6144	6199	6254	6309	6 34
82	6364	6419	6475	6530	6585	6640	6695	6750	6805	6860	7 39
83	6915	6970	7025	7081	7136	7191	7246	7301	7356	7411	8 45
84	7466	7521	7576	7631	7686	7742	7797	7852	7907	7962	9 50
7885	8017	8072	8127	8182	8237	8292	8347	8403	8458	8513	
86	8568	8623	8678	8733	8788	8843	8898	8953	9008	9063	
87	9118	9173	9229	9284	9339	9394	9449	9504	9559	9614	
88	9669	9724	9779	9834	9889	9944	9999	0054	0109	0165	
89	897 0220	0275	0330	0385	0440	0495	0550	0605	0660	0715	
7890	0770	0825	0880	0935	0990	1045	1100	1155	1210	1265	55
91	1320	1375	1431	1486	1541	1596	1651	1706	1761	1816	1 6
92	1871	1926	1981	2036	2091	2146	2201	2256	2311	2366	2 11
93	2421	2476	2531	2586	2641	2696	2751	2806	2861	2916	3 17
94	2971	3026	3081	3136	3191	3246	3301	3356	3411	3466	4 22
7895	3521	3576	3631	3686	3741	3796	3851	3906	3961	4016	5 28
96	4071	4126	4181	4236	4291	4346	4401	4456	4511	4566	6 33
97	4621	4676	4731	4786	4841	4896	4951	5006	5061	5116	7 39
98	5171	5226	5281	5336	5391	5446	5501	5556	5611	5666	8 44
99	5721	5776	5831	5886	5941	5996	6051	6106	6161	6216	9 50
7900	6271	6326	6381	6436	6491	6546	6601	6656	6711	6766	
01	6821	6876	6931	6986	7040	7095	7150	7205	7260	7315	
02	7370	7425	7480	7535	7590	7645	7700	7755	7810	7865	
03	7920	7975	8030	8085	8140	8195	8250	8304	8359	8414	
04	8469	8524	8579	8634	8689	8744	8799	8854	8909	8964	
7905	9019	9074	9129	9184	9238	9293	9348	9403	9458	9513	54
06	9568	9623	9678	9733	9788	9843	9898	9953	0008	0062	1 5
07	898 0117	0172	0227	0282	0337	0392	0447	0502	0557	0612	2 11
08	0667	0722	0776	0831	0886	0941	0996	1051	1106	1161	3 16
09	1216	1271	1326	1380	1435	1490	1545	1600	1655	1710	4 22
7910	1765	1820	1875	1930	1984	2039	2094	2149	2204	2259	5 27
11	2314	2369	2424	2479	2533	2588	2643	2698	2753	2808	6 32
12	2863	2918	2973	3027	3082	3137	3192	3247	3302	3357	7 38
13	3412	3467	3521	3576	3631	3686	3741	3796	3851	3906	8 43
14	3960	4015	4070	4125	4180	4235	4290	4345	4399	4454	9 49
7915	4509	4564	4619	4674	4729	4784	4838	4893	4948	5003	
16	5058	5113	5168	5222	5277	5332	5387	5442	5497	5552	
17	5606	5661	5716	5771	5826	5881	5936	5990	6045	6100	
18	6155	6210	6265	6320	6374	6429	6484	6539	6594	6649	
19	6703	6758	6813	6868	6923	6978	7032	7087	7142	7197	
7920	7252	7307	7361	7416	7471	7526	7581	7636	7690	7745	55
21	7800	7855	7910	7965	8019	8074	8129	8184	8239	8294	1 6
22	8348	8403	8458	8513	8568	8622	8677	8732	8787	8842	2 11
23	8897	8951	9006	9061	9116	9171	9225	9280	9335	9390	3 17
24	9445	9499	9554	9609	9664	9719	9774	9828	9883	9938	4 22
7925	9993	0048	0102	0157	0212	0267	0321	0376	0431	0486	5 28
26	899 0541	0595	0650	0705	0760	0815	0869	0924	0979	1034	6 33
27	1089	1143	1198	1253	1308	1363	1417	1472	1527	1582	7 39
28	1636	1691	1746	1801	1856	1910	1965	2020	2075	2129	8 44
29	2184	2239	2294	2348	2403	2458	2513	2568	2622	2677	9 50
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 79300 *to* 79999
Logarithm 899 2732 *to* 903 0846

N.	0	1	2	3	4	5	6	7	8	9	Diff.
7930	899 2732	2787	2841	2896	2951	3006	3060	3115	3170	3225	54
31	3279	3334	3389	3444	3499	3553	3608	3663	3718	3772	1 5
32	3827	3882	3937	3991	4046	4101	4156	4210	4265	4320	2 11
33	4375	4429	4484	4539	4594	4648	4703	4758	4812	4867	3 16
34	4922	4977	5031	5086	5141	5196	5250	5305	5360	5415	4 22
7935	5469	5524	5579	5634	5688	5743	5798	5852	5907	5962	5 27
36	6017	6071	6126	6181	6235	6290	6345	6400	6454	6509	6 32
37	6564	6619	6673	6728	6783	6837	6892	6947	7002	7056	7 38
38	7111	7166	7220	7275	7330	7384	7439	7494	7549	7603	8 43
39	7658	7713	7767	7822	7877	7932	7986	8041	8096	8150	9 49
7940	8205	8260	8314	8369	8424	8479	8533	8588	8643	8697	
41	8752	8807	8861	8916	8971	9025	9080	9135	9189	9244	
42	9299	9354	9408	9463	9518	9572	9627	9682	9736	9791	
43	9846	9900	9955	0010	0064	0119	0174	0228	0283	0338	
44	900 0392	0447	0502	0556	0611	0666	0720	0775	0830	0884	
7945	0939	0994	1048	1103	1158	1212	1267	1322	1376	1431	55
46	1486	1540	1595	1650	1704	1759	1814	1868	1923	1977	1 6
47	2032	2087	2141	2196	2251	2305	2360	2415	2469	2524	2 11
48	2579	2633	2688	2743	2797	2852	2906	2961	3016	3070	3 17
49	3125	3180	3234	3289	3344	3398	3453	3507	3562	3617	4 22
7950	3671	3726	3781	3835	3890	3944	3999	4054	4108	4163	5 28
51	4218	4272	4327	4381	4436	4491	4545	4600	4654	4709	6 33
52	4764	4818	4873	4928	4982	5037	5091	5146	5201	5255	7 39
53	5310	5364	5419	5474	5528	5583	5637	5692	5747	5801	8 44
54	5856	5910	5965	6020	6074	6129	6183	6238	6293	6347	9 50
7955	6402	6456	6511	6566	6620	6675	6729	6784	6839	6893	
56	6948	7002	7057	7112	7166	7221	7275	7330	7384	7439	
57	7494	7548	7603	7657	7712	7766	7821	7876	7930	7985	
58	8039	8094	8148	8203	8258	8312	8367	8421	8476	8530	
59	8585	8640	8694	8749	8803	8858	8912	8967	9022	9076	
7960	9131	9185	9240	9294	9349	9403	9458	9513	9567	9622	54
61	9676	9731	9785	9840	9894	9949	0004	0058	0113	0167	1 5
62	901 0222	0276	0331	0385	0440	0494	0549	0604	0658	0713	2 11
63	0767	0822	0876	0931	0985	1040	1094	1149	1203	1258	3 16
64	1313	1367	1422	1476	1531	1585	1640	1694	1749	1803	4 22
7965	1858	1912	1967	2021	2076	2130	2185	2239	2294	2349	5 27
66	2403	2458	2512	2567	2621	2676	2730	2785	2839	2894	6 32
67	2948	3003	3057	3112	3166	3221	3275	3330	3384	3439	7 38
68	3493	3548	3602	3657	3711	3766	3820	3875	3929	3984	8 43
69	4038	4093	4147	4202	4256	4311	4365	4420	4474	4529	9 49
7970	4583	4638	4692	4747	4801	4856	4910	4965	5019	5074	
71	5128	5183	5237	5292	5346	5401	5455	5509	5564	5618	
72	5673	5727	5782	5836	5891	5945	6000	6054	6109	6163	
73	6218	6272	6327	6381	6436	6490	6544	6599	6653	6708	
74	6762	6817	6871	6926	6980	7035	7089	7144	7198	7252	
7975	7307	7361	7416	7470	7525	7579	7634	7688	7743	7797	55
76	7851	7906	7960	8015	8069	8124	8178	8233	8287	8341	1 6
77	8396	8450	8505	8559	8614	8668	8723	8777	8831	8886	2 11
78	8940	8995	9049	9104	9158	9212	9267	9321	9376	9430	3 17
79	9485	9539	9594	9648	9702	9757	9811	9866	9920	9974	4 22
7980	902 0029	0083	0138	0192	0247	0301	0355	0410	0464	0519	5 28
81	0573	0628	0682	0736	0791	0845	0900	0954	1008	1063	6 33
82	1117	1172	1226	1280	1335	1389	1444	1498	1552	1607	7 39
83	1661	1716	1770	1824	1879	1933	1988	2042	2096	2151	8 44
84	2205	2260	2314	2368	2423	2477	2532	2586	2640	2695	9 50
7985	2749	2804	2858	2912	2967	3021	3076	3130	3184	3239	
86	3293	3347	3402	3456	3511	3565	3619	3674	3728	3782	
87	3837	3891	3946	4000	4054	4109	4163	4217	4272	4326	
88	4381	4435	4489	4544	4598	4652	4707	4761	4815	4870	
89	4924	4979	5033	5087	5142	5196	5250	5305	5359	5413	
7990	5468	5522	5577	5631	5685	5740	5794	5848	5903	5957	54
91	6011	6066	6120	6174	6229	6283	6337	6392	6446	6500	1 5
92	6555	6609	6663	6718	6772	6826	6881	6935	6989	7044	2 11
93	7098	7152	7207	7261	7315	7370	7424	7478	7533	7587	3 16
94	7641	7696	7750	7804	7859	7913	7967	8022	8076	8130	4 22
7995	8185	8239	8293	8348	8402	8456	8511	8565	8619	8674	5 27
96	8728	8782	8836	8891	8945	8999	9054	9108	9162	9217	6 32
97	9271	9325	9380	9434	9488	9542	9597	9651	9705	9760	7 38
98	9814	9868	9923	9977	0031	0085	0140	0194	0248	0303	8 43
99	903 0357	0411	0466	0520	0574	0628	0683	0737	0791	0846	9 49
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 80000 *to* 80699
Logarithm 903 0900 *to* 906 8682

N.		0	1	2	3	4	5	6	7	8	9	Diff.	
8000	903	0900	0954	1008	1063	1117	1171	1226	1280	1334	1388	55	
01		1443	1497	1551	1606	1660	1714	1768	1823	1877	1931	1	6
02		1985	2040	2094	2148	2203	2257	2311	2365	2420	2474	2	11
03		2528	2582	2637	2691	2745	2799	2854	2908	2962	3017	3	17
04		3071	3125	3179	3234	3288	3342	3396	3451	3505	3559	4	22
8005		3613	3668	3722	3776	3830	3885	3939	3993	4047	4102	5	28
06		4156	4210	4264	4319	4373	4427	4481	4536	4590	4644	6	33
07		4698	4753	4807	4861	4915	4969	5024	5078	5132	5186	7	39
08		5241	5295	5349	5403	5458	5512	5566	5620	5674	5729	8	44
09		5783	5837	5891	5946	6000	6054	6108	6163	6217	6271	9	50
8010		6325	6379	6434	6488	6542	6596	6650	6705	6759	6813		
11		6867	6922	6976	7030	7084	7138	7193	7247	7301	7355		
12		7409	7464	7518	7572	7626	7680	7735	7789	7843	7897		
13		7951	8006	8060	8114	8168	8222	8277	8331	8385	8439		
14		8493	8548	8602	8656	8710	8764	8819	8873	8927	8981		
8015		9035	9089	9144	9198	9252	9306	9360	9415	9469	9523	54	
16		9577	9631	9685	9740	9794	9848	9902	9956	0010	0065	1	5
17	904	0119	0173	0227	0281	0336	0390	0444	0498	0552	0606	2	11
18		0661	0715	0769	0823	0877	0931	0985	1040	1094	1148	3	16
19		1202	1256	1310	1365	1419	1473	1527	1581	1635	1690	4	22
8020		1744	1798	1852	1906	1960	2014	2069	2123	2177	2231	5	27
21		2285	2339	2393	2448	2502	2556	2610	2664	2718	2772	6	32
22		2827	2881	2935	2989	3043	3097	3151	3206	3260	3314	7	38
23		3368	3422	3476	3530	3584	3639	3693	3747	3801	3855	8	43
24		3909	3963	4017	4072	4126	4180	4234	4288	4342	4396	9	49
8025		4450	4505	4559	4613	4667	4721	4775	4829	4883	4937		
26		4992	5046	5100	5154	5208	5262	5316	5370	5424	5479		
27		5533	5587	5641	5695	5749	5803	5857	5911	5965	6020		
28		6074	6128	6182	6236	6290	6344	6398	6452	6506	6560		
29		6615	6669	6723	6777	6831	6885	6939	6993	7047	7101		
8030		7155	7210	7264	7318	7372	7426	7480	7534	7588	7642	55	
31		7696	7750	7804	7858	7913	7967	8021	8075	8129	8183	1	6
32		8237	8291	8345	8399	8453	8507	8561	8615	8670	8724	2	11
33		8778	8832	8886	8940	8994	9048	9102	9156	9210	9264	3	17
34		9318	9372	9426	9480	9534	9589	9643	9697	9751	9805	4	22
8035		9859	9913	9967	0021	0075	0129	0183	0237	0291	0345	5	28
36	905	0399	0453	0507	0561	0615	0669	0724	0778	0832	0886	6	33
37		0940	0994	1048	1102	1156	1210	1264	1318	1372	1426	7	39
38		1480	1534	1588	1642	1696	1750	1804	1858	1912	1966	8	44
39		2020	2074	2128	2182	2236	2290	2344	2398	2452	2506	9	50
8040		2560	2615	2669	2723	2777	2831	2885	2939	2993	3047		
41		3101	3155	3209	3263	3317	3371	3425	3479	3533	3587		
42		3641	3695	3749	3803	3857	3911	3965	4019	4073	4127		
43		4181	4235	4289	4343	4397	4451	4505	4559	4613	4667		
44		4721	4775	4829	4883	4937	4991	5045	5099	5153	5207		
8045		5260	5314	5368	5422	5476	5530	5584	5638	5692	5746	54	
46		5800	5854	5908	5962	6016	6070	6124	6178	6232	6286	1	5
47		6340	6394	6448	6502	6556	6610	6664	6718	6772	6826	2	11
48		6880	6934	6988	7042	7096	7149	7203	7257	7311	7365	3	16
49		7419	7473	7527	7581	7635	7689	7743	7797	7851	7905	4	22
8050		7959	8013	8067	8121	8175	8229	8282	8336	8390	8444	5	27
51		8498	8552	8606	8660	8714	8768	8822	8876	8930	8984	6	32
52		9038	9092	9146	9199	9253	9307	9361	9415	9469	9523	7	38
53		9577	9631	9685	9739	9793	9847	9901	9954	0008	0062	8	43
54	906	0116	0170	0224	0278	0332	0386	0440	0494	0548	0602	9	49
8055		0655	0709	0763	0817	0871	0925	0979	1033	1087	1141		
56		1195	1248	1302	1356	1410	1464	1518	1572	1626	1680		
57		1734	1788	1841	1895	1949	2003	2057	2111	2165	2219		
58		2273	2327	2380	2434	2488	2542	2596	2650	2704	2758		
59		2812	2865	2919	2973	3027	3081	3135	3189	3243	3297		
8060		3350	3404	3458	3512	3566	3620	3674	3728	3781	3835	53	
61		3889	3943	3997	4051	4105	4159	4212	4266	4320	4374	1	5
62		4428	4482	4536	4590	4643	4697	4751	4805	4859	4913	2	11
63		4967	5020	5074	5128	5182	5236	5290	5344	5397	5451	3	16
64		5505	5559	5613	5667	5721	5774	5828	5882	5936	5990	4	21
8065		6044	6098	6151	6205	6259	6313	6367	6421	6474	6528	5	27
66		6582	6636	6690	6744	6798	6851	6905	6959	7013	7067	6	32
67		7121	7174	7228	7282	7336	7390	7444	7497	7551	7605	7	37
68		7659	7713	7767	7820	7874	7928	7982	8036	8090	8143	8	42
69		8197	8251	8305	8359	8412	8466	8520	8574	8628	8682	9	48
N.		0	1	2	3	4	5	6	7	8	9	Diff.	

Number 80700 *to* 81399
Logarithm 906 8735 *to* 910 6191

N.		0	1	2	3	4	5	6	7	8	9	Diff.	
8070	906	8735	8789	8843	8897	8951	9004	9058	9112	9166	9220	54	
71		9273	9327	9381	9435	9489	9543	9596	9650	9704	9758	1	5
72		9812	9865	9919	9973	0027	0081	0134	0188	0242	0296	2	11
73	907	0350	0403	0457	0511	0565	0618	0672	0726	0780	0834	3	16
74		0887	0941	0995	1049	1103	1156	1210	1264	1318	1372	4	22
8075		1425	1479	1533	1587	1640	1694	1748	1802	1856	1909	5	27
76		1963	2017	2071	2124	2178	2232	2286	2340	2393	2447	6	32
77		2501	2555	2608	2662	2716	2770	2823	2877	2931	2985	7	38
78		3038	3092	3146	3200	3254	3307	3361	3415	3469	3522	8	43
79		3576	3630	3684	3737	3791	3845	3899	3952	4006	4060	9	49
8080		4114	4167	4221	4275	4329	4382	4436	4490	4544	4597		
81		4651	4705	4759	4812	4866	4920	4974	5027	5081	5135		
82		5188	5242	5296	5350	5403	5457	5511	5565	5618	5672		
83		5726	5780	5833	5887	5941	5994	6048	6102	6156	6209		
84		6263	6317	6370	6424	6478	6532	6585	6639	6693	6747		
8085		6800	6854	6908	6961	7015	7069	7123	7176	7230	7284	53	
86		7337	7391	7445	7498	7552	7606	7660	7713	7767	7821	1	5
87		7874	7928	7982	8036	8089	8143	8197	8250	8304	8358	2	11
88		8411	8465	8519	8573	8626	8680	8734	8787	8841	8895	3	16
89		8948	9002	9056	9109	9163	9217	9270	9324	9378	9432	4	21
8090		9485	9539	9593	9646	9700	9754	9807	9861	9915	9968	5	27
91	908	0022	0076	0129	0183	0237	0290	0344	0398	0451	0505	6	32
92		0559	0612	0666	0720	0773	0827	0881	0934	0988	1042	7	37
93		1095	1149	1203	1256	1310	1364	1417	1471	1525	1578	8	42
94		1632	1686	1739	1793	1847	1900	1954	2008	2061	2115	9	48
8095		2169	2222	2276	2329	2383	2437	2490	2544	2598	2651		
96		2705	2759	2812	2866	2920	2973	3027	3080	3134	3188		
97		3241	3295	3349	3402	3456	3510	3563	3617	3670	3724		
98		3778	3831	3885	3939	3992	4046	4099	4153	4207	4260		
99		4314	4368	4421	4475	4528	4582	4636	4689	4743	4797		
8100		4850	4904	4957	5011	5065	5118	5172	5225	5279	5333	54	
01		5386	5440	5494	5547	5601	5654	5708	5762	5815	5869	1	5
02		5922	5976	6030	6083	6137	6190	6244	6298	6351	6405	2	11
03		6458	6512	6566	6619	6673	6726	6780	6834	6887	6941	3	16
04		6994	7048	7102	7155	7209	7262	7316	7369	7423	7477	4	22
8105		7530	7584	7637	7691	7745	7798	7852	7905	7959	8012	5	27
06		8066	8120	8173	8227	8280	8334	8387	8441	8495	8548	6	32
07		8602	8655	8709	8762	8816	8870	8923	8977	9030	9084	7	38
08		9137	9191	9245	9298	9352	9405	9459	9512	9566	9619	8	43
09		9673	9727	9780	9834	9887	9941	9994	0048	0101	0155	9	49
8110	909	0209	0262	0316	0369	0423	0476	0530	0583	0637	0690		
11		0744	0798	0851	0905	0958	1012	1065	1119	1172	1226		
12		1279	1333	1386	1440	1494	1547	1601	1654	1708	1761		
13		1815	1868	1922	1975	2029	2082	2136	2189	2243	2297		
14		2350	2404	2457	2511	2564	2618	2671	2725	2778	2832		
8115		2885	2939	2992	3046	3099	3153	3206	3260	3313	3367	53	
16		3420	3474	3527	3581	3634	3688	3741	3795	3848	3902	1	5
17		3955	4009	4062	4116	4169	4223	4276	4330	4383	4437	2	11
18		4490	4544	4597	4651	4704	4758	4811	4865	4918	4972	3	16
19		5025	5079	5132	5186	5239	5293	5346	5400	5453	5507	4	21
8120		5560	5614	5667	5721	5774	5828	5881	5935	5988	6042	5	27
21		6095	6149	6202	6256	6309	6362	6416	6469	6523	6576	6	32
22		6630	6683	6737	6790	6844	6897	6951	7004	7058	7111	7	37
23		7165	7218	7271	7325	7378	7432	7485	7539	7592	7646	8	42
24		7699	7753	7806	7860	7913	7966	8020	8073	8127	8180	9	48
8125		8234	8287	8341	8394	8447	8501	8554	8608	8661	8715		
26		8768	8822	8875	8929	8982	9035	9089	9142	9196	9249		
27		9303	9356	9409	9463	9516	9570	9623	9677	9730	9784		
28		9837	9890	9944	9997	0051	0104	0158	0211	0264	0318		
29	910	0371	0425	0478	0532	0585	0638	0692	0745	0799	0852		
8130		0905	0959	1012	1066	1119	1173	1226	1279	1333	1386	54	
31		1440	1493	1546	1600	1653	1707	1760	1813	1867	1920	1	5
32		1974	2027	2081	2134	2187	2241	2294	2348	2401	2454	2	11
33		2508	2561	2615	2668	2721	2775	2828	2882	2935	2988	3	16
34		3042	3095	3148	3202	3255	3309	3362	3415	3469	3522	4	22
8135		3576	3629	3682	3736	3789	3842	3896	3949	4003	4056	5	27
36		4109	4163	4216	4270	4323	4376	4430	4483	4536	4590	6	32
37		4643	4697	4750	4803	4857	4910	4963	5017	5070	5123	7	38
38		5177	5230	5284	5337	5390	5444	5497	5550	5604	5657	8	43
39		5710	5764	5817	5871	5924	5977	6031	6084	6137	6191	9	49
N.		0	1	2	3	4	5	6	7	8	9	Diff.	

Number 81400 *to* 82099
Logarithm 910 6244 *to* 914 3379

N.	0	1	2	3	4	5	6	7	8	9	Diff.
8140	910 6244	6297	6351	6404	6457	6511	6564	6618	6671	6724	53
41	6778	6831	6884	6938	6991	7044	7098	7151	7204	7258	1 5
42	7311	7364	7418	7471	7524	7578	7631	7684	7738	7791	2 11
43	7844	7898	7951	8004	8058	8111	8164	8218	8271	8324	3 16
44	8378	8431	8484	8538	8591	8644	8698	8751	8804	8858	4 21
8145	8911	8964	9018	9071	9124	9177	9231	9284	9337	9391	5 27
46	9444	9497	9551	9604	9657	9711	9764	9817	9871	9924	6 32
47	9977	0030	0084	0137	0190	0244	0297	0350	0404	0457	7 37
48	911 0510	0564	0617	0670	0723	0777	0830	0883	0937	0990	8 42
49	1043	1096	1150	1203	1256	1310	1363	1416	1470	1523	9 48
8150	1576	1629	1683	1736	1789	1843	1896	1949	2002	2056	
51	2109	2162	2215	2269	2322	2375	2429	2482	2535	2588	
52	2642	2695	2748	2802	2855	2908	2961	3015	3068	3121	
53	3174	3228	3281	3334	3387	3441	3494	3547	3601	3654	
54	3707	3760	3814	3867	3920	3973	4027	4080	4133	4186	
8155	4240	4293	4346	4399	4453	4506	4559	4612	4666	4719	54
56	4772	4825	4879	4932	4985	5038	5092	5145	5198	5251	1 5
57	5305	5358	5411	5464	5518	5571	5624	5677	5731	5784	2 11
58	5837	5890	5943	5997	6050	6103	6156	6210	6263	6316	3 16
59	6369	6423	6476	6529	6582	6635	6689	6742	6795	6848	4 22
8160	6902	6955	7008	7061	7114	7168	7221	7274	7327	7381	5 27
61	7434	7487	7540	7593	7647	7700	7753	7806	7859	7913	6 32
62	7966	8019	8072	8126	8179	8232	8285	8338	8392	8445	7 38
63	8498	8551	8604	8658	8711	8764	8817	8870	8924	8977	8 43
64	9030	9083	9136	9190	9243	9296	9349	9402	9456	9509	9 49
8165	9562	9615	9668	9721	9775	9828	9881	9934	9987	0041	
66	912 0094	0147	0200	0253	0306	0360	0413	0466	0519	0572	
67	0626	0679	0732	0785	0838	0891	0945	0998	1051	1104	
68	1157	1210	1264	1317	1370	1423	1476	1529	1583	1636	
69	1689	1742	1795	1848	1902	1955	2008	2061	2114	2167	
8170	2221	2274	2327	2380	2433	2486	2539	2593	2646	2699	53
71	2752	2805	2858	2912	2965	3018	3071	3124	3177	3230	1 5
72	3284	3337	3390	3443	3496	3549	3602	3656	3709	3762	2 11
73	3815	3868	3921	3974	4028	4081	4134	4187	4240	4293	3 16
74	4346	4399	4453	4506	4559	4612	4665	4718	4771	4824	4 21
8175	4878	4931	4984	5037	5090	5143	5196	5249	5303	5356	5 27
76	5409	5462	5515	5568	5621	5674	5728	5781	5834	5887	6 32
77	5940	5993	6046	6099	6152	6206	6259	6312	6365	6418	7 37
78	6471	6524	6577	6630	6683	6737	6790	6843	6896	6949	8 42
79	7002	7055	7108	7161	7214	7268	7321	7374	7427	7480	9 48
8180	7533	7586	7639	7692	7745	7798	7852	7905	7958	8011	
81	8064	8117	8170	8223	8276	8329	8382	8436	8489	8542	
82	8595	8648	8701	8754	8807	8860	8913	8966	9019	9072	
83	9126	9179	9232	9285	9338	9391	9444	9497	9550	9603	
84	9656	9709	9762	9815	9868	9922	9975	0028	0081	0134	
8185	913 0187	0240	0293	0346	0399	0452	0505	0558	0611	0664	54
86	0717	0770	0824	0877	0930	0983	1036	1089	1142	1195	1 5
87	1248	1301	1354	1407	1460	1513	1566	1619	1672	1725	2 11
88	1778	1831	1884	1937	1990	2044	2097	2150	2203	2256	3 16
89	2309	2362	2415	2468	2521	2574	2627	2680	2733	2786	4 22
8190	2839	2892	2945	2998	3051	3104	3157	3210	3263	3316	5 27
91	3369	3422	3475	3528	3581	3634	3687	3740	3793	3846	6 32
92	3899	3952	4005	4058	4111	4165	4218	4271	4324	4377	7 38
93	4430	4483	4536	4589	4642	4695	4748	4801	4854	4907	8 43
94	4960	5013	5066	5119	5172	5225	5278	5331	5384	5437	9 49
8195	5490	5543	5596	5649	5702	5755	5808	5861	5914	5967	
96	6019	6072	6125	6178	6231	6284	6337	6390	6443	6496	
97	6549	6602	6655	6708	6761	6814	6867	6920	6973	7026	
98	7079	7132	7185	7238	7291	7344	7397	7450	7503	7556	
99	7609	7662	7715	7768	7821	7874	7927	7980	8033	8086	
8200	8139	8191	8244	8297	8350	8403	8456	8509	8562	8615	53
01	8668	8721	8774	8827	8880	8933	8986	9039	9092	9145	1 5
02	9198	9251	9304	9356	9409	9462	9515	9568	9621	9674	2 11
03	9727	9780	9833	9886	9939	9992	0045	0098	0151	0204	3 16
04	914 0257	0309	0362	0415	0468	0521	0574	0627	0680	0733	4 21
8205	0786	0839	0892	0945	0998	1050	1103	1156	1209	1262	5 27
06	1315	1368	1421	1474	1527	1580	1633	1686	1738	1791	6 32
07	1844	1897	1950	2003	2056	2109	2162	2215	2268	2321	7 37
08	2373	2426	2479	2532	2585	2638	2691	2744	2797	2850	8 42
09	2903	2955	3008	3061	3114	3167	3220	3273	3326	3379	9 48
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 82100 *to* 82799
Logarithm 914 3432 *to* 918 0251

N.	0	1	2	3	4	5	6	7	8	9	Diff.
8210	914 3432	3484	3537	3590	3643	3696	3749	3802	3855	3908	52
11	3961	4013	4066	4119	4172	4225	4278	4331	4384	4437	1 5
12	4489	4542	4595	4648	4701	4754	4807	4860	4912	4965	2 10
13	5018	5071	5124	5177	5230	5283	5335	5388	5441	5494	3 16
14	5547	5600	5653	5706	5758	5811	5864	5917	5970	6023	4 21
8215	6076	6129	6181	6234	6287	6340	6393	6446	6499	6551	5 26
16	6604	6657	6710	6763	6816	6869	6921	6974	7027	7080	6 31
17	7133	7186	7239	7291	7344	7397	7450	7503	7556	7609	7 36
18	7661	7714	7767	7820	7873	7926	7978	8031	8084	8137	8 42
19	8190	8243	8295	8348	8401	8454	8507	8560	8613	8665	9 47
8220	8718	8771	8824	8877	8930	8982	9035	9088	9141	9194	
21	9246	9299	9352	9405	9458	9511	9563	9616	9669	9722	
22	9775	9828	9880	9933	9986	0039	0092	0144	0197	0250	
23	915 0303	0356	0409	0461	0514	0567	0620	0673	0725	0778	
24	0831	0884	0937	0989	1042	1095	1148	1201	1253	1306	
8225	1359	1412	1465	1517	1570	1623	1676	1729	1781	1834	53
26	1887	1940	1993	2045	2098	2151	2204	2257	2309	2362	1 5
27	2415	2468	2521	2573	2626	2679	2732	2784	2837	2890	2 11
28	2943	2996	3048	3101	3154	3207	3260	3312	3365	3418	3 16
29	3471	3523	3576	3629	3682	3734	3787	3840	3893	3946	4 21
8230	3998	4051	4104	4157	4209	4262	4315	4368	4420	4473	5 27
31	4526	4579	4632	4684	4737	4790	4843	4895	4948	5001	6 32
32	5054	5106	5159	5212	5265	5317	5370	5423	5476	5528	7 37
33	5581	5634	5687	5739	5792	5845	5898	5950	6003	6056	8 42
34	6109	6161	6214	6267	6320	6372	6425	6478	6531	6583	9 48
8235	6636	6689	6742	6794	6847	6900	6952	7005	7058	7111	
36	7163	7216	7269	7322	7374	7427	7480	7532	7585	7638	
37	7691	7743	7796	7849	7902	7954	8007	8060	8112	8165	
38	8218	8271	8323	8376	8429	8481	8534	8587	8640	8692	
39	8745	8798	8850	8903	8956	9009	9061	9114	9167	9219	
8240	9272	9325	9378	9430	9483	9536	9588	9641	9694	9746	52
41	9799	9852	9905	9957	0010	0063	0115	0168	0221	0273	1 5
42	916 0326	0379	0431	0484	0537	0590	0642	0695	0748	0800	2 10
43	0853	0906	0958	1011	1064	1116	1169	1222	1274	1327	3 16
44	1380	1433	1485	1538	1591	1643	1696	1749	1801	1854	4 21
8245	1907	1959	2012	2065	2117	2170	2223	2275	2328	2381	5 26
46	2433	2486	2539	2591	2644	2697	2749	2802	2855	2907	6 31
47	2960	3013	3065	3118	3171	3223	3276	3329	3381	3434	7 36
48	3487	3539	3592	3644	3697	3750	3802	3855	3908	3960	8 42
49	4013	4066	4118	4171	4224	4276	4329	4382	4434	4487	9 47
8250	4539	4592	4645	4697	4750	4803	4855	4908	4961	5013	
51	5066	5119	5171	5224	5276	5329	5382	5434	5487	5540	
52	5592	5645	5697	5750	5803	5855	5908	5961	6013	6066	
53	6118	6171	6224	6276	6329	6382	6434	6487	6539	6592	
54	6645	6697	6750	6802	6855	6908	6960	7013	7066	7118	
8255	7171	7223	7276	7329	7381	7434	7486	7539	7592	7644	53
56	7697	7749	7802	7855	7907	7960	8012	8065	8118	8170	1 5
57	8223	8275	8328	8381	8433	8486	8538	8591	8644	8696	2 11
58	8749	8801	8854	8907	8959	9012	9064	9117	9169	9222	3 16
59	9275	9327	9380	9432	9485	9538	9590	9643	9695	9748	4 21
8260	9800	9853	9906	9958	0011	0063	0116	0169	0221	0274	5 27
61	917 0326	0379	0431	0484	0537	0589	0642	0694	0747	0799	6 32
62	0852	0904	0957	1010	1062	1115	1167	1220	1272	1325	7 37
63	1378	1430	1483	1535	1588	1640	1693	1745	1798	1851	8 42
64	1903	1956	2008	2061	2113	2166	2218	2271	2323	2376	9 48
8265	2429	2481	2534	2586	2639	2691	2744	2796	2849	2901	
66	2954	3007	3059	3112	3164	3217	3269	3322	3374	3427	
67	3479	3532	3584	3637	3690	3742	3795	3847	3900	3952	
68	4005	4057	4110	4162	4215	4267	4320	4372	4425	4477	
69	4530	4582	4635	4687	4740	4793	4845	4898	4950	5003	
8270	5055	5108	5160	5213	5265	5318	5370	5423	5475	5528	52
71	5580	5633	5685	5738	5790	5843	5895	5948	6000	6053	1 5
72	6105	6158	6210	6263	6315	6368	6420	6473	6525	6578	2 10
73	6630	6683	6735	6788	6840	6893	6945	6998	7050	7103	3 16
74	7155	7208	7260	7313	7365	7418	7470	7523	7575	7628	4 21
8275	7680	7733	7785	7837	7890	7942	7995	8047	8100	8152	5 26
76	8205	8257	8310	8362	8415	8467	8520	8572	8625	8677	6 31
77	8730	8782	8834	8887	8939	8992	9044	9097	9149	9202	7 36
78	9254	9307	9359	9412	9464	9517	9569	9621	9674	9726	8 42
79	9779	9831	9884	9936	9989	0041	0094	0146	0198	0251	9 47
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 82800 *to* 83499
Logarithm 918 0303 *to* 921 6813

N.	0	1	2	3	4	5	6	7	8	9	Diff.
8280	918 0303	0356	0408	0461	0513	0566	0618	0671	0723	0775	52
81	0828	0880	0933	0985	1038	1090	1143	1195	1247	1300	1 5
82	1352	1405	1457	1510	1562	1614	1667	1719	1772	1824	2 10
83	1877	1929	1981	2034	2086	2139	2191	2244	2296	2348	3 16
84	2401	2453	2506	2558	2611	2663	2715	2768	2820	2873	4 21
8285	2925	2978	3030	3082	3135	3187	3240	3292	3344	3397	5 26
86	3449	3502	3554	3607	3659	3711	3764	3816	3869	3921	6 31
87	3973	4026	4078	4131	4183	4235	4288	4340	4393	4445	7 36
88	4497	4550	4602	4655	4707	4759	4812	4864	4917	4969	8 42
89	5021	5074	5126	5179	5231	5283	5336	5388	5441	5493	9 47
8290	5545	5598	5650	5702	5755	5807	5860	5912	5964	6017	
91	6069	6122	6174	6226	6279	6331	6383	6436	6488	6541	
92	6593	6645	6698	6750	6802	6855	6907	6960	7012	7064	
93	7117	7169	7221	7274	7326	7378	7431	7483	7536	7588	
94	7640	7693	7745	7797	7850	7902	7954	8007	8059	8112	
8295	8164	8216	8269	8321	8373	8426	8478	8530	8583	8635	53
96	8687	8740	8792	8844	8897	8949	9002	9054	9106	9159	1 5
97	9211	9263	9316	9368	9420	9473	9525	9577	9630	9682	2 11
98	9734	9787	9839	9891	9944	9996	0048	0101	0153	0205	3 16
99	919 0258	0310	0362	0415	0467	0519	0572	0624	0676	0729	4 21
8300	0781	0833	0886	0938	0990	1043	1095	1147	1200	1252	5 27
01	1304	1356	1409	1461	1513	1566	1618	1670	1723	1775	6 32
02	1827	1880	1932	1984	2037	2089	2141	2193	2246	2298	7 37
03	2350	2403	2455	2507	2560	2612	2664	2717	2769	2821	8 42
04	2873	2926	2978	3030	3083	3135	3187	3239	3292	3344	9 48
8305	3396	3449	3501	3553	3606	3658	3710	3762	3815	3867	
06	3919	3972	4024	4076	4128	4181	4233	4285	4338	4390	
07	4442	4494	4547	4599	4651	4703	4756	4808	4860	4913	
08	4965	5017	5069	5122	5174	5226	5279	5331	5383	5435	
09	5488	5540	5592	5644	5697	5749	5801	5853	5906	5958	
8310	6010	6062	6115	6167	6219	6272	6324	6376	6428	6481	52
11	6533	6585	6637	6690	6742	6794	6846	6899	6951	7003	1 5
12	7055	7108	7160	7212	7264	7317	7369	7421	7473	7526	2 10
13	7578	7630	7682	7735	7787	7839	7891	7943	7996	8048	3 16
14	8100	8152	8205	8257	8309	8361	8414	8466	8518	8570	4 21
8315	8623	8675	8727	8779	8831	8884	8936	8988	9040	9093	5 26
16	9145	9197	9249	9301	9354	9406	9458	9510	9563	9615	6 31
17	9667	9719	9771	9824	9876	9928	9980	0033	0085	0137	7 36
18	920 0189	0241	0294	0346	0398	0450	0502	0555	0607	0659	8 42
19	0711	0763	0816	0868	0920	0972	1024	1077	1129	1181	9 47
8320	1233	1285	1338	1390	1442	1494	1546	1599	1651	1703	
21	1755	1807	1860	1912	1964	2016	2068	2121	2173	2225	
22	2277	2329	2381	2434	2486	2538	2590	2642	2695	2747	
23	2799	2851	2903	2955	3008	3060	3112	3164	3216	3269	
24	3321	3373	3425	3477	3529	3582	3634	3686	3738	3790	
8325	3842	3895	3947	3999	4051	4103	4155	4208	4260	4312	53
26	4364	4416	4468	4521	4573	4625	4677	4729	4781	4833	1 5
27	4886	4938	4990	5042	5094	5146	5199	5251	5303	5355	2 11
28	5407	5459	5511	5564	5616	5668	5720	5772	5824	5876	3 16
29	5929	5981	6033	6085	6137	6189	6241	6294	6346	6398	4 21
8330	6450	6502	6554	6606	6659	6711	6763	6815	6867	6919	5 27
31	6971	7023	7076	7128	7180	7232	7284	7336	7388	7440	6 32
32	7493	7545	7597	7649	7701	7753	7805	7857	7910	7962	7 37
33	8014	8066	8118	8170	8222	8274	8327	8379	8431	8483	8 42
34	8535	8587	8639	8691	8743	8796	8848	8900	8952	9004	9 48
8335	9056	9108	9160	9212	9264	9317	9369	9421	9473	9525	
36	9577	9629	9681	9733	9785	9838	9890	9942	9994	0046	
37	921 0098	0150	0202	0254	0306	0358	0411	0463	0515	0567	
38	0619	0671	0723	0775	0827	0879	0931	0983	1036	1088	
39	1140	1192	1244	1296	1348	1400	1452	1504	1556	1608	
8340	1661	1713	1765	1817	1869	1921	1973	2025	2077	2129	52
41	2181	2233	2285	2337	2389	2442	2494	2546	2598	2650	1 5
42	2702	2754	2806	2858	2910	2962	3014	3066	3118	3170	2 10
43	3222	3274	3327	3379	3431	3483	3535	3587	3639	3691	3 16
44	3743	3795	3847	3899	3951	4003	4055	4107	4159	4211	4 21
8345	4263	4315	4367	4420	4472	4524	4576	4628	4680	4732	5 26
46	4784	4836	4888	4940	4992	5044	5096	5148	5200	5252	6 31
47	5304	5356	5408	5460	5512	5564	5616	5668	5720	5772	7 36
48	5824	5876	5928	5980	6032	6085	6137	6189	6241	6293	8 42
49	6345	6397	6449	6501	6553	6605	6657	6709	6761	6813	9 47
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 83500 *to* 84199
Logarithm 921 6865 *to* 925 3069

N.	0	1	2	3	4	5	6	7	8	9	Diff.
8350	921 6865	6917	6969	7021	7073	7125	7177	7229	7281	7333	51
51	7385	7437	7489	7541	7593	7645	7697	7749	7801	7853	1 5
52	7905	7957	8009	8061	8113	8165	8217	8269	8321	8373	2 10
53	8425	8477	8529	8581	8633	8685	8737	8789	8841	8893	3 15
54	8945	8997	9049	9101	9153	9205	9257	9309	9361	9413	4 20
8355	9465	9517	9569	9620	9672	9724	9776	9828	9880	9932	5 26
56	9984	0036	0088	0140	0192	0244	0296	0348	0400	0452	6 31
57	922 0504	0556	0608	0660	0712	0764	0816	0868	0920	0972	7 36
58	1024	1076	1128	1180	1232	1283	1335	1387	1439	1491	8 41
59	1543	1595	1647	1699	1751	1803	1855	1907	1959	2011	9 46
8360	2063	2115	2167	2219	2271	2323	2374	2426	2478	2530	
61	2582	2634	2686	2738	2790	2842	2894	2946	2998	3050	
62	3102	3154	3206	3257	3309	3361	3413	3465	3517	3569	
63	3621	3673	3725	3777	3829	3881	3933	3984	4036	4088	
64	4140	4192	4244	4296	4348	4400	4452	4504	4556	4608	
8365	4659	4711	4763	4815	4867	4919	4971	5023	5075	5127	52
66	5179	5231	5282	5334	5386	5438	5490	5542	5594	5646	1 5
67	5698	5750	5801	5853	5905	5957	6009	6061	6113	6165	2 10
68	6217	6269	6321	6372	6424	6476	6528	6580	6632	6684	3 16
69	6736	6788	6839	6891	6943	6995	7047	7099	7151	7203	4 21
8370	7255	7306	7358	7410	7462	7514	7566	7618	7670	7722	5 26
71	7773	7825	7877	7929	7981	8033	8085	8137	8188	8240	6 31
72	8292	8344	8396	8448	8500	8552	8603	8655	8707	8759	7 36
73	8811	8863	8915	8967	9018	9070	9122	9174	9226	9278	8 42
74	9330	9381	9433	9485	9537	9589	9641	9693	9744	9796	9 47
8375	9848	9900	9952	0004	0056	0107	0159	0211	0263	0315	
76	923 0367	0419	0470	0522	0574	0626	0678	0730	0781	0833	
77	0885	0937	0989	1041	1093	1144	1196	1248	1300	1352	
78	1404	1455	1507	1559	1611	1663	1715	1766	1818	1870	
79	1922	1974	2026	2077	2129	2181	2233	2285	2337	2388	
8380	2440	2492	2544	2596	2647	2699	2751	2803	2855	2907	51
81	2958	3010	3062	3114	3166	3217	3269	3321	3373	3425	1 5
82	3477	3528	3580	3632	3684	3736	3787	3839	3891	3943	2 10
83	3995	4046	4098	4150	4202	4254	4305	4357	4409	4461	3 15
84	4513	4564	4616	4668	4720	4772	4823	4875	4927	4979	4 20
8385	5031	5082	5134	5186	5238	5290	5341	5393	5445	5497	5 26
86	5549	5600	5652	5704	5756	5808	5859	5911	5963	6015	6 31
87	6066	6118	6170	6222	6274	6325	6377	6429	6481	6532	7 36
88	6584	6636	6688	6740	6791	6843	6895	6947	6998	7050	8 41
89	7102	7154	7205	7257	7309	7361	7413	7464	7516	7568	9 46
8390	7620	7671	7723	7775	7827	7878	7930	7982	8034	8085	
91	8137	8189	8241	8292	8344	8396	8448	8499	8551	8603	
92	8655	8707	8758	8810	8862	8913	8965	9017	9069	9120	
93	9172	9224	9276	9327	9379	9431	9483	9534	9586	9638	
94	9690	9741	9793	9845	9897	9948	0000	0052	0104	0155	
8395	924 0207	0259	0310	0362	0414	0466	0517	0569	0621	0673	52
96	0724	0776	0828	0879	0931	0983	1035	1086	1138	1190	1 5
97	1242	1293	1345	1397	1448	1500	1552	1604	1655	1707	2 10
98	1759	1810	1862	1914	1966	2017	2069	2121	2172	2224	3 16
99	2276	2328	2379	2431	2483	2534	2586	2638	2689	2741	4 21
8400	2793	2845	2896	2948	3000	3051	3103	3155	3206	3258	5 26
01	3310	3362	3413	3465	3517	3568	3620	3672	3723	3775	6 31
02	3827	3878	3930	3982	4034	4085	4137	4189	4240	4292	7 36
03	4344	4395	4447	4499	4550	4602	4654	4705	4757	4809	8 42
04	4860	4912	4964	5015	5067	5119	5170	5222	5274	5326	9 47
8405	5377	5429	5481	5532	5584	5636	5687	5739	5791	5842	
06	5894	5946	5997	6049	6101	6152	6204	6255	6307	6359	
07	6410	6462	6514	6565	6617	6669	6720	6772	6824	6875	
08	6927	6979	7030	7082	7134	7185	7237	7289	7340	7392	
09	7444	7495	7547	7598	7650	7702	7753	7805	7857	7908	
8410	7960	8012	8063	8115	8167	8218	8270	8321	8373	8425	51
11	8476	8528	8580	8631	8683	8734	8786	8838	8889	8941	1 5
12	8993	9044	9096	9148	9199	9251	9302	9354	9406	9457	2 10
13	9509	9561	9612	9664	9715	9767	9819	9870	9922	9973	3 15
14	925 0025	0077	0128	0180	0232	0283	0335	0386	0438	0490	4 20
8415	0541	0593	0644	0696	0748	0799	0851	0902	0954	1006	5 26
16	1057	1109	1160	1212	1264	1315	1367	1418	1470	1522	6 31
17	1573	1625	1676	1728	1780	1831	1883	1934	1986	2038	7 36
18	2089	2141	2192	2244	2296	2347	2399	2450	2502	2554	8 41
19	2605	2657	2708	2760	2811	2863	2915	2966	3018	3069	9 46
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 84200 *to* 84899
Logarithm 925 3121 *to* 928 9026

N.	0	1	2	3	4	5	6	7	8	9	Diff.
8420	925 3121	3172	3224	3276	3327	3379	3430	3482	3534	3585	52
21	3637	3688	3740	3791	3843	3895	3946	3998	4049	4101	1 5
22	4152	4204	4256	4307	4359	4410	4462	4513	4565	4616	2 10
23	4668	4720	4771	4823	4874	4926	4977	5029	5080	5132	3 16
24	5184	5235	5287	5338	5390	5441	5493	5544	5596	5648	4 21
8425	5699	5751	5802	5854	5905	5957	6008	6060	6111	6163	5 26
26	6215	6266	6318	6369	6421	6472	6524	6575	6627	6678	6 31
27	6730	6781	6833	6885	6936	6988	7039	7091	7142	7194	7 36
28	7245	7297	7348	7400	7451	7503	7554	7606	7657	7709	8 42
29	7761	7812	7864	7915	7967	8018	8070	8121	8173	8224	9 47
8430	8276	8327	8379	8430	8482	8533	8585	8636	8688	8739	
31	8791	8842	8894	8945	8997	9048	9100	9151	9203	9254	
32	9306	9357	9409	9460	9512	9563	9615	9667	9718	9770	
33	9821	9873	9924	9975	0027	0078	0130	0181	0233	0284	
34	926 0336	0387	0439	0490	0542	0593	0645	0696	0748	0799	
8435	0851	0902	0954	1005	1057	1108	1160	1211	1263	1314	51
36	1366	1417	1469	1520	1572	1623	1675	1726	1778	1829	1 5
37	1880	1932	1983	2035	2086	2138	2189	2241	2292	2344	2 10
38	2395	2447	2498	2550	2601	2653	2704	2755	2807	2858	3 15
39	2910	2961	3013	3064	3116	3167	3219	3270	3322	3373	4 20
8440	3424	3476	3527	3579	3630	3682	3733	3785	3836	3888	5 26
41	3939	3990	4042	4093	4145	4196	4248	4299	4351	4402	6 31
42	4453	4505	4556	4608	4659	4711	4762	4814	4865	4916	7 36
43	4968	5019	5071	5122	5174	5225	5277	5328	5379	5431	8 41
44	5482	5534	5585	5637	5688	5739	5791	5842	5894	5945	9 46
8445	5997	6048	6099	6151	6202	6254	6305	6357	6408	6459	
46	6511	6562	6614	6665	6716	6768	6819	6871	6922	6974	
47	7025	7076	7128	7179	7231	7282	7333	7385	7436	7488	
48	7539	7590	7642	7693	7745	7796	7847	7899	7950	8002	
49	8053	8105	8156	8207	8259	8310	8362	8413	8464	8516	
8450	8567	8618	8670	8721	8773	8824	8875	8927	8978	9030	52
51	9081	9132	9184	9235	9287	9338	9389	9441	9492	9543	1 5
52	9595	9646	9698	9749	9800	9852	9903	9955	0006	0057	2 10
53	927 0109	0160	0211	0263	0314	0366	0417	0468	0520	0571	3 16
54	0622	0674	0725	0777	0828	0879	0931	0982	1033	1085	4 21
8455	1136	1187	1239	1290	1342	1393	1444	1496	1547	1598	5 26
56	1650	1701	1752	1804	1855	1907	1958	2009	2061	2112	6 31
57	2163	2215	2266	2317	2369	2420	2471	2523	2574	2625	7 36
58	2677	2728	2780	2831	2882	2934	2985	3036	3088	3139	8 42
59	3190	3242	3293	3344	3396	3447	3498	3550	3601	3652	9 47
8460	3704	3755	3806	3858	3909	3960	4012	4063	4114	4166	
61	4217	4268	4320	4371	4422	4474	4525	4576	4628	4679	
62	4730	4782	4833	4884	4935	4987	5038	5089	5141	5192	
63	5243	5295	5346	5397	5449	5500	5551	5603	5654	5705	
64	5757	5808	5859	5910	5962	6013	6064	6116	6167	6218	
8465	6270	6321	6372	6424	6475	6526	6577	6629	6680	6731	51
66	6783	6834	6885	6937	6988	7039	7090	7142	7193	7244	1 5
67	7296	7347	7398	7449	7501	7552	7603	7655	7706	7757	2 10
68	7808	7860	7911	7962	8014	8065	8116	8167	8219	8270	3 15
69	8321	8373	8424	8475	8526	8578	8629	8680	8732	8783	4 20
8470	8834	8885	8937	8988	9039	9090	9142	9193	9244	9296	5 26
71	9347	9398	9449	9501	9552	9603	9654	9706	9757	9808	6 31
72	9859	9911	9962	0013	0065	0116	0167	0218	0270	0321	7 36
73	928 0372	0423	0475	0526	0577	0628	0680	0731	0782	0833	8 41
74	0885	0936	0987	1038	1090	1141	1192	1243	1295	1346	9 46
8475	1397	1448	1500	1551	1602	1653	1705	1756	1807	1858	
76	1909	1961	2012	2063	2114	2166	2217	2268	2319	2371	
77	2422	2473	2524	2576	2627	2678	2729	2780	2832	2883	
78	2934	2985	3037	3088	3139	3190	3241	3293	3344	3395	
79	3446	3498	3549	3600	3651	3702	3754	3805	3856	3907	
8480	3959	4010	4061	4112	4163	4215	4266	4317	4368	4419	52
81	4471	4522	4573	4624	4675	4727	4778	4829	4880	4931	1 5
82	4983	5034	5085	5136	5187	5239	5290	5341	5392	5443	2 10
83	5495	5546	5597	5648	5699	5751	5802	5853	5904	5955	3 16
84	6007	6058	6109	6160	6211	6263	6314	6365	6416	6467	4 21
8485	6518	6570	6621	6672	6723	6774	6826	6877	6928	6979	5 26
86	7030	7081	7133	7184	7235	7286	7337	7389	7440	7491	6 31
87	7542	7593	7644	7696	7747	7798	7849	7900	7951	8003	7 36
88	8054	8105	8156	8207	8258	8310	8361	8412	8463	8514	8 42
89	8565	8616	8668	8719	8770	8821	8872	8923	8975	9026	9 47
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 84900 *to* 85599
Logarithm 928 9077 *to* 932 4687

N.	0	1	2	3	4	5	6	7	8	9	Diff.
8490	928 9077	9128	9179	9230	9282	9333	9384	9435	9486	9537	51
91	9588	9640	9691	9742	9793	9844	9895	9946	9998	0049	1 5
92	929 0100	0151	0202	0253	0304	0356	0407	0458	0509	0560	2 10
93	0611	0662	0714	0765	0816	0867	0918	0969	1020	1071	3 15
94	1123	1174	1225	1276	1327	1378	1429	1480	1532	1583	4 20
8495	1634	1685	1736	1787	1838	1889	1941	1992	2043	2094	5 26
96	2145	2196	2247	2298	2350	2401	2452	2503	2554	2605	6 31
97	2656	2707	2758	2810	2861	2912	2963	3014	3065	3116	7 36
98	3167	3218	3269	3321	3372	3423	3474	3525	3576	3627	8 41
99	3678	3729	3780	3832	3883	3934	3985	4036	4087	4138	9 46
8500	4189	4240	4291	4343	4394	4445	4496	4547	4598	4649	
01	4700	4751	4802	4853	4905	4956	5007	5058	5109	5160	
02	5211	5262	5313	5364	5415	5466	5517	5569	5620	5671	
03	5722	5773	5824	5875	5926	5977	6028	6079	6130	6181	
04	6233	6284	6335	6386	6437	6488	6539	6590	6641	6692	
8505	6743	6794	6845	6896	6947	6998	7050	7101	7152	7203	52
06	7254	7305	7356	7407	7458	7509	7560	7611	7662	7713	1 5
07	7764	7815	7866	7917	7969	8020	8071	8122	8173	8224	2 10
08	8275	8326	8377	8428	8479	8530	8581	8632	8683	8734	3 16
09	8785	8836	8887	8938	8989	9040	9091	9142	9194	9245	4 21
8510	9296	9347	9398	9449	9500	9551	9602	9653	9704	9755	5 26
11	9806	9857	9908	9959	0010	0061	0112	0163	0214	0265	6 31
12	930 0316	0367	0418	0469	0520	0571	0622	0673	0724	0775	7 36
13	0826	0877	0928	0979	1030	1081	1132	1183	1234	1285	8 42
14	1336	1387	1438	1489	1540	1591	1643	1694	1745	1796	9 47
8515	1847	1898	1949	2000	2051	2102	2153	2204	2255	2306	
16	2357	2408	2459	2510	2561	2612	2663	2713	2764	2815	
17	2866	2917	2968	3019	3070	3121	3172	3223	3274	3325	
18	3376	3427	3478	3529	3580	3631	3682	3733	3784	3835	
19	3886	3937	3988	4039	4090	4141	4192	4243	4294	4345	
8520	4396	4447	4498	4549	4600	4651	4702	4753	4804	4855	51
21	4906	4957	5008	5059	5110	5160	5211	5262	5313	5364	1 5
22	5415	5466	5517	5568	5619	5670	5721	5772	5823	5874	2 10
23	5925	5976	6027	6078	6129	6180	6231	6282	6333	6383	3 15
24	6434	6485	6536	6587	6638	6689	6740	6791	6842	6893	4 20
8525	6944	6995	7046	7097	7148	7199	7250	7300	7351	7402	5 26
26	7453	7504	7555	7606	7657	7708	7759	7810	7861	7912	6 31
27	7963	8014	8064	8115	8166	8217	8268	8319	8370	8421	7 36
28	8472	8523	8574	8625	8676	8727	8777	8828	8879	8930	8 41
29	8981	9032	9083	9134	9185	9236	9287	9338	9388	9439	9 46
8530	9490	9541	9592	9643	9694	9745	9796	9847	9898	9949	
31	9999	0050	0101	0152	0203	0254	0305	0356	0407	0458	
32	931 0508	0559	0610	0661	0712	0763	0814	0865	0916	0967	
33	1017	1068	1119	1170	1221	1272	1323	1374	1425	1475	
34	1526	1577	1628	1679	1730	1781	1832	1883	1933	1984	
8535	2035	2086	2137	2188	2239	2290	2341	2391	2442	2493	50
36	2544	2595	2646	2697	2748	2798	2849	2900	2951	3002	1 5
37	3053	3104	3155	3205	3256	3307	3358	3409	3460	3511	2 10
38	3562	3612	3663	3714	3765	3816	3867	3918	3968	4019	3 15
39	4070	4121	4172	4223	4274	4324	4375	4426	4477	4528	4 20
8540	4579	4630	4680	4731	4782	4833	4884	4935	4986	5036	5 25
41	5087	5138	5189	5240	5291	5341	5392	5443	5494	5545	6 30
42	5596	5647	5697	5748	5799	5850	5901	5952	6002	6053	7 35
43	6104	6155	6206	6257	6307	6358	6409	6460	6511	6562	8 40
44	6612	6663	6714	6765	6816	6867	6917	6968	7019	7070	9 45
8545	7121	7171	7222	7273	7324	7375	7426	7476	7527	7578	
46	7629	7680	7731	7781	7832	7883	7934	7985	8035	8086	
47	8137	8188	8239	8289	8340	8391	8442	8493	8544	8594	
48	8645	8696	8747	8798	8848	8899	8950	9001	9052	9102	
49	9153	9204	9255	9306	9356	9407	9458	9509	9560	9610	
8550	9661	9712	9763	9814	9864	9915	9966	0017	0067	0118	51
51	932 0169	0220	0271	0321	0372	0423	0474	0525	0575	0626	1 5
52	0677	0728	0778	0829	0880	0931	0982	1032	1083	1134	2 10
53	1185	1235	1286	1337	1388	1439	1489	1540	1591	1642	3 15
54	1692	1743	1794	1845	1896	1946	1997	2048	2099	2149	4 20
8555	2200	2251	2302	2352	2403	2454	2505	2555	2606	2657	5 26
56	2708	2759	2809	2860	2911	2962	3012	3063	3114	3165	6 31
57	3215	3266	3317	3368	3418	3469	3520	3571	3621	3672	7 36
58	3723	3774	3824	3875	3926	3977	4027	4078	4129	4180	8 41
59	4230	4281	4332	4382	4433	4484	4535	4585	4636	4687	9 46
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 85600 *to* 86299
Logarithm 932 4738 *to* 936 0058

N.		0	1	2	3	4	5	6	7	8	9	Diff.	
8560	932	4738	4788	4839	4890	4941	4991	5042	5093	5144	5194	50	
61		5245	5296	5346	5397	5448	5499	5549	5600	5651	5702	1	5
62		5752	5803	5854	5904	5955	6006	6057	6107	6158	6209	2	10
63		6259	6310	6361	6412	6462	6513	6564	6614	6665	6716	3	15
64		6767	6817	6868	6919	6969	7020	7071	7122	7172	7223	4	20
8565		7274	7324	7375	7426	7476	7527	7578	7629	7679	7730	5	25
66		7781	7831	7882	7933	7983	8034	8085	8136	8186	8237	6	30
67		8288	8338	8389	8440	8490	8541	8592	8643	8693	8744	7	35
68		8795	8845	8896	8947	8997	9048	9099	9149	9200	9251	8	40
69		9301	9352	9403	9453	9504	9555	9606	9656	9707	9758	9	45
8570		9808	9859	9910	9960	0011	0062	0112	0163	0214	0264		
71	933	0315	0366	0416	0467	0518	0568	0619	0670	0720	0771		
72		0822	0872	0923	0974	1024	1075	1126	1176	1227	1278		
73		1328	1379	1430	1480	1531	1582	1632	1683	1733	1784		
74		1835	1885	1936	1987	2037	2088	2139	2189	2240	2291		
8575		2341	2392	2443	2493	2544	2595	2645	2696	2746	2797	51	
76		2848	2898	2949	3000	3050	3101	3152	3202	3253	3303	1	5
77		3354	3405	3455	3506	3557	3607	3658	3709	3759	3810	2	10
78		3860	3911	3962	4012	4063	4114	4164	4215	4265	4316	3	15
79		4367	4417	4468	4519	4569	4620	4670	4721	4772	4822	4	20
8580		4873	4923	4974	5025	5075	5126	5177	5227	5278	5328	5	26
81		5379	5430	5480	5531	5581	5632	5683	5733	5784	5834	6	31
82		5885	5936	5986	6037	6088	6138	6189	6239	6290	6341	7	36
83		6391	6442	6492	6543	6594	6644	6695	6745	6796	6846	8	41
84		6897	6948	6998	7049	7099	7150	7201	7251	7302	7352	9	46
8585		7403	7454	7504	7555	7605	7656	7707	7757	7808	7858		
86		7909	7959	8010	8061	8111	8162	8212	8263	8313	8364		
87		8415	8465	8516	8566	8617	8668	8718	8769	8819	8870		
88		8920	8971	9021	9072	9123	9173	9224	9274	9325	9375		
89		9426	9477	9527	9578	9628	9679	9729	9780	9831	9881		
8590		9932	9982	0033	0083	0134	0184	0235	0286	0336	0387	50	
91	934	0437	0488	0538	0589	0639	0690	0740	0791	0842	0892	1	5
92		0943	0993	1044	1094	1145	1195	1246	1296	1347	1398	2	10
93		1448	1499	1549	1600	1650	1701	1751	1802	1852	1903	3	15
94		1953	2004	2055	2105	2156	2206	2257	2307	2358	2408	4	20
8595		2459	2509	2560	2610	2661	2711	2762	2812	2863	2914	5	25
96		2964	3015	3065	3116	3166	3217	3267	3318	3368	3419	6	30
97		3469	3520	3570	3621	3671	3722	3772	3823	3873	3924	7	35
98		3974	4025	4075	4126	4176	4227	4277	4328	4378	4429	8	40
99		4479	4530	4580	4631	4682	4732	4783	4833	4884	4934	9	45
8600		4985	5035	5086	5136	5187	5237	5287	5338	5388	5439		
01		5489	5540	5590	5641	5691	5742	5792	5843	5893	5944		
02		5994	6045	6095	6146	6196	6247	6297	6348	6398	6449		
03		6499	6550	6600	6651	6701	6752	6802	6853	6903	6954		
04		7004	7054	7105	7155	7206	7256	7307	7357	7408	7458		
8605		7509	7559	7610	7660	7711	7761	7812	7862	7912	7963	51	
06		8013	8064	8114	8165	8215	8266	8316	8367	8417	8468	1	5
07		8518	8568	8619	8669	8720	8770	8821	8871	8922	8972	2	10
08		9023	9073	9123	9174	9224	9275	9325	9376	9426	9477	3	15
09		9527	9578	9628	9678	9729	9779	9830	9880	9931	9981	4	20
8610	935	0032	0082	0132	0183	0233	0284	0334	0385	0435	0485	5	26
11		0536	0586	0637	0687	0738	0788	0838	0889	0939	0990	6	31
12		1040	1091	1141	1191	1242	1292	1343	1393	1444	1494	7	36
13		1544	1595	1645	1696	1746	1797	1847	1897	1948	1998	8	41
14		2049	2099	2150	2200	2250	2301	2351	2402	2452	2502	9	46
8615		2553	2603	2654	2704	2754	2805	2855	2906	2956	3006		
16		3057	3107	3158	3208	3259	3309	3359	3410	3460	3511		
17		3561	3611	3662	3712	3763	3813	3863	3914	3964	4015		
18		4065	4115	4166	4216	4266	4317	4367	4418	4468	4518		
19		4569	4619	4670	4720	4770	4821	4871	4922	4972	5022		
8620		5073	5123	5173	5224	5274	5325	5375	5425	5476	5526	50	
21		5576	5627	5677	5728	5778	5828	5879	5929	5979	6030	1	5
22		6080	6131	6181	6231	6282	6332	6382	6433	6483	6533	2	10
23		6584	6634	6685	6735	6785	6836	6886	6936	6987	7037	3	15
24		7087	7138	7188	7239	7289	7339	7390	7440	7490	7541	4	20
8625		7591	7641	7692	7742	7792	7843	7893	7943	7994	8044	5	25
26		8095	8145	8195	8246	8296	8346	8397	8447	8497	8548	6	30
27		8598	8648	8699	8749	8799	8850	8900	8950	9001	9051	7	35
28		9101	9152	9202	9252	9303	9353	9403	9454	9504	9554	8	40
29		9605	9655	9705	9756	9806	9856	9907	9957	0007	0058	9	45
N.		0	1	2	3	4	5	6	7	8	9	Diff.	

Number 86300 *to* 86999
Logarithm 936 0108 *to* 939 5143

N.		0	1	2	3	4	5	6	7	8	9	Diff.	
8630	936	0108	0158	0209	0259	0309	0360	0410	0460	0511	0561	51	
31		0611	0661	0712	0762	0812	0863	0913	0963	1014	1064	1	5
32		1114	1165	1215	1265	1316	1366	1416	1466	1517	1567	2	10
33		1617	1668	1718	1768	1819	1869	1919	1970	2020	2070	3	15
34		2120	2171	2221	2271	2322	2372	2422	2473	2523	2573	4	20
8635		2623	2674	2724	2774	2825	2875	2925	2975	3026	3076	5	26
36		3126	3177	3227	3277	3327	3378	3428	3478	3529	3579	6	31
37		3629	3679	3730	3780	3830	3881	3931	3981	4031	4082	7	36
38		4132	4182	4233	4283	4333	4383	4434	4484	4534	4584	8	41
39		4635	4685	4735	4786	4836	4886	4936	4987	5037	5087	9	46
8640		5137	5188	5238	5288	5338	5389	5439	5489	5540	5590		
41		5640	5690	5741	5791	5841	5891	5942	5992	6042	6092		
42		6143	6193	6243	6293	6344	6394	6444	6494	6545	6595		
43		6645	6695	6746	6796	6846	6896	6947	6997	7047	7097		
44		7148	7198	7248	7298	7349	7399	7449	7499	7550	7600		
8645		7650	7700	7750	7801	7851	7901	7951	8002	8052	8102	50	
46		8152	8203	8253	8303	8353	8403	8454	8504	8554	8604	1	5
47		8655	8705	8755	8805	8855	8906	8956	9006	9056	9107	2	10
48		9157	9207	9257	9307	9358	9408	9458	9508	9559	9609	3	15
49		9659	9709	9759	9810	9860	9910	9960	0010	0061	0111	4	20
8650	937	0161	0211	0261	0312	0362	0412	0462	0513	0563	0613	5	25
51		0663	0713	0764	0814	0864	0914	0964	1015	1065	1115	6	30
52		1165	1215	1265	1316	1366	1416	1466	1516	1567	1617	7	35
53		1667	1717	1767	1818	1868	1918	1968	2018	2069	2119	8	40
54		2169	2219	2269	2319	2370	2420	2470	2520	2570	2621	9	45
8655		2671	2721	2771	2821	2871	2922	2972	3022	3072	3122		
56		3172	3223	3273	3323	3373	3423	3474	3524	3574	3624		
57		3674	3724	3775	3825	3875	3925	3975	4025	4075	4126		
58		4176	4226	4276	4326	4376	4427	4477	4527	4577	4627		
59		4677	4728	4778	4828	4878	4928	4978	5028	5079	5129		
8660		5179	5229	5279	5329	5380	5430	5480	5530	5580	5630	51	
61		5680	5731	5781	5831	5881	5931	5981	6031	6082	6132	1	5
62		6182	6232	6282	6332	6382	6432	6483	6533	6583	6633	2	10
63		6683	6733	6783	6834	6884	6934	6984	7034	7084	7134	3	15
64		7184	7235	7285	7335	7385	7435	7485	7535	7585	7636	4	20
8665		7686	7736	7786	7836	7886	7936	7986	8037	8087	8137	5	26
66		8187	8237	8287	8337	8387	8437	8488	8538	8588	8638	6	31
67		8688	8738	8788	8838	8888	8939	8989	9039	9089	9139	7	36
68		9189	9239	9289	9339	9389	9440	9490	9540	9590	9640	8	41
69		9690	9740	9790	9840	9890	9941	9991	0041	0091	0141	9	46
8670	938	0191	0241	0291	0341	0391	0441	0492	0542	0592	0642		
71		0692	0742	0792	0842	0892	0942	0992	1042	1093	1143		
72		1193	1243	1293	1343	1393	1443	1493	1543	1593	1643		
73		1693	1744	1794	1844	1894	1944	1994	2044	2094	2144		
74		2194	2244	2294	2344	2394	2445	2495	2545	2595	2645		
8675		2695	2745	2795	2845	2895	2945	2995	3045	3095	3145	50	
76		3195	3245	3296	3346	3396	3446	3496	3546	3596	3646	1	5
77		3696	3746	3796	3846	3896	3946	3996	4046	4096	4146	2	10
78		4196	4247	4297	4347	4397	4447	4497	4547	4597	4647	3	15
79		4697	4747	4797	4847	4897	4947	4997	5047	5097	5147	4	20
8680		5197	5247	5297	5347	5397	5447	5497	5547	5598	5648	5	25
81		5698	5748	5798	5848	5898	5948	5998	6048	6098	6148	6	30
82		6198	6248	6298	6348	6398	6448	6498	6548	6598	6648	7	35
83		6698	6748	6798	6848	6898	6948	6998	7048	7098	7148	8	40
84		7198	7248	7298	7348	7398	7448	7498	7548	7598	7648	9	45
8685		7698	7748	7798	7848	7898	7948	7998	8048	8098	8148		
86		8198	8248	8298	8348	8398	8448	8498	8548	8598	8648		
87		8698	8748	8798	8848	8898	8948	8998	9048	9098	9148		
88		9198	9248	9298	9348	9398	9448	9498	9548	9598	9648		
89		9698	9748	9798	9848	9898	9948	9998	0048	0098	0148		
8690	939	0198	0248	0298	0348	0398	0448	0498	0548	0598	0648	49	
91		0697	0747	0797	0847	0897	0947	0997	1047	1097	1147	1	5
92		1197	1247	1297	1347	1397	1447	1497	1547	1597	1647	2	10
93		1697	1747	1797	1847	1897	1947	1997	2046	2096	2146	3	15
94		2196	2246	2296	2346	2396	2446	2496	2546	2596	2646	4	20
8695		2696	2746	2796	2846	2896	2946	2996	3045	3095	3145	5	25
96		3195	3245	3295	3345	3395	3445	3495	3545	3595	3645	6	29
97		3695	3745	3795	3845	3894	3944	3994	4044	4094	4144	7	34
98		4194	4244	4294	4344	4394	4444	4494	4544	4593	4643	8	39
99		4693	4743	4793	4843	4893	4943	4993	5043	5093	5143	9	44
N.		0	1	2	3	4	5	6	7	8	9	Diff.	

Number 87000 *to* 87699
Logarithm 939 5193 *to* 942 9946

N.		0	1	2	3	4	5	6	7	8	9	Diff.	
8700	939	5193	5242	5292	5342	5392	5442	5492	5542	5592	5642	50	
01		5692	5742	5792	5841	5891	5941	5991	6041	6091	6141	1	5
02		6191	6241	6291	6341	6390	6440	6490	6540	6590	6640	2	10
03		6690	6740	6790	6840	6889	6939	6989	7039	7089	7139	3	15
04		7189	7239	7289	7339	7388	7438	7488	7538	7588	7638	4	20
8705		7688	7738	7788	7837	7887	7937	7987	8037	8087	8137	5	25
06		8187	8237	8286	8336	8386	8436	8486	8536	8586	8636	6	30
07		8685	8735	8785	8835	8885	8935	8985	9035	9084	9134	7	35
08		9184	9234	9284	9334	9384	9434	9483	9533	9583	9633	8	40
09		9683	9733	9783	9833	9882	9932	9982	0032	0082	0132	9	45
8710	940	0182	0231	0281	0331	0381	0431	0481	0531	0580	0630		
11		0680	0730	0780	0830	0880	0929	0979	1029	1079	1129		
12		1179	1229	1278	1328	1378	1428	1478	1528	1577	1627		
13		1677	1727	1777	1827	1877	1926	1976	2026	2076	2126		
14		2176	2225	2275	2325	2375	2425	2475	2524	2574	2624		
8715		2674	2724	2774	2823	2873	2923	2973	3023	3073	3122	49	
16		3172	3222	3272	3322	3372	3421	3471	3521	3571	3621	1	5
17		3670	3720	3770	3820	3870	3920	3969	4019	4069	4119	2	10
18		4169	4218	4268	4318	4368	4418	4468	4517	4567	4617	3	15
19		4667	4717	4766	4816	4866	4916	4966	5015	5065	5115	4	20
8720		5165	5215	5264	5314	5364	5414	5464	5513	5563	5613	5	25
21		5663	5713	5762	5812	5862	5912	5962	6011	6061	6111	6	29
22		6161	6211	6260	6310	6360	6410	6460	6509	6559	6609	7	34
23		6659	6709	6758	6808	6858	6908	6957	7007	7057	7107	8	39
24		7157	7206	7256	7306	7356	7405	7455	7505	7555	7605	9	44
8725		7654	7704	7754	7804	7853	7903	7953	8003	8053	8102		
26		8152	8202	8252	8301	8351	8401	8451	8500	8550	8600		
27		8650	8700	8749	8799	8849	8899	8948	8998	9048	9098		
28		9147	9197	9247	9297	9346	9396	9446	9496	9545	9595		
29		9645	9695	9744	9794	9844	9894	9943	9993	0043	0093		
8730	941	0142	0192	0242	0292	0341	0391	0441	0491	0540	0590	50	
31		0640	0690	0739	0789	0839	0889	0938	0988	1038	1088	1	5
32		1137	1187	1237	1286	1336	1386	1436	1485	1535	1585	2	10
33		1635	1684	1734	1784	1834	1883	1933	1983	2032	2082	3	15
34		2132	2182	2231	2281	2331	2380	2430	2480	2530	2579	4	20
8735		2629	2679	2729	2778	2828	2878	2927	2977	3027	3077	5	25
36		3126	3176	3226	3275	3325	3375	3425	3474	3524	3574	6	30
37		3623	3673	3723	3772	3822	3872	3922	3971	4021	4071	7	35
38		4120	4170	4220	4270	4319	4369	4419	4468	4518	4568	8	40
39		4617	4667	4717	4766	4816	4866	4916	4965	5015	5065	9	45
8740		5114	5164	5214	5263	5313	5363	5412	5462	5512	5562		
41		5611	5661	5711	5760	5810	5860	5909	5959	6009	6058		
42		6108	6158	6207	6257	6307	6356	6406	6456	6505	6555		
43		6605	6654	6704	6754	6803	6853	6903	6952	7002	7052		
44		7101	7151	7201	7250	7300	7350	7399	7449	7499	7548		
8745		7598	7648	7697	7747	7797	7846	7896	7946	7995	8045	49	
46		8095	8144	8194	8244	8293	8343	8393	8442	8492	8542	1	5
47		8591	8641	8691	8740	8790	8840	8889	8939	8988	9038	2	10
48		9088	9137	9187	9237	9286	9336	9386	9435	9485	9535	3	15
49		9584	9634	9683	9733	9783	9832	9882	9932	9981	0031	4	20
8750	942	0081	0130	0180	0229	0279	0329	0378	0428	0478	0527	5	25
51		0577	0626	0676	0726	0775	0825	0875	0924	0974	1023	6	29
52		1073	1123	1172	1222	1272	1321	1371	1420	1470	1520	7	34
53		1569	1619	1669	1718	1768	1817	1867	1917	1966	2016	8	39
54		2065	2115	2165	2214	2264	2313	2363	2413	2462	2512	9	44
8755		2562	2611	2661	2710	2760	2810	2859	2909	2958	3008		
56		3058	3107	3157	3206	3256	3306	3355	3405	3454	3504		
57		3553	3603	3653	3702	3752	3801	3851	3901	3950	4000		
58		4049	4099	4149	4198	4248	4297	4347	4397	4446	4496		
59		4545	4595	4644	4694	4744	4793	4843	4892	4942	4991		
8760		5041	5091	5140	5190	5239	5289	5339	5388	5438	5487	50	
61		5537	5586	5636	5686	5735	5785	5834	5884	5933	5983	1	5
62		6032	6082	6132	6181	6231	6280	6330	6379	6429	6479	2	10
63		6528	6578	6627	6677	6726	6776	6825	6875	6925	6974	3	15
64		7024	7073	7123	7172	7222	7271	7321	7371	7420	7470	4	20
8765		7519	7569	7618	7668	7717	7767	7816	7866	7916	7965	5	25
66		8015	8064	8114	8163	8213	8262	8312	8361	8411	8461	6	30
67		8510	8560	8609	8659	8708	8758	8807	8857	8906	8956	7	35
68		9005	9055	9104	9154	9204	9253	9303	9352	9402	9451	8	40
69		9501	9550	9600	9649	9699	9748	9798	9847	9897	9946	9	45
N.		0	1	2	3	4	5	6	7	8	9	Diff.	

Number 87700 *to* 88399
Logarithm 942 9996 *to* 946 4474

N.		0	1	2	3	4	5	6	7	8	9	Diff.	
8770	942	9996	0045	0095	0144	0194	0244	0293	0343	0392	0442	49	
71	943	0491	0541	0590	0640	0689	0739	0788	0838	0887	0937	1	5
72		0986	1036	1085	1135	1184	1234	1283	1333	1382	1432	2	10
73		1481	1531	1580	1630	1679	1729	1778	1828	1877	1927	3	15
74		1976	2026	2075	2125	2174	2224	2273	2323	2372	2422	4	20
8775		2471	2521	2570	2620	2669	2719	2768	2818	2867	2917	5	25
76		2966	3016	3065	3115	3164	3214	3263	3313	3362	3412	6	29
77		3461	3510	3560	3609	3659	3708	3758	3807	3857	3906	7	34
78		3956	4005	4055	4104	4154	4203	4253	4302	4352	4401	8	39
79		4450	4500	4549	4599	4648	4698	4747	4797	4846	4896	9	44
8780		4945	4995	5044	5094	5143	5192	5242	5291	5341	5390		
81		5440	5489	5539	5588	5638	5687	5737	5786	5835	5885		
82		5934	5984	6033	6083	6132	6182	6231	6280	6330	6379		
83		6429	6478	6528	6577	6627	6676	6726	6775	6824	6874		
84		6923	6973	7022	7072	7121	7170	7220	7269	7319	7368		
8785		7418	7467	7517	7566	7615	7665	7714	7764	7813	7863	50	
86		7912	7961	8011	8060	8110	8159	8209	8258	8307	8357	1	5
87		8406	8456	8505	8555	8604	8653	8703	8752	8802	8851	2	10
88		8900	8950	8999	9049	9098	9148	9197	9246	9296	9345	3	15
89		9395	9444	9493	9543	9592	9642	9691	9741	9790	9839	4	20
8790		9889	9938	9988	0037	0086	0136	0185	0235	0284	0333	5	25
91	944	0383	0432	0482	0531	0580	0630	0679	0729	0778	0827	6	30
92		0877	0926	0976	1025	1074	1124	1173	1223	1272	1321	7	35
93		1371	1420	1470	1519	1568	1618	1667	1716	1766	1815	8	40
94		1865	1914	1963	2013	2062	2112	2161	2210	2260	2309	9	45
8795		2358	2408	2457	2507	2556	2605	2655	2704	2753	2803		
96		2852	2902	2951	3000	3050	3099	3148	3198	3247	3297		
97		3346	3395	3445	3494	3543	3593	3642	3691	3741	3790		
98		3840	3889	3938	3988	4037	4086	4136	4185	4234	4284		
99		4333	4383	4432	4481	4531	4580	4629	4679	4728	4777		
8800		4827	4876	4925	4975	5024	5073	5123	5172	5222	5271	49	
01		5320	5370	5419	5468	5518	5567	5616	5666	5715	5764	1	5
02		5814	5863	5912	5962	6011	6060	6110	6159	6208	6258	2	10
03		6307	6356	6406	6455	6504	6554	6603	6652	6702	6751	3	15
04		6800	6850	6899	6948	6998	7047	7096	7146	7195	7244	4	20
8805		7294	7343	7392	7442	7491	7540	7590	7639	7688	7737	5	25
06		7787	7836	7885	7935	7984	8033	8083	8132	8181	8231	6	29
07		8280	8329	8379	8428	8477	8527	8576	8625	8674	8724	7	34
08		8773	8822	8872	8921	8970	9020	9069	9118	9167	9217	8	39
09		9266	9315	9365	9414	9463	9513	9562	9611	9660	9710	9	44
8810		9759	9808	9858	9907	9956	0006	0055	0104	0153	0203		
11	945	0252	0301	0351	0400	0449	0498	0548	0597	0646	0696		
12		0745	0794	0843	0893	0942	0991	1041	1090	1139	1188		
13		1238	1287	1336	1386	1435	1484	1533	1583	1632	1681		
14		1730	1780	1829	1878	1928	1977	2026	2075	2125	2174		
8815		2223	2272	2322	2371	2420	2469	2519	2568	2617	2667	50	
16		2716	2765	2814	2864	2913	2962	3011	3061	3110	3159	1	5
17		3208	3258	3307	3356	3405	3455	3504	3553	3602	3652	2	10
18		3701	3750	3799	3849	3898	3947	3996	4046	4095	4144	3	15
19		4193	4243	4292	4341	4390	4440	4489	4538	4587	4637	4	20
8820		4686	4735	4784	4834	4883	4932	4981	5031	5080	5129	5	25
21		5178	5227	5277	5326	5375	5424	5474	5523	5572	5621	6	30
22		5671	5720	5769	5818	5867	5917	5966	6015	6064	6114	7	35
23		6163	6212	6261	6310	6360	6409	6458	6507	6557	6606	8	40
24		6655	6704	6753	6803	6852	6901	6950	7000	7049	7098	9	45
8825		7147	7196	7246	7295	7344	7393	7442	7492	7541	7590		
26		7639	7688	7738	7787	7836	7885	7934	7984	8033	8082		
27		8131	8180	8230	8279	8328	8377	8426	8476	8525	8574		
28		8623	8672	8722	8771	8820	8869	8918	8968	9017	9066		
29		9115	9164	9214	9263	9312	9361	9410	9459	9509	9558		
8830		9607	9656	9705	9755	9804	9853	9902	9951	0000	0050	49	
31	946	0099	0148	0197	0246	0296	0345	0394	0443	0492	0541	1	5
32		0591	0640	0689	0738	0787	0836	0886	0935	0984	1033	2	10
33		1082	1131	1181	1230	1279	1328	1377	1426	1476	1525	3	15
34		1574	1623	1672	1721	1771	1820	1869	1918	1967	2016	4	20
8835		2066	2115	2164	2213	2262	2311	2360	2410	2459	2508	5	25
36		2557	2606	2655	2705	2754	2803	2852	2901	2950	2999	6	29
37		3049	3098	3147	3196	3245	3294	3343	3393	3442	3491	7	34
38		3540	3589	3638	3687	3737	3786	3835	3884	3933	3982	8	39
39		4031	4080	4130	4179	4228	4277	4326	4375	4424	4474	9	44
N.		0	1	2	3	4	5	6	7	8	9	Diff.	

Number 88400 *to* 89099
Logarithm 946 4523 *to* 949 8728

N:	0	1	2	3	4	5	6	7	8	9	Diff.
8840	946 4523	4572	4621	4670	4719	4768	4817	4867	4916	4965	50
41	5014	5063	5112	5161	5210	5260	5309	5358	5407	5456	1 5
42	5505	5554	5603	5652	5702	5751	5800	5849	5898	5947	2 10
43	5996	6045	6094	6144	6193	6242	6291	6340	6389	6438	3 15
44	6487	6536	6586	6635	6684	6733	6782	6831	6880	6929	4 20
8845	6978	7027	7077	7126	7175	7224	7273	7322	7371	7420	5 25
46	7469	7518	7568	7617	7666	7715	7764	7813	7862	7911	6 30
47	7960	8009	8058	8108	8157	8206	8255	8304	8353	8402	7 35
48	8451	8500	8549	8598	8647	8697	8746	8795	8844	8893	8 40
49	8942	8991	9040	9089	9138	9187	9236	9285	9335	9384	9 45
8850	9433	9482	9531	9580	9629	9678	9727	9776	9825	9874	
51	9923	9972	0022	0071	0120	0169	0218	0267	0316	0365	
52	947 0414	0463	0512	0561	0610	0659	0708	0757	0807	0856	
53	0905	0954	1003	1052	1101	1150	1199	1248	1297	1346	
54	1395	1444	1493	1542	1591	1640	1689	1739	1788	1837	
8855	1886	1935	1984	2033	2082	2131	2180	2229	2278	2327	49
56	2376	2425	2474	2523	2572	2621	2670	2719	2768	2817	1 5
57	2866	2915	2965	3014	3063	3112	3161	3210	3259	3308	2 10
58	3357	3406	3455	3504	3553	3602	3651	3700	3749	3798	3 15
59	3847	3896	3945	3994	4043	4092	4141	4190	4239	4288	4 20
8860	4337	4386	4435	4484	4533	4582	4631	4680	4729	4778	5 25
61	4827	4876	4925	4974	5023	5072	5121	5170	5219	5268	6 29
62	5317	5366	5415	5464	5513	5562	5611	5660	5709	5758	7 34
63	5807	5856	5905	5954	6003	6052	6101	6150	6199	6248	8 39
64	6297	6346	6395	6444	6493	6542	6591	6640	6689	6738	9 44
8865	6787	6836	6885	6934	6983	7032	7081	7130	7179	7228	
66	7277	7326	7375	7424	7473	7522	7571	7620	7669	7718	
67	7767	7816	7865	7914	7963	8012	8061	8110	8159	8208	
68	8257	8306	8355	8404	8453	8502	8551	8600	8649	8698	
69	8747	8796	8844	8893	8942	8991	9040	9089	9138	9187	
8870	9236	9285	9334	9383	9432	9481	9530	9579	9628	9677	48
71	9726	9775	9824	9873	9922	9971	0020	0068	0117	0166	1 5
72	948 0215	0264	0313	0362	0411	0460	0509	0558	0607	0656	2 10
73	0705	0754	0803	0852	0901	0950	0998	1047	1096	1145	3 14
74	1194	1243	1292	1341	1390	1439	1488	1537	1586	1635	4 19
8875	1684	1733	1781	1830	1879	1928	1977	2026	2075	2124	5 24
76	2173	2222	2271	2320	2369	2418	2467	2515	2564	2613	6 29
77	2662	2711	2760	2809	2858	2907	2956	3005	3054	3102	7 34
78	3151	3200	3249	3298	3347	3396	3445	3494	3543	3592	8 38
79	3641	3689	3738	3787	3836	3885	3934	3983	4032	4081	9 43
8880	4130	4179	4227	4276	4325	4374	4423	4472	4521	4570	
81	4619	4668	4717	4765	4814	4863	4912	4961	5010	5059	
82	5108	5157	5205	5254	5303	5352	5401	5450	5499	5548	
83	5597	5646	5694	5743	5792	5841	5890	5939	5988	6037	
84	6085	6134	6183	6232	6281	6330	6379	6428	6477	6525	
8885	6574	6623	6672	6721	6770	6819	6868	6916	6965	7014	49
86	7063	7112	7161	7210	7259	7307	7356	7405	7454	7503	1 5
87	7552	7601	7650	7698	7747	7796	7845	7894	7943	7992	2 10
88	8040	8089	8138	8187	8236	8285	8334	8382	8431	8480	3 15
89	8529	8578	8627	8676	8724	8773	8822	8871	8920	8969	4 20
8890	9018	9066	9115	9164	9213	9262	9311	9360	9408	9457	5 25
91	9506	9555	9604	9653	9701	9750	9799	9848	9897	9946	6 29
92	9995	0043	0092	0141	0190	0239	0288	0336	0385	0434	7 34
93	949 0483	0532	0581	0629	0678	0727	0776	0825	0874	0922	8 39
94	0971	1020	1069	1118	1167	1215	1264	1313	1362	1411	9 44
8895	1460	1508	1557	1606	1655	1704	1752	1801	1850	1899	
96	1948	1997	2045	2094	2143	2192	2241	2289	2338	2387	
97	2436	2485	2534	2582	2631	2680	2729	2778	2826	2875	
98	2924	2973	3022	3070	3119	3168	3217	3266	3314	3363	
99	3412	3461	3510	3558	3607	3656	3705	3754	3802	3851	
8900	3900	3949	3998	4046	4095	4144	4193	4242	4290	4339	48
01	4388	4437	4486	4534	4583	4632	4681	4730	4778	4827	1 5
02	4876	4925	4973	5022	5071	5120	5169	5217	5266	5315	2 10
03	5364	5413	5461	5510	5559	5608	5656	5705	5754	5803	3 14
04	5852	5900	5949	5998	6047	6095	6144	6193	6242	6290	4 19
8905	6339	6388	6437	6486	6534	6583	6632	6681	6729	6778	5 24
06	6827	6876	6924	6973	7022	7071	7119	7168	7217	7266	6 29
07	7315	7363	7412	7461	7510	7558	7607	7656	7705	7753	7 34
08	7802	7851	7900	7948	7997	8046	8095	8143	8192	8241	8 38
09	8290	8338	8387	8436	8485	8533	8582	8631	8680	8728	9 43
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 89100 *to* 89799
Logarithm 949 8777 *to* 953 2715

N.	0	1	2	3	4	5	6	7	8	9	Diff.
8910	949 8777	8826	8875	8923	8972	9021	9069	9118	9167	9216	49
11	9264	9313	9362	9411	9459	9508	9557	9606	9654	9703	1 5
12	9752	9801	9849	9898	9947	9995	0044	0093	0142	0190	2 10
13	950 0239	0288	0337	0385	0434	0483	0531	0580	0629	0678	3 15
14	0726	0775	0824	0872	0921	0970	1019	1067	1116	1165	4 20
8915	1213	1262	1311	1360	1408	1457	1506	1554	1603	1652	5 25
16	1701	1749	1798	1847	1895	1944	1993	2042	2090	2139	6 29
17	2188	2236	2285	2334	2382	2431	2480	2529	2577	2626	7 34
18	2675	2723	2772	2821	2869	2918	2967	3016	3064	3113	8 39
19	3162	3210	3259	3308	3356	3405	3454	3502	3551	3600	9 44
8920	3649	3697	3746	3795	3843	3892	3941	3989	4038	4087	
21	4135	4184	4233	4281	4330	4379	4427	4476	4525	4574	
22	4622	4671	4720	4768	4817	4866	4914	4963	5012	5060	
23	5109	5158	5206	5255	5304	5352	5401	5450	5498	5547	
24	5596	5644	5693	5742	5790	5839	5888	5936	5985	6034	
8925	6082	6131	6180	6228	6277	6326	6374	6423	6472	6520	48
26	6569	6617	6666	6715	6763	6812	6861	6909	6958	7007	1 5
27	7055	7104	7153	7201	7250	7299	7347	7396	7445	7493	2 10
28	7542	7590	7639	7688	7736	7785	7834	7882	7931	7980	3 14
29	8028	8077	8126	8174	8223	8271	8320	8369	8417	8466	4 19
8930	8515	8563	8612	8660	8709	8758	8806	8855	8904	8952	5 24
31	9001	9050	9098	9147	9195	9244	9293	9341	9390	9439	6 29
32	9487	9536	9584	9633	9682	9730	9779	9827	9876	9925	7 34
33	9973	0022	0071	0119	0168	0216	0265	0314	0362	0411	8 38
34	951 0459	0508	0557	0605	0654	0703	0751	0800	0848	0897	9 43
8935	0946	0994	1043	1091	1140	1189	1237	1286	1334	1383	
36	1432	1480	1529	1577	1626	1675	1723	1772	1820	1869	
37	1918	1966	2015	2063	2112	2161	2209	2258	2306	2355	
38	2404	2452	2501	2549	2598	2646	2695	2744	2792	2841	
39	2889	2938	2987	3035	3084	3132	3181	3229	3278	3327	
8940	3375	3424	3472	3521	3569	3618	3667	3715	3764	3812	49
41	3861	3910	3958	4007	4055	4104	4152	4201	4250	4298	1 5
42	4347	4395	4444	4492	4541	4589	4638	4687	4735	4784	2 10
43	4832	4881	4929	4978	5027	5075	5124	5172	5221	5269	3 15
44	5318	5366	5415	5464	5512	5561	5609	5658	5706	5755	4 20
8945	5803	5852	5901	5949	5998	6046	6095	6143	6192	6240	5 25
46	6289	6337	6386	6435	6483	6532	6580	6629	6677	6726	6 29
47	6774	6823	6871	6920	6969	7017	7066	7114	7163	7211	7 34
48	7260	7308	7357	7405	7454	7502	7551	7599	7648	7697	8 39
49	7745	7794	7842	7891	7939	7988	8036	8085	8133	8182	9 44
8950	8230	8279	8327	8376	8424	8473	8521	8570	8619	8667	
51	8716	8764	8813	8861	8910	8958	9007	9055	9104	9152	
52	9201	9249	9298	9346	9395	9443	9492	9540	9589	9637	
53	9686	9734	9783	9831	9880	9928	9977	0025	0074	0122	
54	952 0171	0219	0268	0316	0365	0413	0462	0510	0559	0607	
8955	0656	0704	0753	0801	0850	0898	0947	0995	1044	1092	48
56	1141	1189	1238	1286	1335	1383	1432	1480	1529	1577	1 5
57	1626	1674	1723	1771	1820	1868	1917	1965	2014	2062	2 10
58	2111	2159	2208	2256	2305	2353	2401	2450	2498	2547	3 14
59	2595	2644	2692	2741	2789	2838	2886	2935	2983	3032	4 19
8960	3080	3129	3177	3226	3274	3322	3371	3419	3468	3516	5 24
61	3565	3613	3662	3710	3759	3807	3856	3904	3952	4001	6 29
62	4049	4098	4146	4195	4243	4292	4340	4389	4437	4486	7 34
63	4534	4582	4631	4679	4728	4776	4825	4873	4922	4970	8 38
64	5018	5067	5115	5164	5212	5261	5309	5358	5406	5454	9 43
8965	5503	5551	5600	5648	5697	5745	5794	5842	5890	5939	
66	5987	6036	6084	6133	6181	6230	6278	6326	6375	6423	
67	6472	6520	6569	6617	6665	6714	6762	6811	6859	6908	
68	6956	7004	7053	7101	7150	7198	7247	7295	7343	7392	
69	7440	7489	7537	7586	7634	7682	7731	7779	7828	7876	
8970	7924	7973	8021	8070	8118	8167	8215	8263	8312	8360	49
71	8409	8457	8505	8554	8602	8651	8699	8747	8796	8844	1 5
72	8893	8941	8989	9038	9086	9135	9183	9231	9280	9328	2 10
73	9377	9425	9473	9522	9570	9619	9667	9715	9764	9812	3 15
74	9861	9909	9957	0006	0054	0103	0151	0199	0248	0296	4 20
8975	953 0345	0393	0441	0490	0538	0587	0635	0683	0732	0780	5 25
76	0828	0877	0925	0974	1022	1070	1119	1167	1215	1264	6 29
77	1312	1361	1409	1457	1506	1554	1603	1651	1699	1748	7 34
78	1796	1844	1893	1941	1989	2038	2086	2135	2183	2231	8 39
79	2280	2328	2376	2425	2473	2522	2570	2618	2667	2715	9 44
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 89800 *to* 90499
Logarithm 953 2763 *to* 956 6438

N.	0	1	2	3	4	5	6	7	8	9	Diff.
8980	953 2763	2812	2860	2908	2957	3005	3054	3102	3150	3199	48
81	3247	3295	3344	3392	3440	3489	3537	3585	3634	3682	1 5
82	3731	3779	3827	3876	3924	3972	4021	4069	4117	4166	2 10
83	4214	4262	4311	4359	4407	4456	4504	4552	4601	4649	3 14
84	4697	4746	4794	4842	4891	4939	4987	5036	5084	5132	4 19
8985	5181	5229	5277	5326	5374	5422	5471	5519	5567	5616	5 24
86	5664	5712	5761	5809	5857	5906	5954	6002	6051	6099	6 29
87	6147	6196	6244	6292	6341	6389	6437	6486	6534	6582	7 34
88	6631	6679	6727	6776	6824	6872	6921	6969	7017	7065	8 38
89	7114	7162	7210	7259	7307	7355	7404	7452	7500	7549	9 43
8990	7597	7645	7694	7742	7790	7838	7887	7935	7983	8032	
91	8080	8128	8177	8225	8273	8321	8370	8418	8466	8515	
92	8563	8611	8660	8708	8756	8804	8853	8901	8949	8998	
93	9046	9094	9143	9191	9239	9287	9336	9384	9432	9481	
94	9529	9577	9625	9674	9722	9770	9819	9867	9915	9963	
8995	954 0012	0060	0108	0157	0205	0253	0301	0350	0398	0446	49
96	0494	0543	0591	0639	0688	0736	0784	0832	0881	0929	1 5
97	0977	1025	1074	1122	1170	1219	1267	1315	1363	1412	2 10
98	1460	1508	1556	1605	1653	1701	1749	1798	1846	1894	3 15
99	1943	1991	2039	2087	2136	2184	2232	2280	2329	2377	4 20
9000	2425	2473	2522	2570	2618	2666	2715	2763	2811	2859	5 25
01	2908	2956	3004	3052	3101	3149	3197	3245	3294	3342	6 29
02	3390	3438	3487	3535	3583	3631	3680	3728	3776	3824	7 34
03	3873	3921	3969	4017	4065	4114	4162	4210	4258	4307	8 39
04	4355	4403	4451	4500	4548	4596	4644	4692	4741	4789	9 44
9005	4837	4885	4934	4982	5030	5078	5127	5175	5223	5271	
06	5319	5368	5416	5464	5512	5561	5609	5657	5705	5753	
07	5802	5850	5898	5946	5994	6043	6091	6139	6187	6236	
08	6284	6332	6380	6428	6477	6525	6573	6621	6669	6718	
09	6766	6814	6862	6910	6959	7007	7055	7103	7152	7200	
9010	7248	7296	7344	7393	7441	7489	7537	7585	7634	7682	48
11	7730	7778	7826	7874	7923	7971	8019	8067	8115	8164	1 5
12	8212	8260	8308	8356	8405	8453	8501	8549	8597	8646	2 10
13	8694	8742	8790	8838	8886	8935	8983	9031	9079	9127	3 14
14	9176	9224	9272	9320	9368	9416	9465	9513	9561	9609	4 19
9015	9657	9705	9754	9802	9850	9898	9946	9995	0043	0091	5 24
16	955 0139	0187	0235	0284	0332	0380	0428	0476	0524	0573	6 29
17	0621	0669	0717	0765	0813	0862	0910	0958	1006	1054	7 34
18	1102	1150	1199	1247	1295	1343	1391	1439	1488	1536	8 38
19	1584	1632	1680	1728	1776	1825	1873	1921	1969	2017	9 43
9020	2065	2114	2162	2210	2258	2306	2354	2402	2451	2499	
21	2547	2595	2643	2691	2739	2788	2836	2884	2932	2980	
22	3028	3076	3125	3173	3221	3269	3317	3365	3413	3461	
23	3510	3558	3606	3654	3702	3750	3798	3846	3895	3943	
24	3991	4039	4087	4135	4183	4231	4280	4328	4376	4424	
9025	4472	4520	4568	4616	4665	4713	4761	4809	4857	4905	49
26	4953	5001	5050	5098	5146	5194	5242	5290	5338	5386	1 5
27	5434	5483	5531	5579	5627	5675	5723	5771	5819	5867	2 10
28	5916	5964	6012	6060	6108	6156	6204	6252	6300	6348	3 15
29	6397	6445	6493	6541	6589	6637	6685	6733	6781	6829	4 20
9030	6878	6926	6974	7022	7070	7118	7166	7214	7262	7310	5 25
31	7358	7407	7455	7503	7551	7599	7647	7695	7743	7791	6 29
32	7839	7887	7935	7984	8032	8080	8128	8176	8224	8272	7 34
33	8320	8368	8416	8464	8512	8560	8609	8657	8705	8753	8 39
34	8801	8849	8897	8945	8993	9041	9089	9137	9185	9234	9 44
9035	9282	9330	9378	9426	9474	9522	9570	9618	9666	9714	
36	9762	9810	9858	9906	9954	0003	0051	0099	0147	0195	
37	956 0243	0291	0339	0387	0435	0483	0531	0579	0627	0675	
38	0723	0771	0819	0868	0916	0964	1012	1060	1108	1156	
39	1204	1252	1300	1348	1396	1444	1492	1540	1588	1636	
9040	1684	1732	1780	1828	1876	1925	1973	2021	2069	2117	48
41	2165	2213	2261	2309	2357	2405	2453	2501	2549	2597	1 5
42	2645	2693	2741	2789	2837	2885	2933	2981	3029	3077	2 10
43	3125	3173	3221	3269	3317	3365	3413	3461	3509	3558	3 14
44	3606	3654	3702	3750	3798	3846	3894	3942	3990	4038	4 19
9045	4086	4134	4182	4230	4278	4326	4374	4422	4470	4518	5 24
46	4566	4614	4662	4710	4758	4806	4854	4902	4950	4998	6 29
47	5046	5094	5142	5190	5238	5286	5334	5382	5430	5478	7 34
48	5526	5574	5622	5670	5718	5766	5814	5862	5910	5958	8 38
49	6006	6054	6102	6150	6198	6246	6294	6342	6390	6438	9 43
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 90500 *to* 91199
Logarithm 956 6486 *to* 959 9901

N.	0	1	2	3	4	5	6	7	8	9	Diff.
9050	956 6486	6534	6582	6630	6678	6726	6774	6822	6870	6918	47
51	6966	7014	7062	7110	7158	7206	7254	7302	7349	7397	1 5
52	7445	7493	7541	7589	7637	7685	7733	7781	7829	7877	2 9
53	7925	7973	8021	8069	8117	8165	8213	8261	8309	8357	3 14
54	8405	8453	8501	8549	8597	8645	8693	8741	8789	8837	4 19
9055	8885	8933	8980	9028	9076	9124	9172	9220	9268	9316	5 24
56	9364	9412	9460	9508	9556	9604	9652	9700	9748	9796	6 28
57	9844	9892	9940	9988	0035	0083	0131	0179	0227	0275	7 33
58	957 0323	0371	0419	0467	0515	0563	0611	0659	0707	0755	8 38
59	0803	0851	0898	0946	0994	1042	1090	1138	1186	1234	9 42
9060	1282	1330	1378	1426	1474	1522	1570	1618	1665	1713	
61	1761	1809	1857	1905	1953	2001	2049	2097	2145	2193	
62	2241	2289	2336	2384	2432	2480	2528	2576	2624	2672	
63	2720	2768	2816	2864	2911	2959	3007	3055	3103	3151	
64	3199	3247	3295	3343	3391	3439	3486	3534	3582	3630	
9065	3678	3726	3774	3822	3870	3918	3966	4013	4061	4109	48
66	4157	4205	4253	4301	4349	4397	4445	4492	4540	4588	1 5
67	4636	4684	4732	4780	4828	4876	4924	4971	5019	5067	2 10
68	5115	5163	5211	5259	5307	5355	5402	5450	5498	5546	3 14
69	5594	5642	5690	5738	5786	5833	5881	5929	5977	6025	4 19
9070	6073	6121	6169	6217	6264	6312	6360	6408	6456	6504	5 24
71	6552	6600	6647	6695	6743	6791	6839	6887	6935	6983	6 29
72	7030	7078	7126	7174	7222	7270	7318	7366	7413	7461	7 34
73	7509	7557	7605	7653	7701	7748	7796	7844	7892	7940	8 38
74	7988	8036	8083	8131	8179	8227	8275	8323	8371	8418	9 43
9075	8466	8514	8562	8610	8658	8706	8753	8801	8849	8897	
76	8945	8993	9041	9088	9136	9184	9232	9280	9328	9376	
77	9423	9471	9519	9567	9615	9663	9710	9758	9806	9854	
78	9902	9950	9997	0045	0093	0141	0189	0237	0284	0332	
79	958 0380	0428	0476	0524	0571	0619	0667	0715	0763	0811	
9080	0858	0906	0954	1002	1050	1098	1145	1193	1241	1289	47
81	1337	1385	1432	1480	1528	1576	1624	1672	1719	1767	1 5
82	1815	1863	1911	1958	2006	2054	2102	2150	2198	2245	2 9
83	2293	2341	2389	2437	2484	2532	2580	2628	2676	2723	3 14
84	2771	2819	2867	2915	2962	3010	3058	3106	3154	3202	4 19
9085	3249	3297	3345	3393	3441	3488	3536	3584	3632	3680	5 24
86	3727	3775	3823	3871	3919	3966	4014	4062	4110	4157	6 28
87	4205	4253	4301	4349	4396	4444	4492	4540	4588	4635	7 33
88	4683	4731	4779	4827	4874	4922	4970	5018	5065	5113	8 38
89	5161	5209	5257	5304	5352	5400	5448	5495	5543	5591	9 42
9090	5639	5687	5734	5782	5830	5878	5925	5973	6021	6069	
91	6117	6164	6212	6260	6308	6355	6403	6451	6499	6547	
92	6594	6642	6690	6738	6785	6833	6881	6929	6976	7024	
93	7072	7120	7167	7215	7263	7311	7358	7406	7454	7502	
94	7549	7597	7645	7693	7741	7788	7836	7884	7932	7979	
9095	8027	8075	8123	8170	8218	8266	8314	8361	8409	8457	48
96	8505	8552	8600	8648	8695	8743	8791	8839	8886	8934	1 5
97	8982	9030	9077	9125	9173	9221	9268	9316	9364	9412	2 10
98	9459	9507	9555	9603	9650	9698	9746	9793	9841	9889	3 14
99	9937	9984	0032	0080	0128	0175	0223	0271	0318	0366	4 19
9100	959 0414	0462	0509	0557	0605	0653	0700	0748	0796	0843	5 24
01	0891	0939	0987	1034	1082	1130	1177	1225	1273	1321	6 29
02	1368	1416	1464	1511	1559	1607	1655	1702	1750	1798	7 34
03	1845	1893	1941	1989	2036	2084	2132	2179	2227	2275	8 38
04	2322	2370	2418	2466	2513	2561	2609	2656	2704	2752	9 43
9105	2800	2847	2895	2943	2990	3038	3086	3133	3181	3229	
06	3276	3324	3372	3420	3467	3515	3563	3610	3658	3706	
07	3753	3801	3849	3896	3944	3992	4039	4087	4135	4183	
08	4230	4278	4326	4373	4421	4469	4516	4564	4612	4659	
09	4707	4755	4802	4850	4898	4945	4993	5041	5088	5136	
9110	5184	5231	5279	5327	5374	5422	5470	5517	5565	5613	47
11	5660	5708	5756	5803	5851	5899	5946	5994	6042	6089	1 5
12	6137	6185	6232	6280	6328	6375	6423	6471	6518	6566	2 9
13	6614	6661	6709	6757	6804	6852	6900	6947	6995	7043	3 14
14	7090	7138	7186	7233	7281	7328	7376	7424	7471	7519	4 19
9115	7567	7614	7662	7710	7757	7805	7853	7900	7948	7996	5 24
16	8043	8091	8138	8186	8234	8281	8329	8377	8424	8472	6 28
17	8520	8567	8615	8662	8710	8758	8805	8853	8901	8948	7 33
18	8996	9044	9091	9139	9186	9234	9282	9329	9377	9425	8 38
19	9472	9520	9567	9615	9663	9710	9758	9806	9853	9901	9 42
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 91200 *to* 91899
Logarithm 959 9948 *to* 963 3108

N.	0	1	2	3	4	5	6	7	8	9	Diff.
9120	959 9948	9996	0044	0091	0139	0186	0234	0282	0329	0377	47
21	960 0425	0472	0520	0567	0615	0663	0710	0758	0805	0853	1 5
22	0901	0948	0996	1044	1091	1139	1186	1234	1282	1329	2 9
23	1377	1424	1472	1520	1567	1615	1662	1710	1758	1805	3 14
24	1853	1900	1948	1996	2043	2091	2138	2186	2234	2281	4 19
9125	2329	2376	2424	2472	2519	2567	2614	2662	2709	2757	5 24
26	2805	2852	2900	2947	2995	3043	3090	3138	3185	3233	6 28
27	3281	3328	3376	3423	3471	3518	3566	3614	3661	3709	7 33
28	3756	3804	3851	3899	3947	3994	4042	4089	4137	4184	8 38
29	4232	4280	4327	4375	4422	4470	4517	4565	4613	4660	9 42
9130	4708	4755	4803	4850	4898	4946	4993	5041	5088	5136	
31	5183	5231	5279	5326	5374	5421	5469	5516	5564	5611	
32	5659	5707	5754	5802	5849	5897	5944	5992	6039	6087	
33	6135	6182	6230	6277	6325	6372	6420	6467	6515	6563	
34	6610	6658	6705	6753	6800	6848	6895	6943	6990	7038	
9135	7086	7133	7181	7228	7276	7323	7371	7418	7466	7513	48
36	7561	7608	7656	7704	7751	7799	7846	7894	7941	7989	1 5
37	8036	8084	8131	8179	8226	8274	8321	8369	8416	8464	2 10
38	8512	8559	8607	8654	8702	8749	8797	8844	8892	8939	3 14
39	8987	9034	9082	9129	9177	9224	9272	9319	9367	9414	4 19
9140	9462	9509	9557	9605	9652	9700	9747	9795	9842	9890	5 24
41	9937	9985	0032	0080	0127	0175	0222	0270	0317	0365	6 29
42	961 0412	0460	0507	0555	0602	0650	0697	0745	0792	0840	7 34
43	0887	0935	0982	1030	1077	1125	1172	1220	1267	1315	8 38
44	1362	1410	1457	1505	1552	1600	1647	1695	1742	1790	9 43
9145	1837	1885	1932	1980	2027	2075	2122	2170	2217	2264	
46	2312	2359	2407	2454	2502	2549	2597	2644	2692	2739	
47	2787	2834	2882	2929	2977	3024	3072	3119	3167	3214	
48	3262	3309	3357	3404	3451	3499	3546	3594	3641	3689	
49	3736	3784	3831	3879	3926	3974	4021	4069	4116	4163	
9150	4211	4258	4306	4353	4401	4448	4496	4543	4591	4638	47
51	4686	4733	4780	4828	4875	4923	4970	5018	5065	5113	1 5
52	5160	5208	5255	5302	5350	5397	5445	5492	5540	5587	2 9
53	5635	5682	5730	5777	5824	5872	5919	5967	6014	6062	3 14
54	6109	6157	6204	6251	6299	6346	6394	6441	6489	6536	4 19
9155	6583	6631	6678	6726	6773	6821	6868	6916	6963	7010	5 24
56	7058	7105	7153	7200	7248	7295	7342	7390	7437	7485	6 28
57	7532	7580	7627	7674	7722	7769	7817	7864	7912	7959	7 33
58	8006	8054	8101	8149	8196	8243	8291	8338	8386	8433	8 38
59	8481	8528	8575	8623	8670	8718	8765	8812	8860	8907	9 42
9160	8955	9002	9050	9097	9144	9192	9239	9287	9334	9381	
61	9429	9476	9524	9571	9618	9666	9713	9761	9808	9855	
62	9903	9950	9998	0045	0092	0140	0187	0235	0282	0329	
63	962 0377	0424	0472	0519	0566	0614	0661	0709	0756	0803	
64	0851	0898	0946	0993	1040	1088	1135	1183	1230	1277	
9165	1325	1372	1419	1467	1514	1562	1609	1656	1704	1751	48
66	1799	1846	1893	1941	1988	2035	2083	2130	2178	2225	1 5
67	2272	2320	2367	2414	2462	2509	2557	2604	2651	2699	2 10
68	2746	2793	2841	2888	2936	2983	3030	3078	3125	3172	3 14
69	3220	3267	3314	3362	3409	3457	3504	3551	3599	3646	4 19
9170	3693	3741	3788	3835	3883	3930	3978	4025	4072	4120	5 24
71	4167	4214	4262	4309	4356	4404	4451	4498	4546	4593	6 29
72	4640	4688	4735	4783	4830	4877	4925	4972	5019	5067	7 34
73	5114	5161	5209	5256	5303	5351	5398	5445	5493	5540	8 38
74	5587	5635	5682	5729	5777	5824	5871	5919	5966	6013	9 43
9175	6061	6108	6155	6203	6250	6297	6345	6392	6439	6487	
76	6534	6581	6629	6676	6723	6771	6818	6865	6913	6960	
77	7007	7055	7102	7149	7197	7244	7291	7339	7386	7433	
78	7481	7528	7575	7622	7670	7717	7764	7812	7859	7906	
79	7954	8001	8048	8096	8143	8190	8238	8285	8332	8380	
9180	8427	8474	8521	8569	8616	8663	8711	8758	8805	8853	47
81	8900	8947	8994	9042	9089	9136	9184	9231	9278	9326	1 5
82	9373	9420	9467	9515	9562	9609	9657	9704	9751	9799	2 9
83	9846	9893	9940	9988	0035	0082	0130	0177	0224	0271	3 14
84	963 0319	0366	0413	0461	0508	0555	0602	0650	0697	0744	4 19
9185	0792	0839	0886	0933	0981	1028	1075	1123	1170	1217	5 24
86	1264	1312	1359	1406	1454	1501	1548	1595	1643	1690	6 28
87	1737	1784	1832	1879	1926	1974	2021	2068	2115	2163	7 33
88	2210	2257	2304	2352	2399	2446	2493	2541	2588	2635	8 38
89	2683	2730	2777	2824	2872	2919	2966	3013	3061	3108	9 42
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 91900 *to* 92599
Logarithm 963 3155 *to* 966 6063

N.	0	1	2	3	4	5	6	7	8	9	Diff.
9190	963 3155	3202	3250	3297	3344	3391	3439	3486	3533	3580	48
91	3628	3675	3722	3769	3817	3864	3911	3958	4006	4053	1 5
92	4100	4147	4195	4242	4289	4336	4384	4431	4478	4525	2 10
93	4573	4620	4667	4714	4762	4809	4856	4903	4951	4998	3 14
94	5045	5092	5139	5187	5234	5281	5328	5376	5423	5470	4 19
9195	5517	5565	5612	5659	5706	5753	5801	5848	5895	5942	5 24
96	5990	6037	6084	6131	6179	6226	6273	6320	6367	6415	6 29
97	6462	6509	6556	6604	6651	6698	6745	6792	6840	6887	7 34
98	6934	6981	7028	7076	7123	7170	7217	7265	7312	7359	8 38
99	7406	7453	7501	7548	7595	7642	7689	7737	7784	7831	9 43
9200	7878	7925	7973	8020	8067	8114	8161	8209	8256	8303	
01	8350	8398	8445	8492	8539	8586	8634	8681	8728	8775	
02	8822	8869	8917	8964	9011	9058	9105	9153	9200	9247	
03	9294	9341	9389	9436	9483	9530	9577	9625	9672	9719	
04	9766	9813	9860	9908	9955	0002	0049	0096	0144	0191	
9205	964 0238	0285	0332	0379	0427	0474	0521	0568	0615	0663	47
06	0710	0757	0804	0851	0898	0946	0993	1040	1087	1134	1 5
07	1181	1229	1276	1323	1370	1417	1464	1512	1559	1606	2 9
08	1653	1700	1747	1795	1842	1889	1936	1983	2030	2078	3 14
09	2125	2172	2219	2266	2313	2361	2408	2455	2502	2549	4 19
9210	2596	2643	2691	2738	2785	2832	2879	2926	2974	3021	5 24
11	3068	3115	3162	3209	3256	3304	3351	3398	3445	3492	6 28
12	3539	3586	3634	3681	3728	3775	3822	3869	3916	3964	7 33
13	4011	4058	4105	4152	4199	4246	4294	4341	4388	4435	8 38
14	4482	4529	4576	4623	4671	4718	4765	4812	4859	4906	9 42
9215	4953	5001	5048	5095	5142	5189	5236	5283	5330	5378	
16	5425	5472	5519	5566	5613	5660	5707	5755	5802	5849	
17	5896	5943	5990	6037	6084	6131	6179	6226	6273	6320	
18	6367	6414	6461	6508	6555	6603	6650	6697	6744	6791	
19	6838	6885	6932	6979	7027	7074	7121	7168	7215	7262	
9220	7309	7356	7403	7451	7498	7545	7592	7639	7686	7733	48
21	7780	7827	7874	7922	7969	8016	8063	8110	8157	8204	1 5
22	8251	8298	8345	8392	8440	8487	8534	8581	8628	8675	2 10
23	8722	8769	8816	8863	8910	8958	9005	9052	9099	9146	3 14
24	9193	9240	9287	9334	9381	9428	9475	9523	9570	9617	4 19
9225	9664	9711	9758	9805	9852	9899	9946	9993	0040	0087	5 24
26	965 0135	0182	0229	0276	0323	0370	0417	0464	0511	0558	6 29
27	0605	0652	0699	0746	0793	0841	0888	0935	0982	1029	7 34
28	1076	1123	1170	1217	1264	1311	1358	1405	1452	1499	8 38
29	1546	1594	1641	1688	1735	1782	1829	1876	1923	1970	9 43
9230	2017	2064	2111	2158	2205	2252	2299	2346	2393	2440	
31	2488	2535	2582	2629	2676	2723	2770	2817	2864	2911	
32	2958	3005	3052	3099	3146	3193	3240	3287	3334	3381	
33	3428	3475	3522	3569	3617	3664	3711	3758	3805	3852	
34	3899	3946	3993	4040	4087	4134	4181	4228	4275	4322	
9235	4369	4416	4463	4510	4557	4604	4651	4698	4745	4792	47
36	4839	4886	4933	4980	5027	5074	5121	5168	5215	5262	1 5
37	5309	5356	5403	5450	5497	5545	5592	5639	5686	5733	2 9
38	5780	5827	5874	5921	5968	6015	6062	6109	6156	6203	3 14
39	6250	6297	6344	6391	6438	6485	6532	6579	6626	6673	4 19
9240	6720	6767	6814	6861	6908	6955	7002	7049	7096	7143	5 24
41	7190	7237	7284	7331	7378	7425	7472	7519	7566	7613	6 28
42	7660	7707	7754	7801	7848	7895	7942	7989	8036	8083	7 33
43	8130	8177	8224	8270	8317	8364	8411	8458	8505	8552	8 38
44	8599	8646	8693	8740	8787	8834	8881	8928	8975	9022	9 42
9245	9069	9116	9163	9210	9257	9304	9351	9398	9445	9492	
46	9539	9586	9633	9680	9727	9774	9821	9868	9915	9962	
47	966 0009	0056	0103	0149	0196	0243	0290	0337	0384	0431	
48	0478	0525	0572	0619	0666	0713	0760	0807	0854	0901	
49	0948	0995	1042	1089	1136	1183	1230	1276	1323	1370	
9250	1417	1464	1511	1558	1605	1652	1699	1746	1793	1840	46
51	1887	1934	1981	2028	2075	2122	2168	2215	2262	2309	1 5
52	2356	2403	2450	2497	2544	2591	2638	2685	2732	2779	2 9
53	2826	2873	2919	2966	3013	3060	3107	3154	3201	3248	3 14
54	3295	3342	3389	3436	3483	3530	3577	3623	3670	3717	4 18
9255	3764	3811	3858	3905	3952	3999	4046	4093	4140	4187	5 23
56	4233	4280	4327	4374	4421	4468	4515	4562	4609	4656	6 28
57	4703	4750	4796	4843	4890	4937	4984	5031	5078	5125	7 32
58	5172	5219	5266	5312	5359	5406	5453	5500	5547	5594	8 37
59	5641	5688	5735	5782	5828	5875	5922	5969	6016	6063	9 41
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 92600 *to* 93299
Logarithm 966 6110 *to* 969 8770

N.	0	1	2	3	4	5	6	7	8	9	Diff.
9260	966 6110	6157	6204	6251	6297	6344	6391	6438	6485	6532	47
61	6579	6626	6673	6720	6766	6813	6860	6907	6954	7001	1 5
62	7048	7095	7142	7188	7235	7282	7329	7376	7423	7470	2 9
63	7517	7564	7610	7657	7704	7751	7798	7845	7892	7939	3 14
64	7985	8032	8079	8126	8173	8220	8267	8314	8360	8407	4 19
9265	8454	8501	8548	8595	8642	8689	8735	8782	8829	8876	5 24
66	8923	8970	9017	9064	9110	9157	9204	9251	9298	9345	6 28
67	9392	9438	9485	9532	9579	9626	9673	9720	9767	9813	7 33
68	9860	9907	9954	0001	0048	0095	0141	0188	0235	0282	8 38
69	967 0329	0376	0423	0469	0516	0563	0610	0657	0704	0750	9 42
9270	0797	0844	0891	0938	0985	1032	1078	1125	1172	1219	
71	1266	1313	1359	1406	1453	1500	1547	1594	1641	1687	
72	1734	1781	1828	1875	1922	1968	2015	2062	2109	2156	
73	2203	2249	2296	2343	2390	2437	2484	2530	2577	2624	
74	2671	2718	2765	2811	2858	2905	2952	2999	3046	3092	
9275	3139	3186	3233	3280	3326	3373	3420	3467	3514	3561	46
76	3607	3654	3701	3748	3795	3841	3888	3935	3982	4029	1 5
77	4076	4122	4169	4216	4263	4310	4356	4403	4450	4497	2 9
78	4544	4590	4637	4684	4731	4778	4825	4871	4918	4965	3 14
79	5012	5059	5105	5152	5199	5246	5293	5339	5386	5433	4 18
9280	5480	5527	5573	5620	5667	5714	5761	5807	5854	5901	5 23
81	5948	5995	6041	6088	6135	6182	6228	6275	6322	6369	6 28
82	6416	6462	6509	6556	6603	6650	6696	6743	6790	6837	7 32
83	6884	6930	6977	7024	7071	7117	7164	7211	7258	7305	8 37
84	7351	7398	7445	7492	7538	7585	7632	7679	7726	7772	9 41
9285	7819	7866	7913	7959	8006	8053	8100	8146	8193	8240	
86	8287	8334	8380	8427	8474	8521	8567	8614	8661	8708	
87	8754	8801	8848	8895	8942	8988	9035	9082	9129	9175	
88	9222	9269	9316	9362	9409	9456	9503	9549	9596	9643	
89	9690	9736	9783	9830	9877	9923	9970	0017	0064	0110	
9290	968 0157	0204	0251	0297	0344	0391	0438	0484	0531	0578	47
91	0625	0671	0718	0765	0812	0858	0905	0952	0999	1045	1 5
92	1092	1139	1185	1232	1279	1326	1372	1419	1466	1513	2 9
93	1559	1606	1653	1700	1746	1793	1840	1886	1933	1980	3 14
94	2027	2073	2120	2167	2214	2260	2307	2354	2400	2447	4 19
9295	2494	2541	2587	2634	2681	2728	2774	2821	2868	2914	5 24
96	2961	3008	3055	3101	3148	3195	3241	3288	3335	3382	6 28
97	3428	3475	3522	3568	3615	3662	3709	3755	3802	3849	7 33
98	3895	3942	3989	4036	4082	4129	4176	4222	4269	4316	8 38
99	4362	4409	4456	4503	4549	4596	4643	4689	4736	4783	9 42
9300	4829	4876	4923	4970	5016	5063	5110	5156	5203	5250	
01	5296	5343	5390	5437	5483	5530	5577	5623	5670	5717	
02	5763	5810	5857	5903	5950	5997	6043	6090	6137	6184	
03	6230	6277	6324	6370	6417	6464	6510	6557	6604	6650	
04	6697	6744	6790	6837	6884	6930	6977	7024	7070	7117	
9305	7164	7210	7257	7304	7350	7397	7444	7490	7537	7584	46
06	7630	7677	7724	7770	7817	7864	7910	7957	8004	8050	1 5
07	8097	8144	8190	8237	8284	8330	8377	8424	8470	8517	2 9
08	8564	8610	8657	8704	8750	8797	8844	8890	8937	8984	3 14
09	9030	9077	9124	9170	9217	9264	9310	9357	9404	9450	4 18
9310	9497	9543	9590	9637	9683	9730	9777	9823	9870	9917	5 23
11	9963	0010	0057	0103	0150	0196	0243	0290	0336	0383	6 28
12	969 0430	0476	0523	0570	0616	0663	0709	0756	0803	0849	7 32
13	0896	0943	0989	1036	1083	1129	1176	1222	1269	1316	8 37
14	1362	1409	1456	1502	1549	1595	1642	1689	1735	1782	9 41
9315	1829	1875	1922	1968	2015	2062	2108	2155	2202	2248	
16	2295	2341	2388	2435	2481	2528	2574	2621	2668	2714	
17	2761	2808	2854	2901	2947	2994	3041	3087	3134	3180	
18	3227	3274	3320	3367	3413	3460	3507	3553	3600	3647	
19	3693	3740	3786	3833	3880	3926	3973	4019	4066	4113	
9320	4159	4206	4252	4299	4346	4392	4439	4485	4532	4578	47
21	4625	4672	4718	4765	4811	4858	4905	4951	4998	5044	1 5
22	5091	5138	5184	5231	5277	5324	5371	5417	5464	5510	2 9
23	5557	5603	5650	5697	5743	5790	5836	5883	5929	5976	3 14
24	6023	6069	6116	6162	6209	6256	6302	6349	6395	6442	4 19
9325	6488	6535	6582	6628	6675	6721	6768	6814	6861	6908	5 24
26	6954	7001	7047	7094	7140	7187	7234	7280	7327	7373	6 28
27	7420	7466	7513	7559	7606	7653	7699	7746	7792	7839	7 33
28	7885	7932	7978	8025	8072	8118	8165	8211	8258	8304	8 38
29	8351	8397	8444	8491	8537	8584	8630	8677	8723	8770	9 42
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 93300 *to* 93999
Logarithm 969 8816 *to* 973 1232

N.	0	1	2	3	4	5	6	7	8	9	Diff.
9330	969 8816	8863	8910	8956	9003	9049	9096	9142	9189	9235	46
31	9282	9328	9375	9422	9468	9515	9561	9608	9654	9701	1 5
32	9747	9794	9840	9887	9933	9980	0027	0073	0120	0166	2 9
33	970 0213	0259	0306	0352	0399	0445	0492	0538	0585	0631	3 14
34	0678	0724	0771	0818	0864	0911	0957	1004	1050	1097	4 18
9335	1143	1190	1236	1283	1329	1376	1422	1469	1515	1562	5 23
36	1608	1655	1701	1748	1794	1841	1888	1934	1981	2027	6 28
37	2074	2120	2167	2213	2260	2306	2353	2399	2446	2492	7 32
38	2539	2585	2632	2678	2725	2771	2818	2864	2911	2957	8 37
39	3004	3050	3097	3143	3190	3236	3283	3329	3376	3422	9 41
9340	3469	3515	3562	3608	3655	3701	3748	3794	3841	3887	
41	3934	3980	4027	4073	4120	4166	4213	4259	4306	4352	
42	4399	4445	4492	4538	4585	4631	4678	4724	4771	4817	
43	4863	4910	4956	5003	5049	5096	5142	5189	5235	5282	
44	5328	5375	5421	5468	5514	5561	5607	5654	5700	5747	
9345	5793	5840	5886	5932	5979	6025	6072	6118	6165	6211	47
46	6258	6304	6351	6397	6444	6490	6537	6583	6629	6676	1 5
47	6722	6769	6815	6862	6908	6955	7001	7048	7094	7141	2 9
48	7187	7233	7280	7326	7373	7419	7466	7512	7559	7605	3 14
49	7652	7698	7745	7791	7837	7884	7930	7977	8023	8070	4 19
9350	8116	8163	8209	8255	8302	8348	8395	8441	8488	8534	5 24
51	8581	8627	8673	8720	8766	8813	8859	8906	8952	8999	6 28
52	9045	9091	9138	9184	9231	9277	9324	9370	9416	9463	7 33
53	9509	9556	9602	9649	9695	9742	9788	9834	9881	9927	8 38
54	9974	0020	0067	0113	0159	0206	0252	0299	0345	0391	9 42
9355	971 0438	0484	0531	0577	0624	0670	0716	0763	0809	0856	
56	0902	0949	0995	1041	1088	1134	1181	1227	1273	1320	
57	1366	1413	1459	1506	1552	1598	1645	1691	1738	1784	
58	1830	1877	1923	1970	2016	2062	2109	2155	2202	2248	
59	2294	2341	2387	2434	2480	2526	2573	2619	2666	2712	
9360	2758	2805	2851	2898	2944	2990	3037	3083	3130	3176	46
61	3222	3269	3315	3362	3408	3454	3501	3547	3594	3640	1 5
62	3686	3733	3779	3826	3872	3918	3965	4011	4057	4104	2 9
63	4150	4197	4243	4289	4336	4382	4429	4475	4521	4568	3 14
64	4614	4660	4707	4753	4800	4846	4892	4939	4985	5031	4 18
9365	5078	5124	5171	5217	5263	5310	5356	5402	5449	5495	5 23
66	5542	5588	5634	5681	5727	5773	5820	5866	5912	5959	6 28
67	6005	6052	6098	6144	6191	6237	6283	6330	6376	6422	7 32
68	6469	6515	6562	6608	6654	6701	6747	6793	6840	6886	8 37
69	6932	6979	7025	7071	7118	7164	7211	7257	7303	7350	9 41
9370	7396	7442	7489	7535	7581	7628	7674	7720	7767	7813	
71	7859	7906	7952	7998	8045	8091	8137	8184	8230	8276	
72	8323	8369	8415	8462	8508	8554	8601	8647	8694	8740	
73	8786	8833	8879	8925	8972	9018	9064	9111	9157	9203	
74	9249	9296	9342	9388	9435	9481	9527	9574	9620	9666	
9375	9713	9759	9805	9852	9898	9944	9991	0037	0083	0130	47
76	972 0176	0222	0269	0315	0361	0408	0454	0500	0547	0593	1 5
77	0639	0685	0732	0778	0824	0871	0917	0963	1010	1056	2 9
78	1102	1149	1195	1241	1288	1334	1380	1426	1473	1519	3 14
79	1565	1612	1658	1704	1751	1797	1843	1889	1936	1982	4 19
9380	2028	2075	2121	2167	2214	2260	2306	2352	2399	2445	5 24
81	2491	2538	2584	2630	2677	2723	2769	2815	2862	2908	6 28
82	2954	3001	3047	3093	3139	3186	3232	3278	3325	3371	7 33
83	3417	3463	3510	3556	3602	3649	3695	3741	3787	3834	8 38
84	3880	3926	3973	4019	4065	4111	4158	4204	4250	4296	9 42
9385	4343	4389	4435	4482	4528	4574	4620	4667	4713	4759	
86	4805	4852	4898	4944	4991	5037	5083	5129	5176	5222	
87	5268	5314	5361	5407	5453	5500	5546	5592	5638	5685	
88	5731	5777	5823	5870	5916	5962	6008	6055	6101	6147	
89	6193	6240	6286	6332	6378	6425	6471	6517	6563	6610	
9390	6656	6702	6748	6795	6841	6887	6933	6980	7026	7072	46
91	7118	7165	7211	7257	7303	7350	7396	7442	7488	7535	1 5
92	7581	7627	7673	7720	7766	7812	7858	7905	7951	7997	2 9
93	8043	8089	8136	8182	8228	8274	8321	8367	8413	8459	3 14
94	8506	8552	8598	8644	8690	8737	8783	8829	8875	8922	4 18
9395	8968	9014	9060	9107	9153	9199	9245	9291	9338	9384	5 23
96	9430	9476	9523	9569	9615	9661	9707	9754	9800	9846	6 28
97	9892	9938	9985	0031	0077	0123	0170	0216	0262	0308	7 32
98	973 0354	0401	0447	0493	0539	0585	0632	0678	0724	0770	8 37
99	0816	0863	0909	0955	1001	1048	1094	1140	1186	1232	9 41
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 94000 *to* 94699
Logarithm 973 1279 *to* 976 3454

N.	0	1	2	3	4	5	6	7	8	9	Diff.
9400	973 1279	1325	1371	1417	1463	1510	1556	1602	1648	1694	47
01	1741	1787	1833	1879	1925	1972	2018	2064	2110	2156	1 5
02	2202	2249	2295	2341	2387	2433	2480	2526	2572	2618	2 9
03	2664	2711	2757	2803	2849	2895	2941	2988	3034	3080	3 14
04	3126	3172	3219	3265	3311	3357	3403	3449	3496	3542	4 19
9405	3588	3634	3680	3727	3773	3819	3865	3911	3957	4004	5 24
06	4050	4096	4142	4188	4234	4281	4327	4373	4419	4465	6 28
07	4511	4558	4604	4650	4696	4742	4788	4835	4881	4927	7 33
08	4973	5019	5065	5112	5158	5204	5250	5296	5342	5389	8 38
09	5435	5481	5527	5573	5619	5665	5712	5758	5804	5850	9 42
9410	5896	5942	5989	6035	6081	6127	6173	6219	6265	6312	
11	6358	6404	6450	6496	6542	6588	6635	6681	6727	6773	
12	6819	6865	6911	6958	7004	7050	7096	7142	7188	7234	
13	7281	7327	7373	7419	7465	7511	7557	7604	7650	7696	
14	7742	7788	7834	7880	7926	7973	8019	8065	8111	8157	
9415	8203	8249	8295	8342	8388	8434	8480	8526	8572	8618	46
16	8664	8711	8757	8803	8849	8895	8941	8987	9033	9080	1 5
17	9126	9172	9218	9264	9310	9356	9402	9449	9495	9541	2 9
18	9587	9633	9679	9725	9771	9817	9864	9910	9956	0002	3 14
19	974 0048	0094	0140	0186	0232	0279	0325	0371	0417	0463	4 18
9420	0509	0555	0601	0647	0693	0740	0786	0832	0878	0924	5 23
21	0970	1016	1062	1108	1154	1201	1247	1293	1339	1385	6 28
22	1431	1477	1523	1569	1615	1661	1708	1754	1800	1846	7 32
23	1892	1938	1984	2030	2076	2122	2168	2215	2261	2307	8 37
24	2353	2399	2445	2491	2537	2583	2629	2675	2721	2768	9 41
9425	2814	2860	2906	2952	2998	3044	3090	3136	3182	3228	
26	3274	3320	3367	3413	3459	3505	3551	3597	3643	3689	
27	3735	3781	3827	3873	3919	3965	4011	4058	4104	4150	
28	4196	4242	4288	4334	4380	4426	4472	4518	4564	4610	
29	4656	4702	4748	4795	4841	4887	4933	4979	5025	5071	
9430	5117	5163	5209	5255	5301	5347	5393	5439	5485	5531	47
31	5577	5623	5670	5716	5762	5808	5854	5900	5946	5992	1 5
32	6038	6084	6130	6176	6222	6268	6314	6360	6406	6452	2 9
33	6498	6544	6590	6636	6683	6729	6775	6821	6867	6913	3 14
34	6959	7005	7051	7097	7143	7189	7235	7281	7327	7373	4 19
9435	7419	7465	7511	7557	7603	7649	7695	7741	7787	7833	5 24
36	7879	7925	7971	8017	8063	8109	8155	8201	8248	8294	6 28
37	8340	8386	8432	8478	8524	8570	8616	8662	8708	8754	7 33
38	8800	8846	8892	8938	8984	9030	9076	9122	9168	9214	8 38
39	9260	9306	9352	9398	9444	9490	9536	9582	9628	9674	9 42
9440	9720	9766	9812	9858	9904	9950	9996	0042	0088	0134	
41	975 0180	0226	0272	0318	0364	0410	0456	0502	0548	0594	
42	0640	0686	0732	0778	0824	0870	0916	0962	1008	1054	
43	1100	1146	1192	1238	1284	1330	1376	1422	1468	1514	
44	1560	1606	1652	1698	1744	1790	1836	1882	1928	1974	
9445	2020	2066	2112	2158	2204	2250	2296	2341	2387	2433	46
46	2479	2525	2571	2617	2663	2709	2755	2801	2847	2893	1 5
47	2939	2985	3031	3077	3123	3169	3215	3261	3307	3353	2 9
48	3399	3445	3491	3537	3583	3629	3675	3721	3767	3813	3 14
49	3858	3904	3950	3996	4042	4088	4134	4180	4226	4272	4 18
9450	4318	4364	4410	4456	4502	4548	4594	4640	4686	4732	5 23
51	4778	4824	4870	4915	4961	5007	5053	5099	5145	5191	6 28
52	5237	5283	5329	5375	5421	5467	5513	5559	5605	5651	7 32
53	5697	5743	5788	5834	5880	5926	5972	6018	6064	6110	8 37
54	6156	6202	6248	6294	6340	6386	6432	6478	6523	6569	9 41
9455	6615	6661	6707	6753	6799	6845	6891	6937	6983	7029	
56	7075	7121	7166	7212	7258	7304	7350	7396	7442	7488	
57	7534	7580	7626	7672	7718	7763	7809	7855	7901	7947	
58	7993	8039	8085	8131	8177	8223	8269	8315	8360	8406	
59	8452	8498	8544	8590	8636	8682	8728	8774	8820	8865	
9460	8911	8957	9003	9049	9095	9141	9187	9233	9279	9325	45
61	9370	9416	9462	9508	9554	9600	9646	9692	9738	9784	1 5
62	9829	9875	9921	9967	0013	0059	0105	0151	0197	0243	2 9
63	976 0288	0334	0380	0426	0472	0518	0564	0610	0656	0701	3 14
64	0747	0793	0839	0885	0931	0977	1023	1069	1114	1160	4 18
9465	1206	1252	1298	1344	1390	1436	1481	1527	1573	1619	5 23
66	1665	1711	1757	1803	1849	1894	1940	1986	2032	2078	6 27
67	2124	2170	2216	2261	2307	2353	2399	2445	2491	2537	7 32
68	2582	2628	2674	2720	2766	2812	2858	2904	2949	2995	8 36
69	3041	3087	3133	3179	3225	3270	3316	3362	3408	3454	9 41
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 94700 *to* 95399
Logarithm 976 3500 *to* 979 5438

N.	0	1	2	3	4	5	6	7	8	9	Diff.
9470	976 3500	3546	3592	3637	3683	3729	3775	3821	3867	3913	46
71	3958	4004	4050	4096	4142	4188	4233	4279	4325	4371	1 5
72	4417	4463	4509	4554	4600	4646	4692	4738	4784	4830	2 9
73	4875	4921	4967	5013	5059	5105	5150	5196	5242	5288	3 14
74	5334	5380	5425	5471	5517	5563	5609	5655	5701	5746	4 18
9475	5792	5838	5884	5930	5976	6021	6067	6113	6159	6205	5 23
76	6251	6296	6342	6388	6434	6480	6525	6571	6617	6663	6 28
77	6709	6755	6800	6846	6892	6938	6984	7030	7075	7121	7 32
78	7167	7213	7259	7305	7350	7396	7442	7488	7534	7579	8 37
79	7625	7671	7717	7763	7808	7854	7900	7946	7992	8038	9 41
9480	8083	8129	8175	8221	8267	8312	8358	8404	8450	8496	
81	8541	8587	8633	8679	8725	8770	8816	8862	8908	8954	
82	9000	9045	9091	9137	9183	9229	9274	9320	9366	9412	
83	9458	9503	9549	9595	9641	9686	9732	9778	9824	9870	
84	9915	9961	0007	0053	0099	0144	0190	0236	0282	0328	
9485	977 0373	0419	0465	0511	0556	0602	0648	0694	0740	0785	45
86	0831	0877	0923	0969	1014	1060	1106	1152	1197	1243	1 5
87	1289	1335	1381	1426	1472	1518	1564	1609	1655	1701	2 9
88	1747	1793	1838	1884	1930	1976	2021	2067	2113	2159	3 14
89	2204	2250	2296	2342	2388	2433	2479	2525	2571	2616	4 18
9490	2662	2708	2754	2799	2845	2891	2937	2982	3028	3074	5 23
91	3120	3165	3211	3257	3303	3349	3394	3440	3486	3532	6 27
92	3577	3623	3669	3715	3760	3806	3852	3898	3943	3989	7 32
93	4035	4081	4126	4172	4218	4264	4309	4355	4401	4447	8 36
94	4492	4538	4584	4630	4675	4721	4767	4812	4858	4904	9 41
9495	4950	4995	5041	5087	5133	5178	5224	5270	5316	5361	
96	5407	5453	5499	5544	5590	5636	5681	5727	5773	5819	
97	5864	5910	5956	6002	6047	6093	6139	6184	6230	6276	
98	6322	6367	6413	6459	6505	6550	6596	6642	6687	6733	
99	6779	6825	6870	6916	6962	7007	7053	7099	7145	7190	
9500	7236	7282	7327	7373	7419	7465	7510	7556	7602	7647	46
01	7693	7739	7785	7830	7876	7922	7967	8013	8059	8105	1 5
02	8150	8196	8242	8287	8333	8379	8424	8470	8516	8562	2 9
03	8607	8653	8699	8744	8790	8836	8881	8927	8973	9019	3 14
04	9064	9110	9156	9201	9247	9293	9338	9384	9430	9476	4 18
9505	9521	9567	9613	9658	9704	9750	9795	9841	9887	9932	5 23
06	9978	0024	0069	0115	0161	0207	0252	0298	0344	0389	6 28
07	978 0435	0481	0526	0572	0618	0663	0709	0755	0800	0846	7 32
08	0892	0937	0983	1029	1074	1120	1166	1211	1257	1303	8 37
09	1348	1394	1440	1485	1531	1577	1622	1668	1714	1760	9 41
9510	1805	1851	1897	1942	1988	2033	2079	2125	2170	2216	
11	2262	2307	2353	2399	2444	2490	2536	2581	2627	2673	
12	2718	2764	2810	2855	2901	2947	2992	3038	3084	3129	
13	3175	3221	3266	3312	3358	3403	3449	3495	3540	3586	
14	3631	3677	3723	3768	3814	3860	3905	3951	3997	4042	
9515	4088	4134	4179	4225	4270	4316	4362	4407	4453	4499	45
16	4544	4590	4636	4681	4727	4773	4818	4864	4909	4955	1 5
17	5001	5046	5092	5138	5183	5229	5274	5320	5366	5411	2 9
18	5457	5503	5548	5594	5640	5685	5731	5776	5822	5868	3 14
19	5913	5959	6005	6050	6096	6141	6187	6233	6278	6324	4 18
9520	6369	6415	6461	6506	6552	6598	6643	6689	6734	6780	5 23
21	6826	6871	6917	6962	7008	7054	7099	7145	7191	7236	6 27
22	7282	7327	7373	7419	7464	7510	7555	7601	7647	7692	7 32
23	7738	7783	7829	7875	7920	7966	8011	8057	8103	8148	8 36
24	8194	8239	8285	8331	8376	8422	8467	8513	8559	8604	9 41
9525	8650	8695	8741	8787	8832	8878	8923	8969	9015	9060	
26	9106	9151	9197	9243	9288	9334	9379	9425	9470	9516	
27	9562	9607	9653	9698	9744	9790	9835	9881	9926	9972	
28	979 0017	0063	0109	0154	0200	0245	0291	0337	0382	0428	
29	0473	0519	0564	0610	0656	0701	0747	0792	0838	0883	
9530	0929	0975	1020	1066	1111	1157	1202	1248	1294	1339	46
31	1385	1430	1476	1521	1567	1613	1658	1704	1749	1795	1 5
32	1840	1886	1931	1977	2023	2068	2114	2159	2205	2250	2 9
33	2296	2341	2387	2433	2478	2524	2569	2615	2660	2706	3 14
34	2751	2797	2843	2888	2934	2979	3025	3070	3116	3161	4 18
9535	3207	3253	3298	3344	3389	3435	3480	3526	3571	3617	5 23
36	3662	3708	3754	3799	3845	3890	3936	3981	4027	4072	6 28
37	4118	4163	4209	4254	4300	4346	4391	4437	4482	4528	7 32
38	4573	4619	4664	4710	4755	4801	4846	4892	4937	4983	8 37
39	5028	5074	5120	5165	5211	5256	5302	5347	5393	5438	9 41
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 95400 *to* 96099
Logarithm 979 5484 *to* 982 7189

N.	0	1	2	3	4	5	6	7	8	9	Diff.
9540	979 5484	5529	5575	5620	5666	5711	5757	5802	5848	5893	45
41	5939	5984	6030	6076	6121	6167	6212	6258	6303	6349	1 5
42	6394	6440	6485	6531	6576	6622	6667	6713	6758	6804	2 9
43	6849	6895	6940	6986	7031	7077	7122	7168	7213	7259	3 14
44	7304	7350	7395	7441	7486	7532	7577	7623	7668	7714	4 18
9545	7759	7805	7850	7896	7941	7987	8032	8078	8123	8169	5 23
46	8214	8260	8305	8351	8396	8442	8487	8533	8578	8624	6 27
47	8669	8715	8760	8806	8851	8897	8942	8988	9033	9079	7 32
48	9124	9170	9215	9261	9306	9352	9397	9442	9488	9533	8 36
49	9579	9624	9670	9715	9761	9806	9852	9897	9943	9988	9 41
9550	980 0034	0079	0125	0170	0216	0261	0307	0352	0398	0443	
51	0488	0534	0579	0625	0670	0716	0761	0807	0852	0898	
52	0943	0989	1034	1080	1125	1170	1216	1261	1307	1352	
53	1398	1443	1489	1534	1580	1625	1671	1716	1761	1807	
54	1852	1898	1943	1989	2034	2080	2125	2171	2216	2261	
9555	2307	2352	2398	2443	2489	2534	2580	2625	2671	2716	46
56	2761	2807	2852	2898	2943	2989	3034	3080	3125	3170	1 5
57	3216	3261	3307	3352	3398	3443	3489	3534	3579	3625	2 9
58	3670	3716	3761	3807	3852	3897	3943	3988	4034	4079	3 14
59	4125	4170	4215	4261	4306	4352	4397	4443	4488	4533	4 18
9560	4579	4624	4670	4715	4761	4806	4851	4897	4942	4988	5 23
61	5033	5079	5124	5169	5215	5260	5306	5351	5397	5442	6 28
62	5487	5533	5578	5624	5669	5714	5760	5805	5851	5896	7 32
63	5942	5987	6032	6078	6123	6169	6214	6259	6305	6350	8 37
64	6396	6441	6486	6532	6577	6623	6668	6714	6759	6804	9 41
9565	6850	6895	6941	6986	7031	7077	7122	7168	7213	7258	
66	7304	7349	7395	7440	7485	7531	7576	7622	7667	7712	
67	7758	7803	7849	7894	7939	7985	8030	8075	8121	8166	
68	8212	8257	8302	8348	8393	8439	8484	8529	8575	8620	
69	8666	8711	8756	8802	8847	8892	8938	8983	9029	9074	
9570	9119	9165	9210	9256	9301	9346	9392	9437	9482	9528	45
71	9573	9619	9664	9709	9755	9800	9845	9891	9936	9982	1 5
72	981 0027	0072	0118	0163	0208	0254	0299	0344	0390	0435	2 9
73	0481	0526	0571	0617	0662	0707	0753	0798	0844	0889	3 14
74	0934	0980	1025	1070	1116	1161	1206	1252	1297	1342	4 18
9575	1388	1433	1479	1524	1569	1615	1660	1705	1751	1796	5 23
76	1841	1887	1932	1977	2023	2068	2113	2159	2204	2250	6 27
77	2295	2340	2386	2431	2476	2522	2567	2612	2658	2703	7 32
78	2748	2794	2839	2884	2930	2975	3020	3066	3111	3156	8 36
79	3202	3247	3292	3338	3383	3428	3474	3519	3564	3610	9 41
9580	3655	3700	3746	3791	3836	3882	3927	3972	4018	4063	
81	4108	4154	4199	4244	4290	4335	4380	4426	4471	4516	
82	4562	4607	4652	4698	4743	4788	4834	4879	4924	4970	
83	5015	5060	5106	5151	5196	5241	5287	5332	5377	5423	
84	5468	5513	5559	5604	5649	5695	5740	5785	5831	5876	
9585	5921	5966	6012	6057	6102	6148	6193	6238	6284	6329	46
86	6374	6420	6465	6510	6555	6601	6646	6691	6737	6782	1 5
87	6827	6873	6918	6963	7008	7054	7099	7144	7190	7235	2 9
88	7280	7326	7371	7416	7461	7507	7552	7597	7643	7688	3 14
89	7733	7778	7824	7869	7914	7960	8005	8050	8095	8141	4 18
9590	8186	8231	8277	8322	8367	8412	8458	8503	8548	8594	5 23
91	8639	8684	8729	8775	8820	8865	8911	8956	9001	9046	6 28
92	9092	9137	9182	9228	9273	9318	9363	9409	9454	9499	7 32
93	9544	9590	9635	9680	9726	9771	9816	9861	9907	9952	8 37
94	9997	0042	0088	0133	0178	0223	0269	0314	0359	0405	9 41
9595	982 0450	0495	0540	0586	0631	0676	0721	0767	0812	0857	
96	0902	0948	0993	1038	1083	1129	1174	1219	1264	1310	
97	1355	1400	1445	1491	1536	1581	1626	1672	1717	1762	
98	1807	1853	1898	1943	1988	2034	2079	2124	2169	2215	
99	2260	2305	2350	2396	2441	2486	2531	2577	2622	2667	
9600	2712	2758	2803	2848	2893	2939	2984	3029	3074	3119	45
01	3165	3210	3255	3300	3346	3391	3436	3481	3527	3572	1 5
02	3617	3662	3707	3753	3798	3843	3888	3934	3979	4024	2 9
03	4069	4115	4160	4205	4250	4295	4341	4386	4431	4476	3 14
04	4522	4567	4612	4657	4702	4748	4793	4838	4883	4928	4 18
9605	4974	5019	5064	5109	5155	5200	5245	5290	5335	5381	5 23
06	5426	5471	5516	5561	5607	5652	5697	5742	5787	5833	6 27
07	5878	5923	5968	6014	6059	6104	6149	6194	6240	6285	7 32
08	6330	6375	6420	6466	6511	6556	6601	6646	6692	6737	8 36
09	6782	6827	6872	6918	6963	7008	7053	7098	7143	7189	9 41
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 96100 *to* 96799
Logarithm 982 7234 *to* 985 8709

N.	0	1	2	3	4	5	6	7	8	9	Diff.
9610	982 7234	7279	7324	7369	7415	7460	7505	7550	7595	7641	46
11	7686	7731	7776	7821	7867	7912	7957	8002	8047	8092	1 5
12	8138	8183	8228	8273	8318	8364	8409	8454	8499	8544	2 9
13	8589	8635	8680	8725	8770	8815	8860	8906	8951	8996	3 14
14	9041	9086	9132	9177	9222	9267	9312	9357	9403	9448	4 18
9615	9493	9538	9583	9628	9674	9719	9764	9809	9854	9899	5 23
16	9945	9990	0035	0080	0125	0170	0216	0261	0306	0351	6 28
17	983 0396	0441	0486	0532	0577	0622	0667	0712	0757	0803	7 32
18	0848	0893	0938	0983	1028	1073	1119	1164	1209	1254	8 37
19	1299	1344	1390	1435	1480	1525	1570	1615	1660	1706	9 41
9620	1751	1796	1841	1886	1931	1976	2022	2067	2112	2157	
21	2202	2247	2292	2338	2383	2428	2473	2518	2563	2608	
22	2654	2699	2744	2789	2834	2879	2924	2969	3015	3060	
23	3105	3150	3195	3240	3285	3331	3376	3421	3466	3511	
24	3556	3601	3646	3692	3737	3782	3827	3872	3917	3962	
9625	4007	4053	4098	4143	4188	4233	4278	4323	4368	4413	45
26	4459	4504	4549	4594	4639	4684	4729	4774	4819	4865	1 5
27	4910	4955	5000	5045	5090	5135	5180	5225	5271	5316	2 9
28	5361	5406	5451	5496	5541	5586	5631	5677	5722	5767	3 14
29	5812	5857	5902	5947	5992	6037	6082	6128	6173	6218	4 18
9630	6263	6308	6353	6398	6443	6488	6533	6579	6624	6669	5 23
31	6714	6759	6804	6849	6894	6939	6984	7029	7075	7120	6 27
32	7165	7210	7255	7300	7345	7390	7435	7480	7525	7571	7 32
33	7616	7661	7706	7751	7796	7841	7886	7931	7976	8021	8 36
34	8066	8111	8157	8202	8247	8292	8337	8382	8427	8472	9 41
9635	8517	8562	8607	8652	8697	8743	8788	8833	8878	8923	
36	8968	9013	9058	9103	9148	9193	9238	9283	9328	9374	
37	9419	9464	9509	9554	9599	9644	9689	9734	9779	9824	
38	9869	9914	9959	0004	0049	0095	0140	0185	0230	0275	
39	984 0320	0365	0410	0455	0500	0545	0590	0635	0680	0725	
9640	0770	0815	0860	0905	0951	0996	1041	1086	1131	1176	46
41	1221	1266	1311	1356	1401	1446	1491	1536	1581	1626	1 5
42	1671	1716	1761	1806	1851	1896	1942	1987	2032	2077	2 9
43	2122	2167	2212	2257	2302	2347	2392	2437	2482	2527	3 14
44	2572	2617	2662	2707	2752	2797	2842	2887	2932	2977	4 18
9645	3022	3067	3112	3157	3202	3247	3292	3338	3383	3428	5 23
46	3473	3518	3563	3608	3653	3698	3743	3788	3833	3878	6 28
47	3923	3968	4013	4058	4103	4148	4193	4238	4283	4328	7 32
48	4373	4418	4463	4508	4553	4598	4643	4688	4733	4778	8 37
49	4823	4868	4913	4958	5003	5048	5093	5138	5183	5228	9 41
9650	5273	5318	5363	5408	5453	5498	5543	5588	5633	5678	
51	5723	5768	5813	5858	5903	5948	5993	6038	6083	6128	
52	6173	6218	6263	6308	6353	6398	6443	6488	6533	6578	
53	6623	6668	6713	6758	6803	6848	6893	6938	6983	7028	
54	7073	7118	7163	7208	7253	7298	7343	7388	7433	7478	
9655	7523	7568	7613	7658	7703	7748	7793	7838	7883	7928	45
56	7973	8018	8063	8107	8152	8197	8242	8287	8332	8377	1 5
57	8422	8467	8512	8557	8602	8647	8692	8737	8782	8827	2 9
58	8872	8917	8962	9007	9052	9097	9142	9187	9232	9277	3 14
59	9322	9367	9412	9457	9502	9546	9591	9636	9681	9726	4 18
9660	9771	9816	9861	9906	9951	9996	0041	0086	0131	0176	5 23
61	985 0221	0266	0311	0356	0401	0446	0491	0535	0580	0625	6 27
62	0670	0715	0760	0805	0850	0895	0940	0985	1030	1075	7 32
63	1120	1165	1210	1255	1300	1345	1389	1434	1479	1524	8 36
64	1569	1614	1659	1704	1749	1794	1839	1884	1929	1974	9 41
9665	2019	2064	2108	2153	2198	2243	2288	2333	2378	2423	
66	2468	2513	2558	2603	2648	2693	2737	2782	2827	2872	
67	2917	2962	3007	3052	3097	3142	3187	3232	3277	3321	
68	3366	3411	3456	3501	3546	3591	3636	3681	3726	3771	
69	3816	3861	3905	3950	3995	4040	4085	4130	4175	4220	
9670	4265	4310	4355	4399	4444	4489	4534	4579	4624	4669	44
71	4714	4759	4804	4849	4893	4938	4983	5028	5073	5118	1 4
72	5163	5208	5253	5298	5342	5387	5432	5477	5522	5567	2 9
73	5612	5657	5702	5747	5791	5836	5881	5926	5971	6016	3 13
74	6061	6106	6151	6196	6240	6285	6330	6375	6420	6465	4 18
9675	6510	6555	6600	6644	6689	6734	6779	6824	6869	6914	5 22
76	6959	7003	7048	7093	7138	7183	7228	7273	7318	7363	6 26
77	7407	7452	7497	7542	7587	7632	7677	7722	7766	7811	7 31
78	7856	7901	7946	7991	8036	8081	8125	8170	8215	8260	8 35
79	8305	8350	8395	8440	8484	8529	8574	8619	8664	8709	9 40
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 96800 *to* 97499
Logarithm 985 8754 *to* 989 0002

N.	0	1	2	3	4	5	6	7	8	9	Diff.
9680	985 8754	8798	8843	8888	8933	8978	9023	9068	9112	9157	45
81	9202	9247	9292	9337	9382	9426	9471	9516	9561	9606	1 5
82	9651	9696	9740	9785	9830	9875	9920	9965	0010	0054	2 9
83	986 0099	0144	0189	0234	0279	0324	0368	0413	0458	0503	3 14
84	0548	0593	0637	0682	0727	0772	0817	0862	0907	0951	4 18
9685	0996	1041	1086	1131	1176	1220	1265	1310	1355	1400	5 23
86	1445	1489	1534	1579	1624	1669	1714	1758	1803	1848	6 27
87	1893	1938	1983	2027	2072	2117	2162	2207	2252	2296	7 32
88	2341	2386	2431	2476	2521	2565	2610	2655	2700	2745	8 36
89	2790	2834	2879	2924	2969	3014	3058	3103	3148	3193	9 41
9690	3238	3283	3327	3372	3417	3462	3507	3551	3596	3641	
91	3686	3731	3776	3820	3865	3910	3955	4000	4044	4089	
92	4134	4179	4224	4268	4313	4358	4403	4448	4493	4537	
93	4582	4627	4672	4717	4761	4806	4851	4896	4941	4985	
94	5030	5075	5120	5165	5209	5254	5299	5344	5389	5433	
9695	5478	5523	5568	5613	5657	5702	5747	5792	5836	5881	44
96	5926	5971	6016	6060	6105	6150	6195	6240	6284	6329	1 4
97	6374	6419	6464	6508	6553	6598	6643	6687	6732	6777	2 9
98	6822	6867	6911	6956	7001	7046	7090	7135	7180	7225	3 13
99	7270	7314	7359	7404	7449	7493	7538	7583	7628	7673	4 18
9700	7717	7762	7807	7852	7896	7941	7986	8031	8076	8120	5 22
01	8165	8210	8255	8299	8344	8389	8434	8478	8523	8568	6 26
02	8613	8657	8702	8747	8792	8837	8881	8926	8971	9016	7 31
03	9060	9105	9150	9195	9239	9284	9329	9374	9418	9463	8 35
04	9508	9553	9597	9642	9687	9732	9776	9821	9866	9911	9 40
9705	9955	0000	0045	0090	0134	0179	0224	0269	0313	0358	
06	987 0403	0448	0492	0537	0582	0627	0671	0716	0761	0806	
07	0850	0895	0940	0985	1029	1074	1119	1163	1208	1253	
08	1298	1342	1387	1432	1477	1521	1566	1611	1656	1700	
09	1745	1790	1834	1879	1924	1969	2013	2058	2103	2148	
9710	2192	2237	2282	2326	2371	2416	2461	2505	2550	2595	45
11	2640	2684	2729	2774	2818	2863	2908	2953	2997	3042	1 5
12	3087	3131	3176	3221	3266	3310	3355	3400	3444	3489	2 9
13	3534	3579	3623	3668	3713	3757	3802	3847	3892	3936	3 14
14	3981	4026	4070	4115	4160	4205	4249	4294	4339	4383	4 18
9715	4428	4473	4517	4562	4607	4652	4696	4741	4786	4830	5 23
16	4875	4920	4964	5009	5054	5099	5143	5188	5233	5277	6 27
17	5322	5367	5411	5456	5501	5545	5590	5635	5680	5724	7 32
18	5769	5814	5858	5993	5948	5992	6037	6082	6126	6171	8 36
19	6216	6261	6305	6350	6395	6439	6484	6529	6573	6618	9 41
9720	6663	6707	6752	6797	6841	6886	6931	6975	7020	7065	
21	7109	7154	7199	7243	7288	7333	7377	7422	7467	7511	
22	7556	7601	7646	7690	7735	7780	7824	7869	7914	7958	
23	8003	8048	8092	8137	8182	8226	8271	8316	8360	8405	
24	8450	8494	8539	8583	8628	8673	8717	8762	8807	8851	
9725	8896	8941	8985	9030	9075	9119	9164	9209	9253	9298	44
26	9343	9387	9432	9477	9521	9566	9611	9655	9700	9745	1 4
27	9789	9834	9878	9923	9968	0012	0057	0102	0146	0191	2 9
28	988 0236	0280	0325	0370	0414	0459	0503	0548	0593	0637	3 13
29	0682	0727	0771	0816	0861	0905	0950	0994	1039	1084	4 18
9730	1128	1173	1218	1262	1307	1352	1396	1441	1485	1530	5 22
31	1575	1619	1664	1709	1753	1798	1842	1887	1932	1976	6 26
32	2021	2066	2110	2155	2200	2244	2289	2333	2378	2423	7 31
33	2467	2512	2556	2601	2646	2690	2735	2780	2824	2869	8 35
34	2913	2958	3003	3047	3092	3136	3181	3226	3270	3315	9 40
9735	3360	3404	3449	3493	3538	3583	3627	3672	3716	3761	
36	3806	3850	3895	3939	3984	4029	4073	4118	4162	4207	
37	4252	4296	4341	4386	4430	4475	4519	4564	4609	4653	
38	4698	4742	4787	4831	4876	4921	4965	5010	5054	5099	
39	5144	5188	5233	5277	5322	5367	5411	5456	5500	5545	
9740	5590	5634	5679	5723	5768	5813	5857	5902	5946	5991	45
41	6035	6080	6125	6169	6214	6258	6303	6348	6392	6437	1 5
42	6481	6526	6570	6615	6660	6704	6749	6793	6838	6882	2 9
43	6927	6972	7016	7061	7105	7150	7194	7239	7284	7328	3 14
44	7373	7417	7462	7506	7551	7596	7640	7685	7729	7774	4 18
9745	7818	7863	7908	7952	7997	8041	8086	8130	8175	8220	5 23
46	8264	8309	8353	8398	8442	8487	8531	8576	8621	8665	6 27
47	8710	8754	8799	8843	8888	8932	8977	9022	9066	9111	7 32
48	9155	9200	9244	9289	9333	9378	9423	9467	9512	9556	8 36
49	9601	9645	9690	9734	9779	9823	9868	9913	9957	0002	9 41
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 97500 *to* 98199
Logarithm 989 0046 *to* 992 1071

N.	0	1	2	3	4	5	6	7	8	9	Diff.
9750	989 0046	0091	0135	0180	0224	0269	0313	0358	0402	0447	44
51	0492	0536	0581	0625	0670	0714	0759	0803	0848	0892	1 4
52	0937	0981	1026	1071	1115	1160	1204	1249	1293	1338	2 9
53	1382	1427	1471	1516	1560	1605	1649	1694	1738	1783	3 13
54	1828	1872	1917	1961	2006	2050	2095	2139	2184	2228	4 18
9755	2273	2317	2362	2406	2451	2495	2540	2584	2629	2673	5 22
56	2718	2762	2807	2851	2896	2940	2985	3030	3074	3119	6 26
57	3163	3208	3252	3297	3341	3386	3430	3475	3519	3564	7 31
58	3608	3653	3697	3742	3786	3831	3875	3920	3964	4009	8 35
59	4053	4098	4142	4187	4231	4276	4320	4365	4409	4454	9 40
9760	4498	4543	4587	4632	4676	4721	4765	4810	4854	4899	
61	4943	4988	5032	5077	5121	5166	5210	5255	5299	5344	
62	5388	5433	5477	5521	5566	5610	5655	5699	5744	5788	
63	5833	5877	5922	5966	6011	6055	6100	6144	6189	6233	
64	6278	6322	6367	6411	6456	6500	6545	6589	6634	6678	
9765	6722	6767	6811	6856	6900	6945	6989	7034	7078	7123	45
66	7167	7212	7256	7301	7345	7390	7434	7478	7523	7567	1 5
67	7612	7656	7701	7745	7790	7834	7879	7923	7968	8012	2 9
68	8057	8101	8145	8190	8234	8279	8323	8368	8412	8457	3 14
69	8501	8546	8590	8634	8679	8723	8768	8812	8857	8901	4 18
9770	8946	8990	9035	9079	9123	9168	9212	9257	9301	9346	5 23
71	9390	9435	9479	9523	9568	9612	9657	9701	9746	9790	6 27
72	9835	9879	9923	9968	0012	0057	0101	0146	0190	0235	7 32
73	990 0279	0323	0368	0412	0457	0501	0546	0590	0634	0679	8 36
74	0723	0768	0812	0857	0901	0946	0990	1034	1079	1123	9 41
9775	1168	1212	1257	1301	1345	1390	1434	1479	1523	1568	
76	1612	1656	1701	1745	1790	1834	1878	1923	1967	2012	
77	2056	2101	2145	2189	2234	2278	2323	2367	2411	2456	
78	2500	2545	2589	2634	2678	2722	2767	2811	2856	2900	
79	2944	2989	3033	3078	3122	3167	3211	3255	3300	3344	
9780	3389	3433	3477	3522	3566	3611	3655	3699	3744	3788	44
81	3833	3877	3921	3966	4010	4055	4099	4143	4188	4232	1 4
82	4277	4321	4365	4410	4454	4499	4543	4587	4632	4676	2 9
83	4721	4765	4809	4854	4898	4942	4987	5031	5076	5120	3 13
84	5164	5209	5253	5298	5342	5386	5431	5475	5520	5564	4 18
9785	5608	5653	5697	5741	5786	5830	5875	5919	5963	6008	5 22
86	6052	6096	6141	6185	6230	6274	6318	6363	6407	6452	6 26
87	6496	6540	6585	6629	6673	6718	6762	6806	6851	6895	7 31
88	6940	6984	7028	7073	7117	7161	7206	7250	7295	7339	8 35
89	7383	7428	7472	7516	7561	7605	7649	7694	7738	7783	9 40
9790	7827	7871	7916	7960	8004	8049	8093	8137	8182	8226	
91	8271	8315	8359	8404	8448	8492	8537	8581	8625	8670	
92	8714	8758	8803	8847	8891	8936	8980	9025	9069	9113	
93	9158	9202	9246	9291	9335	9379	9424	9468	9512	9557	
94	9601	9645	9690	9734	9778	9823	9867	9911	9956	0000	
9795	991 0044	0089	0133	0177	0222	0266	0310	0355	0399	0443	45
96	0488	0532	0576	0621	0665	0709	0754	0798	0842	0887	1 5
97	0931	0975	1020	1064	1108	1153	1197	1241	1286	1330	2 9
98	1374	1419	1463	1507	1552	1596	1640	1685	1729	1773	3 14
99	1818	1862	1906	1951	1995	2039	2083	2128	2172	2216	4 18
9800	2261	2305	2349	2394	2438	2482	2527	2571	2615	2660	5 23
01	2704	2748	2793	2837	2881	2925	2970	3014	3058	3103	6 27
02	3147	3191	3236	3280	3324	3369	3413	3457	3501	3546	7 32
03	3590	3634	3679	3723	3767	3812	3856	3900	3944	3989	8 36
04	4033	4077	4122	4166	4210	4255	4299	4343	4387	4432	9 41
9805	4476	4520	4565	4609	4653	4697	4742	4786	4830	4875	
06	4919	4963	5007	5052	5096	5140	5185	5229	5273	5317	
07	5362	5406	5450	5495	5539	5583	5627	5672	5716	5760	
08	5805	5849	5893	5937	5982	6026	6070	6115	6159	6203	
09	6247	6292	6336	6380	6424	6469	6513	6557	6602	6646	
9810	6690	6734	6779	6823	6867	6911	6956	7000	7044	7088	44
11	7133	7177	7221	7266	7310	7354	7398	7443	7487	7531	1 4
12	7575	7620	7664	7708	7752	7797	7841	7885	7929	7974	2 9
13	8018	8062	8107	8151	8195	8239	8284	8328	8372	8416	3 13
14	8461	8505	8549	8593	8638	8682	8726	8770	8815	8859	4 18
9815	8903	8947	8992	9036	9080	9124	9169	9213	9257	9301	5 22
16	9345	9390	9434	9478	9522	9567	9611	9655	9699	9744	6 26
17	9788	9832	9876	9921	9965	0009	0053	0098	0142	0186	7 31
18	992 0230	0275	0319	0363	0407	0451	0496	0540	0584	0628	8 35
19	0673	0717	0761	0805	0850	0894	0938	0982	1026	1071	9 40
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 98200 *to* 98899
Logarithm 992 1115 *to* 995 1919

N.	0	1	2	3	4	5	6	7	8	9	Diff.
9820	992 1115	1159	1203	1248	1292	1336	1380	1424	1469	1513	45
21	1557	1601	1646	1690	1734	1778	1822	1867	1911	1955	1 5
22	1999	2044	2088	2132	2176	2220	2265	2309	2353	2397	2 9
23	2441	2486	2530	2574	2618	2662	2707	2751	2795	2839	3 14
24	2884	2928	2972	3016	3060	3105	3149	3193	3237	3281	4 18
9825	3326	3370	3414	3458	3502	3547	3591	3635	3679	3723	5 23
26	3768	3812	3856	3900	3944	3989	4033	4077	4121	4165	6 27
27	4210	4254	4298	4342	4386	4431	4475	4519	4563	4607	7 32
28	4651	4696	4740	4784	4828	4872	4917	4961	5005	5049	8 36
29	5093	5138	5182	5226	5270	5314	5358	5403	5447	5491	9 41
9830	5535	5579	5624	5668	5712	5756	5800	5844	5889	5933	
31	5977	6021	6065	6109	6154	6198	6242	6286	6330	6375	
32	6419	6463	6507	6551	6595	6640	6684	6728	6772	6816	
33	6860	6905	6949	6993	7037	7081	7125	7170	7214	7258	
34	7302	7346	7390	7435	7479	7523	7567	7611	7655	7699	
9835	7744	7788	7832	7876	7920	7964	8009	8053	8097	8141	44
36	8185	8229	8274	8318	8362	8406	8450	8494	8538	8583	1 4
37	8627	8671	8715	8759	8803	8847	8892	8936	8980	9024	2 9
38	9068	9112	9156	9201	9245	9289	9333	9377	9421	9465	3 13
39	9510	9554	9598	9642	9686	9730	9774	9819	9863	9907	4 18
9840	9951	9995	0039	0083	0128	0172	0216	0260	0304	0348	5 22
41	993 0392	0436	0481	0525	0569	0613	0657	0701	0745	0789	6 26
42	0834	0878	0922	0966	1010	1054	1098	1142	1187	1231	7 31
43	1275	1319	1363	1407	1451	1495	1540	1584	1628	1672	8 35
44	1716	1760	1804	1848	1893	1937	1981	2025	2069	2113	9 40
9845	2157	2201	2245	2290	2334	2378	2422	2466	2510	2554	
46	2598	2642	2687	2731	2775	2819	2863	2907	2951	2995	
47	3039	3083	3128	3172	3216	3260	3304	3348	3392	3436	
48	3480	3524	3569	3613	3657	3701	3745	3789	3833	3877	
49	3921	3965	4010	4054	4098	4142	4186	4230	4274	4318	
9850	4362	4406	4450	4495	4539	4583	4627	4671	4715	4759	45
51	4803	4847	4891	4935	4980	5024	5068	5112	5156	5200	1 5
52	5244	5288	5332	5376	5420	5464	5509	5553	5597	5641	2 9
53	5685	5729	5773	5817	5861	5905	5949	5993	6037	6082	3 14
54	6126	6170	6214	6258	6302	6346	6390	6434	6478	6522	4 18
9855	6566	6610	6654	6698	6743	6787	6831	6875	6919	6963	5 23
56	7007	7051	7095	7139	7183	7227	7271	7315	7359	7404	6 27
57	7448	7492	7536	7580	7624	7668	7712	7756	7800	7844	7 32
58	7888	7932	7976	8020	8064	8108	8152	8197	8241	8285	8 36
59	8329	8373	8417	8461	8505	8549	8593	8637	8681	8725	9 41
9860	8769	8813	8857	8901	8945	8989	9033	9077	9122	9166	
61	9210	9254	9298	9342	9386	9430	9474	9518	9562	9606	
62	9650	9694	9738	9782	9826	9870	9914	9958	0002	0046	
63	994 0090	0134	0178	0222	0266	0310	0355	0399	0443	0487	
64	0531	0575	0619	0663	0707	0751	0795	0839	0883	0927	
9865	0971	1015	1059	1103	1147	1191	1235	1279	1323	1367	44
66	1411	1455	1499	1543	1587	1631	1675	1719	1763	1807	1 4
67	1851	1895	1939	1983	2027	2071	2115	2159	2203	2247	2 9
68	2291	2335	2379	2423	2467	2511	2555	2599	2643	2687	3 13
69	2731	2775	2820	2864	2908	2952	2996	3040	3084	3128	4 18
9870	3172	3216	3260	3304	3348	3392	3436	3480	3524	3568	5 22
71	3612	3656	3700	3744	3788	3831	3875	3919	3963	4007	6 26
72	4051	4095	4139	4183	4227	4271	4315	4359	4403	4447	7 31
73	4491	4535	4579	4623	4667	4711	4755	4799	4843	4887	8 35
74	4931	4975	5019	5063	5107	5151	5195	5239	5283	5327	9 40
9875	5371	5415	5459	5503	5547	5591	5635	5679	5723	5767	
76	5811	5855	5899	5943	5987	6031	6075	6119	6163	6207	
77	6251	6295	6338	6382	6426	6470	6514	6558	6602	6646	
78	6690	6734	6778	6822	6866	6910	6954	6998	7042	7086	
79	7130	7174	7218	7262	7306	7350	7394	7438	7482	7525	
9880	7569	7613	7657	7701	7745	7789	7833	7877	7921	7965	43
81	8009	8053	8097	8141	8185	8229	8273	8317	8361	8405	1 4
82	8448	8492	8536	8580	8624	8668	8712	8756	8800	8844	2 9
83	8888	8932	8976	9020	9064	9108	9152	9196	9239	9283	3 13
84	9327	9371	9415	9459	9503	9547	9591	9635	9679	9723	4 17
9885	9767	9811	9855	9899	9942	9986	0030	0074	0118	0162	5 22
86	995 0206	0250	0294	0338	0382	0426	0470	0514	0557	0601	6 26
87	0645	0689	0733	0777	0821	0865	0909	0953	0997	1041	7 30
88	1085	1128	1172	1216	1260	1304	1348	1392	1436	1480	8 34
89	1524	1568	1612	1656	1699	1743	1787	1831	1875	1919	9 39
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 98900 *to* 99599
Logarithm 995 1963 *to* 998 2550

N.	0	1	2	3	4	5	6	7	8	9	Diff.
9890	995 1963	2007	2051	2095	2139	2182	2226	2270	2314	2358	44
91	2402	2446	2490	2534	2578	2622	2665	2709	2753	2797	1 4
92	2841	2885	2929	2973	3017	3061	3104	3148	3192	3236	2 9
93	3280	3324	3368	3412	3456	3500	3543	3587	3631	3675	3 13
94	3719	3763	3807	3851	3895	3939	3982	4026	4070	4114	4 18
9895	4158	4202	4246	4290	4334	4377	4421	4465	4509	4553	5 22
96	4597	4641	4685	4729	4772	4816	4860	4904	4948	4992	6 26
97	5036	5080	5123	5167	5211	5255	5299	5343	5387	5431	7 31
98	5474	5518	5562	5606	5650	5694	5738	5782	5825	5869	8 35
99	5913	5957	6001	6045	6089	6133	6176	6220	6264	6308	9 40
9900	6352	6396	6440	6484	6527	6571	6615	6659	6703	6747	
01	6791	6834	6878	6922	6966	7010	7054	7098	7142	7185	
02	7229	7273	7317	7361	7405	7449	7492	7536	7580	7624	
03	7668	7712	7755	7799	7843	7887	7931	7975	8019	8062	
04	8106	8150	8194	8238	8282	8326	8369	8413	8457	8501	
9905	8545	8589	8632	8676	8720	8764	8808	8852	8896	8939	43
06	8983	9027	9071	9115	9159	9202	9246	9290	9334	9378	1 4
07	9422	9465	9509	9553	9597	9641	9685	9728	9772	9816	2 9
08	9860	9904	9948	9991	0035	0079	0123	0167	0211	0254	3 13
09	996 0298	0342	0386	0430	0474	0517	0561	0605	0649	0693	4 17
9910	0737	0780	0824	0868	0912	0956	0999	1043	1087	1131	5 22
11	1175	1219	1262	1306	1350	1394	1438	1481	1525	1569	6 26
12	1613	1657	1701	1744	1788	1832	1876	1920	1963	2007	7 30
13	2051	2095	2139	2182	2226	2270	2314	2358	2402	2445	8 34
14	2489	2533	2577	2621	2664	2708	2752	2796	2840	2883	9 39
9915	2927	2971	3015	3059	3102	3146	3190	3234	3278	3321	
16	3365	3409	3453	3497	3540	3584	3628	3672	3716	3759	
17	3803	3847	3891	3935	3978	4022	4066	4110	4153	4197	
18	4241	4285	4329	4372	4416	4460	4504	4548	4591	4635	
19	4679	4723	4766	4810	4854	4898	4942	4985	5029	5073	
9920	5117	5161	5204	5248	5292	5336	5379	5423	5467	5511	44
21	5554	5598	5642	5686	5730	5773	5817	5861	5905	5948	1 4
22	5992	6036	6080	6124	6167	6211	6255	6299	6342	6386	2 9
23	6430	6474	6517	6561	6605	6649	6693	6736	6780	6824	3 13
24	6868	6911	6955	6999	7043	7086	7130	7174	7218	7261	4 18
9925	7305	7349	7393	7436	7480	7524	7568	7611	7655	7699	5 22
26	7743	7786	7830	7874	7918	7961	8005	8049	8093	8136	6 26
27	8180	8224	8268	8311	8355	8399	8443	8486	8530	8574	7 31
28	8618	8661	8705	8749	8793	8836	8880	8924	8968	9011	8 35
29	9055	9099	9143	9186	9230	9274	9318	9361	9405	9449	9 40
9930	9492	9536	9580	9624	9667	9711	9755	9799	9842	9886	
31	9930	9974	0017	0061	0105	0148	0192	0236	0280	0323	
32	997 0367	0411	0455	0498	0542	0586	0629	0673	0717	0761	
33	0804	0848	0892	0936	0979	1023	1067	1110	1154	1198	
34	1242	1285	1329	1373	1416	1460	1504	1548	1591	1635	
9935	1679	1722	1766	1810	1854	1897	1941	1985	2028	2072	43
36	2116	2160	2203	2247	2291	2334	2378	2422	2465	2509	1 4
37	2553	2597	2640	2684	2728	2771	2815	2859	2903	2946	2 9
38	2990	3034	3077	3121	3165	3208	3252	3296	3340	3383	3 13
39	3427	3471	3514	3558	3602	3645	3689	3733	3776	3820	4 17
9940	3864	3908	3951	3995	4039	4082	4126	4170	4213	4257	5 22
41	4301	4344	4388	4432	4475	4519	4563	4607	4650	4694	6 26
42	4738	4781	4825	4869	4912	4956	5000	5043	5087	5131	7 30
43	5174	5218	5262	5305	5349	5393	5436	5480	5524	5567	8 34
44	5611	5655	5699	5742	5786	5830	5873	5917	5961	6004	9 39
9945	6048	6092	6135	6179	6223	6266	6310	6354	6397	6441	
46	6485	6528	6572	6616	6659	6703	6747	6790	6834	6878	
47	6921	6965	7009	7052	7096	7139	7183	7227	7270	7314	
48	7358	7401	7445	7489	7532	7576	7620	7663	7707	7751	
49	7794	7838	7882	7925	7969	8013	8056	8100	8144	8187	
9950	8231	8274	8318	8362	8405	8449	8493	8536	8580	8624	44
51	8667	8711	8755	8798	8842	8885	8929	8973	9016	9060	1 4
52	9104	9147	9191	9235	9278	9322	9365	9409	9453	9496	2 9
53	9540	9584	9627	9671	9715	9758	9802	9845	9889	9933	3 13
54	9976	0020	0064	0107	0151	0195	0238	0282	0325	0369	4 18
9955	998 0413	0456	0500	0544	0587	0631	0674	0718	0762	0805	5 22
56	0849	0893	0936	0980	1023	1067	1111	1154	1198	1241	6 26
57	1285	1329	1372	1416	1460	1503	1547	1590	1634	1678	7 31
58	1721	1765	1808	1852	1896	1939	1983	2026	2070	2114	8 35
59	2157	2201	2245	2288	2332	2375	2419	2463	2506	2550	9 40
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 99600 *to* 100299
Logarithm 998 2593 *to* 0012 9660

N.	0	1	2	3	4	5	6	7	8	9	Diff.
9960	998 2593	2637	2681	2724	2768	2811	2855	2899	2942	2986	44
61	3029	3073	3117	3160	3204	3247	3291	3335	3378	3422	1 4
62	3465	3509	3553	3596	3640	3683	3727	3771	3814	3858	2 9
63	3901	3945	3988	4032	4076	4119	4163	4206	4250	4294	3 13
64	4337	4381	4424	4468	4512	4555	4599	4642	4686	4729	4 18
9965	4773	4817	4860	4904	4947	4991	5035	5078	5122	5165	5 22
66	5209	5252	5296	5340	5383	5427	5470	5514	5557	5601	6 26
67	5645	5688	5732	5775	5819	5862	5906	5950	5993	6037	7 31
68	6080	6124	6167	6211	6255	6298	6342	6385	6429	6472	8 35
69	6516	6560	6603	6647	6690	6734	6777	6821	6864	6908	9 40
9970	6952	6995	7039	7082	7126	7169	7213	7256	7300	7344	
71	7387	7431	7474	7518	7561	7605	7648	7692	7736	7779	
72	7823	7866	7910	7953	7997	8040	8084	8128	8171	8215	
73	8258	8302	8345	8389	8432	8476	8519	8563	8607	8650	43
74	8694	8737	8781	8824	8868	8911	8955	8998	9042	9086	1 4
9975	9129	9173	9216	9260	9303	9347	9390	9434	9477	9521	2 9
76	9564	9608	9651	9695	9739	9782	9826	9869	9913	9956	3 13
77	999 0000	0043	0087	0130	0174	0217	0261	0304	0348	0391	4 17
78	0435	0479	0522	0566	0609	0653	0696	0740	0783	0827	5 22
79	0870	0914	0957	1001	1044	1088	1131	1175	1218	1262	6 26
9980	1305	1349	1392	1436	1479	1523	1567	1610	1654	1697	7 30
81	1741	1784	1828	1871	1915	1958	2002	2045	2089	2132	8 34
82	2176	2219	2263	2306	2350	2393	2437	2480	2524	2567	9 39
83	2611	2654	2698	2741	2785	2828	2872	2915	2959	3002	
84	3046	3089	3133	3176	3220	3263	3307	3350	3394	3437	
9985	3481	3524	3568	3611	3655	3698	3742	3785	3829	3872	44
86	3916	3959	4003	4046	4090	4133	4177	4220	4264	4307	1 4
87	4350	4394	4437	4481	4524	4568	4611	4655	4698	4742	2 9
88	4785	4829	4872	4916	4959	5003	5046	5090	5133	5177	3 13
89	5220	5264	5307	5351	5394	5438	5481	5524	5568	5611	4 18
9990	5655	5698	5742	5785	5829	5872	5916	5959	6003	6046	5 22
91	6090	6133	6177	6220	6263	6307	6350	6394	6437	6481	6 26
92	6524	6568	6611	6655	6698	6742	6785	6828	6872	6915	7 31
93	6959	7002	7046	7089	7133	7176	7220	7263	7307	7350	8 35
94	7393	7437	7480	7524	7567	7611	7654	7698	7741	7785	9 40
9995	7828	7871	7915	7958	8002	8045	8089	8132	8176	8219	
96	8262	8306	8349	8393	8436	8480	8523	8567	8610	8653	435
97	8697	8740	8784	8827	8871	8914	8958	9001	9044	9088	1 44
98	9131	9175	9218	9262	9305	9349	9392	9435	9479	9522	2 87
99	9566	9609	9653	9696	9739	9783	9826	9870	9913	9957	3 131
10000	0000 0000	0434	0869	1303	1737	2171	2606	3040	3474	3908	4 174
01	4343	4777	5211	5645	6080	6514	6948	7382	7817	8251	5 218
02	8685	9119	9553	9988	0422	0856	1290	1724	2159	2593	6 261
03	0001 3027	3461	3895	4329	4764	5198	5632	6066	6500	6934	7 305
04	7368	7802	8237	8671	9105	9539	9973	0407	0841	1275	8 348
10005	0002 1709	2143	2577	3012	3446	3880	4314	4748	5182	5616	9 392
06	6050	6484	6918	7352	7786	8220	8654	9088	9522	9956	
07	0003 0390	0824	1258	1692	2126	2560	2994	3428	3862	4296	
08	4730	5164	5598	6031	6465	6899	7333	7767	8201	8635	434
09	9069	9503	9937	0371	0805	1238	1672	2106	2540	2974	1 43
10010	0004 3408	3842	4275	4709	5143	5577	6011	6445	6878	7312	2 87
11	7746	8180	8614	9048	9481	9915	0349	0783	1217	1650	3 130
12	0005 2084	2518	2952	3385	3819	4253	4687	5120	5554	5988	4 174
13	6422	6855	7289	7723	8157	8590	9024	9458	9891	0325	5 217
14	0006 0759	1192	1626	2060	2493	2927	3361	3794	4228	4662	6 260
10015	5095	5529	5963	6396	6830	7264	7697	8131	8564	8998	7 304
16	9432	9865	0299	0732	1166	1600	2033	2467	2900	3334	8 347
17	0007 3767	4201	4634	5068	5502	5935	6369	6802	7236	7669	9 391
18	8103	8536	8970	9403	9837	0270	0704	1137	1571	2004	
19	0008 2438	2871	3305	3738	4172	4605	5038	5472	5905	6339	
10020	6772	7206	7639	8072	8506	8939	9373	9806	0239	0673	433
21	0009 1106	1540	1973	2406	2840	3273	3706	4140	4573	5006	1 43
22	5440	5873	6307	6740	7173	7606	8040	8473	8906	9340	2 87
23	9773	0206	0640	1073	1506	1939	2373	2806	3239	3673	3 130
24	0010 4106	4539	4972	5406	5839	6272	6705	7138	7572	8005	4 173
10025	8438	8871	9305	9738	0171	0604	1037	1471	1904	2337	5 217
26	0011 2770	3203	3636	4070	4503	4936	5369	5802	6235	6668	6 260
27	7101	7535	7968	8401	8834	9267	9700	0133	0566	0999	7 303
28	0012 1433	1866	2299	2732	3165	3598	4031	4464	4897	5330	8 346
29	5763	6196	6629	7062	7495	7928	8361	8794	9227	9660	9 390
N.	0	1	2	3	4	5	6	7	8	9	Diff.

Number 100300 *to* 100999
Logarithm 0013 0093 *to* 0042 1707

N.	0	1	2	3	4	5	6	7	8	9	Diff.
10030	0013 0093	0526	0959	1392	1825	2258	2691	3124	3557	3990	433
31	4423	4856	5289	5722	6155	6588	7021	7454	7887	8319	1 43
32	8752	9185	9618	0051	0484	0917	1350	1783	2215	2648	2 87
33	0014 3081	3514	3947	4380	4813	5246	5678	6111	6544	6977	3 130
34	7410	7842	8275	8708	9141	9574	0007	0439	0872	1305	4 173
10035	0015 1738	2170	2603	3036	3469	3902	4334	4767	5200	5633	5 217
36	6065	6498	6931	7363	7796	8229	8662	9094	9527	9960	6 260
37	0016 0392	0825	1258	1690	2123	2556	2988	3421	3854	4286	7 303
38	4719	5152	5584	6017	6450	6882	7315	7748	8180	8613	8 346
39	9045	9478	9911	0343	0776	1208	1641	2074	2506	2939	9 390
10040	0017 3371	3804	4236	4669	5102	5534	5967	6399	6832	7264	
41	7697	8129	8562	8994	9427	9859	0292	0724	1157	1589	
42	0018 2022	2454	2887	3319	3752	4184	4616	5049	5481	5914	432
43	6346	6779	7211	7644	8076	8508	8941	9373	9806	0238	1 43
44	0019 0670	1103	1535	1968	2400	2832	3265	3697	4129	4562	2 86
10045	4994	5426	5859	6291	6723	7156	7588	8020	8453	8885	3 130
46	9317	9750	0182	0614	1047	1479	1911	2343	2776	3208	4 173
47	0020 3640	4072	4505	4937	5369	5801	6234	6666	7098	7530	5 216
48	7963	8395	8827	9259	9691	0124	0556	0988	1420	1852	6 259
49	0021 2285	2717	3149	3581	4013	4445	4878	5310	5742	6174	7 302
10050	6606	7038	7470	7903	8335	8767	9199	9631	0063	0495	8 346
51	0022 0927	1359	1791	2224	2656	3088	3520	3952	4384	4816	9 389
52	5248	5680	6112	6544	6976	7408	7840	8272	8704	9136	
53	9568	0000	0432	0864	1296	1728	2160	2592	3024	3456	
54	0023 3888	4320	4752	5184	5616	6048	6480	6912	7344	7776	
10055	8207	8639	9071	9503	9935	0367	0799	1231	1663	2095	431
56	0024 2526	2958	3390	3822	4254	4686	5118	5549	5981	6413	1 43
57	6845	7277	7709	8140	8572	9004	9436	9868	0300	0731	2 86
58	0025 1163	1595	2027	2458	2890	3322	3754	4186	4617	5049	3 129
59	5481	5913	6344	6776	7208	7639	8071	8503	8935	9366	4 172
10060	9798	0230	0661	1093	1525	1957	2388	2820	3252	3683	5 216
61	0026 4115	4547	4978	5410	5842	6273	6705	7136	7568	8000	6 259
62	8431	8863	9295	9726	0158	0589	1021	1453	1884	2316	7 302
63	0027 2747	3179	3610	4042	4474	4905	5337	5768	6200	6631	8 345
64	7063	7494	7926	8357	8789	9220	9652	0083	0515	0946	9 388
10065	0028 1378	1809	2241	2672	3104	3535	3967	4398	4830	5261	
66	5693	6124	6555	6987	7418	7850	8281	8713	9144	9575	432
67	0029 0007	0438	0870	1301	1732	2164	2595	3027	3458	3889	1 43
68	4321	4752	5183	5615	6046	6477	6909	7340	7771	8203	2 86
69	8634	9065	9497	9928	0359	0791	1222	1653	2084	2516	3 130
10070	0030 2947	3378	3810	4241	4672	5103	5535	5966	6397	6828	4 173
71	7260	7691	8122	8553	8984	9416	9847	0278	0709	1141	5 216
72	0031 1572	2003	2434	2865	3296	3728	4159	4590	5021	5452	6 259
73	5883	6315	6746	7177	7608	8039	8470	8901	9332	9764	7 302
74	0032 0195	0626	1057	1488	1919	2350	2781	3212	3643	4074	8 346
10075	4505	4937	5368	5799	6230	6661	7092	7523	7954	8385	9 389
76	8816	9247	9678	0109	0540	0971	1402	1833	2264	2695	
77	0033 3126	3557	3988	4419	4850	5281	5712	6143	6574	7004	
78	7435	7866	8297	8728	9159	9590	0021	0452	0883	1314	431
79	0034 1745	2175	2606	3037	3468	3899	4330	4761	5192	5622	1 43
10080	6053	6484	6915	7346	7777	8207	8638	9069	9500	9931	2 86
81	0035 0361	0792	1223	1654	2085	2515	2946	3377	3808	4239	3 129
82	4669	5100	5531	5962	6392	6823	7254	7685	8115	8546	4 172
83	8977	9407	9838	0269	0700	1130	1561	1992	2422	2853	5 216
84	0036 3284	3714	4145	4576	5006	5437	5868	6298	6729	7160	6 259
10085	7590	8021	8452	8882	9313	9743	0174	0605	1035	1466	7 302
86	0037 1896	2327	2758	3188	3619	4049	4480	4910	5341	5772	8 345
87	6202	6633	7063	7494	7924	8355	8785	9216	9646	0077	9 388
88	0038 0507	0938	1368	1799	2229	2660	3090	3521	3951	4382	
89	4812	5243	5673	6104	6534	6964	7395	7825	8256	8686	
10090	9117	9547	9977	0408	0838	1269	1699	2129	2560	2990	430
91	0039 3421	3851	4281	4712	5142	5572	6003	6433	6864	7294	1 43
92	7724	8155	8585	9015	9445	9876	0306	0736	1167	1597	2 86
93	0040 2027	2458	2888	3318	3748	4179	4609	5039	5470	5900	3 129
94	6330	6760	7191	7621	8051	8481	8911	9342	9772	0202	4 172
10095	0041 0632	1063	1493	1923	2353	2783	3213	3644	4074	4504	5 215
96	4934	5364	5795	6225	6655	7085	7515	7945	8375	8806	6 258
97	9236	9666	0096	0526	0956	1386	1816	2246	2676	3107	7 301
98	0042 3537	3967	4397	4827	5257	5687	6117	6547	6977	7407	8 344
99	7837	8267	8697	9127	9557	9987	0417	0847	1277	1707	9 387
N.	0	1	2	3	4	5	6	7	8	9	Diff.

A

TABLE

OF

LOGARITHMIC

SINES AND TANGENTS

TO

EVERY SECOND OF THE QUADRANT.

o Deg. Sine

"	0′	1′	2′	3′	4′	5′	6′	7′
		6.	6.	6.	7.	7.	7.	7.
0		4637261	7647561	9408473	0657860	1626960	2418771	3088239
1	4.6855749	4709047	7683602	9432534	0675918	1641412	2430818	3098567
2	4.9866049	4779665	7719347	9456462	0693901	1655817	2442832	3108870
3	5.1626961	4849154	7754800	9480259	0711810	1670173	2454813	3119149
4	5.2876349	4917548	7789965	9503926	0729646	1684483	2466760	3129404
5	5.3845449	4984882	7824849	9527465	0747408	1698745	2478675	3139635
6	5.4637261	5051188	7859454	9550878	0765099	1712961	2490557	3149842
7	5.5306729	5116497	7893786	9574164	0782717	1727131	2502407	3160024
8	5.5886649	5180838	7927848	9597327	0800264	1741254	2514225	3170183
9	5.6398174	5244239	7961645	9620366	0817741	1755332	2526010	3180318
10	5.6855749	5306729	7995182	9643284	0835148	1769364	2537764	3190430
11	5.7269676	5368332	8028461	9666082	0852485	1783351	2549485	3200518
12	5.7647561	5429074	8061488	9688760	0869753	1797293	2561176	3210583
13	5.7995182	5488977	8094265	9711321	0886953	1811190	2572835	3220624
14	5.8317029	5548066	8126796	9733765	0904085	1825043	2584462	3230643
15	5.8616661	5606361	8159086	9756094	0921149	1838853	2596059	3240638
16	5.8896948	5663884	8191137	9778309	0938147	1852618	2607625	3250610
17	5.9160238	5720656	8222954	9800410	0955079	1866340	2619160	3260560
18	5.9408474	5776695	8254539	9822400	0971945	1880018	2630664	3270487
19	5.9643285	5832019	8285896	9844279	0988745	1893654	2642138	3280391
20	5.9866049	5886648	8317029	9866048	1005481	1907247	2653582	3290272
21	6.0077942	5940599	8347939	9887709	1022153	1920797	2664996	3300131
22	6.0279975	5993887	8378632	9909262	1038760	1934306	2676380	3309968
23	6.0473027	6046529	8409109	9930708	1055305	1947772	2687734	3319783
24	6.0657861	6098541	8439373	9952050	1071787	1961197	2699058	3329575
25	6.0835149	6149938	8469428	9973287	1088206	1974580	2710353	3339345
26	6.1005482	6200733	8499277	9994420	1104564	1987923	2721619	3349094
27	6.1169386	6250941	8528922	0015451	1120860	2001224	2732856	3358821
28	6.1327329	6300575	8558365	0036381	1137095	2014485	2744063	3368525
29	6.1479729	6349649	8587611	0057211	1153270	2027706	2755242	3378209
30	6.1626961	6398174	8616661	0077941	1169385	2040886	2766392	3387870
31	6.1769366	6446162	8645518	0098572	1185440	2054027	2777514	3397511
32	6.1907248	6493627	8674184	0119107	1201436	2067128	2788607	3407130
33	6.2040888	6540578	8702663	0139544	1217374	2080189	2799672	3416727
34	6.2170538	6587027	8730955	0159886	1233253	2093211	2810708	3426304
35	6.2296429	6632985	8759065	0180132	1249074	2106195	2821717	3435859
36	6.2418774	6678461	8786994	0200285	1264838	2119140	2832698	3445394
37	6.2537766	6723466	8814745	0220345	1280545	2132046	2843651	3454907
38	6.2653585	6768009	8842319	0240313	1296195	2144914	2854577	3464400
39	6.2766395	6812100	8869719	0260189	1311789	2157744	2865475	3473872
40	6.2876349	6855748	8896948	0279975	1327328	2170536	2876346	3483323
41	6.2983587	6898962	8924007	0299671	1342811	2183290	2887190	3492754
42	6.3088242	6941750	8950898	0319278	1358238	2196008	2898006	3502165
43	6.3190433	6984121	8977624	0338796	1373612	2208688	2908796	3511555
44	6.3290275	7026082	9004187	0358228	1388931	2221331	2919560	3520925
45	6.3387874	7067641	9030588	0377573	1404196	2233938	2930296	3530275
46	6.3483327	7108807	9056829	0396832	1419408	2246508	2941006	3539604
47	6.3576727	7149586	9082913	0416006	1434566	2259041	2951690	3548914
48	6.3668161	7189986	9108841	0435096	1449672	2271539	2962347	3558203
49	6.3757709	7230013	9134615	0454103	1464726	2284001	2972979	3567473
50	6.3845449	7269675	9160237	0473026	1479727	2296427	2983584	3576723
51	6.3931450	7308978	9185709	0491868	1494677	2308818	2994164	3585954
52	6.4015782	7347929	9211033	0510628	1509576	2321173	3004718	3595165
53	6.4098507	7386533	9236209	0529307	1524423	2333494	3015246	3604356
54	6.4179686	7424797	9261241	0547906	1539221	2345779	3025749	3613528
55	6.4259376	7462727	9286129	0566426	1553967	2358030	3036227	3622681
56	6.4337629	7500328	9310875	0584868	1568664	2370246	3046679	3631814
57	6.4414497	7537607	9335481	0603231	1583312	2382429	3057106	3640929
58	6.4490029	7574569	9359948	0621517	1597910	2394577	3067509	3650024
59	6.4564269	7611218	9384278	0639727	1612459	2406691	3077886	3659100
60	6.4637261	7647561	9408473	0657860	1626960	2418771	3088239	3668157
"	59′	58′	57′	56′	55′	54′	53′	52′

Co-Sine Deg. 89

o Deg. Co-Sine

0′	1′	2′	3′	4′	5′	6′	7′	"
10.	10.	9.	9.	9.	9.	9.	9.	
0000000	0000000	9999999	9999998	9999997	9999995	9999993	9999991	60
0000000	0000000	9999999	9999998	9999997	9999995	9999993	9999991	59
0000000	0000000	9999999	9999998	9999997	9999995	9999993	9999991	58
0000000	0000000	9999999	9999998	9999997	9999995	9999993	9999991	57
0000000	0000000	9999999	9999998	9999997	9999995	9999993	9999991	56
0000000	0000000	9999999	9999998	9999997	9999995	9999993	9999991	55
0000000	0000000	9999999	9999998	9999997	9999995	9999993	9999991	54
0000000	0000000	9999999	9999998	9999997	9999995	9999993	9999991	53
0000000	0000000	9999999	9999998	9999997	9999995	9999993	9999991	52
0000000	0000000	9999999	9999998	9999997	9999995	9999993	9999991	51
0000000	0000000	9999999	9999998	9999997	9999995	9999993	9999991	50
0000000	0000000	9999999	9999998	9999997	9999995	9999993	9999991	49
0000000	0000000	9999999	9999998	9999997	9999995	9999993	9999990	48
0000000	0000000	9999999	9999998	9999997	9999995	9999993	9999990	47
0000000	0000000	9999999	9999998	9999997	9999995	9999993	9999990	46
0000000	0000000	9999999	9999998	9999997	9999995	9999993	9999990	45
0000000	0000000	9999999	9999998	9999997	9999995	9999993	9999990	44
0000000	0000000	9999999	9999998	9999997	9999995	9999993	9999990	43
0000000	0000000	9999999	9999998	9999997	9999995	9999993	9999990	42
0000000	0000000	9999999	9999998	9999997	9999995	9999993	9999990	41
0000000	0000000	9999999	9999998	9999997	9999995	9999993	9999990	40
0000000	0000000	9999999	9999998	9999997	9999995	9999993	9999990	39
0000000	0000000	9999999	9999998	9999996	9999995	9999993	9999990	38
0000000	0000000	9999999	9999998	9999996	9999995	9999993	9999990	37
0000000	0000000	9999999	9999998	9999996	9999995	9999992	9999990	36
0000000	0000000	9999999	9999998	9999996	9999995	9999992	9999990	35
0000000	0000000	9999999	9999998	9999996	9999995	9999992	9999990	34
0000000	0000000	9999999	9999998	9999996	9999995	9999992	9999990	33
0000000	0000000	9999999	9999998	9999996	9999995	9999992	9999990	32
0000000	0000000	9999999	9999998	9999996	9999994	9999992	9999990	31
0000000	0000000	9999999	9999998	9999996	9999994	9999992	9999990	30
0000000	0000000	9999999	9999998	9999996	9999994	9999992	9999990	29
0000000	0000000	9999999	9999998	9999996	9999994	9999992	9999990	28
0000000	0000000	9999999	9999998	9999996	9999994	9999992	9999990	27
0000000	0000000	9999999	9999998	9999996	9999994	9999992	9999989	26
0000000	0000000	9999999	9999998	9999996	9999994	9999992	9999989	25
0000000	0000000	9999999	9999998	9999996	9999994	9999992	9999989	24
0000000	0000000	9999999	9999998	9999996	9999994	9999992	9999989	23
0000000	0000000	9999999	9999998	9999996	9999994	9999992	9999989	22
0000000	9999999	9999999	9999998	9999996	9999994	9999992	9999989	21
0000000	9999999	9999999	9999998	9999996	9999994	9999992	9999989	20
0000000	9999999	9999999	9999998	9999996	9999994	9999992	9999989	19
0000000	9999999	9999999	9999997	9999996	9999994	9999992	9999989	18
0000000	9999999	9999999	9999997	9999996	9999994	9999992	9999989	17
0000000	9999999	9999999	9999997	9999996	9999994	9999992	9999989	16
0000000	9999999	9999999	9999997	9999996	9999994	9999992	9999989	15
0000000	9999999	9999999	9999997	9999996	9999994	9999992	9999989	14
0000000	9999999	9999999	9999997	9999996	9999994	9999992	9999989	13
0000000	9999999	9999999	9999997	9999996	9999994	9999992	9999989	12
0000000	9999999	9999999	9999997	9999996	9999994	9999991	9999989	11
0000000	9999999	9999999	9999997	9999996	9999994	9999991	9999989	10
0000000	9999999	9999999	9999997	9999996	9999994	9999991	9999989	9
0000000	9999999	9999998	9999997	9999996	9999994	9999991	9999989	8
0000000	9999999	9999998	9999997	9999996	9999994	9999991	9999989	7
0000000	9999999	9999998	9999997	9999996	9999994	9999991	9999989	6
0000000	9999999	9999998	9999997	9999996	9999994	9999991	9999988	5
0000000	9999999	9999998	9999997	9999996	9999994	9999991	9999988	4
0000000	9999999	9999998	9999997	9999995	9999993	9999991	9999988	3
0000000	9999999	9999998	9999997	9999995	9999993	9999991	9999988	2
0000000	9999999	9999998	9999997	9999995	9999993	9999991	9999988	1
0000000	9999999	9999998	9999997	9999995	9999993	9999991	9999988	0
59′	58′	57′	56′	55′	54′	53′	52′	"

Sine Deg. 89

o Deg. Tangent

"	0′	1′	2′	3′	4′	5′	6′	7′
		6.	6.	6.	7.	7.	7.	7.
0		4637261	7647562	9408475	0657863	1626964	2418778	3088248
1	4. 6855749	4709047	7683603	9432536	0675921	1641417	2430825	3098576
2	4. 9866049	4779666	7719347	9456464	0693904	1655821	2442839	3108879
3	5. 1626961	4849154	7754800	9480261	0711813	1670178	2454819	3119158
4	5. 2876349	4917549	7789966	9503928	0729649	1684488	2466767	3129413
5	5. 3845449	4984882	7824849	9527467	0747412	1698750	2478682	3139644
6	5. 4637261	5051188	7859455	9550879	0765102	1712966	2490564	3149851
7	5. 5306729	5116497	7893786	9574166	0782720	1727136	2502414	3160034
8	5. 5886649	5180838	7927849	9597328	0800268	1741259	2514231	3170193
9	5. 6398174	5244240	7961646	9620368	0817744	1755337	2526017	3180328
10	5. 6855749	5306729	7995183	9643286	0835151	1769369	2537771	3190440
11	5. 7269676	5368332	8028462	9666084	0852488	1783356	2549492	3200528
12	5. 7647561	5429074	8061489	9688762	0869756	1797298	2561183	3210592
13	5. 7995182	5488977	8094266	9711323	0886956	1811195	2572842	3220634
14	5. 8317029	5548066	8126797	9733767	0904088	1825049	2584469	3230652
15	5. 8616661	5606361	8159087	9756096	0921153	1838858	2596066	3240648
16	5. 8896948	5663885	8191138	9778311	0938151	1852623	2607632	3250620
17	5. 9160238	5720656	8222955	9800412	0955082	1866345	2619167	3260570
18	5. 9408474	5776695	8254540	9822402	0971948	1880023	2630672	3270496
19	5. 9643285	5832020	8285897	9844281	0988749	1893659	2642146	3280400
20	5. 9866049	5886649	8317030	9866050	1005484	1907252	2653590	3290282
21	6. 0077942	5940599	8347940	9887711	1022156	1920802	2665003	3300141
22	6. 0279975	5993887	8378633	9909264	1038764	1934311	2676387	3309978
23	6. 0473027	6046530	8409110	9930710	1055309	1947777	2687741	3319793
24	6. 0657861	6098542	8439374	9952052	1071790	1961202	2699066	3329585
25	6. 0835149	6149938	8469429	9973289	1088210	1974586	2710361	3339356
26	6. 1005482	6200733	8499278	9994422	1104567	1987928	2721627	3349104
27	6. 1169386	6250941	8528923	0015454	1120864	2001230	2732863	3358831
28	6. 1327329	6300576	8558367	0036383	1137099	2014491	2744071	3368536
29	6. 1479729	6349649	8587612	0057213	1153274	2027711	2755250	3378219
30	6. 1626961	6398174	8616662	0077943	1169389	2040892	2766400	3387881
31	6. 1769366	6446163	8645519	0098575	1185444	2054032	2777521	3397521
32	6. 1907248	6493627	8674185	0119109	1201440	2067133	2788615	3407140
33	6. 2040888	6540578	8702664	0139546	1217378	2080195	2799679	3416738
34	6. 2170538	6587027	8730957	0159888	1233257	2093217	2810716	3426314
35	6. 2296429	6632985	8759066	0180135	1249078	2106201	2821725	3435870
36	6. 2418774	6678461	8786995	0200288	1264842	2119145	2832706	3445404
37	6. 2537766	6723466	8814746	0220348	1280549	2132052	2843659	3454918
38	6. 2653585	6768010	8842320	0240315	1296199	2144920	2854585	3464411
39	6. 2766395	6812101	8869721	0260191	1311793	2157750	2865483	3473883
40	6. 2876349	6855749	8896949	0279977	1327332	2170542	2876354	3483334
41	6. 2983587	6898963	8924008	0299673	1342815	2183296	2887198	3492765
42	6. 3088242	6941751	8950900	0319280	1358242	2196014	2898015	3502176
43	6. 3190433	6984121	8977626	0338799	1373616	2208694	2908805	3511566
44	6. 3290275	7026082	9004188	0358231	1388935	2221337	2919568	3520936
45	6. 3387874	7067642	9030589	0377576	1404200	2233944	2930304	3530286
46	6. 3483327	7108808	9056830	0396835	1419412	2246514	2941015	3539615
47	6. 3576727	7149587	9082914	0416009	1434570	2259048	2951698	3548925
48	6. 3668161	7189987	9108842	0435099	1449676	2271545	2962356	3558215
49	6. 3757709	7230014	9134617	0454105	1464730	2284007	2972987	3567485
50	6. 3845449	7269676	9160239	0473029	1479732	2296433	2983593	3576735
51	6. 3931450	7308979	9185711	0491870	1494681	2308824	2994173	3585965
52	6. 4015782	7347929	9211034	0510630	1509580	2321180	3004727	3595176
53	6. 4098507	7386534	9236211	0529310	1524428	2333500	3015255	3604368
54	6. 4179686	7424798	9261242	0547909	1539225	2345786	3025758	3613540
55	6. 4259376	7462728	9286130	0566429	1553972	2358036	3036235	3622692
56	6. 4337629	7500329	9310876	0584871	1568669	2370253	3046688	3631826
57	6. 4414497	7537608	9335482	0603234	1583316	2382435	3057115	3640940
58	6. 4490029	7574570	9359950	0621520	1597914	2394583	3067517	3650035
59	6. 4564269	7611219	9384280	0639730	1612464	2406698	3077895	3659112
60	6. 4637261	7647562	9408475	0657863	1626964	2418778	3088248	3668169
"	59′	58′	57′	56′	55′	54′	53′	52′

Co-Tangent Deg. 89

o Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	"
	13.	13.	13.	12.	12.	12.	12.	
Infinite	5362739	2352438	0591525	9342137	8373036	7581222	6911752	60
15. 3144251	5290953	2316397	0567464	9324079	8358583	7569175	6901424	59
15. 0133951	5220334	2280653	0543536	9306096	8344179	7557161	6891121	58
14. 8373039	5150846	2245200	0519739	9288187	8329822	7545181	6880842	57
14. 7123651	5082451	2210034	0496072	9270351	8315512	7533233	6870587	56
14. 6154551	5015118	2175151	0472533	9252588	8301250	7521318	6860356	55
14. 5362739	4948812	2140545	0449121	9234898	8287034	7509436	6850149	54
14. 4693271	4883503	2106214	0425834	9217280	8272864	7497586	6839966	53
14. 4113351	4819162	2072151	0402672	9199732	8258741	7485769	6829807	52
14. 3601826	4755760	2038354	0379632	9182256	8244663	7473983	6819672	51
14. 3144251	4693271	2004817	0356714	9164849	8230631	7462229	6809560	50
14. 2730324	4631668	1971538	0333916	9147512	8216644	7450508	6799472	49
14. 2352439	4570926	1938511	0311238	9130244	8202702	7438817	6789408	48
14. 2004818	4511023	1905734	0288677	9113044	8188805	7427158	6779366	47
14. 1682971	4451934	1873203	0266233	9095912	8174951	7415531	6769348	46
14. 1383339	4393639	1840913	0243904	9078847	8161142	7403934	6759352	45
14. 1103052	4336115	1808862	0221689	9061849	8147377	7392368	6749380	44
14. 0839762	4279344	1777045	0199588	9044918	8133655	7380833	6739430	43
14. 0591526	4223305	1745460	0177598	9028052	8119977	7369328	6729504	42
14. 0356715	4167980	1714103	0155719	9011251	8106341	7357854	6719600	41
14. 0133951	4113351	1682970	0133950	8994516	8092748	7346410	6709718	40
13. 9922058	4059401	1652060	0112289	8977844	8079198	7334997	6699859	39
13. 9720025	4006113	1621367	0090736	8961236	8065689	7323613	6690022	38
13. 9526973	3953470	1590890	0069290	8944691	8052223	7312259	6680207	37
13. 9342139	3901458	1560626	0047948	8928210	8038798	7300934	6670415	36
13. 9164851	3850062	1530571	0026711	8911790	8025414	7289639	6660644	35
13. 8994518	3799267	1500722	0005578	8895433	8012072	7278373	6650896	34
13. 8830614	3749059	1471077	9984546	8879136	7998770	7267137	6641169	33
13. 8672671	3699424	1441633	9963617	8862901	7985509	7255929	6631464	32
13. 8520271	3650351	1412388	9942787	8846726	7972289	7244750	6621781	31
13. 8373039	3601826	1383338	9922057	8830611	7959108	7233600	6612119	30
13. 8230634	3553837	1354481	9901425	8814556	7945968	7222479	6602479	29
13. 8092752	3506373	1325815	9880891	8798560	7932867	7211385	6592860	28
13. 7959112	3459422	1297336	9860454	8782622	7919805	7200321	6583262	27
13. 7829462	3412973	1269043	9840112	8766743	7906783	7189284	6573686	26
13. 7703571	3367015	1240934	9819865	8750922	7893799	7178275	6564130	25
13. 7581226	3321539	1213005	9799712	8735158	7880855	7167294	6554596	24
13. 7462234	3276534	1185254	9779652	8719451	7867948	7156341	6545082	23
13. 7346415	3231990	1157680	9759685	8703801	7855080	7145415	6535589	22
13. 7233605	3187899	1130279	9739809	8688207	7842250	7134517	6526117	21
13. 7123651	3144251	1103051	9720023	8672668	7829458	7123646	6516666	20
13. 7016413	3101037	1075992	9700327	8657185	7816704	7112802	6507235	19
13. 6911758	3058249	1049100	9680720	8641758	7803986	7101985	6497824	18
13. 6809567	3015879	1022374	9661201	8626384	7791306	7091195	6488434	17
13. 6709725	2973918	0995812	9641769	8611065	7778663	7080432	6479064	16
13. 6612126	2932358	0969411	9622424	8595800	7766056	7069696	6469714	15
13. 6516673	2891192	0943170	9603165	8580588	7753486	7058985	6460385	14
13. 6423273	2850413	0917086	9583991	8565430	7740952	7048302	6451075	13
13. 6331839	2810013	0891158	9564901	8550324	7728455	7037644	6441785	12
13. 6242291	2769986	0865383	9545895	8535270	7715993	7027013	6432515	11
13. 6154551	2730324	0839761	9526971	8520268	7703567	7016407	6423265	10
13. 6068550	2691021	0814289	9508130	8505319	7691176	7005827	6414035	9
13. 5984218	2652071	0788966	9489370	8490420	7678820	6995273	6404824	8
13. 5901493	2613466	0763789	9470690	8475572	7666500	6984745	6395632	7
13. 5820314	2575202	0738758	9452091	8460775	7654214	6974242	6386460	6
13. 5740624	2537272	0713870	9433571	8446028	7641964	6963765	6377308	5
13. 5662371	2499671	0689124	9415129	8431331	7629747	6953312	6368174	4
13. 5585503	2462392	0664518	9396766	8416684	7617565	6942885	6359060	3
13. 5509971	2425430	0640050	9378480	8402086	7605417	6932483	6349965	2
13. 5435731	2388781	0615720	9360270	8387536	7593302	6922105	6340888	1
13. 5362739	2352438	0591525	9342137	8373036	7581222	6911752	6331831	0
59′	58′	57′	56′	55′	54′	53′	52′	"

Tangent Deg. 89

0 Deg. Sine

"	8′	9′	10′	11′	12′	13′	14′	15′	16′	17′
	7.3	7.4	7.4	7.5	7.5	7.5	7.6	7.6	7.6	7.6
0	668157	179681	637255	051181	429065	776684	098530	398160	678445	941733
1	677195	187716	644487	057756	435092	782249	103697	402983	682967	945988
2	686215	195737	651707	064321	441112	787806	108858	407800	687484	950240
3	695216	203742	658916	070876	447123	793356	114012	412612	691996	954487
4	704198	211733	666112	077422	453125	798899	119161	417419	696503	958730
5	713162	219709	673296	083958	459120	804435	124304	422221	701006	962969
6	722107	227670	680469	090483	465106	809964	129440	427017	705504	967204
7	731034	235617	687629	096999	471084	815485	134571	431808	709998	971435
8	739943	243549	694778	103506	477053	821000	139695	436593	714486	975662
9	748832	251467	701915	110002	483015	826508	144813	441373	718970	979884
10	757705	259370	709041	116489	488968	832009	149926	446149	723450	984103
11	766559	267259	716154	122966	494913	837503	155032	450918	727925	988317
12	775396	275134	723257	129434	500850	842990	160132	455683	732395	992528
13	784214	282995	730347	135892	506779	848470	165227	460442	736861	996734
14	793014	290841	737426	142340	512700	853943	170315	465196	741322	000936
15	801796	298673	744493	148779	518613	859409	175397	469945	745779	005134
16	810561	306491	751549	155208	524518	864869	180474	474689	750231	009328
17	819308	314295	758594	161628	530414	870321	185544	479428	754678	013518
18	828038	322085	765627	168038	536303	875767	190609	484161	759121	017704
19	836750	329861	772649	174439	542184	881206	195668	488889	763559	021886
20	845444	337624	779659	180830	548057	886638	200721	493613	767993	026064
21	854122	345372	786658	187212	553921	892063	205768	498331	772422	030238
22	862782	353106	793646	193585	559778	897481	210809	503043	776847	034407
23	871424	360827	800623	199948	565627	902893	215844	507751	781267	038573
24	880050	368534	807588	206302	571469	908298	220873	512454	785683	042735
25	888658	376228	814542	212646	577302	913696	225897	517151	790094	046893
26	897249	383908	821485	218982	583127	919088	230915	521844	794501	051047
27	905824	391574	828417	225308	588945	924473	235927	526531	798904	055197
28	914381	399227	835338	231625	594755	929851	240933	531214	803302	059343
29	922922	406866	842248	237933	600557	935223	245934	535891	807695	063485
30	931446	414492	849147	244231	606352	940588	250928	540563	812084	067623
31	939953	422104	856035	250521	612138	945946	255917	545231	816469	071757
32	948444	429703	862913	256801	617917	951298	260901	549893	820849	075887
33	956918	437289	869779	263073	623689	956643	265878	554550	825224	080014
34	965375	444862	876634	269335	629452	961981	270850	559203	829596	084136
35	973816	452421	883479	275588	635208	967313	275816	563850	833963	088254
36	982241	459968	890313	281833	640957	972639	280777	568492	838325	092369
37	990650	467501	897136	288068	646698	977958	285732	573130	842683	096480
38	999042	475021	903949	294295	652431	983270	290681	577762	847037	100586
39	007418	482529	910750	300512	658157	988576	295624	582390	851387	104689
40	015778	490023	917541	306721	663875	993876	300562	587012	855732	108788
41	024121	497504	924322	312920	669585	999169	305495	591630	860072	112883
42	032449	504973	931092	319111	675289	004455	310421	596243	864409	116975
43	040761	512428	937851	325294	680984	009735	315342	600850	868741	121062
44	049057	519871	944600	331467	686672	015009	320258	605453	873069	125146
45	057337	527302	951339	337631	692353	020277	325168	610052	877392	129225
46	065601	534719	958067	343787	698026	025538	330073	614645	881711	133301
47	073850	542124	964784	349934	703692	030792	334971	619233	886026	137373
48	082083	549516	971492	356073	709351	036040	339865	623817	890337	141442
49	090301	556896	978188	362202	715002	041282	344753	628395	894643	145506
50	098503	564263	984875	368324	720646	046518	349635	632969	898945	149567
51	106689	571618	991551	374436	726282	051747	354512	637538	903243	153624
52	114860	578960	998217	380540	731912	056970	359384	642103	907536	157677
53	123016	586290	004873	386635	737533	062187	364250	646662	911826	161726
54	131156	593607	011519	392722	743148	067397	369110	651217	916111	165772
55	139282	600912	018154	398800	748755	072602	373965	655767	920392	169814
56	147392	608205	024780	404870	754356	077800	378815	660312	924668	173852
57	155487	615486	031395	410931	759949	082991	383659	664852	928941	177886
58	163567	622754	038000	416984	765534	088177	388498	669388	933209	181917
59	171631	630011	044595	423029	771113	093356	393332	673919	937473	185943
60	179681	637255	051181	429065	776684	098530	398160	678445	941733	189966
"	51′	50′	49′	48′	47′	46′	45′	44′	43′	42′

Co-Sine Deg. 89

0 Deg. Co-Sine

8′	9′	10′	11′	12′	13′	14′	15′	16′	17′	"
9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	
999988	999985	999982	999978	999974	999969	999964	999959	999953	999947	60
999988	999985	999982	999978	999973	999969	999964	999959	999953	999947	59
999988	999985	999982	999978	999973	999969	999964	999958	999953	999947	58
999988	999985	999981	999978	999973	999969	999964	999958	999953	999947	57
999988	999985	999981	999977	999973	999969	999964	999958	999953	999946	56
999988	999985	999981	999977	999973	999969	999964	999958	999952	999946	55
999988	999985	999981	999977	999973	999968	999963	999958	999952	999946	54
999988	999985	999981	999977	999973	999968	999963	999958	999952	999946	53
999988	999985	999981	999977	999973	999968	999963	999958	999952	999946	52
999988	999985	999981	999977	999973	999968	999963	999958	999952	999946	51
999988	999985	999981	999977	999973	999968	999963	999958	999952	999946	50
999988	999985	999981	999977	999973	999968	999963	999958	999952	999946	49
999988	999984	999981	999977	999973	999968	999963	999958	999952	999946	48
999988	999984	999981	999977	999973	999968	999963	999957	999952	999946	47
999988	999984	999981	999977	999973	999968	999963	999957	999952	999945	46
999987	999984	999981	999977	999972	999968	999963	999957	999951	999945	45
999987	999984	999981	999977	999972	999968	999963	999957	999951	999945	44
999987	999984	999981	999977	999972	999968	999963	999957	999951	999945	43
999987	999984	999981	999977	999972	999967	999962	999957	999951	999945	42
999987	999984	999980	999976	999972	999967	999962	999957	999951	999945	41
999987	999984	999980	999976	999972	999967	999962	999957	999951	999945	40
999987	999984	999980	999976	999972	999967	999962	999957	999951	999945	39
999987	999984	999980	999976	999972	999967	999962	999957	999951	999945	38
999987	999984	999980	999976	999972	999967	999962	999957	999951	999944	37
999987	999984	999980	999976	999972	999967	999962	999956	999951	999944	36
999987	999984	999980	999976	999972	999967	999962	999956	999950	999944	35
999987	999984	999980	999976	999972	999967	999962	999956	999950	999944	34
999987	999984	999980	999976	999972	999967	999962	999956	999950	999944	33
999987	999984	999980	999976	999971	999967	999962	999956	999950	999944	32
999987	999983	999980	999976	999971	999967	999961	999956	999950	999944	31
999987	999983	999980	999976	999971	999967	999961	999956	999950	999944	30
999987	999983	999980	999976	999971	999966	999961	999956	999950	999944	29
999987	999983	999980	999976	999971	999966	999961	999956	999950	999944	28
999987	999983	999980	999975	999971	999966	999961	999956	999950	999943	27
999987	999983	999979	999975	999971	999966	999961	999955	999950	999943	26
999986	999983	999979	999975	999971	999966	999961	999955	999949	999943	25
999986	999983	999979	999975	999971	999966	999961	999955	999949	999943	24
999986	999983	999979	999975	999971	999966	999961	999955	999949	999943	23
999986	999983	999979	999975	999971	999966	999961	999955	999949	999943	22
999986	999983	999979	999975	999971	999966	999961	999955	999949	999943	21
999986	999983	999979	999975	999971	999966	999960	999955	999949	999943	20
999986	999983	999979	999975	999970	999966	999960	999955	999949	999943	19
999986	999983	999979	999975	999970	999966	999960	999955	999949	999942	18
999986	999983	999979	999975	999970	999965	999960	999955	999949	999942	17
999986	999983	999979	999975	999970	999965	999960	999955	999949	999942	16
999986	999983	999979	999975	999970	999965	999960	999954	999948	999942	15
999986	999982	999979	999975	999970	999965	999960	999954	999948	999942	14
999986	999982	999979	999974	999970	999965	999960	999954	999948	999942	13
999986	999982	999979	999974	999970	999965	999960	999954	999948	999942	12
999986	999982	999979	999974	999970	999965	999960	999954	999948	999942	11
999986	999982	999978	999974	999970	999965	999960	999954	999948	999942	10
999986	999982	999978	999974	999970	999965	999959	999954	999948	999941	9
999986	999982	999978	999974	999970	999965	999959	999954	999948	999941	8
999986	999982	999978	999974	999970	999965	999959	999954	999948	999941	7
999985	999982	999978	999974	999969	999964	999959	999954	999948	999941	6
999985	999982	999978	999974	999969	999964	999959	999953	999947	999941	5
999985	999982	999978	999974	999969	999964	999959	999953	999947	999941	4
999985	999982	999978	999974	999969	999964	999959	999953	999947	999941	3
999985	999982	999978	999974	999969	999964	999959	999953	999947	999941	2
999985	999982	999978	999974	999969	999964	999959	999953	999947	999941	1
999985	999982	999978	999974	999969	999964	999959	999953	999947	999940	0
51′	50′	49′	48′	47′	46′	45′	44′	43′	42′	"

Sine Deg. 89

o Deg. Tangent

	8′	9′	10′	11′	12′	13′	14′	15′	16′	17′
″	7.3	7.4	7.4	7.5	7.5	7.5	7.6	7.6	7.6	7.6
0	668169	179696	637273	051203	429091	776715	098566	398201	678492	941786
1	677207	187731	644506	057778	435119	782280	103733	403024	683014	946042
2	686227	195752	651726	064343	441138	787837	108894	407842	687531	950293
3	695228	203757	658934	070899	447149	793387	114049	412654	692043	954541
4	704210	211748	666130	077444	453152	798930	119197	417461	696551	958784
5	713174	219724	673315	083980	459147	804466	124340	422262	701053	963023
6	722119	227685	680487	090506	465133	809995	129477	427059	705552	967258
7	731046	235632	687648	097022	471111	815517	134607	431850	710045	971489
8	739955	243564	694797	103528	477080	821032	139732	436635	714534	975716
9	748845	251482	701934	110025	483042	826540	144850	441416	719018	979938
10	757718	259386	709060	116512	488995	832041	149963	446191	723498	984157
11	766572	267275	716173	122989	494941	837535	155069	450961	727973	988371
12	775408	275150	723276	129457	500878	843022	160169	455725	732443	992582
13	784226	283010	730366	135915	506807	848502	165264	460485	736909	996788
14	793026	290857	737445	142363	512728	853975	170352	465239	741371	000990
15	801809	298689	744513	148802	518640	859441	175435	469988	745827	005189
16	810574	306507	751569	155231	524545	864901	180511	474732	750279	009383
17	819321	314311	758613	161651	530442	870353	185582	479471	754727	013573
18	828051	322101	765646	168061	536331	875799	190647	484204	759170	017759
19	836763	329877	772668	174462	542212	881238	195705	488933	763608	021941
20	845457	337640	779679	180854	548084	886670	200758	493656	768042	026119
21	854134	345388	786678	187236	553949	892096	205805	498374	772471	030293
22	862794	353123	793666	193608	559806	897514	210847	503087	776896	034463
23	871437	360843	800642	199972	565656	902926	215882	507795	781317	038629
24	880063	368551	807608	206326	571497	908331	220911	512497	785733	042791
25	888671	376244	814562	212670	577330	913730	225935	517195	790144	046949
26	897263	383924	821505	219006	583156	919121	230953	521888	794551	051103
27	905837	391590	828437	225332	588974	924506	235965	526575	798953	055253
28	914395	399243	835359	231649	594784	929884	240972	531258	803351	059399
29	922935	406882	842269	237957	600586	935256	245972	535935	807745	063541
30	931459	414508	849168	244256	606380	940621	250967	540608	812134	067679
31	939967	422121	856056	250545	612167	945980	255956	545275	816519	071813
32	948457	429720	862933	256826	617946	951331	260939	549937	820899	075944
33	956931	437306	869799	263097	623718	956677	265917	554595	825275	080070
34	965389	444879	876655	269360	629481	962015	270889	559247	829646	084193
35	973830	452438	883500	275613	635238	967347	275855	563895	834013	088311
36	982255	459985	890334	281858	640986	972673	280816	568537	838376	092426
37	990663	467518	897157	288093	646727	977992	285771	573174	842734	096537
38	999055	475038	903969	294319	652460	983304	290720	577807	847088	100643
39	007431	482546	910771	300537	658186	988611	295664	582435	851438	104746
40	015791	490040	917562	306746	663904	993910	300602	587057	855783	108846
41	024135	497521	924343	312946	669615	999203	305534	591675	860124	112941
42	032463	504990	931113	319137	675318	004490	310461	596288	864460	117032
43	040775	512446	937872	325319	681014	009770	315382	600896	868792	121120
44	049071	519889	944621	331492	686702	015044	320298	605499	873120	125203
45	057351	527319	951360	337657	692383	020311	325208	610097	877444	129283
46	065616	534737	958088	343813	698056	025572	330113	614690	881763	133359
47	073864	542141	964806	349960	703722	030827	335012	619279	886078	137432
48	082097	549534	971513	356098	709381	036075	339905	623863	890389	141500
49	090315	556913	978210	362228	715032	041317	344793	628441	894695	145565
50	098517	564281	984897	368349	720676	046553	349676	633015	898997	149625
51	106703	571635	991573	374462	726313	051782	354553	637585	903295	153682
52	114875	578978	998239	380566	731942	057005	359424	642149	907589	157736
53	123030	586308	004895	386661	737564	062222	364290	646709	911878	161785
54	131171	593625	011541	392748	743179	067433	369151	651263	916163	165831
55	139296	600930	018176	398826	748786	072637	374006	655813	920444	169873
56	147406	608223	024802	404896	754386	077835	378856	660359	924721	173911
57	155501	615504	031417	410958	759979	083027	383700	664899	928993	177945
58	163581	622773	038022	417011	765565	088213	388539	669435	933262	181976
59	171646	630030	044618	423055	771144	093392	393373	673966	937526	186003
60	179696	637273	051203	429091	776715	098566	398201	678492	941786	190026
″	51′	50′	49′	48′	47′	46′	45′	44′	43′	42′

Co-Tangent Deg. 89

o Deg. Co-Tangent

8′	9′	10′	11′	12′	13′	14′	15′	16′	17′	
12.6	12.5	12.5	12.4	12.4	12.4	12.3	12.3	12.3	12.3	″
331831	820304	362727	948797	570909	223285	901434	601799	321508	058214	60
322793	812269	355494	942222	564881	217720	896267	596976	316986	053958	59
313773	804248	348274	935657	558862	212163	891106	592158	312469	049707	58
304772	796243	341066	929101	552851	206613	885951	587346	307957	045459	57
295790	788252	333870	922556	546848	201070	880803	582539	303449	041216	56
286826	780276	326685	916020	540853	195534	875660	577738	298947	036977	55
277881	772315	319513	909494	534867	190005	870523	572941	294448	032742	54
268954	764368	312352	902978	528889	184483	865393	568150	289955	028511	53
260045	756436	305203	896472	522920	178968	860268	563365	285466	024284	52
251155	748518	298066	889975	516958	173460	855150	558584	280982	020062	51
242282	740614	290940	883488	511005	167959	850037	553809	276502	015843	50
233428	732725	283827	877011	505059	162465	844931	549039	272027	011629	49
224592	724850	276724	870543	499122	156978	839831	544275	267557	007418	48
215774	716990	269634	864085	493193	151498	834736	539515	263091	003212	47
206974	709143	262555	857637	487272	146025	829648	534761	258629	999010	46
198191	701311	255487	851198	481360	140559	824565	530012	254173	994811	45
189426	693493	248431	844769	475455	135099	819489	525268	249721	990617	44
180679	685689	241387	838349	469558	129647	814418	520529	245273	986427	43
171949	677899	234354	831939	463669	124201	809353	515796	240830	982241	42
163237	670123	227332	825538	457788	118762	804295	511067	236392	978059	41
154543	662360	220321	819146	451916	113330	799242	506344	231958	973881	40
145866	654612	213322	812764	446051	107904	794195	501626	227529	969707	39
137206	646877	206334	806392	440194	102486	789153	496913	223104	965537	38
128563	639157	199358	800028	434344	097074	784118	492205	218683	961371	37
119937	631449	192392	793674	428503	091669	779089	487503	214267	957209	36
111329	623756	185438	787330	422670	086270	774065	482805	209856	953051	35
102737	616076	178495	780994	416844	080879	769047	478112	205449	948897	34
094163	608410	171563	774668	411026	075494	764035	473425	201047	944747	33
085605	600757	164641	768351	405216	070116	759028	468742	196649	940601	32
077065	593118	157731	762043	399414	064744	754028	464065	192255	936459	31
068541	585492	150832	755744	393620	059379	749033	459392	187866	932321	30
060033	577879	143944	749455	387833	054020	744044	454725	183481	928187	29
051543	570280	137067	743174	382054	048669	739061	450063	179101	924056	28
043069	562694	130201	736903	376282	043323	734083	445405	174725	919930	27
034611	555121	123345	730640	370519	037985	729111	440753	170354	915807	26
026170	547562	116500	724387	364762	032653	724145	436105	165987	911689	25
017745	540015	109666	718142	359014	027327	719184	431463	161624	907574	24
009337	532482	102843	711907	353273	022008	714229	426826	157266	903463	23
000945	524962	096031	705681	347540	016696	709280	422193	152912	899357	22
992569	517454	089229	699463	341814	011389	704336	417565	148562	895254	21
984209	509960	082438	693254	336096	006090	699398	412943	144217	891154	20
975865	502479	075657	687054	330385	000797	694466	408325	139876	887059	19
967537	495010	068887	680863	324682	995510	689539	403712	135540	882968	18
959225	487554	062128	674681	318986	990230	684618	399104	131208	878880	17
950929	480111	055379	668508	313298	984956	679702	394501	126880	874797	16
942649	472681	048640	662343	307617	979689	674792	389903	122556	870717	15
934384	465263	041912	656187	301944	974428	669887	385310	118237	866641	14
926136	457859	035194	650040	296278	969173	664988	380721	113922	862568	13
917903	450466	028487	643902	290619	963925	660095	376137	109611	858500	12
909685	443087	021790	637772	284968	958683	655207	371559	105305	854435	11
901483	435719	015103	631651	279324	953447	650324	366985	101003	850375	10
893297	428365	008427	625538	273687	948218	645447	362415	096705	846318	9
885125	421022	001761	619434	268058	942995	640576	357851	092411	842264	8
876970	413692	995105	613339	262436	937778	635710	353291	088122	838215	7
868829	406375	988459	607252	256821	932567	630849	348737	083837	834169	6
860704	399070	981824	601174	251214	927363	625994	344187	079556	830127	5
852594	391777	975198	595104	245614	922165	621144	339641	075279	826089	4
844499	384496	968583	589042	240021	916973	616300	335101	071007	822055	3
836419	377227	961978	582989	234435	911787	611461	330565	066738	818024	2
828354	369970	955382	576945	228856	906608	606627	326034	062474	813997	1
820304	362727	948797	570909	223285	901434	601799	321508	058214	809974	0
51′	50′	49′	48′	47′	46′	45′	44′	43′	42′	″

Tangent Deg. 89

o Deg. Sine

	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′
″	7.7	7.7	7.7	7.7	7.8	7.8	7.8	7.8	7.8	7.8
0	189966	424775	647537	859427	061458	254507	439338	616623	786953	950854
1	193986	428583	651154	862872	064747	257653	442353	619517	789736	953534
2	198001	432388	654769	866315	068033	260797	445366	622410	792517	956212
3	202013	436189	658380	869755	071317	263938	448377	625300	795297	958889
4	206021	439987	661989	873192	074599	267077	451385	628189	798075	961564
5	210026	443781	665594	876627	077878	270214	454392	631075	800850	964237
6	214027	447573	669197	880058	081154	273348	457396	633960	803625	966909
7	218024	451360	672797	883488	084428	276481	460398	636843	806397	969579
8	222017	455145	676393	886914	087699	279611	463399	639723	809167	972248
9	226007	458926	679987	890337	090968	282738	466397	642602	811936	974914
10	229993	462705	683577	893758	094235	285864	469393	645479	814703	977580
11	233976	466479	687165	897177	097499	288987	472387	648354	817469	980243
12	237955	470251	690750	900592	100761	292108	475379	651228	820232	982905
13	241930	474019	694332	904005	104020	295227	478369	654099	822994	985565
14	245902	477784	697910	907415	107277	298343	481357	656968	825754	988224
15	249869	481546	701486	910823	110531	301458	484343	659836	828512	990881
16	253834	485304	705059	914228	113783	304570	487326	662702	831269	993536
17	257794	489059	708629	917630	117032	307680	490308	665565	834023	996190
18	261752	492811	712196	921029	120279	310787	493288	668427	836776	998842
19	265705	496560	715760	924426	123524	313893	496265	671287	839528	001493
20	269655	500306	719322	927820	126766	316996	499241	674145	842277	004141
21	273601	504048	722880	931212	130006	320097	502215	677001	845025	006789
22	277544	507787	726435	934601	133243	323195	505186	679856	847771	009434
23	281483	511523	729988	937987	136478	326292	508156	682708	850515	012078
24	285419	515255	733537	941371	139711	329386	511123	685559	853258	014721
25	289351	518985	737084	944752	142941	332478	514088	688408	855999	017362
26	293279	522711	740628	948130	146168	335568	517052	691254	858738	020001
27	297204	526434	744169	951506	149394	338656	520013	694099	861475	022639
28	301125	530154	747707	954879	152617	341741	522973	696942	864211	025275
29	305043	533871	751242	958250	155837	344825	525930	699784	866945	027909
30	308957	537584	754774	961617	159055	347906	528885	702623	869677	030542
31	312868	541294	758303	964983	162271	350985	531839	705461	872407	033173
32	316776	545001	761830	968345	165484	354062	534790	708296	875136	035803
33	320679	548705	765354	971705	168695	357136	537739	711130	877863	038431
34	324579	552406	768874	975063	171904	360209	540687	713962	880589	041057
35	328476	556104	772392	978418	175110	363279	543632	716792	883312	043682
36	332369	559798	775907	981770	178314	366347	546575	719621	886034	046305
37	336259	563490	779420	985120	181516	369413	549517	722447	888754	048927
38	340145	567178	782929	988467	184715	372477	552456	725272	891473	051547
39	344028	570863	786436	991811	187912	375538	555393	728095	894190	054166
40	347908	574545	789939	995153	191106	378598	558329	730916	896905	056783
41	351783	578224	793440	998493	194298	381655	561262	733735	899618	059398
42	355656	581900	796938	001830	197488	384710	564193	736552	902330	062012
43	359525	585572	800434	005164	200676	387763	567123	739367	905040	064624
44	363390	589242	803926	008496	203861	390814	570050	742181	907749	067235
45	367252	592908	807416	011825	207043	393863	572976	744993	910455	069844
46	371111	596572	810903	015151	210224	396909	575899	747803	913160	072451
47	374966	600232	814387	018475	213402	399954	578821	750611	915864	075057
48	378818	603889	817868	021797	216578	402996	581740	753417	918565	077662
49	382666	607543	821347	025116	219751	406036	584658	756222	921265	080265
50	386511	611194	824822	028432	222922	409074	587574	759025	923963	082866
51	390353	614842	828295	031746	226091	412110	590487	761826	926660	085466
52	394191	618487	831765	035058	229258	415144	593399	764625	929355	088064
53	398026	622129	835233	038367	232422	418176	596309	767422	932048	090660
54	401857	625768	838697	041673	235584	421205	599217	770218	934740	093256
55	405685	629403	842159	044977	238743	424233	602123	773011	937430	095849
56	409510	633036	845618	048278	241901	427258	605027	775803	940118	098441
57	413331	636666	849075	051577	245056	430281	607929	778594	942804	101031
58	417149	640292	852528	054873	248209	433302	610829	781382	945489	103620
59	420964	643916	855979	058167	251359	436321	613727	784168	948173	106208
60	424775	647537	859427	061458	254507	439338	616623	786953	950854	108793
″	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′

Co-Sine Deg. 89

o Deg. Co-Sine

18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	
9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	″
999940	999934	999927	999919	999911	999903	999894	999885	999876	999866	60
999940	999934	999926	999919	999911	999903	999894	999885	999876	999866	59
999940	999933	999926	999919	999911	999903	999894	999885	999875	999866	58
999940	999933	999926	999919	999911	999902	999894	999885	999875	999866	57
999940	999933	999926	999918	999911	999902	999894	999885	999875	999865	56
999940	999933	999926	999918	999910	999902	999893	999884	999875	999865	55
999940	999933	999926	999918	999910	999902	999893	999884	999875	999865	54
999940	999933	999926	999918	999910	999902	999893	999884	999875	999865	53
999940	999933	999926	999918	999910	999902	999893	999884	999875	999865	52
999939	999933	999925	999918	999910	999902	999893	999884	999874	999865	51
999939	999933	999925	999918	999910	999901	999893	999884	999874	999864	50
999939	999932	999925	999918	999910	999901	999893	999883	999874	999864	49
999939	999932	999925	999917	999909	999901	999892	999883	999874	999864	48
999939	999932	999925	999917	999909	999901	999892	999883	999874	999864	47
999939	999932	999925	999917	999909	999901	999892	999883	999874	999864	46
999939	999932	999925	999917	999909	999901	999892	999883	999873	999864	45
999939	999932	999925	999917	999909	999901	999892	999883	999873	999863	44
999939	999932	999924	999917	999909	999900	999892	999883	999873	999863	43
999938	999932	999924	999917	999909	999900	999892	999882	999873	999863	42
999938	999931	999924	999917	999908	999900	999891	999882	999873	999863	41
999938	999931	999924	999916	999908	999900	999891	999882	999873	999863	40
999938	999931	999924	999916	999908	999900	999891	999882	999872	999863	39
999938	999931	999924	999916	999908	999900	999891	999882	999872	999862	38
999938	999931	999924	999916	999908	999900	999891	999882	999872	999862	37
999938	999931	999924	999916	999908	999899	999891	999881	999872	999862	36
999938	999931	999923	999916	999908	999899	999890	999881	999872	999862	35
999938	999931	999923	999916	999908	999899	999890	999881	999872	999862	34
999937	999930	999923	999915	999907	999899	999890	999881	999871	999862	33
999937	999930	999923	999915	999907	999899	999890	999881	999871	999861	32
999937	999930	999923	999915	999907	999899	999890	999881	999871	999861	31
999937	999930	999923	999915	999907	999899	999890	999881	999871	999861	30
999937	999930	999923	999915	999907	999898	999890	999880	999871	999861	29
999937	999930	999923	999915	999907	999898	999889	999880	999871	999861	28
999937	999930	999922	999915	999907	999898	999889	999880	999870	999861	27
999937	999930	999922	999915	999906	999898	999889	999880	999870	999860	26
999937	999930	999922	999914	999906	999898	999889	999880	999870	999860	25
999936	999929	999922	999914	999906	999898	999889	999880	999870	999860	24
999936	999929	999922	999914	999906	999898	999889	999879	999870	999860	23
999936	999929	999922	999914	999906	999897	999889	999879	999870	999860	22
999936	999929	999922	999914	999906	999897	999888	999879	999870	999860	21
999936	999929	999922	999914	999906	999897	999888	999879	999869	999859	20
999936	999929	999921	999914	999905	999897	999888	999879	999869	999859	19
999936	999929	999921	999913	999905	999897	999888	999879	999869	999859	18
999936	999929	999921	999913	999905	999897	999888	999878	999869	999859	17
999936	999928	999921	999913	999905	999897	999888	999878	999869	999859	16
999935	999928	999921	999913	999905	999896	999887	999878	999869	999859	15
999935	999928	999921	999913	999905	999896	999887	999878	999868	999858	14
999935	999928	999921	999913	999905	999896	999887	999878	999868	999858	13
999935	999928	999921	999913	999904	999896	999887	999878	999868	999858	12
999935	999928	999920	999913	999904	999896	999887	999878	999868	999858	11
999935	999928	999920	999912	999904	999896	999887	999877	999868	999858	10
999935	999928	999920	999912	999904	999895	999887	999877	999868	999857	9
999935	999927	999920	999912	999904	999895	999886	999877	999867	999857	8
999934	999927	999920	999912	999904	999895	999886	999877	999867	999857	7
999934	999927	999920	999912	999904	999895	999886	999877	999867	999857	6
999934	999927	999920	999912	999904	999895	999886	999877	999867	999857	5
999934	999927	999919	999912	999903	999895	999886	999876	999867	999857	4
999934	999927	999919	999911	999903	999895	999886	999876	999867	999856	3
999934	999927	999919	999911	999903	999894	999885	999876	999866	999856	2
999934	999927	999919	999911	999903	999894	999885	999876	999866	999856	1
999934	999927	999919	999911	999903	999894	999885	999876	999866	999856	0
41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	″

Sine Deg. 89

o Deg. Tangent

	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′
″	7.7	7.7	7.7	7.7	7.8	7.8	7.8	7.8	7.8	7.8
0	190026	424841	647610	859508	061547	254604	439444	616738	787077	950988
1	194045	428649	651228	862954	064836	257750	442459	619632	789861	953668
2	198061	432454	654843	866396	068123	260894	445472	622525	792642	956347
3	202073	436255	658454	869836	071407	264036	448483	625415	795422	959023
4	206081	440053	662063	873274	074688	267175	451492	628304	798199	961699
5	210086	443848	665669	876708	077967	270312	454498	631191	800975	964372
6	214087	447640	669271	880140	081244	273446	457503	634076	803750	967044
7	218084	451428	672871	883569	084518	276579	460505	636958	806522	969714
8	222078	455212	676468	886996	087789	279709	463506	639839	809293	972383
9	226068	458994	680061	890420	091059	282837	466504	642719	812062	975050
10	230054	462772	683652	893841	094325	285962	469500	645596	814829	977715
11	234037	466547	687240	897259	097590	289086	472494	648471	817594	980379
12	238016	470319	690825	900675	100851	292207	475487	651344	820358	983041
13	241991	474087	694407	904088	104111	295326	478477	654216	823120	985701
14	245963	477852	697986	907498	107368	298443	481465	657085	825880	988360
15	249931	481614	701562	910906	110622	301557	484451	659953	828639	991017
16	253895	485372	705135	914311	113874	304669	487435	662819	831395	993673
17	257856	489128	708705	917713	117124	307779	490416	665683	834150	996327
18	261813	492880	712272	921113	120371	310887	493396	668545	836903	998979
19	265767	496629	715836	924510	123615	313992	496374	671405	839655	001630
20	269717	500374	719398	927904	126858	317096	499350	674263	842404	004279
21	273663	504117	722956	931296	130098	320197	502323	677120	845152	006926
22	277606	507856	726512	934685	133335	323296	505295	679974	847899	009572
23	281545	511592	730064	938071	136570	326392	508265	682827	850643	012216
24	285481	515325	733614	941455	139803	329487	511232	685677	853386	014859
25	289413	519054	737161	944836	143033	332579	514198	688526	856127	017500
26	293342	522780	740705	948215	146261	335669	517161	691373	858866	020139
27	297267	526504	744246	951590	149486	338757	520123	694218	861604	022777
28	301188	530224	747784	954964	152709	341843	523083	697062	864339	025413
29	305106	533940	751319	958334	155930	344926	526040	699903	867074	028048
30	309020	537654	754851	961702	159148	348007	528996	702743	869806	030681
31	312931	541364	758381	965068	162364	351087	531949	705580	872537	033312
32	316839	545072	761907	968431	165578	354163	534900	708416	875266	035942
33	320742	548776	765431	971791	168789	357238	537850	711250	877993	038570
34	324643	552477	768952	975148	171998	360311	540797	714082	880718	041197
35	328540	556174	772470	978503	175204	363381	543743	716913	883442	043822
36	332433	559869	775985	981856	178408	366449	546686	719741	886164	046445
37	336323	563560	779498	985206	181610	369515	549628	722568	888885	049067
38	340209	567249	783007	988553	184809	372579	552567	725393	891603	051687
39	344092	570934	786514	991898	188006	375641	555505	728215	894320	054306
40	347972	574616	790018	995240	191201	378701	558440	731037	897036	056923
41	351848	578295	793519	998579	194393	381758	561374	733856	899749	059539
42	355720	581971	797017	001916	197583	384813	564305	736673	902461	062153
43	359589	585644	800513	005251	200770	387867	567235	739489	905171	064765
44	363455	589313	804005	008582	203956	390918	570163	742303	907880	067376
45	367317	592980	807495	011912	207139	393966	573088	745115	910587	069985
46	371176	596643	810982	015238	210319	397013	576012	747925	913292	072593
47	375031	600304	814466	018563	213497	400058	578934	750733	915995	075199
48	378883	603961	817948	021884	216673	403100	581853	753540	918697	077804
49	382731	607615	821426	025203	219847	406140	584771	756344	921397	080407
50	386577	611266	824902	028520	223018	409179	587687	759147	924096	083008
51	390418	614915	828375	031834	226187	412215	590601	761949	926792	085608
52	394257	618560	831845	035146	229354	415249	593513	764748	929487	088207
53	398091	622202	835313	038455	232518	418280	596423	767545	932181	090803
54	401923	625840	838778	041761	235680	421310	599331	770341	934873	093399
55	405751	629476	842240	045065	238840	424338	602237	773135	937563	095992
56	409576	633109	845699	048366	241997	427363	605141	775927	940251	098584
57	413397	636739	849155	051665	245153	430387	608043	778717	942938	101175
58	417215	640366	852609	054962	248305	433408	610943	781506	945623	103764
59	421030	643989	856060	058256	251456	436427	613841	784293	948306	106352
60	424841	647610	859508	061547	254604	439444	616738	787077	950988	108938
″	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′

Co-Tangent Deg. 89

o Deg. Co-Tangent

18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	
12.2	12.2	12.2	12.2	12.1	12.1	12.1	12.1	12.1	12.1	″
809974	575159	352390	140492	938453	745396	560556	383262	212923	049012	60
805955	571351	348772	137046	935164	742250	557541	380368	210139	046332	59
801939	567546	345157	133604	931877	739106	554528	377475	207358	043653	58
797927	563745	341546	130164	928593	735964	551517	374585	204578	040977	57
793919	559947	337937	126726	925312	732825	548508	371696	201801	038301	56
789914	556152	334331	123292	922033	729688	545502	368809	199025	035628	55
785913	552360	330729	119860	918756	726554	542497	365924	196250	032956	54
781916	548572	327129	116431	915482	723421	539495	363042	193478	030286	53
777922	544788	323532	113004	912211	720291	536494	360161	190707	027617	52
773932	541006	319939	109580	908941	717163	533496	357281	187938	024950	51
769946	537228	316348	106159	905675	714038	530500	354404	185171	022285	50
765963	533453	312760	102741	902410	710914	527506	351529	182406	019621	49
761984	529681	309175	099325	899149	707793	524513	348656	179642	016959	48
758009	525913	305593	095912	895889	704674	521523	345784	176880	014299	47
754037	522148	302014	092502	892632	701557	518535	342915	174120	011640	46
750069	518386	298438	089094	889378	698443	515549	340047	171361	008983	45
746105	514628	294865	085689	886126	695331	512565	337181	168605	006327	44
742144	510872	291295	082287	882876	692221	509584	334317	165850	003673	43
738187	507120	287728	078887	879629	689113	506604	331455	163097	001021	42
734233	503371	284164	075490	876385	686008	503626	328595	160345	998370	41
730283	499626	280602	072096	873142	682904	500650	325737	157596	995721	40
726337	495883	277044	068704	869902	679803	497677	322880	154848	993074	39
722394	492144	273488	065315	866665	676704	494705	320026	152101	990428	38
718455	488408	269936	061929	863430	673608	491735	317173	149357	987784	37
714519	484675	266386	058545	860197	670513	488768	314323	146614	985141	36
710587	480946	262839	055164	856967	667421	485802	311474	143873	982500	35
706658	477220	259295	051785	853739	664331	482839	308627	141134	979861	34
702733	473496	255754	048410	850514	661243	479877	305782	138396	977223	33
698812	469776	252216	045036	847291	658157	476917	302938	135661	974587	32
694894	466060	248681	041666	844070	655074	473960	300097	132926	971952	31
690980	462346	245149	038298	840852	651993	471004	297257	130194	969319	30
687069	458636	241619	034932	837636	648913	468051	294420	127463	966688	29
683161	454928	238093	031569	834422	645837	465100	291584	124734	964058	28
679258	451224	234569	028209	831211	642762	462150	288750	122007	961430	27
675357	447523	231048	024852	828002	639689	459203	285918	119282	958803	26
671460	443826	227530	021497	824796	636619	456257	283087	116558	956178	25
667567	440131	224015	018144	821592	633551	453314	280259	113836	953555	24
663677	436440	220502	014794	818390	630485	450372	277432	111115	950933	23
659791	432751	216993	011447	815191	627421	447433	274607	108397	948313	22
655908	429066	213486	008102	811994	624359	444495	271785	105680	945694	21
652028	425384	209982	004760	808799	621299	441560	268963	102964	943077	20
648152	421705	206481	001421	805607	618242	438626	266144	100251	940461	19
644280	418029	202983	998084	802417	615187	435695	263327	097539	937847	18
640411	414356	199487	994749	799230	612133	432765	260511	094829	935235	17
636545	410687	195995	991418	796044	609082	429837	257697	092120	932624	16
632683	407020	192505	988088	792861	606034	426912	254885	089413	930015	15
628824	403357	189018	984762	789681	602987	423988	252075	086708	927407	14
624969	399696	185534	981437	786503	599942	421066	249267	084005	924801	13
621117	396039	182052	978116	783327	596900	418147	246460	081303	922196	12
617269	392385	178574	974797	780153	593860	415229	243656	078603	919593	11
613423	388734	175098	971480	776982	590821	412313	240853	075904	916992	10
609582	385085	171625	968166	773813	587785	409399	238051	073208	914392	9
605743	381440	168155	964854	770646	584751	406487	235252	070513	911793	8
601909	377798	164687	961545	767482	581720	403577	232455	067819	909197	7
598077	374160	161222	958239	764320	578690	400669	229659	065127	906601	6
594249	370524	157760	954935	761160	575662	397763	226865	062437	904008	5
590424	366891	154301	951634	758003	572637	394859	224073	059749	901416	4
586603	363261	150845	948335	754847	569613	391957	221283	057062	898825	3
582785	359634	147391	945038	751695	566592	389057	218494	054377	896236	2
578970	356011	143940	941744	748544	563573	386159	215707	051694	893648	1
575159	352390	140492	938453	745396	560556	383262	212923	049012	891062	0
41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	″

Tangent Deg. 89

o Deg. Sine

	28′	29′	30′	31′	32′	33′	34′	35′	36′	37′
″	7.9	7.9	7.9	7.9	7.9	7.9	7.9	8.0	8.0	8.0
0	108793	261190	408419	550819	688698	822334	951980	077867	200207	319195
1	111378	263685	410831	553153	690960	824527	954108	079934	202217	321150
2	113960	266179	413241	555486	693220	826718	956235	082001	204226	323105
3	116542	268671	415651	557818	695479	828909	958361	084066	206234	325059
4	119121	271162	418059	560149	697736	831098	960487	086131	208242	327012
5	121699	273651	420465	562478	699993	833287	962611	088194	210248	328965
6	124276	276139	422871	564806	702248	835474	964734	090257	212253	330916
7	126851	278626	425275	567133	704503	837660	966856	092318	214258	332866
8	129425	281111	427677	569458	706756	839845	968977	094379	216261	334816
9	131997	283595	430079	571782	709008	842029	971097	096439	218264	336765
10	134567	286077	432479	574105	711258	844212	973216	098497	220266	338713
11	137136	288558	434877	576427	713508	846394	975334	100555	222267	340660
12	139704	291037	437275	578747	715756	848574	977451	102612	224267	342606
13	142269	293516	439671	581067	718004	850754	979566	104668	226266	344551
14	144834	295992	442066	583385	720250	852933	981681	106722	228264	346495
15	147397	298467	444459	585702	722495	855110	983795	108776	230261	348439
16	149958	300941	446851	588017	724738	857286	985908	110829	232257	350382
17	152518	303414	449242	590331	726981	859461	988020	112881	234252	352323
18	155076	305885	451631	592645	729222	861636	990130	114932	236247	354264
19	157633	308354	454019	594956	731463	863809	992240	116982	238240	356204
20	160189	310823	456406	597267	733702	865981	994349	119031	240233	358143
21	162743	313289	458792	599576	735940	868151	996456	121079	242224	360082
22	165295	315755	461176	601885	738177	870321	998563	123126	244215	362019
23	167846	318219	463559	604192	740412	872490	000669	125172	246205	363956
24	170395	320682	465940	606497	742647	874658	002773	127217	248194	365892
25	172943	323143	468321	608802	744880	876824	004877	129261	250182	367826
26	175489	325603	470700	611105	747113	878989	006979	131304	252169	369760
27	178034	328061	473077	613407	749344	881154	009081	133347	254155	371693
28	180578	330518	475454	615708	751574	883317	011181	135388	256140	373626
29	183120	332974	477829	618008	753802	885479	013281	137428	258125	375557
30	185660	335428	480203	620306	756030	887641	015379	139468	260108	377488
31	188199	337881	482575	622603	758257	889801	017477	141506	262091	379417
32	190736	340332	484946	624899	760482	891960	019573	143543	264072	381346
33	193272	342783	487316	627194	762706	894117	021669	145580	266053	383274
34	195807	345231	489685	629487	764929	896274	023763	147615	268033	385201
35	198340	347679	492052	631780	767151	898430	025856	149650	270012	387128
36	200871	350125	494418	634071	769372	900585	027949	151684	271990	389053
37	203401	352569	496783	636361	771592	902738	030040	153716	273967	390978
38	205930	355012	499146	638649	773810	904891	032131	155748	275943	392901
39	208457	357454	501508	640937	776028	907043	034220	157779	277919	394824
40	210983	359895	503869	643223	778244	909193	036308	159808	279893	396746
41	213507	362334	506229	645508	780459	911342	038396	161837	281867	398667
42	216030	364772	508587	647792	782673	913491	040482	163865	283839	400588
43	218551	367208	510944	650075	784886	915638	042568	165892	285811	402507
44	221071	369643	513300	652356	787098	917784	044652	167918	287782	404426
45	223589	372077	515654	654637	789309	919929	046735	169943	289752	406343
46	226106	374509	518008	656916	791518	922073	048818	171967	291721	408260
47	228621	376940	520360	659194	793726	924216	050899	173991	293689	410176
48	231135	379369	522710	661470	795934	926358	052979	176013	295656	412092
49	233648	381798	525060	663746	798140	928499	055059	178034	297623	414006
50	236159	384224	527408	666020	800345	930639	057137	180055	299588	415920
51	238668	386650	529755	668293	802549	932778	059215	182074	301553	417832
52	241177	389074	532100	670565	804752	934915	061291	184093	303517	419744
53	243683	391497	534444	672836	806953	937052	063366	186110	305479	421655
54	246188	393918	536787	675106	809154	939188	065441	188127	307441	423565
55	248692	396338	539129	677374	811353	941322	067514	190142	309403	425475
56	251195	398757	541470	679641	813552	943456	069587	192157	311363	427383
57	253696	401175	543809	681907	815749	945588	071658	194171	313322	429291
58	256195	403591	546147	684172	817945	947720	073729	196184	315280	431198
59	258693	406005	548484	686436	820140	949850	075798	198196	317238	433104
60	261190	408419	550819	688698	822334	951980	077867	200207	319195	435009
″	31′	30′	29′	28′	27′	26′	25′	24′	23′	22′

Co-Sine Deg. 89

o Deg. Co-Sine

	28′	29′	30′	31′	32′	33′	34′	35′	36′	37′
″	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9
60	999856	999845	999835	999823	999812	999800	999788	999775	999762	999748
59	999856	999845	999834	999823	999812	999800	999787	999775	999762	999748
58	999856	999845	999834	999823	999811	999799	999787	999774	999761	999748
57	999855	999845	999834	999823	999811	999799	999787	999774	999761	999748
56	999855	999845	999834	999823	999811	999799	999787	999774	999761	999748
55	999855	999845	999834	999822	999811	999799	999787	999774	999761	999747
54	999855	999844	999834	999822	999811	999799	999786	999774	999761	999747
53	999855	999844	999833	999822	999810	999798	999786	999773	999760	999747
52	999855	999844	999833	999822	999810	999798	999786	999773	999760	999747
51	999854	999844	999833	999822	999810	999798	999786	999773	999760	999746
50	999854	999844	999833	999822	999810	999798	999786	999773	999760	999746
49	999854	999844	999833	999821	999810	999798	999785	999773	999759	999746
48	999854	999843	999832	999821	999809	999797	999785	999772	999759	999746
47	999854	999843	999832	999821	999809	999797	999785	999772	999759	999745
46	999854	999843	999832	999821	999809	999797	999785	999772	999759	999745
45	999853	999843	999832	999821	999809	999797	999784	999772	999759	999745
44	999853	999843	999832	999820	999809	999797	999784	999771	999758	999745
43	999853	999842	999831	999820	999808	999796	999784	999771	999758	999745
42	999853	999842	999831	999820	999808	999796	999784	999771	999758	999744
41	999853	999842	999831	999820	999808	999796	999784	999771	999758	999744
40	999852	999842	999831	999820	999808	999796	999783	999771	999757	999744
39	999852	999842	999831	999819	999808	999796	999783	999770	999757	999744
38	999852	999842	999831	999819	999808	999795	999783	999770	999757	999743
37	999852	999841	999830	999819	999807	999795	999783	999770	999757	999743
36	999852	999841	999830	999819	999807	999795	999783	999770	999757	999743
35	999852	999841	999830	999819	999807	999795	999782	999770	999756	999743
34	999851	999841	999830	999818	999807	999795	999782	999769	999756	999743
33	999851	999841	999830	999818	999807	999794	999782	999769	999756	999742
32	999851	999840	999829	999818	999806	999794	999782	999769	999756	999742
31	999851	999840	999829	999818	999806	999794	999782	999769	999755	999742
30	999851	999840	999829	999818	999806	999794	999781	999768	999755	999742
29	999851	999840	999829	999817	999806	999794	999781	999768	999755	999741
28	999850	999840	999829	999817	999806	999793	999781	999768	999755	999741
27	999850	999840	999829	999817	999805	999793	999781	999768	999755	999741
26	999850	999839	999828	999817	999805	999793	999780	999768	999754	999741
25	999850	999839	999828	999817	999805	999793	999780	999767	999754	999740
24	999850	999839	999828	999817	999805	999793	999780	999767	999754	999740
23	999850	999839	999828	999816	999805	999792	999780	999767	999754	999740
22	999849	999839	999828	999816	999804	999792	999780	999767	999753	999740
21	999849	999838	999827	999816	999804	999792	999779	999766	999753	999740
20	999849	999838	999827	999816	999804	999792	999779	999766	999753	999739
19	999849	999838	999827	999816	999804	999792	999779	999766	999753	999739
18	999849	999838	999827	999815	999804	999791	999779	999766	999753	999739
17	999848	999838	999827	999815	999803	999791	999779	999766	999752	999739
16	999848	999838	999826	999815	999803	999791	999778	999765	999752	999738
15	999848	999837	999826	999815	999803	999791	999778	999765	999752	999738
14	999848	999837	999826	999815	999803	999790	999778	999765	999752	999738
13	999848	999837	999826	999814	999803	999790	999778	999765	999751	999738
12	999848	999837	999826	999814	999802	999790	999777	999765	999751	999737
11	999847	999837	999826	999814	999802	999790	999777	999764	999751	999737
10	999847	999836	999825	999814	999802	999790	999777	999764	999751	999737
9	999847	999836	999825	999814	999802	999789	999777	999764	999750	999737
8	999847	999836	999825	999813	999802	999789	999777	999764	999750	999737
7	999847	999836	999825	999813	999801	999789	999776	999763	999750	999736
6	999847	999836	999825	999813	999801	999789	999776	999763	999750	999736
5	999846	999836	999824	999813	999801	999789	999776	999763	999750	999736
4	999846	999835	999824	999813	999801	999788	999776	999763	999749	999736
3	999846	999835	999824	999812	999801	999788	999776	999763	999749	999735
2	999846	999835	999824	999812	999800	999788	999775	999762	999749	999735
1	999846	999835	999824	999812	999800	999788	999775	999762	999749	999735
0	999845	999835	999823	999812	999800	999788	999775	999762	999748	999735
″	31′	30′	29′	28′	27′	26′	25′	24′	23′	22′

Sine Deg. 89

o Deg. Tangent

″	28′	29′	30′	31′	32′	33′	34′	35′	36′	37′
	7.9	7.9	7.9	7.9	7.9	7.9	7.9	8.0	8.0	8.0
0	108938	261344	408584	550996	688886	822534	952192	078092	200445	319446
1	111522	263840	410996	553330	691148	824727	954320	080159	202455	321402
2	114105	266333	413407	555663	693408	826919	956448	082226	204465	323357
3	116686	268826	415817	557995	695667	829110	958574	084292	206473	325311
4	119266	271317	418225	560326	697925	831299	960700	086357	208481	327265
5	121844	273807	420632	562655	700182	833488	962824	088420	210487	329217
6	124421	276295	423037	564984	702438	835675	964947	090483	212493	331169
7	126996	278782	425441	567310	704692	837862	967070	092545	214498	333120
8	129570	281267	427844	569636	706945	840047	969191	094606	216501	335069
9	132142	283751	430246	571961	709198	842231	971311	096666	218504	337018
10	134713	286233	432646	574284	711449	844414	973430	098725	220506	338967
11	137282	288714	435045	576606	713698	846596	975548	100783	222507	340914
12	139850	291194	437442	578926	715947	848777	977666	102840	224507	342860
13	142416	293672	439839	581246	718194	850957	979782	104896	226507	344806
14	144980	296149	442233	583564	720441	853135	981897	106951	228505	346750
15	147543	298625	444627	585881	722686	855313	984011	109005	230502	348694
16	150105	301099	447019	588197	724930	857490	986124	111058	232499	350637
17	152665	303571	449410	590511	727173	859665	988236	113110	234494	352579
18	155224	306043	451800	592825	729414	861839	990346	115161	236489	354520
19	157781	308512	454188	595137	731655	864013	992456	117211	238483	356460
20	160336	310981	456575	597447	733894	866185	994565	119260	240475	358400
21	162890	313448	458961	599757	736132	868356	996673	121308	242467	360338
22	165443	315913	461345	602065	738369	870526	998780	123356	244458	362276
23	167994	318378	463728	604373	740605	872695	000886	125402	246448	364213
24	170543	320840	466110	606678	742840	874862	002991	127447	248437	366149
25	173091	323302	468491	608983	745073	877029	005094	129492	250426	368084
26	175638	325762	470870	611287	747306	879195	007197	131535	252413	370018
27	178183	328220	473248	613589	749537	881359	009299	133578	254399	371951
28	180727	330678	475624	615890	751767	883523	011400	135619	256385	373884
29	183269	333133	478000	618190	753996	885685	013499	137660	258369	375815
30	185809	335588	480374	620488	756224	887847	015598	139699	260353	377746
31	188348	338041	482746	622786	758451	890007	017696	141738	262336	379676
32	190886	340493	485118	625082	760676	892166	019792	143775	264318	381605
33	193422	342943	487488	627377	762901	894324	021888	145812	266299	383533
34	195957	345392	489856	629670	765124	896481	023983	147848	268279	385461
35	198490	347839	492224	631963	767346	898637	026076	149883	270258	387387
36	201022	350286	494590	634254	769567	900792	028169	151916	272236	389313
37	203552	352730	496955	636544	771787	902946	030260	153949	274213	391238
38	206081	355174	499319	638833	774006	905099	032351	155981	276190	393162
39	208608	357616	501681	641121	776224	907251	034441	158012	278166	395085
40	211134	360057	504042	643408	778440	909401	036529	160042	280140	397007
41	213658	362496	506402	645693	780655	911551	038617	162071	282114	398928
42	216181	364934	508760	647977	782870	913699	040703	164099	284087	400849
43	218702	367370	511118	650260	785083	915847	042789	166127	286059	402768
44	221222	369805	513474	652541	787295	917993	044874	168153	288030	404687
45	223741	372239	515828	654822	789506	920138	046957	170178	290000	406605
46	226258	374672	518182	657101	791715	922283	049040	172203	291969	408522
47	228774	377103	520534	659379	793924	924426	051121	174226	293938	410439
48	231288	379533	522885	661656	796131	926568	053202	176248	295905	412354
49	233800	381961	525234	663932	798338	928709	055282	178270	297872	414269
50	236312	384388	527582	666206	800543	930849	057360	180291	299838	416183
51	238821	386814	529929	668480	802747	932988	059438	182310	301802	418096
52	241330	389238	532275	670752	804950	935126	061514	184329	303766	420008
53	243836	391661	534620	673023	807152	937263	063590	186347	305729	421919
54	246342	394083	536963	675293	809353	939399	065665	188364	307692	423829
55	248846	396503	539305	677561	811552	941534	067738	190379	309653	425739
56	251348	398922	541646	679829	813751	943667	069811	192394	311613	427648
57	253850	401339	543985	682095	815948	945800	071883	194408	313573	429555
58	256349	403756	546323	684360	818145	947932	073953	196422	315531	431462
59	258847	406170	548660	686624	820340	950062	076023	198434	317489	433369
60	261344	408584	550996	688886	822534	952192	078092	200445	319446	435274
″	31′	30′	29′	28′	27′	26′	25′	24′	23′	22′

Co-Tangent Deg. 89

o Deg. Co-Tangent

28′	29′	30′	31′	32′	33′	34′	35′	36′	37′	″
12.0	12.0	12.0	12.0	12.0	12.0	12.0	11.9	11.9	11.9	
891062	738656	591416	449004	311114	177466	047808	921908	799555	680554	60
888478	736160	589004	446670	308852	175273	045680	919841	797545	678598	59
885895	733667	586593	444337	306592	173081	043552	917774	795535	676643	58
883314	731174	584183	442005	304333	170890	041426	915708	793527	674689	57
880734	728683	581775	439674	302075	168701	039300	913643	791519	672735	56
878156	726193	579368	437345	299818	166512	037176	911580	789513	670783	55
875579	723705	576963	435016	297562	164325	035053	909517	787507	668831	54
873004	721218	574559	432690	295308	162138	032930	907455	785502	666880	53
870430	718733	572156	430364	293055	159953	030809	905394	783499	664931	52
867858	716249	569754	428039	290802	157769	028689	903334	781496	662982	51
865287	713767	567354	425716	288551	155586	026570	901275	779494	661033	50
862718	711286	564955	423394	286302	153404	024452	899217	777493	659086	49
860150	708806	562558	421074	284053	151223	022334	897160	775493	657140	48
857584	706328	560161	418754	281806	149043	020218	895104	773493	655194	47
855020	703851	557767	416436	279559	146865	018103	893049	771495	653250	46
852457	701375	555373	414119	277314	144687	015989	890995	769498	651306	45
849895	698901	552981	411803	275070	142510	013876	888942	767501	649363	44
847335	696429	550590	409489	272827	140335	011764	886890	765506	647421	43
844776	693957	548200	407175	270586	138161	009654	884839	763511	645480	42
842219	691488	545812	404863	268345	135987	007544	882789	761517	643540	41
839664	689019	543425	402553	266106	133815	005435	880740	759525	641600	40
837110	686552	541039	400243	263868	131644	003327	878692	757533	639662	39
834557	684087	538655	397935	261631	129474	001220	876644	755542	637724	38
832006	681622	536272	395627	259395	127305	999114	874598	753552	635787	37
829457	679160	533890	393322	257160	125138	997009	872553	751563	633851	36
826909	676698	531509	391017	254927	122971	994906	870508	749574	631916	35
824362	674238	529130	388713	252694	120805	992803	868465	747587	629982	34
821817	671780	526752	386411	250463	118641	990701	866422	745601	628049	33
819273	669322	524376	384110	248233	116477	988600	864381	743615	626116	32
816731	666867	522000	381810	246004	114315	986501	862340	741631	624185	31
814191	664412	519626	379512	243776	112153	984402	860301	739647	622254	30
811652	661959	517254	377214	241549	109993	982304	858262	737664	620324	29
809114	659507	514882	374918	239324	107834	980208	856225	735682	618395	28
806578	657057	512512	372623	237099	105676	978112	854188	733701	616467	27
804043	654608	510144	370330	234876	103519	976017	852152	731721	614539	26
801510	652161	507776	368037	232654	101363	973924	850117	729742	612613	25
798978	649714	505410	365746	230433	099208	971831	848084	727764	610687	24
796448	647270	503045	363456	228213	097054	969740	846051	725787	608762	23
793919	644826	500681	361167	225994	094901	967649	844019	723810	606838	22
791392	642384	498319	358879	223776	092749	965559	841988	721834	604915	21
788866	639943	495958	356592	221560	090599	963471	839958	719860	602993	20
786342	637504	493598	354307	219345	088449	961383	837929	717886	601072	19
783819	635066	491240	352023	217130	086301	959297	835901	715913	599151	18
781298	632630	488882	349740	214917	084153	957211	833873	713941	597232	17
778778	630195	486526	347459	212705	082007	955126	831847	711970	595313	16
776259	627761	484172	345178	210494	079862	953043	829822	710000	593395	15
773742	625328	481818	342899	208285	077717	950960	827797	708031	591478	14
771226	622897	479466	340621	206076	075574	948879	825774	706062	589561	13
768712	620467	477115	338344	203869	073432	946798	823752	704095	587646	12
766200	618039	474766	336068	201662	071291	944718	821730	702128	585731	11
763688	615612	472418	333794	199457	069151	942640	819709	700162	583817	10
761179	613186	470071	331520	197253	067012	940562	817690	698198	581904	9
758670	610762	467725	329248	195050	064874	938486	815671	696234	579992	8
756164	608339	465380	326977	192848	062737	936410	813653	694271	578081	7
753658	605917	463037	324707	190647	060601	934335	811636	692308	576171	6
751154	603497	460695	322439	188448	058466	932262	809621	690347	574261	5
748652	601078	458354	320171	186249	056333	930189	807606	688387	572352	4
746150	598661	456015	317905	184052	054200	928117	805592	686427	570445	3
743651	596244	453677	315640	181855	052068	926047	803578	684469	568538	2
741153	593830	451340	313376	179660	049938	923977	801566	682511	566631	1
738656	591416	449004	311114	177466	047808	921908	799555	680554	564726	0
31′	30′	29′	28′	27′	26′	25′	24′	23′	22′	″

Tangent Deg. 89

o Deg. Sine

	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′
″	8.0	8.0	8.0	8.0	8.0	8.0	8.1	8.1	8.1	8.1
0	435009	547814	657763	764997	869646	971832	071669	169262	264710	358104
1	436913	549670	659572	766762	871369	973515	073314	170870	266283	359644
2	438816	551524	661381	768526	873091	975198	074958	172478	267856	361183
3	440719	553378	663188	770290	874813	976879	076601	174085	269428	362722
4	442621	555231	664995	772052	876534	978560	078244	175691	270999	364260
5	444522	557084	666801	773815	878254	980240	079886	177297	272570	365797
6	446422	558935	668606	775576	879974	981920	081528	178902	274140	367334
7	448321	560786	670411	777337	881692	983599	083169	180507	275710	368871
8	450220	562636	672215	779097	883411	985277	084809	182111	277279	370407
9	452117	564485	674018	780856	885128	986955	086449	183714	278848	371942
10	454014	566333	675820	782614	886845	988632	088088	185317	280416	373477
11	455910	568181	677622	784372	888561	990309	089726	186919	281983	375011
12	457805	570028	679423	786129	890277	991984	091364	188520	283550	376545
13	459700	571874	681223	787886	891991	993659	093001	190121	285117	378078
14	461593	573719	683022	789641	893706	995334	094638	191722	286682	379610
15	463486	575563	684821	791396	895419	997008	096274	193322	288248	381143
16	465378	577407	686619	793151	897132	998681	097909	194921	289812	382674
17	467269	579250	688416	794904	898844	000353	099544	196519	291376	384205
18	469159	581092	690212	796657	900555	002025	101178	198118	292940	385736
19	471048	582933	692008	798409	902266	003697	102812	199715	294503	387265
20	472937	584774	693803	800161	903976	005367	104445	201312	296065	388795
21	474825	586614	695597	801912	905685	007037	106077	202908	297627	390324
22	476712	588453	697390	803662	907394	008706	107709	204504	299188	391852
23	478598	590291	699183	805411	909102	010375	109340	206099	300749	393380
24	480483	592128	700975	807160	910810	012043	110970	207693	302309	394907
25	482368	593965	702766	808908	912516	013710	112600	209287	303869	396434
26	484251	595801	704557	810655	914222	015377	114229	210881	305428	397960
27	486134	597636	706346	812401	915928	017043	115858	212474	306986	399485
28	488016	599470	708135	814147	917632	018709	117486	214066	308544	401011
29	489897	601304	709923	815892	919336	020374	119113	215657	310101	402535
30	491778	603137	711711	817637	921040	022038	120740	217248	311658	404059
31	493657	604969	713498	819380	922743	023701	122366	218839	313215	405583
32	495536	606800	715284	821123	924445	025364	123992	220429	314770	407105
33	497414	608630	717069	822866	926146	027027	125617	222018	316325	408628
34	499291	610460	718854	824607	927847	028688	127241	223607	317880	410150
35	501167	612289	720637	826348	929547	030349	128865	225195	319434	411671
36	503043	614117	722421	828088	931246	032010	130488	226782	320987	413192
37	504918	615944	724203	829828	932945	033669	132110	228369	322540	414712
38	506792	617771	725985	831567	934643	035328	133732	229956	324093	416232
39	508665	619597	727765	833305	936340	036987	135354	231541	325644	417751
40	510537	621422	729546	835042	938037	038645	136974	233127	327196	419270
41	512408	623246	731325	836779	939733	040302	138595	234711	328746	420788
42	514279	625070	733104	838515	941428	041959	140214	236295	330296	422306
43	516149	626892	734882	840251	943123	043615	141833	237879	331846	423823
44	518018	628714	736659	841985	944817	045270	143451	239462	333395	425339
45	519886	630536	738436	843719	946510	046925	145069	241044	334943	426855
46	521754	632356	740211	845452	948203	048579	146686	242626	336491	428371
47	523620	634176	741986	847185	949895	050232	148302	244207	338039	429886
48	525486	635995	743761	848917	951587	051885	149918	245787	339586	431400
49	527351	637813	745534	850648	953277	053537	151534	247367	341132	432914
50	529216	639630	747307	852379	954968	055188	153148	248947	342678	434427
51	531079	641447	749080	854109	956657	056839	154762	250526	344223	435940
52	532942	643263	750851	855838	958346	058490	156376	252104	345767	437453
53	534803	645078	752622	857566	960034	060139	157989	253682	347311	438964
54	536665	646893	754392	859294	961721	061788	159601	255259	348855	440476
55	538525	648706	756161	861021	963408	063437	161213	256836	350398	441987
56	540384	650519	757930	862747	965094	065085	162824	258412	351940	443497
57	542243	652331	759698	864473	966780	066732	164434	259987	353482	445006
58	544101	654143	761465	866198	968465	068378	166044	261562	355023	446516
59	545958	655953	763231	867922	970149	070024	167654	263136	356564	448024
60	547814	657763	764997	869646	971832	071669	169262	264710	358104	449532
″	21′	20′	19′	18′	17′	16′	15′	14′	13′	12′

Co-Sine Deg. 89

o Deg. Co-Sine

	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′	
	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	″
	999735	999721	999706	999691	999676	999660	999644	999628	999611	999594	60
	999734	999720	999706	999691	999676	999660	999644	999628	999611	999594	59
	999734	999720	999706	999691	999675	999660	999644	999627	999611	999594	58
	999734	999720	999705	999690	999675	999659	999643	999627	999610	999593	57
	999734	999720	999705	999690	999675	999659	999643	999627	999610	999593	56
	999734	999719	999705	999690	999675	999659	999643	999627	999610	999593	55
	999733	999719	999705	999690	999674	999659	999643	999626	999609	999592	54
	999733	999719	999704	999689	999674	999658	999642	999626	999609	999592	53
	999733	999719	999704	999689	999674	999658	999642	999626	999609	999592	52
	999733	999718	999704	999689	999674	999658	999642	999625	999609	999592	51
	999732	999718	999704	999689	999673	999658	999642	999625	999608	999591	50
	999732	999718	999703	999688	999673	999657	999641	999625	999608	999591	49
	999732	999718	999703	999688	999673	999657	999641	999625	999608	999591	48
	999732	999717	999703	999688	999673	999657	999641	999624	999608	999590	47
	999731	999717	999703	999688	999672	999657	999640	999624	999607	999590	46
	999731	999717	999702	999687	999672	999656	999640	999624	999607	999590	45
	999731	999717	999702	999687	999672	999656	999640	999623	999607	999589	44
	999731	999716	999702	999687	999671	999656	999640	999623	999606	999589	43
	999730	999716	999702	999687	999671	999655	999639	999623	999606	999589	42
	999730	999716	999701	999686	999671	999655	999639	999623	999606	999589	41
	999730	999716	999701	999686	999671	999655	999639	999622	999606	999588	40
	999730	999715	999701	999686	999670	999655	999639	999622	999605	999588	39
	999730	999715	999701	999686	999670	999654	999638	999622	999605	999588	38
	999729	999715	999700	999685	999670	999654	999638	999622	999605	999587	37
	999729	999715	999700	999685	999670	999654	999638	999621	999604	999587	36
	999729	999715	999700	999685	999669	999654	999637	999621	999604	999587	35
	999729	999714	999700	999685	999669	999653	999637	999621	999604	999587	34
	999728	999714	999699	999684	999669	999653	999637	999620	999604	999586	33
	999728	999714	999699	999684	999669	999653	999637	999620	999603	999586	32
	999728	999714	999699	999684	999668	999653	999636	999620	999603	999586	31
	999728	999713	999699	999684	999668	999652	999636	999620	999603	999585	30
	999727	999713	999698	999683	999668	999652	999636	999619	999602	999585	29
	999727	999713	999698	999683	999668	999652	999636	999619	999602	999585	28
	999727	999713	999698	999683	999667	999652	999635	999619	999602	999585	27
	999727	999712	999698	999683	999667	999651	999635	999618	999602	999584	26
	999726	999712	999697	999682	999667	999651	999635	999618	999601	999584	25
	999726	999712	999697	999682	999667	999651	999634	999618	999601	999584	24
	999726	999712	999697	999682	999666	999650	999634	999618	999601	999583	23
	999726	999711	999697	999682	999666	999650	999634	999617	999600	999583	22
	999726	999711	999696	999681	999666	999650	999634	999617	999600	999583	21
	999725	999711	999696	999681	999666	999650	999633	999617	999600	999583	20
	999725	999711	999696	999681	999665	999649	999633	999617	999600	999582	19
	999725	999710	999696	999680	999665	999649	999633	999616	999599	999582	18
	999725	999710	999695	999680	999665	999649	999633	999616	999599	999582	17
	999724	999710	999695	999680	999664	999649	999632	999616	999599	999581	16
	999724	999710	999695	999680	999664	999648	999632	999615	999598	999581	15
	999724	999709	999695	999679	999664	999648	999632	999615	999598	999581	14
	999724	999709	999694	999679	999664	999648	999631	999615	999598	999580	13
	999723	999709	999694	999679	999663	999647	999631	999615	999598	999580	12
	999723	999709	999694	999679	999663	999647	999631	999614	999597	999580	11
	999723	999708	999694	999678	999663	999647	999631	999614	999597	999580	10
	999723	999708	999693	999678	999663	999647	999630	999614	999597	999579	9
	999722	999708	999693	999678	999662	999646	999630	999613	999596	999579	8
	999722	999708	999693	999678	999662	999646	999630	999613	999596	999579	7
	999722	999707	999693	999677	999662	999646	999630	999613	999596	999578	6
	999722	999707	999692	999677	999662	999646	999629	999613	999596	999578	5
	999721	999707	999692	999677	999661	999645	999629	999612	999595	999578	4
	999721	999707	999692	999677	999661	999645	999629	999612	999595	999578	3
	999721	999706	999692	999676	999661	999645	999628	999612	999595	999577	2
	999721	999706	999691	999676	999661	999645	999628	999611	999594	999577	1
	999721	999706	999691	999676	999660	999644	999628	999611	999594	999577	0

Sine Deg. 89

o Deg. Tangent

	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′
″	8.0	8.0	8.0	8.0	8.0	8.0	8.1	8.1	8.1	8.1
0	435274	548094	658057	765306	869970	972172	072025	169634	265099	358510
1	437179	549949	659866	767071	871693	973855	073670	171243	266672	360050
2	439082	551804	661675	768835	873416	975538	075314	172851	268245	361590
3	440985	553658	663483	770599	875138	977220	076958	174458	269817	363129
4	442887	555512	665290	772362	876859	978901	078601	176064	271389	364667
5	444788	557364	667096	774125	878579	980582	080243	177670	272960	366205
6	446689	559216	668902	775886	880299	982261	081885	179276	274531	367742
7	448588	561067	670707	777647	882018	983941	083526	180881	276101	369279
8	450487	562917	672511	779407	883737	985619	085167	182485	277670	370815
9	452385	564767	674314	781167	885455	987297	086807	184088	279239	372350
10	454282	566615	676117	782926	887172	988975	088446	185691	280807	373886
11	456178	568463	677919	784684	888888	990651	090085	187294	282375	375420
12	458074	570310	679720	786441	890604	992327	091723	188896	283942	376954
13	459968	572156	681520	788198	892319	994003	093361	190497	285509	378488
14	461862	574002	683320	789954	894033	995677	094998	192098	287075	380020
15	463755	575846	685118	791709	895747	997351	096634	193698	288641	381553
16	465647	577690	686917	793464	897460	999025	098269	195297	290206	383085
17	467538	579534	688714	795218	899172	000698	099904	196896	291770	384616
18	469429	581376	690511	796971	900884	002370	101539	198495	293334	386147
19	471318	583217	692306	798723	902595	004041	103173	200092	294897	387677
20	473207	585058	694102	800475	904305	005712	104806	201689	296460	389207
21	475095	586898	695896	802226	906015	007382	106438	203286	298022	390736
22	476982	588737	697690	803976	907724	009052	108070	204882	299583	392264
23	478869	590576	699483	805726	909432	010721	109702	206477	301144	393792
24	480754	592414	701275	807475	911140	012389	111332	208072	302705	395320
25	482639	594250	703066	809223	912847	014057	112962	209666	304265	396847
26	484523	596087	704857	810970	914553	015724	114592	211260	305824	398373
27	486406	597922	706647	812717	916259	017390	116221	212853	307383	399899
28	488288	599756	708436	814463	917964	019056	117849	214446	308941	401425
29	490169	601590	710225	816208	919668	020721	119477	216037	310498	402949
30	492050	603423	712012	817953	921372	022386	121104	217629	312056	404474
31	493930	605255	713799	819697	923075	024049	122730	219219	313612	405997
32	495809	607087	715586	821440	924777	025713	124356	220810	315168	407521
33	497687	608918	717371	823183	926479	027375	125981	222399	316723	409043
34	499564	610748	719156	824925	928180	029037	127606	223988	318278	410566
35	501441	612577	720940	826666	929880	030698	129230	225577	319833	412087
36	503317	614405	722723	828406	931579	032359	130853	227164	321386	413608
37	505192	616233	724506	830146	933278	034019	132476	228752	322940	415129
38	507066	618060	726288	831885	934977	035678	134098	230338	324492	416649
39	508939	619886	728069	833624	936674	037337	135720	231924	326044	418168
40	510812	621711	729850	835361	938371	038995	137341	233510	327596	419687
41	512683	623536	731629	837098	940068	040653	138961	235095	329147	421206
42	514554	625359	733408	838835	941763	042309	140581	236679	330697	422724
43	516424	627182	735186	840570	943458	043966	142200	238263	332247	424241
44	518294	629005	736964	842305	945153	045621	143819	239846	333796	425758
45	520162	630826	738741	844039	946846	047276	145437	241429	335345	427274
46	522030	632647	740517	845773	948539	048931	147054	243011	336893	428790
47	523897	634467	742292	847506	950232	050584	148671	244592	338441	430305
48	525763	636286	744067	849238	951923	052237	150287	246173	339988	431820
49	527628	638104	745841	850969	953614	053890	151903	247753	341535	433334
50	529493	639922	747614	852700	955305	055542	153518	249333	343081	434848
51	531356	641739	749386	854430	956994	057193	155132	250912	344626	436361
52	533219	643555	751158	856160	958683	058843	156746	252491	346171	437874
53	535081	645371	752929	857888	960372	060493	158359	254069	347715	439386
54	536943	647185	754699	859616	962060	062142	159972	255646	349259	440897
55	538803	648999	756469	861344	963747	063791	161584	257223	350802	442408
56	540663	650812	758238	863070	965433	065439	163195	258799	352345	443919
57	542522	652625	760006	864796	967119	067087	164806	260375	353887	445429
58	544380	654436	761773	866522	968804	068733	166416	261950	355429	446938
59	546237	656247	763540	868246	970488	070380	168025	263525	356970	448447
60	548094	658057	765306	869970	972172	072025	169634	265099	358510	449956
″	21′	20′	19′	18′	17′	16′	15′	14′	13′	12′

Co-Tangent Deg. 89

o Deg. Co-Tangent

38′	39′	40′	41′	42′	43′	44′	45′	46′	47′	
11.9	11.9	11.9	11.9	11.9	11.9	11.8	11.8	11.8	11.8	″
564726	451906	341943	234694	130030	027828	927975	830366	734901	641490	60
562821	450051	340134	232929	128307	026145	926330	828757	733328	639950	59
560918	448196	338325	231165	126584	024462	924686	827149	731755	638410	58
559015	446342	336517	229401	124862	022780	923042	825542	730183	636871	57
557113	444488	334710	227638	123141	021099	921399	823936	728611	635333	56
555212	442636	332904	225875	121421	019418	919757	822330	727040	633795	55
553311	440784	331098	224114	119701	017739	918115	820724	725469	632258	54
551412	438933	329293	222353	117982	016059	916474	819119	723899	630721	53
549513	437083	327489	220593	116263	014381	914833	817515	722330	629185	52
547615	435233	325686	218833	114545	012703	913193	815912	720761	627650	51
545718	433385	323883	217074	112828	011025	911554	814309	719193	626114	50
543822	431537	322081	215316	111112	009349	909915	812706	717625	624580	49
541926	429690	320280	213559	109396	007673	908277	811104	716058	623046	48
540032	427844	318480	211802	107681	005997	906639	809503	714491	621512	47
538138	425998	316680	210046	105967	004323	905002	807902	712925	619980	46
536245	424154	314882	208291	104253	002649	903366	806302	711359	618447	45
534353	422310	313083	206536	102540	000975	901731	804703	709794	616915	44
532462	420466	311286	204782	100828	999302	900096	803104	708230	615384	43
530571	418624	309489	203029	099116	997630	898461	801505	706666	613853	42
528682	416783	307694	201277	097405	995959	896827	799908	705103	612323	41
526793	414942	305898	199525	095695	994288	895194	798311	703540	610793	40
524905	413102	304104	197774	093985	992618	893561	796714	701978	609264	39
523018	411263	302310	196024	092276	990948	891930	795118	700417	607736	38
521131	409424	300517	194274	090568	989279	890298	793523	698856	606208	37
519246	407586	298725	192525	088860	987611	888668	791928	697295	604680	36
517361	405750	296934	190777	087153	985943	887038	790334	695735	603153	35
515477	403913	295143	189030	085447	984276	885408	788740	694176	601627	34
513594	402078	293353	187283	083741	982610	883779	787147	692617	600101	33
511712	400244	291564	185537	082036	980944	882151	785554	691059	598575	32
509831	398410	289775	183792	080332	979279	880523	783963	689502	597051	31
507950	396577	287988	182047	078628	977614	878896	782371	687944	595526	30
506070	394745	286201	180303	076925	975951	877270	780781	686388	594003	29
504191	392913	284414	178560	075223	974287	875644	779190	684832	592479	28
502313	391082	282629	176817	073521	972625	874019	777601	683277	590957	27
500436	389252	280844	175075	071820	970963	872394	776012	681722	589434	26
498559	387423	279060	173334	070120	969302	870770	774423	680167	587913	25
496683	385595	277277	171594	068421	967641	869147	772836	678614	586392	24
494808	383767	275494	169854	066722	965981	867524	771248	677060	584871	23
492934	381940	273712	168115	065023	964322	865902	769662	675508	583351	22
491061	380114	271931	166376	063326	962663	864280	768076	673956	581832	21
489188	378289	270150	164639	061629	961005	862659	766490	672404	580313	20
487317	376464	268371	162902	059932	959347	861039	764905	670853	578794	19
485446	374641	266592	161165	058237	957691	859419	763321	669303	577276	18
483576	372818	264814	159430	056542	956034	857800	761737	667753	575759	17
481706	370995	263036	157695	054847	954379	856181	760154	666204	574242	16
479838	369174	261259	155961	053154	952724	854563	758571	664655	572726	15
477970	367353	259483	154227	051461	951069	852946	756989	663107	571210	14
476103	365533	257708	152494	049768	949416	851329	755408	661559	569695	13
474237	363714	255933	150762	048077	947763	849713	753827	660012	568180	12
472372	361896	254159	149031	046386	946110	848097	752247	658465	566666	11
470507	360078	252386	147300	044695	944458	846482	750667	656919	565152	10
468644	358261	250614	145570	043006	942807	844868	749088	655374	563639	9
466781	356445	248842	143840	041317	941157	843254	747509	653829	562126	8
464919	354629	247071	142112	039628	939507	841641	745931	652285	560614	7
463057	352815	245301	140384	037940	937858	840028	744354	650741	559103	6
461197	351001	243531	138656	036253	936209	838416	742777	649198	557592	5
459337	349188	241762	136930	034567	934561	836805	741201	647655	556081	4
457478	347375	239994	135204	032881	932913	835194	739625	646113	554571	3
455620	345564	238227	133478	031196	931267	833584	738050	644571	553062	2
453763	343753	236460	131754	029512	929620	831975	736475	643030	551553	1
451906	341943	234694	130030	027828	927975	830366	734901	641490	550044	0
21′	20′	19′	18′	17′	16′	15′	14′	13′	12′	″

Tangent Deg. 89

o Deg. Sine

″	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	8. 14	8. 15	8. 16	8. 17	8. 17	8. 18	8. 19	8. 20	8. 21	8. 21	8. 22	8. 23
0	49532	39075	26808	12804	97129	79848	61020	40703	18949	95811	71335	45568
1	51040	40552	28255	14223	98521	81213	62360	42019	20242	97080	72583	46795
2	52547	42028	29702	15641	99912	82578	63700	43334	21533	98349	73830	48021
3	54054	43504	31149	17059	01303	83943	65039	44649	22825	99618	75077	49247
4	55560	44979	32594	18477	02693	85307	66378	45963	24116	00887	76324	50472
5	57065	46454	34040	19894	04083	86670	67717	47277	25407	02155	77570	51697
6	58570	47928	35485	21310	05472	88034	69055	48591	26697	03423	78816	52922
7	60075	49402	36929	22726	06861	89397	70392	49905	27987	04690	80061	54147
8	61579	50876	38373	24142	08250	90759	71729	51218	29277	05957	81306	55371
9	63082	52348	39817	25557	09638	92121	73066	52530	30566	07223	82551	56594
10	64585	53821	41259	26972	11025	93482	74403	53842	31854	08490	83796	57818
11	66087	55293	42702	28386	12413	94843	75739	55154	33143	09756	85040	59041
12	67589	56764	44144	29800	13799	96204	77074	56465	34431	11021	86284	60264
13	69091	58235	45586	31214	15186	97564	78409	57776	35719	12286	87527	61486
14	70591	59705	47027	32627	16571	98924	79744	59087	37006	13551	88770	62708
15	72092	61175	48467	34039	17957	00284	81078	60397	38293	14815	90013	63930
16	73592	62644	49907	35451	19342	01643	82412	61707	39579	16079	91255	65151
17	75091	64113	51347	36863	20726	03001	83746	63016	40865	17343	92497	66372
18	76590	65582	52786	38274	22111	04359	85079	64325	42151	18606	93739	67593
19	78088	67049	54225	39684	23494	05717	86412	65634	43436	19869	94980	68813
20	79586	68517	55663	41094	24877	07074	87744	66942	44721	21132	96221	70033
21	81083	69984	57101	42504	26260	08431	89076	68250	46006	22394	97461	71253
22	82579	71450	58538	43913	27643	09788	90407	69557	47290	23656	98701	72472
23	84076	72916	59975	45322	29024	11144	91738	70864	48574	24917	99941	73691
24	85571	74381	61411	46731	30406	12499	93069	72171	49857	26178	01181	74910
25	87066	75846	62847	48138	31787	13854	94399	73477	51140	27439	02420	76128
26	88561	77310	64282	49546	33167	15209	95729	74783	52423	28699	03659	77346
27	90055	78774	65717	50953	34548	16563	97058	76088	53705	29959	04897	78563
28	91549	80238	67151	52359	35927	17917	98387	77393	54987	31219	06135	79781
29	93042	81701	68585	53765	37307	19271	99716	78698	56269	32478	07373	80997
30	94534	83163	70019	55171	38685	20624	01044	80002	57550	33737	08610	82214
31	96027	84625	71452	56576	40064	21976	02372	81306	58831	34996	09847	83430
32	97518	86086	72884	57981	41442	23329	03699	82610	60111	36254	11084	84646
33	99009	87547	74316	59385	42819	24680	05026	83913	61391	37512	12320	85862
34	00500	89008	75748	60789	44196	26032	06353	85216	62671	38769	13556	87077
35	01990	90468	77179	62192	45573	27383	07679	86518	63950	40026	14792	88292
36	03479	91927	78610	63595	46949	28733	09005	87820	65229	41283	16027	89506
37	04968	93386	80040	64998	48325	30083	10330	89121	66508	42539	17262	90720
38	06457	94845	81469	66400	49700	31433	11655	90422	67786	43795	18496	91934
39	07945	96303	82899	67801	51075	32782	12980	91723	69064	45051	19731	93148
40	09432	97760	84327	69202	52450	34131	14304	93024	70341	46306	20965	94361
41	10919	99217	85756	70603	53824	35479	15628	94324	71618	47561	22198	95574
42	12406	00674	87183	72003	55197	36827	16951	95623	72895	48815	23431	96786
43	13891	02130	88611	73403	56570	38175	18274	96922	74171	50070	24664	97998
44	15377	03585	90038	74802	57943	39522	19597	98221	75447	51323	25896	99210
45	16862	05040	91464	76201	59315	40869	20919	99520	76723	52577	27128	00422
46	18346	06495	92890	77599	60687	42215	22241	00818	77998	53830	28360	01633
47	19830	07949	94315	78997	62059	43561	23562	02115	79273	55083	29592	02844
48	21314	09403	95740	80394	63430	44907	24883	03412	80547	56335	30823	04054
49	22796	10856	97165	81791	64800	46252	26203	04709	81821	57587	32053	05264
50	24279	12308	98589	83188	66170	47596	27523	06006	83095	58839	33284	06474
51	25761	13761	00012	84584	67540	48941	28843	07302	84368	60090	34514	07683
52	27242	15212	01435	85980	68909	50284	30163	08598	85641	61341	35743	08892
53	28723	16663	02858	87375	70278	51628	31481	09893	86913	62591	36973	10101
54	30203	18114	04280	88770	71646	52971	32800	11188	88186	63841	38202	11310
55	31683	19564	05702	90164	73014	54313	34118	12482	89457	65091	39430	12518
56	33163	21014	07123	91558	74382	55656	35436	13777	90729	66341	40659	13725
57	34641	22463	08544	92951	75749	56997	36753	15070	92000	67590	41886	14933
58	36120	23912	09964	94344	77116	58339	38070	16364	93270	68839	43114	16140
59	37598	25360	11384	95737	78482	59680	39387	17657	94541	70087	44341	17347
60	39075	26808	12804	97129	79848	61020	40703	18949	95811	71335	45568	18553
″	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

o Deg. Co-Sine

48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	″
9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	
99577	99559	99541	99522	99503	99484	99464	99444	99424	99403	99382	99360	60
99576	99559	99540	99522	99503	99484	99464	99444	99423	99403	99382	99360	59
99576	99558	99540	99521	99503	99483	99464	99443	99423	99402	99381	99360	58
99576	99558	99540	99521	99502	99483	99463	99443	99423	99402	99381	99359	57
99575	99558	99539	99521	99502	99483	99463	99443	99422	99402	99380	99359	56
99575	99557	99539	99521	99502	99482	99463	99442	99422	99401	99380	99359	55
99575	99557	99539	99520	99501	99482	99462	99442	99422	99401	99380	99358	54
99575	99557	99538	99520	99501	99482	99462	99442	99421	99401	99379	99358	53
99574	99556	99538	99520	99501	99481	99462	99441	99421	99400	99379	99357	52
99574	99556	99538	99519	99500	99481	99461	99441	99421	99400	99379	99357	51
99574	99556	99538	99519	99500	99481	99461	99441	99420	99400	99378	99357	50
99573	99556	99537	99519	99500	99480	99461	99440	99420	99399	99378	99356	49
99573	99555	99537	99518	99499	99480	99460	99440	99420	99399	99378	99356	48
99573	99555	99537	99518	99499	99480	99460	99440	99419	99398	99377	99356	47
99573	99555	99536	99518	99499	99479	99460	99439	99419	99398	99377	99355	46
99572	99554	99536	99517	99498	99479	99459	99439	99419	99398	99377	99355	45
99572	99554	99536	99517	99498	99479	99459	99439	99418	99397	99376	99355	44
99572	99554	99535	99517	99498	99478	99459	99438	99418	99397	99376	99354	43
99571	99553	99535	99516	99497	99478	99458	99438	99418	99397	99375	99354	42
99571	99553	99535	99516	99497	99478	99458	99438	99417	99396	99375	99353	41
99571	99553	99534	99516	99497	99477	99458	99437	99417	99396	99375	99353	40
99570	99552	99534	99515	99496	99477	99457	99437	99417	99396	99374	99353	39
99570	99552	99534	99515	99496	99477	99457	99437	99416	99395	99374	99352	38
99570	99552	99534	99515	99496	99476	99457	99436	99416	99395	99374	99352	37
99570	99552	99533	99515	99495	99476	99456	99436	99416	99395	99373	99352	36
99569	99551	99533	99514	99495	99476	99456	99436	99415	99394	99373	99351	35
99569	99551	99533	99514	99495	99475	99456	99435	99415	99394	99373	99351	34
99569	99551	99532	99514	99495	99475	99455	99435	99414	99394	99372	99351	33
99568	99550	99532	99513	99494	99475	99455	99435	99414	99393	99372	99350	32
99568	99550	99532	99513	99494	99474	99455	99434	99414	99393	99372	99350	31
99568	99550	99531	99513	99494	99474	99454	99434	99413	99392	99371	99349	30
99567	99549	99531	99512	99493	99474	99454	99434	99413	99392	99371	99349	29
99567	99549	99531	99512	99493	99473	99454	99433	99413	99392	99370	99349	28
99567	99549	99530	99512	99493	99473	99453	99433	99412	99391	99370	99348	27
99567	99549	99530	99511	99492	99473	99453	99433	99412	99391	99370	99348	26
99566	99548	99530	99511	99492	99472	99453	99432	99412	99391	99369	99348	25
99566	99548	99530	99511	99492	99472	99452	99432	99411	99390	99369	99347	24
99566	99548	99529	99510	99491	99472	99452	99432	99411	99390	99369	99347	23
99565	99547	99529	99510	99491	99471	99452	99431	99411	99390	99368	99347	22
99565	99547	99529	99510	99491	99471	99451	99431	99410	99389	99368	99346	21
99565	99547	99528	99509	99490	99471	99451	99431	99410	99389	99368	99346	20
99565	99546	99528	99509	99490	99470	99451	99430	99410	99389	99367	99345	19
99564	99546	99528	99509	99490	99470	99450	99430	99409	99388	99367	99345	18
99564	99546	99527	99509	99489	99470	99450	99430	99409	99388	99366	99345	17
99564	99546	99527	99508	99489	99469	99450	99429	99409	99388	99366	99344	16
99563	99545	99527	99508	99489	99469	99449	99429	99408	99387	99366	99344	15
99563	99545	99526	99508	99488	99469	99449	99429	99408	99387	99365	99344	14
99563	99545	99526	99507	99488	99468	99449	99428	99408	99386	99365	99343	13
99562	99544	99526	99507	99488	99468	99448	99428	99407	99386	99365	99343	12
99562	99544	99526	99507	99487	99468	99448	99428	99407	99386	99364	99343	11
99562	99544	99525	99506	99487	99467	99448	99427	99406	99385	99364	99342	10
99562	99543	99525	99506	99487	99467	99447	99427	99406	99385	99364	99342	9
99561	99543	99525	99506	99486	99467	99447	99427	99406	99385	99363	99341	8
99561	99543	99524	99505	99486	99467	99447	99426	99405	99384	99363	99341	7
99561	99542	99524	99505	99486	99466	99446	99426	99405	99384	99363	99341	6
99560	99542	99524	99505	99485	99466	99446	99425	99405	99384	99362	99340	5
99560	99542	99523	99504	99485	99466	99446	99425	99404	99383	99362	99340	4
99560	99542	99523	99504	99485	99465	99445	99425	99404	99383	99361	99340	3
99559	99541	99523	99504	99484	99465	99445	99424	99404	99383	99361	99339	2
99559	99541	99522	99503	99484	99465	99444	99424	99403	99382	99361	99339	1
99559	99541	99522	99503	99484	99464	99444	99424	99403	99382	99360	99338	0
11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Co-Sine Deg. 89

Sine Deg. 89

o Deg. Tangent

"	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	8. 14	8. 15	8. 16	8. 17	8. 17	8. 18	8. 19	8. 20	8. 21	8. 21	8. 22	8. 23
0	49956	39516	27267	13282	97626	80364	61556	41259	19526	96408	71953	46208
1	51464	40993	28715	14701	99018	81730	62896	42575	20818	97678	73201	47435
2	52971	42470	30162	16120	00409	83095	64236	43890	22110	98947	74449	48661
3	54478	43946	31609	17538	01800	84460	65576	45206	23402	00216	75696	49887
4	55984	45422	33055	18956	03191	85824	66915	46521	24694	01485	76943	51113
5	57490	46897	34501	20373	04581	87188	68254	47835	25985	02754	78190	52339
6	58995	48371	35946	21790	05971	88552	69592	49149	27275	04022	79436	53564
7	60500	49846	37391	23207	07360	89915	70930	50463	28566	05289	80682	54789
8	62004	51319	38835	24623	08749	91278	72268	51776	29855	06557	81927	56013
9	63508	52792	40279	26038	10137	92640	73605	53089	31145	07824	83173	57237
10	65011	54265	41722	27453	11525	94002	74942	54401	32434	09090	84417	58461
11	66514	55737	43165	28868	12913	95363	76278	55714	33723	10356	85662	59684
12	68016	57209	44607	30282	14300	96724	77614	57025	35011	11622	86906	60908
13	69518	58680	46049	31696	15687	98085	78949	58337	36299	12888	88150	62130
14	71019	60151	47490	33109	17073	99445	80284	59647	37587	14153	89393	63353
15	72520	61621	48931	34522	18459	00805	81619	60958	38874	15418	90636	64575
16	74020	63090	50372	35934	19844	02164	82953	62268	40161	16682	91879	65796
17	75519	64559	51812	37346	21229	03523	84287	63578	41447	17946	93121	67018
18	77018	66028	53251	38757	22613	04881	85621	64887	42733	19210	94363	68239
19	78517	67496	54690	40168	23997	06239	86954	66196	44019	20473	95605	69460
20	80015	68964	56128	41579	25381	07597	88286	67505	45304	21736	96846	70680
21	81512	70431	57566	42989	26764	08954	89619	68813	46589	22998	98087	71900
22	83009	71898	59004	44398	28146	10311	90950	70120	47874	24260	99327	73120
23	84506	73364	60441	45807	29529	11667	92282	71428	49158	25522	00568	74339
24	86002	74830	61878	47216	30910	13023	93613	72735	50442	26784	01807	75558
25	87497	76295	63314	48624	32292	14379	94943	74041	51725	28045	03047	76776
26	88992	77759	64749	50032	33673	15734	96273	75348	53008	29305	04286	77995
27	90487	79224	66185	51439	35053	17088	97603	76653	54291	30566	05525	79213
28	91980	80687	67619	52846	36433	18442	98933	77959	55573	31826	06763	80430
29	93474	82151	69054	54252	37813	19796	00262	79264	56855	33085	08001	81648
30	94967	83613	70487	55658	39192	21150	01590	80568	58137	34345	09239	82865
31	96459	85076	71921	57064	40571	22503	02918	81873	59418	35604	10476	84081
32	97951	86537	73353	58469	41949	23855	04246	83176	60699	36862	11713	85297
33	99442	87999	74786	59873	43327	25207	05573	84480	61979	38120	12950	86513
34	00933	89459	76218	61278	44704	26559	06900	85783	63259	39378	14186	87729
35	02423	90920	77649	62681	46081	27910	08227	87086	64539	40635	15422	88944
36	03913	92379	79080	64084	47458	29261	09553	88388	65818	41892	16658	90159
37	05402	93839	80510	65487	48834	30611	10879	89690	67097	43149	17893	91373
38	06891	95297	81940	66889	50209	31961	12204	90991	68375	44405	19128	92588
39	08380	96756	83370	68291	51585	33311	13529	92292	69653	45661	20363	93802
40	09867	98213	84799	69693	52959	34660	14853	93593	70931	46917	21597	95015
41	11355	99671	86228	71094	54334	36009	16177	94893	72209	48172	22831	96228
42	12841	01128	87656	72494	55708	37357	17501	96193	73486	49427	24064	97441
43	14328	02584	89083	73894	57081	38705	18824	97493	74762	50682	25297	98654
44	15813	04040	90510	75294	58454	40053	20147	98792	76038	51936	26530	99866
45	17299	05495	91937	76693	59827	41400	21470	00091	77314	53190	27763	01078
46	18783	06950	93363	78091	61199	42746	22792	01389	78590	54443	28995	02289
47	20267	08404	94789	79490	62571	44093	24113	02687	79865	55696	30227	03500
48	21751	09858	96214	80887	63942	45439	25435	03985	81140	56949	31458	04711
49	23234	11312	97639	82285	65313	46784	26756	05282	82414	58201	32689	05922
50	24717	12765	99064	83682	66683	48129	28076	06579	83688	59453	33920	07132
51	26199	14217	00487	85078	68053	49473	29396	07875	84962	60705	35150	08342
52	27681	15669	01911	86474	69423	50818	30716	09171	86235	61956	36380	09551
53	29162	17121	03334	87870	70792	52161	32035	10467	87508	63207	37610	10760
54	30643	18572	04756	89265	72161	53505	33354	11762	88780	64457	38839	11969
55	32123	20022	06178	90659	73529	54848	34672	13057	90053	65708	40068	13177
56	33603	21472	07600	92054	74897	56190	35990	14351	91324	66957	41297	14386
57	35082	22922	09021	93447	76264	57532	37308	15646	92596	68207	42525	15593
58	36560	24371	10442	94841	77631	58874	38625	16939	93867	69456	43753	16801
59	38038	25819	11862	96233	78998	60215	39942	18233	95137	70705	44980	18008
60	39516	27267	13282	97626	80364	61556	41259	19526	96408	71953	46208	19215
"	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Tangent Deg. 89

o Deg. Co-Tangent

48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	"
11. 85	11. 84	11. 83	11. 82	11. 82	11. 81	11. 80	11. 79	11. 78	11. 78	11. 77	11. 76	
50044	60484	72733	86718	02374	19636	38444	58741	80474	03592	28047	53792	60
48536	59007	71285	85299	00982	18270	37104	57425	79182	02322	26799	52565	59
47029	57530	69838	83880	99591	16905	35764	56110	77890	01053	25551	51339	58
45522	56054	68391	82462	98200	15540	34424	54794	76598	99784	24304	50113	57
44016	54578	66945	81044	96809	14176	33085	53479	75306	98515	23057	48887	56
42510	53103	65499	79627	95419	12812	31746	52165	74015	97246	21810	47661	55
41005	51629	64054	78210	94029	11448	30408	50851	72725	95978	20564	46436	54
39500	50154	62609	76793	92640	10085	29070	49537	71434	94711	19318	45211	53
37996	48681	61165	75377	91251	08722	27732	48224	70145	93443	18073	43987	52
36492	47208	59721	73962	89863	07360	26395	46911	68855	92176	16827	42763	51
34989	45735	58278	72547	88475	05998	25058	45599	67566	90910	15583	41539	50
33486	44263	56835	71132	87087	04637	23722	44286	66277	89644	14338	40316	49
31984	42791	55393	69718	85700	03276	22386	42975	64989	88378	13094	39092	48
30482	41320	53951	68304	84313	01915	21051	41663	63701	87112	11850	37870	47
28981	39849	52510	66891	82927	00555	19716	40353	62413	85847	10607	36647	46
27480	38379	51069	65478	81541	99195	18381	39042	61126	84582	09364	35425	45
25980	36910	49628	64066	80156	97836	17047	37732	59839	83318	08121	34204	44
24481	35441	48188	62654	78771	96477	15713	36422	58553	82054	06879	32982	43
22982	33972	46749	61243	77387	95119	14379	35113	57267	80790	05637	31761	42
21483	32504	45310	59832	76003	93761	13046	33804	55981	79527	04395	30540	41
19985	31036	43872	58421	74619	92403	11714	32495	54696	78264	03154	29320	40
18488	29569	42434	57011	73236	91046	10381	31187	53411	77002	01913	28100	39
16991	28102	40996	55602	71854	89689	09050	29880	52126	75740	00673	26880	38
15494	26636	39559	54193	70471	88333	07718	28572	50842	74478	99432	25661	37
13998	25170	38122	52784	69090	86977	06387	27265	49558	73216	98193	24442	36
12503	23705	36686	51376	67708	85621	05057	25959	48275	71955	96953	23224	35
11008	22241	35251	49968	66327	84266	03727	24652	46992	70695	95714	22005	34
09513	20776	33815	48561	64947	82912	02397	23347	45709	69434	94475	20787	33
08020	19313	32381	47154	63567	81558	01067	22041	44427	68174	93237	19570	32
06526	17849	30946	45748	62187	80204	99738	20736	43145	66915	91999	18352	31
05033	16387	29513	44342	60808	78850	98410	19432	41863	65655	90761	17135	30
03541	14924	28079	42936	59429	77497	97082	18127	40582	64396	89524	15919	29
02049	13463	26647	41531	58051	76145	95754	16824	39301	63138	88287	14703	28
00558	12001	25214	40127	56673	74793	94427	15520	38021	61880	87050	13487	27
99067	10541	23782	38722	55296	73441	93100	14217	36741	60622	85814	12271	26
97577	09080	22351	37319	53919	72090	91773	12914	35461	59365	84578	11056	25
96087	07621	20920	35916	52542	70739	90447	11612	34182	58108	83342	09841	24
94598	06161	19490	34513	51166	69389	89121	10310	32903	56851	82107	08627	23
93109	04703	18060	33111	49791	68039	87796	09009	31625	55595	80872	07412	22
91620	03244	16630	31709	48415	66689	86471	07708	30347	54339	79637	06198	21
90133	01787	15201	30307	47041	65340	85147	06407	29069	53083	78403	04985	20
88645	00329	13772	28906	45666	63991	83823	05107	27791	51828	77169	03772	19
87159	98872	12344	27506	44292	62643	82499	03807	26514	50573	75936	02559	18
85672	97416	10917	26106	42919	61295	81176	02507	25238	49318	74703	01346	17
84187	95960	09490	24706	41546	59947	79853	01208	23962	48064	73470	00134	16
82701	94505	08063	23307	40173	58600	78530	99909	22686	46810	72237	98922	15
81217	93050	06637	21909	38801	57254	77208	98611	21410	45557	71005	97711	14
79733	91596	05211	20510	37429	55907	75887	97313	20135	44304	69773	96500	13
78249	90142	03786	19113	36058	54561	74565	96015	18860	43051	68542	95289	12
76766	88688	02361	17715	34687	53216	73244	94718	17586	41799	67311	94078	11
75283	87235	00936	16318	33317	51871	71924	93421	16312	40547	66080	92868	10
73801	85783	99513	14922	31947	50527	70604	92125	15038	39295	64850	91658	9
72319	84331	98089	13526	30577	49182	69284	90829	13765	38044	63620	90449	8
70838	82879	96666	12130	29208	47839	67965	89533	12492	36793	62390	89240	7
69357	81428	95244	10735	27839	46495	66646	88238	11220	35543	61161	88031	6
67877	79978	93822	09341	26471	45152	65328	86943	09947	34292	59932	86823	5
66397	78528	92400	07946	25103	43810	64010	85649	08676	33043	58703	85614	4
64918	77078	90979	06553	23736	42468	62692	84354	07404	31793	57475	84407	3
63440	75629	89558	05159	22369	41126	61375	83061	06133	30544	56247	83199	2
61962	74181	88138	03767	21002	39785	60058	81767	04863	29295	55020	81992	1
60484	72733	86718	02374	19636	38444	58741	80474	03592	28047	53792	80785	0
11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	"

Tangent Deg. 89

1 Deg. Sine

″	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′
	8. 24	8. 24	8. 25	8. 26	8. 26	8. 27	8. 28	8. 28	8. 29	8. 30	8. 30	8. 31
0	18553	90332	60943	30424	98810	66136	32434	97734	62067	25460	87941	49536
1	19759	91518	62110	31572	99941	67249	33530	98814	63131	26509	88975	50555
2	20965	92704	63277	32721	01071	68362	34626	99894	64195	27558	90009	51574
3	22170	93890	64443	33869	02201	69475	35722	00974	65259	28606	91042	52593
4	23376	95075	65609	35016	03331	70587	36818	02053	66322	29654	92075	53611
5	24580	96260	66775	36164	04461	71700	37913	03132	67385	30702	93108	54630
6	25785	97445	67941	37311	05590	72811	39008	04211	68448	31749	94140	55648
7	26989	98629	69106	38458	06719	73923	40103	05289	69511	32796	95173	56665
8	28192	99813	70271	39604	07847	75034	41197	06367	70573	33843	96205	57683
9	29396	00997	71436	40750	08976	76145	42292	07445	71635	34890	97237	58700
10	30599	02180	72600	41896	10104	77256	43386	08523	72697	35937	98268	59717
11	31802	03363	73764	43042	11232	78367	44479	09600	73759	36983	99299	60734
12	33004	04546	74928	44187	12359	79477	45573	10677	74820	38029	00330	61751
13	34206	05728	76091	45332	13486	80587	46666	11754	75881	39075	01361	62767
14	35408	06911	77255	46477	14613	81696	47759	12831	76942	40120	02392	63783
15	36609	08092	78417	47621	15740	82806	48851	13907	78002	41165	03422	64799
16	37810	09274	79580	48766	16866	83915	49943	14983	79063	42210	04452	65815
17	39011	10455	80742	49909	17992	85023	51035	16059	80123	43255	05482	66830
18	40212	11636	81904	51053	19118	86132	52127	17134	81183	44299	06512	67845
19	41412	12816	83065	52196	20243	87240	53219	18210	82242	45344	07541	68860
20	42611	13996	84227	53339	21368	88348	54310	19285	83301	46388	08570	69875
21	43811	15176	85388	54482	22493	89456	55401	20359	84360	47431	09599	70889
22	45010	16356	86548	55624	23618	90563	56491	21434	85419	48475	10628	71903
23	46209	17535	87709	56766	24742	91670	57582	22508	86477	49518	11656	72917
24	47407	18714	88869	57908	25866	92777	58672	23582	87536	50561	12684	73931
25	48605	19893	90028	59049	26990	93883	59762	24656	88594	51604	13712	74945
26	49803	21071	91188	60190	28113	94989	60851	25729	89651	52646	14740	75958
27	51000	22249	92347	61331	29236	96095	61941	26802	90709	53688	15767	76971
28	52198	23426	93505	62471	30359	97201	63030	27875	91766	54730	16794	77984
29	53394	24604	94664	63612	31481	98306	64118	28948	92823	55772	17821	78996
30	54591	25781	95822	64751	32604	99411	65207	30020	93879	56813	18848	80008
31	55787	26957	96980	65891	33725	00516	66295	31092	94936	57855	19874	81021
32	56983	28134	98137	67030	34847	01621	67383	32164	95992	58896	20901	82032
33	58178	29310	99295	68169	35968	02725	68471	33235	97048	59936	21927	83044
34	59373	30485	00452	69308	37089	03829	69558	34306	98104	60977	22952	84055
35	60568	31661	01608	70446	38210	04933	70645	35378	99159	62017	23978	85067
36	61762	32836	02764	71585	39331	06036	71732	36448	00214	63057	25003	86077
37	62957	34011	03920	72722	40451	07139	72818	37519	01269	64097	26028	87088
38	64150	35185	05076	73860	41571	08242	73905	38589	02324	65136	27053	88098
39	65344	36359	06232	74997	42690	09345	74991	39659	03378	66175	28077	89109
40	66537	37533	07387	76134	43810	10447	76076	40729	04432	67214	29101	90119
41	67730	38706	08541	77271	44929	11549	77162	41798	05486	68253	30125	91128
42	68922	39880	09696	78407	46048	12650	78247	42867	06539	69291	31149	92138
43	70115	41052	10850	79543	47166	13752	79332	43936	07593	70330	32173	93147
44	71306	42225	12004	80679	48284	14853	80417	45005	08646	71368	33196	94156
45	72498	43397	13157	81814	49402	15954	81501	46073	09699	72405	34219	95165
46	73689	44569	14311	82949	50520	17055	82585	47141	10751	73443	35242	96173
47	74880	45741	15463	84084	51637	18155	83669	48209	11804	74480	36264	97182
48	76071	46912	16616	85219	52754	19255	84752	49277	12856	75517	37287	98190
49	77261	48083	17768	86353	53871	20355	85836	50344	13907	76554	38309	99198
50	78451	49254	18920	87487	54987	21454	86919	51411	14959	77590	39331	00205
51	79640	50424	20072	88620	56103	22553	88002	52478	16010	78626	40352	01213
52	80829	51594	21223	89754	57219	23652	89084	53544	17061	79662	41374	02220
53	82018	52764	22375	90887	58335	24751	90166	54611	18112	80698	42395	03227
54	83207	53933	23525	92020	59450	25849	91248	55677	19163	81734	43416	04233
55	84395	55102	24676	93152	60565	26947	92330	56742	20213	82769	44436	05240
56	85583	56271	25826	94284	61680	28045	93411	57808	21263	83804	45457	06246
57	86771	57439	26976	95416	62794	29143	94492	58873	22313	84839	46477	07252
58	87958	58607	28125	96548	63909	30240	95573	59938	23362	85873	47497	08258
59	89145	59775	29275	97679	65022	31337	96654	61003	24411	86907	48516	09263
60	90332	60943	30424	98810	66136	32434	97734	62067	25460	87941	49536	10269
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′

Co-Sine Deg. 88

1 Deg. Co-Sine

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	″
9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	
99338	99316	99294	99271	99247	99224	99200	99175	99150	99125	99100	99074	60
99338	99316	99293	99270	99247	99223	99199	99175	99150	99125	99099	99073	59
99338	99316	99293	99270	99247	99223	99199	99174	99149	99124	99099	99073	58
99337	99315	99293	99270	99246	99222	99198	99174	99149	99124	99098	99072	57
99337	99315	99292	99269	99246	99222	99198	99173	99149	99123	99098	99072	56
99337	99314	99292	99269	99245	99222	99198	99173	99148	99123	99097	99072	55
99336	99314	99291	99268	99245	99221	99197	99173	99148	99123	99097	99071	54
99336	99314	99291	99268	99245	99221	99197	99172	99147	99122	99097	99071	53
99336	99313	99291	99268	99244	99220	99196	99172	99147	99122	99096	99070	52
99335	99313	99290	99267	99244	99220	99196	99171	99147	99121	99096	99070	51
99335	99313	99290	99267	99243	99220	99196	99171	99146	99121	99095	99069	50
99334	99312	99289	99266	99243	99219	99195	99171	99146	99120	99095	99069	49
99334	99312	99289	99266	99243	99219	99195	99170	99145	99120	99094	99068	48
99334	99311	99289	99266	99242	99218	99194	99170	99145	99120	99094	99068	47
99333	99311	99288	99265	99242	99218	99194	99169	99144	99119	99094	99068	46
99333	99311	99288	99265	99241	99218	99193	99169	99144	99119	99093	99067	45
99333	99310	99288	99265	99241	99217	99193	99169	99144	99118	99093	99067	44
99332	99310	99287	99264	99241	99217	99193	99168	99143	99118	99092	99066	43
99332	99310	99287	99264	99240	99216	99192	99168	99143	99118	99092	99066	42
99331	99309	99286	99263	99240	99216	99192	99167	99142	99117	99091	99065	41
99331	99309	99286	99263	99239	99216	99191	99167	99142	99117	99091	99065	40
99331	99308	99286	99263	99239	99215	99191	99166	99142	99116	99091	99065	39
99330	99308	99285	99262	99239	99215	99191	99166	99141	99116	99090	99064	38
99330	99308	99285	99262	99238	99214	99190	99166	99141	99115	99090	99064	37
99330	99307	99285	99261	99238	99214	99190	99165	99140	99115	99089	99063	36
99329	99307	99284	99261	99238	99214	99189	99165	99140	99115	99089	99063	35
99329	99307	99284	99261	99237	99213	99189	99164	99139	99114	99088	99062	34
99329	99306	99283	99260	99237	99213	99189	99164	99139	99114	99088	99062	33
99328	99306	99283	99260	99236	99212	99188	99164	99139	99113	99088	99061	32
99328	99305	99283	99259	99236	99212	99188	99163	99138	99113	99087	99061	31
99327	99305	99282	99259	99236	99212	99187	99163	99138	99112	99087	99061	30
99327	99305	99282	99259	99235	99211	99187	99162	99137	99112	99086	99060	29
99327	99304	99281	99258	99235	99211	99187	99162	99137	99112	99086	99060	28
99326	99304	99281	99258	99234	99210	99186	99162	99137	99111	99085	99059	27
99326	99304	99281	99258	99234	99210	99186	99161	99136	99111	99085	99059	26
99326	99303	99280	99257	99234	99210	99185	99161	99136	99110	99085	99058	25
99325	99303	99280	99257	99233	99209	99185	99160	99135	99110	99084	99058	24
99325	99302	99280	99256	99233	99209	99185	99160	99135	99109	99084	99058	23
99324	99302	99279	99256	99232	99208	99184	99159	99134	99109	99083	99057	22
99324	99302	99279	99256	99232	99208	99184	99159	99134	99109	99083	99057	21
99324	99301	99278	99255	99232	99208	99183	99159	99134	99108	99082	99056	20
99323	99301	99278	99255	99231	99207	99183	99158	99133	99108	99082	99056	19
99323	99300	99278	99254	99231	99207	99183	99158	99133	99107	99082	99055	18
99323	99300	99277	99254	99230	99206	99182	99157	99132	99107	99081	99055	17
99322	99300	99277	99254	99230	99206	99182	99157	99132	99106	99081	99054	16
99322	99299	99276	99253	99230	99206	99181	99157	99131	99106	99080	99054	15
99321	99299	99276	99253	99229	99205	99181	99156	99131	99106	99080	99054	14
99321	99299	99276	99252	99229	99205	99180	99156	99131	99105	99079	99053	13
99321	99298	99275	99252	99228	99204	99180	99155	99130	99105	99079	99053	12
99320	99298	99275	99252	99228	99204	99180	99155	99130	99104	99078	99052	11
99320	99297	99275	99251	99228	99204	99179	99154	99129	99104	99078	99052	10
99320	99297	99274	99251	99227	99203	99179	99154	99129	99103	99078	99051	9
99319	99297	99274	99250	99227	99203	99178	99154	99129	99103	99077	99051	8
99319	99296	99273	99250	99226	99202	99178	99153	99128	99103	99077	99051	7
99319	99296	99273	99250	99226	99202	99178	99153	99128	99102	99076	99050	6
99318	99296	99273	99249	99226	99202	99177	99152	99127	99102	99076	99050	5
99318	99295	99272	99249	99225	99201	99177	99152	99127	99101	99075	99049	4
99317	99295	99272	99249	99225	99201	99176	99152	99126	99101	99075	99049	3
99317	99294	99271	99248	99224	99200	99176	99151	99126	99100	99075	99048	2
99317	99294	99271	99248	99224	99200	99176	99151	99126	99100	99074	99048	1
99316	99294	99271	99247	99224	99200	99175	99150	99125	99100	99074	99047	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	″

Sine Deg. 88

1 Deg. Tangent

″	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′
	8.24	8.24	8.25	8.26	8.26	8.27	8.28	8.28	8.29	8.30	8.30	8.31
0	19215	91015	61649	31153	99563	66912	33234	98559	62917	26335	88842	50462
1	20421	92202	62817	32302	00694	68026	34331	99640	63981	27385	89876	51482
2	21627	93388	63984	33451	01825	69139	35428	00720	65046	28433	90910	52501
3	22833	94574	65151	34599	02955	70253	36524	01800	66110	29482	91944	53520
4	24038	95760	66317	35747	04085	71365	37620	02879	67174	30531	92977	54539
5	25244	96946	67484	36895	05215	72478	38716	03959	68237	31579	94010	55558
6	26448	98131	68650	38043	06345	73590	39811	05038	69300	32627	95043	56576
7	27653	99315	69815	39190	07474	74702	40906	06117	70363	33674	96076	57595
8	28857	00500	70981	40337	08603	75814	42001	07195	71426	34722	97109	58613
9	30061	01684	72146	41483	09732	76925	43096	08274	72489	35769	98141	59630
10	31264	02868	73310	42630	10860	78036	44190	09352	73551	36816	99173	60648
11	32467	04051	74475	43776	11989	79147	45284	10430	74613	37862	00205	61665
12	33670	05234	75639	44921	13116	80258	46378	11507	75675	38909	01236	62682
13	34872	06417	76803	46067	14244	81368	47471	12584	76736	39955	02267	63699
14	36075	07600	77966	47212	15371	82478	48565	13661	77797	41001	03298	64715
15	37276	08782	79129	48357	16498	83588	49658	14738	78858	42046	04329	65732
16	38478	09964	80292	49501	17625	84697	50750	15815	79919	43092	05360	66748
17	39679	11145	81455	50645	18751	85806	51843	16891	80980	44137	06390	67764
18	40880	12326	82617	51789	19877	86915	52935	17967	82040	45182	07420	68779
19	42080	13507	83779	52933	21003	88024	54027	19042	83100	46226	08450	69795
20	43280	14688	84941	54076	22129	89132	55118	20118	84159	47271	09479	70810
21	44480	15868	86102	55219	23254	90240	56210	21193	85219	48315	10508	71825
22	45680	17048	87263	56362	24379	91348	57301	22268	86278	49359	11538	72839
23	46879	18227	88424	57504	25504	92455	58392	23342	87337	50403	12566	73854
24	48077	19407	89584	58646	26628	93563	59482	24417	88395	51446	13595	74868
25	49276	20586	90744	59788	27752	94670	60572	25491	89454	52489	14623	75882
26	50474	21764	91904	60929	28876	95776	61662	26565	90512	53532	15651	76895
27	51672	22943	93063	62071	29999	96882	62752	27638	91570	54575	16679	77909
28	52869	24121	94223	63212	31122	97988	63841	28711	92627	55617	17707	78922
29	54066	25298	95381	64352	32245	99094	64931	29784	93685	56659	18734	79935
30	55263	26476	96540	65492	33368	00200	66019	30857	94742	57701	19761	80948
31	56460	27653	97698	66632	34490	01305	67108	31930	95799	58743	20788	81960
32	57656	28829	98856	67772	35612	02410	68196	33002	96855	59784	21815	82973
33	58852	30006	00014	68911	36734	03515	69284	34074	97911	60825	22841	83985
34	60047	31182	01171	70051	37856	04619	70372	35145	98967	61866	23867	84997
35	61242	32358	02328	71189	38977	05723	71460	36217	00023	62907	24893	86008
36	62437	33533	03485	72328	40098	06827	72547	37288	01079	63947	25919	87019
37	63632	34708	04641	73466	41218	07930	73634	38359	02134	64987	26944	88031
38	64826	35883	05797	74604	42338	09034	74720	39429	03189	66027	27969	89041
39	66020	37058	06953	75742	43458	10136	75807	40500	04244	67067	28994	90052
40	67213	38232	08108	76879	44578	11239	76893	41570	05298	68106	30019	91062
41	68407	39406	09263	78016	45698	12342	77979	42640	06353	69145	31043	92073
42	69599	40579	10418	79153	46817	13444	79065	43709	07407	70184	32068	93083
43	70792	41752	11573	80289	47936	14545	80150	44779	08460	71223	33092	94092
44	71984	42925	12727	81425	49054	15647	81235	45848	09514	72261	34115	95102
45	73176	44098	13881	82561	50173	16748	82320	46916	10567	73299	35139	96111
46	74368	45270	15034	83696	51291	17849	83404	47985	11620	74337	36162	97120
47	75559	46442	16188	84832	52408	18950	84488	49053	12673	75375	37185	98129
48	76750	47614	17341	85967	53526	20051	85572	50121	13725	76412	38208	99137
49	77940	48785	18493	87101	54643	21151	86656	51189	14778	77449	39230	00145
50	79131	49956	19646	88236	55760	22251	87740	52256	15830	78486	40253	01154
51	80321	51127	20798	89370	56876	23350	88823	53324	16881	79523	41275	02161
52	81510	52297	21950	90503	57992	24450	89906	54391	17933	80559	42296	03169
53	82699	53467	23101	91637	59108	25549	90988	55457	18984	81596	43318	04176
54	83888	54637	24252	92770	60224	26647	92071	56524	20035	82631	44339	05183
55	85077	55806	25403	93903	61340	27746	93153	57590	21086	83667	45360	06190
56	86265	56976	26554	95035	62455	28844	94235	58656	22136	84703	46381	07197
57	87453	58144	27704	96168	63570	29942	95316	59721	23186	85738	47402	08203
58	88641	59313	28854	97300	64684	31040	96397	60787	24236	86773	48422	09210
59	89828	60481	30004	98431	65798	32137	97478	61852	25286	87807	49442	10215
60	91015	61649	31153	99563	66912	33234	98559	62917	26335	88842	50462	11221
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′

Co-Tangent Deg. 88

1 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	″
11.75	11.75	11.74	11.73	11.73	11.72	11.71	11.71	11.70	11.69	11.69	11.68	
80785	08985	38351	68847	00437	33088	66766	01441	37083	73665	11158	49538	60
79579	07798	37183	67698	99306	31974	65669	00360	36019	72615	10124	48518	59
78373	06612	36016	66549	98175	30861	64572	99280	34954	71567	09090	47499	58
77167	05426	34849	65401	97045	29747	63476	98200	33890	70518	08056	46480	57
75962	04240	33683	64253	95915	28635	62380	97121	32826	69469	07023	45461	56
74756	03054	32516	63105	94785	27522	61284	96041	31763	68421	05990	44442	55
73552	01869	31350	61957	93655	26410	60189	94962	30700	67373	04957	43424	54
72347	00685	30185	60810	92526	25298	59094	93883	29637	66326	03924	42405	53
71143	99500	29019	59663	91397	24186	57999	92805	28574	65278	02891	41387	52
69939	98316	27854	58517	90268	23075	56904	91726	27511	64231	01859	40370	51
68736	97132	26690	57370	89140	21964	55810	90648	26449	63184	00827	39352	50
67533	95949	25525	56224	88011	20853	54716	89570	25387	62138	99795	38335	49
66330	94766	24361	55079	86884	19742	53622	88493	24325	61091	98764	37318	48
65128	93583	23197	53933	85756	18632	52529	87416	23264	60045	97733	36301	47
63925	92400	22034	52788	84629	17522	51435	86339	22203	58999	96702	35285	46
62724	91218	20871	51643	83502	16412	50342	85262	21142	57954	95671	34268	45
61522	90036	19708	50499	82375	15303	49250	84185	20081	56908	94640	33252	44
60321	88855	18545	49355	81249	14194	48157	83109	19020	55863	93610	32236	43
59120	87674	17383	48211	80123	13085	47065	82033	17960	54818	92580	31221	42
57920	86493	16221	47067	78997	11976	45973	80958	16900	53774	91550	30205	41
56720	85312	15059	45924	77871	10868	44882	79882	15841	52729	90521	29190	40
55520	84132	13898	44781	76746	09760	43790	78807	14781	51685	89492	28175	39
54320	82952	12737	43638	75621	08652	42699	77732	13722	50641	88462	27161	38
53121	81773	11576	42496	74496	07545	41608	76658	12663	49597	87434	26146	37
51923	80593	10416	41354	73372	06437	40518	75583	11605	48554	86405	25132	36
50724	79414	09256	40212	72248	05330	39428	74509	10546	47511	85377	24118	35
49526	78236	08096	39071	71124	04224	38338	73435	09488	46468	84349	23105	34
48328	77057	06937	37929	70001	03118	37248	72362	08430	45425	83321	22091	33
47131	75879	05777	36788	68878	02012	36159	71289	07373	44383	82293	21078	32
45934	74702	04619	35648	67755	00906	35069	70216	06315	43341	81266	20065	31
44737	73524	03460	34508	66632	99800	33981	69143	05258	42299	80239	19052	30
43540	72347	02302	33368	65510	98695	32892	68070	04201	41257	79212	18040	29
42344	71171	01144	32228	64388	97590	31804	66998	03145	40216	78185	17027	28
41148	69994	99986	31089	63266	96485	30716	65926	02089	39175	77159	16015	27
39953	68818	98829	29949	62144	95381	29628	64855	01033	38134	76133	15003	26
38758	67642	97672	28811	61023	94277	28540	63783	99977	37093	75107	13992	25
37563	66467	96515	27672	59902	93173	27453	62712	98921	36053	74081	12981	24
36368	65292	95359	26534	58782	92070	26366	61641	97866	35013	73056	11969	23
35174	64117	94203	25396	57662	90966	25280	60571	96811	33973	72031	10959	22
33980	62942	93047	24258	56542	89864	24193	59500	95756	32933	71006	09948	21
32787	61768	91892	23121	55422	88761	23107	58430	94702	31894	69981	08938	20
31593	60594	90737	21984	54302	87658	22021	57360	93647	30855	68957	07927	19
30401	59421	89582	20847	53183	86556	20935	56291	92593	29816	67932	06917	18
29208	58248	88427	19711	52064	85455	19850	55221	91540	28777	66908	05908	17
28016	57075	87273	18575	50946	84353	18765	54152	90486	27739	65885	04898	16
26824	55902	86119	17439	49827	83252	17680	53084	89433	26701	64861	03889	15
25632	54730	84966	16304	48709	82151	16596	52015	88380	25663	63838	02880	14
24441	53558	83812	15168	47592	81050	15512	50947	87327	24625	62815	01871	13
23250	52386	82659	14033	46474	79949	14428	49879	86275	23588	61792	00863	12
22060	51215	81507	12899	45357	78849	13344	48811	85222	22551	60770	99855	11
20869	50044	80354	11764	44240	77749	12260	47744	84170	21514	59747	98846	10
19679	48873	79202	10630	43124	76650	11177	46676	83119	20477	58725	97839	9
18490	47703	78050	09497	42008	75550	10094	45609	82067	19441	57704	96831	8
17301	46533	76899	08363	40892	74451	09012	44543	81016	18404	56682	95824	7
16112	45363	75748	07230	39776	73353	07929	43476	79965	17369	55661	94817	6
14923	44194	74597	06097	38660	72254	06847	42410	78914	16333	54640	93810	5
13735	43024	73446	04965	37545	71156	05765	41344	77864	15297	53619	92803	4
12547	41856	72296	03832	36430	70058	04684	40279	76814	14262	52598	91797	3
11359	40687	71146	02700	35316	68960	03603	39213	75764	13227	51578	90790	2
10172	39519	69996	01569	34202	67863	02522	38148	74714	12193	50558	89785	1
08985	38351	68847	00437	33088	66766	01441	37083	73665	11158	49538	88779	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	″

Tangent Deg. 88

1 Deg. Sine

	12′	13′	14′	15′	16′	17′	18′	19′	20′	21′	22′	23′
″	8. 32	8. 32	8. 33	8. 33	8. 34	8. 35	8. 35	8. 36	8. 36	8. 37	8. 37	8. 38
0	10269	70163	29243	87529	45043	01805	57835	13150	67769	21710	74988	27620
1	11274	71155	30221	88494	45995	02745	58762	14066	68674	22603	75870	28492
2	12278	72146	31199	89459	46947	03685	59690	14982	69578	23496	76753	29364
3	13283	73137	32176	90423	47899	04624	60617	15897	70482	24389	77635	30235
4	14287	74127	33153	91387	48851	05563	61544	16813	71386	25282	78517	31106
5	15292	75118	34130	92351	49802	06502	62471	17728	72290	26174	79398	31978
6	16295	76108	35107	93315	50753	07441	63398	18643	73193	27067	80280	32848
7	17299	77098	36084	94279	51704	08379	64324	19558	74097	27959	81161	33719
8	18303	78087	37060	95242	52655	09318	65251	20472	75000	28851	82042	34590
9	19306	79077	38036	96205	53605	10256	66177	21387	75903	29743	82924	35460
10	20309	80066	39012	97168	54555	11194	67103	22301	76806	30635	83804	36330
11	21311	81055	39988	98131	55505	12132	68029	23215	77708	31526	84685	37201
12	22314	82044	40963	99093	56455	13069	68954	24129	78611	32418	85566	38070
13	23316	83032	41938	00055	57405	14006	69880	25042	79513	33309	86446	38940
14	24318	84021	42913	01018	58354	14944	70805	25956	80415	34200	87326	39810
15	25320	85009	43888	01979	59304	15881	71730	26869	81317	35091	88206	40679
16	26322	85997	44863	02941	60253	16817	72654	27782	82219	35981	89086	41548
17	27323	86984	45837	03902	61201	17754	73579	28695	83120	36872	89965	42417
18	28324	87972	46811	04864	62150	18690	74503	29608	84022	37762	90845	43286
19	29325	88959	47785	05825	63098	19626	75427	30520	84923	38652	91724	44155
20	30326	89946	48759	06785	64047	20562	76351	31433	85824	39542	92603	45023
21	31326	90933	49732	07746	64995	21498	77275	32345	86725	40431	93482	45892
22	32326	91919	50706	08706	65942	22433	78199	33257	87625	41321	94361	46760
23	33326	92906	51679	09666	66890	23369	79122	34169	88526	42210	95239	47628
24	34326	93892	52651	10626	67837	24304	80045	35080	89426	43099	96117	48496
25	35325	94878	53624	11586	68784	25239	80968	35991	90326	43988	96996	49363
26	36325	95863	54597	12546	69731	26173	81891	36903	91226	44877	97874	50231
27	37324	96849	55569	13505	70678	27108	82814	37814	92125	45766	98751	51098
28	38322	97834	56541	14464	71625	28042	83736	38724	93025	46654	99629	51965
29	39321	98819	57512	15423	72571	28976	84658	39635	93924	47542	00507	52832
30	40319	99804	58484	16382	73517	29910	85580	40545	94823	48430	01384	53699
31	41317	00788	59455	17340	74463	30844	86502	41456	95722	49318	02261	54565
32	42315	01773	60426	18298	75409	31778	87424	42366	96621	50206	03138	55432
33	43313	02757	61397	19256	76354	32711	88345	43275	97519	51094	04015	56298
34	44310	03740	62368	20214	77300	33644	89266	44185	98418	51981	04891	57164
35	45308	04724	63338	21172	78245	34577	90187	45095	99316	52868	05768	58030
36	46305	05708	64309	22129	79189	35510	91108	46004	00214	53755	06644	58896
37	47301	06691	65279	23086	80134	36442	92029	46913	01111	54642	07520	59761
38	48298	07674	66248	24043	81079	37374	92949	47822	02009	55528	08396	60627
39	49294	08656	67218	25000	82023	38306	93870	48730	02907	56415	09271	61492
40	50290	09639	68187	25957	82967	39238	94790	49639	03804	57301	10147	62357
41	51286	10621	69156	26913	83911	40170	95709	50547	04701	58187	11022	63222
42	52282	11603	70125	27869	84854	41102	96629	51455	05598	59073	11897	64087
43	53277	12585	71094	28825	85798	42033	97549	52363	06494	59959	12772	64951
44	54272	13567	72063	29781	86741	42964	98468	53271	07391	60844	13647	65816
45	55267	14548	73031	30736	87684	43895	99387	54179	08287	61729	14522	66680
46	56262	15529	73999	31691	88627	44826	00306	55086	09183	62615	15396	67544
47	57256	16510	74967	32646	89570	45756	01225	55993	10079	63500	16271	68408
48	58250	17491	75934	33601	90512	46686	02143	56900	10975	64384	17145	69271
49	59244	18472	76902	34556	91454	47617	03061	57807	11870	65269	18019	70135
50	60238	19452	77869	35510	92396	48546	03979	58713	12766	66153	18892	70998
51	61232	20432	78836	36465	93338	49476	04897	59620	13661	67038	19766	71861
52	62225	21412	79803	37419	94280	50406	05815	60526	14556	67922	20639	72724
53	63218	22392	80769	38372	95221	51335	06733	61432	15451	68806	21513	73587
54	64211	23371	81736	39326	96162	52264	07650	62338	16346	69689	22386	74450
55	65204	24350	82702	40279	97103	53193	08567	63244	17240	70573	23258	75312
56	66196	25329	83668	41233	98044	54122	09484	64149	18134	71456	24131	76174
57	67188	26308	84633	42186	98985	55050	10401	65054	19028	72339	25004	77037
58	68180	27287	85599	43138	99925	55979	11317	65959	19922	73222	25876	77898
59	69172	28265	86564	44091	00865	56907	12234	66864	20816	74105	26748	78760
60	70163	29243	87529	45043	01805	57835	13150	67769	21710	74988	27620	79622
″	47′	46′	45′	44′	43′	42′	41′	40′	39′	38′	37′	36′

Co-Sine Deg. 88

1 Deg. Co-Sine

12′	13′	14′	15′	16′	17′	18′	19′	20′	21′	22′	23′	″
9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	″
99047	99021	98994	98966	98939	98911	98882	98853	98824	98794	98764	98734	60
99047	99020	98993	98966	98938	98910	98882	98853	98823	98794	98764	98734	59
99047	99020	98993	98965	98938	98910	98881	98852	98823	98793	98763	98733	58
99046	99019	98992	98965	98937	98909	98881	98852	98822	98793	98763	98733	57
99046	99019	98992	98965	98937	98909	98880	98851	98822	98792	98762	98732	56
99045	99019	98991	98964	98936	98908	98880	98851	98821	98792	98762	98732	55
99045	99018	98991	98964	98936	98908	98879	98850	98821	98791	98761	98731	54
99044	99018	98991	98963	98935	98907	98879	98850	98821	98791	98761	98731	53
99044	99017	98990	98963	98935	98907	98878	98849	98820	98790	98760	98730	52
99043	99017	98990	98962	98934	98906	98878	98849	98820	98790	98760	98730	51
99043	99016	98989	98962	98934	98906	98877	98848	98819	98789	98759	98729	50
99043	99016	98989	98961	98933	98905	98877	98848	98819	98789	98759	98728	49
99042	99015	98988	98961	98933	98905	98876	98847	98818	98788	98758	98728	48
99042	99015	98988	98960	98933	98904	98876	98847	98818	98788	98758	98727	47
99041	99014	98987	98960	98932	98904	98875	98846	98817	98787	98757	98727	46
99041	99014	98987	98959	98932	98903	98875	98846	98817	98787	98757	98726	45
99040	99014	98986	98959	98931	98903	98874	98845	98816	98786	98756	98726	44
99040	99013	98986	98959	98931	98902	98874	98845	98816	98786	98756	98725	43
99039	99013	98986	98958	98930	98902	98873	98844	98815	98785	98755	98725	42
99039	99012	98985	98958	98930	98902	98873	98844	98815	98785	98755	98724	41
99039	99012	98985	98957	98929	98901	98872	98843	98814	98784	98754	98724	40
99038	99011	98984	98957	98929	98901	98872	98843	98814	98784	98754	98723	39
99038	99011	98984	98956	98928	98900	98871	98842	98813	98783	98753	98723	38
99037	99010	98983	98956	98928	98900	98871	98842	98813	98783	98753	98722	37
99037	99010	98983	98955	98927	98899	98871	98842	98812	98782	98752	98722	36
99036	99010	98982	98955	98927	98899	98870	98841	98812	98782	98752	98721	35
99036	99009	98982	98954	98926	98898	98870	98841	98811	98781	98751	98721	34
99035	99009	98981	98954	98926	98898	98869	98840	98811	98781	98751	98720	33
99035	99008	98981	98953	98926	98897	98869	98840	98810	98780	98750	98720	32
99035	99008	98981	98953	98925	98897	98868	98839	98810	98780	98750	98719	31
99034	99007	98980	98953	98925	98896	98868	98839	98809	98779	98749	98719	30
99034	99007	98980	98952	98924	98896	98867	98838	98809	98779	98749	98718	29
99033	99006	98979	98952	98924	98895	98867	98838	98808	98778	98748	98718	28
99033	99006	98979	98951	98923	98895	98866	98837	98808	98778	98748	98717	27
99032	99006	98978	98951	98923	98894	98866	98837	98807	98777	98747	98717	26
99032	99005	98978	98950	98922	98894	98865	98836	98807	98777	98747	98716	25
99031	99005	98977	98950	98922	98893	98865	98836	98806	98776	98746	98716	24
99031	99004	98977	98949	98921	98893	98864	98835	98806	98776	98746	98715	23
99031	99004	98976	98949	98921	98893	98864	98835	98805	98775	98745	98715	22
99030	99003	98976	98948	98920	98892	98863	98834	98805	98775	98745	98714	21
99030	99003	98976	98948	98920	98892	98863	98834	98804	98774	98744	98714	20
99029	99002	98975	98947	98919	98891	98862	98833	98804	98774	98744	98713	19
99029	99002	98975	98947	98919	98891	98862	98833	98803	98773	98743	98713	18
99028	99001	98974	98947	98919	98890	98861	98832	98803	98773	98743	98712	17
99028	99001	98974	98946	98918	98890	98861	98832	98802	98772	98742	98712	16
99027	99001	98973	98946	98918	98889	98860	98831	98802	98772	98742	98711	15
99027	99000	98973	98945	98917	98889	98860	98831	98801	98771	98741	98711	14
99027	99000	98972	98945	98917	98888	98859	98830	98801	98771	98741	98710	13
99026	98999	98972	98944	98916	98888	98859	98830	98800	98770	98740	98710	12
99026	98999	98971	98944	98916	98887	98858	98829	98800	98770	98740	98709	11
99025	98998	98971	98943	98915	98887	98858	98829	98799	98769	98739	98709	10
99025	98998	98971	98943	98915	98886	98858	98828	98799	98769	98739	98708	9
99024	98997	98970	98942	98914	98886	98857	98828	98798	98768	98738	98708	8
99024	98997	98970	98942	98914	98885	98857	98827	98798	98768	98738	98707	7
99023	98996	98969	98941	98913	98885	98856	98827	98797	98767	98737	98706	6
99023	98996	98969	98941	98913	98884	98856	98826	98797	98767	98737	98706	5
99023	98996	98968	98940	98912	98884	98855	98826	98796	98766	98736	98705	4
99022	98995	98968	98940	98912	98883	98855	98825	98796	98766	98736	98705	3
99022	98995	98967	98940	98911	98883	98854	98825	98795	98765	98735	98704	2
99021	98994	98967	98939	98911	98883	98854	98824	98795	98765	98735	98704	1
99021	98994	98966	98939	98911	98882	98853	98824	98794	98764	98734	98703	0
47′	46′	45′	44′	43′	42′	41′	40′	39′	38′	37′	36′	″

Sine Deg. 88

1 Deg. Tangent

"	12′	13′	14′	15′	16′	17′	18′	19′	20′	21′	22′	23′
	8. 32	8. 32	8. 33	8. 33	8. 34	8. 35	8. 35	8. 36	8. 36	8. 37	8. 37	8. 38
0	11221	71143	30249	88563	46105	02895	58953	14297	68945	22915	76223	28886
1	12227	72134	31228	89528	47057	03835	59881	15213	69850	23809	77106	29758
2	13232	73126	32206	90493	48010	04775	60809	16129	70755	24703	77989	30631
3	14237	74117	33184	91458	48962	05715	61737	17045	71660	25596	78872	31503
4	15242	75108	34161	92423	49914	06655	62664	17961	72564	26489	79754	32374
5	16246	76099	35139	93387	50866	07594	63592	18877	73468	27383	80636	33246
6	17251	77090	36116	94351	51817	08533	64519	19793	74372	28275	81519	34117
7	18255	78080	37093	95316	52769	09472	65446	20708	75276	29168	82400	34989
8	19259	79070	38070	96279	53720	10411	66373	21623	76180	30061	83282	35860
9	20262	80060	39046	97243	54671	11350	67299	22538	77083	30953	84164	36731
10	21266	81050	40023	98206	55621	12288	68226	23453	77987	31845	85045	37601
11	22269	82039	40999	99169	56572	13226	69152	24367	78890	32737	85926	38472
12	23272	83028	41975	00132	57522	14164	70078	25281	79793	33629	86807	39342
13	24274	84017	42950	01095	58472	15102	71004	26196	80696	34521	87688	40213
14	25277	85006	43926	02058	59422	16040	71929	27110	81598	35412	88569	41083
15	26279	85995	44901	03020	60372	16977	72855	28023	82501	36304	89449	41953
16	27281	86983	45876	03982	61321	17914	73780	28937	83403	37195	90329	42822
17	28283	87971	46851	04944	62271	18851	74705	29850	84305	38086	91209	43692
18	29285	88959	47826	05906	63220	19788	75630	30763	85207	38976	92089	44561
19	30286	89947	48800	06867	64169	20725	76555	31676	86108	39867	92969	45430
20	31287	90934	49774	07828	65117	21661	77479	32589	87010	40757	93849	46299
21	32288	91921	50748	08789	66066	22597	78403	33502	87911	41647	94728	47168
22	33288	92908	51722	09750	67014	23533	79327	34414	88812	42538	95607	48037
23	34289	93895	52695	10711	67962	24469	80251	35327	89713	43427	96486	48905
24	35289	94882	53669	11671	68910	25405	81175	36239	90614	44317	97365	49774
25	36289	95868	54642	12631	69857	26340	82098	37150	91514	45206	98244	50642
26	37289	96854	55615	13591	70805	27275	83022	38062	92414	46096	99122	51510
27	38288	97840	56587	14551	71752	28210	83945	38974	93315	46985	00001	52378
28	39287	98826	57560	15511	72699	29145	84868	39885	94215	47874	00879	53245
29	40286	99811	58532	16470	73646	30080	85790	40796	95114	48762	01757	54113
30	41285	00796	59504	17429	74592	31014	86713	41707	96014	49651	02634	54980
31	42284	01781	60476	18388	75539	31948	87635	42617	96913	50539	03512	55847
32	43282	02766	61447	19347	76485	32882	88557	43528	97812	51428	04390	56714
33	44280	03751	62419	20305	77431	33816	89479	44438	98711	52316	05267	57581
34	45278	04735	63390	21263	78377	34750	90401	45348	99610	53203	06144	58448
35	46276	05719	64361	22221	79322	35683	91322	46258	00509	54091	07021	59314
36	47273	06703	65331	23179	80268	36616	92243	47168	01407	54979	07898	60180
37	48270	07687	66302	24137	81213	37549	93165	48078	02306	55866	08774	61046
38	49267	08670	67272	25094	82158	38482	94086	48987	03204	56753	09650	61912
39	50264	09653	68242	26052	83103	39414	95006	49896	04102	57640	10527	62778
40	51260	10636	69212	27009	84047	40347	95927	50805	04999	58527	11403	63643
41	52257	11619	70181	27965	84991	41279	96847	51714	05897	59413	12278	64509
42	53253	12601	71151	28922	85936	42211	97767	52623	06794	60299	13154	65374
43	54249	13584	72120	29878	86879	43143	98687	53531	07692	61186	14030	66239
44	55244	14566	73089	30835	87823	44074	99607	54439	08589	62072	14905	67104
45	56240	15548	74058	31791	88767	45006	00527	55347	09485	62958	15780	67969
46	57235	16529	75026	32746	89710	45937	01446	56255	10382	63843	16655	68833
47	58230	17511	75994	33702	90653	46868	02365	57163	11278	64729	17530	69698
48	59224	18492	76963	34657	91596	47799	03284	58070	12175	65614	18404	70562
49	60219	19473	77930	35612	92539	48729	04203	58978	13071	66499	19279	71426
50	61213	20454	78898	36567	93481	49660	05121	59885	13967	67384	20153	72290
51	62207	21434	79866	37522	94423	50590	06040	60792	14862	68269	21027	73153
52	63201	22415	80833	38476	95365	51520	06958	61698	15758	69153	21901	74017
53	64194	23395	81800	39431	96307	52450	07876	62605	16653	70038	22775	74880
54	65188	24375	82767	40385	97249	53379	08794	63511	17548	70922	23648	75743
55	66181	25354	83733	41339	98191	54309	09711	64417	18443	71806	24522	76606
56	67173	26334	84700	42292	99132	55238	10629	65323	19338	72690	25395	77469
57	68166	27313	85666	43246	00073	56167	11546	66229	20232	73574	26268	78332
58	69158	28292	86632	44199	01014	57096	12463	67135	21127	74457	27141	79194
59	70151	29271	87597	45152	01954	58024	13380	68040	22021	75340	28014	80056
60	71143	30249	88563	46105	02895	58953	14297	68945	22915	76223	28886	80918
"	47′	46′	45′	44′	43′	42′	41′	40′	39′	38′	37′	36′

1 Deg. Co-Tangent

12′	13′	14′	15′	16′	17′	18′	19′	20′	21′	22′	23′	"
11. 67	11. 67	11. 66	11. 66	11. 65	11. 64	11. 64	11. 63	11. 63	11. 62	11. 62	11. 61	
88779	28857	69751	11437	53895	97105	41047	85703	31055	77085	23777	71114	60
87773	27866	68772	10472	52943	96165	40119	84787	30150	76191	22894	70242	59
86768	26874	67794	09507	51990	95225	39191	83871	29245	75297	22011	69369	58
85763	25883	66816	08542	51038	94285	38263	82955	28340	74404	21128	68497	57
84758	24892	65839	07577	50086	93345	37336	82039	27436	73511	20246	67626	56
83754	23901	64861	06613	49134	92406	36407	81123	26532	72617	19364	66754	55
82749	22910	63884	05649	48183	91467	35481	80207	25628	71725	18481	65883	54
81745	21920	62907	04684	47231	90528	34554	79292	24724	70832	17600	65011	53
80741	20930	61930	03721	46280	89589	33627	78377	23820	69939	16718	64140	52
79738	19940	60954	02757	45329	88650	32701	77462	22917	69047	15836	63269	51
78734	18950	59977	01794	44379	87712	31774	76547	22013	68155	14955	62399	50
77731	17961	59001	00831	43428	86774	30848	75633	21110	67263	14074	61528	49
76728	16972	58025	99868	42478	85836	29922	74719	20207	66371	13193	60658	48
75726	15983	57050	98905	41528	84898	28996	73804	19304	65479	12312	59787	47
74723	14994	56074	97942	40578	83960	28071	72890	18402	64588	11431	58917	46
73721	14005	55099	96980	39628	83023	27145	71977	17499	63696	10551	58047	45
72719	13017	54124	96018	38679	82086	26220	71063	16597	62805	09671	57178	44
71717	12029	53149	95056	37729	81149	25295	70150	15695	61914	08791	56308	43
70715	11041	52174	94094	36780	80212	24370	69237	14793	61024	07911	55439	42
69714	10053	51200	93133	35831	79275	23445	68324	13892	60133	07031	54570	41
68713	09066	50226	92172	34883	78339	22521	67411	12990	59243	06151	53701	40
67712	08079	49252	91211	33934	77403	21597	66498	12089	58353	05272	52832	39
66712	07092	48278	90250	32986	76467	20673	65586	11188	57462	04393	51963	38
65711	06105	47305	89289	32038	75531	19749	64673	10287	56573	03514	51095	37
64711	05118	46331	88329	31090	74595	18825	63761	09386	55683	02635	50226	36
63711	04132	45358	87369	30143	73660	17902	62850	08486	54794	01756	49358	35
62711	03146	44385	86409	29195	72725	16978	61938	07586	53904	00878	48490	34
61712	02160	43413	85449	28248	71790	16055	61026	06685	53015	99999	47622	33
60713	01174	42440	84489	27301	70855	15132	60115	05785	52126	99121	46755	32
59714	00189	41468	83530	26354	69920	14210	59204	04886	51238	98243	45887	31
58715	99204	40496	82571	25408	68986	13287	58293	03986	50349	97366	45020	30
57716	98219	39524	81612	24461	68052	12365	57383	03087	49461	96488	44153	29
56718	97234	38553	80653	23515	67118	11443	56472	02188	48572	95610	43286	28
55720	96249	37581	79695	22569	66184	10521	55562	01289	47684	94733	42419	27
54722	95265	36610	78737	21623	65250	09599	54652	00390	46797	93856	41552	26
53724	94281	35639	77779	20678	64317	08678	53742	99491	45909	92979	40686	25
52727	93297	34669	76821	19732	63384	07757	52832	98593	45021	92102	39820	24
51730	92313	33698	75863	18787	62451	06835	51922	97694	44134	91226	38954	23
50733	91330	32728	74906	17842	61518	05914	51013	96796	43247	90350	38088	22
49736	90347	31758	73948	16897	60586	04994	50104	95898	42360	89473	37222	21
48740	89364	30788	72991	15953	59653	04073	49195	95001	41473	88597	36357	20
47743	88381	29819	72035	15009	58721	03153	48286	94103	40587	87722	35491	19
46747	87399	28849	71078	14064	57789	02233	47377	93206	39701	86846	34626	18
45751	86416	27880	70122	13121	56857	01313	46469	92308	38814	85970	33761	17
44756	85434	26911	69165	12177	55926	00393	45561	91411	37928	85095	32896	16
43760	84452	25942	68209	11233	54994	99473	44653	90515	37042	84220	32031	15
42765	83471	24974	67254	10290	54063	98554	43745	89618	36157	83345	31167	14
41770	82489	24006	66298	09347	53132	97635	42837	88722	35271	82470	30302	13
40776	81508	23037	65343	08404	52201	96716	41930	87825	34386	81596	29438	12
39781	80527	22070	64388	07461	51271	95797	41022	86929	33501	80721	28574	11
38787	79546	21102	63433	06519	50340	94879	40115	86033	32616	79847	27710	10
37793	78566	20134	62478	05577	49410	93960	39208	85138	31731	78973	26847	9
36799	77585	19167	61524	04635	48480	93042	38302	84242	30847	78099	25983	8
35806	76605	18200	60569	03693	47550	92124	37395	83347	29962	77225	25120	7
34812	75625	17233	59615	02751	46621	91206	36489	82452	29078	76352	24257	6
33819	74646	16267	58661	01809	45691	90289	35583	81557	28194	75478	23394	5
32827	73666	15300	57708	00868	44762	89371	34677	80662	27310	74605	22531	4
31834	72687	14334	56754	99927	43833	88454	33771	79768	26426	73732	21668	3
30842	71708	13368	55801	98986	42904	87537	32865	78873	25543	72859	20806	2
29849	70729	12403	54848	98046	41976	86620	31960	77979	24660	71986	19944	1
28857	69751	11437	53895	97105	41047	85703	31055	77085	23777	71114	19082	0
47′	46′	45′	44′	43′	42′	41′	40′	39′	38′	37′	36′	"

Co-Tangent Deg. 88

Tangent Deg. 88

1 Deg. Sine

″	24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′
	8.58	8.39	8.39	8.40	8.40	8.41	8.41	8.42	8.42	8.43	8.43	8.44
0	79622	31008	81793	31990	81614	30676	79190	27168	74621	21561	67999	13944
1	80483	31859	82634	32822	82436	31489	79994	27963	75408	22339	68768	14706
2	81345	32710	83475	33653	83258	32302	80798	28758	76194	23117	69538	15468
3	82206	33561	84316	34485	84080	33115	81602	29553	76980	23895	70307	16229
4	83067	34412	85157	35316	84902	33927	82405	30348	77766	24672	71077	16990
5	83927	35263	85998	36147	85723	34740	83209	31142	78552	25450	71846	17751
6	84788	36113	86839	36978	86545	35552	84012	31937	79338	26227	72615	18512
7	85648	36964	87679	37809	87366	36364	84815	32731	80124	27004	73384	19273
8	86509	37814	88519	38639	88187	37176	85618	33525	80909	27781	74153	20034
9	87369	38664	89359	39470	89008	37988	86421	34319	81694	28558	74921	20795
10	88229	39513	90199	40300	89829	38800	87223	35113	82480	29335	75690	21555
11	89088	40363	91039	41130	90650	39611	88026	35907	83265	30112	76458	22315
12	89948	41213	91879	41960	91471	40422	88828	36700	84050	30888	77227	23076
13	90807	42062	92718	42790	92291	41234	89630	37494	84835	31665	77995	23836
14	91666	42911	93557	43620	93111	42045	90432	38287	85619	32441	78763	24596
15	92526	43760	94397	44449	93931	42856	91234	39080	86404	33217	79531	25355
16	93384	44609	95236	45279	94751	43666	92036	39873	87188	33993	80298	26115
17	94243	45457	96074	46108	95571	44477	92838	40666	87972	34769	81066	26875
18	95102	46306	96913	46937	96391	45287	93639	41458	88756	35544	81833	27634
19	95960	47154	97751	47766	97210	46098	94441	42251	89540	36320	82601	28393
20	96818	48002	98590	48594	98029	46908	95242	43043	90324	37095	83368	29152
21	97676	48850	99428	49423	98849	47718	96043	43836	91108	37871	84135	29911
22	98534	49698	00266	50251	99668	48528	96844	44628	91891	38646	84902	30670
23	99392	50546	01104	51080	00486	49337	97644	45420	92675	39421	85669	31429
24	00249	51393	01941	51908	01305	50147	98445	46211	93458	40196	86435	32187
25	01107	52240	02779	52736	02124	50956	99245	47003	94241	40970	87202	32946
26	01964	53088	03616	53563	02942	51765	00046	47795	95024	41745	87968	33704
27	02821	53935	04453	54391	03760	52575	00846	48586	95807	42519	88734	34462
28	03678	54781	05290	55218	04578	53383	01646	49377	96590	43294	89501	35221
29	04534	55628	06127	56046	05396	54192	02446	50168	97372	44068	90266	35978
30	05391	56475	06964	56873	06214	55001	03245	50959	98154	44842	91032	36736
31	06247	57321	07801	57700	07032	55809	04045	51750	98937	45616	91798	37494
32	07103	58167	08637	58527	07849	56618	04844	52541	99719	46389	92564	38251
33	07959	59013	09473	59353	08667	57426	05644	53331	00501	47163	93329	39009
34	08815	59859	10309	60180	09484	58234	06443	54122	01283	47937	94094	39766
35	09671	60705	11145	61006	10301	59042	07242	54912	02064	48710	94859	40523
36	10526	61550	11981	61832	11118	59850	08040	55702	02846	49483	95624	41280
37	11382	62395	12816	62658	11934	60657	08839	56492	03627	50256	96389	42037
38	12237	63241	13652	63484	12751	61465	09638	57282	04409	51029	97154	42794
39	13092	64086	14487	64310	13567	62272	10436	58071	05190	51802	97919	43551
40	13947	64930	15322	65135	14383	63079	11234	58861	05971	52574	98683	44307
41	14801	65775	16157	65961	15200	63886	12032	59650	06751	53347	99447	45063
42	15656	66620	16992	66786	16015	64693	12830	60439	07532	54119	00212	45820
43	16510	67464	17826	67611	16831	65499	13628	61229	08313	54892	00976	46576
44	17364	68308	18661	68436	17647	66306	14426	62018	09093	55664	01740	47332
45	18218	69152	19495	69261	18462	67112	15223	62806	09873	56436	02503	48087
46	19072	69996	20329	70085	19278	67919	16020	63595	10654	57207	03267	48843
47	19926	70840	21163	70910	20093	68725	16818	64383	11434	57979	04031	49599
48	20779	71683	21997	71734	20908	69531	17615	65172	12213	58751	04794	50354
49	21633	72527	22831	72558	21723	70336	18412	65960	12993	59522	05557	51109
50	22486	73370	23664	73382	22537	71142	19208	66748	13773	60293	06321	51865
51	23339	74213	24497	74206	23352	71948	20005	67536	14552	61064	07083	52620
52	24191	75056	25331	75030	24166	72753	20801	68324	15332	61835	07846	53375
53	25044	75898	26164	75853	24981	73558	21598	69111	16111	62606	08609	54129
54	25897	76741	26996	76677	25795	74363	22394	69899	16890	63377	09372	54884
55	26749	77583	27829	77500	26609	75168	23190	70686	17669	64148	10134	55638
56	27601	78425	28662	78323	27422	75973	23986	71474	18447	64918	10896	56393
57	28453	79268	29494	79146	28236	76777	24782	72261	19226	65688	11659	57147
58	29305	80109	30326	79969	29050	77582	25577	73048	20004	66459	12421	57901
59	30156	80951	31158	80791	29863	78386	26373	73834	20783	67229	13183	58655
60	31008	81793	31990	81614	30676	79190	27168	74621	21561	67999	13944	59409
″	35′	34′	33′	32′	31′	30′	29′	28′	27′	26′	25′	24′

Co-Sine Deg. 88

1 Deg. Co-Sine

24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′	″
9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	
98703	98672	98641	98609	98577	98544	98512	98478	98445	98411	98376	98342	60
98703	98672	98640	98609	98576	98544	98511	98478	98444	98410	98376	98341	59
98702	98671	98640	98608	98576	98543	98510	98477	98444	98409	98375	98340	58
98702	98671	98639	98608	98575	98543	98510	98477	98443	98409	98375	98340	57
98701	98670	98639	98607	98575	98542	98509	98476	98442	98408	98374	98339	56
98701	98670	98638	98606	98574	98542	98509	98475	98442	98408	98373	98339	55
98700	98669	98638	98606	98574	98541	98508	98475	98441	98407	98373	98338	54
98700	98669	98637	98605	98573	98541	98508	98474	98441	98407	98372	98337	53
98699	98668	98637	98605	98573	98540	98507	98474	98440	98406	98372	98337	52
98699	98668	98636	98604	98572	98540	98507	98473	98440	98405	98371	98336	51
98698	98667	98636	98604	98572	98539	98506	98473	98439	98405	98370	98336	50
98698	98667	98635	98603	98571	98538	98505	98472	98438	98404	98370	98335	49
98697	98666	98635	98603	98570	98538	98505	98472	98438	98404	98369	98335	48
98697	98666	98634	98602	98570	98537	98504	98471	98437	98403	98369	98334	47
98696	98665	98634	98602	98569	98537	98504	98470	98437	98403	98368	98333	46
98696	98665	98633	98601	98569	98536	98503	98470	98436	98402	98368	98333	45
98695	98664	98632	98601	98568	98536	98503	98469	98436	98401	98367	98332	44
98695	98663	98632	98600	98568	98535	98502	98469	98435	98401	98366	98332	43
98694	98663	98631	98600	98567	98535	98502	98468	98434	98400	98366	98331	42
98694	98662	98631	98599	98567	98534	98501	98468	98434	98400	98365	98330	41
98693	98662	98630	98598	98566	98533	98500	98467	98433	98399	98365	98330	40
98693	98661	98630	98598	98566	98533	98500	98467	98433	98399	98364	98329	39
98692	98661	98629	98597	98565	98532	98499	98466	98432	98398	98364	98329	38
98692	98660	98629	98597	98565	98532	98499	98465	98432	98397	98363	98328	37
98691	98660	98628	98596	98564	98531	98498	98465	98431	98397	98362	98328	36
98690	98659	98628	98596	98563	98531	98498	98464	98431	98396	98362	98327	35
98690	98659	98627	98595	98563	98530	98497	98464	98430	98396	98361	98326	34
98689	98658	98627	98595	98562	98530	98497	98463	98429	98395	98361	98326	33
98689	98658	98626	98594	98562	98529	98496	98463	98429	98395	98360	98325	32
98688	98657	98626	98594	98561	98529	98495	98462	98428	98394	98360	98325	31
98688	98657	98625	98593	98561	98528	98495	98461	98428	98393	98359	98324	30
98687	98656	98625	98593	98560	98527	98494	98461	98427	98393	98358	98323	29
98687	98656	98624	98592	98560	98527	98494	98460	98427	98392	98358	98323	28
98686	98655	98623	98591	98559	98526	98493	98460	98426	98392	98357	98322	27
98686	98655	98623	98591	98559	98526	98493	98459	98425	98391	98357	98322	26
98685	98654	98622	98590	98558	98525	98492	98459	98425	98391	98356	98321	25
98685	98654	98622	98590	98557	98525	98492	98458	98424	98390	98355	98321	24
98684	98653	98621	98589	98557	98524	98491	98458	98424	98389	98355	98320	23
98684	98652	98621	98589	98556	98524	98491	98457	98423	98389	98354	98319	22
98683	98652	98620	98588	98556	98523	98490	98456	98423	98388	98354	98319	21
98683	98651	98620	98588	98555	98523	98489	98456	98422	98388	98353	98318	20
98682	98651	98619	98587	98555	98522	98489	98455	98421	98387	98353	98318	19
98682	98650	98619	98587	98554	98521	98488	98455	98421	98387	98352	98317	18
98681	98650	98618	98586	98554	98521	98488	98454	98420	98386	98351	98316	17
98681	98649	98618	98586	98553	98520	98487	98454	98420	98385	98351	98316	16
98680	98649	98617	98585	98553	98520	98487	98453	98419	98385	98350	98315	15
98680	98648	98617	98584	98552	98519	98486	98453	98419	98384	98350	98315	14
98679	98648	98616	98584	98552	98519	98485	98452	98418	98384	98349	98314	13
98679	98647	98616	98583	98551	98518	98485	98451	98417	98383	98349	98313	12
98678	98647	98615	98583	98550	98518	98484	98451	98417	98383	98348	98313	11
98678	98646	98614	98582	98550	98517	98484	98450	98416	98382	98347	98312	10
98677	98646	98614	98582	98549	98516	98483	98450	98416	98381	98347	98312	9
98676	98645	98613	98581	98549	98516	98483	98449	98415	98381	98346	98311	8
98676	98645	98613	98581	98548	98515	98482	98449	98415	98380	98346	98311	7
98675	98644	98612	98580	98548	98515	98482	98448	98414	98380	98345	98310	6
98675	98644	98612	98580	98547	98514	98481	98447	98413	98379	98344	98309	5
98674	98643	98611	98579	98547	98514	98480	98447	98413	98379	98344	98309	4
98674	98642	98611	98579	98546	98513	98480	98446	98412	98378	98343	98308	3
98673	98642	98610	98578	98546	98513	98479	98446	98412	98377	98343	98308	2
98673	98641	98610	98577	98545	98512	98479	98445	98411	98377	98342	98307	1
98672	98641	98609	98577	98544	98512	98478	98445	98411	98376	98342	98306	0
35′	34′	33′	32′	31′	30′	29′	28′	27′	26′	25′	24′	″

Sine Deg. 88

1 Deg. Tangent

″	24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′
	8. 38	8. 39	8. 39	8. 40	8. 40	8. 41	8. 41	8. 42	8. 42	8. 43	8. 43	8. 44
0	80918	32336	83152	33381	83037	32132	80679	28690	76176	23150	69622	15603
1	81780	33187	83994	34213	83859	32945	81483	29485	76963	23929	70393	16365
2	82642	34039	84835	35045	84682	33759	82288	30281	77750	24707	71163	17127
3	83504	34891	85677	35877	85505	34572	83092	31076	78537	25486	71933	17889
4	84365	35742	86519	36709	86327	35385	83896	31872	79324	26264	72703	18651
5	85227	36593	87360	37541	87149	36198	84700	32667	80110	27042	73473	19413
6	86088	37444	88201	38372	87971	37011	85504	33462	80897	27820	74242	20174
7	86949	38295	89042	39203	88793	37823	86307	34257	81683	28598	75012	20936
8	87809	39145	89883	40035	89615	38636	87111	35051	82469	29375	75781	21697
9	88670	39996	90723	40866	90436	39448	87914	35846	83255	30153	76550	22458
10	89530	40846	91564	41696	91258	40261	88717	36640	84041	30930	77320	23219
11	90391	41696	92404	42527	92079	41073	89520	37434	84826	31707	78089	23980
12	91251	42546	93244	43358	92900	41885	90323	38229	85612	32484	78857	24741
13	92111	43396	94084	44188	93721	42696	91126	39023	86397	33261	79626	25502
14	92970	44246	94924	45018	94542	43508	91929	39816	87182	34038	80395	26262
15	93830	45095	95764	45848	95362	44319	92731	40610	87968	34815	81163	27023
16	94689	45945	96603	46678	96183	45131	93533	41404	88752	35591	81931	27783
17	95548	46794	97442	47508	97003	45942	94336	42197	89537	36368	82700	28543
18	96408	47643	98282	48337	97823	46753	95138	42990	90322	37144	83468	29303
19	97266	48492	99121	49167	98643	47564	95940	43783	91106	37920	84235	30063
20	98125	49340	99959	49996	99463	48374	96741	44576	91891	38696	85003	30822
21	98984	50189	00798	50825	00283	49185	97543	45369	92675	39472	85771	31582
22	99842	51037	01637	51654	01103	49995	98344	46162	93459	40248	86538	32341
23	00700	51885	02475	52483	01922	50805	99146	46954	94243	41023	87306	33101
24	01558	52733	03313	53311	02741	51616	99947	47747	95027	41799	88073	33860
25	02416	53581	04151	54140	03560	52425	00748	48539	95811	42574	88840	34619
26	03274	54429	04989	54968	04379	53235	01549	49331	96594	43349	89607	35378
27	04131	55276	05827	55796	05198	54045	02349	50123	97377	44124	90374	36137
28	04989	56124	06664	56624	06017	54854	03150	50915	98161	44899	91140	36895
29	05846	56971	07502	57452	06835	55664	03950	51706	98944	45674	91907	37654
30	06703	57818	08339	58280	07653	56473	04750	52498	99727	46448	92673	38412
31	07560	58665	09176	59107	08472	57282	05550	53289	00510	47223	93440	39171
32	08417	59511	10013	59935	09290	58091	06350	54080	01292	47997	94206	39929
33	09273	60358	10850	60762	10107	58900	07150	54872	02075	48771	94972	40687
34	10129	61204	11686	61589	10925	59708	07950	55662	02857	49545	95738	41444
35	10986	62050	12523	62416	11743	60517	08749	56453	03639	50319	96503	42202
36	11842	62897	13359	63242	12560	61325	09549	57244	04422	51093	97269	42960
37	12697	63742	14195	64069	13377	62133	10348	58034	05204	51867	98034	43717
38	13553	64588	15031	64895	14194	62941	11147	58825	05985	52640	98800	44475
39	14409	65434	15867	65722	15011	63749	11946	59615	06767	53413	99565	45232
40	15264	66279	16702	66548	15828	64556	12745	60405	07549	54187	00330	45989
41	16119	67124	17538	67374	16645	65364	13543	61195	08330	54960	01095	46746
42	16974	67969	18373	68199	17461	66171	14342	61985	09111	55733	01860	47503
43	17829	68814	19208	69025	18278	66979	15140	62774	09892	56506	02624	48259
44	18684	69659	20043	69850	19094	67786	15938	63564	10673	57278	03389	49016
45	19538	70503	20878	70676	19910	68593	16736	64353	11454	58051	04153	49772
46	20393	71348	21713	71501	20726	69399	17534	65142	12235	58823	04918	50529
47	21247	72192	22547	72326	21541	70206	18332	65932	13016	59595	05682	51285
48	22101	73036	23381	73151	22357	71012	19130	66720	13796	60367	06446	52041
49	22955	73880	24216	73975	23172	71819	19927	67509	14576	61139	07209	52797
50	23808	74724	25050	74800	23988	72625	20725	68298	15356	61911	07973	53552
51	24662	75567	25884	75624	24803	73431	21522	69086	16136	62683	08737	54308
52	25515	76411	26717	76449	25618	74237	22319	69875	16916	63455	09500	55063
53	26368	77254	27551	77273	26432	75043	23116	70663	17696	64226	10263	55819
54	27221	78097	28384	78097	27247	75848	23912	71451	18476	64997	11027	56574
55	28074	78940	29217	78920	28062	76654	24709	72239	19255	65768	11790	57329
56	28927	79782	30050	79744	28876	77459	25505	73027	20034	66540	12553	58084
57	29779	80625	30883	80567	29690	78264	26302	73814	20814	67310	13315	58839
58	30631	81467	31716	81391	30504	79069	27098	74602	21593	68081	14078	59594
59	31484	82310	32549	82214	31318	79874	27894	75389	22372	68852	14841	60348
60	32336	83152	33381	83037	32132	80679	28690	76176	23150	69622	15603	61103
″	35′	34′	33′	32′	31′	30′	29′	28′	27′	26′	25′	24′

Co-Tangent Deg. 88

1 Deg. Co-Tangent

24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′	″
11. 61	11. 60	11. 60	11. 59	11. 59	11. 58	11. 58	11. 57	11. 57	11. 56	11. 56	11. 55	
19082	67664	16848	66619	16963	67868	19321	71310	23824	76850	30378	84397	60
18220	66813	16006	65787	16141	67055	18517	70515	23037	76071	29607	83635	59
17358	65961	15165	64955	15318	66241	17712	69719	22250	75293	28837	82873	58
16496	65109	14323	64123	14495	65428	16908	68924	21463	74514	28067	82111	57
15635	64258	13481	63291	13673	64615	16104	68128	20676	73736	27297	81349	56
14773	63407	12640	62459	12851	63802	15300	67333	19890	72958	26527	80587	55
13912	62556	11799	61628	12029	62989	14496	66538	19103	72180	25758	79826	54
13051	61705	10958	60797	11207	62177	13693	65743	18317	71402	24988	79064	53
12191	60855	10117	59965	10385	61364	12889	64949	17531	70625	24219	78303	52
11330	60004	09277	59134	09564	60552	12086	64154	16745	69847	23450	77542	51
10470	59154	08436	58304	08742	59739	11283	63360	15959	69070	22680	76781	50
09609	58304	07596	57473	07921	58927	10480	62566	15174	68293	21911	76020	49
08749	57454	06756	56642	07100	58115	09677	61771	14388	67516	21143	75259	48
07889	56604	05916	55812	06279	57304	08874	60977	13603	66739	20374	74498	47
07030	55754	05076	54982	05458	56492	08071	60184	12818	65962	19605	73738	46
06170	54905	04236	54152	04638	55681	07269	59390	12032	65185	18837	72977	45
05311	54055	03397	53322	03817	54869	06467	58596	11248	64409	18069	72217	44
04452	53206	02558	52492	02997	54058	05664	57803	10463	63632	17300	71457	43
03592	52357	01718	51663	02177	53247	04862	57010	09678	62856	16532	70697	42
02734	51508	00879	50833	01357	52436	04060	56217	08894	62080	15765	69937	41
01875	50660	00041	50004	00537	51626	03259	55424	08109	61304	14997	69178	40
01016	49811	99202	49175	99717	50815	02457	54631	07325	60528	14229	68418	39
00158	48963	98363	48346	98897	50005	01656	53838	06541	59752	13462	67659	38
99300	48115	97525	47517	98078	49195	00854	53046	05757	58977	12694	66899	37
98442	47267	96687	46689	97259	48384	00053	52253	04973	58201	11927	66140	36
97584	46419	95849	45860	96440	47575	99252	51461	04189	57426	11160	65381	35
96726	45571	95011	45032	95621	46765	98451	50669	03406	56651	10393	64622	34
95869	44724	94173	44204	94802	45955	97651	49877	02623	55876	09626	63863	33
95011	43876	93336	43376	93983	45146	96850	49085	01839	55101	08860	63105	32
94154	43029	92498	42548	93165	44336	96050	48294	01056	54326	08093	62346	31
93297	42182	91661	41720	92347	43527	95250	47502	00273	53552	07327	61588	30
92440	41335	90824	40893	91528	42718	94450	46711	99490	52777	06560	60829	29
91583	40489	89987	40065	90710	41909	93650	45920	98708	52003	05794	60071	28
90727	39642	89150	39238	89893	41100	92850	45128	97925	51229	05028	59313	27
89871	38796	88314	38411	89075	40292	92050	44338	97143	50455	04262	58556	26
89014	37950	87477	37584	88257	39483	91251	43547	96361	49681	03497	57798	25
88158	37103	86641	36758	87440	38675	90451	42756	95578	48907	02731	57040	24
87303	36258	85805	35931	86623	37867	89652	41966	94796	48133	01966	56283	23
86447	35412	84969	35105	85806	37059	88853	41175	94015	47360	01200	55525	22
85591	34566	84133	34278	84989	36251	88054	40385	93233	46587	00435	54768	21
84736	33721	83298	33452	84172	35444	87255	39595	92451	45813	99670	54011	20
83881	32876	82462	32626	83355	34636	86457	38805	91670	45040	98905	53254	19
83026	32031	81627	31801	82539	33829	85658	38015	90889	44267	98140	52497	18
82171	31186	80792	30975	81722	33021	84860	37226	90108	43494	97376	51741	17
81316	30341	79957	30150	80906	32214	84062	36436	89327	42722	96611	50984	16
80462	29497	79122	29324	80090	31407	83264	35647	88546	41949	95847	50228	15
79607	28652	78287	28499	79274	30601	82466	34858	87765	41177	95082	49471	14
78753	27808	77453	27674	78459	29794	81668	34068	86984	40405	94318	48715	13
77899	26964	76619	26849	77643	28988	80870	33280	86204	39633	93554	47959	12
77045	26120	75784	26025	76828	28181	80073	32491	85424	38861	92791	47203	11
76192	25276	74950	25200	76012	27375	79275	31702	84644	38089	92027	46448	10
75338	24433	74116	24376	75197	26569	78478	30914	83864	37317	91263	45692	9
74485	23589	73283	23551	74382	25763	77681	30125	83084	36545	90500	44937	8
73632	22746	72449	22727	73568	24957	76884	29337	82304	35774	89737	44181	7
72779	21903	71616	21903	72753	24152	76088	28549	81524	35003	88973	43426	6
71926	21060	70783	21080	71938	23346	75291	27761	80745	34232	88210	43671	5
71073	20218	69950	20256	71124	22541	74495	26973	79966	33460	87447	41916	4
70221	19375	69117	19433	70310	21736	73698	26186	79186	32690	86685	41161	3
69369	18533	68284	18609	69496	20931	72902	25398	78407	31919	85922	40406	2
68516	17690	67451	17786	68682	20126	72106	24611	77628	31148	85159	39652	1
67664	16848	66619	16963	67868	19321	71310	23824	76850	30378	84397	38897	0
35′	34′	33′	32′	31′	30′	29′	28′	27′	26′	25′	24′	″

Tangent Deg. 88

1 Deg. Sine

″	36′	37′	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′
	8. 44	8. 45	8. 45	8. 45	8. 46	8. 46	8. 47	8. 47	8. 48	8. 48	8. 48	8. 49
0	59409	04402	48934	93013	36649	79850	22626	64984	06932	48479	89632	30398
1	60163	05148	49672	93744	37372	80567	23335	65686	07628	49168	90314	31074
2	60916	05894	50410	94474	38096	81283	24044	66388	08323	49857	90997	31750
3	61670	06640	51148	95205	38819	81999	24753	67091	09019	50546	91679	32426
4	62423	07385	51886	95936	39542	82715	25462	67793	09714	51235	92361	33102
5	63176	08131	52624	96666	40265	83431	26171	68495	10410	51923	93043	33778
6	63929	08876	53362	97396	40988	84147	26880	69197	11105	52612	93726	34453
7	64682	09621	54099	98126	41711	84862	27589	69899	11800	53300	94407	35129
8	65435	10366	54837	98856	42434	85578	28297	70600	12495	53989	95089	35804
9	66188	11111	55574	99586	43156	86293	29006	71302	13190	54677	95771	36480
10	66940	11856	56311	00316	43879	87009	29714	72003	13884	55365	96453	37155
11	67693	12601	57048	01046	44601	87724	30422	72705	14579	56053	97134	37830
12	68445	13345	57785	01775	45323	88439	31130	73406	15273	56741	97816	38505
13	69197	14090	58522	02505	46046	89154	31838	74107	15968	57429	98497	39180
14	69949	14834	59259	03234	46768	89869	32546	74808	16662	58116	99178	39855
15	70701	15578	59996	03963	47489	90584	33254	75509	17356	58804	99859	40530
16	71453	16322	60732	04692	48211	91298	33962	76210	18050	59491	00540	41204
17	72205	17066	61468	05421	48933	92013	34669	76910	18744	60179	01221	41879
18	72956	17810	62205	06150	49654	92727	35377	77611	19438	60866	01902	42553
19	73707	18553	62941	06878	50376	93441	36084	78311	20132	61553	02582	43228
20	74459	19297	63677	07607	51097	94156	36791	79012	20825	62240	03263	43902
21	75210	20040	64412	08335	51818	94870	37498	79712	21519	62927	03943	44576
22	75961	20784	65148	09064	52539	95583	38205	80412	22212	63614	04624	45250
23	76712	21527	65884	09792	53260	96297	38912	81112	22905	64300	05304	45924
24	77462	22270	66619	10520	53981	97011	39618	81812	23599	64987	05984	46597
25	78213	23013	67354	11248	54702	97725	40325	82511	24292	65673	06664	47271
26	78963	23755	68090	11976	55422	98438	41032	83211	24985	66360	07344	47945
27	79714	24498	68825	12703	56143	99151	41738	83911	25677	67046	08024	48618
28	80464	25240	69560	13431	56863	99865	42444	84610	26370	67732	08703	49292
29	81214	25983	70295	14158	57583	00578	43150	85309	27063	68418	09383	49965
30	81964	26725	71029	14886	58303	01291	43856	86009	27755	69104	10063	50638
31	82714	27467	71764	15613	59023	02003	44562	86708	28448	69790	10742	51311
32	83463	28209	72498	16340	59743	02716	45268	87407	29140	70476	11421	51984
33	84213	28951	73233	17067	60463	03429	45974	88105	29832	71161	12100	52657
34	84962	29693	73967	17794	61182	04141	46679	88804	30524	71847	12779	53330
35	85712	30434	74701	18520	61902	04854	47385	89503	31216	72532	13458	54002
36	86461	31176	75435	19247	62621	05566	48090	90201	31908	73217	14137	54675
37	87210	31917	76169	19973	63340	06278	48795	90900	32600	73903	14816	55347
38	87959	32659	76902	20700	64059	06990	49500	91598	33291	74588	15495	56020
39	88708	33400	77636	21426	64778	07702	50205	92296	33983	75273	16173	56692
40	89456	34141	78369	22152	65497	08414	50910	92994	34674	75957	16852	57364
41	90205	34881	79103	22878	66216	09126	51615	93692	35365	76642	17530	58036
42	90953	35622	79836	23604	66935	09837	52320	94390	36057	77327	18208	58708
43	91701	36363	80569	24330	67653	10549	53024	95088	36748	78011	18886	59380
44	92450	37103	81302	25055	68372	11260	53729	95785	37439	78696	19564	60051
45	93198	37844	82035	25781	69090	11971	54433	96483	38129	79380	20242	60723
46	93945	38584	82768	26506	69808	12682	55137	97180	38820	80064	20920	61394
47	94693	39324	83500	27231	70526	13393	55841	97878	39511	80748	21598	62066
48	95441	40064	84233	27957	71244	14104	56545	98575	40201	81432	22275	62737
49	96188	40804	84965	28682	71962	14815	57249	99272	40892	82116	22953	63408
50	96936	41543	85697	29406	72680	15526	57953	99969	41582	82800	23630	64079
51	97683	42283	86429	30131	73397	16236	58656	00666	42272	83484	24307	64750
52	98430	43023	87161	30856	74115	16947	59360	01362	42962	84167	24984	65421
53	99177	43762	87893	31580	74832	17657	60063	02059	43652	84851	25661	66092
54	99924	44501	88625	32305	75549	18367	60766	02755	44342	85534	26338	66763
55	00671	45240	89357	33029	76266	19077	61470	03452	45032	86217	27015	67433
56	01417	45979	90088	33753	76983	19787	62173	04148	45721	86900	27692	68104
57	02164	46718	90819	34477	77700	20497	62876	04844	46411	87583	28368	68774
58	02910	47457	91551	35201	78417	21207	63578	05540	47100	88266	29045	69444
59	03656	48195	92282	35925	79134	21916	64281	06236	47790	88949	29721	70114
60	04402	48934	93013	36649	79850	22626	64984	06932	48479	89632	30398	70784
″	23′	22′	21′	20′	19′	18′	17′	16′	15′	14′	13′	12′

Co-Sine Deg. 88

1 Deg. Co-Sine

36′	37′	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′	″
9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	
98306	98271	98235	98199	98162	98125	98088	98050	98012	97974	97935	97896	60
98306	98270	98235	98198	98162	98125	98087	98050	98012	97973	97935	97895	59
98305	98270	98234	98198	98161	98124	98087	98049	98011	97973	97934	97895	58
98305	98269	98233	98197	98160	98124	98086	98049	98010	97972	97933	97894	57
98304	98269	98233	98196	98160	98123	98086	98048	98010	97971	97933	97893	56
98303	98268	98232	98196	98159	98122	98085	98047	98009	97971	97932	97893	55
98303	98267	98232	98195	98159	98122	98084	98047	98009	97970	97931	97892	54
98302	98267	98231	98195	98158	98121	98084	98046	98008	97969	97931	97891	53
98302	98266	98230	98194	98157	98120	98083	98045	98007	97969	97930	97891	52
98301	98266	98230	98193	98157	98120	98082	98045	98007	97968	97929	97890	51
98301	98265	98229	98193	98156	98119	98082	98044	98006	97968	97929	97889	50
98300	98264	98229	98192	98156	98119	98081	98043	98005	97967	97928	97889	49
98299	98264	98228	98192	98155	98118	98081	98043	98005	97966	97927	97888	48
98299	98263	98227	98191	98154	98117	98080	98042	98004	97966	97927	97887	47
98298	98263	98227	98190	98154	98117	98079	98042	98003	97965	97926	97887	46
98298	98262	98226	98190	98153	98116	98079	98041	98003	97964	97925	97886	45
98297	98261	98225	98189	98153	98115	98078	98040	98002	97964	97925	97886	44
98296	98261	98225	98189	98152	98115	98077	98040	98002	97963	97924	97885	43
98296	98260	98224	98188	98151	98114	98077	98039	98001	97962	97923	97884	42
98295	98260	98224	98187	98151	98114	98076	98038	98000	97962	97923	97884	41
98295	98259	98223	98187	98150	98113	98076	98038	98000	97961	97922	97883	40
98294	98258	98222	98186	98149	98112	98075	98037	97999	97960	97921	97882	39
98293	98258	98222	98186	98149	98112	98074	98036	97998	97960	97921	97882	38
98293	98257	98221	98185	98148	98111	98074	98036	97998	97959	97920	97881	37
98292	98257	98221	98184	98148	98111	98073	98035	97997	97958	97920	97880	36
98292	98256	98220	98184	98147	98110	98072	98035	97996	97958	97919	97880	35
98291	98255	98219	98183	98146	98109	98072	98034	97996	97957	97918	97879	34
98291	98255	98219	98182	98146	98109	98071	98033	97995	97957	97918	97878	33
98290	98254	98218	98182	98145	98108	98071	98033	97994	97956	97917	97878	32
98289	98254	98218	98181	98145	98107	98070	98032	97994	97955	97916	97877	31
98289	98253	98217	98181	98144	98107	98069	98031	97993	97955	97916	97876	30
98288	98252	98216	98180	98143	98106	98069	98031	97993	97954	97915	97876	29
98288	98252	98216	98179	98143	98106	98068	98030	97992	97953	97914	97875	28
98287	98251	98215	98179	98142	98105	98067	98030	97991	97953	97914	97874	27
98286	98251	98215	98178	98141	98104	98067	98029	97991	97952	97913	97874	26
98286	98250	98214	98178	98141	98104	98066	98028	97990	97951	97912	97873	25
98285	98249	98213	98177	98140	98103	98066	98028	97989	97951	97912	97872	24
98285	98249	98213	98176	98140	98102	98065	98027	97989	97950	97911	97872	23
98284	98248	98212	98176	98139	98102	98064	98026	97988	97949	97910	97871	22
98283	98248	98212	98175	98138	98101	98064	98026	97987	97949	97910	97870	21
98283	98247	98211	98175	98138	98101	98063	98025	97987	97948	97909	97870	20
98282	98246	98210	98174	98137	98100	98062	98024	97986	97947	97908	97869	19
98282	98246	98210	98173	98137	98099	98062	98024	97986	97947	97908	97868	18
98281	98245	98209	98173	98136	98099	98061	98023	97985	97946	97907	97868	17
98280	98245	98209	98172	98135	98098	98060	98023	97984	97946	97906	97867	16
98280	98244	98208	98172	98135	98097	98060	98022	97984	97945	97906	97866	15
98279	98244	98207	98171	98134	98097	98059	98021	97983	97944	97905	97866	14
98279	98243	98207	98170	98133	98096	98059	98021	97982	97944	97905	97865	13
98278	98242	98206	98170	98133	98096	98058	98020	97982	97943	97904	97864	12
98277	98242	98206	98169	98132	98095	98057	98019	97981	97942	97903	97864	11
98277	98241	98205	98168	98132	98094	98057	98019	97980	97942	97903	97863	10
98276	98241	98204	98168	98131	98094	98056	98018	97980	97941	97902	97862	9
98276	98240	98204	98167	98130	98093	98055	98017	97979	97940	97901	97862	8
98275	98239	98203	98167	98130	98092	98055	98017	97978	97940	97901	97861	7
98275	98239	98203	98166	98129	98092	98054	98016	97978	97939	97900	97860	6
98274	98238	98202	98165	98128	98091	98054	98016	97977	97938	97899	97860	5
98273	98238	98201	98165	98128	98091	98053	98015	97977	97938	97899	97859	4
98273	98237	98201	98164	98127	98090	98052	98014	97976	97937	97898	97858	3
98272	98236	98200	98164	98127	98089	98052	98014	97975	97936	97897	97858	2
98272	98236	98200	98163	98126	98089	98051	98013	97975	97936	97897	97857	1
98271	98235	98199	98162	98125	98088	98050	98012	97974	97935	97896	97856	0
23′	22′	21′	20′	19′	18′	17′	16′	15′	14′	13′	12′	″

Sine Deg. 88

1 Deg. Tangent

"	36′	37′	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′
	8. 44	8. 45	8. 45	8. 45	8. 46	8. 46	8. 47	8. 47	8. 48	8. 48	8. 48	8. 49
0	61103	06131	50699	94814	38486	81725	24538	66933	08920	50505	91696	32502
1	61857	06878	51438	95545	39211	82442	25248	67636	09616	51195	92380	33179
2	62611	07624	52176	96277	39935	83159	25957	68339	10312	51884	93063	33855
3	63365	08371	52915	97008	40659	83875	26667	69042	11008	52574	93746	34532
4	64119	09117	53654	97739	41382	84592	27377	69745	11704	53263	94429	35208
5	64873	09863	54392	98470	42106	85309	28086	70448	12400	53953	95112	35885
6	65627	10609	55130	99201	42830	86025	28796	71150	13096	54642	95794	36561
7	66380	11354	55868	99932	43553	86741	29505	71853	13792	55331	96477	37237
8	67133	12100	56607	00662	44276	87458	30214	72555	14487	56020	97159	37914
9	67887	12846	57344	01393	45000	88174	30923	73257	15183	56709	97842	38590
10	68640	13591	58082	02123	45723	88890	31632	73959	15878	57397	98524	39266
11	69393	14336	58820	02853	46446	89605	32341	74661	16574	58086	99206	39941
12	70146	15081	59558	03584	47168	90321	33050	75363	17269	58775	99888	40617
13	70898	15826	60295	04314	47891	91037	33758	76065	17964	59463	00570	41293
14	71651	16571	61032	05043	48614	91752	34467	76766	18659	60151	01252	41968
15	72404	17316	61769	05773	49336	92468	35175	77468	19353	60839	01934	42643
16	73156	18061	62506	06503	50059	93183	35884	78169	20048	61528	02615	43319
17	73908	18805	63243	07232	50781	93898	36592	78871	20743	62216	03297	43994
18	74660	19549	63980	07962	51503	94613	37300	79572	21437	62903	03978	44669
19	75412	20294	64717	08691	52225	95328	38008	80273	22131	63591	04660	45344
20	76164	21038	65453	09420	52947	96043	38715	80974	22826	64279	05341	46019
21	76916	21782	66190	10149	53669	96757	39423	81675	23520	64966	06022	46694
22	77667	22526	66926	10878	54390	97472	40131	82375	24214	65654	06703	47368
23	78419	23269	67662	11607	55112	98186	40838	83076	24908	66341	07384	48043
24	79170	24013	68398	12336	55833	98900	41545	83776	25602	67028	08065	48717
25	79921	24757	69134	13064	56555	99615	42253	84477	26295	67716	08745	49392
26	80672	25500	69870	13792	57276	00329	42960	85177	26989	68403	09426	50066
27	81423	26243	70606	14521	57997	01043	43667	85877	27682	69089	10106	50740
28	82174	26986	71341	15249	58718	01756	44374	86577	28376	69776	10787	51414
29	82925	27729	72077	15977	59439	02470	45080	87277	29069	70463	11467	52088
30	83675	28472	72812	16705	60159	03184	45787	87977	29762	71149	12147	52762
31	84426	29215	73547	17433	60880	03897	46494	88677	30455	71836	12827	53435
32	85176	29957	74282	18160	61600	04611	47200	89376	31148	72522	13507	54109
33	85926	30700	75017	18888	62321	05324	47906	90076	31841	73209	14187	54783
34	86676	31442	75752	19615	63041	06037	48612	90775	32533	73895	14866	55456
35	87426	32184	76487	20343	63761	06750	49319	91475	33226	74581	15546	56129
36	88176	32926	77221	21070	64481	07463	50025	92174	33919	75267	16226	56802
37	88925	33668	77956	21797	65201	08176	50730	92873	34611	75952	16905	57476
38	89675	34410	78690	22524	65921	08888	51436	93572	35303	76638	17584	58148
39	90424	35152	79424	23251	66640	09601	52142	94271	35995	77324	18263	58821
40	91173	35893	80158	23978	67360	10313	52847	94969	36687	78009	18942	59494
41	91923	36635	80892	24704	68079	11026	53553	95668	37379	78695	19621	60167
42	92672	37376	81626	25431	68798	11738	54258	96366	38071	79380	20300	60839
43	93420	38117	82360	26157	69517	12450	54963	97065	38763	80065	20979	61512
44	94169	38859	83094	26883	70236	13162	55668	97763	39454	80750	21658	62184
45	94918	39599	83827	27609	70955	13874	56373	98461	40146	81435	22336	62856
46	95666	40340	84560	28335	71674	14586	57078	99159	40837	82120	23015	63529
47	96415	41081	85293	29061	72393	15297	57783	99857	41528	82805	23693	64201
48	97163	41822	86027	29787	73111	16009	58487	00555	42220	83489	24371	64873
49	97911	42562	86760	30512	73830	16720	59192	01252	42911	84174	25049	65544
50	98659	43302	87492	31238	74548	17431	59896	01950	43602	84858	25727	66216
51	99407	44043	88225	31963	75266	18142	60600	02648	44292	85543	26405	66888
52	00154	44783	88958	32689	75984	18853	61304	03345	44983	86227	27083	67559
53	00902	45523	89690	33414	76702	19564	62008	04042	45674	86911	27761	68231
54	01649	46262	90422	34139	77420	20275	62712	04739	46364	87595	28438	68902
55	02397	47002	91155	34864	78138	20986	63416	05436	47055	88279	29116	69573
56	03144	47742	91887	35588	78855	21696	64120	06133	47745	88962	29793	70244
57	03891	48481	92619	36313	79573	22407	64823	06830	48435	89646	30471	70915
58	04638	49220	93351	37038	80290	23117	65527	07527	49125	90330	31148	71586
59	05385	49960	94082	37762	81008	23827	66230	08223	49815	91013	31825	72257
60	06131	50699	94814	38486	81725	24538	66933	08920	50505	91696	32502	72928
"	23′	22′	21′	20′	19′	18′	17′	16′	15′	14′	13′	12′

Co-Tangent Deg. 88

1 Deg. Co-Tangent

36′	37′	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′	"
11. 55	11. 54	11. 54	11. 54	11. 53	11. 53	11. 52	11. 52	11. 51	11. 51	11. 51	11. 50	
38897	93869	49301	05186	61514	18275	75462	33067	91080	49495	08304	67498	60
38143	93122	48562	04455	60789	17558	74752	32364	90384	48805	07620	66821	59
37389	92376	47824	03723	60065	16841	74043	31661	89688	48116	06937	66145	58
36635	91629	47085	02992	59341	16125	73333	30958	88992	47426	06254	65468	57
35881	90883	46346	02261	58618	15408	72623	30255	88296	46737	05571	64792	56
35127	90137	45608	01530	57894	14691	71914	29552	87600	46047	04888	64115	55
34373	89391	44870	00799	57170	13975	71204	28850	86904	45358	04206	63439	54
33620	88646	44132	00068	56447	13259	70495	28147	86208	44669	03523	62763	53
32867	87900	43393	99338	55724	12542	69786	27445	85513	43980	02841	62086	52
32113	87154	42656	98607	55000	11826	69077	26743	84817	43291	02158	61410	51
31360	86409	41918	97877	54277	11110	68368	26041	84122	42603	01476	60734	50
30607	85664	41180	97147	53554	10395	67659	25339	83426	41914	00794	60059	49
29854	84919	40442	96416	52832	09679	66950	24637	82731	41225	00112	59383	48
29102	84174	39705	95686	52109	08963	66242	23935	82036	40537	99430	58707	47
28349	83429	38968	94957	51386	08248	65533	23234	81341	39849	98748	58032	46
27596	82684	38231	94227	50664	07532	64825	22532	80647	39161	98066	57357	45
26844	81939	37494	93497	49941	06817	64116	21831	79952	38472	97385	56681	44
26092	81195	36757	92768	49219	06102	63408	21129	79257	37784	96703	56006	43
25340	80451	36020	92038	48497	05387	62700	20428	78563	37097	96022	55331	42
24588	79706	35283	91309	47775	04672	61992	19727	77869	36409	95340	54656	41
23836	78962	34547	90580	47053	03957	61285	19026	77174	35721	94659	53981	40
23084	78218	33810	89851	46331	03243	60577	18325	76480	35034	93978	53306	39
22333	77474	33074	89122	45610	02528	59869	17625	75786	34346	93297	52632	38
21581	76731	32338	88393	44888	01814	59162	16924	75092	33659	92616	51957	37
20830	75987	31602	87664	44167	01100	58455	16224	74398	32972	91935	51283	36
20079	75243	30866	86936	43445	00385	57747	15523	73705	32284	91255	50608	35
19328	74500	30130	86208	42724	99671	57040	14823	73011	31597	90574	49934	34
18577	73757	29394	85479	42003	98957	56333	14123	72318	30911	89894	49260	33
17826	73014	28659	84751	41282	98244	55626	13423	71624	30224	89213	48586	32
17075	72271	27923	84023	40561	97530	54920	12723	70931	29537	88533	47912	31
16325	71528	27188	83295	39841	96816	54213	12023	70238	28851	87853	47238	30
15574	70785	26453	82567	39120	96103	53506	11323	69545	28164	87173	46565	29
14824	70043	25718	81840	38400	95389	52800	10624	68852	27478	86493	45891	28
14074	69300	24983	81112	37679	94676	52094	09924	68159	26791	85813	45217	27
13324	68558	24248	80385	36959	93963	51388	09225	67467	26105	85134	44544	26
12574	67816	23513	79657	36239	93250	50681	08525	66774	25419	84454	43871	25
11824	67074	22779	78930	35519	92537	49975	07826	66081	24733	83774	43198	24
11075	66332	22044	78203	34799	91824	49270	07127	65389	24048	83095	42524	23
10325	65590	21310	77476	34079	91112	48564	06428	64697	23362	82416	41852	22
09576	64848	20576	76749	33360	90399	47858	05729	64005	22676	81737	41179	21
08827	64107	19842	76022	32640	89687	47153	05031	63313	21991	81058	40506	20
08077	63365	19108	75296	31921	88974	46447	04332	62621	21305	80379	39833	19
07328	62624	18374	74569	31202	88262	45742	03634	61929	20620	79700	39161	18
06580	61883	17640	73843	30483	87550	45037	02935	61237	19935	79021	38488	17
05831	61141	16906	73117	29764	86838	44332	02237	60546	19250	78342	37816	16
05082	60401	16173	72391	29045	86126	43627	01539	59854	18565	77664	37144	15
04334	59660	15440	71665	28326	85414	42922	00841	59163	17880	76985	36471	14
03585	58919	14707	70939	27607	84703	42217	00143	58472	17195	76307	35799	13
02837	58178	13973	70213	26889	83991	41513	99445	57780	16511	75629	35127	12
02089	57438	13240	69488	26170	83280	40808	98748	57089	15826	74951	34456	11
01341	56698	12508	68762	25452	82569	40104	98050	56398	15142	74273	33784	10
00593	55957	11775	68037	24734	81858	39400	97352	55708	14457	73595	33112	9
99846	55217	11042	67311	24016	81147	38696	96655	55017	13773	72917	32441	8
99098	54477	10310	66586	23298	80436	37992	95958	54326	13089	72239	31769	7
98351	53738	09578	65861	22580	79725	37288	95261	53636	12405	71562	31098	6
97603	52998	08845	65136	21862	79014	36584	94564	52945	11721	70884	30427	5
96856	52258	08113	64412	21145	78304	35880	93867	52255	11038	70207	29756	4
96109	51519	07381	63687	20427	77593	35177	93170	51565	10354	69529	29085	3
95362	50780	06649	62962	19710	76883	34473	92473	50875	09670	68852	28414	2
94615	50040	05918	62238	18992	76173	33770	91777	50185	08987	68175	27743	1
93869	49301	05186	61514	18275	75462	33067	91080	49495	08304	67498	27072	0
23′	22′	21′	20′	19′	18′	17′	16′	15′	14′	13′	12′	"

Tangent Deg. 88

1 Deg. Sine

"	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	8. 49	8. 50	8. 50	8. 50	8. 51	8. 51	8. 52	8. 52	8. 52	8. 53	8. 53	8. 53
0	70784	10798	50447	89736	28673	67264	05514	43430	81017	18281	55228	91863
1	71454	11462	51105	90388	29319	67904	06148	44059	81641	18900	55842	92471
2	72124	12126	51762	91040	29965	68544	06783	44688	82264	19518	56455	93079
3	72794	12790	52420	91691	30611	69184	07417	45317	82888	20136	57068	93687
4	73463	13453	53077	92343	31256	69824	08052	45946	83511	20754	57680	94295
5	74133	14116	53735	92994	31902	70464	08686	46574	84135	21372	58293	94902
6	74802	14780	54392	93646	32548	71104	09320	47203	84758	21990	58906	95510
7	75472	15443	55049	94297	33193	71743	09954	47832	85381	22608	59518	96117
8	76141	16106	55706	94948	33838	72383	10588	48460	86004	23226	60131	96725
9	76810	16769	56363	95599	34484	73023	11222	49088	86627	23844	60743	97332
10	77479	17432	57020	96250	35129	73662	11856	49717	87250	24461	61356	97939
11	78148	18095	57677	96901	35774	74301	12490	50345	87873	25079	61968	98546
12	78817	18757	58333	97552	36419	74941	13123	50973	88495	25696	62580	99153
13	79485	19420	58990	98202	37064	75580	13757	51601	89118	26313	63192	99760
14	80154	20082	59646	98853	37708	76219	14390	52229	89741	26931	63804	00367
15	80823	20745	60303	99503	38353	76858	15024	52857	90363	27548	64416	00974
16	81491	21407	60959	00154	38997	77497	15657	53485	90985	28165	65028	01581
17	82159	22069	61615	00804	39642	78135	16290	54112	91608	28782	65640	02187
18	82827	22731	62271	01454	40286	78774	16923	54740	92230	29399	66251	02794
19	83495	23393	62927	02104	40931	79413	17556	55367	92852	30015	66863	03400
20	84163	24055	63583	02754	41575	80051	18189	55995	93474	30632	67474	04007
21	84831	24717	64239	03404	42219	80689	18822	56622	94096	31249	68086	04613
22	85499	25378	64894	04054	42863	81328	19455	57249	94718	31865	68697	05219
23	86167	26040	65550	04703	43507	81966	20087	57877	95339	32482	69308	05825
24	86834	26701	66205	05353	44150	82604	20720	58504	95961	33098	69920	06431
25	87502	27363	66861	06002	44794	83242	21352	59131	96583	33714	70531	07037
26	88169	28024	67516	06652	45438	83880	21985	59757	97204	34330	71142	07643
27	88836	28685	68171	07301	46081	84518	22617	60384	97826	34946	71752	08249
28	89504	29346	68826	07950	46725	85156	23249	61011	98447	35562	72363	08854
29	90171	30007	69481	08599	47368	85793	23881	61637	99068	36178	72974	09460
30	90838	30668	70136	09248	48011	86431	24513	62264	99689	36794	73585	10066
31	91504	31329	70791	09897	48654	87068	25145	62890	00310	37410	74195	10671
32	92171	31989	71446	10546	49297	87706	25777	63517	00931	38026	74806	11276
33	92838	32650	72100	11195	49940	88343	26408	64143	01552	38641	75416	11882
34	93504	33310	72755	11843	50583	88980	27040	64769	02173	39257	76026	12487
35	94171	33971	73409	12492	51226	89617	27672	65395	02793	39872	76636	13092
36	94837	34631	74063	13140	51869	90254	28303	66021	03414	40487	77247	13697
37	95503	35291	74717	13789	52511	90891	28934	66647	04034	41103	77857	14302
38	96169	35951	75371	14437	53154	91528	29566	67273	04655	41718	78466	14907
39	96835	36611	76025	15085	53796	92164	30197	67898	05275	42333	79076	15511
40	97501	37271	76679	15733	54438	92801	30828	68524	05895	42948	79686	16116
41	98167	37931	77333	16381	55080	93438	31459	69149	06516	43563	80296	16721
42	98833	38590	77987	17029	55722	94074	32090	69775	07136	44177	80905	17325
43	99499	39250	78640	17676	56364	94710	32720	70400	07756	44792	81515	17929
44	00164	39909	79294	18324	57006	95347	33351	71025	08375	45407	82124	18534
45	00829	40569	79947	18972	57648	95983	33982	71651	08995	46021	82734	19138
46	01495	41228	80601	19619	58290	96619	34612	72276	09615	46636	83343	19742
47	02160	41887	81254	20266	58931	97255	35243	72901	10235	47250	83952	20346
48	02825	42546	81907	20914	59573	97891	35873	73525	10854	47864	84561	20950
49	03490	43205	82560	21561	60214	98526	36503	74150	11473	48478	85170	21554
50	04155	43864	83213	22208	60856	99162	37133	74775	12093	49092	85779	22158
51	04820	44523	83866	22855	61497	99798	37763	75400	12712	49706	86388	22762
52	05485	45181	84518	23502	62138	00433	38393	76024	13331	50320	86997	23365
53	06149	45840	85171	24148	62779	01069	39023	76648	13950	50934	87605	23969
54	06814	46498	85823	24795	63420	01704	39653	77273	14569	51548	88214	24572
55	07478	47157	86476	25442	64061	02339	40283	77897	15188	52161	88822	25176
56	08142	47815	87128	26088	64701	02974	40912	78521	15807	52775	89431	25779
57	08806	48473	87780	26735	65342	03609	41542	79145	16426	53389	90039	26382
58	09471	49131	88432	27381	65983	04244	42171	79769	17044	54002	90647	26986
59	10135	49789	89084	28027	66623	04879	42800	80393	17663	54615	91255	27589
60	10798	50447	89736	28673	67264	05514	43430	81017	18281	55228	91863	28192
"	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Sine Deg. 88

1 Deg. Co-Sine

48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	"
9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	
97856	97817	97776	97736	97695	97653	97612	97570	97527	97484	97441	97398	60
97856	97816	97776	97735	97694	97653	97611	97569	97526	97484	97440	97397	59
97855	97815	97775	97734	97693	97652	97610	97568	97526	97483	97440	97396	58
97855	97815	97774	97734	97693	97651	97610	97567	97525	97482	97439	97395	57
97854	97814	97774	97733	97692	97651	97609	97567	97524	97481	97438	97395	56
97853	97813	97773	97732	97691	97650	97608	97566	97524	97481	97437	97394	55
97853	97813	97772	97732	97691	97649	97607	97565	97523	97480	97437	97393	54
97852	97812	97772	97731	97690	97649	97607	97565	97522	97479	97436	97392	53
97851	97811	97771	97730	97689	97648	97606	97564	97521	97479	97435	97392	52
97851	97811	97770	97730	97689	97647	97605	97563	97521	97478	97435	97391	51
97850	97810	97770	97729	97688	97646	97605	97563	97520	97477	97434	97390	50
97849	97809	97769	97728	97687	97646	97604	97562	97519	97476	97433	97389	49
97849	97809	97768	97728	97687	97645	97603	97561	97519	97476	97432	97389	48
97848	97808	97768	97727	97686	97644	97603	97560	97518	97475	97432	97388	47
97847	97807	97767	97726	97685	97644	97602	97560	97517	97474	97431	97387	46
97847	97807	97766	97726	97684	97643	97601	97559	97516	97474	97430	97387	45
97846	97806	97766	97725	97684	97642	97600	97558	97516	97473	97430	97386	44
97845	97805	97765	97724	97683	97642	97600	97558	97515	97472	97429	97385	43
97845	97805	97764	97723	97682	97641	97599	97557	97514	97471	97428	97384	42
97844	97804	97764	97723	97682	97640	97598	97556	97514	97471	97427	97384	41
97843	97803	97763	97722	97681	97640	97598	97555	97513	97470	97427	97383	40
97843	97803	97762	97721	97680	97639	97597	97555	97512	97469	97426	97382	39
97842	97802	97762	97721	97680	97638	97596	97554	97511	97468	97425	97381	38
97841	97801	97761	97720	97679	97637	97596	97553	97511	97468	97424	97381	37
97841	97801	97760	97719	97678	97637	97595	97553	97510	97467	97424	97380	36
97840	97800	97759	97719	97678	97636	97594	97552	97509	97466	97423	97379	35
97839	97799	97759	97718	97677	97635	97593	97551	97509	97466	97422	97379	34
97839	97799	97758	97717	97676	97635	97593	97551	97508	97465	97422	97378	33
97838	97798	97757	97717	97675	97634	97592	97550	97507	97464	97421	97377	32
97837	97797	97757	97716	97675	97633	97591	97549	97506	97463	97420	97376	31
97837	97797	97756	97715	97674	97633	97591	97548	97506	97463	97419	97376	30
97836	97796	97755	97715	97673	97632	97590	97548	97505	97462	97419	97375	29
97835	97795	97755	97714	97673	97631	97589	97547	97504	97461	97418	97374	28
97835	97795	97754	97713	97672	97630	97589	97546	97504	97461	97417	97373	27
97834	97794	97753	97713	97671	97630	97588	97546	97503	97460	97416	97373	26
97833	97793	97753	97712	97671	97629	97587	97545	97502	97459	97416	97372	25
97833	97792	97752	97711	97670	97628	97586	97544	97501	97458	97415	97371	24
97832	97792	97751	97710	97669	97628	97586	97543	97501	97458	97414	97370	23
97831	97791	97751	97710	97669	97627	97585	97543	97500	97457	97414	97370	22
97831	97790	97750	97709	97668	97626	97584	97542	97499	97456	97413	97369	21
97830	97790	97749	97708	97667	97626	97584	97541	97499	97456	97412	97368	20
97829	97789	97749	97708	97667	97625	97583	97541	97498	97455	97411	97368	19
97829	97788	97748	97707	97666	97624	97582	97540	97497	97454	97411	97367	18
97828	97788	97747	97706	97665	97624	97582	97539	97496	97453	97410	97366	17
97827	97787	97747	97706	97664	97623	97581	97538	97496	97453	97409	97365	16
97827	97786	97746	97705	97664	97622	97580	97538	97495	97452	97408	97365	15
97826	97786	97745	97704	97663	97621	97579	97537	97494	97451	97408	97364	14
97825	97785	97745	97704	97662	97621	97579	97536	97494	97450	97407	97363	13
97825	97784	97744	97703	97662	97620	97578	97536	97493	97450	97406	97362	12
97824	97784	97743	97702	97661	97619	97577	97535	97492	97449	97406	97362	11
97823	97783	97743	97702	97660	97619	97577	97534	97491	97448	97405	97361	10
97823	97782	97742	97701	97660	97618	97576	97534	97491	97448	97404	97360	9
97822	97782	97741	97700	97659	97617	97575	97533	97490	97447	97403	97359	8
97821	97781	97740	97700	97658	97617	97574	97532	97489	97446	97403	97359	7
97821	97780	97740	97699	97658	97616	97574	97531	97489	97445	97402	97358	6
97820	97780	97739	97698	97657	97615	97573	97531	97488	97445	97401	97357	5
97819	97779	97738	97697	97656	97614	97572	97530	97487	97444	97400	97357	4
97819	97778	97738	97697	97655	97614	97572	97529	97486	97443	97400	97356	3
97818	97778	97737	97696	97655	97613	97571	97529	97486	97443	97399	97355	2
97817	97777	97736	97695	97654	97612	97570	97528	97485	97442	97398	97354	1
97817	97776	97736	97695	97653	97612	97570	97527	97484	97441	97398	97354	0
11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	"

Sine Deg. 88

1 Deg. Tangent

″	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	8. 49	8. 50	8. 50	8. 50	8. 51	8. 51	8. 52	8. 52	8. 52	8. 53	8. 53	8. 53
0	72928	12982	52671	92001	30978	69610	07902	45860	83490	20797	57787	94466
1	73598	13646	53329	92653	31625	70251	08537	46490	84114	21416	58401	95075
2	74269	14311	53987	93305	32272	70892	09173	47120	84739	22035	59015	95683
3	74939	14975	54646	93958	32918	71533	09808	47749	85363	22654	59629	96292
4	75610	15639	55304	94610	33564	72173	10443	48379	85987	23273	60242	96900
5	76280	16303	55962	95262	34211	72814	11078	49008	86611	23892	60856	97509
6	76950	16967	56620	95914	34857	73455	11713	49638	87235	24510	61469	98117
7	77620	17631	57277	96566	35503	74095	12348	50267	87859	25129	62082	98725
8	78290	18295	57935	97218	36149	74735	12982	50896	88483	25747	62696	99333
9	78959	18958	58593	97870	36795	75375	13617	51525	89106	26366	63309	99941
10	79629	19622	59250	98521	37441	76016	14251	52154	89730	26984	63922	00549
11	80299	20285	59908	99173	38087	76656	14886	52783	90353	27602	64535	01157
12	80968	20949	60565	99824	38732	77296	15520	53412	90977	28220	65148	01765
13	81638	21612	61222	00475	39378	77935	16154	54041	91600	28838	65761	02372
14	82307	22275	61879	01127	40023	78575	16789	54669	92223	29456	66373	02980
15	82976	22938	62536	01778	40668	79215	17423	55298	92847	30074	66986	03587
16	83645	23601	63193	02429	41314	79854	18057	55926	93470	30692	67599	04195
17	84314	24264	63850	03080	41959	80494	18690	56555	94093	31310	68211	04802
18	84983	24927	64507	03731	42604	81133	19324	57183	94716	31927	68823	05409
19	85652	25589	65164	04381	43249	81772	19958	57811	95338	32545	69436	06017
20	86320	26252	65820	05032	43894	82412	20591	58439	95961	33162	70048	06624
21	86989	26914	66477	05683	44539	83051	21225	59067	96584	33779	70660	07231
22	87657	27576	67133	06333	45183	83690	21858	59695	97206	34397	71272	07838
23	88325	28239	67789	06983	45828	84329	22492	60323	97829	35014	71884	08445
24	88994	28901	68445	07634	46472	84967	23125	60951	98451	35631	72496	09051
25	89662	29563	69101	08284	47117	85606	23758	61579	99073	36248	73108	09658
26	90330	30225	69757	08934	47761	86245	24391	62206	99696	36865	73719	10264
27	90998	30887	70413	09584	48405	86883	25024	62834	00318	37482	74331	10871
28	91666	31548	71069	10234	49049	87522	25657	63461	00940	38098	74942	11477
29	92333	32210	71724	10883	49693	88160	26290	64088	01562	38715	75554	12084
30	93001	32871	72380	11533	50337	88798	26922	64716	02183	39331	76165	12690
31	93668	33533	73035	12183	50981	89436	27555	65343	02805	39948	76777	13296
32	94336	34194	73691	12832	51625	90074	28187	65970	03427	40564	77388	13902
33	95003	34855	74346	13482	52268	90712	28820	66597	04048	41181	77999	14508
34	95670	35517	75001	14131	52912	91350	29452	67223	04670	41797	78610	15114
35	96337	36178	75656	14780	53555	91988	30084	67850	05291	42413	79221	15720
36	97004	36838	76311	15429	54199	92626	30717	68477	05912	43029	79832	16326
37	97671	37499	76966	16078	54842	93263	31349	69103	06534	43645	80442	16931
38	98338	38160	77621	16727	55485	93901	31980	69730	07155	44261	81053	17537
39	99005	38821	78275	17376	56128	94538	32612	70356	07776	44876	81664	18142
40	99671	39481	78930	18025	56771	95175	33244	70983	08397	45492	82274	18748
41	00338	40142	79584	18673	57414	95813	33876	71609	09018	46108	82884	19353
42	01004	40802	80239	19322	58057	96450	34507	72235	09638	46723	83495	19958
43	01671	41462	80893	19970	58699	97087	35139	72861	10259	47339	84105	20563
44	02337	42122	81547	20618	59342	97724	35770	73487	10880	47954	84715	21168
45	03003	42782	82201	21267	59984	98361	36401	74113	11500	48569	85325	21773
46	03669	43442	82855	21915	60627	98997	37033	74739	12121	49184	85935	22378
47	04335	44102	83509	22563	61269	99634	37664	75364	12741	49799	86545	22983
48	05000	44762	84163	23211	61911	00271	38295	75990	13361	50414	87155	23588
49	05666	45421	84817	23859	62553	00907	38926	76615	13981	51029	87765	24193
50	06332	46081	85470	24506	63195	01543	39557	77241	14601	51644	88374	24797
51	06997	46740	86124	25154	63837	02180	40187	77866	15221	52259	88984	25402
52	07663	47400	86777	25801	64479	02816	40818	78491	15841	52873	89593	26006
53	08328	48059	87430	26449	65121	03452	41449	79116	16461	53488	90203	26610
54	08993	48718	88084	27096	65762	04088	42079	79741	17081	54102	90812	27214
55	09658	49377	88737	27743	66404	04724	42709	80366	17700	54717	91421	27819
56	10323	50036	89390	28391	67045	05360	43340	80991	18320	55331	92030	28423
57	10988	50695	90042	29038	67687	05995	43970	81616	18939	55945	92639	29027
58	11653	51353	90695	29685	68328	06631	44600	82241	19559	56559	93248	29631
59	12317	52012	91348	30332	68969	07267	45230	82865	20178	57173	93857	30234
60	12982	52671	92001	30978	69610	07902	45860	83490	20797	57787	94466	30838
″	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Tangent Deg. 88

1 Deg. Co-Tangent

48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	″
11. 50	11 49	11. 49	11. 49	11. 48	11. 48	11. 47	11. 47	11. 47	11. 46	11. 46	11. 46	
27072	87018	47329	07999	69022	30390	92098	54140	16510	79203	42213	05534	60
26402	86354	46671	07347	68375	29749	91463	53510	15886	78584	41599	04925	59
25731	85689	46013	06695	67728	29108	90827	52880	15261	77965	40985	04317	58
25061	85025	45354	06042	67082	28467	90192	52251	14637	77346	40371	03708	57
24390	84361	44696	05390	66436	27827	89557	51621	14013	76727	39758	03100	56
23720	83697	44038	04738	65789	27186	88922	50992	13389	76108	39144	02491	55
23050	83033	43380	04086	65143	26545	88287	50362	12765	75490	38531	01883	54
22380	82369	42723	03434	64497	25905	87652	49733	12141	74871	37918	01275	53
21710	81705	42065	02782	63851	25265	87018	49104	11517	74253	37304	00667	52
21041	81042	41407	02130	63205	24625	86383	48475	10894	73634	36691	00059	51
20371	80378	40750	01479	62559	23984	85749	47846	10270	73016	36078	99451	50
19701	79715	40092	00827	61913	23344	85114	47217	09647	72398	35465	98843	49
19032	79051	39435	00176	61268	22704	84480	46588	09023	71780	34852	98235	48
18362	78388	38778	99525	60622	22065	83846	45959	08400	71162	34239	97628	47
17693	77725	38121	98873	59977	21425	83211	45331	07777	70544	33627	97020	46
17024	77062	37464	98222	59332	20785	82577	44702	07153	69926	33014	96413	45
16355	76399	36807	97571	58686	20146	81943	44074	06530	69308	32401	95805	44
15686	75736	36150	96920	58041	19506	81310	43445	05907	68690	31789	95198	43
15017	75073	35493	96269	57396	18867	80676	42817	05284	68073	31177	94591	42
14348	74411	34836	95619	56751	18228	80042	42189	04662	67455	30564	93983	41
13680	73748	34180	94968	56106	17588	79409	41561	04039	66838	29952	93376	40
13011	73086	33523	94317	55461	16949	78775	40933	03416	66221	29340	92769	39
12343	72424	32867	93667	54817	16310	78142	40305	02794	65603	28728	92162	38
11675	71761	32211	93017	54172	15671	77508	39677	02171	64986	28116	91555	37
11006	71099	31555	92366	53528	15033	76875	39049	01549	64369	27504	90949	36
10338	70437	30899	91716	52883	14394	76242	38421	00927	63752	26892	90342	35
09670	69775	30243	91066	52239	13755	75609	37794	00304	63135	26281	89736	34
09002	69113	29587	90416	51595	13117	74976	37166	99682	62518	25669	89129	33
08334	68452	28931	89766	50951	12478	74343	36539	99060	61902	25058	88523	32
07667	67790	28276	89117	50307	11840	73710	35912	98438	61285	24446	87916	31
06999	67129	27620	88467	49663	11202	73078	35284	97817	60669	23835	87310	30
06332	66467	26965	87817	49019	10564	72445	34657	97195	60052	23223	86704	29
05664	65806	26309	87168	48375	09926	71813	34030	96573	59436	22612	86098	28
04997	65145	25654	86518	47732	09288	71180	33403	95952	58819	22001	85492	27
04330	64483	24999	85869	47088	08650	70548	32777	95330	58203	21390	84886	26
03663	63822	24344	85220	46445	08012	69916	32150	94709	57587	20779	84280	25
02996	63162	23689	84571	45801	07374	69283	31523	94088	56971	20168	83674	24
02329	62501	23034	83922	45158	06737	68651	30897	93466	56355	19558	83069	23
01662	61840	22379	83273	44515	06099	68020	30270	92845	55739	18947	82463	22
00995	61179	21725	82624	43872	05462	67388	29644	92224	55124	18336	81858	21
00329	60519	21070	81975	43229	04825	66756	29017	91603	54508	17726	81252	20
99662	59858	20416	81327	42586	04187	66124	28391	90982	53892	17116	80647	19
98996	59198	19761	80678	41943	03550	65493	27765	90362	53277	16505	80042	18
98329	58538	19107	80030	41301	02913	64861	27139	89741	52661	15895	79437	17
97663	57878	18453	79382	40658	02276	64230	26513	89120	52046	15285	78832	16
96997	57218	17799	78733	40016	01639	63599	25887	88500	51431	14675	78227	15
96331	56558	17145	78085	39373	01003	62967	25261	87879	50816	14065	77622	14
95665	55898	16491	77437	38731	00366	62336	24636	87259	50201	13455	77017	13
95000	55238	15837	76789	38089	99729	61705	24010	86639	49586	12845	76412	12
94334	54579	15183	76141	37447	99093	61074	23385	86019	48971	12235	75807	11
93668	53919	14530	75494	36805	98457	60443	22759	85399	48356	11626	75203	10
93003	53260	13876	74846	36163	97820	59813	22134	84779	47741	11016	74598	9
92337	52600	13223	74199	35521	97184	59182	21509	84159	47127	10407	73994	8
91672	51941	12570	73551	34879	96548	58551	20884	83539	46512	09797	73390	7
91007	51282	11916	72904	34238	95912	57921	20259	82919	45898	09188	72786	6
90342	50623	11263	72257	33596	95276	57291	19634	82300	45283	08579	72181	5
89677	49964	10610	71609	32955	94640	56660	19009	81680	44669	07970	71577	4
89012	49305	09958	70962	32313	94005	56030	18384	81061	44055	07361	70973	3
88347	48647	09305	70315	31672	93369	55400	17759	80441	43441	06752	70369	2
87683	47988	08652	69668	31031	92733	54770	17135	79822	42827	06143	69766	1
87018	47329	07999	69022	30390	92098	54140	16510	79203	42213	05534	69162	0
11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Tangent Deg. 88

2 Deg. Sine

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′
″	8. 54	8. 54	8. 54	8. 55	8. 55	8. 56	8. 56	8. 56	8. 57	8. 57	8. 57	8. 58
0	28192	64218	99948	35386	70536	05404	39994	74310	08357	42139	75660	08923
1	28795	64816	00541	35974	71120	05983	40568	74880	08923	42700	76216	09475
2	29397	65414	01134	36562	71703	06562	41142	75450	09488	43261	76772	10027
3	30000	66012	01727	37150	72286	07140	41716	76019	10053	43821	77329	10580
4	30603	66609	02319	37738	72870	07719	42290	76589	10618	44382	77885	11132
5	31205	67207	02912	38326	73453	08297	42864	77158	11183	44942	78441	11683
6	31808	67804	03505	38914	74036	08876	43438	77727	11747	45503	78997	12235
7	32410	68402	04097	39501	74619	09454	44012	78296	12312	46063	79553	12787
8	33012	68999	04690	40089	75202	10032	44585	78866	12877	46623	80109	13339
9	33615	69596	05282	40676	75784	10610	45159	79435	13441	47184	80665	13891
10	34217	70194	05874	41264	76367	11188	45732	80004	14006	47744	81221	14442
11	34819	70791	06466	41851	76950	11766	46306	80572	14570	48304	81777	14994
12	35421	71388	07059	42439	77532	12344	46879	81141	15135	48864	82333	15545
13	36023	71985	07651	43026	78115	12922	47452	81710	15699	49424	82888	16097
14	36625	72581	08243	43613	78697	13500	48026	82279	16263	49984	83444	16648
15	37226	73178	08834	44200	79280	14078	48599	82847	16827	50543	83999	17199
16	37828	73775	09426	44787	79862	14655	49172	83416	17392	51103	84555	17750
17	38430	74371	10018	45374	80444	15233	49745	83984	17956	51663	85110	18301
18	39031	74968	10610	45961	81026	15810	50318	84553	18520	52222	85665	18853
19	39632	75564	11201	46548	81608	16388	50890	85121	19083	52782	86221	19403
20	40234	76161	11793	47134	82190	16965	51463	85689	19647	53341	86776	19954
21	40835	76757	12384	47721	82772	17542	52036	86257	20211	53901	87331	20505
22	41436	77353	12975	48307	83354	18119	52608	86825	20775	54460	87886	21056
23	42037	77949	13567	48894	83935	18696	53181	87393	21338	55019	88441	21607
24	42638	78545	14158	49480	84517	19273	53753	87961	21902	55578	88996	22157
25	43239	79141	14749	50066	85099	19850	54326	88529	22465	56137	89550	22708
26	43840	79737	15340	50653	85680	20427	54898	89097	23028	56696	90105	23258
27	44441	80333	15931	51239	86262	21004	55470	89665	23592	57255	90660	23809
28	45041	80929	16522	51825	86843	21581	56042	90232	24155	57814	91214	24359
29	45642	81524	17112	52411	87424	22157	56614	90800	24718	58373	91769	24909
30	46242	82120	17703	52997	88005	22734	57186	91367	25281	58932	92323	25460
31	46843	82715	18294	53582	88586	23310	57758	91935	25844	59490	92878	26010
32	47443	83311	18884	54168	89167	23887	58330	92502	26407	60049	93432	26560
33	48043	83906	19474	54754	89748	24463	58902	93069	26970	60607	93986	27110
34	48643	84501	20065	55339	90329	25039	59473	93637	27533	61166	94540	27660
35	49243	85096	20655	55925	90910	25615	60045	94204	28095	61724	95094	28210
36	49843	85691	21245	56510	91491	26191	60617	94771	28658	62282	95648	28759
37	50443	86286	21835	57095	92071	26767	61188	95338	29220	62841	96202	29309
38	51043	86881	22425	57681	92652	27343	61759	95905	29783	63399	96756	29859
39	51643	87476	23015	58266	93232	27919	62331	96471	30345	63957	97310	30408
40	52243	88071	23605	58851	93813	28495	62902	97038	30908	64515	97864	30958
41	52842	88665	24195	59436	94393	29071	63473	97605	31470	65073	98417	31507
42	53442	89260	24785	60021	94973	29646	64044	98171	32032	65631	98971	32057
43	54041	89854	25374	60606	95553	30222	64615	98738	32594	66188	99524	32606
44	54640	90449	25964	61191	96134	30797	65186	99304	33156	66746	00078	33155
45	55240	91043	26553	61775	96714	31373	65757	99871	33718	67304	00631	33704
46	55839	91637	27143	62360	97293	31948	66328	00437	34280	67861	01184	34253
47	56438	92231	27732	62944	97873	32523	66898	01003	34842	68419	01738	34802
48	57037	92825	28321	63529	98453	33098	67469	01569	35404	68976	02291	35351
49	57636	93419	28910	64113	99033	33673	68039	02135	35965	69533	02844	35900
50	58234	94013	29499	64698	99612	34248	68610	02701	36527	70091	03397	36449
51	58833	94607	30088	65282	00192	34823	69180	03267	37089	70648	03950	36998
52	59432	95201	30677	65866	00771	35398	69751	03833	37650	71205	04503	37546
53	60030	95795	31266	66450	01351	35973	70321	04399	38211	71762	05055	38095
54	60629	96388	31855	67034	01930	36548	70891	04965	38773	72319	05608	38644
55	61227	96982	32444	67618	02509	37122	71461	05530	39334	72876	06161	39192
56	61826	97575	33032	68202	03088	37697	72031	06096	39895	73433	06713	39740
57	62424	98168	33621	68785	03668	38271	72601	06661	40456	73990	07266	40289
58	63022	98762	34209	69369	04247	38846	73171	07227	41017	74546	07818	40837
59	63620	99355	34797	69953	04825	39420	73741	07792	41578	75103	08371	41385
60	64218	99948	35386	70536	05404	39994	74310	08357	42139	75660	08923	41933
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′

Co-Sine Deg. 87

2 Deg. Co-Sine

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	″
9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	″
97354	97309	97265	97220	97174	97128	97082	97036	96989	96942	96894	96846	60
97353	97309	97264	97219	97173	97128	97082	97035	96988	96941	96893	96845	59
97352	97308	97263	97218	97173	97127	97081	97034	96987	96940	96892	96844	58
97351	97307	97262	97217	97172	97126	97080	97033	96987	96939	96892	96844	57
97351	97306	97262	97217	97171	97125	97079	97033	96986	96938	96891	96843	56
97350	97306	97261	97216	97170	97125	97078	97032	96985	96938	96890	96842	55
97349	97305	97260	97215	97170	97124	97078	97031	96984	96937	96889	96841	54
97348	97304	97259	97214	97169	97123	97077	97030	96983	96936	96888	96840	53
97348	97303	97259	97214	97168	97122	97076	97030	96983	96935	96888	96840	52
97347	97303	97258	97213	97167	97122	97075	97029	96982	96935	96887	96839	51
97346	97302	97257	97212	97167	97121	97075	97028	96981	96934	96886	96838	50
97345	97301	97256	97211	97166	97120	97074	97027	96980	96933	96885	96837	49
97345	97300	97256	97211	97165	97119	97073	97026	96979	96932	96884	96836	48
97344	97300	97255	97210	97164	97118	97072	97026	96979	96931	96884	96836	47
97343	97299	97254	97209	97164	97118	97071	97025	96978	96931	96883	96835	46
97343	97298	97253	97208	97163	97117	97071	97024	96977	96930	96882	96834	45
97342	97297	97253	97208	97162	97116	97070	97023	96976	96929	96881	96833	44
97341	97297	97252	97207	97161	97115	97069	97023	96976	96928	96880	96832	43
97340	97296	97251	97206	97160	97115	97068	97022	96975	96927	96880	96832	42
97340	97295	97250	97205	97160	97114	97068	97021	96974	96927	96879	96831	41
97339	97294	97250	97204	97159	97113	97067	97020	96973	96926	96878	96830	40
97338	97294	97249	97204	97158	97112	97066	97019	96972	96925	96877	96829	39
97337	97293	97248	97203	97157	97112	97065	97019	96972	96924	96876	96828	38
97337	97292	97247	97202	97157	97111	97064	97018	96971	96923	96876	96828	37
97336	97291	97247	97201	97156	97110	97064	97017	96970	96923	96875	96827	36
97335	97291	97246	97201	97155	97109	97063	97016	96969	96922	96874	96826	35
97334	97290	97245	97200	97154	97108	97062	97015	96968	96921	96873	96825	34
97334	97289	97244	97199	97154	97108	97061	97015	96968	96920	96872	96824	33
97333	97288	97244	97198	97153	97107	97061	97014	96967	96919	96872	96824	32
97332	97288	97243	97198	97152	97106	97060	97013	96966	96919	96871	96823	31
97331	97287	97242	97197	97151	97105	97059	97012	96965	96918	96870	96822	30
97331	97286	97241	97196	97151	97105	97058	97012	96965	96917	96869	96821	29
97330	97286	97241	97195	97150	97104	97058	97011	96964	96916	96868	96820	28
97329	97285	97240	97195	97149	97103	97057	97010	96963	96916	96868	96820	27
97329	97284	97239	97194	97148	97102	97056	97009	96962	96915	96867	96819	26
97328	97283	97238	97193	97148	97102	97055	97008	96961	96914	96866	96818	25
97327	97283	97238	97192	97147	97101	97054	97008	96961	96913	96865	96817	24
97326	97282	97237	97192	97146	97100	97054	97007	96960	96912	96864	96816	23
97326	97281	97236	97191	97145	97099	97053	97006	96959	96912	96864	96815	22
97325	97280	97235	97190	97144	97098	97052	97005	96958	96911	96863	96815	21
97324	97280	97235	97189	97144	97098	97051	97005	96957	96910	96862	96814	20
97323	97279	97234	97189	97143	97097	97051	97004	96957	96909	96861	96813	19
97323	97278	97233	97188	97142	97096	97050	97003	96956	96908	96860	96812	18
97322	97277	97232	97187	97141	97095	97049	97002	96955	96908	96860	96811	17
97321	97277	97232	97186	97141	97095	97048	97001	96954	96907	96859	96811	16
97320	97276	97231	97186	97140	97094	97047	97001	96953	96906	96858	96810	15
97320	97275	97230	97185	97139	97093	97047	97000	96953	96905	96857	96809	14
97319	97274	97229	97184	97138	97092	97046	96999	96952	96904	96856	96808	13
97318	97274	97229	97183	97138	97092	97045	96998	96951	96904	96856	96807	12
97317	97273	97228	97183	97137	97091	97044	96998	96950	96903	96855	96807	11
97317	97272	97227	97182	97136	97090	97044	96997	96950	96902	96854	96806	10
97316	97271	97226	97181	97135	97089	97043	96996	96949	96901	96853	96805	9
97315	97271	97226	97180	97135	97088	97042	96995	96948	96900	96852	96804	8
97314	97270	97225	97179	97134	97088	97041	96994	96947	96900	96852	96803	7
97314	97269	97224	97179	97133	97087	97040	96994	96946	96899	96851	96803	6
97313	97268	97223	97178	97132	97086	97040	96993	96946	96898	96850	96802	5
97312	97268	97223	97177	97131	97085	97039	96992	96945	96897	96849	96801	4
97312	97267	97222	97176	97131	97085	97038	96991	96944	96896	96848	96800	3
97311	97266	97221	97176	97130	97084	97037	96990	96943	96896	96848	96799	2
97310	97265	97220	97175	97129	97083	97037	96990	96942	96895	96847	96799	1
97309	97265	97220	97174	97128	97082	97036	96989	96942	96894	96846	96798	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	″

Sine Deg. 87

2 Deg. Tangent

"	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′
	8. 54	8. 54	8. 55	8. 55	8. 55	8. 56	8. 56	8. 56	8. 57	8. 57	8. 57	8. 58
0	30838	66909	02683	38166	73362	08276	42912	77275	11368	45197	78766	12077
1	31442	67507	03277	38755	73946	08855	43487	77845	11934	45759	79323	12630
2	32045	68106	03871	39344	74530	09435	44062	78415	12500	46320	79880	13183
3	32649	68705	04464	39933	75114	10014	44637	78986	13066	46882	80437	13736
4	33252	69303	05058	40521	75698	10594	45211	79556	13632	47443	80994	14289
5	33855	69901	05651	41110	76282	11173	45786	80126	14198	48005	81551	14841
6	34459	70500	06245	41698	76866	11752	46360	80696	14763	48566	82108	15394
7	35062	71098	06838	42287	77450	12331	46935	81266	15329	49127	82665	15947
8	35665	71696	07431	42875	78033	12910	47509	81836	15894	49688	83222	16499
9	36268	72294	08024	43464	78617	13489	48084	82406	16460	50249	83779	17052
10	36871	72892	08617	44052	79201	14068	48658	82976	17025	50810	84335	17604
11	37473	73490	09210	44640	79784	14646	49232	83545	17590	51371	84892	18157
12	38076	74087	09803	45228	80367	15225	49806	84115	18155	51932	85448	18709
13	38679	74685	10396	45816	80951	15804	50380	84684	18720	52492	86005	19261
14	39281	75283	10988	46404	81534	16382	50954	85254	19285	53053	86561	19813
15	39884	75880	11581	46992	82117	16961	51528	85823	19850	53614	87117	20365
16	40486	76477	12174	47580	82700	17539	52102	86393	20415	54174	87674	20917
17	41088	77075	12766	48167	83283	18117	52676	86962	20980	54735	88230	21469
18	41691	77672	13358	48755	83866	18696	53249	87531	21545	55295	88786	22021
19	42293	78269	13951	49342	84448	19274	53823	88100	22109	55855	89342	22573
20	42895	78866	14543	49930	85031	19852	54396	88669	22674	56416	89898	23124
21	43497	79463	15135	50517	85614	20430	54970	89238	23238	56976	90454	23676
22	44099	80060	15727	51104	86196	21008	55543	89807	23803	57536	91009	24228
23	44701	80657	16319	51692	86779	21586	56116	90376	24367	58096	91565	24779
24	45302	81254	16911	52279	87361	22163	56690	90944	24932	58656	92121	25331
25	45904	81851	17503	52866	87944	22741	57263	91513	25496	59216	92676	25882
26	46505	82447	18095	53453	88526	23319	57836	92081	26060	59775	93232	26433
27	47107	83044	18686	54039	89108	23896	58409	92650	26624	60335	93787	26984
28	47708	83640	19278	54626	89690	24474	58982	93218	27188	60895	94343	27536
29	48310	84236	19869	55213	90272	25051	59554	93787	27752	61454	94898	28087
30	48911	84833	20461	55800	90854	25628	60127	94355	28316	62014	95453	28638
31	49512	85429	21052	56386	91436	26206	60700	94923	28880	62573	96008	29189
32	50113	86025	21643	56973	92018	26783	61272	95491	29443	63133	96563	29739
33	50714	86621	22235	57559	92599	27360	61845	96059	30007	63692	97118	30290
34	51315	87217	22826	58145	93181	27937	62417	96627	30570	64251	97673	30841
35	51916	87813	23417	58732	93762	28514	62990	97195	31134	64810	98228	31392
36	52516	88409	24008	59318	94344	29091	63562	97763	31697	65369	98783	31942
37	53117	89004	24598	59904	94925	29667	64134	98331	32261	65928	99338	32493
38	53718	89600	25189	60490	95507	30244	64706	98898	32824	66487	99892	33043
39	54318	90196	25780	61076	96088	30821	65279	99466	33387	67046	00447	33594
40	54918	90791	26371	61662	96669	31397	65851	00034	33950	67605	01001	34144
41	55519	91386	26961	62247	97250	31974	66422	00601	34513	68164	01556	34694
42	56119	91982	27552	62833	97831	32550	66994	01168	35076	68722	02110	35244
43	56719	92577	28142	63419	98412	33126	67566	01736	35639	69281	02665	35794
44	57319	93172	28732	64004	98993	33703	68138	02303	36202	69839	03219	36344
45	57919	93767	29322	64590	99574	34279	68709	02870	36765	70398	03773	36894
46	58519	94362	29913	65175	00154	34855	69281	03437	37327	70956	04327	37444
47	59119	94957	30503	65760	00735	35431	69852	04004	37890	71514	04881	37994
48	59719	95552	31093	66346	01315	36007	70424	04571	38453	72073	05435	38544
49	60318	96147	31682	66931	01896	36583	70995	05138	39015	72631	05989	39094
50	60918	96741	32272	67516	02476	37158	71566	05705	39577	73189	06543	39643
51	61517	97336	32862	68101	03057	37734	72138	06271	40140	73747	07096	40193
52	62117	97930	33452	68686	03637	38310	72709	06838	40702	74305	07650	40742
53	62716	98525	34041	69270	04217	38885	73280	07405	41264	74863	08204	41292
54	63315	99119	34631	69855	04797	39461	73851	07971	41826	75420	08757	41841
55	63914	99713	35220	70440	05377	40036	74421	08537	42388	75978	09311	42390
56	64513	00307	35810	71024	05957	40611	74992	09104	42950	76536	09864	42939
57	65112	00901	36399	71609	06537	41187	75563	09670	43512	77093	10417	43489
58	65711	01495	36988	72193	07117	41762	76134	10236	44074	77651	10971	44038
59	66310	02089	37577	72778	07696	42337	76704	10802	44636	78208	11524	44587
60	66909	02683	38166	73362	08276	42912	77275	11368	45197	78766	12077	45136
"	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′

Co-Tangent Deg. 87

2 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	"
11. 45	11. 45	11. 44	11. 44	11. 44	11. 43	11. 43	11. 43	11. 42	11. 42	11. 42	11. 41	
69162	33091	97317	61834	26638	91724	57088	22725	88632	54803	21234	87923	60
68558	32493	96723	61245	26054	91145	56513	22155	88066	54241	20677	87370	59
67955	31894	96129	60656	25470	90565	55938	21585	87500	53680	20120	86817	58
67351	31295	95536	60067	24886	89986	55363	21014	86934	53118	19563	86264	57
66748	30697	94942	59479	24302	89406	54789	20444	86368	52557	19006	85711	56
66145	30099	94349	58890	23718	88827	54214	19874	85802	51995	18449	85159	55
65541	29500	93755	58302	23134	88248	53640	19304	85237	51434	17892	84606	54
64938	28902	93162	57713	22550	87669	53065	18734	84671	50873	17335	84053	53
64335	28304	92569	57125	21967	87090	52491	18164	84106	50312	16778	83501	52
63732	27706	91976	56536	21383	86511	51916	17594	83540	49751	16221	82948	51
63129	27108	91383	55948	20799	85932	51342	17024	82975	49190	15665	82396	50
62527	26510	90790	55360	20216	85354	50768	16455	82410	48629	15108	81843	49
61924	25913	90197	54772	19633	84775	50194	15885	81845	48068	14552	81291	48
61321	25315	89604	54184	19049	84196	49620	15316	81280	47508	13995	80739	47
60719	24717	89012	53596	18466	83618	49046	14746	80715	46947	13439	80187	46
60116	24120	88419	53008	17883	83039	48472	14177	80150	46386	12883	79635	45
59514	23523	87826	52420	17300	82461	47898	13607	79585	45826	12326	79083	44
58912	22925	87234	51833	16717	81883	47324	13038	79020	45265	11770	78531	43
58309	22328	86642	51245	16134	81304	46751	12469	78455	44705	11214	77979	42
57707	21731	86049	50658	15552	80726	46177	11900	77891	44145	10658	77427	41
57105	21134	85457	50070	14969	80148	45604	11331	77326	43584	10102	76876	40
56503	20537	84865	49483	14386	79570	45030	10762	76762	43024	09546	76324	39
55901	19940	84273	48896	13804	78992	44457	10193	76197	42464	08991	75772	38
55299	19343	83681	48308	13221	78414	43884	09624	75633	41904	08435	75221	37
54698	18746	83089	47721	12639	77837	43310	09056	75068	41344	07879	74669	36
54096	18149	82497	47134	12056	77259	42737	08487	74504	40784	07324	74118	35
53495	17553	81905	46547	11474	76681	42164	07919	73940	40225	06768	73567	34
52893	16956	81314	45961	10892	76104	41591	07350	73376	39665	06213	73016	33
52292	16360	80722	45374	10310	75526	41018	06782	72812	39105	05657	72464	32
51690	15764	80131	44787	09728	74949	40446	06213	72248	38546	05102	71913	31
51089	15167	79539	44200	09146	74372	39873	05645	71684	37986	04547	71362	30
50488	14571	78948	43614	08564	73794	39300	05077	71120	37427	03992	70811	29
49887	13975	78357	43027	07982	73217	38728	04509	70557	36867	03437	70261	28
49286	13379	77765	42441	07401	72640	38155	03941	69993	36308	02882	69710	27
48685	12783	77174	41855	06819	72063	37583	03373	69430	35749	02327	69159	26
48084	12187	76583	41268	06238	71486	37010	02805	68866	35190	01772	68608	25
47484	11591	75992	40682	05656	70909	36438	02237	68303	34631	01217	68058	24
46883	10996	75402	40096	05075	70333	35866	01669	67739	34072	00662	67507	23
46282	10400	74811	39510	04493	69756	35294	01102	67176	33513	00108	66957	22
45682	09804	74220	38924	03912	69179	34721	00534	66613	32954	99553	66406	21
45082	09209	73629	38338	03331	68603	34149	99966	66050	32395	98999	65856	20
44481	08614	73039	37753	02750	68026	33578	99399	65487	31836	98444	65306	19
43881	08018	72448	37167	02169	67450	33006	98832	64924	31278	97890	64756	18
43281	07423	71858	36581	01588	66874	32434	98264	64361	30719	97335	64206	17
42681	06828	71268	35996	01007	66297	31862	97697	63798	30161	96781	63656	16
42081	06233	70678	35410	00426	65721	31291	97130	63235	29602	96227	63106	15
41481	05638	70087	34825	99846	65145	30719	96563	62673	29044	95673	62556	14
40881	05043	69497	34240	99265	64569	30148	95996	62110	28486	95119	62006	13
40281	04448	68907	33654	98685	63993	29576	95429	61547	27927	94565	61456	12
39682	03853	68318	33069	98104	63417	29005	94862	60985	27369	94011	60906	11
39082	03259	67728	32484	97524	62842	28434	94295	60423	26811	93457	60357	10
38483	02664	67138	31899	96943	62266	27862	93729	59860	26253	92904	59807	9
37883	02070	66548	31314	96363	61690	27291	93162	59298	25695	92350	59258	8
37284	01475	65959	30730	95783	61115	26720	92595	58736	25137	91796	58708	7
36685	00881	65369	30145	95203	60539	26149	92029	58174	24580	91243	58159	6
36086	00287	64780	29560	94623	59964	25579	91463	57612	24022	90689	57610	5
35487	99693	64190	28976	94043	59389	25008	90896	57050	23464	90136	57061	4
34888	99099	63601	28391	93463	58813	24437	90330	56488	22907	89583	56511	3
34289	98505	63012	27807	92883	58238	23866	89764	55926	22349	89029	55962	2
33690	97911	62423	27222	92304	57663	23296	89198	55364	21792	88476	55413	1
33091	97317	61834	26638	91724	57088	22725	88632	54803	21234	87923	54864	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	"

Tangent Deg. 87

	12′	13′	14′	15′	16′	17′	18′	19′	20′	21′	22′	23′	12′	13′	14′	15′	16′	17′	18′	19′	20′	21′	22′	23′	
″	8. 58	8. 58	8. 59	8. 59	8. 59	8. 60	8. 60	8. 60	8. 60	8. 61	8. 61	8. 61	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	″
0	41933	74694	07209	39483	71517	03317	34886	66226	97341	28235	58910	89369	96798	96749	96700	96650	96601	96550	96500	96449	96398	96346	96294	96242	60
1	42481	75238	07749	40018	72049	03845	35410	66746	97858	28748	59419	89875	96797	96748	96699	96650	96600	96550	96499	96448	96397	96345	96293	96241	59
2	43029	75782	08289	40554	72581	04373	35934	67267	98374	29261	59928	90381	96796	96747	96698	96649	96599	96549	96498	96447	96396	96344	96292	96240	58
3	43577	76326	08829	41090	73113	04901	36458	67787	98891	29773	60438	90886	96795	96747	96697	96648	96598	96548	96497	96446	96395	96343	96291	96239	57
4	44125	76869	09368	41626	73645	05429	36982	68307	99407	30286	60947	91392	96794	96746	96697	96647	96597	96547	96497	96446	96394	96343	96291	96238	56
5	44673	77413	09908	42161	74176	05957	37506	68827	99924	30799	61456	91898	96794	96745	96696	96646	96596	96546	96496	96445	96393	96342	96290	96237	55
6	45221	77957	10447	42697	74708	06484	38030	69347	00440	31312	61965	92403	96793	96744	96695	96645	96596	96545	96495	96444	96393	96341	96289	96236	54
7	45768	78500	10987	43232	75239	07012	38554	69867	00957	31825	62474	92909	96792	96743	96694	96645	96595	96545	96494	96443	96392	96340	96288	96235	53
8	46316	79044	11526	43768	75771	07540	39077	70387	01473	32337	62983	93414	96791	96742	96693	96644	96594	96544	96493	96442	96391	96339	96287	96235	52
9	46863	79587	12066	44303	76302	08067	39601	70907	01989	32850	63492	93920	96790	96742	96693	96643	96593	96543	96492	96441	96390	96338	96286	96234	51
10	47411	80130	12605	44838	76834	08595	40125	71427	02505	33362	64001	94425	96790	96741	96692	96642	96592	96542	96491	96440	96389	96337	96285	96233	50
11	47958	80674	13144	45373	77365	09122	40648	71947	03021	33875	64510	94930	96789	96740	96691	96641	96591	96541	96491	96440	96388	96337	96284	96232	49
12	48505	81217	13683	45908	77896	09649	41172	72467	03537	34387	65019	95435	96788	96739	96690	96641	96591	96540	96490	96439	96387	96336	96284	96231	48
13	49052	81760	14222	46444	78427	10177	41695	72986	04053	34899	65527	95940	96787	96738	96689	96640	96590	96540	96489	96438	96387	96335	96283	96230	47
14	49600	82303	14761	46979	78958	10704	42219	73506	04569	35412	66036	96446	96786	96738	96688	96639	96589	96539	96488	96437	96386	96334	96282	96229	46
15	50147	82846	15300	47513	79489	11231	42742	74026	05085	35924	66545	96951	96786	96737	96688	96638	96588	96538	96487	96436	96385	96333	96281	96228	45
16	50694	83389	15839	48048	80020	11758	43265	74545	05601	36436	67053	97456	96785	96736	96687	96637	96587	96537	96486	96435	96384	96332	96280	96228	44
17	51241	83932	16378	48583	80551	12285	43788	75064	06117	36948	67561	97960	96784	96735	96686	96636	96586	96536	96486	96434	96383	96331	96279	96227	43
18	51788	84474	16917	49118	81082	12812	44311	75584	06632	37460	68070	98465	96783	96734	96685	96636	96586	96535	96485	96434	96382	96330	96278	96226	42
19	52334	85017	17455	49653	81613	13339	44835	76103	07148	37972	68578	98970	96782	96733	96684	96635	96585	96534	96484	96433	96381	96330	96277	96225	41
20	52881	85560	17994	50187	82143	13866	45357	76622	07663	38484	69087	99475	96782	96733	96683	96634	96584	96534	96483	96432	96380	96329	96277	96224	40
21	53428	86102	18532	50722	82674	14392	45880	77142	08179	38996	69595	99979	96781	96732	96683	96633	96583	96533	96482	96431	96380	96328	96276	96223	39
22	53974	86645	19071	51256	83204	14919	46403	77661	08694	39507	70103	00484	96780	96731	96682	96632	96582	96532	96481	96430	96379	96327	96275	96222	38
23	54521	87187	19609	51791	83735	15446	46926	78180	09210	40019	70611	00989	96779	96730	96681	96631	96581	96531	96480	96429	96378	96326	96274	96221	37
24	55067	87729	20147	52325	84265	15972	47449	78699	09725	40531	71119	01493	96778	96729	96680	96631	96581	96530	96480	96428	96377	96325	96273	96221	36
25	55614	88272	20686	52859	84796	16499	47972	79218	10240	41042	71627	01998	96777	96729	96679	96630	96580	96529	96479	96428	96376	96324	96272	96220	35
26	56160	88814	21224	53393	85326	17025	48494	79736	10755	41554	72135	02502	96777	96728	96679	96629	96579	96529	96478	96427	96375	96324	96271	96219	34
27	56706	89356	21762	53928	85856	17551	49017	80255	11270	42065	72643	03006	96776	96727	96678	96628	96578	96528	96477	96426	96374	96323	96270	96218	33
28	57252	89898	22300	54462	86386	18078	49539	80774	11785	42577	73151	03511	96775	96726	96677	96627	96577	96527	96476	96425	96374	96322	96270	96217	32
29	57799	90440	22838	54996	86916	18604	50062	81293	12300	43088	73658	04015	96774	96725	96676	96626	96576	96526	96475	96424	96373	96321	96269	96216	31
30	58345	90982	23376	55530	87446	19130	50584	81811	12815	43599	74166	04519	96773	96724	96675	96626	96576	96525	96474	96423	96372	96320	96268	96215	30
31	58891	91524	23914	56063	87976	19656	51106	82330	13330	44110	74674	05023	96773	96724	96674	96625	96575	96524	96474	96423	96371	96319	96267	96214	29
32	59437	92066	24452	56597	88506	20182	51629	82848	13845	44622	75181	05527	96772	96723	96674	96624	96574	96524	96473	96422	96370	96318	96266	96213	28
33	59982	92608	24989	57131	89036	20708	52151	83367	14360	45133	75689	06031	96771	96722	96673	96623	96573	96523	96472	96421	96369	96317	96265	96213	27
34	60528	93149	25527	57665	89566	21234	52673	83885	14874	45644	76196	06535	96770	96721	96672	96622	96572	96522	96471	96420	96368	96317	96264	96212	26
35	61074	93691	26065	58198	90096	21760	53195	84403	15389	46155	76704	07039	96769	96720	96671	96621	96571	96521	96470	96419	96368	96316	96263	96211	25
36	61619	94233	26602	58732	90625	22286	53717	84922	15904	46666	77211	07543	96769	96720	96670	96621	96571	96520	96469	96418	96367	96315	96263	96210	24
37	62165	94774	27140	59265	91155	22812	54239	85440	16418	47176	77718	08046	96768	96719	96669	96620	96570	96519	96469	96417	96366	96314	96262	96209	23
38	62711	95315	27677	59799	91684	23337	54761	85958	16932	47687	78225	08550	96767	96718	96669	96619	96569	96518	96468	96417	96365	96313	96261	96208	22
39	63256	95857	28214	60332	92214	23863	55282	86476	17447	48198	78733	09054	96766	96717	96668	96618	96568	96518	96467	96416	96364	96312	96260	96207	21
40	63801	96398	28751	60865	92743	24388	55804	86994	17961	48709	79240	09557	96765	96716	96667	96617	96567	96517	96466	96415	96363	96311	96259	96206	20
41	64347	96939	29289	61399	93272	24914	56326	87512	18475	49219	79747	10061	96764	96715	96666	96616	96566	96516	96465	96414	96362	96311	96258	96206	19
42	64892	97480	29826	61932	93802	25439	56847	88030	18990	49730	80254	10564	96764	96715	96665	96616	96566	96515	96464	96413	96362	96310	96257	96205	18
43	65437	98021	30363	62465	94331	25965	57369	88548	19504	50240	80761	11067	96763	96714	96665	96615	96565	96514	96463	96412	96361	96309	96256	96204	17
44	65982	98562	30900	62998	94860	26490	57891	89065	20018	50751	81267	11571	96762	96713	96664	96614	96564	96513	96463	96411	96360	96308	96256	96203	16
45	66527	99103	31437	63531	95389	27015	58412	89583	20532	51261	81774	12074	96761	96712	96663	96613	96563	96513	96462	96411	96359	96307	96255	96202	15
46	67072	99644	31974	64064	95918	27540	58933	90101	21046	51771	82281	12577	96760	96711	96662	96612	96562	96512	96461	96410	96358	96306	96254	96201	14
47	67617	00185	32510	64597	96447	28065	59455	90618	21560	52282	82788	13080	96760	96711	96661	96611	96561	96511	96460	96409	96357	96305	96253	96200	13
48	68162	00726	33047	65129	96976	28590	59976	91136	22073	52792	83294	13583	96759	96710	96660	96611	96561	96510	96459	96408	96356	96304	96252	96199	12
49	68706	01266	33584	65662	97505	29115	60497	91653	22587	53302	83801	14086	96758	96709	96660	96610	96560	96509	96458	96407	96356	96304	96251	96199	11
50	69251	01807	34120	66195	98033	29640	61018	92171	23101	53812	84307	14589	96757	96708	96659	96609	96559	96508	96457	96406	96355	96303	96250	96198	10
51	69796	02348	34657	66727	98562	30165	61539	92688	23615	54322	84814	15092	96756	96707	96658	96608	96558	96507	96457	96405	96354	96302	96249	96197	9
52	70340	02888	35193	67260	99091	30690	62060	93205	24128	54832	85320	15595	96756	96706	96657	96607	96557	96507	96456	96405	96353	96301	96249	96196	8
53	70885	03428	35730	67792	99619	31214	62581	93722	24642	55342	85826	16098	96755	96706	96656	96606	96556	96506	96455	96404	96352	96300	96248	96195	7
54	71429	03969	36266	68325	00148	31739	63102	94240	25155	55852	86333	16601	96754	96705	96655	96606	96555	96505	96454	96403	96351	96299	96247	96194	6
55	71973	04509	36802	68857	00676	32264	63623	94757	25669	56362	86839	17103	96753	96704	96655	96605	96555	96504	96453	96402	96350	96298	96246	96193	5
56	72518	05049	37338	69389	01204	32788	64143	95274	26182	56871	87345	17606	96752	96703	96654	96604	96554	96503	96452	96401	96349	96297	96245	96192	4
57	73062	05589	37875	69921	01733	33313	64664	95791	26695	57381	87851	18109	96751	96702	96653	96603	96553	96502	96452	96400	96349	96297	96244	96191	3
58	73606	06129	38411	70453	02261	33837	65185	96307	27208	57891	88357	18611	96751	96702	96652	96602	96552	96502	96451	96399	96348	96296	96243	96191	2
59	74150	06669	38947	70985	02789	34361	65705	96824	27721	58400	88863	19114	96750	96701	96651	96601	96551	96501	96450	96399	96347	96295	96242	96190	1
60	74694	07209	39483	71517	03317	34886	66226	97341	28235	58910	89369	19616	96749	96700	96650	96601	96550	96500	96449	96398	96346	96294	96242	96189	0
″	47′	46′	45′	44′	43′	42′	41′	40′	39′	38′	37′	36′	47′	46′	45′	44′	43′	42′	41′	40′	39′	38′	37′	36′	″

2 Deg. Tangent

″	12′	13′	14′	15′	16′	17′	18′	19′	20′	21′	22′	23′
	8. 58	8. 58	8. 59	8. 59	8. 59	8. 60	8. 60	8. 60	8. 61	8. 61	8. 61	8. 61
0	45136	77945	10509	42832	74917	06767	38386	69777	00943	31889	62616	93127
1	45684	78490	11050	43369	75449	07296	38911	70298	01461	32402	63126	93634
2	46233	79035	11591	43905	75982	07824	39436	70819	01978	32916	63636	94141
3	46782	79579	12131	44442	76515	08353	39961	71340	02496	33430	64146	94647
4	47331	80124	12672	44978	77047	08882	40485	71862	03013	33944	64656	95154
5	47879	80668	13212	45515	77580	09410	41010	72383	03531	34457	65166	95660
6	48428	81213	13753	46051	78112	09939	41535	72903	04048	34971	65676	96167
7	48976	81757	14293	46588	78645	10468	42060	73424	04565	35485	06186	96673
8	49524	82301	14833	47124	79177	10996	42584	73945	05082	35998	66696	97180
9	50073	82845	15373	47660	79709	11524	43109	74466	05599	36511	67206	97686
10	50621	83389	15913	48196	80241	12053	43633	74987	06116	37025	67716	98192
11	51169	83934	16453	48732	80773	12581	44158	75507	06633	37538	68225	98698
12	51717	84478	16993	49268	81305	13109	44682	76028	07150	38051	68735	99204
13	52265	85021	17533	49804	81837	13637	45206	76548	07667	38564	69245	99710
14	52813	85565	18073	50340	82369	14165	45731	77069	08184	39078	69754	00216
15	53361	86109	18613	50875	82901	14693	46255	77589	08700	39591	70264	00722
16	53909	86653	19152	51411	83433	15221	46779	78110	09217	40104	70773	01228
17	54457	87196	19692	51947	83965	15749	47303	78630	09733	40617	71282	01734
18	55004	87740	20231	52482	84496	16277	47827	79150	10250	41129	71792	02240
19	55552	88284	20771	53018	85028	16804	48351	79670	10766	41642	72301	02745
20	56100	88827	21310	53553	85559	17332	48875	80190	11283	42155	72810	03251
21	56647	89370	21850	54089	86091	17860	49398	80710	11799	42668	73319	03756
22	57194	89914	22389	54624	86622	18387	49922	81230	12315	43180	73828	04262
23	57742	90457	22928	55159	87153	18915	50446	81750	12832	43693	74337	04767
24	58289	91000	23467	55694	87685	19442	50969	82270	13348	44205	74846	05273
25	58836	91543	24006	56229	88216	19969	51493	82790	13864	44718	75355	05778
26	59383	92086	24545	56764	88747	20496	52016	83310	14380	45230	75864	06283
27	59930	92629	25084	57299	89278	21024	52540	83829	14896	45743	76372	06788
28	60477	93172	25623	57834	89809	21551	53063	84349	15412	46255	76881	07294
29	61024	93715	26162	58369	90340	22078	53586	84868	15928	46767	77390	07799
30	61571	94258	26701	58904	90871	22605	54110	85388	16443	47279	77898	08304
31	62118	94800	27239	59439	91402	23132	54633	85907	16959	47791	78407	08809
32	62665	95343	27778	59973	91932	23659	55156	86427	17475	48303	78915	09314
33	63211	95886	28317	60508	92463	24186	55679	86946	17990	48815	79424	09818
34	63758	96428	28855	61042	92994	24712	56202	87465	18506	49327	79932	10323
35	64304	96971	29393	61577	93524	25239	56725	87984	19021	49839	80440	10828
36	64851	97513	29932	62111	94055	25766	57247	88503	19537	50351	80948	11333
37	65397	98055	30470	62646	94585	26292	57770	89022	20052	50862	81456	11837
38	65944	98597	31008	63180	95115	26819	58293	89541	20567	51374	81965	12342
39	66490	99140	31546	63714	95646	27345	58816	90060	21083	51886	82473	12846
40	67036	99682	32085	64248	96176	27872	59338	90579	21598	52397	82981	13351
41	67582	00224	32623	64782	96706	28398	59861	91098	22113	52909	83488	13855
42	68128	00766	33160	65316	97236	28924	60383	91617	22628	53420	83996	14359
43	68674	01308	33698	65850	97766	29450	60906	92135	23143	53932	84504	14864
44	69220	01849	34236	66384	98296	29976	61428	92654	23658	54443	85012	15368
45	69766	02391	34774	66918	98826	30502	61950	93173	24173	54954	85519	15872
46	70312	02933	35312	67451	99356	31028	62472	93691	24688	55465	86027	16376
47	70857	03474	35849	67985	99886	31554	62995	94209	25202	55976	86535	16880
48	71403	04016	36387	68519	00415	32080	63517	94728	25717	56487	87042	17384
49	71949	04558	36924	69052	00945	32606	64039	95246	26232	56998	87550	17888
50	72494	05099	37462	69586	01475	33132	64561	95764	26746	57509	88057	18392
51	73039	05640	37999	70119	02004	33657	65083	96283	27261	58020	88564	18896
52	73585	06182	38536	70652	02534	34183	65604	96801	27775	58531	89072	19399
53	74130	06723	39073	71186	03063	34709	66126	97319	28290	59042	89579	19903
54	74675	07264	39611	71719	03592	35234	66648	97837	28804	59553	90086	20407
55	75220	07805	40148	72252	04121	35760	67169	98355	29318	60063	90593	20910
56	75766	08346	40685	72785	04651	36285	67691	98872	29832	60574	91100	21414
57	76311	08887	41222	73318	05180	36810	68213	99390	30347	61084	91607	21917
58	76855	09428	41759	73851	05709	37335	68734	99908	30861	61595	92114	22421
59	77400	09969	42295	74384	06238	37861	69255	00426	31375	62105	92621	22924
60	77945	10509	42832	74917	06767	38386	69777	00943	31889	62616	93127	23427
″	47′	46′	45′	44′	43′	42′	41′	40′	39′	38′	37′	36′

Co-Tangent Deg. 87

2 Deg. Co-Tangent

12′	13′	14′	15′	16′	17′	18′	19′	20′	21′	22′	23′	″
11. 41	11. 41	11. 40	11. 40	11. 40	11. 39	11. 39	11. 39	11. 38	11. 38	11. 38	11. 38	
54864	22055	89491	57168	25083	93233	61614	30223	99057	68111	37384	06873	60
54316	21510	88950	56631	24551	92704	61089	29702	98539	67598	36874	06366	59
53767	20965	88409	56095	24018	92176	60564	29181	98022	67084	36364	05859	58
53218	20421	87869	55558	23485	91647	60039	28660	97504	66570	35854	05353	57
52669	19876	87328	55022	22953	91118	59515	28138	96987	66056	35344	04846	56
52121	19332	86788	54485	22420	90590	58990	27617	96469	65543	34834	04340	55
51572	18787	86247	53949	21888	90061	58465	27097	95952	65029	34324	03833	54
51024	18243	85707	53412	21355	89532	57940	26576	95435	64515	33814	03327	53
50476	17699	85167	52876	20823	89004	57416	26055	94918	64002	33304	02820	52
49927	17155	84627	52340	20291	88476	56891	25534	94401	63489	32794	02314	51
49379	16611	84087	51804	19759	87947	56367	25013	93884	62975	32284	01808	50
48831	16066	83547	51268	19227	87419	55842	24493	93367	62462	31775	01302	49
48283	15522	83007	50732	18695	86891	55318	23972	92850	61949	31265	00796	48
47735	14979	82467	50196	18163	86363	54794	23452	92333	61436	30755	00290	47
47187	14435	81927	49660	17631	85835	54269	22931	91816	60922	30246	99784	46
46639	13891	81387	49125	17099	85307	53745	22411	91300	60409	29736	99278	45
46091	13347	80848	48589	16567	84779	53221	21890	90783	59896	29227	98772	44
45543	12804	80308	48053	16035	84251	52697	21370	90267	59383	28718	98266	43
44996	12260	79769	47518	15504	83723	52173	20850	89750	58871	28208	97760	42
44448	11716	79229	46982	14972	83196	51649	20330	89234	58358	27699	97255	41
43900	11173	78690	46447	14441	82668	51125	19810	88717	57845	27190	96749	40
43353	10630	78150	45911	13909	82140	50602	19290	88201	57332	26681	96244	39
42806	10086	77611	45376	13378	81613	50078	18770	87685	56820	26172	95738	38
42258	09543	77072	44841	12847	81085	49554	18250	87168	56307	25663	95233	37
41711	09000	76533	44306	12315	80558	49031	17730	86652	55795	25154	94727	36
41164	08457	75994	43771	11784	80031	48507	17210	86136	55282	24645	94222	35
40617	07914	75455	43236	11253	79504	47984	16690	85620	54770	24136	93717	34
40070	07371	74916	42701	10722	78976	47460	16171	85104	54257	23628	93212	33
39523	06828	74377	42166	10191	78449	46937	15651	84588	53745	23119	92706	32
38976	06285	73838	41631	09660	77922	46414	15132	84072	53233	22610	92201	31
38429	05742	73299	41096	09129	77395	45890	14612	83557	52721	22102	91696	30
37882	05200	72761	40561	08598	76868	45367	14093	83041	52209	21593	91191	29
37335	04657	72222	40027	08068	76341	44844	13573	82525	51697	21085	90686	28
36789	04114	71683	39492	07537	75814	44321	13054	82010	51185	20576	90182	27
36242	03572	71145	38958	07006	75288	43798	12535	81494	50673	20068	89677	26
35696	03029	70607	38423	06476	74761	43275	12016	80979	50161	19560	89172	25
35149	02487	70068	37889	05945	74234	42753	11497	80463	49649	19052	88667	24
34603	01945	69530	37354	05415	73708	42230	10978	79948	49138	18544	88163	23
34056	01403	68992	36820	04885	73181	41707	10459	79433	48626	18035	87658	22
33510	00860	68454	36286	04354	72655	41184	09940	78917	48114	17527	87154	21
32964	00318	67915	35752	03824	72128	40662	09421	78402	47603	17019	86649	20
32418	99776	67377	35218	03294	71602	40139	08902	77887	47091	16512	86145	19
31872	99234	66840	34684	02764	71076	39617	08383	77372	46580	16004	85641	18
31326	98692	66302	34150	02234	70550	39094	07865	76857	46068	15496	85136	17
30780	98151	65764	33616	01704	70024	38572	07346	76342	45557	14988	84632	16
30234	97609	65226	33082	01174	69498	38050	06827	75827	45046	14481	84128	15
29688	97067	64688	32549	00644	68972	37528	06309	75312	44535	13973	83624	14
29143	96526	64151	32015	00114	68446	37005	05791	74798	44024	13465	83120	13
28597	95984	63613	31481	99585	67920	36483	05272	74283	43513	12958	82616	12
28051	95442	63076	30948	99055	67394	35961	04754	73768	43002	12450	82112	11
27506	94901	62538	30414	98525	66868	35439	04236	73254	42491	11943	81608	10
26961	94360	62001	29881	97996	66343	34917	03717	72739	41980	11436	81104	9
26415	93818	61464	29348	97466	65817	34396	03199	72225	41469	10928	80601	8
25870	93277	60927	28814	96937	65291	33874	02681	71710	40958	10421	80097	7
25325	92736	60389	28281	96408	64766	33352	02163	71196	40447	09914	79593	6
24780	92195	59852	27748	95879	64240	32831	01645	70682	39937	09407	79090	5
24234	91654	59315	27215	95349	63715	32309	01128	70168	39426	08900	78586	4
23689	91113	58778	26682	94820	63190	31787	00610	69653	38916	08393	78083	3
23145	90572	58241	26149	94291	62665	31266	00092	69139	38405	07886	77579	2
22600	90031	57705	25616	93762	62139	30745	99574	68625	37895	07379	77076	1
22055	89491	57168	25083	93233	61614	30223	99057	68111	37384	06873	76573	0
47′	46′	45′	44′	43′	42′	41′	40′	39′	38′	37′	36′	″

Tangent Deg. 87

2 Deg. Sine — 2 Deg. Co-Sine

"	24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′	24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′	"
	8.	8.	8.	8.	8.	8.	8.	8.	8.	8.	8.	8.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	
	62	62	62	63	63	63	63	64	64	64	65	65	99	99	99	99	99	99	99	99	99	99	99	99	
0	19616	49653	79484	09111	38537	67764	96796	25634	54282	82742	11016	39107	96189	96136	96082	96028	95974	95919	95865	95809	95753	95697	95641	95584	60
1	20118	50152	79980	09603	39025	68249	97278	26113	54758	83214	11485	39573	96188	96135	96081	96027	95973	95919	95864	95808	95753	95696	95640	95583	59
2	20621	50651	80475	10095	39514	68735	97760	26592	55234	83687	11955	40040	96187	96134	96080	96027	95972	95918	95863	95807	95752	95696	95639	95582	58
3	21123	51150	80970	10587	40003	69220	98242	27071	55709	84160	12425	40506	96186	96133	96080	96026	95971	95917	95862	95806	95751	95695	95638	95581	57
4	21625	51649	81466	11079	40491	69706	98724	27550	56185	84632	12894	40973	96185	96132	96079	96025	95970	95916	95861	95805	95750	95694	95637	95580	56
5	22127	52147	81961	11571	40980	70191	99206	28029	56661	85105	13364	41439	96184	96131	96078	96024	95970	95915	95860	95805	95749	95693	95636	95579	55
6	22629	52646	82456	12063	41468	70676	99688	28507	57136	85577	13833	41906	96184	96130	96077	96023	95969	95914	95859	95804	95748	95692	95635	95578	54
7	23131	53144	82951	12554	41957	71161	00170	28986	57612	86050	14302	42372	96183	96129	96076	96022	95968	95913	95858	95803	95747	95691	95634	95577	53
8	23633	53643	83446	13046	42445	71646	00652	29465	58087	86522	14772	42838	96182	96129	96075	96021	95967	95912	95857	95802	95746	95690	95633	95577	52
9	24135	54141	83941	13538	42933	72131	01134	29943	58563	86995	15241	43305	96181	96128	96074	96020	95966	95911	95856	95801	95745	95689	95632	95576	51
10	24637	54639	84436	14029	43422	72616	01615	30422	59038	87467	15710	43771	96180	96127	96073	96019	95965	95910	95855	95800	95744	95688	95631	95575	50
11	25138	55138	84931	14521	43910	73101	02097	30900	59514	87939	16179	44237	96179	96126	96072	96018	95964	95909	95854	95799	95743	95687	95631	95574	49
12	25640	55636	85426	15012	44398	73586	02579	31379	59989	88411	16649	44703	96178	96125	96071	96018	95963	95909	95853	95798	95742	95686	95630	95573	48
13	26142	56134	85920	15503	44886	74071	03060	31857	60464	88883	17118	45169	96177	96124	96071	96017	95962	95908	95853	95797	95741	95685	95629	95572	47
14	26643	56632	86415	15995	45374	74555	03542	32336	60939	89355	17587	45635	96176	96123	96070	96016	95961	95907	95852	95796	95740	95684	95628	95571	46
15	27145	57130	86910	16486	45862	75040	04023	32814	61414	89827	18056	46101	96176	96122	96069	96015	95960	95906	95851	95795	95739	95683	95627	95570	45
16	27646	57628	87404	16977	46350	75525	04505	33292	61889	90299	18524	46567	96175	96121	96068	96014	95960	95905	95850	95794	95739	95682	95626	95569	44
17	28148	58126	87899	17469	46838	76009	04986	33770	62364	90771	18993	47033	96174	96121	96067	96013	95959	95904	95849	95793	95738	95681	95625	95568	43
18	28649	58624	88393	17960	47326	76494	05467	34248	62839	91243	19462	47498	96173	96120	96066	96012	95958	95903	95848	95792	95737	95680	95624	95567	42
19	29150	59122	88888	18451	47813	76978	05949	34726	63314	91715	19931	47964	96172	96119	96065	96011	95957	95902	95847	95792	95736	95680	95623	95566	41
20	29652	59620	89382	18942	48301	77463	06430	35204	63789	92187	20400	48430	96171	96118	96064	96010	95956	95901	95846	95791	95735	95679	95622	95565	40
21	30153	60118	89877	19433	48789	77947	06911	35682	64264	92659	20868	48896	96170	96117	96063	96009	95955	95900	95845	95790	95734	95678	95621	95564	39
22	30654	60615	90371	19924	49276	78432	07392	36160	64739	93130	21337	49361	96169	96116	96062	96008	95954	95899	95844	95789	95733	95677	95620	95563	38
23	31155	61113	90865	20414	49764	78916	07873	36638	65214	93602	21805	49827	96169	96115	96062	96008	95953	95898	95843	95788	95732	95676	95619	95562	37
24	31656	61610	91359	20905	50251	79400	08354	37116	65688	94073	22274	50292	96168	96114	96061	96007	95952	95898	95842	95787	95731	95675	95618	95561	36
25	32157	62108	91853	21396	50739	79884	08835	37594	66163	94545	22742	50758	96167	96113	96060	96006	95951	95897	95841	95786	95730	95674	95617	95560	35
26	32658	62605	92347	21887	51226	80368	09316	38071	66637	95016	23211	51223	96166	96113	96059	96005	95950	95896	95841	95785	95729	95673	95616	95559	34
27	33159	63103	92841	22377	51713	80852	09797	38549	67112	95488	23679	51688	96165	96112	96058	96004	95950	95895	95840	95784	95728	95672	95615	95558	33
28	33659	63600	93335	22868	52201	81336	10277	39027	67586	95959	24147	52154	96164	96111	96057	96003	95949	95894	95839	95783	95727	95671	95614	95557	32
29	34160	64097	93829	23358	52688	81820	10758	39504	68061	96430	24616	52619	96163	96110	96056	96002	95948	95893	95838	95782	95726	95670	95614	95557	31
30	34661	64594	94323	23849	53175	82304	11239	39982	68535	96902	25084	53084	96162	96109	96055	96001	95947	95892	95837	95781	95725	95669	95613	95556	30
31	35161	65092	94817	24339	53662	82788	11719	40459	69009	97373	25552	53549	96161	96108	96054	96000	95946	95891	95836	95780	95725	95668	95612	95555	29
32	35662	65589	95310	24830	54149	83272	12200	40936	69484	97844	26020	54014	96161	96107	96054	95999	95945	95890	95835	95780	95724	95667	95611	95554	28
33	36162	66086	95804	25320	54636	83755	12680	41414	69958	98315	26488	54479	96160	96106	96053	95999	95944	95889	95834	95779	95723	95666	95610	95553	27
34	36663	66583	96298	25810	55123	84239	13161	41891	70432	98786	26956	54944	96159	96105	96052	95998	95943	95888	95833	95778	95722	95665	95609	95552	26
35	37163	67080	96791	26300	55610	84723	13641	42368	70906	99257	27424	55409	96158	96105	96051	95997	95942	95887	95832	95777	95721	95664	95608	95551	25
36	37663	67576	97284	26790	56097	85206	14122	42845	71380	99728	27892	55874	96157	96104	96050	95996	95941	95887	95831	95776	95720	95664	95607	95550	24
37	38164	68073	97778	27280	56583	85690	14602	43323	71854	00199	28360	56339	96156	96103	96049	95995	95940	95886	95830	95775	95719	95663	95606	95549	23
38	38664	68570	98271	27770	57070	86173	15082	43800	72328	00670	28828	56804	96155	96102	96048	95994	95940	95885	95830	95774	95718	95662	95605	95548	22
39	39164	69067	98765	28260	57557	86657	15562	44277	72802	01141	29295	57268	96154	96101	96047	95993	95939	95884	95829	95773	95717	95661	95604	95547	21
40	39664	69563	99258	28750	58043	87140	16043	44754	73276	01612	29763	57733	96153	96100	96046	95992	95938	95883	95828	95772	95716	95660	95603	95546	20
41	40164	70060	99751	29240	58530	87623	16523	45231	73750	02082	30231	58198	96153	96099	96045	95991	95937	95882	95827	95771	95715	95659	95602	95545	19
42	40664	70556	00244	29730	59016	88107	17003	45707	74223	02553	30698	58662	96152	96098	96045	95990	95936	95881	95826	95770	95714	95658	95601	95544	18
43	41164	71053	00737	30220	59503	88590	17483	46184	74697	03023	31166	59127	96151	96097	96044	95989	95935	95880	95825	95769	95713	95657	95600	95543	17
44	41664	71549	01230	30709	59989	89073	17963	46661	75171	03494	31633	59591	96150	96096	96043	95989	95934	95879	95824	95768	95712	95656	95599	95542	16
45	42164	72046	01723	31199	60476	89556	18442	47138	75644	03964	32101	60056	96149	96096	96042	95988	95933	95878	95823	95767	95711	95655	95598	95541	15
46	42663	72542	02216	31689	60962	90039	18922	47614	76118	04435	32568	60520	96148	96095	96041	95987	95932	95877	95822	95766	95710	95654	95597	95540	14
47	43163	73038	02709	32178	61448	90522	19402	48091	76591	04905	33036	60985	96147	96094	96040	95986	95931	95876	95821	95766	95710	95653	95596	95539	13
48	43663	73534	03202	32667	61934	91005	19882	48567	77065	05376	33503	61449	96146	96093	96039	95985	95930	95876	95820	95765	95709	95652	95596	95538	12
49	44162	74030	03694	33157	62420	91488	20361	49044	77538	05846	33970	61913	96145	96092	96038	95984	95930	95875	95819	95764	95708	95651	95595	95537	11
50	44662	74527	04187	33646	62906	91970	20841	49520	78011	06316	34437	62377	96145	96091	96037	95983	95929	95874	95818	95763	95707	95650	95594	95536	10
51	45161	75023	04680	34136	63392	92453	21321	49997	78485	06786	34905	62841	96144	96090	96036	95982	95928	95873	95817	95762	95706	95649	95593	95536	9
52	45660	75519	05172	34625	63878	92936	21800	50473	78958	07257	35372	63306	96143	96089	96036	95981	95927	95872	95817	95761	95705	95648	95592	95535	8
53	46160	76014	05665	35114	64364	93419	22279	50949	79431	07727	35839	63770	96142	96088	96035	95980	95926	95871	95816	95760	95704	95648	95591	95534	7
54	46659	76510	06157	35603	64850	93901	22759	51426	79904	08197	36306	64234	96141	96088	96034	95980	95925	95870	95815	95759	95703	95647	95590	95533	6
55	47158	77006	06650	36092	65336	94384	23238	51902	80377	08667	36773	64698	96140	96087	96033	95979	95924	95869	95814	95758	95702	95646	95589	95532	5
56	47657	77502	07142	36581	65822	94866	23717	52378	80850	09137	37240	65161	96139	96086	96032	95978	95923	95868	95813	95757	95701	95645	95588	95531	4
57	48156	77997	07634	37070	66307	95349	24197	52854	81323	09606	37706	65625	96138	96085	96031	95977	95922	95867	95812	95756	95700	95644	95587	95530	3
58	48655	78493	08127	37559	66793	95831	24676	53330	81796	10076	38173	66089	96137	96084	96030	95976	95921	95866	95811	95755	95699	95643	95586	95529	2
59	49154	78989	08619	38048	67279	96313	25155	53806	82269	10546	38640	66553	96137	96083	96029	95975	95920	95865	95810	95754	95698	95642	95585	95528	1
60	49653	79484	09111	38537	67764	96796	25634	54282	82742	11016	39107	67017	96136	96082	96028	95974	95919	95865	95809	95753	95697	95641	95584	95527	0
"	35′	34′	33′	32′	31′	30′	29′	28′	27′	26′	25′	24′	35′	34′	33′	32′	31′	30′	29′	28′	27′	26′	25′	24′	"

Co-Sine Deg. 87 — Sine Deg. 87

2 Deg. Tangent

″	24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′
	8. 62	8. 62	8. 62	8. 63	8. 63	8. 63	8. 64	8. 64	8. 64	8. 64	8. 65	8. 65
0	23427	53518	83402	13083	42563	71845	00931	29825	58528	87044	15375	43522
1	23930	54017	83898	13576	43052	72331	01414	30305	59005	87518	15845	43990
2	24434	54517	84395	14069	43542	72817	01897	30785	59482	87992	16316	44458
3	24937	55017	84891	14561	44031	73303	02380	31265	59959	88465	16787	44925
4	25440	55516	85387	15054	44521	73790	02863	31744	60435	88939	17257	45393
5	25943	56016	85883	15547	45010	74276	03346	32224	60912	89412	17727	45860
6	26446	56515	86379	16040	45500	74762	03829	32704	61388	89886	18198	46327
7	26948	57015	86875	16532	45989	75248	04312	33183	61865	90359	18668	46795
8	27451	57514	87371	17025	46478	75734	04795	33663	62341	90832	19138	47262
9	27954	58013	87867	17517	46967	76220	05277	34142	62818	91306	19609	47729
10	28457	58513	88363	18010	47457	76706	05760	34622	63294	91779	20079	48196
11	28959	59012	88859	18502	47946	77192	06243	35101	63770	92252	20549	48663
12	29462	59511	89354	18995	48435	77677	06725	35581	64247	92725	21019	49130
13	29964	60010	89850	19487	48924	78163	07208	36060	64723	93198	21489	49597
14	30467	60509	90346	19979	49413	78649	07690	36539	65199	93671	21959	50064
15	30969	61008	90841	20471	49902	79134	08173	37019	65675	94144	22429	50531
16	31472	61507	91337	20963	50390	79620	08655	37498	66151	94617	22899	50998
17	31974	62006	91832	21456	50879	80105	09137	37977	66627	95090	23368	51465
18	32476	62505	92327	21948	51368	80591	09619	38456	67103	95563	23838	51931
19	32978	63003	92823	22440	51857	81076	10102	38935	67579	96036	24308	52398
20	33480	63502	93318	22931	52345	81562	10584	39414	68054	96508	24778	52865
21	33983	64000	93813	23423	52834	82047	11066	39893	68530	96981	25247	53331
22	34485	64499	94308	23915	53322	82532	11548	40371	69006	97454	25717	53798
23	34986	64998	94803	24407	53811	83017	12030	40850	69482	97926	26186	54264
24	35488	65496	95298	24899	54299	83502	12512	41329	69957	98399	26656	54731
25	35990	65994	95793	25390	54787	83988	12993	41808	70433	98871	27125	55197
26	36492	66493	96288	25882	55276	84473	13475	42286	70908	99343	27594	55664
27	36994	66991	96783	26373	55764	84958	13957	42765	71384	99816	28064	56130
28	37495	67489	97278	26865	56252	85442	14439	43243	71859	00288	28533	56596
29	37997	67987	97773	27356	56740	85927	14920	43722	72334	00760	29002	57062
30	38498	68485	98268	27848	57228	86412	15402	44200	72810	01233	29471	57528
31	39000	68983	98762	28339	57716	86897	15883	44679	73285	01705	29940	57995
32	39501	69481	99257	28830	58204	87382	16365	45157	73760	02177	30410	58461
33	40003	69979	99751	29321	58692	87866	16846	45635	74235	02649	30879	58927
34	40504	70477	00246	29812	59180	88351	17328	46113	74710	03121	31347	59393
35	41005	70975	00740	30303	59668	88835	17809	46592	75185	03593	31816	59858
36	41506	71473	01235	30795	60155	89320	18290	47070	75660	04065	32285	60324
37	42008	71971	01729	31285	60643	89804	18772	47548	76135	04537	32754	60790
38	42509	72468	02223	31776	61131	90289	19253	48026	76610	05008	33223	61256
39	43010	72966	02717	32267	61618	90773	19734	48504	77085	05480	33691	61721
40	43511	73463	03211	32758	62106	91257	20215	48982	77560	05952	34160	62187
41	44011	73961	03706	33249	62593	91741	20696	49459	78034	06423	34629	62653
42	44512	74458	04200	33740	63081	92225	21177	49937	78509	06895	35097	63118
43	45013	74956	04694	34230	63568	92710	21658	50415	78984	07366	35566	63584
44	45514	75453	05188	34721	64055	93194	22139	50893	79458	07838	36034	64049
45	46015	75950	05681	35211	64542	93678	22619	51370	79933	08309	36503	64515
46	46515	76447	06175	35702	65030	94162	23100	51848	80407	08781	36971	64980
47	47016	76944	06669	36192	65517	94645	23581	52325	80882	09252	37439	65445
48	47516	77441	07163	36683	66004	95129	24061	52803	81356	09723	37907	65911
49	48017	77938	07656	37173	66491	95613	24542	53280	81830	10195	38376	66376
50	48517	78435	08150	37663	66978	96097	25023	53758	82305	10666	38844	66841
51	49017	78932	08643	38153	67465	96580	25503	54235	82779	11137	39312	67306
52	49518	79429	09137	38643	67952	97064	25983	54712	83253	11608	39780	67771
53	50018	79926	09630	39134	68438	97548	26464	55189	83727	12079	40248	68236
54	50518	80423	10124	39624	68925	98031	26944	55667	84201	12550	40716	68701
55	51018	80919	10617	40114	69412	98515	27424	56144	84675	13021	41184	69166
56	51518	81416	11110	40603	69899	98998	27905	56621	85149	13492	41652	69631
57	52018	81913	11603	41093	70385	99481	28385	57098	85623	13963	42119	70096
58	52518	82409	12097	41583	70872	99965	28865	57575	86097	14433	42587	70560
59	53018	82906	12590	42073	71358	00448	29345	58052	86571	14904	43055	71025
60	53518	83402	13083	42563	71845	00931	29825	58528	87044	15375	43522	71490
″	35′	34′	33′	32′	31′	30′	29′	28′	27′	26′	25′	24′

Co-Tangent Deg. 87

2 Deg. Co-Tangent

24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′	″
11. 37	11. 37	11. 37	11. 36	11. 36	11. 36	11. 35	11. 35	11. 35	11. 35	11. 34	11. 34	
76573	46482	16598	86917	57437	28155	99069	70175	41472	12956	84625	56478	60
76070	45983	16102	86424	56948	27669	98586	69695	40995	12482	84155	56010	59
75566	45483	15605	85931	56458	27183	98103	69215	40518	12008	83684	55542	58
75063	44983	15109	85439	55969	26697	97620	68735	40041	11535	83213	55075	57
74560	44484	14613	84946	55479	26210	97137	68256	39565	11061	82743	54607	56
74057	43984	14117	84453	54990	25724	96654	67776	39088	10588	82273	54140	55
73554	43485	13621	83960	54500	25238	96171	67296	38612	10114	81802	53673	54
73052	42985	13125	83468	54011	24752	95688	66817	38135	09641	81332	53205	53
72549	42486	12629	82975	53522	24266	95205	66337	37659	09168	80862	52738	52
72046	41987	12133	82483	53033	23780	94723	65858	37182	08694	80391	52271	51
71543	41487	11637	81990	52543	23294	94240	65378	36706	08221	79921	51804	50
71041	40988	11141	81498	52054	22808	93757	64899	36230	07748	79451	51337	49
70538	40489	10646	81005	51565	22323	93275	64419	35753	07275	78981	50870	48
70036	39990	10150	80513	51076	21837	92792	63940	35277	06802	78511	50403	47
69533	39491	09654	80021	50587	21351	92310	63461	34801	06329	78041	49936	46
69031	38992	09159	79529	50098	20866	91827	62981	34325	05856	77571	49469	45
68528	38493	08663	79037	49610	20380	91345	62502	33849	05383	77101	49002	44
68026	37994	08168	78544	49121	19895	90863	62023	33373	04910	76632	48535	43
67524	37495	07673	78052	48632	19409	90381	61544	32897	04437	76162	48069	42
67022	36997	07177	77560	48143	18924	89898	61065	32421	03964	75692	47602	41
66520	36498	06682	77069	47655	18438	89416	60586	31946	03492	75222	47135	40
66017	36000	06187	76577	47166	17953	88934	60107	31470	03019	74753	46669	39
65515	35501	05692	76085	46678	17468	88452	59629	30994	02546	74283	46202	38
65014	35002	05197	75593	46189	16983	87970	59150	30518	02074	73814	45736	37
64512	34504	04702	75101	45701	16498	87488	58671	30043	01601	73344	45269	36
64010	34006	04207	74610	45213	16012	87007	58192	29567	01129	72875	44803	35
63508	33507	03712	74118	44724	15527	86525	57714	29092	00657	72406	44336	34
63006	33009	03217	73627	44236	15042	86043	57235	28616	00184	71936	43870	33
62505	32511	02722	73135	43748	14558	85561	56757	28141	99712	71467	43404	32
62003	32013	02227	72644	43260	14073	85080	56278	27666	99240	70998	42938	31
61502	31515	01732	72152	42772	13588	84598	55800	27190	98767	70529	42472	30
61000	31017	01238	71661	42284	13103	84117	55321	26715	98295	70060	42005	29
60499	30519	00743	71170	41796	12618	83635	54843	26240	97823	69590	41539	28
59997	30021	00249	70679	41308	12134	83154	54365	25765	97351	69121	41073	27
59496	29523	99754	70188	40820	11649	82672	53887	25290	96879	68653	40607	26
58995	29025	99260	69697	40332	11165	82191	53408	24815	96407	68184	40142	25
58494	28527	98765	69205	39845	10680	81710	52930	24340	95935	67715	39676	24
57992	28029	98271	68715	39357	10196	81228	52452	23865	95463	67246	39210	23
57491	27532	97777	68224	38869	09711	80747	51974	23390	94992	66777	38744	22
56990	27034	97283	67733	38382	09227	80266	51496	22915	94520	66309	38279	21
56489	26537	96789	67242	37894	08743	79785	51018	22440	94048	65840	37813	20
55989	26039	96294	66751	37407	08259	79304	50541	21966	93577	65371	37347	19
55488	25542	95800	66260	36919	07775	78823	50063	21491	93105	64903	36882	18
54987	25044	95306	65770	36432	07290	78342	49585	21016	92634	64434	36416	17
54486	24547	94812	65279	35945	06806	77861	49107	20542	92162	63966	35951	16
53985	24050	94319	64789	35458	06322	77381	48630	20067	91691	63497	35485	15
53485	23553	93825	64298	34970	05838	76900	48152	19593	91219	63029	35020	14
52984	23056	93331	63808	34483	05355	76419	47675	19118	90748	62561	34555	13
52484	22559	92837	63317	33996	04871	75939	47197	18644	90277	62093	34089	12
51983	22062	92344	62827	33509	04387	75458	46720	18170	89805	61624	33624	11
51483	21565	91850	62337	33022	03903	74977	46242	17695	89334	61156	33159	10
50983	21068	91357	61847	32535	03420	74497	45765	17221	88863	60688	32694	9
50482	20571	90863	61357	32048	02936	74017	45288	16747	88392	60220	32229	8
49982	20074	90370	60866	31562	02452	73536	44811	16273	87921	59752	31764	7
49482	19577	89876	60376	31075	01969	73056	44333	15799	87450	59284	31299	6
48982	19081	89383	59886	30588	01485	72576	43856	15325	86979	58816	30834	5
48482	18584	88890	59397	30101	01002	72095	43379	14851	86508	58348	30369	4
47982	18087	88397	58907	29615	00519	71615	42902	14377	86037	57881	29904	3
47482	17591	87903	58417	29128	00035	71135	42425	13903	85567	57413	29440	2
46982	17094	87410	57927	28642	99552	70655	41948	13429	85096	56945	28975	1
46482	16598	86917	57437	28155	99069	70175	41472	12956	84625	56478	28510	0
35′	34′	33′	32′	31′	30′	29′	28′	27′	26′	25′	24′	″

Tangent Deg. 87

2 Deg. Sine — 2 Deg. Co-Sine

"	36′	37′	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′	36′	37′	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′	"
	8. 65	8. 65	8. 66	8. 66	8. 66	8. 67	8. 67	8. 67	8. 67	8. 68	8. 68	8. 68	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	
0	67017	94748	22303	49684	76893	03932	30804	57510	84052	10433	36654	62718	95527	95469	95411	95353	95295	95236	95176	95116	95056	94996	94935	94874	60
1	67480	95209	22761	50139	77345	04381	31250	57954	84493	10871	37090	63151	95526	95468	95411	95352	95294	95235	95175	95115	95055	94995	94934	94873	59
2	67944	95669	23218	50594	77797	04831	31697	58397	84934	11310	37526	63584	95525	95467	95410	95351	95293	95234	95174	95114	95054	94994	94933	94872	58
3	68407	96130	23676	51048	78249	05280	32143	58841	85375	11748	37961	64017	95524	95467	95409	95350	95292	95233	95173	95113	95053	94993	94932	94871	57
4	68871	96590	24134	51503	78701	05729	32589	59284	85816	12186	38397	64450	95523	95466	95408	95349	95291	95232	95172	95112	95052	94992	94931	94870	56
5	69334	97051	24591	51958	79153	06178	33036	59728	86257	12624	38832	64883	95522	95465	95407	95348	95290	95231	95171	95111	95051	94991	94930	94869	55
6	69798	97511	25049	52413	79604	06627	33482	60171	86698	13062	39268	65315	95521	95464	95406	95347	95289	95230	95170	95110	95050	94990	94929	94867	54
7	70261	97972	25506	52867	80056	07076	33928	60615	87138	13500	39703	65748	95520	95463	95405	95346	95288	95229	95169	95109	95049	94989	94928	94866	53
8	70724	98432	25964	53322	80508	07525	34374	61058	87579	13938	40138	66181	95519	95462	95404	95345	95287	95228	95168	95108	95048	94988	94927	94865	52
9	71188	98892	26421	53776	80960	07974	34820	61502	88020	14376	40574	66614	95518	95461	95403	95344	95286	95227	95167	95107	95047	94987	94926	94864	51
10	71651	99353	26878	54231	81411	08422	35266	61945	88460	14814	41009	67046	95517	95460	95402	95343	95285	95226	95166	95106	95046	94986	94925	94863	50
11	72114	99813	27336	54685	81863	08871	35712	62388	88901	15252	41444	67479	95516	95459	95401	95342	95284	95225	95165	95105	95045	94985	94924	94862	49
12	72577	00273	27793	55139	82314	09320	36158	62831	89341	15690	41879	67912	95515	95458	95400	95341	95283	95224	95164	95104	95044	94984	94923	94861	48
13	73040	00733	28250	55594	82766	09769	36604	63274	89782	16128	42315	68344	95515	95457	95399	95341	95282	95223	95163	95103	95043	94983	94922	94860	47
14	73503	01193	28707	56048	83217	10217	37050	63718	90222	16566	42750	68777	95514	95456	95398	95340	95281	95222	95162	95102	95042	94982	94921	94859	46
15	73966	01653	29164	56502	83669	10666	37496	64161	90663	17003	43185	69209	95513	95455	95397	95339	95280	95221	95161	95101	95041	94981	94920	94858	45
16	74429	02113	29621	56956	84120	11114	37942	64604	91103	17441	43620	69641	95512	95454	95396	95338	95279	95220	95160	95100	95040	94980	94919	94857	44
17	74892	02573	30078	57411	84571	11563	38387	65047	91543	17878	44055	70074	95511	95453	95395	95337	95278	95219	95159	95099	95039	94979	94918	94856	43
18	75355	03033	30535	57865	85022	12011	38833	65490	91983	18316	44490	70506	95510	95452	95394	95336	95277	95218	95158	95098	95038	94978	94917	94855	42
19	75817	03493	30992	58319	85474	12460	39279	65933	92424	18754	44925	70938	95509	95451	95393	95335	95276	95217	95157	95097	95037	94976	94916	94854	41
20	76280	03952	31449	58773	85925	12908	39724	66375	92864	19191	45359	71371	95508	95450	95392	95334	95275	95216	95156	95096	95036	94975	94914	94853	40
21	76743	04412	31906	59227	86376	13356	40170	66818	93304	19629	45794	71803	95507	95449	95391	95333	95274	95215	95155	95095	95035	94974	94913	94852	39
22	77205	04872	32363	59680	86827	13805	40615	67261	93744	20066	46229	72235	95506	95448	95390	95332	95273	95214	95154	95094	95034	94973	94912	94851	38
23	77668	05331	32819	60134	87278	14253	41061	67704	94184	20503	46664	72667	95505	95447	95389	95331	95272	95213	95153	95093	95033	94972	94911	94850	37
24	78130	05791	33276	60588	87729	14701	41506	68146	94624	20941	47098	73099	95504	95446	95388	95330	95271	95212	95152	95092	95032	94971	94910	94849	36
25	78593	06250	33733	61042	88180	15149	41951	68589	95064	21378	47533	73531	95503	95445	95387	95329	95270	95211	95151	95091	95031	94970	94909	94848	35
26	79055	06710	34189	61495	88631	15597	42397	69031	95504	21815	47968	73963	95502	95444	95386	95328	95269	95210	95150	95090	95030	94969	94908	94847	34
27	79518	07169	34646	61949	89082	16045	42842	69474	95943	22252	48402	74395	95501	95443	95385	95327	95268	95209	95149	95089	95029	94968	94907	94846	33
28	79980	07629	35102	62403	89532	16493	43287	69917	96383	22689	48837	74827	95500	95442	95384	95326	95267	95208	95148	95088	95028	94967	94906	94845	32
29	80442	08088	35559	62856	89983	16941	43732	70359	96823	23126	49271	75259	95499	95441	95383	95325	95266	95207	95147	95087	95027	94966	94905	94844	31
30	80904	08547	36015	63310	90434	17389	44177	70801	97263	23563	49706	75691	95498	95440	95382	95324	95265	95206	95146	95086	95026	94965	94904	94843	30
31	81367	09007	36471	63763	90884	17837	44622	71244	97702	24000	50140	76123	95497	95440	95381	95323	95264	95205	95145	95085	95025	94964	94903	94842	29
32	81829	09466	36928	64217	91335	18284	45068	71686	98142	24437	50574	76554	95496	95439	95380	95322	95263	95204	95144	95084	95024	94963	94902	94841	28
33	82291	09925	37384	64670	91785	18732	45512	72128	98582	24874	51008	76986	95495	95438	95379	95321	95262	95203	95143	95083	95023	94962	94901	94840	27
34	82753	10384	37840	65123	92236	19180	45957	72570	99021	25311	51443	77418	95494	95437	95378	95320	95261	95202	95142	95082	95022	94961	94900	94839	26
35	83215	10843	38296	65577	92686	19628	46402	73013	99461	25748	51877	77849	95493	95436	95378	95319	95260	95201	95141	95081	95021	94960	94899	94838	25
36	83677	11302	38752	66030	93137	20075	46847	73455	99900	26185	52311	78281	95492	95435	95377	95318	95259	95200	95140	95080	95020	94959	94898	94837	24
37	84139	11761	39208	66483	93587	20523	47292	73897	00339	26621	52745	78712	95491	95434	95376	95317	95258	95199	95139	95079	95019	94958	94897	94836	23
38	84600	12220	39664	66936	94037	20970	47737	74339	00779	27058	53179	79144	95491	95433	95375	95316	95257	95198	95138	95078	95018	94957	94896	94835	22
39	85062	12679	40120	67389	94488	21418	48181	74781	01218	27495	53613	79575	95490	95432	95374	95315	95256	95197	95137	95077	95017	94956	94895	94834	21
40	85524	13137	40576	67842	94938	21865	48626	75223	01657	27931	54047	80007	95489	95431	95373	95314	95255	95196	95136	95076	95016	94955	94894	94833	20
41	85985	13596	41032	68295	95388	22313	49071	75665	02096	28368	54481	80438	95488	95430	95372	95313	95254	95195	95135	95075	95015	94954	94893	94832	19
42	86447	14055	41488	68748	95838	22760	49515	76107	02536	28804	54915	80869	95487	95429	95371	95312	95253	95194	95134	95074	95014	94953	94892	94831	18
43	86909	14513	41944	69201	96288	23207	49960	76548	02975	29241	55349	81300	95486	95428	95370	95311	95252	95193	95133	95073	95013	94952	94891	94830	17
44	87370	14972	42399	69654	96738	23654	50404	76990	03414	29677	55783	81732	95485	95427	95369	95310	95251	95192	95132	95072	95012	94951	94890	94828	16
45	87832	15431	42855	70107	97188	24102	50849	77432	03853	30114	56216	82163	95484	95426	95368	95309	95250	95191	95131	95071	95011	94950	94889	94827	15
46	88293	15889	43310	70559	97638	24549	51293	77874	04292	30550	56650	82594	95483	95425	95367	95308	95249	95190	95130	95070	95010	94949	94888	94826	14
47	88754	16348	43766	71012	98088	24996	51737	78315	04731	30986	57084	83025	95482	95424	95366	95307	95248	95189	95129	95069	95009	94948	94887	94825	13
48	89216	16806	44222	71465	98538	25443	52182	78757	05170	31423	57517	83456	95481	95423	95365	95306	95247	95188	95128	95068	95008	94947	94886	94824	12
49	89677	17264	44677	71917	98988	25890	52626	79198	05609	31859	57951	83887	95480	95422	95364	95305	95246	95187	95127	95067	95007	94946	94885	94823	11
50	90138	17723	45132	72370	99437	26337	53070	79640	06047	32295	58385	84318	95479	95421	95363	95304	95245	95186	95126	95066	95006	94945	94884	94822	10
51	90600	18181	45588	72822	99887	26784	53514	80081	06486	32731	58818	84749	95478	95420	95362	95303	95244	95185	95125	95065	95005	94944	94883	94821	9
52	91061	18639	46043	73275	00337	27231	53959	80523	06925	33167	59252	85180	95477	95419	95361	95302	95243	95184	95124	95064	95004	94943	94882	94820	8
53	91522	19097	46498	73727	00786	27677	54403	80964	07364	33603	59685	85611	95476	95418	95360	95301	95242	95183	95123	95063	95003	94942	94881	94819	7
54	91983	19555	46954	74180	01236	28124	54847	81405	07802	34039	60118	86041	95475	95417	95359	95300	95241	95182	95122	95062	95002	94941	94880	94818	6
55	92444	20013	47409	74632	01685	28571	55291	81847	08241	34475	60552	86472	95474	95416	95358	95299	95240	95181	95121	95061	95001	94940	94879	94817	5
56	92905	20471	47864	75084	02135	29018	55735	82288	08679	34911	60985	86903	95473	95415	95357	95298	95239	95180	95120	95060	95000	94939	94878	94816	4
57	93366	20929	48319	75537	02584	29464	56178	82729	09118	35347	61418	87334	95472	95414	95356	95297	95238	95179	95119	95059	94999	94938	94877	94815	3
58	93826	21387	48774	75989	03034	29911	56622	83170	09556	35783	61851	87764	95471	95413	95355	95296	95237	95178	95118	95058	94998	94937	94876	94814	2
59	94287	21845	49229	76441	03483	30357	57066	83611	09995	36218	62285	88195	95470	95412	95354	95296	95236	95177	95117	95057	94997	94936	94875	94813	1
60	94748	22303	49684	76893	03932	30804	57510	84052	10433	36654	62718	88625	95469	95411	95353	95295	95236	95176	95116	95056	94996	94935	94874	94812	0
"	23′	22′	21′	20′	19′	18′	17′	16′	15′	14′	13′	12′	23′	22′	21′	20′	19′	18′	17′	16′	15′	14′	13′	12′	"

Co-Sine Deg. 87 — Sine Deg. 87

2 Deg. Tangent

	36′	37′	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′
″	8. 65	8. 65	8. 66	8. 66	8. 66	8. 67	8. 67	8. 67	8. 67	8. 68	8. 68	8. 68
0	71490	99279	26891	54331	81598	08697	35628	62393	88996	15437	41719	67844
1	71954	99740	27350	54787	82051	09147	36075	62838	89438	15877	42156	68278
2	72419	00202	27809	55242	82504	09597	36523	63283	89880	16316	42593	68712
3	72883	00663	28268	55698	82957	10047	36970	63727	90322	16755	43029	69146
4	73348	01125	28726	56154	83410	10497	37417	64172	90764	17194	43466	69580
5	73812	01586	29185	56610	83863	10947	37864	64617	91206	17634	43902	70014
6	74276	02048	29643	57065	84316	11397	38312	65061	91647	18073	44339	70448
7	74741	02509	30102	57521	84769	11847	38759	65505	92089	18512	44775	70882
8	75205	02970	30560	57976	85221	12297	39206	65950	92531	18951	45212	71316
9	75669	03432	31018	58432	85674	12747	39653	66394	92972	19390	45648	71749
10	76133	03893	31477	58887	86127	13197	40100	66839	93414	19829	46084	72183
11	76598	04354	31935	59343	86579	13647	40547	67283	93856	20268	46521	72617
12	77062	04815	32393	59798	87032	14096	40994	67727	94297	20706	46957	73050
13	77526	05276	32851	60253	87484	14546	41441	68171	94739	21145	47393	73484
14	77990	05737	33309	60708	87936	14996	41888	68615	95180	21584	47829	73917
15	78453	06198	33768	61164	88389	15445	42335	69059	95621	22023	48265	74351
16	78917	06659	34226	61619	88841	15895	42781	69503	96063	22461	48701	74784
17	79381	07120	34683	62074	89293	16344	43228	69947	96504	22900	49137	75218
18	79845	07581	35141	62529	89746	16793	43675	70391	96945	23339	49573	75651
19	80309	08042	35599	62984	90198	17243	44121	70835	97386	23777	50009	76084
20	80772	08502	36057	63439	90650	17692	44568	71279	97828	24216	50445	76518
21	81236	08963	36515	63894	91102	18141	45014	71723	98269	24654	50881	76951
22	81699	09424	36973	64349	91554	18591	45461	72167	98710	25092	51317	77384
23	82163	09884	37430	64804	92006	19040	45907	72610	99151	25531	51752	77817
24	82626	10345	37888	65258	92458	19489	46354	73054	99592	25969	52188	78250
25	83090	10805	38345	65713	92910	19938	46800	73498	00033	26407	52624	78683
26	83553	11266	38803	66168	93362	20387	47246	73941	00474	26846	53059	79116
27	84017	11726	39261	66622	93814	20836	47693	74385	00914	27284	53495	79549
28	84480	12186	39718	67077	94265	21285	48139	74828	01355	27722	53930	79982
29	84943	12647	40175	67531	94717	21734	48585	75272	01796	28160	54366	80415
30	85406	13107	40633	67986	95169	22183	49031	75715	02237	28598	54801	80848
31	85869	13567	41090	68440	95620	22632	49477	76158	02677	29036	55237	81281
32	86332	14027	41547	68895	96072	23081	49923	76602	03118	29474	55672	81713
33	86795	14487	42004	69349	96523	23529	50369	77045	03559	29912	56107	82146
34	87258	14947	42462	69803	96975	23978	50815	77488	03999	30350	56543	82579
35	87721	15407	42919	70258	97426	24427	51261	77931	04440	30788	56978	83011
36	88184	15867	43376	70712	97878	24875	51707	78374	04880	31226	57413	83444
37	88647	16327	43833	71166	98329	25324	52153	78818	05320	31663	57848	83877
38	89110	16787	44290	71620	98780	25772	52598	79261	05761	32101	58283	84309
39	89573	17247	44747	72074	99231	26221	53044	79704	06201	32539	58718	84742
40	90035	17707	45203	72528	99683	26669	53490	80147	06641	32976	59153	85174
41	90498	18166	45660	72982	00134	27118	53935	80589	07082	33414	59588	85606
42	90960	18626	46117	73436	00585	27566	54381	81032	07522	33851	60023	86039
43	91423	19086	46574	73890	01036	28014	54826	81475	07962	34289	60458	86471
44	91885	19545	47030	74344	01487	28462	55272	81918	08402	34726	60893	86903
45	92348	20005	47487	74797	01938	28911	55717	82361	08842	35164	61327	87335
46	92810	20464	47944	75251	02389	29359	56163	82803	09282	35601	61762	87768
47	93273	20924	48400	75705	02840	29807	56608	83246	09722	36038	62197	88200
48	93735	21383	48857	76159	03291	30255	57053	83688	10162	36476	62632	88632
49	94197	21842	49313	76612	03741	30703	57499	84131	10602	36913	63066	89064
50	94659	22301	49770	77066	04192	31151	57944	84573	11042	37350	63501	89496
51	95121	22761	50226	77519	04643	31599	58389	85016	11481	37787	63935	89928
52	95584	23220	50682	77973	05093	32047	58834	85458	11921	38224	64370	90360
53	96046	23679	51138	78426	05544	32494	59279	85901	12361	38661	64804	90791
54	96508	24138	51595	78879	05994	32942	59724	86343	12800	39098	65239	91223
55	96970	24597	52051	79333	06445	33390	60169	86785	13240	39535	65673	91655
56	97431	25056	52507	79786	06895	33837	60614	87228	13680	39972	66107	92087
57	97893	25515	52963	80239	07346	34285	61059	87670	14119	40409	66541	92518
58	98355	25974	53419	80692	07796	34733	61504	88112	14559	40846	66976	92950
59	98817	26433	53875	81145	08246	35180	61949	88554	14998	41283	67410	93382
60	99279	26891	54331	81598	08697	35628	62393	88996	15437	41719	67844	93813
″	23′	22′	21′	20′	19′	18′	17′	16′	15′	14′	13′	12′

Co-Tangent Deg. 87

2 Deg. Co-Tangent

36′	37′	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′	
11. 34	11. 34	11. 33	11. 33	11. 33	11. 32	11. 32	11. 32	11. 32	11. 31	11. 31	11. 31	″
28510	00721	73109	45669	18402	91303	64372	37607	11004	84563	58281	32156	60
28046	00260	72650	45213	17949	90853	63925	37162	10562	84123	57844	31722	59
27581	99798	72191	44758	17496	90403	63477	36717	10120	83684	57407	31288	58
27117	99337	71732	44302	17043	89953	63030	36273	09678	83245	56971	30854	57
26652	98875	71274	43846	16590	89503	62583	35828	09236	82806	56534	30420	56
26188	98414	70815	43390	16137	89053	62136	35383	08794	82366	56098	29986	55
25724	97952	70357	42935	15684	88603	61688	34939	08353	81927	55661	29552	54
25259	97491	69898	42479	15231	88153	61241	34495	07911	81488	55225	29118	53
24795	97030	69440	42024	14779	87703	60794	34050	07469	81049	54788	28684	52
24331	96568	68982	41568	14326	87253	60347	33606	07028	80610	54352	28251	51
23867	96107	68523	41113	13873	86803	59900	33161	06586	80171	53916	27817	50
23402	95646	68065	40657	13421	86353	59453	32717	06144	79732	53479	27383	49
22938	95185	67607	40202	12968	85904	59006	32273	05703	79294	53043	26950	48
22474	94724	67149	39747	12516	85454	58559	31829	05261	78855	52607	26516	47
22010	94263	66691	39292	12064	85004	58112	31385	04820	78416	52171	26083	46
21547	93802	66232	38836	11611	84555	57665	30941	04379	77977	51735	25649	45
21083	93341	65774	38381	11159	84105	57219	30497	03937	77539	51299	25216	44
20619	92880	65317	37926	10707	83656	56772	30053	03496	77100	50863	24782	43
20155	92419	64859	37471	10254	83207	56325	29609	03055	76661	50427	24349	42
19691	91958	64401	37016	09802	82757	55879	29165	02614	76223	49991	23916	41
19228	91498	63943	36561	09350	82308	55432	28721	02172	75784	49555	23482	40
18764	91037	63485	36106	08898	81859	54986	28277	01731	75346	49119	23049	39
18301	90576	63027	35651	08446	81409	54539	27833	01290	74908	48683	22616	38
17837	90116	62570	35196	07994	80960	54093	27390	00849	74469	48248	22183	37
17374	89655	62112	34742	07542	80511	53646	26946	00408	74031	47812	21750	36
16910	89195	61655	34287	07090	80062	53200	26502	99967	73593	47376	21317	35
16447	88734	61197	33832	06638	79613	52754	26059	99526	73154	46941	20884	34
15983	88274	60739	33378	06186	79164	52307	25615	99086	72716	46505	20451	33
15520	87814	60282	32923	05735	78715	51861	25172	98645	72278	46070	20018	32
15057	87353	59825	32469	05283	78266	51415	24728	98204	71840	45634	19585	31
14594	86893	59367	32014	04831	77817	50969	24285	97763	71402	45199	19152	30
14131	86433	58910	31560	04380	77368	50523	23842	97323	70964	44763	18719	29
13668	85973	58453	31105	03928	76919	50077	23398	96882	70526	44328	18287	28
13205	85513	57996	30651	03477	76471	49631	22955	96441	70088	43893	17854	27
12742	85053	57538	30197	03025	76022	49185	22512	96001	69650	43457	17421	26
12279	84593	57081	29742	02574	75573	48739	22069	95560	69212	43022	16989	25
11816	84133	56624	29288	02122	75125	48293	21626	95120	68774	42587	16556	24
11353	83673	56167	28834	01671	74676	47847	21182	94680	68337	42152	16123	23
10890	83213	55710	28380	01220	74228	47402	20739	94239	67899	41717	15691	22
10427	82753	55253	27926	00769	73779	46956	20296	93799	67461	41282	15258	21
09965	82293	54797	27472	00317	73331	46510	19853	93359	67024	40847	14826	20
09502	81834	54340	27018	99866	72882	46065	19411	92918	66586	40412	14394	19
09040	81374	53883	26564	99415	72434	45619	18968	92478	66149	39977	13961	18
08577	80914	53426	26110	98964	71986	45174	18525	92038	65711	39542	13529	17
08115	80455	52970	25656	98513	71538	44728	18082	91598	65274	39107	13097	16
07652	79995	52513	25203	98062	71089	44283	17639	91158	64836	38673	12665	15
07190	79536	52056	24749	97611	70641	43837	17197	90718	64399	38238	12232	14
06727	79076	51600	24295	97160	70193	43392	16754	90278	63962	37803	11800	13
06265	78617	51143	23841	96709	69745	42947	16312	89838	63524	37368	11368	12
05803	78158	50687	23388	96259	69297	42501	15869	89398	63087	36934	10936	11
05341	77699	50230	22934	95808	68849	42056	15427	88958	62650	36499	10504	10
04879	77239	49774	22481	95357	68401	41611	14984	88519	62213	36065	10072	9
04416	76780	49318	22027	94907	67953	41166	14542	88079	61776	35630	09640	8
03954	76321	48862	21574	94456	67506	40721	14099	87639	61339	35196	09209	7
03492	75862	48405	21121	94006	67058	40276	13657	87200	60902	34761	08777	6
03030	75403	47949	20667	93555	66610	39831	13215	86760	60465	34327	08345	5
02569	74944	47493	20214	93105	66163	39386	12772	86320	60028	33893	07913	4
02107	74485	47037	19761	92654	65715	38941	12330	85881	59591	33459	07482	3
01645	74026	46581	19308	92204	65267	38496	11888	85441	59154	33024	07050	2
01183	73567	46125	18855	91754	64820	38051	11446	85002	58717	32590	06618	1
00721	73109	45669	18402	91303	64372	37607	11004	84563	58281	32156	06187	0
23′	22′	21′	20′	19′	18′	17′	16′	15′	14′	13′	12′	″

Tangent Deg. 87

2 Deg. Sine

	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	8.68	8.69	8.69	8.69	8.69	8.70	8.70	8.70	8.70	8.71	8.71	8.71
0	88625	14379	39980	65431	90734	15889	40899	65766	90490	15075	39520	63829
1	89056	14807	40406	65854	91154	16307	41315	66179	90901	15483	39927	64233
2	89486	15235	40831	66277	91574	16725	41730	66592	91312	15892	40333	64637
3	89917	15662	41256	66700	91995	17143	42146	67005	91723	16300	40739	65041
4	90347	16090	41682	67123	92415	17561	42561	67419	92134	16709	41145	65445
5	90777	16518	42107	67545	92835	17979	42977	67832	92545	17117	41551	65848
6	91207	16946	42532	67968	93256	18397	43392	68245	92955	17526	41957	66252
7	91638	17373	42957	68391	93676	18814	43808	68658	93366	17934	42363	66656
8	92068	17801	43382	68813	94096	19232	44223	69071	93776	18342	42769	67060
9	92498	18229	43807	69236	94516	19650	44638	69484	94187	18751	43175	67463
10	92928	18656	44232	69659	94936	20067	45054	69896	94598	19159	43581	67867
11	93358	19084	44657	70081	95356	20485	45469	70309	95008	19567	43987	68271
12	93788	19511	45082	70504	95776	20903	45884	70722	95419	19975	44393	68674
13	94218	19939	45507	70926	96196	21320	46299	71135	95829	20383	44799	69078
14	94648	20366	45932	71348	96616	21738	46714	71548	96239	20791	45205	69481
15	95078	20793	46357	71771	97036	22155	47129	71960	96650	21199	45610	69885
16	95508	21221	46782	72193	97456	22573	47544	72373	97060	21607	46016	70288
17	95938	21648	47207	72615	97876	22990	47959	72785	97470	22015	46422	70692
18	96367	22075	47631	73037	98296	23407	48374	73198	97880	22423	46827	71095
19	96797	22502	48056	73460	98715	23825	48789	73611	98291	22831	47233	71498
20	97227	22929	48480	73882	99135	24242	49204	74023	98701	23239	47638	71901
21	97656	23357	48905	74304	99555	24659	49619	74436	99111	23647	48044	72305
22	98086	23784	49330	74726	99974	25076	50034	74848	99521	24054	48449	72708
23	98516	24211	49754	75148	00394	25493	50448	75260	99931	24462	48855	73111
24	98945	24638	50179	75570	00813	25910	50863	75673	00341	24870	49260	73514
25	99374	25064	50603	75992	01233	26327	51278	76085	00751	25277	49666	73917
26	99804	25491	51027	76414	01652	26744	51692	76497	01161	25685	50071	74320
27	00233	25918	51452	76836	02072	27161	52107	76909	01571	26092	50476	74723
28	00663	26345	51876	77257	02491	27578	52521	77322	01981	26500	50881	75126
29	01092	26772	52300	77679	02910	27995	52936	77734	02390	26907	51287	75529
30	01521	27198	52724	78101	03330	28412	53350	78146	02800	27315	51692	75932
31	01950	27625	53149	78523	03749	28829	53765	78558	03210	27722	52097	76335
32	02380	28052	53573	78944	04168	29246	54179	78970	03620	28130	52502	76738
33	02809	28478	53997	79366	04587	29662	54593	79382	04029	28537	52907	77141
34	03238	28905	54421	79787	05006	30079	55008	79794	04439	28944	53312	77543
35	03667	29331	54845	80209	05425	30496	55422	80206	04848	29352	53717	77946
36	04096	29758	55269	80630	05844	30912	55836	80618	05258	29759	54122	78349
37	04525	30184	55693	81052	06263	31329	56250	81029	05667	30166	54527	78751
38	04954	30611	56117	81473	06682	31746	56665	81441	06077	30573	54932	79154
39	05382	31037	56540	81895	07101	32162	57079	81853	06486	30980	55336	79557
40	05811	31463	56964	82316	07520	32578	57493	82265	06896	31387	55741	79959
41	06240	31889	57388	82737	07939	32995	57907	82676	07305	31794	56146	80362
42	06669	32316	57812	83158	08358	33411	58321	83088	07714	32201	56551	80764
43	07097	32742	58235	83580	08776	33828	58735	83499	08123	32608	56955	81166
44	07526	33168	58659	84001	09195	34244	59149	83911	08533	33015	57360	81569
45	07955	33594	59082	84422	09614	34660	59563	84323	08942	33422	57765	81971
46	08383	34020	59506	84843	10032	35076	59976	84734	09351	33829	58169	82373
47	08812	34446	59929	85264	10451	35493	60390	85145	09760	34236	58574	82776
48	09240	34872	60353	85685	10870	35909	60804	85557	10169	34642	58978	83178
49	09669	35298	60776	86106	11288	36325	61218	85968	10578	35049	59383	83580
50	10097	35724	61200	86527	11707	36741	61631	86380	10987	35456	59787	83982
51	10526	36150	61623	86948	12125	37157	62045	86791	11396	35862	60191	84384
52	10954	36575	62046	87368	12543	37573	62458	87202	11805	36269	60596	84786
53	11382	37001	62470	87789	12962	37989	62872	87613	12214	36676	61000	85188
54	11810	37427	62893	88210	13380	38405	63286	88024	12623	37082	61404	85590
55	12239	37853	63316	88631	13798	38821	63699	88435	13031	37489	61808	85992
56	12667	38278	63739	89051	14216	39236	64112	88847	13440	37895	62213	86394
57	13095	38704	64162	89472	14635	39652	64526	89258	13849	38301	62617	86796
58	13523	39129	64585	89893	15053	40068	64939	89669	14258	38708	63021	87198
59	13951	39555	65008	90313	15471	40484	65353	90080	14666	39114	63425	87600
60	14379	39980	65431	90734	15889	40899	65766	90490	15075	39520	63829	88002
″	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Sine Deg. 87

2 Deg. Co-Sine

48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	″
94812	94750	94688	94625	94562	94498	94435	94370	94306	94241	94176	94110	60
94811	94749	94687	94624	94561	94497	94434	94369	94305	94240	94175	94109	59
94810	94748	94686	94623	94560	94496	94433	94368	94304	94239	94174	94108	58
94809	94747	94685	94622	94559	94495	94431	94367	94303	94238	94172	94107	57
94808	94746	94684	94621	94558	94494	94430	94366	94302	94237	94171	94106	56
94807	94745	94683	94620	94557	94493	94429	94365	94301	94236	94170	94105	55
94806	94744	94681	94619	94556	94492	94428	94364	94299	94235	94169	94104	54
94805	94743	94680	94618	94555	94491	94427	94363	94298	94233	94168	94102	53
94804	94742	94679	94617	94553	94490	94426	94362	94297	94232	94167	94101	52
94803	94741	94678	94616	94552	94489	94425	94361	94296	94231	94166	94100	51
94802	94740	94677	94615	94551	94488	94424	94360	94295	94230	94165	94099	50
94801	94739	94676	94613	94550	94487	94423	94359	94294	94229	94164	94098	49
94800	94738	94675	94612	94549	94486	94422	94358	94293	94228	94163	94097	48
94799	94737	94674	94611	94548	94485	94421	94357	94292	94227	94162	94096	47
94798	94736	94673	94610	94547	94484	94420	94355	94291	94226	94160	94095	46
94797	94735	94672	94609	94546	94483	94419	94354	94290	94225	94159	94094	45
94796	94733	94671	94608	94545	94482	94418	94353	94289	94224	94158	94093	44
94795	94732	94670	94607	94544	94480	94417	94352	94288	94223	94157	94091	43
94793	94731	94669	94606	94543	94479	94415	94351	94287	94221	94156	94090	42
94792	94730	94668	94605	94542	94478	94414	94350	94285	94220	94155	94089	41
94791	94729	94667	94604	94541	94477	94413	94349	94284	94219	94154	94088	40
94790	94728	94666	94603	94540	94476	94412	94348	94283	94218	94153	94087	39
94789	94727	94665	94602	94539	94475	94411	94347	94282	94217	94152	94086	38
94788	94726	94664	94601	94538	94474	94410	94346	94281	94216	94151	94085	37
94787	94725	94663	94600	94537	94473	94409	94345	94280	94215	94150	94084	36
94786	94724	94662	94599	94536	94472	94408	94344	94279	94214	94148	94083	35
94785	94723	94661	94598	94534	94471	94407	94343	94278	94213	94147	94082	34
94784	94722	94660	94597	94533	94470	94406	94341	94277	94212	94146	94080	33
94783	94721	94658	94596	94532	94469	94405	94340	94276	94211	94145	94079	32
94782	94720	94657	94595	94531	94468	94404	94339	94275	94210	94144	94078	31
94781	94719	94656	94594	94530	94467	94403	94338	94274	94208	94143	94077	30
94780	94718	94655	94592	94529	94466	94402	94337	94272	94207	94142	94076	29
94779	94717	94654	94591	94528	94464	94400	94336	94271	94206	94141	94075	28
94778	94716	94653	94590	94527	94463	94399	94335	94270	94205	94140	94074	27
94777	94715	94652	94589	94526	94462	94398	94334	94269	94204	94139	94073	26
94776	94714	94651	94588	94525	94461	94397	94333	94268	94203	94137	94072	25
94775	94713	94650	94587	94524	94460	94396	94332	94267	94202	94136	94071	24
94774	94712	94649	94586	94523	94459	94395	94331	94266	94201	94135	94069	23
94773	94711	94648	94585	94522	94458	94394	94330	94265	94200	94134	94068	22
94772	94710	94647	94584	94521	94457	94393	94329	94264	94199	94133	94067	21
94771	94709	94646	94583	94520	94456	94392	94328	94263	94198	94132	94066	20
94770	94707	94645	94582	94519	94455	94391	94326	94262	94196	94131	94065	19
94769	94706	94644	94581	94518	94454	94390	94325	94261	94195	94130	94064	18
94768	94705	94643	94580	94517	94453	94389	94324	94259	94194	94129	94063	17
94767	94704	94642	94579	94515	94452	94388	94323	94258	94193	94128	94062	16
94766	94703	94641	94578	94514	94451	94387	94322	94257	94192	94127	94061	15
94765	94702	94640	94577	94513	94450	94386	94321	94256	94191	94125	94060	14
94764	94701	94639	94576	94512	94449	94384	94320	94255	94190	94124	94058	13
94762	94700	94638	94575	94511	94447	94383	94319	94254	94189	94123	94057	12
94761	94699	94637	94574	94510	94446	94382	94318	94253	94188	94122	94056	11
94760	94698	94635	94572	94509	94445	94381	94317	94252	94187	94121	94055	10
94759	94697	94634	94571	94508	94444	94380	94316	94251	94186	94120	94054	9
94758	94696	94633	94570	94507	94443	94379	94315	94250	94184	94119	94053	8
94757	94695	94632	94569	94506	94442	94378	94313	94249	94183	94118	94052	7
94756	94694	94631	94568	94505	94441	94377	94312	94248	94182	94117	94051	6
94755	94693	94630	94567	94504	94440	94376	94311	94246	94181	94116	94050	5
94754	94692	94629	94566	94503	94439	94375	94310	94245	94180	94114	94048	4
94753	94691	94628	94565	94502	94438	94374	94309	94244	94179	94113	94047	3
94752	94690	94627	94564	94501	94437	94373	94308	94243	94178	94112	94046	2
94751	94689	94626	94563	94500	94436	94372	94307	94242	94177	94111	94045	1
94750	94688	94625	94562	94498	94435	94370	94306	94241	94176	94110	94044	0
11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Sine Deg. 87

2 Deg. Tangent

″	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	8. 68	8. 69	8. 69	8. 69	8. 69	8. 70	8. 70	8. 70	8. 70	8. 71	8. 71	8. 71
0	93813	19629	45292	70806	96172	21390	46465	71395	96185	20834	45345	69719
1	94245	20058	45719	71230	96593	21810	46881	71810	96597	21243	45752	70124
2	94676	20487	46145	71654	97015	22229	47298	72224	97008	21653	46159	70529
3	95108	20916	46572	72078	97436	22648	47714	72638	97420	22063	46567	70934
4	95539	21344	46998	72502	97857	23067	48131	73052	97832	22472	46974	71339
5	95970	21773	47424	72926	98279	23486	48548	73466	98244	22882	47381	71744
6	96402	22202	47851	73349	98700	23904	48964	73881	98656	23291	47788	72149
7	96833	22631	48277	73773	99121	24323	49380	74295	99067	23701	48195	72554
8	97264	23059	48703	74197	99543	24742	49797	74709	99479	24110	48602	72958
9	97695	23488	49129	74620	99964	25161	50213	75123	99891	24519	49010	73363
10	98126	23917	49555	75044	00385	25580	50630	75537	00302	24929	49417	73768
11	98557	24345	49981	75468	00806	25998	51046	75951	00714	25338	49824	74173
12	98989	24774	50407	75891	01227	26417	51462	76364	01126	25747	50230	74577
13	99420	25202	50833	76315	01648	26835	51878	76778	01537	26156	50637	74982
14	99850	25630	51259	76738	02069	27254	52294	77192	01949	26565	51044	75387
15	00281	26059	51685	77161	02490	27673	52711	77606	02360	26974	51451	75791
16	00712	26487	52111	77585	02911	28091	53127	78020	02771	27384	51858	76196
17	01143	26915	52537	78008	03332	28509	53543	78433	03183	27793	52265	76600
18	01574	27344	52962	78431	03753	28928	53959	78847	03594	28202	52671	77005
19	02005	27772	53388	78855	04173	29346	54375	79260	04005	28611	53078	77409
20	02435	28200	53814	79278	04594	29765	54791	79674	04416	29019	53485	77813
21	02866	28628	54239	79701	05015	30183	55206	80088	04828	29428	53891	78218
22	03297	29056	54665	80124	05435	30601	55622	80501	05239	29837	54298	78622
23	03727	29484	55090	80547	05856	31019	56038	80914	05650	30246	54704	79026
24	04158	29912	55516	80970	06277	31437	56454	81328	06061	30655	55111	79430
25	04588	30340	55941	81393	06697	31856	56870	81741	06472	31063	55517	79835
26	05019	30768	56367	81816	07118	32274	57285	82155	06883	31472	55924	80239
27	05449	31196	56792	82239	07538	32692	57701	82568	07294	31881	56330	80643
28	05879	31624	57217	82662	07959	33110	58117	82981	07705	32289	56736	81047
29	06310	32052	57643	83085	08379	33528	58532	83394	08116	32698	57143	81451
30	06740	32479	58068	83507	08799	33946	58948	83808	08527	33106	57549	81855
31	07170	32907	58493	83930	09220	34363	59363	84221	08937	33515	57955	82259
32	07600	33335	58918	84353	09640	34781	59779	84634	09348	33923	58361	82663
33	08031	33762	59343	84775	10060	35199	60194	85047	09759	34332	58767	83067
34	08461	34190	59769	85198	10480	35617	60609	85460	10170	34740	59173	83471
35	08891	34618	60194	85621	10900	36034	61025	85873	10580	35149	59579	83874
36	09321	35045	60619	86043	11320	36452	61440	86286	10991	35557	59985	84278
37	09751	35473	61044	86466	11740	36870	61855	86699	11401	35965	60391	84682
38	10181	35900	61468	86888	12160	37287	62271	87111	11812	36373	60797	85086
39	10611	36327	61893	87310	12580	37705	62686	87524	12222	36782	61203	85489
40	11041	36755	62318	87733	13000	38122	63101	87937	12633	37190	61609	85893
41	11470	37182	62743	88155	13420	38540	63516	88350	13043	37598	62015	86297
42	11900	37609	63168	88577	13840	38957	63931	88763	13454	38006	62421	86700
43	12330	38036	63592	89000	14260	39375	64346	89175	13864	38414	62827	87104
44	12760	38464	64017	89422	14680	39792	64761	89588	14274	38822	63232	87507
45	13189	38891	64442	89844	15099	40209	65176	90000	14685	39230	63638	87910
46	13619	39318	64866	90266	15519	40627	65591	90413	15095	39638	64044	88314
47	14048	39745	65291	90688	15939	41044	66006	90825	15505	40046	64449	88717
48	14478	40172	65715	91110	16358	41461	66421	91238	15915	40454	64855	89121
49	14907	40599	66140	91532	16778	41878	66835	91650	16325	40861	65260	89524
50	15337	41026	66564	91954	17197	42295	67250	92063	16735	41269	65666	89927
51	15766	41453	66989	92376	17617	42713	67665	92475	17145	41677	66071	90330
52	16195	41879	67413	92798	18036	43130	68079	92887	17555	42085	66477	90734
53	16625	42306	67837	93220	18456	43547	68494	93300	17965	42492	66882	91137
54	17054	42733	68262	93642	18875	43964	68909	93712	18375	42900	67288	91540
55	17483	43160	68686	94063	19294	44380	69323	94124	18785	43307	67693	91943
56	17912	43586	69110	94485	19714	44797	69738	94536	19195	43715	68098	92346
57	18342	44013	69534	94907	20133	45214	70152	94948	19605	44122	68503	92749
58	18771	44439	69958	95328	20552	45631	70567	95361	20014	44530	68909	93152
59	19200	44866	70382	95750	20971	46048	70981	95773	20424	44937	69314	93555
60	19629	45292	70806	96172	21390	46465	71395	96185	20834	45345	69719	93958
″	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Tangent Deg. 87

2 Deg. Co-Tangent

48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	″
11. 31	11. 30	11. 30	11. 30	11. 30	11. 29	11. 29	11. 29	11. 29	11. 28	11. 28	11. 28	
06187	80371	54708	29194	03828	78610	53535	28605	03815	79166	54655	30281	60
05755	79942	54281	28770	03407	78190	53119	28190	03403	78757	54248	29876	59
05324	79513	53855	28346	02985	77771	52702	27776	02992	78347	53841	29471	58
04892	79084	53428	27922	02564	77352	52286	27362	02580	77937	53433	29066	57
04461	78656	53002	27498	02143	76933	51869	26948	02168	77528	53026	28661	56
04030	78227	52576	27074	01721	76514	51452	26534	01756	77118	52619	28256	55
03598	77798	52149	26651	01300	76096	51036	26119	01344	76709	52212	27851	54
03167	77369	51723	26227	00879	75677	50620	25705	00933	76299	51805	27446	53
02736	76941	51297	25803	00457	75258	50203	25291	00521	75890	51398	27042	52
02305	76512	50871	25380	00036	74839	49787	24877	00109	75481	50990	26637	51
01874	76083	50445	24956	99615	74420	49370	24463	99698	75071	50583	26232	50
01443	75655	50019	24532	99194	74002	48954	24049	99286	74662	50176	25827	49
01011	75226	49593	24109	98773	73583	48538	23636	98874	74253	49770	25423	48
00580	74798	49167	23685	98352	73165	48122	23222	98463	73844	49363	25018	47
00150	74370	48741	23262	97931	72746	47706	22808	98051	73435	48956	24613	46
99719	73941	48315	22839	97510	72327	47289	22394	97640	73026	48549	24209	45
99288	73513	47889	22415	97089	71909	46873	21980	97229	72616	48142	23804	44
98857	73085	47463	21992	96668	71491	46457	21567	96817	72207	47735	23400	43
98426	72656	47038	21569	96247	71072	46041	21153	96406	71798	47329	22995	42
97995	72228	46612	21145	95827	70654	45625	20740	95995	71389	46922	22591	41
97565	71800	46186	20722	95406	70235	45209	20326	95584	70981	46515	22187	40
97134	71372	45761	20299	94985	69817	44794	19912	95172	70572	46109	21782	39
96703	70944	45335	19876	94565	69399	44378	19499	94761	70163	45702	21378	38
96273	70516	44910	19453	94144	68981	43962	19086	94350	69754	45296	20974	37
95842	70088	44484	19030	93723	68563	43546	18672	93939	69345	44889	20570	36
95412	69660	44059	18607	93303	68144	43130	18259	93528	68937	44483	20165	35
94981	69232	43633	18184	92882	67726	42715	17845	93117	68528	44076	19761	34
94551	68804	43208	17761	92462	67308	42299	17432	92706	68119	43670	19357	33
94121	68376	42783	17338	92041	66890	41883	17019	92295	67711	43264	18953	32
93690	67948	42357	16915	91621	66472	41468	16606	91884	67302	42857	18549	31
93260	67521	41932	16493	91201	66054	41052	16192	91473	66894	42451	18145	30
92830	67093	41507	16070	90780	65637	40637	15779	91063	66485	42045	17741	29
92400	66665	41082	15647	90360	65219	40221	15366	90652	66077	41639	17337	28
91969	66238	40657	15225	89940	64801	39806	14953	90241	65668	41233	16933	27
91539	65810	40231	14802	89520	64383	39391	14540	89830	65260	40827	16529	26
91109	65382	39806	14379	89100	63966	38975	14127	89420	64851	40421	16126	25
90679	64955	39381	13957	88680	63548	38560	13714	89009	64443	40015	15722	24
90249	64527	38956	13534	88260	63130	38145	13301	88599	64035	39609	15318	23
89819	64100	38532	13112	87840	62713	37729	12889	88188	63627	39203	14914	22
89389	63673	38107	12690	87420	62295	37314	12476	87778	63218	38797	14511	21
88959	63245	37682	12267	87000	61878	36899	12063	87367	62810	38391	14107	20
88530	62818	37257	11845	86580	61460	36484	11650	86957	62402	37985	13703	19
88100	62391	36832	11423	86160	61043	36069	11237	86546	61994	37579	13300	18
87670	61964	36408	11000	85740	60625	35654	10825	86136	61586	37173	12896	17
87240	61536	35983	10578	85320	60208	35239	10412	85726	61178	36768	12493	16
86811	61109	35558	10156	84901	59791	34824	10000	85315	60770	36362	12090	15
86381	60682	35134	09734	84481	59373	34409	09587	84905	60362	35956	11686	14
85952	60255	34709	09312	84061	58956	33994	09175	84495	59954	35551	11283	13
85522	59828	34285	08890	83642	58539	33579	08762	84085	59546	35145	10879	12
85093	59401	33860	08468	83222	58122	33165	08350	83675	59139	34740	10476	11
84663	58974	33436	08046	82803	57705	32750	07937	83265	58731	34334	10073	10
84234	58547	33011	07624	82383	57287	32335	07525	82855	58323	33929	09670	9
83805	58121	32587	07202	81964	56870	31921	07113	82445	57915	33523	09266	8
83375	57694	32163	06780	81544	56453	31506	06700	82035	57508	33118	08863	7
82946	57267	31738	06358	81125	56036	31091	06288	81625	57100	32712	08460	6
82517	56840	31314	05937	80706	55620	30677	05876	81215	56693	32307	08057	5
82088	56414	30890	05515	80286	55203	30262	05464	80805	56285	31902	07654	4
81658	55987	30466	05093	79867	54786	29848	05052	80395	55878	31497	07251	3
81229	55561	30042	04672	79448	54369	29433	04639	79986	55470	31091	06848	2
80800	55134	29618	04250	79029	53952	29019	04227	79576	55063	30686	06445	1
80371	54708	29194	03828	78610	53535	28605	03815	79166	54655	30281	06042	0
11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Tangent Deg. 87

3 Deg. Sine

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′
″	8. 71	8. 72	8. 72	8. 72	8. 72	8. 73	8. 73	8. 73	8. 73	8. 73	8. 74	8. 74
0	88002	12040	35946	59721	83366	06882	30272	53535	76675	99691	22586	45360
1	88403	12440	36343	60116	83759	07273	30660	53922	77059	00074	22966	45739
2	88805	12839	36741	60511	84152	07664	31049	54309	77444	00456	23347	46117
3	89207	13239	37138	60906	84544	08055	31438	54695	77828	00839	23728	46496
4	89608	13638	37535	61301	84937	08445	31826	55082	78213	01221	24108	46874
5	90010	14037	37932	61696	85330	08836	32215	55468	78597	01604	24488	47253
6	90412	14437	38329	62091	85723	09227	32604	55855	78982	01986	24869	47631
7	90813	14836	38727	62486	86116	09617	32992	56241	79366	02368	25249	48009
8	91215	15235	39124	62881	86509	10008	33381	56628	79751	02751	25629	48388
9	91616	15635	39521	63276	86901	10399	33769	57014	80135	03133	26010	48766
10	92017	16034	39918	63671	87294	10789	34157	57400	80519	03515	26390	49144
11	92419	16433	40315	64065	87687	11180	34546	57787	80904	03898	26770	49523
12	92820	16832	40711	64460	88079	11570	34934	58173	81288	04280	27150	49901
13	93221	17231	41108	64855	88472	11961	35323	58559	81672	04662	27531	50279
14	93623	17630	41505	65249	88864	12351	35711	58946	82056	05044	27911	50657
15	94024	18029	41902	65644	89257	12741	36099	59332	82440	05426	28291	51035
16	94425	18428	42299	66039	89649	13132	36487	59718	82824	05808	28671	51413
17	94826	18827	42696	66433	90042	13522	36876	60104	83208	06190	29051	51791
18	95227	19226	43092	66828	90434	13912	37264	60490	83593	06572	29431	52169
19	95628	19625	43489	67222	90826	14302	37652	60876	83977	06954	29811	52547
20	96029	20024	43886	67617	91219	14693	38040	61262	84360	07336	30191	52925
21	96430	20422	44282	68011	91611	15083	38428	61648	84744	07718	30571	53303
22	96831	20821	44679	68406	92003	15473	38816	62034	85128	08100	30950	53681
23	97232	21220	45075	68800	92395	15863	39204	62420	85512	08482	31330	54059
24	97633	21618	45472	69194	92788	16253	39592	62806	85896	08864	31710	54437
25	98034	22017	45868	69588	93180	16643	39980	63192	86280	09245	32090	54814
26	98435	22416	46264	69983	93572	17033	40368	63578	86664	09627	32470	55192
27	98836	22814	46661	70377	93964	17423	40756	63963	87047	10009	32849	55570
28	99236	23213	47057	70771	94356	17813	41143	64349	87431	10390	33229	55947
29	99637	23611	47453	71165	94748	18203	41531	64735	87815	10772	33608	56325
30	00038	24010	47850	71559	95140	18593	41919	65120	88198	11154	33988	56703
31	00438	24408	48246	71953	95532	18982	42307	65506	88582	11535	34368	57080
32	00839	24806	48642	72347	95924	19372	42694	65892	88965	11917	34747	57458
33	01239	25205	49038	72741	96315	19762	43082	66277	89349	12298	35127	57835
34	01640	25603	49434	73135	96707	20152	43470	66663	89732	12680	35506	58213
35	02040	26001	49831	73529	97099	20541	43857	67048	90116	13061	35886	58590
36	02441	26400	50227	73923	97491	20931	44245	67434	90499	13443	36265	58968
37	02841	26798	50623	74317	97883	21320	44632	67819	90883	13824	36644	59345
38	03242	27196	51019	74711	98274	21710	45020	68205	91266	14205	37024	59722
39	03642	27594	51414	75105	98666	22100	45407	68590	91649	14587	37403	60100
40	04042	27992	51810	75498	99057	22489	45795	68975	92033	14968	37782	60477
41	04442	28390	52206	75892	99449	22879	46182	69361	92416	15349	38161	60854
42	04843	28788	52602	76286	99841	23268	46569	69746	92799	15730	38541	61231
43	05243	29186	52998	76679	00232	23657	46957	70131	93182	16111	38920	61608
44	05643	29584	53394	77073	00623	24047	47344	70516	93565	16492	39299	61986
45	06043	29982	53789	77467	01015	24436	47731	70901	93949	16874	39678	62363
46	06443	30380	54185	77860	01406	24825	48118	71287	94332	17255	40057	62740
47	06843	30778	54581	78254	01798	25215	48505	71672	94715	17636	40436	63117
48	07243	31175	54976	78647	02189	25604	48893	72057	95098	18017	40815	63494
49	07643	31573	55372	79040	02580	25993	49280	72442	95481	18398	41194	63871
50	08043	31971	55767	79434	02972	26382	49667	72827	95864	18779	41573	64248
51	08443	32369	56163	79827	03363	26771	50054	73212	96247	19159	41952	64625
52	08843	32766	56558	80220	03754	27160	50441	73597	96629	19540	42331	65002
53	09243	33164	56954	80614	04145	27549	50828	73981	97012	19921	42709	65378
54	09642	33561	57349	81007	04536	27938	51215	74366	97395	20302	43088	65755
55	10042	33959	57745	81400	04927	28327	51601	74751	97778	20683	43467	66132
56	10442	34356	58140	81793	05318	28716	51988	75136	98161	21063	43846	66509
57	10841	34754	58535	82186	05709	29105	52375	75521	98543	21444	44224	66885
58	11241	35151	58930	82580	06100	29494	52762	75905	98926	21825	44603	67262
59	11641	35549	59326	82973	06491	29883	53149	76290	99309	22205	44982	67639
60	12040	35946	59721	83366	06882	30272	53535	76675	99691	22586	45360	68015
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′

Co-Sine Deg. 86

3 Deg. Co-Sine

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	
9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	″
94044	93978	93911	93844	93776	93708	93640	93572	93503	93433	93364	93293	60
94043	93977	93910	93843	93775	93707	93639	93570	93501	93432	93362	93292	59
94042	93975	93909	93842	93774	93706	93638	93569	93500	93431	93361	93291	58
94041	93974	93908	93840	93773	93705	93637	93568	93499	93430	93360	93290	57
94040	93973	93906	93839	93772	93704	93636	93567	93498	93429	93359	93289	56
94039	93972	93905	93838	93771	93703	93634	93566	93497	93427	93358	93288	55
94037	93971	93904	93837	93770	93702	93633	93565	93496	93426	93357	93286	54
94036	93970	93903	93836	93768	93700	93632	93564	93495	93425	93355	93285	53
94035	93969	93902	93835	93767	93699	93631	93562	93493	93424	93354	93284	52
94034	93968	93901	93834	93766	93698	93630	93561	93492	93423	93353	93283	51
94033	93967	93900	93833	93765	93697	93629	93560	93491	93422	93352	93282	50
94032	93965	93899	93831	93764	93696	93628	93559	93490	93421	93351	93281	49
94031	93964	93898	93830	93763	93695	93626	93558	93489	93419	93350	93279	48
94030	93963	93896	93829	93762	93694	93625	93557	93488	93418	93348	93278	47
94029	93962	93895	93828	93760	93693	93624	93556	93486	93417	93347	93277	46
94027	93961	93894	93827	93759	93691	93623	93554	93485	93416	93346	93276	45
94026	93960	93893	93826	93758	93690	93622	93553	93484	93415	93345	93275	44
94025	93959	93892	93825	93757	93689	93621	93552	93483	93414	93344	93274	43
94024	93958	93891	93824	93756	93688	93620	93551	93482	93412	93343	93272	42
94023	93957	93890	93822	93755	93687	93619	93550	93481	93411	93341	93271	41
94022	93955	93889	93821	93754	93686	93617	93549	93480	93410	93340	93270	40
94021	93954	93887	93820	93753	93685	93616	93547	93478	93409	93339	93269	39
94020	93953	93886	93819	93751	93683	93615	93546	93477	93408	93338	93268	38
94019	93952	93885	93818	93750	93682	93614	93545	93476	93407	93337	93267	37
94018	93951	93884	93817	93749	93681	93613	93544	93475	93405	93336	93265	36
94016	93950	93883	93816	93748	93680	93612	93543	93474	93404	93334	93264	35
94015	93949	93882	93815	93747	93679	93611	93542	93473	93403	93333	93263	34
94014	93948	93881	93813	93746	93678	93609	93541	93471	93402	93332	93262	33
94013	93947	93880	93812	93745	93677	93608	93539	93470	93401	93331	93261	32
94012	93945	93879	93811	93744	93675	93607	93538	93469	93400	93330	93259	31
94011	93944	93877	93810	93742	93674	93606	93537	93468	93398	93329	93258	30
94010	93943	93876	93809	93741	93673	93605	93536	93467	93397	93327	93257	29
94009	93942	93875	93808	93740	93672	93604	93535	93466	93396	93326	93256	28
94008	93941	93874	93807	93739	93671	93602	93534	93465	93395	93325	93255	27
94006	93940	93873	93806	93738	93670	93601	93533	93463	93394	93324	93254	26
94005	93939	93872	93804	93737	93669	93600	93531	93462	93393	93323	93252	25
94004	93938	93871	93803	93736	93668	93599	93530	93461	93391	93322	93251	24
94003	93937	93870	93802	93734	93666	93598	93529	93460	93390	93320	93250	23
94002	93935	93868	93801	93733	93665	93597	93528	93459	93389	93319	93249	22
94001	93934	93867	93800	93732	93664	93596	93527	93458	93388	93318	93248	21
94000	93933	93866	93799	93731	93663	93594	93526	93456	93387	93317	93247	20
93999	93932	93865	93798	93730	93662	93593	93524	93455	93386	93316	93245	19
93998	93931	93864	93797	93729	93661	93592	93523	93454	93385	93315	93244	18
93997	93930	93863	93795	93728	93660	93591	93522	93453	93383	93313	93243	17
93995	93929	93862	93794	93727	93658	93590	93521	93452	93382	93312	93242	16
93994	93928	93861	93793	93725	93657	93589	93520	93451	93381	93311	93241	15
93993	93927	93859	93792	93724	93656	93588	93519	93449	93380	93310	93240	14
93992	93925	93858	93791	93723	93655	93586	93518	93448	93379	93309	93238	13
93991	93924	93857	93790	93722	93654	93585	93516	93447	93378	93308	93237	12
93990	93923	93856	93789	93721	93653	93584	93515	93446	93376	93306	93236	11
93989	93922	93855	93788	93720	93652	93583	93514	93445	93375	93305	93235	10
93988	93921	93854	93786	93719	93650	93582	93513	93444	93374	93304	93234	9
93987	93920	93853	93785	93717	93649	93581	93512	93443	93373	93303	93232	8
93985	93919	93852	93784	93716	93648	93580	93511	93441	93372	93302	93231	7
93984	93918	93851	93783	93715	93647	93578	93510	93440	93371	93301	93230	6
93983	93916	93849	93782	93714	93646	93577	93508	93439	93369	93299	93229	5
93982	93915	93848	93781	93713	93645	93576	93507	93438	93368	93298	93228	4
93981	93914	93847	93780	93712	93644	93575	93506	93437	93367	93297	93227	3
93980	93913	93846	93779	93711	93642	93574	93505	93436	93366	93296	93225	2
93979	93912	93845	93777	93710	93641	93573	93504	93434	93365	93295	93224	1
93978	93911	93844	93776	93708	93640	93572	93503	93433	93364	93293	93223	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	″

Sine Deg. 86

3 Deg. Tangent

″	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′
	8. 71	8. 72	8. 72	8. 72	8. 72	8. 73	8. 73	8. 73	8. 73	8. 74	8. 74	8. 74
0	93958	18063	42035	65877	89589	13174	36631	59964	83172	06258	29222	52067
1	94360	18463	42434	66273	89983	13566	37021	60352	83558	06642	29604	52447
2	94763	18864	42832	66669	90378	13958	37411	60739	83944	07025	29986	52826
3	95166	19264	43230	67066	90772	14350	37801	61127	84329	07409	30367	53206
4	95569	19665	43629	67462	91166	14741	38191	61515	84715	07793	30749	53585
5	95971	20065	44027	67858	91560	15133	38580	61902	85101	08176	31131	53965
6	96374	20466	44425	68254	91954	15525	38970	62290	85486	08560	31512	54345
7	96777	20866	44823	68650	92347	15917	39360	62678	85872	08943	31894	54724
8	97179	21267	45222	69046	92741	16309	39750	63065	86257	09327	32275	55104
9	97582	21667	45620	69442	93135	16700	40139	63453	86643	09710	32657	55483
10	97984	22067	46018	69838	93529	17092	40529	63840	87028	10094	33038	55863
11	98387	22467	46416	70234	93923	17484	40918	64228	87414	10477	33419	56242
12	98789	22868	46814	70630	94316	17875	41308	64615	87799	10860	33801	56621
13	99192	23268	47212	71026	94710	18267	41697	65003	88184	11244	34182	57001
14	99594	23668	47610	71421	95104	18658	42087	65390	88570	11627	34563	57380
15	99996	24068	48008	71817	95497	19050	42476	65777	88955	12010	34945	57759
16	00399	24468	48406	72213	95891	19441	42865	66165	89340	12394	35326	58138
17	00801	24868	48804	72609	96284	19833	43255	66552	89725	12777	35707	58518
18	01203	25268	49201	73004	96678	20224	43644	66939	90111	13160	36088	58897
19	01605	25668	49599	73400	97071	20616	44033	67326	90496	13543	36469	59276
20	02007	26068	49997	73795	97465	21007	44423	67714	90881	13926	36850	59655
21	02409	26468	50395	74191	97858	21398	44812	68101	91266	14309	37232	60034
22	02812	26868	50792	74586	98252	21789	45201	68488	91651	14692	37613	60413
23	03214	27268	51190	74982	98645	22181	45590	68875	92036	15075	37994	60792
24	03616	27667	51588	75377	99038	22572	45979	69262	92421	15458	38374	61171
25	04017	28067	51985	75773	99432	22963	46368	69649	92806	15841	38755	61550
26	04419	28467	52383	76168	99825	23354	46757	70036	93191	16224	39136	61929
27	04821	28867	52780	76563	00218	23745	47146	70423	93576	16607	39517	62308
28	05223	29266	53178	76959	00611	24136	47535	70810	93961	16990	39898	62687
29	05625	29666	53575	77354	01004	24527	47924	71196	94345	17372	40279	63066
30	06027	30065	53972	77749	01397	24918	48313	71583	94730	17755	40660	63444
31	06428	30465	54370	78144	01790	25309	48702	71970	95115	18138	41040	63823
32	06830	30864	54767	78540	02183	25700	49091	72357	95500	18521	41421	64202
33	07232	31264	55164	78935	02576	26091	49480	72744	95884	18903	41802	64580
34	07633	31663	55562	79330	02969	26482	49868	73130	96269	19286	42182	64959
35	08035	32063	55959	79725	03362	26873	50257	73517	96654	19669	42563	65338
36	08437	32462	56356	80120	03755	27263	50646	73904	97038	20051	42943	65716
37	08838	32861	56753	80515	04148	27654	51034	74290	97423	20434	43324	66095
38	09239	33261	57150	80910	04541	28045	51423	74677	97807	20816	43704	66473
39	09641	33660	57547	81305	04934	28435	51812	75063	98192	21199	44085	66852
40	10042	34059	57944	81700	05326	28826	52200	75450	98576	21581	44465	67230
41	10444	34458	58341	82094	05719	29217	52589	75836	98961	21963	44846	67609
42	10845	34857	58738	82489	06112	29607	52977	76223	99345	22346	45226	67987
43	11246	35256	59135	82884	06504	29998	53365	76609	99729	22728	45606	68365
44	11648	35655	59532	83279	06897	30388	53754	76995	00114	23110	45987	68744
45	12049	36054	59929	83673	07290	30779	54142	77382	00498	23493	46367	69122
46	12450	36453	60326	84068	07682	31169	54531	77768	00882	23875	46747	69500
47	12851	36852	60722	84463	08075	31560	54919	78154	01266	24257	47127	69879
48	13252	37251	61119	84857	08467	31950	55307	78540	01651	24639	47507	70257
49	13653	37650	61516	85252	08859	32340	55695	78926	02035	25021	47888	70635
50	14054	38049	61912	85646	09252	32730	56084	79313	02419	25403	48268	71013
51	14455	38448	62309	86041	09644	33121	56472	79699	02803	25785	48648	71391
52	14856	38846	62706	86435	10036	33511	56860	80085	03187	26167	49028	71769
53	15257	39245	63102	86830	10429	33901	57248	80471	03571	26549	49408	72147
54	15658	39644	63499	87224	10821	34291	57636	80857	03955	26931	49788	72525
55	16059	40042	63895	87618	11213	34681	58024	81243	04339	27313	50168	72903
56	16460	40441	64292	88013	11605	35071	58412	81629	04723	27695	50548	73281
57	16860	40840	64688	88407	11997	35461	58809	82015	05107	28077	50927	73659
58	17261	41238	65084	88801	12390	35851	59188	82400	05490	28459	51307	74037
59	17662	41637	65481	89195	12782	36241	59576	82786	05874	28841	51687	74415
60	18063	42035	65877	89589	13174	36631	59964	83172	06258	29222	52067	74792
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′

3 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	″
11. 28	11. 27	11. 27	11. 27	11. 27	11. 26	11. 26	11. 26	11. 26	11. 25	11. 25	11. 25	
06042	81937	57965	34123	10411	86826	63369	40036	16828	93742	70778	47933	60
05640	81537	57566	33727	10017	86434	62979	39648	16442	93358	70396	47553	59
05237	81136	57168	33331	09622	86042	62589	39261	16056	92975	70014	47174	58
04834	80736	56770	32934	09228	85650	62199	38873	15671	92591	69633	46794	57
04431	80335	56371	32538	08834	85259	61809	38485	15285	92207	69251	46415	56
04029	79935	55973	32142	08440	84867	61420	38098	14899	91824	68869	46035	55
03626	79534	55575	31746	08046	84475	61030	37710	14514	91440	68488	45655	54
03223	79134	55177	31350	07653	84083	60640	37322	14128	91057	68106	45276	53
02821	78733	54778	30954	07259	83691	60250	36935	13743	90673	67725	44896	52
02418	78333	54380	30558	06865	83300	59861	36547	13357	90290	67343	44517	51
02016	77933	53982	30162	06471	82908	59471	36160	12972	89906	66962	44137	50
01613	77533	53584	29766	06077	82516	59082	35772	12586	89523	66581	43758	49
01211	77132	53186	29370	05684	82125	58692	35385	12201	89140	66199	43379	48
00808	76732	52788	28974	05290	81733	58303	34997	11816	88756	65818	42999	47
00406	76332	52390	28579	04896	81342	57913	34610	11430	88373	65437	42620	46
00004	75932	51992	28183	04503	80950	57524	34223	11045	87990	65055	42241	45
99601	75532	51594	27787	04109	80559	57135	33835	10660	87606	64674	41862	44
99199	75132	51196	27391	03716	80167	56745	33448	10275	87223	64293	41482	43
98797	74732	50799	26996	03322	79776	56356	33061	09889	86840	63912	41103	42
98395	74332	50401	26600	02929	79384	55967	32674	09504	86457	63531	40724	41
97993	73932	50003	26205	02535	78993	55577	32286	09119	86074	63150	40345	40
97591	73532	49605	25809	02142	78602	55188	31899	08734	85691	62768	39966	39
97188	73132	49208	25414	01748	78211	54799	31512	08349	85308	62387	39587	38
96786	72732	48810	25018	01355	77819	54410	31125	07964	84925	62006	39208	37
96384	72333	48412	24623	00962	77428	54021	30738	07579	84542	61626	38829	36
95983	71933	48015	24227	00568	77037	53632	30351	07194	84159	61245	38450	35
95581	71533	47617	23832	00175	76646	53243	29964	06809	83776	60864	38071	34
95179	71133	47220	23437	99782	76255	52854	29577	06424	83393	60483	37692	33
94777	70734	46822	23041	99389	75864	52465	29190	06039	83010	60102	37313	32
94375	70334	46425	22646	98996	75473	52076	28804	05655	82628	59721	36934	31
93973	69935	46028	22251	98603	75082	51687	28417	05270	82245	59340	36556	30
93572	69535	45630	21856	98210	74691	51298	28030	04885	81862	58960	36177	29
93170	69136	45233	21460	97817	74300	50909	27643	04500	81479	58579	35798	28
92768	68736	44836	21065	97424	73909	50520	27256	04116	81097	58198	35420	27
92367	68337	44438	20670	97031	73518	50132	26870	03731	80714	57818	35041	26
91965	67937	44041	20275	96638	73127	49743	26483	03346	80331	57437	34662	25
91563	67538	43644	19880	96245	72737	49354	26096	02962	79949	57057	34284	24
91162	67139	43247	19485	95852	72346	48966	25710	02577	79566	56676	33905	23
90761	66739	42850	19090	95459	71955	48577	25323	02193	79184	56296	33527	22
90359	66340	42453	18695	95066	71565	48188	24937	01808	78801	55915	33148	21
89958	65941	42056	18300	94674	71174	47800	24550	01424	78419	55535	32770	20
89556	65542	41659	17906	94281	70783	47411	24164	01039	78037	55154	32391	19
89155	65143	41262	17511	93888	70393	47023	23777	00655	77654	54774	32013	18
88754	64744	40865	17116	93496	70002	46635	23391	00271	77272	54394	31635	17
88352	64345	40468	16721	93103	69612	46246	23005	99886	76890	54013	31256	16
87951	63946	40071	16327	92710	69221	45858	22618	99502	76507	53633	30878	15
87550	63547	39674	15932	92318	68831	45469	22232	99118	76125	53253	30500	14
87149	63148	39278	15537	91925	68440	45081	21846	98734	75743	52873	30121	13
86748	62749	38881	15143	91533	68050	44693	21460	98349	75361	52493	29743	12
86347	62350	38484	14748	91141	67660	44305	21074	97965	74979	52112	29365	11
85946	61951	38088	14354	90748	67270	43916	20687	97581	74597	51732	28987	10
85545	61552	37691	13959	90356	66879	43528	20301	97197	74215	51352	28609	9
85144	61154	37294	13565	89964	66489	43140	19915	96813	73833	50972	28231	8
84743	60755	36898	13170	89571	66099	42752	19529	96429	73451	50592	27853	7
84342	60356	36501	12776	89179	65709	42364	19143	96045	73069	50212	27475	6
83941	59958	36105	12382	88787	65319	41976	18757	95661	72687	49832	27097	5
83540	59559	35708	11987	88395	64929	41588	18371	95277	72305	49452	26719	4
83140	59160	35312	11593	88003	64539	41200	17985	94893	71923	49073	26341	3
82739	58762	34916	11199	87610	64149	40812	17600	94510	71541	48693	25963	2
82338	58363	34519	10805	87218	63759	40424	17214	94126	71159	48313	25585	1
81937	57965	34123	10411	86826	63369	40036	16828	93742	70778	47933	25208	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	″

Co-Tangent Deg. 86 Tangent Deg. 86

3 Deg. Sine

"	12′	13′	14′	15′	16′	17′	18′	19′	20′	21′	22′	23′
	8. 74	8. 74	8. 75	8. 75	8. 75	8. 75	8. 76	8. 76	8. 76	8. 76	8. 76	8. 77
0	68015	90553	12973	35278	57469	79546	01512	23366	45111	66747	88275	09697
1	68392	90927	13346	35649	57838	79913	01877	23730	45472	67107	88633	10053
2	68769	91302	13718	36020	58206	80280	02242	24093	45834	67466	88991	10410
3	69145	91676	14091	36390	58575	80647	02607	24456	46195	67826	89349	10766
4	69522	92051	14464	36761	58944	81014	02972	24819	46557	68186	89707	11122
5	69898	92425	14836	37132	59313	81381	03337	25182	46918	68545	90065	11478
6	70274	92800	15209	37502	59682	81748	03702	25546	47279	68905	90422	11834
7	70651	93174	15581	37873	60050	82115	04067	25909	47641	69264	90780	12190
8	71027	93549	15954	38243	60419	82481	04432	26272	48002	69624	91138	12546
9	71403	93923	16326	38614	60788	82848	04797	26635	48363	69983	91496	12901
10	71780	94297	16699	38984	61156	83215	05162	26998	48724	70343	91853	13257
11	72156	94672	17071	39355	61525	83582	05527	27361	49086	70702	92211	13613
12	72532	95046	17443	39725	61893	83948	05891	27724	49447	71061	92568	13969
13	72908	95420	17816	40096	62262	84315	06256	28087	49808	71421	92926	14325
14	73285	95794	18188	40466	62630	84681	06621	28450	50169	71780	93283	14681
15	73661	96169	18560	40836	62999	85048	06986	28813	50530	72139	93641	15036
16	74037	96543	18932	41207	63367	85415	07350	29176	50891	72498	93998	15392
17	74413	96917	19305	41577	63735	85781	07715	29538	51252	72858	94356	15748
18	74789	97291	19677	41947	64104	86148	08080	29901	51613	73217	94713	16103
19	75165	97665	20049	42317	64472	86514	08444	30264	51974	73576	95071	16459
20	75541	98039	20421	42688	64840	86880	08809	30627	52335	73935	95428	16814
21	75917	98413	20793	43058	65209	87247	09173	30989	52696	74294	95785	17170
22	76293	98787	21165	43428	65577	87613	09538	31352	53057	74653	96142	17526
23	76669	99161	21537	43798	65945	87980	09902	31715	53418	75012	96500	17881
24	77044	99535	21909	44168	66313	88346	10267	32077	53778	75371	96857	18236
25	77420	99909	22281	44538	66681	88712	10631	32440	54139	75730	97214	18592
26	77796	00282	22653	44908	67049	89078	10996	32802	54500	76089	97571	18947
27	78172	00656	23025	45278	67418	89444	11360	33165	54861	76448	97928	19303
28	78547	01030	23396	45648	67786	89811	11724	33527	55221	76807	98286	19658
29	78923	01404	23768	46018	68154	90177	12088	33890	55582	77166	98643	20013
30	79299	01777	24140	46388	68522	90543	12453	34252	55943	77525	99000	20369
31	79674	02151	24512	46757	68890	90909	12817	34615	56303	77883	99357	20724
32	80050	02525	24883	47127	69257	91275	13181	34977	56664	78242	99714	21079
33	80425	02898	25255	47497	69625	91641	13545	35339	57024	78601	00071	21434
34	80801	03272	25627	47867	69993	92007	13909	35702	57385	78960	00428	21789
35	81176	03645	25998	48236	70361	92373	14274	36064	57745	79318	00784	22145
36	81552	04019	26370	48606	70729	92739	14638	36426	58106	79677	01141	22500
37	81927	04392	26741	48976	71097	93105	15002	36788	58466	80036	01498	22855
38	82303	04766	27113	49345	71464	93471	15366	37151	58826	80394	01855	23210
39	82678	05139	27484	49715	71832	93836	15730	37513	59187	80753	02212	23565
40	83053	05513	27856	50085	72200	94202	16094	37875	59547	81111	02568	23920
41	83429	05886	28227	50454	72567	94568	16458	38237	59907	81470	02925	24275
42	83804	06259	28599	50824	72935	94934	16821	38599	60268	81828	03282	24630
43	84179	06632	28970	51193	73302	95299	17185	38961	60628	82187	03639	24985
44	84554	07006	29341	51562	73670	95665	17549	39323	60988	82545	03995	25340
45	84929	07379	29713	51932	74037	96031	17913	39685	61348	82903	04352	25694
46	85304	07752	30084	52301	74405	96396	18277	40047	61708	83262	04708	26049
47	85680	08125	30455	52670	74772	96762	18640	40409	62068	83620	05065	26404
48	86055	08498	30826	53040	75140	97127	19004	40771	62428	83978	05421	26759
49	86430	08871	31197	53409	75507	97493	19368	41133	62788	84337	05778	27114
50	86805	09244	31569	53778	75874	97859	19731	41494	63149	84695	06134	27468
51	87180	09617	31940	54147	76242	98224	20095	41856	63509	85053	06491	27823
52	87554	09990	32311	54517	76609	98589	20459	42218	63868	85411	06847	28178
53	87929	10363	32682	54886	76976	98955	20822	42580	64228	85769	07204	28532
54	88304	10736	33053	55255	77344	99320	21186	42941	64588	86127	07560	28887
55	88679	11109	33424	55624	77711	99685	21549	43303	64948	86486	07916	29241
56	89054	11482	33795	55993	78078	00051	21913	43665	65308	86844	08272	29596
57	89429	11855	34166	56362	78445	00416	22276	44026	65668	87202	08629	29950
58	89803	12228	34536	56731	78812	00781	22640	44388	66028	87560	08985	30305
59	90178	12600	34907	57100	79179	01146	23003	44749	66387	87918	09341	30659
60	90553	12973	35278	57469	79546	01512	23366	45111	66747	88275	09697	31014
"	47′	46′	45′	44′	43′	42′	41′	40′	39′	38′	37′	36′

Co-Sine Deg. 86

3 Deg. Co-Sine

12′	13′	14′	15′	16′	17′	18′	19′	20′	21′	22′	23′	"
9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	
93223	93152	93081	93009	92938	92865	92793	92720	92646	92572	92498	92424	60
93222	93151	93080	93008	92936	92864	92791	92718	92645	92571	92497	92423	59
93221	93150	93079	93007	92935	92863	92790	92717	92644	92570	92496	92421	58
93220	93149	93077	93006	92934	92862	92789	92716	92643	92569	92495	92420	57
93218	93147	93076	93005	92933	92860	92788	92715	92641	92568	92493	92419	56
93217	93146	93075	93004	92932	92859	92787	92713	92640	92566	92492	92418	55
93216	93145	93074	93002	92930	92858	92785	92712	92639	92565	92491	92416	54
93215	93144	93073	93001	92929	92857	92784	92711	92638	92564	92490	92415	53
93214	93143	93072	93000	92928	92856	92783	92710	92636	92563	92488	92414	52
93212	93142	93070	92999	92927	92854	92782	92709	92635	92561	92487	92413	51
93211	93140	93069	92998	92926	92853	92780	92707	92634	92560	92486	92411	50
93210	93139	93068	92996	92924	92852	92779	92706	92633	92559	92485	92410	49
93209	93138	93067	92995	92923	92851	92778	92705	92631	92558	92483	92409	48
93208	93137	93066	92994	92922	92850	92777	92704	92630	92556	92482	92408	47
93207	93136	93064	92993	92921	92848	92776	92703	92629	92555	92481	92406	46
93205	93134	93063	92992	92920	92847	92774	92701	92628	92554	92480	92405	45
93204	93133	93062	92990	92918	92846	92773	92700	92627	92553	92478	92404	44
93203	93132	93061	92989	92917	92845	92772	92699	92625	92551	92477	92403	43
93202	93131	93060	92988	92916	92844	92771	92698	92624	92550	92476	92401	42
93201	93130	93058	92987	92915	92842	92770	92696	92623	92549	92475	92400	41
93199	93129	93057	92986	92914	92841	92768	92695	92622	92548	92474	92399	40
93198	93127	93056	92984	92912	92840	92767	92694	92620	92547	92472	92398	39
93197	93126	93055	92983	92911	92839	92766	92693	92619	92545	92471	92396	38
93196	93125	93054	92982	92910	92837	92765	92692	92618	92544	92470	92395	37
93195	93124	93052	92981	92909	92836	92763	92690	92617	92543	92469	92394	36
93194	93123	93051	92980	92907	92835	92762	92689	92616	92542	92467	92393	35
93192	93121	93050	92978	92906	92834	92761	92688	92614	92540	92466	92391	34
93191	93120	93049	92977	92905	92833	92760	92687	92613	92539	92465	92390	33
93190	93119	93048	92976	92904	92831	92759	92685	92612	92538	92464	92389	32
93189	93118	93047	92975	92903	92830	92757	92684	92611	92537	92462	92388	31
93188	93117	93045	92974	92901	92829	92756	92683	92609	92535	92461	92386	30
93186	93115	93044	92972	92900	92828	92755	92682	92608	92534	92460	92385	29
93185	93114	93043	92971	92899	92827	92754	92680	92607	92533	92459	92384	28
93184	93113	93042	92970	92898	92825	92753	92679	92606	92532	92457	92383	27
93183	93112	93041	92969	92897	92824	92751	92678	92604	92530	92456	92381	26
93182	93111	93039	92968	92895	92823	92750	92677	92603	92529	92455	92380	25
93181	93110	93038	92966	92894	92822	92749	92676	92602	92528	92454	92379	24
93179	93108	93037	92965	92893	92821	92748	92674	92601	92527	92452	92378	23
93178	93107	93036	92964	92892	92819	92746	92673	92600	92526	92451	92376	22
93177	93106	93035	92963	92891	92818	92745	92672	92598	92524	92450	92375	21
93176	93105	93033	92962	92889	92817	92744	92671	92597	92523	92449	92374	20
93175	93104	93032	92960	92888	92816	92743	92669	92596	92522	92447	92373	19
93174	93102	93031	92959	92887	92814	92742	92668	92595	92521	92446	92371	18
93172	93101	93030	92958	92886	92813	92740	92667	92593	92519	92445	92370	17
93171	93100	93029	92957	92885	92812	92739	92666	92592	92518	92444	92369	16
93170	93099	93027	92956	92883	92811	92738	92665	92591	92517	92442	92368	15
93169	93098	93026	92954	92882	92810	92737	92663	92590	92516	92441	92366	14
93168	93096	93025	92953	92881	92808	92735	92662	92588	92514	92440	92365	13
93166	93095	93024	92952	92880	92807	92734	92661	92587	92513	92439	92364	12
93165	93094	93023	92951	92879	92806	92733	92660	92586	92512	92437	92363	11
93164	93093	93021	92950	92877	92805	92732	92658	92585	92511	92436	92361	10
93163	93092	93020	92948	92876	92804	92731	92657	92584	92509	92435	92360	9
93162	93091	93019	92947	92875	92802	92729	92656	92582	92508	92434	92359	8
93161	93089	93018	92946	92874	92801	92728	92655	92581	92507	92433	92358	7
93159	93088	93017	92945	92873	92800	92727	92654	92580	92506	92431	92356	6
93158	93087	93015	92944	92871	92799	92726	92652	92579	92504	92430	92355	5
93157	93086	93014	92942	92870	92797	92724	92651	92577	92503	92429	92354	4
93156	93085	93013	92941	92869	92796	92723	92650	92576	92502	92428	92353	3
93155	93083	93012	92940	92868	92795	92722	92649	92575	92501	92426	92351	2
93153	93082	93011	92939	92866	92794	92721	92647	92574	92500	92425	92350	1
93152	93081	93009	92938	92865	92793	92720	92646	92572	92498	92424	92349	0
47′	46′	45′	44′	43′	42′	41′	40′	39′	38′	37′	36′	"

Sine Deg. 86

3 Deg. Tangent

″	12′	13′	14′	15′	16′	17′	18′	19′	20′	21′	22′	23′
	8. 74	8. 74	8. 75	8. 75	8. 75	8. 75	8. 76	8. 76	8. 76	8. 76	8. 76	8. 77
0	74792	97400	19892	42269	64531	86681	08719	30647	52465	74175	95777	17274
1	75170	97776	20266	42641	64901	87049	09085	31011	52827	74536	96136	17631
2	75548	98152	20640	43013	65271	87417	09452	31376	53190	74896	96495	17988
3	75926	98528	21014	43384	65641	87786	09818	31740	53553	75257	96854	18346
4	76303	98903	21387	43756	66011	88154	10184	32105	53915	75618	97214	18703
5	76681	99279	21761	44128	66381	88522	10551	32469	54278	75979	97573	19060
6	77058	99655	22135	44500	66751	88890	10917	32833	54641	76340	97932	19417
7	77436	00030	22509	44872	67121	89258	11283	33198	55003	76700	98291	19775
8	77814	00406	22882	45244	67491	89626	11649	33562	55366	77061	98649	20132
9	78191	00782	23256	45615	67861	89994	12015	33926	55728	77422	99008	20489
10	78569	01157	23629	45987	68231	90362	12381	34291	56091	77782	99367	20846
11	78946	01533	24003	46359	68600	90730	12747	34655	56453	78143	99726	21203
12	79323	01908	24377	46730	68970	91097	13113	35019	56815	78504	00085	21560
13	79701	02283	24750	47102	69340	91465	13479	35383	57178	78864	00444	21917
14	80078	02659	25124	47473	69710	91833	13845	35747	57540	79225	00802	22274
15	80455	03034	25497	47845	70079	92201	14211	36111	57902	79585	01161	22631
16	80833	03410	25870	48216	70449	92569	14577	36475	58265	79946	01520	22988
17	81210	03785	26244	48588	70818	92936	14943	36839	58627	80306	01879	23345
18	81587	04160	26617	48959	71188	93304	15309	37204	58989	80667	02237	23702
19	81964	04535	26990	49331	71557	93672	15675	37567	59351	81027	02596	24059
20	82341	04911	27364	49702	71927	94039	16040	37931	59713	81387	02954	24416
21	82718	05286	27737	50073	72296	94407	16406	38295	60075	81748	03313	24772
22	83096	05661	28110	50445	72666	94774	16772	38659	60438	82108	03671	25129
23	83473	06036	28483	50816	73035	95142	17138	39023	60800	82468	04030	25486
24	83850	06411	28856	51187	73405	95510	17503	39387	61162	82828	04388	25843
25	84227	06786	29230	51558	73774	95877	17869	39751	61524	83189	04747	26199
26	84604	07161	29603	51930	74143	96244	18235	40115	61886	83549	05105	26556
27	84980	07536	29976	52301	74512	96612	18600	40478	62248	83909	05464	26913
28	85357	07911	30349	52672	74882	96979	18966	40842	62609	84269	05822	27269
29	85734	08286	30722	53043	75251	97347	19331	41206	62971	84629	06180	27626
30	86111	08661	31095	53414	75620	97714	19697	41569	63333	84989	06539	27982
31	86488	09036	31468	53785	75989	98081	20062	41933	63695	85349	06897	28339
32	86865	09410	31840	54156	76358	98448	20427	42297	64057	85709	07255	28695
33	87241	09785	32213	54527	76727	98816	20793	42660	64419	86069	07613	29052
34	87618	10160	32586	54898	77097	99183	21158	43024	64780	86429	07971	29408
35	87995	10535	32959	55269	77466	99550	21523	43387	65142	86789	08330	29764
36	88371	10909	33332	55640	77835	99917	21889	43751	65504	87149	08688	30121
37	88748	11284	33704	56011	78203	00284	22254	44114	65865	87509	09046	30477
38	89124	11659	34077	56381	78572	00651	22619	44477	66227	87869	09404	30833
39	89501	12033	34450	56752	78941	01018	22984	44841	66588	88228	09762	31190
40	89877	12408	34823	57123	79310	01385	23350	45204	66950	88588	10120	31546
41	90254	12782	35195	57494	79679	01752	23715	45567	67311	88948	10478	31902
42	90630	13157	35568	57864	80048	02119	24080	45931	67673	89308	10836	32258
43	91007	13531	35940	58235	80417	02486	24445	46294	68034	89667	11194	32615
44	91383	13906	36313	58606	80785	02853	24810	46657	68396	90027	11551	32971
45	91759	14280	36685	58976	81154	03220	25175	47020	68757	90387	11909	33327
46	92136	14654	37058	59347	81523	03587	25540	47384	69119	90746	12267	33683
47	92512	15029	37430	59717	81891	03954	25905	47747	69480	91106	12625	34039
48	92888	15403	37802	60088	82260	04320	26270	48110	69841	91465	12983	34395
49	93264	15777	38175	60458	82629	04687	26635	48473	70203	91825	13340	34751
50	93641	16152	38547	60829	82997	05054	27000	48836	70564	92184	13698	35107
51	94017	16526	38919	61199	83366	05420	27364	49199	70925	92544	14056	35463
52	94393	16900	39292	61569	83734	05787	27729	49562	71286	92903	14413	35819
53	94769	17274	39664	61940	84103	06154	28094	49925	71647	93262	14771	36174
54	95145	17648	40036	62310	84471	06520	28459	50288	72008	93622	15129	36530
55	95521	18022	40408	62680	84839	06887	28824	50651	72370	93981	15486	36886
56	95897	18396	40780	63051	85208	07253	29188	51014	72731	94340	15844	37242
57	96273	18770	41153	63421	85576	07620	29553	51376	73092	94700	16201	37598
58	96649	19144	41525	63791	85944	07986	29917	51739	73453	95059	16559	37953
59	97025	19518	41897	64161	86313	08353	30282	52102	73814	95418	16916	38309
60	97400	19892	42269	64531	86681	08719	30647	52465	74175	95777	17274	38665
″	47′	46′	45′	44′	43′	42′	41′	40′	39′	38′	37′	36′

Co-Tangent Deg. 86

3 Deg. Co-Tangent

12′	13′	14′	15′	16′	17′	18′	19′	20′	21′	22′	23′	″
11. 25	11. 25	11. 24	11. 24	11. 24	11. 24	11. 23	11. 23	11. 23	11. 23	11. 23	11. 22	
25208	02600	80108	57731	35469	13319	91281	69353	47535	25825	04223	82726	60
24830	02224	79734	57359	35099	12951	90915	68989	47173	25464	03864	82369	59
24452	01848	79360	56987	34729	12583	90548	68624	46810	25104	03505	82012	58
24074	01472	78986	56616	34359	12214	90182	68260	46447	24743	03146	81654	57
23697	01097	78613	56244	33989	11846	89816	67895	46085	24382	02786	81297	56
23319	00721	78239	55872	33619	11478	89449	67531	45722	24021	02427	80940	55
22942	00345	77865	55500	33249	11110	89083	67167	45359	23660	02068	80583	54
22564	99970	77491	55128	32879	10742	88717	66802	44997	23300	01709	80225	53
22186	99594	77118	54756	32509	10374	88351	66438	44634	22939	01351	79868	52
21809	99218	76744	54385	32139	10006	87985	66074	44272	22578	00992	79511	51
21431	98843	76371	54013	31769	09638	87619	65709	43909	22218	00633	79154	50
21054	98467	75997	53641	31400	09270	87253	65345	43547	21857	00274	78797	49
20677	98092	75623	53270	31030	08903	86887	64981	43185	21496	99915	78440	48
20299	97717	75250	52898	30660	08535	86521	64617	42822	21136	99556	78083	47
19922	97341	74876	52527	30290	08167	86155	64253	42460	20775	99198	77726	46
19545	96966	74503	52155	29921	07799	85789	63889	42098	20415	98839	77369	45
19167	96590	74130	51784	29551	07431	85423	63525	41735	20054	98480	77012	44
18790	96215	73756	51412	29182	07064	85057	63161	41373	19694	98121	76655	43
18413	95840	73383	51041	28812	06696	84691	62796	41011	19333	97763	76298	42
18036	95465	73010	50669	28443	06328	84325	62433	40649	18973	97404	75941	41
17659	95089	72636	50298	28073	05961	83960	62069	40287	18613	97046	75584	40
17282	94714	72263	49927	27704	05593	83594	61705	39925	18252	96687	75228	39
16904	94339	71890	49555	27334	05226	83228	61341	39562	17892	96329	74871	38
16527	93964	71517	49184	26965	04858	82862	60977	39200	17532	95970	74514	37
16150	93589	71144	48813	26595	04490	82497	60613	38838	17172	95612	74157	36
15773	93214	70770	48442	26226	04123	82131	60249	38476	16811	95253	73801	35
15396	92839	70397	48070	25857	03756	81765	59885	38114	16451	94895	73444	34
15020	92464	70024	47699	25488	03388	81400	59522	37752	16091	94536	73087	33
14643	92089	69651	47328	25118	03021	81034	59158	37391	15731	94178	72731	32
14266	91714	69278	46957	24749	02653	80669	58794	37029	15371	93820	72374	31
13889	91339	68905	46586	24380	02286	80303	58431	36667	15011	93461	72018	30
13512	90964	68532	46215	24011	01919	79938	58067	36305	14651	93103	71661	29
13135	90590	68160	45844	23642	01552	79573	57703	35943	14291	92745	71305	28
12759	90215	67787	45473	23273	01184	79207	57340	35581	13931	92387	70948	27
12382	89840	67414	45102	22903	00817	78842	56976	35220	13571	92029	70592	26
12005	89465	67041	44731	22534	00450	78477	56613	34858	13211	91670	70236	25
11629	89091	66668	44360	22165	00083	78111	56249	34496	12851	91312	69879	24
11252	88716	66296	43989	21797	99716	77746	55886	34135	12491	90954	69523	23
10876	88341	65923	43619	21428	99349	77381	55523	33773	12131	90596	69167	22
10499	87967	65550	43248	21059	98982	77016	55159	33412	11772	90238	68810	21
10123	87592	65177	42877	20690	98615	76650	54796	33050	11412	89880	68454	20
09746	87218	64805	42506	20321	98248	76285	54433	32689	11052	89522	68098	19
09370	86843	64432	42136	19952	97881	75920	54069	32327	10692	89164	67742	18
08993	86469	64060	41765	19583	97514	75555	53706	31966	10333	88806	67385	17
08617	86094	63687	41394	19215	97147	75190	53343	31604	09973	88449	67029	16
08241	85720	63315	41024	18846	96780	74825	52980	31243	09613	88091	66673	15
07864	85346	62942	40653	18477	96413	74460	52616	30881	09254	87733	66317	14
07488	84971	62570	40283	18109	96046	74095	52253	30520	08894	87375	65961	13
07112	84597	62198	39912	17740	95680	73730	51890	30159	08535	87017	65605	12
06736	84223	61825	39542	17371	95313	73365	51527	29797	08175	86660	65249	11
06359	83848	61453	39171	17003	94946	73000	51164	29436	07816	86302	64893	10
05983	83474	61081	38801	16634	94580	72636	50801	29075	07456	85944	64537	9
05607	83100	60708	38431	16266	94213	72271	50438	28714	07097	85587	64181	8
05231	82726	60336	38060	15897	93846	71906	50075	28353	06738	85229	63826	7
04855	82352	59964	37690	15529	93480	71541	49712	27992	06378	84871	63470	6
04479	81978	59592	37320	15161	93113	71176	49349	27630	06019	84514	63114	5
04103	81604	59220	36949	14792	92747	70812	48986	27269	05660	84156	62758	4
03727	81230	58847	36579	14424	92380	70447	48624	26908	05300	83799	62402	3
03351	80856	58475	36209	14056	92014	70083	48261	26547	04941	83441	62047	2
02975	80482	58103	35839	13687	91647	69718	47898	26186	04582	83084	61691	1
02600	80108	57731	35469	13319	91281	69353	47535	25825	04223	82726	61335	0
47′	46′	45′	44′	43′	42′	41′	40′	39′	38′	37′	36′	″

Tangent Deg. 86

3 Deg. Sine

″	24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′
	8. 77	8. 77	8. 77	8. 77	8. 78	8. 78	8. 78	8. 78	8. 78	8. 79	8. 79	8. 79
0	31014	52226	73334	94340	15244	36048	56753	77359	97867	18278	38594	58814
1	31368	52578	73685	94689	15592	36394	57097	77701	98208	18618	38931	59150
2	31722	52931	74036	95038	15939	36740	57441	78044	98549	18957	39269	59487
3	32077	53283	74387	95388	16287	37086	57785	78386	98890	19296	39607	59823
4	32431	53636	74738	95737	16634	37432	58130	78729	99231	19635	39945	60159
5	32785	53989	75088	96086	16982	37778	58474	79071	99571	19975	40282	60495
6	33140	54341	75439	96435	17329	38123	58818	79414	99912	20314	40620	60831
7	33494	54694	75790	96784	17677	38469	59162	79756	00253	20653	40958	61167
8	33848	55046	76141	97133	18024	38815	59506	80099	00594	20992	41295	61503
9	34202	55398	76491	97482	18371	39160	59850	80441	00935	21332	41633	61839
10	34556	55751	76842	97831	18719	39506	60194	80783	01275	21671	41970	62175
11	34910	56103	77193	98180	19066	39852	60538	81126	01616	22010	42308	62511
12	35264	56455	77543	98529	19413	40197	60882	81468	01957	22349	42645	62847
13	35618	56808	77894	98878	19760	40543	61226	81810	02297	22688	42983	63183
14	35972	57160	78245	99227	20108	40888	61570	82153	02638	23027	43320	63519
15	36326	57512	78595	99576	20455	41234	61913	82495	02979	23366	43658	63855
16	36680	57865	78946	99924	20802	41579	62257	82837	03319	23705	43995	64190
17	37034	58217	79296	00273	21149	41925	62601	83179	03660	24044	44332	64526
18	37388	58569	79646	00622	21496	42270	62945	83521	04000	24383	44670	64862
19	37742	58921	79997	00971	21843	42615	63289	83863	04341	24722	45007	65198
20	38096	59273	80347	01319	22190	42961	63632	84205	04681	25061	45344	65534
21	38450	59625	80698	01668	22537	43306	63976	84548	05022	25399	45682	65869
22	38803	59977	81048	02017	22884	43651	64320	84890	05362	25738	46019	66205
23	39157	60329	81398	02365	23231	43997	64663	85232	05702	26077	46356	66540
24	39511	60681	81749	02714	23578	44342	65007	85574	06043	26416	46693	66876
25	39865	61033	82099	03062	23925	44687	65350	85915	06383	26755	47030	67212
26	40218	61385	82449	03411	24272	45032	65694	86257	06724	27093	47368	67547
27	40572	61737	82799	03759	24619	45378	66038	86599	07064	27432	47705	67883
28	40926	62089	83149	04108	24965	45723	66381	86941	07404	27771	48042	68218
29	41279	62441	83500	04456	25312	46068	66725	87283	07744	28109	48379	68554
30	41633	62793	83850	04805	25659	46413	67068	87625	08084	28448	48716	68889
31	41986	63144	84200	05153	26006	46758	67411	87967	08425	28786	49053	69225
32	42340	63496	84550	05502	26352	47103	67755	88308	08765	29125	49390	69560
33	42693	63848	84900	05850	26699	47448	68098	88650	09105	29463	49727	69895
34	43047	64200	85250	06198	27046	47793	68441	88992	09445	29802	50064	70231
35	43400	64551	85600	06546	27392	48138	68785	89333	09785	30140	50400	70566
36	43753	64903	85950	06895	27739	48483	69128	89675	10125	30479	50737	70901
37	44107	65255	86300	07243	28085	48828	69471	90017	10465	30817	51074	71237
38	44460	65606	86650	07591	28432	49173	69815	90358	10805	31156	51411	71572
39	44813	65958	86999	07939	28778	49518	70158	90700	11145	31494	51748	71907
40	45166	66309	87349	08287	29125	49862	70501	91041	11485	31832	52085	72242
41	45520	66661	87699	08636	29471	50207	70844	91383	11825	32171	52421	72577
42	45873	67012	88049	08984	29818	50552	71187	91725	12165	32509	52758	72913
43	46226	67364	88399	09332	30164	50897	71530	92066	12505	32847	53095	73248
44	46579	67715	88748	09680	30510	51241	71873	92407	12845	33186	53431	73583
45	46932	68067	89098	10028	30857	51586	72216	92749	13184	33524	53768	73918
46	47285	68418	89448	10376	31203	51931	72559	93090	13524	33862	54105	74253
47	47638	68769	89797	10724	31549	52275	72902	93432	13864	34200	54441	74588
48	47992	69121	90147	11072	31896	52620	73245	93773	14204	34538	54778	74923
49	48344	69472	90496	11419	32242	52964	73588	94114	14543	34876	55114	75258
50	48697	69823	90846	11767	32588	53309	73931	94455	14883	35214	55451	75593
51	49050	70174	91196	12115	32934	53653	74274	94797	15223	35552	55787	75928
52	49403	70525	91545	12463	33280	53998	74617	95138	15562	35890	56124	76263
53	49756	70877	91894	12811	33626	54342	74960	95479	15902	36228	56460	76597
54	50109	71228	92244	13158	33972	54687	75302	95820	16241	36566	56796	76932
55	50462	71579	92593	13506	34319	55031	75645	96161	16581	36904	57133	77267
56	50815	71930	92943	13854	34665	55376	75988	96503	16920	37242	57469	77602
57	51167	72281	93292	14202	35011	55720	76331	96844	17260	37580	57805	77937
58	51520	72632	93641	14549	35357	56064	76673	97185	17599	37918	58142	78271
59	51873	72983	93991	14897	35702	56409	77016	97526	17939	38256	58478	78606
60	52226	73334	94340	15244	36048	56753	77359	97867	18278	38594	58814	78941
″	35′	34′	33′	32′	31′	30′	29′	28′	27′	26′	25′	24′

Co-Sine Deg. 86

3 Deg. Co-Sine

24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′	″
9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	
92349	92274	92198	92122	92046	91969	91892	91815	91737	91659	91580	91501	60
92348	92272	92197	92121	92044	91968	91891	91813	91735	91657	91579	91500	59
92346	92271	92196	92120	92043	91966	91889	91812	91734	91656	91577	91498	58
92345	92270	92194	92118	92042	91965	91888	91811	91733	91655	91576	91497	57
92344	92269	92193	92117	92041	91964	91887	91809	91731	91653	91575	91496	56
92343	92267	92192	92116	92039	91963	91886	91808	91730	91652	91573	91494	55
92341	92266	92191	92114	92038	91961	91884	91807	91729	91651	91572	91493	54
92340	92265	92189	92113	92037	91960	91883	91805	91728	91649	91571	91492	53
92339	92264	92188	92112	92036	91959	91882	91804	91726	91648	91569	91490	52
92338	92262	92187	92111	92034	91958	91880	91803	91725	91647	91568	91489	51
92336	92261	92185	92109	92033	91956	91879	91802	91724	91645	91567	91488	50
92335	92260	92184	92108	92032	91955	91878	91800	91722	91644	91566	91487	49
92334	92259	92183	92107	92030	91954	91877	91799	91721	91643	91564	91485	48
92333	92257	92182	92106	92029	91952	91875	91798	91720	91642	91563	91484	47
92331	92256	92180	92104	92028	91951	91874	91796	91718	91640	91562	91483	46
92330	92255	92179	92103	92027	91950	91873	91795	91717	91639	91560	91481	45
92329	92254	92178	92102	92025	91949	91871	91794	91716	91638	91559	91480	44
92328	92252	92177	92101	92024	91947	91870	91793	91715	91636	91558	91479	43
92326	92251	92175	92099	92023	91946	91869	91791	91713	91635	91556	91477	42
92325	92250	92174	92098	92022	91945	91867	91790	91712	91634	91555	91476	41
92324	92249	92173	92097	92020	91943	91866	91789	91711	91632	91554	91475	40
92323	92247	92172	92095	92019	91942	91865	91787	91709	91631	91552	91473	39
92321	92246	92170	92094	92018	91941	91864	91786	91708	91630	91551	91472	38
92320	92245	92169	92093	92016	91940	91862	91785	91707	91628	91550	91471	37
92319	92243	92168	92092	92015	91938	91861	91783	91705	91627	91548	91469	36
92318	92242	92166	92090	92014	91937	91860	91782	91704	91626	91547	91468	35
92316	92241	92165	92089	92013	91936	91858	91781	91703	91625	91546	91467	34
92315	92240	92164	92088	92011	91934	91857	91780	91702	91623	91544	91465	33
92314	92238	92163	92087	92010	91933	91856	91778	91700	91622	91543	91464	32
92313	92237	92161	92085	92009	91932	91855	91777	91699	91621	91542	91463	31
92311	92236	92160	92084	92007	91931	91853	91776	91698	91619	91541	91461	30
92310	92235	92159	92083	92006	91929	91852	91774	91696	91618	91539	91460	29
92309	92233	92158	92081	92005	91928	91851	91773	91695	91617	91538	91459	28
92308	92232	92156	92080	92004	91927	91849	91772	91694	91615	91537	91457	27
92306	92231	92155	92079	92002	91925	91848	91770	91692	91614	91535	91456	26
92305	92230	92154	92078	92001	91924	91847	91769	91691	91613	91534	91455	25
92304	92228	92153	92076	92000	91923	91846	91768	91690	91611	91533	91453	24
92303	92227	92151	92075	91999	91922	91844	91767	91689	91610	91531	91452	23
92301	92226	92150	92074	91997	91920	91843	91765	91687	91609	91530	91451	22
92300	92225	92149	92073	91996	91919	91842	91764	91686	91607	91529	91450	21
92299	92223	92147	92071	91995	91918	91840	91763	91685	91606	91527	91448	20
92298	92222	92146	92070	91993	91916	91839	91761	91683	91605	91526	91447	19
92296	92221	92145	92069	91992	91915	91838	91760	91682	91604	91525	91446	18
92295	92220	92144	92067	91991	91914	91836	91759	91681	91602	91523	91444	17
92294	92218	92142	92066	91990	91913	91835	91757	91679	91601	91522	91443	16
92293	92217	92141	92065	91988	91911	91834	91756	91678	91600	91521	91442	15
92291	92216	92140	92064	91987	91910	91833	91755	91677	91598	91519	91440	14
92290	92215	92139	92062	91986	91909	91831	91754	91675	91597	91518	91439	13
92289	92213	92137	92061	91984	91907	91830	91752	91674	91596	91517	91438	12
92288	92212	92136	92060	91983	91906	91829	91751	91673	91594	91516	91436	11
92286	92211	92135	92059	91982	91905	91827	91750	91672	91593	91514	91435	10
92285	92209	92134	92057	91981	91904	91826	91748	91670	91592	91513	91434	9
92284	92208	92132	92056	91979	91902	91825	91747	91669	91590	91512	91432	8
92282	92207	92131	92055	91978	91901	91824	91746	91668	91589	91510	91431	7
92281	92206	92130	92053	91977	91900	91822	91744	91666	91588	91509	91430	6
92280	92204	92128	92052	91975	91898	91821	91743	91665	91587	91508	91428	5
92279	92203	92127	92051	91974	91897	91820	91742	91664	91585	91506	91427	4
92277	92202	92126	92050	91973	91896	91818	91741	91662	91584	91505	91426	3
92276	92201	92125	92048	91972	91895	91817	91739	91661	91583	91504	91424	2
92275	92199	92123	92047	91970	91893	91816	91738	91660	91581	91502	91423	1
92274	92198	92122	92046	91969	91892	91815	91737	91659	91580	91501	91422	0
35′	34′	33′	32′	31′	30′	29′	28′	27′	26′	25′	24′	″

Sine Deg. 86

3 Deg. Tangent

″	24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′
	8. 77	8. 77	8. 77	8. 78	8. 78	8. 78	8. 78	8. 78	8. 79	8. 79	8. 79	8. 79
0	38665	59952	81136	02218	23199	44079	64861	85544	06130	26620	47014	67313
1	39020	60306	81488	02568	23547	44426	65206	85888	06472	26960	47353	67651
2	39376	60660	81840	02919	23896	44774	65552	86232	06815	27301	47692	67988
3	39732	61014	82192	03269	24245	45121	65897	86576	07157	27642	48031	68326
4	40087	61367	82545	03620	24594	45468	66243	86919	07499	27982	48370	68663
5	40443	61721	82897	03970	24943	45815	66588	87263	07841	28323	48709	69001
6	40798	62075	83249	04320	25291	46162	66934	87607	08183	28663	49048	69338
7	41154	62429	83601	04671	25640	46509	67279	87951	08525	29004	49387	69675
8	41509	62782	83953	05021	25988	46856	67624	88294	08868	29344	49726	70013
9	41864	63136	84305	05371	26337	47203	67970	88638	09210	29685	50065	70350
10	42220	63490	84657	05722	26686	47550	68315	88982	09552	30025	50404	70687
11	42575	63843	85009	06072	27034	47897	68660	89325	09894	30366	50742	71025
12	42930	64197	85360	06422	27383	48244	69005	89669	10236	30706	51081	71362
13	43286	64550	85712	06772	27731	48590	69350	90013	10578	31046	51420	71699
14	43641	64904	86064	07122	28080	48937	69696	90356	10920	31387	51759	72036
15	43996	65258	86416	07472	28428	49284	70041	90700	11261	31727	52097	72373
16	44351	65611	86768	07823	28777	49631	70386	91043	11603	32067	52436	72711
17	44707	65964	87119	08173	29125	49977	70731	91387	11945	32408	52775	73048
18	45062	66318	87471	08523	29473	50324	71076	91730	12287	32748	53113	73385
19	45417	66671	87823	08873	29822	50671	71421	92073	12629	33088	53452	73722
20	45772	67025	88175	09223	30170	51017	71766	92417	12971	33428	53791	74059
21	46127	67378	88526	09573	30518	51364	72111	92760	13312	33768	54129	74396
22	46482	67731	88878	09922	30866	51711	72456	93104	13654	34109	54468	74733
23	46837	68085	89229	10272	31215	52057	72801	93447	13996	34449	54806	75070
24	47192	68438	89581	10622	31563	52404	73146	93790	14337	34789	55145	75407
25	47547	68791	89932	10972	31911	52750	73491	94133	14679	35129	55483	75744
26	47902	69144	90284	11322	32259	53097	73836	94477	15021	35469	55822	76081
27	48257	69497	90635	11672	32607	53443	74180	94820	15362	35809	56160	76417
28	48612	69851	90987	12021	32955	53790	74525	95163	15704	36149	56499	76754
29	48966	70204	91338	12371	33303	54136	74870	95506	16045	36489	56837	77091
30	49321	70557	91690	12721	33651	54482	75215	95849	16387	36829	57175	77428
31	49676	70910	92041	13070	33999	54829	75559	96192	16728	37168	57514	77765
32	50031	71263	92392	13420	34347	55175	75904	96535	17070	37508	57852	78101
33	50385	71616	92744	13770	34695	55521	76249	96878	17411	37848	58190	78438
34	50740	71969	93095	14119	35043	55868	76593	97221	17753	38188	58528	78775
35	51095	72322	93446	14469	35391	56214	76938	97564	18094	38528	58867	79111
36	51449	72675	93797	14818	35739	56560	77283	97907	18435	38867	59205	79448
37	51804	73027	94148	15168	36087	56906	77627	98250	18777	39207	59543	79785
38	52159	73380	94500	15517	36435	57252	77972	98593	19118	39547	59881	80121
39	52513	73733	94851	15867	36782	57599	78316	98936	19459	39887	60219	80458
40	52868	74086	95202	16216	37130	57945	78661	99279	19800	40226	60557	80794
41	53222	74439	95553	16566	37478	58291	79005	99622	20142	40566	60895	81131
42	53577	74791	95904	16915	37826	58637	79349	99964	20483	40905	61233	81467
43	53931	75144	96255	17264	38173	58983	79694	00307	20824	41245	61571	81804
44	54285	75497	96606	17614	38521	59329	80038	00650	21165	41585	61909	82140
45	54640	75850	96957	17963	38868	59675	80382	00993	21506	41924	62247	82476
46	54994	76202	97308	18312	39216	60021	80727	01335	21847	42264	62585	82813
47	55348	76555	97659	18661	39564	60367	81071	01678	22188	42603	62923	83149
48	55703	76907	98010	19011	39911	60712	81415	02021	22529	42942	63261	83485
49	56057	77260	98360	19360	40259	61058	81759	02363	22870	43282	63599	83822
50	56411	77612	98711	19709	40606	61404	82104	02706	23211	43621	63937	84158
51	56765	77965	99062	20058	40954	61750	82448	03048	23552	43961	64274	84494
52	57120	78317	99413	20407	41301	62096	82792	03391	23893	44300	64612	84830
53	57474	78670	99763	20756	41648	62441	83136	03733	24234	44639	64950	85166
54	57828	79022	00114	21105	41996	62787	83480	04076	24575	44979	65288	85503
55	58182	79374	00465	21454	42343	63133	83824	04418	24916	45318	65625	85839
56	58536	79727	00816	21803	42690	63478	84168	04761	25257	45657	65963	86175
57	58890	80079	01166	22152	43038	63824	84512	05103	25597	45996	66300	86511
58	59244	80431	01517	22501	43385	64170	84856	05445	25938	46335	66638	86847
59	59598	80784	01867	22850	43732	64515	85200	05788	26279	46675	66976	87183
60	59952	81136	02218	23199	44079	64861	85544	06130	26620	47014	67313	87519
″	35′	34′	33′	32′	31′	30′	29′	28′	27′	26′	25′	24′

3 Deg. Co-Tangent

24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′	″
11. 22	11. 22	11. 22	11. 21	11. 21	11. 21	11. 21	11. 21	11. 20	11. 20	11. 20	11. 20	
61335	40048	18864	97782	76801	55921	35139	14456	93870	73380	52986	32687	60
60980	39694	18512	97432	76453	55574	34794	14112	93528	73040	52647	32349	59
60624	39340	18160	97081	76104	55226	34448	13768	93185	72699	52308	32012	58
60268	38986	17808	96731	75755	54879	34103	13424	92843	72358	51969	31674	57
59913	38633	17455	96380	75406	54532	33757	13081	92501	72018	51630	31337	56
59557	38279	17103	96030	75057	54185	33412	12737	92159	71677	51291	30999	55
59202	37925	16751	95680	74709	53838	33066	12393	91817	71337	50952	30662	54
58846	37571	16399	95329	74360	53491	32721	12049	91475	70996	50613	30325	53
58491	37218	16047	94979	74012	53144	32376	11706	91132	70656	50274	29987	52
58136	36864	15695	94629	73663	52797	32030	11362	90790	70315	49935	29650	51
57780	36510	15343	94278	73314	52450	31685	11018	90448	69975	49596	29313	50
57425	36157	14991	93928	72966	52103	31340	10675	90106	69634	49258	28975	49
57070	35803	14640	93578	72617	51756	30995	10331	89764	69294	48919	28638	48
56714	35450	14288	93228	72269	51410	30650	09987	89422	68954	48580	28301	47
56359	35096	13936	92878	71920	51063	30304	09644	89080	68613	48241	27964	46
56004	34742	13584	92528	71572	50716	29959	09300	88739	68273	47903	27627	45
55649	34389	13232	92177	71223	50369	29614	08957	88397	67933	47564	27289	44
55293	34036	12881	91827	70875	50023	29269	08613	88055	67592	47225	26952	43
54938	33682	12529	91477	70527	49676	28924	08270	87713	67252	46887	26615	42
54583	33329	12177	91127	70178	49329	28579	07927	87371	66912	46548	26278	41
54228	32975	11825	90777	69830	48983	28234	07583	87029	66572	46209	25941	40
53873	32622	11474	90427	69482	48636	27889	07240	86688	66232	45871	25604	39
53518	32269	11122	90078	69134	48289	27544	06896	86346	65891	45532	25267	38
53163	31915	10771	89728	68785	47943	27199	06553	86004	65551	45194	24930	37
52808	31562	10419	89378	68437	47596	26854	06210	85663	65211	44855	24593	36
52453	31209	10068	89028	68089	47250	26509	05867	85321	64871	44517	24256	35
52098	30856	09716	88678	67741	46903	26164	05523	84979	64531	44178	23919	34
51743	30503	09365	88328	67393	46557	25820	05180	84638	64191	43840	23583	33
51388	30149	09013	87979	67045	46210	25475	04837	84296	63851	43501	23246	32
51034	29796	08662	87629	66697	45864	25130	04494	83955	63511	43163	22909	31
50679	29443	08310	87279	66349	45518	24785	04151	83613	63171	42825	22572	30
50324	29090	07959	86930	66001	45171	24441	03808	83272	62832	42486	22235	29
49969	28737	07608	86580	65653	44825	24096	03465	82930	62492	42148	21899	28
49615	28384	07256	86230	65305	44479	23751	03122	82589	62152	41810	21562	27
49260	28031	06905	85881	64957	44132	23407	02779	82247	61812	41472	21225	26
48905	27678	06554	85531	64609	43786	23062	02436	81906	61472	41133	20889	25
48551	27325	06203	85182	64261	43440	22717	02093	81565	61133	40795	20552	24
48196	26973	05852	84832	63913	43094	22373	01750	81223	60793	40457	20215	23
47841	26620	05500	84483	63565	42748	22028	01407	80882	60453	40119	19879	22
47487	26267	05149	84133	63218	42401	21684	01064	80541	60113	39781	19542	21
47132	25914	04798	83784	62870	42055	21339	00721	80200	59774	39443	19206	20
46778	25561	04447	83434	62522	41709	20995	00378	79858	59434	39105	18869	19
46423	25209	04096	83085	62174	41363	20651	00036	79517	59095	38767	18533	18
46069	24856	03745	82736	61827	41017	20306	99693	79176	58755	38429	18196	17
45715	24503	03394	82386	61479	40671	19962	99350	78835	58415	38091	17860	16
45360	24150	03043	82037	61132	40325	19618	99007	78494	58076	37753	17524	15
45006	23798	02692	81688	60784	39979	19273	98665	78153	57736	37415	17187	14
44652	23445	02341	81339	60436	39633	18929	98322	77812	57397	37077	16851	13
44297	23093	01990	80989	60089	39288	18585	97979	77471	57058	36739	16515	12
43943	22740	01640	80640	59741	38942	18241	97637	77130	56718	36401	16178	11
43589	22388	01289	80291	59394	38596	17896	97294	76789	56379	36063	15842	10
43235	22035	00938	79942	59046	38250	17552	96952	76448	56039	35726	15506	9
42880	21683	00587	79593	58699	37904	17208	96609	76107	55700	35388	15170	8
42526	21330	00237	79244	58352	37559	16864	96267	75766	55361	35050	14834	7
42172	20978	99886	78895	58004	37213	16520	95924	75425	55021	34712	14497	6
41818	20626	99535	78546	57657	36867	16176	95582	75084	54682	34375	14161	5
41464	20273	99184	78197	57310	36522	15832	95239	74743	54343	34037	13825	4
41110	19921	98834	77848	56962	36176	15488	94897	74403	54004	33700	13489	3
40756	19569	98483	77499	56615	35830	15144	94555	74062	53665	33362	13153	2
40402	19216	98133	77150	56268	35485	14800	94212	73721	53325	33024	12817	1
40048	18864	97782	76801	55921	35139	14456	93870	73380	52986	32687	12481	0
35′	34′	33′	32′	31′	30′	29′	28′	27′	26′	25′	24′	″

Co-Tangent Deg. 86

Tangent Deg. 86

3 Deg. Sine

″	36′	37′	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′
	8. 79	8. 79	8. 80	8. 80	8. 80	8. 80	8. 80	8. 81	8. 81	8. 81	8. 81	8. 81
0	78941	98974	18915	38764	58523	78192	97772	17264	36668	55985	75217	94363
1	79275	99307	19247	39095	58852	78519	98098	17588	36990	56307	75537	94682
2	79610	99640	19578	39425	59180	78846	98423	17912	37313	56628	75856	95000
3	79945	99973	19910	39755	59509	79173	98749	18236	37636	56949	76176	95318
4	80279	00306	20241	40085	59837	79500	99074	18560	37958	57270	76496	95637
5	80614	00639	20573	40414	60166	79827	99400	18884	38281	57591	76816	95955
6	80948	00972	20904	40744	60494	80154	99725	19208	38603	57912	77135	96273
7	81283	01305	21235	41074	60823	80481	00051	19532	38926	58233	77455	96592
8	81617	01638	21567	41404	61151	80808	00376	19856	39248	58554	77775	96910
9	81952	01971	21898	41734	61479	81135	00701	20180	39571	58875	78094	97228
10	82286	02304	22230	42064	61808	81462	01027	20504	39893	59196	78414	97546
11	82620	02637	22561	42394	62136	81788	01352	20828	40216	59517	78733	97864
12	82955	02970	22892	42723	62464	82115	01677	21151	40538	59838	79053	98182
13	83289	03302	23223	43053	62792	82442	02003	21475	40861	60159	79372	98501
14	83624	03635	23555	43383	63121	82769	02328	21799	41183	60480	79692	98819
15	83958	03968	23886	43713	63449	83095	02653	22123	41505	60801	80011	99137
16	84292	04301	24217	44042	63777	83422	02978	22447	41828	61122	80331	99455
17	84626	04633	24548	44372	64105	83749	03304	22770	42150	61443	80650	99773
18	84961	04966	24879	44702	64433	84075	03629	23094	42472	61764	80970	00091
19	85295	05299	25211	45031	64761	84402	03954	23418	42794	62085	81289	00409
20	85629	05631	25542	45361	65089	84729	04279	23741	43117	62405	81608	00727
21	85963	05964	25873	45690	65418	85055	04604	24065	43439	62726	81928	01045
22	86297	06296	26204	46020	65746	85382	04929	24389	43761	63047	82247	01362
23	86631	06629	26535	46349	66074	85708	05254	24712	44083	63367	82566	01680
24	86965	06961	26866	46679	66402	86035	05579	25036	44405	63688	82886	01998
25	87299	07294	27197	47008	66729	86361	05904	25359	44727	64009	83205	02316
26	87633	07626	27528	47338	67057	86688	06229	25683	45049	64329	83524	02634
27	87967	07959	27859	47667	67385	87014	06554	26006	45371	64650	83843	02952
28	88301	08291	28189	47996	67713	87340	06879	26330	45693	64971	84162	03269
29	88635	08624	28520	48326	68041	87667	07204	26653	46015	65291	84482	03587
30	88969	08956	28851	48655	68369	87993	07529	26977	46337	65612	84801	03905
31	89303	09288	29182	48984	68697	88319	07854	27300	46659	65932	85120	04222
32	89637	09621	29513	49314	69024	88646	08178	27623	46981	66253	85439	04540
33	89971	09953	29843	49643	69352	88972	08503	27947	47303	66573	85758	04858
34	90304	10285	30174	49972	69680	89298	08828	28270	47625	66894	86077	05175
35	90638	10617	30505	50301	70008	89624	09153	28593	47947	67214	86396	05493
36	90972	10950	30836	50631	70335	89951	09478	28917	48269	67534	86715	05811
37	91306	11282	31166	50960	70663	90277	09802	29240	48590	67855	87034	06128
38	91639	11614	31497	51289	70991	90603	10127	29563	48912	68175	87353	06446
39	91973	11946	31828	51618	71318	90929	10452	29886	49234	68496	87672	06763
40	92307	12278	32158	51947	71646	91255	10776	30209	49556	68816	87991	07081
41	92640	12610	32489	52276	71973	91581	11101	30533	49877	69136	88309	07398
42	92974	12942	32819	52605	72301	91907	11425	30856	50199	69456	88628	07716
43	93307	13274	33150	52934	72628	92233	11750	31179	50521	69777	88947	08033
44	93641	13606	33480	53263	72956	92559	12074	31502	50842	70097	89266	08350
45	93974	13938	33811	53592	73283	92885	12399	31825	51164	70417	89585	08668
46	94308	14270	34141	53921	73611	93211	12723	32148	51486	70737	89903	08985
47	94641	14602	34471	54250	73938	93537	13048	32471	51807	71057	90222	09302
48	94975	14934	34802	54579	74265	93863	13372	32794	52129	71377	90541	09620
49	95308	15266	35132	54908	74593	94189	13697	33117	52450	71697	90859	09937
50	95642	15598	35463	55236	74920	94515	14021	33440	52772	72018	91178	10254
51	95975	15930	35793	55565	75247	94841	14345	33763	53093	72338	91497	10571
52	96308	16262	36123	55894	75575	95166	14670	34086	53415	72658	91815	10889
53	96642	16593	36453	56223	75902	95492	14994	34408	53736	72978	92134	11206
54	96975	16925	36784	56551	76229	95818	15318	34731	54057	73298	92452	11523
55	97308	17257	37114	56880	76556	96144	15643	35054	54379	73617	92771	11840
56	97641	17588	37444	57209	76884	96469	15967	35377	54700	73937	93089	12157
57	97975	17920	37774	57537	77211	96795	16291	35700	55021	74257	93408	12474
58	98308	18252	38104	57866	77538	97121	16615	36022	55343	74577	93726	12791
59	98641	18583	38434	58195	77865	97446	16939	36345	55664	74897	94045	13108
60	98974	18915	38764	58523	78192	97772	17264	36668	55985	75217	94363	13425
″	23′	22′	21′	20′	19′	18′	17′	16′	15′	14′	13′	12′

Co-Sine Deg. 86

3 Deg. Co-Sine

36′	37′	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′	″
9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	
91422	91342	91262	91182	91101	91020	90938	90856	90774	90691	90608	90525	60
91420	91341	91261	91180	91099	91018	90937	90855	90773	90690	90607	90524	59
91419	91339	91259	91179	91098	91017	90935	90854	90771	90689	90606	90522	58
91418	91338	91258	91178	91097	91016	90934	90852	90770	90687	90604	90521	57
91416	91337	91257	91176	91095	91014	90933	90851	90769	90686	90603	90520	56
91415	91335	91255	91175	91094	91013	90931	90849	90767	90685	90602	90518	55
91414	91334	91254	91174	91093	91012	90930	90848	90766	90683	90600	90517	54
91412	91333	91253	91172	91091	91010	90929	90847	90764	90682	90599	90515	53
91411	91331	91251	91171	91090	91009	90927	90845	90763	90680	90597	90514	52
91410	91330	91250	91170	91089	91008	90926	90844	90762	90679	90596	90513	51
91408	91329	91249	91168	91087	91006	90925	90843	90760	90678	90595	90511	50
91407	91327	91247	91167	91086	91005	90923	90841	90759	90676	90593	90510	49
91406	91326	91246	91165	91085	91003	90922	90840	90758	90675	90592	90508	48
91404	91325	91245	91164	91083	91002	90920	90839	90756	90674	90590	90507	47
91403	91323	91243	91163	91082	91001	90919	90837	90755	90672	90589	90506	46
91402	91322	91242	91161	91081	90999	90918	90836	90753	90671	90588	90504	45
91401	91321	91241	91160	91079	90998	90916	90834	90752	90669	90586	90503	44
91399	91319	91239	91159	91078	90997	90915	90833	90751	90668	90585	90501	43
91398	91318	91238	91157	91077	90995	90914	90832	90749	90667	90583	90500	42
91397	91317	91237	91156	91075	90994	90912	90830	90748	90665	90582	90499	41
91395	91315	91235	91155	91074	90993	90911	90829	90747	90664	90581	90497	40
91394	91314	91234	91153	91072	90991	90910	90828	90745	90662	90579	90496	39
91393	91313	91233	91152	91071	90990	90908	90826	90744	90661	90578	90494	38
91391	91311	91231	91151	91070	90989	90907	90825	90742	90660	90577	90493	37
91390	91310	91230	91149	91068	90987	90905	90823	90741	90658	90575	90492	36
91389	91309	91229	91148	91067	90986	90904	90822	90740	90657	90574	90490	35
91387	91307	91227	91147	91066	90984	90903	90821	90738	90656	90572	90489	34
91386	91306	91226	91145	91064	90983	90901	90819	90737	90654	90571	90487	33
91385	91305	91225	91144	91063	90982	90900	90818	90736	90653	90570	90486	32
91383	91303	91223	91143	91062	90980	90899	90817	90734	90651	90568	90485	31
91382	91302	91222	91141	91060	90979	90897	90815	90733	90650	90567	90483	30
91381	91301	91221	91140	91059	90978	90896	90814	90731	90649	90565	90482	29
91379	91299	91219	91139	91058	90976	90895	90812	90730	90647	90564	90481	28
91378	91298	91218	91137	91056	90975	90893	90811	90729	90646	90563	90479	27
91377	91297	91217	91136	91055	90974	90892	90810	90727	90644	90561	90478	26
91375	91295	91215	91135	91054	90972	90890	90808	90726	90643	90560	90476	25
91374	91294	91214	91133	91052	90971	90889	90807	90725	90642	90558	90475	24
91373	91293	91212	91132	91051	90969	90888	90806	90723	90640	90557	90474	23
91371	91291	91211	91131	91050	90968	90886	90804	90722	90639	90556	90472	22
91370	91290	91210	91129	91048	90967	90885	90803	90720	90638	90554	90471	21
91369	91289	91208	91128	91047	90965	90884	90802	90719	90636	90553	90469	20
91367	91287	91207	91126	91045	90964	90882	90800	90718	90635	90552	90468	19
91366	91286	91206	91125	91044	90963	90881	90799	90716	90633	90550	90467	18
91365	91285	91204	91124	91043	90961	90880	90797	90715	90632	90549	90465	17
91363	91283	91203	91122	91041	90960	90878	90796	90714	90631	90547	90464	16
91362	91282	91202	91121	91040	90959	90877	90795	90712	90629	90546	90462	15
91361	91281	91200	91120	91039	90957	90875	90793	90711	90628	90545	90461	14
91359	91279	91199	91118	91037	90956	90874	90792	90709	90626	90543	90460	13
91358	91278	91198	91117	91036	90955	90873	90791	90708	90625	90542	90458	12
91357	91277	91196	91116	91035	90953	90871	90789	90707	90624	90540	90457	11
91355	91275	91195	91114	91033	90952	90870	90788	90705	90622	90539	90455	10
91354	91274	91194	91113	91032	90950	90869	90786	90704	90621	90538	90454	9
91353	91273	91192	91112	91031	90949	90867	90785	90702	90620	90536	90453	8
91351	91271	91191	91110	91029	90948	90866	90784	90701	90618	90535	90451	7
91350	91270	91190	91109	91028	90946	90865	90782	90700	90617	90533	90450	6
91349	91269	91188	91108	91026	90945	90863	90781	90698	90615	90532	90448	5
91347	91267	91187	91106	91025	90944	90862	90780	90697	90614	90531	90447	4
91346	91266	91186	91105	91024	90942	90860	90778	90696	90613	90529	90446	3
91345	91265	91184	91104	91022	90941	90859	90777	90694	90611	90528	90444	2
91343	91263	91183	91102	91021	90940	90858	90775	90693	90610	90527	90443	1
91342	91262	91182	91101	91020	90938	90856	90774	90691	90608	90525	90441	0
23′	22′	21′	20′	19′	18′	17′	16′	15′	14′	13′	12′	″

Sine Deg. 86

3 Deg. Tangent

"	36′	37′	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′
	8. 79	8. 80	8. 80	8. 80	8. 80	8. 80	8. 81	8. 81	8. 81	8. 81	8. 81	8. 82
0	87519	07632	27653	47583	67422	87172	06834	26407	45894	65294	84608	03838
1	87855	07966	27986	47914	67752	87501	07161	26733	46218	65616	84930	04158
2	88191	08301	28319	48246	68082	87829	07488	27058	46542	65939	85251	04478
3	88527	08635	28652	48577	68412	88158	07815	27384	46866	66262	85572	04797
4	88863	08970	28984	48908	68742	88486	08141	27709	47190	66584	85893	05117
5	89199	09304	29317	49240	69072	88814	08468	28034	47514	66907	86214	05437
6	89534	09638	29650	49571	69401	89143	08795	28360	47838	67229	86535	05757
7	89870	09973	29983	49902	69731	89471	09122	28685	48161	67552	86856	06076
8	90206	10307	30316	50233	70061	89799	09449	29011	48485	67874	87177	06396
9	90542	10641	30648	50564	70391	90127	09775	29336	48809	68196	87498	06715
10	90878	10975	30981	50896	70720	90455	10102	29661	49133	68519	87819	07035
11	91213	11309	31314	51227	71050	90784	10429	29986	49457	68841	88140	07354
12	91549	11644	31646	51558	71380	91112	10756	30312	49781	69164	88461	07674
13	91885	11978	31979	51889	71709	91440	11082	30637	50104	69486	88782	07994
14	92220	12312	32311	52220	72039	91768	11409	30962	50428	69808	89103	08313
15	92556	12646	32644	52551	72368	92096	11735	31287	50752	70130	89424	08632
16	92892	12980	32976	52882	72698	92424	12062	31612	51075	70453	89745	08952
17	93227	13314	33309	53213	73027	92752	12389	31937	51399	70775	90065	09271
18	93563	13648	33641	53544	73357	93080	12715	32262	51723	71097	90386	09591
19	93898	13982	33974	53875	73686	93408	13042	32587	52046	71419	90707	09910
20	94234	14316	34306	54206	74016	93736	13368	32912	52370	71741	91028	10229
21	94569	14650	34639	54537	74345	94064	13694	33237	52694	72064	91348	10549
22	94905	14984	34971	54868	74674	94392	14021	33562	53017	72386	91669	10808
23	95240	15318	35303	55199	75004	94720	14347	33887	53341	72708	91990	11187
24	95575	15651	35636	55529	75333	95048	14674	34212	53664	73030	92310	11507
25	95911	15985	35968	55860	75662	95375	15000	34537	53988	73352	92631	11826
26	96246	16319	36300	56191	75992	95703	15326	34862	54311	73674	92952	12145
27	96581	16653	36633	56522	76321	96031	15653	35187	54634	73996	93272	12464
28	96917	16987	36965	56852	76650	96359	15979	35512	54958	74318	93593	12783
29	97252	17320	37297	57183	76979	96686	16305	35837	55281	74640	93913	13102
30	97587	17654	37629	57514	77309	97014	16631	36161	55605	74962	94234	13422
31	97922	17988	37961	57844	77638	97342	16958	36486	55928	75284	94554	13741
32	98257	18321	38294	58175	77967	97669	17284	36811	56251	75606	94875	14060
33	98593	18655	38626	58506	78296	97997	17610	37136	56574	75927	95195	14379
34	98928	18988	38958	58836	78625	98325	17936	37460	56898	76249	95516	14698
35	99263	19322	39290	59167	78954	98652	18262	37785	57221	76571	95836	15017
36	99598	19656	39622	59497	79283	98980	18588	38110	57544	76893	96156	15336
37	99933	19989	39954	59828	79612	99307	18914	38434	57867	77215	96477	15655
38	00268	20323	40286	60158	79941	99635	19241	38759	58190	77536	96797	15974
39	00603	20656	40618	60489	80270	99962	19567	39083	58514	77858	97117	16292
40	00938	20989	40950	60819	80599	00290	19893	39408	58837	78180	97438	16611
41	01273	21323	41282	61150	80928	00617	20218	39732	59160	78501	97758	16930
42	01608	21656	41613	61480	81257	00945	20544	40057	59483	78823	98078	17249
43	01943	21990	41945	61810	81586	01272	20870	40381	59806	79145	98398	17568
44	02278	22323	42277	62141	81914	01599	21196	40706	60129	79466	98718	17887
45	02612	22656	42609	62471	82243	01927	21522	41030	60452	79788	99039	18205
46	02947	22990	42941	62801	82572	02254	21848	41355	60775	80109	99359	18524
47	03282	23323	43272	63131	82901	02581	22174	41679	61098	80431	99679	18843
48	03617	23656	43604	63462	83230	02909	22500	42003	61421	80752	99999	19161
49	03952	23989	43936	63792	83558	03236	22825	42328	61744	81074	00319	19480
50	04286	24323	44267	64122	83887	03563	23151	42652	62066	81395	00639	19799
51	04621	24656	44599	64452	84216	03890	23477	42976	62389	81717	00959	20117
52	04956	24989	44931	64782	84544	04217	23803	43301	62712	82038	01279	20436
53	05290	25322	45262	65112	84873	04545	24128	43625	63035	82359	01599	20755
54	05625	25655	45594	65442	85201	04872	24454	43949	63358	82681	01919	21073
55	05959	25988	45925	65773	85530	05199	24780	44273	63680	83002	02239	21392
56	06294	26321	46257	66103	85859	05526	25105	44597	64003	83323	02559	21710
57	06629	26654	46588	66433	86187	05853	25431	44921	64326	83645	02879	22029
58	06963	26987	46920	66762	86516	06180	25756	45246	64649	83966	03199	22347
59	07298	27320	47251	67092	86844	06507	26082	45570	64971	84287	03518	22666
60	07632	27653	47583	67422	87172	06834	26407	45894	65294	84608	03838	22984
"	23′	22′	21′	20′	19′	18′	17′	16′	15′	14′	13′	12′

3 Deg. Co-Tangent

36′	37′	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′	"
11. 20	11. 19	11. 19	11. 19	11. 19	11. 19	11. 18	11. 18	11. 18	11. 18	11. 18	11. 17	
12481	92368	72347	52417	32578	12828	93166	73593	54106	34706	15392	96162	60
12145	92034	72014	52086	32248	12499	92839	73267	53782	34384	15070	95842	59
11809	91699	71681	51754	31918	12171	92512	72942	53458	34061	14749	95522	58
11473	91365	71348	51423	31588	11842	92185	72616	53134	33738	14428	95203	57
11137	91030	71016	51092	31258	11514	91859	72291	52810	33416	14107	94883	56
10801	90696	70683	50760	30928	11186	91532	71966	52486	33093	13786	94563	55
10466	90362	70350	50429	30599	10857	91205	71640	52162	32771	13465	94243	54
10130	90027	70017	50098	30269	10529	90878	71315	51839	32448	13144	93924	53
09794	89693	69684	49767	29939	10201	90551	70989	51515	32126	12823	93604	52
09458	89359	69352	49436	29609	09873	90225	70664	51191	31804	12502	93285	51
09122	89025	69019	49104	29280	09545	89898	70339	50867	31481	12181	92965	50
08787	88691	68686	48773	28950	09216	89571	70014	50543	31159	11860	92646	49
08451	88356	68354	48442	28620	08888	89244	69688	50219	30836	11539	92326	48
08115	88022	68021	48111	28291	08560	88918	69363	49896	30514	11218	92006	47
07780	87688	67689	47780	27961	08232	88591	69038	49572	30192	10897	91687	46
07444	87354	67356	47449	27632	07904	88265	68713	49248	29870	10576	91368	45
07108	87020	67024	47118	27302	07576	87938	68388	48925	29547	10255	91048	44
06773	86686	66691	46787	26973	07248	87611	68063	48601	29225	09935	90729	43
06437	86352	66359	46456	26643	06920	87285	67738	48277	28903	09614	90409	42
06102	86018	66026	46125	26314	06592	86958	67413	47954	28581	09293	90090	41
05766	85684	65694	45794	25984	06264	86632	67088	47630	28259	08972	89771	40
05431	85350	65361	45463	25655	05936	86306	66763	47306	27936	08652	89451	39
05095	85016	65029	45132	25326	05608	85979	66438	46983	27614	08331	89132	38
04760	84682	64697	44801	24996	05280	85653	66113	46659	27292	08010	88813	37
04425	84349	64364	44471	24667	04952	85326	65788	46336	26970	07690	88493	36
04089	84015	64032	44140	24338	04625	85000	65463	46012	26648	07369	88174	35
03754	83681	63700	43809	24008	04297	84674	65138	45689	26326	07048	87855	34
03419	83347	63367	43478	23679	03969	84347	64813	45366	26004	06728	87536	33
03083	83013	63035	43148	23350	03641	84021	64488	45042	25682	06407	87217	32
02748	82680	62703	42817	23021	03314	83695	64163	44719	25360	06087	86898	31
02413	82346	62371	42486	22691	02986	83369	63839	44395	25038	05766	86578	30
02078	82012	62039	42156	22362	02658	83042	63514	44072	24716	05446	86259	29
01743	81679	61706	41825	22033	02331	82716	63189	43749	24394	05125	85940	28
01407	81345	61374	41494	21704	02003	82390	62864	43426	24073	04805	85621	27
01072	81012	61042	41164	21375	01675	82064	62540	43102	23751	04484	85302	26
00737	80678	60710	40833	21046	01348	81738	62215	42779	23429	04164	84983	25
00402	80344	60378	40503	20717	01020	81412	61890	42456	23107	03844	84664	24
00067	80011	60046	40172	20388	00693	81086	61566	42133	22785	03523	84345	23
99733	79677	59714	39842	20059	00365	80759	61241	41810	22464	03203	84026	22
99397	79344	59382	39511	19730	00038	80433	60917	41486	22142	02883	83708	21
99062	79011	59050	39181	19401	99710	80107	60592	41163	21820	02562	83389	20
98727	78677	58718	38850	19072	99383	79782	60268	40840	21499	02242	83070	19
98392	78344	58387	38520	18743	99055	79456	59943	40517	21177	01922	82751	18
98057	78010	58055	38190	18414	98728	79130	59619	40194	20855	01602	82432	17
97722	77677	57723	37859	18086	98401	78804	59294	39871	20534	01282	82113	16
97388	77344	57391	37529	17757	98073	78478	58970	39548	20212	00961	81795	15
97053	77010	57059	37199	17428	97746	78152	58645	39225	19891	00641	81476	14
96718	76677	56728	36869	17099	97419	77826	58321	38902	19569	00321	81157	13
96383	76344	56396	36538	16770	97091	77500	57997	38579	19248	00001	80839	12
96048	76011	56064	36208	16442	96764	77175	57672	38256	18926	99681	80520	11
95714	75677	55733	35878	16113	96437	76849	57348	37934	18605	99361	80201	10
95379	75344	55401	35548	15784	96110	76523	57024	37611	18283	99041	79883	9
95044	75011	55069	35218	15456	95783	76197	56699	37288	17962	98721	79564	8
94710	74678	54738	34888	15127	95455	75872	56375	36965	17641	98401	79245	7
94375	74345	54406	34558	14799	95128	75546	56051	36642	17319	98081	78927	6
94041	74012	54075	34227	14470	94801	75220	55727	36320	16998	97761	78608	5
93706	73679	53743	33897	14141	94474	74895	55403	35997	16677	97441	78290	4
93371	73346	53412	33567	13813	94147	74569	55079	35674	16355	97121	77971	3
93037	73013	53080	33238	13484	93820	74244	54754	35351	16034	96801	77653	2
92702	72680	52749	32908	13156	93493	73918	54430	35029	15713	96482	77334	1
92368	72347	52417	32578	12828	93166	73593	54106	34706	15392	96162	77016	0
23′	22′	21′	20′	19′	18′	17′	16′	15′	14′	13′	12′	"

Co-Tangent Deg. 86 Tangent Deg. 86

3 Deg. Sine — 3 Deg. Co-Sine

	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
″	8.82	8.82	8.82	8.82	8.82	8.83	8.83	8.83	8.83	8.83	8.83	8.84	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	″
0	13425	32404	51299	70112	88844	07495	26066	44557	62969	81304	99561	17741	90441	90357	90273	90188	90103	90017	89931	89845	89758	89671	89584	89496	60
1	13742	32719	51613	70425	89155	07805	26374	44864	63276	81609	99865	18043	90440	90356	90271	90187	90101	90016	89930	89844	89757	89670	89582	89495	59
2	14059	33035	51928	70738	89467	08115	26683	45172	63582	81914	00168	18346	90439	90354	90270	90185	90100	90014	89928	89842	89755	89668	89581	89493	58
3	14376	33350	52242	71051	89778	08425	26992	45479	63888	82219	00472	18648	90437	90353	90269	90184	90099	90013	89927	89841	89754	89667	89579	89492	57
4	14693	33666	52556	71364	90090	08735	27301	45787	64194	82523	00775	18950	90436	90352	90267	90182	90097	90012	89926	89839	89753	89665	89578	89490	56
5	15010	33981	52870	71676	90401	09045	27610	46094	64500	82828	01079	19253	90434	90350	90266	90181	90096	90010	89924	89838	89751	89664	89577	89489	55
6	15327	34297	53184	71989	90713	09355	27918	46402	64806	83133	01382	19555	90433	90349	90264	90179	90094	90009	89923	89836	89750	89663	89575	89487	54
7	15644	34612	53498	72302	91024	09666	28227	46709	65112	83438	01686	19857	90432	90347	90263	90178	90093	90007	89921	89835	89748	89661	89574	89486	53
8	15961	34928	53812	72615	91335	09976	28536	47016	65419	83743	01989	20159	90430	90346	90262	90177	90091	90006	89920	89833	89747	89660	89572	89484	52
9	16277	35243	54126	72927	91647	10286	28844	47324	65725	84047	02293	20462	90429	90345	90260	90175	90090	90004	89918	89832	89745	89658	89571	89483	51
10	16594	35559	54440	73240	91958	10596	29153	47631	66031	84352	02596	20764	90427	90343	90259	90174	90089	90003	89917	89831	89744	89657	89569	89481	50
11	16911	35874	54754	73552	92269	10905	29462	47938	66337	84657	02900	21066	90426	90342	90257	90172	90087	90001	89915	89829	89742	89655	89568	89480	49
12	17228	36189	55068	73865	92581	11215	29770	48246	66643	84961	03203	21368	90425	90340	90256	90171	90086	90000	89914	89828	89741	89654	89566	89478	48
13	17544	36505	55382	74178	92892	11525	30079	48553	66949	85266	03506	21670	90423	90339	90254	90170	90084	89999	89913	89826	89739	89652	89565	89477	47
14	17861	36820	55696	74490	93203	11835	30387	48860	67254	85571	03810	21972	90422	90338	90253	90168	90083	89997	89911	89825	89738	89651	89563	89476	46
15	18178	37135	56010	74803	93514	12145	30696	49167	67560	85875	04113	22274	90420	90336	90252	90167	90081	89996	89910	89823	89737	89649	89562	89474	45
16	18494	37451	56324	75115	93825	12455	31004	49475	67866	86180	04416	22576	90419	90335	90250	90165	90080	89994	89908	89822	89735	89648	89560	89473	44
17	18811	37766	56638	75428	94137	12765	31313	49782	68172	86485	04720	22878	90418	90333	90249	90164	90079	89993	89907	89820	89734	89647	89559	89471	43
18	19128	38081	56952	75740	94448	13074	31621	50089	68478	86789	05023	23180	90416	90332	90247	90162	90077	89991	89905	89819	89732	89645	89558	89470	42
19	19444	38396	57265	76053	94759	13384	31930	50396	68784	87094	05326	23482	90415	90331	90246	90161	90076	89990	89904	89818	89731	89644	89556	89468	41
20	19761	38711	57579	76365	95070	13694	32238	50703	69090	87398	05629	23784	90413	90329	90245	90160	90074	89989	89903	89816	89729	89642	89555	89467	40
21	20077	39026	57893	76678	95381	14004	32547	51010	69395	87703	05933	24086	90412	90328	90243	90158	90073	89987	89901	89815	89728	89641	89553	89465	39
22	20394	39342	58207	76990	95692	14313	32855	51317	69701	88007	06236	24388	90411	90326	90242	90157	90071	89986	89900	89813	89726	89639	89552	89464	38
23	20710	39657	58520	77302	96003	14623	33163	51624	70007	88312	06539	24690	90409	90325	90240	90155	90070	89984	89898	89812	89725	89638	89550	89462	37
24	21027	39972	58834	77615	96314	14933	33472	51931	70313	88616	06842	24992	90408	90324	90239	90154	90069	89983	89897	89810	89724	89636	89549	89461	36
25	21343	40287	59148	77927	96625	15242	33780	52238	70618	88920	07145	25294	90406	90322	90238	90153	90067	89981	89895	89809	89722	89635	89547	89459	35
26	21659	40602	59462	78239	96936	15552	34088	52545	70924	89225	07448	25596	90405	90321	90236	90151	90066	89980	89894	89807	89721	89633	89546	89458	34
27	21976	40917	59775	78552	97247	15862	34396	52852	71230	89529	07751	25897	90404	90319	90235	90150	90064	89979	89892	89806	89719	89632	89544	89456	33
28	22292	41232	60089	78864	97558	16171	34705	53159	71535	89833	08055	26199	90402	90318	90233	90148	90063	89977	89891	89805	89718	89631	89543	89455	32
29	22609	41547	60402	79176	97869	16481	35013	53466	71841	90138	08358	26501	90401	90317	90232	90147	90061	89976	89890	89803	89716	89629	89541	89453	31
30	22925	41862	60716	79488	98179	16790	35321	53773	72146	90442	08661	26803	90399	90315	90230	90145	90060	89974	89888	89802	89715	89628	89540	89452	30
31	23241	42177	61029	79800	98490	17100	35629	54080	72452	90746	08964	27104	90398	90314	90229	90144	90059	89973	89887	89800	89713	89626	89539	89451	29
32	23557	42491	61343	80113	98801	17409	35937	54387	72757	91051	09267	27406	90397	90312	90228	90143	90057	89971	89885	89799	89712	89625	89537	89449	28
33	23874	42806	61656	80425	99112	17719	36246	54694	73063	91355	09569	27708	90395	90311	90226	90141	90056	89970	89884	89797	89710	89623	89536	89448	27
34	24190	43121	61970	80737	99423	18028	36554	55000	73369	91659	09872	28009	90394	90309	90225	90140	90054	89969	89882	89796	89709	89622	89534	89446	26
35	24506	43436	62283	81049	99733	18337	36862	55307	73674	91963	10175	28311	90392	90308	90223	90138	90053	89967	89881	89794	89708	89620	89533	89445	25
36	24822	43751	62597	81361	00044	18647	37170	55614	73979	92267	10478	28613	90391	90307	90222	90137	90051	89966	89880	89793	89706	89619	89531	89443	24
37	25138	44066	62910	81673	00355	18956	37478	55921	74285	92572	10781	28914	90390	90305	90221	90136	90050	89964	89878	89792	89705	89617	89530	89442	23
38	25455	44380	63224	81985	00666	19266	37786	56227	74590	92876	11084	29216	90388	90304	90219	90134	90049	89963	89877	89790	89703	89616	89528	89441	22
39	25771	44695	63537	82297	00976	19575	38094	56534	74896	93180	11387	29517	90387	90302	90218	90133	90047	89961	89875	89789	89702	89614	89527	89439	21
40	26087	45010	63850	82609	01287	19884	38402	56841	75201	93484	11690	29819	90385	90301	90216	90131	90046	89960	89874	89787	89700	89613	89525	89437	20
41	26403	45324	64164	82921	01597	20193	38710	57147	75506	93788	11992	30120	90384	90300	90215	90130	90044	89959	89872	89786	89699	89612	89524	89436	19
42	26719	45639	64477	83233	01908	20503	39018	57454	75812	94092	12295	30422	90383	90298	90213	90128	90043	89957	89871	89784	89697	89610	89522	89434	18
43	27035	45954	64790	83545	02219	20812	39326	57761	76117	94396	12598	30723	90381	90297	90212	90127	90042	89956	89869	89783	89696	89609	89521	89433	17
44	27351	46268	65103	83857	02529	21121	39634	58067	76422	94700	12901	31025	90380	90295	90211	90126	90040	89954	89868	89781	89695	89607	89519	89431	16
45	27667	46583	65417	84169	02840	21430	39941	58374	76728	95004	13203	31326	90378	90294	90209	90124	90039	89953	89867	89780	89693	89606	89518	89430	15
46	27983	46898	65730	84480	03150	21740	40249	58680	77033	95308	13506	31628	90377	90293	90208	90123	90037	89951	89865	89779	89692	89604	89517	89429	14
47	28299	47212	66043	84792	03461	22049	40557	58987	77338	95612	13809	31929	90376	90291	90206	90121	90036	89950	89864	89777	89690	89603	89515	89427	13
48	28615	47527	66356	85104	03771	22358	40865	59293	77643	95916	14111	32230	90374	90290	90205	90120	90034	89949	89862	89776	89689	89601	89514	89426	12
49	28931	47841	66669	85416	04082	22667	41173	59600	77948	96220	14414	32532	90373	90288	90204	90118	90033	89947	89861	89774	89687	89600	89512	89424	11
50	29246	48156	66982	85728	04392	22976	41481	59906	78254	96523	14716	32833	90371	90287	90202	90117	90032	89946	89859	89773	89686	89598	89511	89423	10
51	29562	48470	67296	86039	04702	23285	41788	60213	78559	96827	15019	33134	90370	90286	90201	90116	90030	89944	89858	89771	89684	89597	89509	89421	9
52	29878	48784	67609	86351	05013	23594	42096	60519	78864	97131	15322	33436	90369	90284	90199	90114	90029	89943	89857	89770	89683	89596	89508	89420	8
53	30194	49099	67922	86663	05323	23903	42404	60825	79169	97435	15624	33737	90367	90283	90198	90113	90027	89941	89855	89768	89681	89594	89506	89418	7
54	30510	49413	68235	86974	05633	24212	42711	61132	79474	97739	15927	34038	90366	90281	90196	90111	90026	89940	89854	89767	89680	89593	89505	89417	6
55	30825	49728	68548	87286	05944	24521	43019	61438	79779	98042	16229	34339	90364	90280	90195	90110	90024	89938	89852	89766	89679	89591	89503	89415	5
56	31141	50042	68861	87598	06254	24830	43327	61744	80084	98346	16531	34641	90363	90278	90194	90108	90023	89937	89851	89764	89677	89590	89502	89414	4
57	31457	50356	69174	87909	06564	25139	43634	62051	80389	98650	16834	34942	90362	90277	90192	90107	90022	89936	89849	89763	89676	89588	89500	89412	3
58	31772	50671	69486	88221	06874	25448	43942	62357	80694	98954	17136	35243	90360	90276	90191	90106	90020	89934	89848	89761	89674	89587	89499	89411	2
59	32088	50985	69799	88532	07185	25757	44249	62663	80999	99257	17439	35544	90359	90274	90189	90104	90019	89933	89846	89760	89673	89585	89498	89409	1
60	32404	51299	70112	88844	07495	26066	44557	62969	81304	99561	17741	35845	90357	90273	90188	90103	90017	89931	89845	89758	89671	89584	89496	89408	0
″	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Co-Sine Deg. 86 — Sine Deg. 86

3 Deg. Tangent

"	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	8. 82	8. 82	8. 82	8. 82	8. 82	8. 83	8. 83	8. 83	8. 83	8. 83	8. 84	8. 84
0	22984	42046	61026	79924	98741	17478	36134	54712	73211	91633	09977	28245
1	23302	42363	61342	80239	99054	17789	36445	55021	73519	91939	10282	28549
2	23621	42680	61657	80553	99367	18101	36755	55330	73826	92245	10587	28853
3	23939	42997	61973	80867	99680	18412	37065	55639	74134	92552	10892	29156
4	24257	43314	62289	81181	99993	18724	37375	55948	74442	92858	11197	29460
5	24576	43631	62604	81495	00306	19035	37685	56257	74749	93164	11502	29764
6	24894	43948	62920	81810	00618	19347	37996	56565	75057	93471	11807	30068
7	25212	44265	63235	82124	00931	19658	38306	56874	75364	93777	12112	30371
8	25530	44582	63551	82438	01244	19970	38616	57183	75672	94083	12417	30675
9	25849	44899	63866	82752	01557	20281	38926	57492	75979	94389	12722	30979
10	26167	45215	64182	83066	01869	20593	39236	57801	76287	94695	13027	31282
11	26485	45532	64497	83380	02182	20904	39546	58109	76594	95002	13332	31586
12	26803	45849	64812	83694	02495	21215	39856	58418	76902	95308	13637	31890
13	27121	46166	65128	84008	02808	21527	40166	58727	77209	95614	13942	32193
14	27439	46482	65443	84322	03120	21838	40476	59035	77516	95920	14246	32497
15	27757	46799	65758	84636	03433	22149	40786	59344	77824	96226	14551	32800
16	28075	47116	66074	84950	03745	22460	41096	59653	78131	96532	14856	33104
17	28393	47432	66389	85264	04058	22772	41406	59961	78438	96838	15161	33407
18	28711	47749	66704	85578	04371	23083	41716	60270	78746	97144	15465	33711
19	29029	48066	67019	85892	04683	23394	42026	60578	79053	97450	15770	34014
20	29347	48382	67335	86206	04996	23705	42336	60887	79360	97756	16075	34318
21	29665	48699	67650	86519	05308	24016	42645	61196	79667	98062	16380	34621
22	29983	49015	67965	86833	05620	24328	42955	61504	79975	98368	16684	34924
23	30301	49332	68280	87147	05933	24639	43265	61813	80282	98674	16989	35228
24	30619	49648	68595	87461	06245	24950	43575	62121	80589	98980	17293	35531
25	30937	49965	68910	87774	06558	25261	43885	62429	80896	99285	17598	35834
26	31255	50281	69225	88088	06870	25572	44194	62738	81203	99591	17903	36138
27	31572	50597	69540	88402	07182	25883	44504	63046	81510	99897	18207	36441
28	31890	50914	69855	88716	07495	26194	44814	63355	81817	00203	18512	36744
29	32208	51230	70170	89029	07807	26505	45123	63663	82125	00509	18816	37047
30	32526	51547	70485	89343	08119	26816	45433	63971	82432	00814	19121	37351
31	32843	51863	70800	89656	08432	27127	45743	64280	82739	01120	19425	37654
32	33161	52179	71115	89970	08744	27438	46052	64588	83046	01426	19729	37957
33	33479	52495	71430	90284	09056	27749	46362	64896	83353	01732	20034	38260
34	33796	52812	71745	90597	09368	28059	46671	65204	83659	02087	20338	38563
35	34114	53128	72060	90911	09680	28370	46981	65513	83966	02343	20643	38866
36	34431	53444	72375	91224	09993	28681	47290	65821	84273	02649	20947	39169
37	34749	53760	72690	91538	10305	28992	47600	66129	84580	02954	21251	39473
38	35066	54076	73004	91851	10617	29303	47909	66437	84887	03260	21556	39776
39	35384	54393	73319	92164	10929	29613	48219	66745	85194	03565	21860	40079
40	35701	54709	73634	92478	11241	29924	48528	67053	85501	03871	22164	40382
41	36019	55025	73949	92791	11553	30235	48838	67361	85808	04176	22468	40685
42	36336	55341	74263	93105	11865	30546	49147	67670	86114	04482	22773	40988
43	36654	55657	74578	93418	12177	30856	49456	67978	86421	04787	23077	41290
44	36971	55973	74893	93731	12489	31167	49766	68286	86728	05093	23381	41593
45	37289	56289	75207	94045	12801	31478	50075	68594	87035	05398	23685	41896
46	37606	56605	75522	94358	13113	31788	50384	68902	87341	05704	23989	42199
47	37923	56921	75837	94671	13425	32099	50693	69210	87648	06009	24293	42502
48	38241	57237	76151	94984	13737	32409	51003	69518	87955	06314	24598	42805
49	38558	57553	76466	95297	14049	32720	51312	69825	88261	06620	24902	43108
50	38875	57869	76780	95611	14360	33030	51621	70133	88568	06925	25206	43410
51	39192	58185	77095	95924	14672	33341	51930	70441	88874	07230	25510	43713
52	39509	58500	77409	96237	14984	33651	52239	70749	89181	07536	25814	44016
53	39827	58816	77724	96550	15296	33962	52549	71057	89487	07841	26118	44319
54	40144	59132	78038	96863	15608	34272	52858	71365	89794	08146	26422	44621
55	40461	59448	78353	97176	15919	34583	53167	71673	90100	08451	26726	44924
56	40778	59763	78667	97489	16231	34893	53476	71980	90407	08756	27030	45227
57	41095	60079	78981	97802	16543	35203	53785	72288	90713	09062	27333	45529
58	41412	60395	79296	98115	16854	35514	54094	72596	91020	09367	27637	45832
59	41729	60711	79610	98428	17166	35824	54403	72903	91326	09672	27941	46135
60	42046	61026	79924	98741	17478	36134	54712	73211	91633	09977	28245	46437
"	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Tangent Deg. 86

3 Deg. Co-Tangent

48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	"
11. 17	11. 17	11. 17	11. 17	11. 17	11. 16	11. 16	11. 16	11 16	11. 16	11. 15	11. 15	
77016	57954	38974	20076	01259	82522	63866	45288	26789	08367	90023	71755	60
76698	57637	38658	19761	00946	82211	63555	44979	26481	08061	89718	71451	59
76379	57320	38343	19447	00633	81899	63245	44670	26174	07755	89413	71147	58
76061	57003	38027	19133	00320	81588	62935	44361	25866	07448	89108	70844	57
75743	56686	37711	18819	00007	81276	62625	44052	25558	07142	88803	70540	56
75424	56369	37396	18505	99694	80965	62315	43743	25251	06836	88498	70236	55
75106	56052	37080	18190	99382	80653	62004	43435	24943	06529	88193	69932	54
74788	55735	36765	17876	99069	80342	61694	43126	24636	06223	87888	69629	53
74470	55418	36449	17562	98756	80030	61384	42817	24328	05917	87583	69325	52
74151	55101	36134	17248	98443	79719	61074	42508	24021	05611	87278	69021	51
73833	54785	35818	16934	98131	79407	60764	42199	23713	05305	86973	68718	50
73515	54468	35503	16620	97818	79096	60454	41891	23406	04998	86668	68414	49
73197	54151	35188	16306	97505	78785	60144	41582	23098	04692	86363	68110	48
72879	53834	34872	15992	97192	78473	59834	41273	22791	04386	86058	67807	47
72561	53518	34557	15678	96880	78162	59524	40965	22484	04080	85754	67503	46
72243	53201	34242	15364	96567	77851	59214	40656	22176	03774	85449	67200	45
71925	52884	33926	15050	96255	77540	58904	40347	21869	03468	85144	66896	44
71607	52568	33611	14736	95942	77228	58594	40039	21562	03162	84839	66593	43
71289	52251	33296	14422	95629	76917	58284	39730	21254	02856	84535	66289	42
70971	51934	32981	14108	95317	76606	57974	39422	20947	02550	84230	65986	41
70653	51618	32665	13794	95004	76295	57664	39113	20640	02244	83925	65682	40
70335	51301	32350	13481	94692	75984	57355	38804	20333	01938	83620	65379	39
70017	50985	32035	13167	94380	75672	57045	38496	20025	01632	83316	65076	38
69699	50668	31720	12853	94067	75361	56735	38187	19718	01326	83011	64772	37
69381	50352	31405	12539	93755	75050	56425	37879	19411	01020	82707	64469	36
69063	50035	31090	12226	93442	74739	56115	37571	19104	00715	82402	64166	35
68745	49719	30775	11912	93130	74428	55806	37262	18797	00409	82097	63862	34
68428	49403	30460	11598	92818	74117	55496	36954	18490	00103	81793	63559	33
68110	49086	30145	11284	92505	73806	55186	36645	18183	99797	81488	63256	32
67792	48770	29830	10971	92193	73495	54877	36337	17875	99491	81184	62953	31
67474	48453	29515	10657	91881	73184	54567	36029	17568	99186	80879	62649	30
67157	48137	29200	10344	91568	72873	54257	35720	17261	98880	80575	62346	29
66839	47821	28885	10030	91256	72562	53948	35412	16954	98574	80271	62043	28
66521	47505	28570	09716	90944	72251	53638	35104	16647	98268	79966	61740	27
66204	47188	28255	09403	90632	71941	53329	34796	16341	97963	79662	61437	26
65886	46872	27940	09089	90320	71630	53019	34487	16034	97657	79357	61134	25
65569	46556	27625	08776	90007	71319	52710	34179	15727	97351	79053	60831	24
65251	46240	27310	08462	89695	71008	52400	33871	15420	97046	78749	60527	23
64934	45924	26996	08149	89383	70697	52091	33563	15113	96740	78444	60224	22
64616	45607	26681	07836	89071	70387	51781	33255	14806	96435	78140	59921	21
64299	45291	26366	07522	88759	70076	51472	32947	14499	96129	77836	59618	20
63981	44975	26051	07209	88447	69765	51162	32639	14192	95824	77532	59315	19
63664	44659	25737	06895	88135	69454	50853	32330	13886	95518	77227	59012	18
63346	44343	25422	06582	87823	69144	50544	32022	13579	95213	76923	58710	17
63029	44027	25107	06269	87511	68833	50234	31714	13272	94907	76619	58407	16
62711	43711	24793	05955	87199	68522	49925	31406	12965	94602	76315	58104	15
62394	43395	24478	05642	86887	68212	49616	31098	12659	94296	76011	57801	14
62077	43079	24163	05329	86575	67901	49307	30790	12352	93991	75707	57498	13
61759	42763	23849	05016	86263	67591	48997	30482	12045	93686	75402	57195	12
61442	42447	23534	04703	85951	67280	48688	30175	11739	93380	75098	56892	11
61125	42131	23220	04389	85640	66970	48379	29867	11432	93075	74794	56590	10
60808	41815	22905	04076	85328	66659	48070	29559	11126	92770	74490	56287	9
60491	41500	22591	03763	85016	66349	47761	29251	10819	92464	74186	55984	8
60173	41184	22276	03450	84704	66038	47451	28943	10513	92159	73882	55681	7
59856	40868	21962	03137	84392	65728	47142	28635	10206	91854	73578	55379	6
59539	40552	21647	02824	84081	65417	46833	28327	09900	91549	73274	55076	5
59222	40237	21333	02511	83769	65107	46524	28020	09593	91244	72970	54773	4
58905	39921	21019	02198	83457	64797	46215	27712	09287	90938	72667	54471	3
58588	39605	20704	01885	83146	64486	45906	27404	08980	90633	72363	54168	2
58271	39289	20390	01572	82834	64176	45597	27097	08674	90328	72059	53865	1
57954	38974	20076	01259	82522	63866	45288	26789	08367	90023	71755	53563	0
11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	"

Tangent Deg. 86

4 Deg. Sine

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′
″	8.84	8.84	8.84	8.84	8.85	8.85	8.85	8.85	8.85	8.85	8.86	8.86
0	35845	53874	71827	89707	07512	25245	42905	60493	78010	95457	12833	30139
1	36146	54174	72126	90004	07809	25540	43199	60786	78302	95747	13122	30427
2	36447	54473	72425	90301	08105	25835	43493	61078	78593	96037	13411	30715
3	36748	54773	72723	90599	08401	26130	43786	61371	78884	96327	13700	31003
4	37049	55073	73022	90896	08697	26425	44080	61663	79176	96617	13989	31290
5	37350	55373	73320	91193	08993	26719	44374	61956	79467	96907	14277	31578
6	37651	55672	73619	91491	09289	27014	44667	62248	79758	97197	14566	31866
7	37952	55972	73917	91788	09585	27309	44961	62541	80049	97487	14855	32154
8	38253	56272	74216	92085	09881	27604	45254	62833	80341	97777	15144	32441
9	38554	56572	74514	92382	10177	27899	45548	63126	80632	98067	15433	32729
10	38855	56871	74812	92679	10473	28193	45842	63418	80923	98357	15722	33017
11	39156	57171	75111	92977	10769	28488	46135	63710	81214	98647	16011	33304
12	39457	57470	75409	93274	11065	28783	46429	64003	81505	98937	16299	33592
13	39758	57770	75708	93571	11361	29078	46722	64295	81796	99227	16588	33880
14	40059	58070	76006	93868	11657	29372	47016	64587	82087	99517	16877	34167
15	40359	58369	76304	94165	11952	29667	47309	64879	82379	99807	17166	34455
16	40660	58669	76602	94462	12248	29961	47602	65172	82670	00097	17454	34742
17	40961	58968	76901	94759	12544	30256	47896	65464	82961	00387	17743	35030
18	41262	59268	77199	95056	12840	30551	48189	65756	83252	00677	18032	35318
19	41562	59567	77497	95353	13136	30845	48483	66048	83543	00967	18321	35605
20	41863	59867	77795	95650	13431	31140	48776	66340	83834	01256	18609	35893
21	42164	60166	78094	95947	13727	31434	49069	66632	84125	01546	18898	36180
22	42464	60465	78392	96244	14023	31729	49363	66925	84416	01836	19186	36467
23	42765	60765	78690	96541	14319	32023	49656	67217	84706	02126	19475	36755
24	43066	61064	78988	96838	14614	32318	49949	67509	84997	02415	19764	37042
25	43366	61363	79286	97135	14910	32612	50242	67801	85288	02705	20052	37330
26	43667	61663	79584	97432	15205	32907	50536	68093	85579	02995	20341	37617
27	43967	61962	79882	97728	15501	33201	50829	68385	85870	03284	20629	37904
28	44268	62261	80180	98025	15797	33495	51122	68677	86161	03574	20918	38192
29	44568	62561	80478	98322	16092	33790	51415	68969	86452	03864	21206	38479
30	44869	62860	80776	98619	16388	34084	51708	69261	86742	04153	21495	38766
31	45169	63159	81074	98915	16683	34378	52001	69553	87033	04443	21783	39054
32	45470	63458	81372	99212	16979	34673	52294	69845	87324	04733	22071	39341
33	45770	63757	81670	99509	17274	34967	52588	70137	87615	05022	22360	39628
34	46071	64057	81968	99806	17570	35261	52881	70428	87905	05312	22648	39915
35	46371	64356	82266	00102	17865	35556	53174	70720	88196	05601	22936	40203
36	46671	64655	82564	00399	18161	35850	53467	71012	88487	05891	23225	40490
37	46972	64954	82862	00696	18456	36144	53760	71304	88777	06180	23513	40777
38	47272	65253	83160	00992	18752	36438	54053	71596	89068	06470	23801	41064
39	47572	65552	83457	01289	19047	36732	54346	71888	89358	06759	24090	41351
40	47873	65851	83755	01585	19342	37026	54639	72179	89649	07048	24378	41638
41	48173	66150	84053	01882	19638	37321	54932	72471	89940	07338	24666	41925
42	48473	66449	84351	02178	19933	37615	55224	72763	90230	07627	24954	42212
43	48773	66748	84648	02475	20228	37909	55517	73054	90521	07917	25243	42500
44	49073	67047	84946	02771	20523	38203	55810	73346	90811	08206	25531	42787
45	49374	67346	85244	03068	20819	38497	56103	73638	91102	08495	25819	43074
46	49674	67645	85541	03364	21114	38791	56396	73929	91392	08784	26107	43361
47	49974	67944	85839	03661	21409	39085	56689	74221	91683	09074	26395	43648
48	50274	68243	86137	03957	21704	39379	56982	74513	91973	09363	26683	43934
49	50574	68541	86434	04254	21999	39673	57274	74804	92263	09652	26971	44221
50	50874	68840	86732	04550	22295	39967	57567	75096	92554	09941	27259	44508
51	51174	69139	87030	04846	22590	40261	57860	75387	92844	10231	27548	44795
52	51474	69438	87327	05143	22885	40555	58152	75679	93135	10520	27836	45082
53	51774	69737	87625	05439	23180	40849	58445	75970	93425	10809	28124	45369
54	52074	70035	87922	05735	23475	41142	58738	76262	93715	11098	28412	45656
55	52374	70334	88220	06031	23770	41436	59030	76553	94005	11387	28700	45943
56	52674	70633	88517	06328	24065	41730	59323	76845	94296	11676	28987	46229
57	52974	70931	88815	06624	24360	42024	59616	77136	94586	11965	29275	46516
58	53274	71230	89112	06920	24655	42318	59908	77428	94876	12255	29563	46803
59	53574	71529	89409	07216	24950	42611	60201	77719	95166	12544	29851	47090
60	53874	71827	89707	07512	25245	42905	60493	78010	95457	12833	30139	47376
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′

Co-Sine Deg. 85

4 Deg. Co-Sine

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	
9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	″
89408	89319	89230	89141	89052	88962	88871	88780	88689	88598	88506	88414	60
89406	89318	89229	89140	89050	88960	88870	88779	88688	88596	88505	88412	59
89405	89316	89228	89138	89049	88959	88868	88777	88686	88595	88503	88411	58
89403	89315	89226	89137	89047	88957	88867	88776	88685	88593	88501	88409	57
89402	89313	89225	89135	89046	88956	88865	88774	88683	88592	88500	88408	56
89401	89312	89223	89134	89044	88954	88864	88773	88682	88590	88498	88406	55
89399	89311	89222	89132	89043	88953	88862	88771	88680	88589	88497	88405	54
89398	89309	89220	89131	89041	88951	88861	88770	88679	88587	88495	88403	53
89396	89308	89219	89129	89040	88950	88859	88768	88677	88586	88494	88401	52
89395	89306	89217	89128	89038	88948	88858	88767	88676	88584	88492	88400	51
89393	89305	89216	89126	89037	88947	88856	88765	88674	88583	88491	88398	50
89392	89303	89214	89125	89035	88945	88855	88764	88673	88581	88489	88397	49
89390	89302	89213	89123	89034	88944	88853	88762	88671	88580	88488	88395	48
89389	89300	89211	89122	89032	88942	88852	88761	88670	88578	88486	88394	47
89387	89299	89210	89120	89031	88941	88850	88759	88668	88576	88485	88392	46
89386	89297	89208	89119	89029	88939	88849	88758	88667	88575	88483	88391	45
89384	89296	89207	89117	89028	88938	88847	88756	88665	88573	88481	88389	44
89383	89294	89205	89116	89026	88936	88846	88755	88663	88572	88480	88388	43
89381	89293	89204	89114	89025	88935	88844	88753	88662	88570	88478	88386	42
89380	89291	89202	89113	89023	88933	88843	88752	88660	88569	88477	88385	41
89378	89290	89201	89111	89022	88932	88841	88750	88659	88567	88475	88383	40
89377	89288	89199	89110	89020	88930	88839	88749	88657	88566	88474	88381	39
89375	89287	89198	89108	89019	88928	88838	88747	88656	88564	88472	88380	38
89374	89285	89196	89107	89017	88927	88836	88746	88654	88563	88471	88378	37
89373	89284	89195	89105	89016	88925	88835	88744	88653	88561	88469	88377	36
89371	89282	89193	89104	89014	88924	88833	88743	88651	88560	88468	88375	35
89370	89281	89192	89102	89013	88922	88832	88741	88650	88558	88466	88374	34
89368	89279	89190	89101	89011	88921	88830	88740	88648	88557	88465	88372	33
89367	89278	89189	89099	89010	88919	88829	88738	88647	88555	88463	88371	32
89365	89276	89187	89098	89008	88918	88827	88736	88645	88554	88462	88369	31
89364	89275	89186	89096	89007	88916	88826	88735	88644	88552	88460	88368	30
89362	89273	89184	89095	89005	88915	88824	88733	88642	88550	88458	88366	29
89361	89272	89183	89093	89004	88913	88823	88732	88641	88549	88457	88364	28
89359	89271	89181	89092	89002	88912	88821	88730	88639	88547	88455	88363	27
89358	89269	89180	89090	89001	88910	88820	88729	88638	88546	88454	88361	26
89356	89268	89178	89089	88999	88909	88818	88727	88636	88544	88452	88360	25
89355	89266	89177	89087	88998	88907	88817	88726	88635	88543	88451	88358	24
89353	89265	89175	89086	88996	88906	88815	88724	88633	88541	88449	88357	23
89352	89263	89174	89084	88995	88904	88814	88723	88631	88540	88448	88355	22
89350	89262	89173	89083	88993	88903	88812	88721	88630	88538	88446	88354	21
89349	89260	89171	89082	88992	88901	88811	88720	88628	88537	88445	88352	20
89347	89259	89170	89080	88990	88900	88809	88718	88627	88535	88443	88351	19
89346	89257	89168	89079	88989	88898	88808	88717	88625	88534	88442	88349	18
89344	89256	89167	89077	88987	88897	88806	88715	88624	88532	88440	88348	17
89343	89254	89165	89076	88986	88895	88805	88714	88622	88531	88438	88346	16
89342	89253	89164	89074	88984	88894	88803	88712	88621	88529	88437	88344	15
89340	89251	89162	89073	88983	88892	88802	88711	88619	88528	88435	88343	14
89339	89250	89161	89071	88981	88891	88800	88709	88618	88526	88434	88341	13
89337	89248	89159	89070	88980	88889	88799	88708	88616	88524	88432	88340	12
89336	89247	89158	89068	88978	88888	88797	88706	88615	88523	88431	88338	11
89334	89245	89156	89067	88977	88886	88796	88705	88613	88521	88429	88337	10
89333	89244	89155	89065	88975	88885	88794	88703	88612	88520	88428	88335	9
89331	89242	89153	89064	88974	88883	88793	88702	88610	88518	88426	88334	8
89330	89241	89152	89062	88972	88882	88791	88700	88609	88517	88425	88332	7
89328	89239	89150	89061	88971	88880	88790	88698	88607	88515	88423	88331	6
89327	89238	89149	89059	88969	88879	88788	88697	88606	88514	88422	88329	5
89325	89236	89147	89058	88968	88877	88787	88695	88604	88512	88420	88327	4
89324	89235	89146	89056	88966	88876	88785	88694	88602	88511	88418	88326	3
89322	89233	89144	89055	88965	88874	88784	88692	88601	88509	88417	88324	2
89321	89232	89143	89053	88963	88873	88782	88691	88599	88508	88415	88323	1
89319	89230	89141	89052	88962	88871	88780	88689	88598	88506	88414	88321	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	″

Sine Deg. 85

4 Deg. Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′
″	8.84	8.84	8.84	8.85	8.85	8.85	8.85	8.85	8.85	8.86	8.86	8.86
0	46437	64554	82597	00566	18461	36283	54034	71713	89321	06859	24327	41725
1	46740	64856	82897	00864	18758	36580	54329	72007	89614	07150	24617	42015
2	47042	65157	83197	01163	19056	36876	54624	72301	89907	07442	24908	42304
3	47345	65458	83497	01462	19354	37173	54920	72595	90200	07734	25198	42593
4	47647	65760	83797	01761	19651	37469	55215	72889	90492	08025	25489	42883
5	47950	66061	84097	02060	19949	37765	55510	73183	90785	08317	25779	43172
6	48252	66362	84397	02358	20246	38062	55805	73477	91078	08609	26070	43461
7	48555	66663	84697	02657	20544	38358	56100	73771	91371	08900	26360	43751
8	48857	66964	84997	02956	20841	38654	56395	74065	91663	09192	26650	44040
9	49160	67265	85297	03254	21139	38951	56690	74359	91956	09483	26941	44329
10	49462	67567	85597	03553	21436	39247	56985	74653	92249	09775	27231	44618
11	49764	67868	85897	03852	21734	39543	57280	74946	92542	10066	27522	44908
12	50067	68169	86197	04150	22031	39839	57575	75240	92834	10358	27812	45197
13	50369	68470	86496	04449	22329	40135	57870	75534	93127	10649	28102	45486
14	50671	68771	86796	04748	22626	40432	58165	75828	93419	10941	28392	45775
15	50974	69072	87096	05046	22923	40728	58460	76122	93712	11232	28683	46064
16	51276	69373	87396	05345	23221	41024	58755	76415	94005	11524	28973	46353
17	51578	69674	87695	05643	23518	41320	59050	76709	94297	11815	29263	46642
18	51880	69975	87995	05942	23815	41616	59345	77003	94590	12106	29553	46931
19	52182	70276	88295	06240	24112	41912	59640	77296	94882	12398	29844	47220
20	52485	70577	88595	06539	24410	42208	59935	77590	95175	12689	30134	47510
21	52787	70878	88894	06837	24707	42504	60230	77884	95467	12980	30424	47799
22	53089	71179	89194	07136	25004	42800	60525	78177	95760	13272	30714	48088
23	53391	71479	89494	07434	25301	43096	60819	78471	96052	13563	31004	48376
24	53693	71780	89793	07732	25599	43392	61114	78765	96345	13854	31294	48665
25	53995	72081	90093	08031	25896	43688	61409	79058	96637	14145	31584	48954
26	54297	72382	90392	08329	26193	43984	61704	79352	96929	14437	31874	49243
27	54599	72683	90692	08627	26490	44280	61998	79645	97222	14728	32165	49532
28	54901	72983	90991	08926	26787	44576	62293	79939	97514	15019	32455	49821
29	55203	73284	91291	09224	27084	44872	62588	80232	97806	15310	32745	50110
30	55505	73585	91590	09522	27381	45168	62882	80526	98099	15601	33035	50399
31	55807	73886	91890	09821	27678	45464	63177	80819	98391	15892	33325	50688
32	56109	74186	92189	10119	27975	45759	63472	81113	98683	16184	33614	50976
33	56411	74487	92489	10417	28272	46055	63766	81406	98975	16475	33904	51265
34	56713	74788	92788	10715	28569	46351	64061	81700	99268	16766	34194	51554
35	57015	75088	93088	11013	28866	46647	64355	81993	99560	17057	34484	51843
36	57317	75389	93387	11311	29163	46942	64650	82286	99852	17348	34774	52131
37	57618	75689	93686	11610	29460	47238	64944	82580	00144	17639	35064	52420
38	57920	75990	93986	11908	29757	47534	65239	82873	00436	17930	35354	52709
39	58222	76290	94285	12206	30054	47829	65533	83166	00728	18221	35644	52998
40	58524	76591	94584	12504	30351	48125	65828	83460	01021	18512	35933	53286
41	58825	76891	94883	12802	30647	48421	66122	83753	01313	18803	36223	53575
42	59127	77192	95183	13100	30944	48716	66417	84046	01605	19094	36513	53863
43	59429	77492	95482	13398	31241	49012	66711	84339	01897	19384	36803	54152
44	59730	77793	95781	13696	31538	49308	67006	84632	02189	19675	37092	54441
45	60032	78093	96080	13994	31835	49603	67300	84926	02481	19966	37382	54729
46	60334	78394	96379	14292	32131	49899	67594	85219	02773	20257	37672	55018
47	60635	78694	96679	14590	32428	50194	67889	85512	03065	20548	37961	55306
48	60937	78994	96978	14888	32725	50490	68183	85805	03357	20839	38251	55595
49	61238	79295	97277	15185	33021	50785	68477	86098	03649	21129	38541	55883
50	61540	79595	97576	15483	33318	51081	68771	86391	03941	21420	38830	56172
51	61842	79895	97875	15781	33615	51376	69066	86684	04233	21711	39120	56460
52	62143	80195	98174	16079	33911	51671	69360	86977	04524	22002	39409	56749
53	62445	80496	98473	16377	34208	51967	69654	87270	04816	22292	39699	57037
54	62746	80796	98772	16675	34504	52262	69948	87563	05108	22583	39988	57325
55	63047	81096	99071	16972	34801	52557	70242	87856	05400	22874	40278	57614
56	63349	81396	99370	17270	35098	52853	70537	88149	05692	23164	40567	57902
57	63650	81697	99669	17568	35394	53148	70831	88442	05983	23455	40857	58190
58	63952	81997	99968	17865	35691	53443	71125	88735	06275	23745	41146	58479
59	64253	82297	00267	18163	35987	53739	71419	89028	06567	24036	41436	58767
60	64554	82597	00566	18461	36283	54034	71713	89321	06859	24327	41725	59055
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′

Co-Tangent Deg. 85

4 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	″
11.15	11.15	11.15	11.14	11.14	11.14	11.14	11.14	11.14	11.13	11.13	11.13	
53563	35446	17403	99434	81539	63717	45966	28287	10679	93141	75673	58275	60
53260	35144	17103	99136	81242	63420	45671	27993	10386	92850	75383	57985	59
52958	34843	16803	98837	80944	63124	45376	27699	10093	92558	75092	57696	58
52655	34542	16503	98538	80646	62827	45080	27405	09800	92266	74802	57407	57
52353	34240	16203	98239	80349	62531	44785	27111	09508	91975	74511	57117	56
52050	33939	15903	97940	80051	62235	44490	26817	09215	91683	74221	56828	55
51748	33638	15603	97642	79754	61938	44195	26523	08922	91391	73930	56539	54
51445	33337	15303	97343	79456	61642	43900	26229	08629	91100	73640	56249	53
51143	33036	15003	97044	79159	61346	43605	25935	08337	90808	73350	55960	52
50840	32735	14703	96746	78861	61049	43310	25641	08044	90517	73059	55671	51
50538	32433	14403	96447	78564	60753	43015	25347	07751	90225	72769	55382	50
50236	32132	14103	96148	78266	60457	42720	25054	07458	89934	72478	55092	49
49933	31831	13803	95850	77969	60161	42425	24760	07166	89642	72188	54803	48
49631	31530	13504	95551	77671	59865	42130	24466	06873	89351	71898	54514	47
49329	31229	13204	95252	77374	59568	41835	24172	06581	89059	71608	54225	46
49026	30928	12904	94954	77077	59272	41540	23878	06288	88768	71317	53936	45
48724	30627	12604	94655	76779	58976	41245	23585	05995	88476	71027	53647	44
48422	30326	12305	94357	76482	58680	40950	23291	05703	88185	70737	53358	43
48120	30025	12005	94058	76185	58384	40655	22997	05410	87894	70447	53069	42
47818	29724	11705	93760	75888	58088	40360	22704	05118	87602	70156	52780	41
47515	29423	11405	93461	75590	57792	40065	22410	04825	87311	69866	52490	40
47213	29122	11106	93163	75293	57496	39770	22116	04533	87020	69576	52201	39
46911	28821	10806	92864	74996	57200	39475	21823	04240	86728	69286	51912	38
46609	28521	10506	92566	74699	56904	39181	21529	03948	86437	68996	51624	37
46307	28220	10207	92268	74401	56608	38886	21235	03655	86146	68706	51335	36
46005	27919	09907	91969	74104	56312	38591	20942	03363	85855	68416	51046	35
45703	27618	09608	91671	73807	56016	38296	20648	03071	85563	68126	50757	34
45401	27317	09308	91373	73510	55720	38002	20355	02778	85272	67835	50468	33
45099	27017	09009	91074	73213	55424	37707	20061	02486	84981	67545	50179	32
44797	26716	08709	90776	72916	55128	37412	19768	02194	84690	67255	49890	31
44495	26415	08410	90478	72619	54832	37118	19474	01901	84399	66965	49601	30
44193	26114	08110	90179	72322	54536	36822	19181	01609	84108	66675	49312	29
43891	25814	07811	89881	72025	54241	36528	18887	01317	83816	66386	49024	28
43589	25513	07511	89583	71728	53945	36234	18594	01025	83525	66096	48735	27
43287	25212	07212	89285	71431	53649	35939	18300	00732	83234	65806	48446	26
42985	24912	06912	88987	71134	53353	35645	18007	00440	82943	65516	48157	25
42683	24611	06613	88689	70837	53058	35350	17714	00148	82652	65226	47869	24
42382	24311	06314	88390	70540	52762	35056	17420	99856	82361	64936	47580	23
42080	24010	06014	88092	70243	52466	34761	17127	99564	82070	64646	47291	22
41778	23710	05715	87794	69946	52171	34467	16834	99272	81779	64356	47002	21
41476	23409	05416	87496	69649	51875	34172	16540	98979	81488	64067	46714	20
41175	23109	05117	87198	69353	51579	33878	16247	98687	81197	63777	46425	19
40873	22808	04817	86900	69056	51284	33583	15954	98395	80906	63487	46137	18
40571	22508	04518	86602	68759	50988	33289	15661	98103	80616	63197	45848	17
40270	22207	04219	86304	68462	50692	32994	15368	97811	80325	62908	45559	16
39968	21907	03920	86006	68165	50397	32700	15074	97519	80034	62618	45271	15
39666	21606	03621	85708	67869	50101	32406	14781	97227	79743	62328	44982	14
39365	21306	03321	85410	67572	49806	32111	14488	96935	79452	62039	44694	13
39063	21006	03022	85112	67275	49510	31817	14195	96643	79161	61749	44405	12
38762	20705	02723	84815	66976	49215	31523	13902	96351	78871	61459	44117	11
38460	20405	02424	84517	66682	48919	31229	13609	96059	78580	61170	43828	10
38158	20105	02125	84219	66385	48624	30934	13316	95767	78289	60880	43540	9
37857	19805	01826	83921	66089	48329	30640	13023	95476	77998	60591	43251	8
37555	19504	01527	83623	65792	48033	30346	12730	95184	77708	60301	42963	7
37254	19204	01228	83325	65496	47738	30052	12437	94892	77417	60012	42675	6
36953	18904	00929	83028	65199	47443	29758	12144	94600	77126	59722	42386	5
36651	18604	00630	82730	64902	47147	29463	11851	94308	76836	59433	42098	4
36350	18303	00331	82432	64606	46852	29169	11558	94017	76545	59143	41810	3
36048	18003	00032	82135	64309	46557	28875	11265	93725	76255	58854	41521	2
35747	17703	99733	81837	64013	46261	28581	10972	93433	75964	58564	41233	1
35446	17403	99434	81539	63717	45966	28287	10679	93141	75673	58275	40945	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	″

Tangent Deg. 85

4 Deg. Sine

"	12′	13′	14′	15′	16′	17′	18′	19′	20′	21′	22′	23′
	8. 86	8. 86	8. 86	8. 86	8. 87	8. 87	8. 87	8. 87	8. 87	8. 87	8. 88	8. 88
0	47376	64545	81646	98680	15646	32546	49381	66150	82854	99493	16069	32581
1	47663	64831	81931	98963	15928	32827	49661	66428	83131	99770	16345	32856
2	47950	65116	82215	99246	16211	33109	49941	66707	83409	00047	16620	33131
3	48237	65402	82499	99530	16493	33390	50221	66986	83687	00324	16896	33405
4	48523	65687	82784	99813	16775	33671	50501	67265	83965	00600	17172	33680
5	48810	65973	83068	00096	17057	33952	50781	67544	84243	00877	17447	33955
6	49096	66258	83353	00379	17339	34233	51060	67823	84520	01154	17723	34229
7	49383	66544	83637	00663	17621	34514	51340	68102	84798	01430	17999	34504
8	49670	66829	83921	00946	17903	34795	51620	68380	85076	01707	18274	34778
9	49956	67115	84206	01229	18185	35076	51900	68659	85354	01984	18550	35053
10	50243	67400	84490	01512	18467	35357	52180	68938	85631	02260	18825	35327
11	50529	67686	84774	01795	18750	35638	52460	69217	85909	02537	19101	35602
12	50816	67971	85058	02078	19032	35918	52740	69496	86187	02813	19377	35876
13	51102	68256	85342	02361	19314	36199	53019	69774	86464	03090	19652	36151
14	51389	68542	85627	02644	19595	36480	53299	70053	86742	03367	19928	36425
15	51675	68827	85911	02928	19877	36761	53579	70332	87019	03643	20203	36700
16	51961	69112	86195	03211	20159	37042	53859	70610	87297	03920	20479	36974
17	52248	69397	86479	03494	20441	37323	54138	70889	87575	04196	20754	37248
18	52534	69683	86763	03777	20723	37604	54418	71168	87852	04473	21029	37523
19	52821	69968	87047	04060	21005	37884	54698	71446	88130	04749	21305	37797
20	53107	70253	87331	04343	21287	38165	54977	71725	88407	05026	21580	38072
21	53393	70538	87616	04626	21569	38446	55257	72003	88685	05302	21856	38346
22	53680	70824	87900	04908	21851	38727	55537	72282	88962	05578	22131	38620
23	53966	71109	88184	05191	22132	39007	55816	72560	89240	05855	22406	38894
24	54252	71394	88468	05474	22414	39288	56096	72839	89517	06131	22682	39169
25	54538	71679	88752	05757	22696	39569	56376	73117	89795	06408	22957	39443
26	54825	71964	89036	06040	22978	39849	56655	73396	90072	06684	23232	39717
27	55111	72249	89320	06323	23259	40130	56935	73674	90349	06960	23507	39991
28	55397	72534	89604	06606	23541	40411	57214	73953	90627	07237	23783	40266
29	55683	72819	89887	06888	23823	40691	57494	74231	90904	07513	24058	40540
30	55969	73104	90171	07171	24105	40972	57773	74510	91181	07789	24333	40814
31	56256	73389	90455	07454	24386	41252	58053	74788	91459	08065	24608	41088
32	56542	73674	90739	07737	24668	41533	58332	75066	91736	08342	24883	41362
33	56828	73959	91023	08019	24949	41813	58612	75345	92013	08618	25159	41636
34	57114	74244	91307	08302	25231	42094	58891	75623	92291	08894	25434	41911
35	57400	74529	91591	08585	25513	42374	59170	75901	92568	09170	25709	42185
36	57686	74814	91874	08868	25794	42655	59450	76180	92845	09446	25984	42459
37	57972	75099	92158	09150	26076	42935	59729	76458	93122	09722	26259	42733
38	58258	75384	92442	09433	26357	43216	60008	76736	93399	09999	26534	43107
39	58544	75669	92726	09715	26639	43496	60288	77014	93677	10275	26809	43381
40	58830	75953	93009	09998	26920	43776	60567	77293	93954	10551	27084	43555
41	59116	76238	93293	10281	27202	44057	60846	77571	94231	10827	27359	43829
42	59402	76523	93577	10563	27483	44337	61126	77849	94508	11103	27634	44103
43	59688	76808	93860	10846	27765	44618	61405	78127	94785	11379	27909	44377
44	59974	77093	94144	11128	28046	44898	61684	78405	95062	11655	28184	44651
45	60259	77377	94428	11411	28328	45178	61963	78684	95339	11931	28459	44924
46	60545	77662	94711	11693	28609	45458	62243	78962	95616	12207	28734	45198
47	60831	77947	94995	11976	28890	45739	62522	79240	95893	12483	29009	45472
48	61117	78231	95278	12258	29172	46019	62801	79518	96170	12759	29284	45746
49	61403	78516	95562	12541	29453	46299	63080	79796	96447	13035	29559	46020
50	61689	78801	95845	12823	29734	46579	63359	80074	96724	13311	29834	46294
51	61974	79085	96129	13105	30016	46860	63638	80352	97001	13587	30109	46567
52	62260	79370	96412	13388	30297	47140	63917	80630	97278	13863	30383	46841
53	62546	79655	96696	13670	30578	47420	64196	80908	97555	14138	30658	47115
54	62831	79939	96979	13953	30859	47700	64476	81186	97832	14414	30933	47389
55	63117	80224	97263	14235	31141	47980	64755	81464	98109	14690	31208	47663
56	63403	80508	97546	14517	31422	48260	65034	81742	98386	14966	31483	47936
57	63688	80793	97830	14799	31703	48540	65313	82020	98663	15242	31757	48210
58	63974	81077	98113	15082	31984	48821	65592	82298	98940	15518	32032	48484
59	64260	81362	98396	15364	32265	49101	65871	82576	99216	15793	32307	48757
60	64545	81646	98680	15646	32546	49381	66150	82854	99493	16069	32581	49031
"	47′	46′	45′	44′	43′	42′	41′	40′	39′	38′	37′	36′

Co-Sine Deg. 85

4 Deg. Co-Sine

12′	13′	14′	15′	16′	17′	18′	19′	20′	21′	22′	23′	"
9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	
88321	88228	88135	88041	87947	87853	87758	87663	87567	87471	87375	87278	60
88320	88227	88133	88040	87946	87851	87756	87661	87566	87470	87373	87277	59
88318	88225	88132	88038	87944	87850	87755	87660	87564	87468	87372	87275	58
88317	88224	88130	88037	87942	87848	87753	87658	87562	87467	87370	87274	57
88315	88222	88129	88035	87941	87846	87752	87656	87561	87465	87369	87272	56
88314	88221	88127	88033	87939	87845	87750	87655	87559	87463	87367	87270	55
88312	88219	88126	88032	87938	87843	87748	87653	87558	87462	87365	87269	54
88310	88217	88124	88030	87936	87842	87747	87652	87556	87460	87364	87267	53
88309	88216	88122	88029	87935	87840	87745	87650	87554	87459	87362	87265	52
88307	88214	88121	88027	87933	87839	87744	87648	87553	87457	87361	87264	51
88306	88213	88119	88026	87931	87837	87742	87647	87551	87455	87359	87262	50
88304	88211	88118	88024	87930	87835	87741	87645	87550	87454	87357	87261	49
88303	88210	88116	88022	87928	87834	87740	87644	87548	87452	87356	87259	48
88301	88208	88115	88021	87927	87832	87737	87642	87546	87450	87354	87257	47
88300	88207	88113	88019	87925	87831	87736	87641	87545	87449	87353	87256	46
88298	88205	88112	88018	87924	87829	87734	87639	87543	87447	87351	87254	45
88296	88203	88110	88016	87922	87828	87733	87637	87542	87446	87349	87253	44
88295	88202	88108	88015	87920	87826	87731	87636	87540	87444	87348	87251	43
88293	88200	88107	88013	87919	87824	87729	87634	87539	87442	87346	87249	42
88292	88199	88105	88012	87917	87823	87728	87633	87537	87441	87344	87248	41
88290	88197	88104	88010	87916	87821	87726	87631	87535	87439	87343	87246	40
88289	88196	88102	88008	87914	87820	87725	87629	87534	87438	87341	87244	39
88287	88194	88101	88007	87913	87818	87723	87628	87532	87436	87340	87243	38
88286	88193	88099	88005	87911	87816	87722	87626	87531	87434	87338	87241	37
88284	88191	88098	88004	87909	87815	87720	87625	87529	87433	87336	87240	36
88283	88189	88096	88002	87908	87813	87718	87623	87527	87431	87335	87238	35
88281	88188	88094	88001	87906	87812	87717	87621	87526	87430	87333	87236	34
88279	88186	88093	87999	87905	87810	87715	87620	87524	87428	87332	87235	33
88278	88185	88091	87997	87903	87809	87714	87618	87523	87426	87330	87233	32
88276	88183	88090	87996	87902	87807	87712	87617	87521	87425	87328	87232	31
88275	88182	88088	87994	87900	87805	87710	87615	87519	87423	87327	87230	30
88273	88180	88087	87993	87898	87804	87709	87613	87518	87422	87325	87228	29
88272	88179	88085	87991	87897	87802	87707	87612	87516	87420	87324	87227	28
88270	88177	88083	87990	87895	87801	87706	87610	87515	87418	87322	87225	27
88269	88175	88082	87988	87894	87799	87704	87609	87513	87417	87320	87223	26
88267	88174	88080	87986	87892	87797	87702	87607	87511	87415	87319	87222	25
88266	88172	88079	87985	87891	87796	87701	87605	87510	87414	87317	87220	24
88264	88171	88077	87983	87889	87794	87699	87604	87508	87412	87315	87219	23
88262	88169	88076	87982	87887	87793	87698	87602	87507	87410	87314	87217	22
88261	88168	88074	87980	87886	87791	87696	87601	87505	87409	87312	87215	21
88259	88166	88073	87979	87884	87790	87695	87599	87503	87407	87311	87214	20
88258	88165	88071	87977	87883	87788	87693	87598	87502	87406	87309	87212	19
88256	88163	88069	87975	87881	87786	87691	87596	87500	87404	87307	87211	18
88255	88161	88068	87974	87880	87785	87690	87594	87499	87402	87306	87209	17
88253	88160	88066	87972	87878	87783	87688	87593	87497	87401	87304	87207	16
88252	88158	88065	87971	87876	87782	87687	87591	87495	87399	87303	87206	15
88250	88157	88063	87969	87875	87780	87685	87590	87494	87398	87301	87204	14
88248	88155	88062	87968	87873	87779	87683	87588	87492	87396	87299	87202	13
88247	88154	88060	87966	87872	87777	87682	87586	87491	87394	87298	87201	12
88245	88152	88058	87964	87870	87775	87680	87585	87489	87393	87296	87199	11
88244	88151	88057	87963	87869	87774	87679	87583	87487	87391	87295	87198	10
88242	88149	88055	87961	87867	87772	87677	87582	87486	87390	87293	87196	9
88241	88147	88054	87960	87865	87771	87675	87580	87484	87388	87291	87194	8
88239	88146	88052	87958	87864	87769	87674	87578	87483	87386	87290	87193	7
88238	88144	88051	87957	87862	87767	87672	87577	87481	87385	87288	87191	6
88236	88143	88049	87955	87861	87766	87671	87575	87479	87383	87286	87189	5
88234	88141	88048	87953	87859	87764	87669	87574	87478	87381	87285	87188	4
88233	88140	88046	87952	87857	87763	87668	87572	87476	87380	87283	87186	3
88231	88138	88044	87950	87856	87761	87666	87570	87475	87378	87282	87185	2
88230	88137	88043	87949	87854	87760	87664	87569	87473	87377	87280	87183	1
88228	88135	88041	87947	87853	87758	87663	87567	87471	87375	87278	87181	0
47′	46′	45′	44′	43′	42′	41′	40′	39′	38′	37′	36′	"

Sine Deg. 85

4 Deg. Tangent

″	12′	13′	14′	15′	16′	17′	18′	19′	20′	21′	22′	23′
	8. 86	8. 86	8. 86	8. 87	8. 87	8. 87	8. 87	8. 87	8. 87	8. 88	8. 88	8. 88
0	59055	76317	93511	10638	27699	44694	61623	78487	95286	12022	28694	45303
1	59343	76604	93797	10923	27983	44976	61904	78767	95566	12300	28971	45579
2	59632	76891	94083	11208	28267	45259	62186	79048	95845	12579	29249	45856
3	59920	77178	94369	11493	28550	45542	62467	79328	96125	12857	29526	46132
4	60208	77465	94655	11778	28834	45824	62749	79609	96404	13135	29803	46408
5	60496	77752	94941	12063	29118	46107	63030	79889	96683	13414	30080	46684
6	60784	78039	95227	12347	29401	46389	63312	80170	96963	13692	30358	46961
7	61073	78326	95513	12632	29685	46672	63593	80450	97242	13970	30635	47237
8	61361	78613	95799	12917	29969	46955	63875	80730	97521	14249	30912	47513
9	61649	78900	96085	13202	30252	47237	64156	81011	97801	14527	31189	47789
10	61937	79187	96370	13486	30536	47520	64438	81291	98080	14805	31467	48065
11	62225	79474	96656	13771	30820	47802	64719	81571	98359	15083	31744	48341
12	62513	79761	96942	14056	31103	48085	65001	81852	98639	15361	32021	48617
13	62801	80048	97228	14340	31387	48367	65282	82132	98918	15640	32298	48893
14	63089	80335	97514	14625	31670	48650	65563	82412	99197	15918	32575	49169
15	63377	80622	97799	14910	31954	48932	65845	82693	99476	16196	32852	49446
16	63665	80909	98085	15194	32237	49214	66126	82973	99755	16474	33129	49722
17	63953	81196	98371	15479	32521	49497	66407	83253	00035	16752	33406	49998
18	64241	81482	98656	15764	32804	49779	66689	83533	00314	17030	33683	50274
19	64529	81769	98942	16048	33088	50062	66970	83814	00593	17308	33960	50550
20	64817	82056	99228	16333	33371	50344	67251	84094	00872	17586	34237	50825
21	65105	82343	99513	16617	33655	50626	67532	84374	01151	17864	34514	51101
22	65392	82629	99799	16902	33938	50908	67814	84654	01430	18142	34791	51377
23	65680	82916	00085	17186	34221	51191	68095	84934	01709	18420	35068	51653
24	65968	83203	00370	17471	34505	51473	68376	85214	01988	18698	35345	51929
25	66256	83489	00656	17755	34788	51755	68657	85494	02267	18976	35622	52205
26	66544	83776	00941	18039	35071	52038	68938	85774	02546	19254	35899	52481
27	66831	84063	01227	18324	35355	52320	69220	86055	02825	19532	36176	52757
28	67119	84349	01512	18608	35638	52602	69501	86335	03104	19810	36453	53033
29	67407	84636	01798	18893	35921	52884	69782	86615	03383	20088	36730	53308
30	67695	84923	02083	19177	36205	53166	70063	86895	03662	20366	37006	53584
31	67982	85209	02369	19461	36488	53448	70344	87175	03941	20644	37283	53860
32	68270	85496	02654	19746	36771	53731	70625	87455	04220	20922	37560	54136
33	68558	85782	02939	20030	37054	54013	70906	87734	04499	21199	37837	54411
34	68845	86069	03225	20314	37337	54295	71187	88014	04778	21477	38113	54687
35	69133	86355	03510	20598	37620	54577	71468	88294	05056	21755	38390	54963
36	69420	86642	03796	20883	37904	54859	71749	88574	05335	22033	38667	55238
37	69708	86928	04081	21167	38187	55141	72030	88854	05614	22310	38944	55514
38	69996	87215	04366	21451	38470	55423	72311	89134	05893	22588	39220	55790
39	70283	87501	04651	21735	38753	55705	72592	89414	06172	22866	39497	56065
40	70571	87787	04937	22019	39036	55987	72873	89694	06450	23144	39774	56341
41	70858	88074	05222	22304	39319	56269	73153	89973	06729	23421	40050	56617
42	71146	88360	05507	22588	39602	56551	73434	90253	07008	23699	40327	56892
43	71433	88646	05792	22872	39885	56833	73715	90533	07287	23977	40604	57168
44	71721	88933	06078	23156	40168	57115	73996	90813	07565	24254	40880	57443
45	72008	89219	06363	23440	40451	57397	74277	91092	07844	24532	41157	57719
46	72295	89505	06648	23724	40734	57678	74558	91372	08123	24809	41433	57994
47	72583	89792	06933	24008	41017	57960	74838	91652	08401	25087	41710	58270
48	72870	90078	07218	24292	41300	58242	75119	91932	08680	25365	41986	58545
49	73157	90364	07503	24576	41583	58524	75400	92211	08958	25642	42263	58821
50	73445	90650	07789	24860	41866	58806	75681	92491	09237	25920	42539	59096
51	73732	90936	08074	25144	42149	59087	75961	92770	09516	26197	42816	59372
52	74019	91223	08359	25428	42431	59369	76242	93050	09794	26475	43092	59647
53	74307	91509	08644	25712	42714	59651	76523	93330	10073	26752	43369	59922
54	74594	91795	08929	25996	42997	59933	76803	93609	10351	27030	43645	60198
55	74881	92081	09214	26280	43280	60214	77084	93889	10630	27307	43921	60473
56	75168	92367	09499	26564	43563	60496	77364	94168	10908	27584	44198	60748
57	75456	92653	09784	26848	43845	60778	77645	94448	11187	27862	44474	61024
58	75743	92939	10069	27131	44128	61059	77926	94727	11465	28139	44750	61299
59	76030	93225	10353	27415	44411	61341	78206	95007	11744	28417	45027	61574
60	76317	93511	10638	27699	44694	61623	78487	95286	12022	28694	45303	61850
″	47′	46′	45′	44′	43′	42′	41′	40′	39′	38′	37′	36′

Co-Tangent Deg. 85

4 Deg. Co-Tangent

12′	13′	14′	15′	16′	17′	18′	19′	20′	21′	22′	23′	″
11. 13	11. 13	11. 13	11. 12	11. 12	11. 12	11. 12	11. 12	11. 12	11. 11	11. 11	11. 11	
40945	23683	06489	89362	72301	55306	38377	21513	04714	87978	71306	54697	60
40657	23396	06203	89077	72017	55024	38096	21233	04434	87700	71029	54421	59
40368	23109	05917	88792	71733	54741	37814	20952	04155	87421	70751	54144	58
40080	22822	05631	88507	71450	54458	37533	20672	03875	87143	70474	53868	57
39792	22535	05345	88222	71166	54176	37251	20391	03596	86865	70197	53592	56
39504	22248	05059	87937	70882	53893	36970	20111	03317	86586	69920	53316	55
39216	21961	04773	87653	70599	53611	36688	19830	03037	86308	69642	53039	54
38927	21674	04487	87368	70315	53328	36407	19550	02758	86030	69365	52763	53
38639	21387	04201	87083	70031	53045	36125	19270	02479	85751	69088	52487	52
38351	21100	03915	86798	69748	52763	35844	18989	02199	85473	68811	52211	51
38063	20813	03630	86514	69464	52480	35562	18709	01920	85195	68533	51935	50
37775	20526	03344	86229	69180	52198	35281	18429	01641	84917	68256	51659	49
37487	20239	03058	85944	68897	51915	34999	18148	01361	84639	67979	51383	48
37199	19952	02772	85660	68613	51633	34718	17868	01082	84360	67702	51107	47
36911	19665	02486	85375	68330	51350	34437	17588	00803	84082	67425	50831	46
36623	19378	02201	85090	68046	51068	34155	17307	00524	83804	67148	50554	45
36335	19091	01915	84806	67763	50786	33874	17027	00245	83526	66871	50278	44
36047	18804	01629	84521	67479	50503	33593	16747	99965	83248	66594	50002	43
35759	18518	01344	84236	67196	50221	33311	16467	99686	82970	66317	49726	42
35471	18231	01058	83952	66912	49938	33030	16186	99407	82692	66040	49450	41
35183	17944	00772	83667	66629	49656	32749	15906	99128	82414	65763	49175	40
34895	17657	00487	83383	66345	49374	32468	15626	98849	82136	65486	48899	39
34608	17371	00201	83098	66062	49092	32186	15346	98570	81858	65209	48623	38
34320	17084	99915	82814	65779	48809	31905	15066	98291	81580	64932	48347	37
34032	16797	99630	82529	65495	48527	31624	14786	98012	81302	64655	48071	36
33744	16511	99344	82245	65212	48245	31343	14506	97733	81024	64378	47795	35
33456	16224	99059	81961	64929	47962	31062	14226	97454	80746	64101	47519	34
33169	15937	98773	81676	64645	47680	30780	13945	97175	80468	63824	47243	33
32881	15651	98488	81392	64362	47398	30499	13665	96896	80190	63547	46967	32
32593	15364	98202	81107	64079	47116	30218	13385	96617	79912	63270	46692	31
32305	15077	97917	80823	63795	46834	29937	13105	96338	79634	62994	46416	30
32018	14791	97631	80539	63512	46552	29656	12825	96059	79356	62717	46140	29
31730	14504	97346	80254	63229	46269	29375	12545	95780	79078	62440	45864	28
31442	14218	97061	79970	62946	45987	29094	12266	95501	78801	62163	45589	27
31155	13931	96775	79686	62663	45705	28813	11986	95222	78523	61887	45313	26
30867	13645	96490	79402	62380	45423	28532	11706	94944	78245	61610	45037	25
30580	13358	96204	79117	62096	45141	28251	11426	94665	77967	61333	44762	24
30292	13072	95919	78833	61813	44859	27970	11146	94386	77690	61056	44486	23
30004	12785	95634	78549	61530	44577	27689	10866	94107	77412	60780	44210	22
29717	12499	95349	78265	61247	44295	27408	10586	93828	77134	60503	43935	21
29429	12213	95063	77981	60964	44013	27127	10306	93550	76856	60226	43659	20
29142	11926	94778	77696	60681	43731	26847	10027	93271	76579	59950	43383	19
28854	11640	94493	77412	60398	43449	26566	09747	92992	76301	59673	43108	18
28567	11354	94208	77128	60115	43167	26285	09467	92713	76023	59396	42832	17
28279	11067	93922	76844	59832	42885	26004	09187	92435	75746	59120	42557	16
27992	10781	93637	76560	59549	42603	25723	08908	92156	75468	58843	42281	15
27705	10495	93352	76276	59266	42322	25442	08628	91877	75191	58567	42006	14
27417	10208	93067	75992	58983	42040	25162	08348	91599	74913	58290	41730	13
27130	09922	92782	75708	58700	41758	24881	08068	91320	74635	58014	41455	12
26843	09636	92497	75424	58417	41476	24600	07789	91042	74358	57737	41179	11
26555	09350	92211	75140	58134	41194	24319	07509	90763	74080	57461	40904	10
26268	09064	91926	74856	57851	40913	24039	07230	90484	73803	57184	40628	9
25981	08777	91641	74572	57569	40631	23758	06950	90206	73525	56908	40353	8
25693	08491	91356	74288	57286	40349	23477	06670	89927	73248	56631	40078	7
25406	08205	91071	74004	57003	40067	23197	06391	89649	72970	56355	39802	6
25119	07919	90786	73720	56720	39786	22916	06111	89370	72693	56079	39527	5
24832	07633	90501	73436	56437	39504	22636	05832	89092	72416	55802	39252	4
24544	07347	90216	73152	56155	39222	22355	05552	88813	72138	55526	38976	3
24257	07061	89931	72869	55872	38941	22074	05273	88535	71861	55250	38701	2
23970	06775	89647	72585	55589	38659	21794	04993	88256	71583	54973	38426	1
23683	06489	89362	72301	55306	38377	21513	04714	87978	71306	54697	38150	0
47′	46′	45′	44′	43′	42′	41′	40′	39′	38′	37′	36′	″

Tangent Deg. 85

4 Deg. Sine

"	24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′
	8. .88	8. 88	8. 88	8. 88	8. 89	8. 89	8. 89	8. 89	8. 89	8. 89	8. 90	8. 90
0	49031	65418	81743	98007	14209	30351	46433	62455	78418	94322	10168	25955
1	49305	65691	82015	98277	14479	30620	46701	62722	78684	94587	10431	26218
2	49578	65963	82286	98548	14748	30888	46968	62988	78949	94851	10695	26481
3	49852	66236	82558	98818	15018	31157	47236	63255	79215	95116	10958	26743
4	50125	66508	82829	99089	15287	31425	47503	63521	79480	95380	11222	27006
5	50399	66781	83101	99359	15557	31694	47770	63788	79746	95645	11485	27268
6	50672	67053	83372	99630	15826	31962	48038	64054	80011	95909	11749	27531
7	50946	67326	83644	99900	16096	32230	48305	64320	80276	96174	12013	27793
8	51219	67598	83915	00171	16365	32499	48573	64587	80542	96438	12276	28056
9	51493	67871	84187	00441	16634	32767	48840	64853	80807	96703	12539	28318
10	51766	68143	84458	00711	16904	33036	49107	65120	81073	96967	12803	28581
11	52040	68416	84729	00982	17173	33304	49375	65386	81338	97231	13066	28843
12	52313	68688	85001	01252	17442	33572	49642	65652	81603	97496	13330	29106
13	52587	68960	85272	01522	17712	33841	49909	65919	81869	97760	13593	29368
14	52860	69233	85543	01793	17981	34109	50177	66185	82134	98025	13857	29631
15	53134	69505	85815	02063	18250	34377	50444	66451	82399	98289	14120	29893
16	53407	69777	86086	02333	18520	34646	50711	66718	82665	98553	14383	30156
17	53680	70050	86357	02604	18789	34914	50979	66984	82930	98818	14647	30418
18	53954	70322	86629	02874	19058	35182	51246	67250	83195	99082	14910	30680
19	54227	70594	86900	03144	19327	35450	51513	67516	83461	99346	15173	30943
20	54500	70867	87171	03414	19597	35718	51780	67783	83726	99610	15437	31205
21	54773	71139	87442	03684	19866	35987	52047	68049	83991	99875	15700	31467
22	55047	71411	87714	03955	20135	36255	52315	68315	84256	00139	15963	31730
23	55320	71683	87985	04225	20404	36523	52582	68581	84521	00403	16226	31992
24	55593	71955	88256	04495	20673	36791	52849	68847	84787	00667	16490	32254
25	55866	72228	88527	04765	20942	37059	53116	69113	85052	00931	16753	32516
26	56140	72500	88798	05035	21211	37327	53383	69380	85317	01196	17016	32779
27	56413	72772	89069	05305	21481	37595	53650	69646	85582	01460	17279	33041
28	56686	73044	89340	05575	21750	37863	53917	69912	85847	01724	17542	33303
29	56959	73316	89611	05845	22019	38132	54184	70178	86112	01988	17806	33565
30	57232	73588	89883	06116	22288	38400	54451	70444	86377	02252	18069	33828
31	57505	73860	90154	06386	22557	38668	54719	70710	86642	02516	18332	34090
32	57778	74132	90425	06656	22826	38936	54986	70976	86907	02780	18595	34352
33	58052	74404	90696	06926	23095	39204	55253	71242	87172	03044	18858	34614
34	58325	74676	90967	07196	23364	39472	55519	71508	87437	03308	19121	34876
35	58598	74948	91238	07466	23633	39740	55786	71774	87702	03572	19384	35138
36	58871	75220	91509	07735	23902	40007	56053	72040	87967	03836	19647	35400
37	59144	75492	91780	08005	24171	40275	56320	72306	88232	04100	19910	35662
38	59417	75764	92050	08275	24439	40543	56587	72572	88497	04364	20173	35924
39	59690	76036	92321	08545	24708	40811	56854	72838	88762	04628	20436	36186
40	59963	76308	92592	08815	24977	41079	57121	73104	89027	04892	20699	36448
41	60235	76580	92863	09085	25246	41347	57388	73369	89292	05156	20962	36710
42	60508	76852	93134	09355	25515	41615	57655	73635	89557	05420	21225	36972
43	60781	77124	93405	09625	25784	41883	57922	73901	89822	05684	21488	37234
44	61054	77396	93676	09894	26053	42150	58188	74167	90087	05948	21751	37496
45	61327	77668	93947	10164	26321	42418	58455	74433	90351	06212	22014	37758
46	61600	77939	94217	10434	26590	42686	58722	74699	90616	06476	22277	38020
47	61873	78211	94488	10704	26859	42954	58989	74964	90881	06739	22540	38282
48	62146	78483	94759	10974	27128	43221	59255	75230	91146	07003	22802	38544
49	62418	78755	95030	11243	27396	43489	59522	75496	91411	07267	23065	38806
50	62691	79027	95300	11513	27665	43757	59789	75762	91675	07531	23328	39068
51	62964	79298	95571	11783	27934	44025	60056	76027	91940	07795	23591	39330
52	63237	79570	95842	12052	28202	44292	60322	76293	92205	08058	23854	39591
53	63509	79842	96112	12322	28471	44560	60589	76559	92470	08322	24116	39853
54	63782	80113	96383	12592	28740	44827	60856	76824	92734	08586	24379	40115
55	64055	80385	96654	12861	29008	45095	61122	77090	92999	08849	24642	40377
56	64327	80657	96924	13131	29277	45363	61389	77356	93264	09113	24905	40639
57	64600	80928	97195	13401	29546	45630	61655	77621	93528	09377	25167	40900
58	64873	81200	97466	13670	29814	45898	61922	77887	93793	09640	25430	41162
59	65145	81471	97736	13940	30083	46165	62189	78152	94057	09904	25693	41424
60	65418	81743	98007	14209	30351	46433	62455	78418	94322	10168	25955	41685
"	35′	34′	33′	32′	31′	30′	29′	28′	27′	26′	25′	24′

Co-Sine Deg. 85

4 Deg. Co-Sine

24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′	"
9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	
87181	87084	86986	86888	86790	86691	86591	86492	86392	86292	86191	86090	60
87180	87082	86985	86886	86788	86689	86590	86490	86390	86290	86189	86088	59
87178	87081	86983	86885	86786	86687	86588	86489	86389	86288	86187	86086	58
87177	87079	86981	86883	86785	86686	86587	86487	86387	86287	86186	86085	57
87175	87077	86980	86882	86783	86684	86585	86485	86385	86285	86184	86083	56
87173	87076	86978	86880	86781	86682	86583	86484	86384	86283	86182	86081	55
87172	87074	86976	86878	86780	86681	86582	86482	86382	86281	86181	86080	54
87170	87073	86975	86877	86778	86679	86580	86480	86380	86280	86179	86078	53
87168	87071	86973	86875	86776	86678	86578	86479	86379	86278	86177	86076	52
87167	87069	86972	86873	86775	86676	86577	86477	86377	86276	86176	86075	51
87165	87068	86970	86872	86773	86674	86575	86475	86375	86275	86174	86073	50
87164	87066	86968	86870	86771	86673	86573	86474	86374	86273	86172	86071	49
87162	87064	86967	86868	86770	86671	86572	86472	86372	86271	86171	86069	48
87160	87063	86965	86867	86768	86669	86570	86470	86370	86270	86169	86068	47
87159	87061	86963	86865	86767	86668	86568	86469	86369	86268	86167	86066	46
87157	87060	86962	86863	86765	86666	86567	86467	86367	86266	86166	86064	45
87155	87058	86960	86862	86763	86664	86565	86465	86365	86265	86164	86063	44
87154	87056	86958	86860	86762	86663	86563	86464	86363	86263	86162	86061	43
87152	87055	86957	86859	86760	86661	86562	86462	86362	86261	86161	86059	42
87151	87053	86955	86857	86758	86659	86560	86460	86360	86260	86159	86058	41
87149	87051	86954	86855	86757	86658	86558	86459	86358	86258	86157	86056	40
87147	87050	86952	86854	86755	86656	86557	86457	86357	86256	86155	86054	39
87146	87048	86950	86852	86753	86654	86555	86455	86355	86255	86154	86053	38
87144	87047	86949	86850	86752	86653	86553	86454	86353	86253	86152	86051	37
87142	87045	86947	86849	86750	86651	86552	86452	86352	86251	86150	86049	36
87141	87043	86945	86847	86748	86649	86550	86450	86350	86250	86149	86047	35
87139	87042	86944	86845	86747	86648	86548	86449	86348	86248	86147	86046	34
87138	87040	86942	86844	86745	86646	86547	86447	86347	86246	86145	86044	33
87136	87038	86940	86842	86743	86644	86545	86445	86345	86245	86144	86042	32
87134	87037	86939	86841	86742	86643	86543	86444	86343	86243	86142	86041	31
87133	87035	86937	86839	86740	86641	86542	86442	86342	86241	86140	86039	30
87131	87034	86936	86837	86739	86639	86540	86440	86340	86240	86139	86037	29
87129	87032	86934	86836	86737	86638	86538	86439	86338	86238	86137	86036	28
87128	87030	86932	86834	86735	86636	86537	86437	86337	86236	86135	86034	27
87126	87029	86931	86832	86734	86635	86535	86435	86335	86235	86134	86032	26
87125	87027	86929	86831	86732	86633	86533	86434	86333	86233	86132	86031	25
87123	87025	86927	86829	86730	86631	86532	86432	86332	86231	86130	86029	24
87121	87024	86926	86827	86729	86630	86530	86430	86330	86229	86129	86027	23
87120	87022	86924	86826	86727	86628	86528	86429	86328	86228	86127	86026	22
87118	87020	86922	86824	86725	86626	86527	86427	86327	86226	86125	86024	21
87116	87019	86921	86822	86724	86625	86525	86425	86325	86224	86123	86022	20
87115	87017	86919	86821	86722	86623	86523	86424	86323	86223	86122	86020	19
87113	87016	86918	86819	86720	86621	86522	86422	86322	86221	86120	86019	18
87112	87014	86916	86818	86719	86620	86520	86420	86320	86219	86118	86017	17
87110	87012	86914	86816	86717	86618	86518	86419	86318	86218	86117	86015	16
87108	87011	86913	86814	86715	86616	86517	86417	86317	86216	86115	86014	15
87107	87009	86911	86813	86714	86615	86515	86415	86315	86214	86113	86012	14
87105	87007	86909	86811	86712	86613	86513	86414	86313	86213	86112	86010	13
87103	87006	86908	86809	86711	86611	86512	86412	86312	86211	86110	86009	12
87102	87004	86906	86808	86709	86610	86510	86410	86310	86209	86108	86007	11
87100	87003	86904	86806	86707	86608	86508	86409	86308	86208	86107	86005	10
87099	87001	86903	86804	86706	86606	86507	86407	86307	86206	86105	86004	9
87097	86999	86901	86803	86704	86605	86505	86405	86305	86204	86103	86002	8
87095	86998	86900	86801	86702	86603	86504	86404	86303	86203	86102	86000	7
87094	86996	86898	86799	86701	86601	86502	86402	86302	86201	86100	85998	6
87092	86994	86896	86798	86699	86600	86500	86400	86300	86199	86098	85997	5
87090	86993	86895	86796	86697	86598	86499	86399	86298	86198	86096	85995	4
87089	86991	86893	86795	86696	86596	86497	86397	86297	86196	86095	85993	3
87087	86989	86891	86793	86694	86595	86495	86395	86295	86194	86093	85992	2
87086	86988	86890	86791	86692	86593	86494	86394	86293	86192	86091	85990	1
87084	86986	86888	86790	86691	86591	86492	86392	86292	86191	86090	85988	0
35′	34′	33′	32′	31′	30′	29′	28′	27′	26′	25′	24′	"

Sine Deg. 85

4 Deg. Tangent

″	24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′
	8. 88	8. 88	8. 88	8. 89	8. 89	8. 89	8. 89	8. 89	8. 89	8. 90	8. 90	8. 90
0	61850	78334	94757	11119	27420	43660	59842	75963	92026	08030	23977	39866
1	62125	78608	95030	11391	27691	43931	60111	76231	92293	08297	24242	40130
2	62400	78882	95303	11663	27962	44201	60380	76500	92560	08563	24507	40394
3	62675	79157	95576	11935	28233	44471	60649	76768	92828	08829	24773	40659
4	62950	79431	95850	12207	28504	44741	60918	77036	93095	09095	25038	40923
5	63226	79705	96123	12479	28775	45011	61187	77304	93362	09362	25303	41187
6	63501	79979	96396	12751	29046	45281	61456	77572	93629	09628	25568	41451
7	63776	80253	96669	13023	29317	45551	61725	77840	93896	09894	25833	41716
8	64051	80527	96942	13296	29589	45821	61994	78108	94163	10160	26099	41980
9	64326	80801	97215	13568	29860	46091	62264	78376	94430	10426	26364	42244
10	64601	81075	97488	13840	30131	46361	62533	78644	94698	10692	26629	42508
11	64876	81349	97761	14112	30402	46631	62802	78912	94965	10958	26894	42772
12	65151	81623	98034	14384	30673	46901	63071	79181	95232	11224	27159	43036
13	65426	81898	98307	14656	30944	47171	63340	79449	95499	11490	27424	43301
14	65701	82171	98580	14928	31215	47441	63609	79716	95766	11756	27689	43565
15	65976	82445	98853	15200	31485	47711	63877	79984	96033	12022	27954	43829
16	66251	82719	99126	15471	31756	47981	64146	80252	96300	12288	28219	44093
17	66526	82993	99399	15743	32027	48251	64415	80520	96567	12554	28484	44357
18	66801	83267	99672	16015	32298	48521	64684	80788	96834	12820	28749	44621
19	67076	83541	99945	16287	32569	48791	64953	81056	97100	13086	29014	44885
20	67351	83815	00218	16559	32840	49061	65222	81324	97367	13352	29279	45149
21	67626	84089	00490	16831	33111	49331	65491	81592	97634	13618	29544	45413
22	67901	84363	00763	17103	33382	49600	65760	81860	97901	13884	29809	45677
23	68176	84637	01036	17374	33652	49870	66028	82128	98168	14150	30074	45941
24	68451	84911	01309	17646	33923	50140	66297	82395	98435	14416	30339	46205
25	68726	85184	01582	17918	34194	50410	66566	82663	98702	14682	30604	46469
26	69000	85458	01854	18190	34465	50680	66835	82931	98968	14948	30869	46733
27	69275	85732	02127	18462	34735	50949	67104	83199	99235	15213	31134	46997
28	69550	86006	02400	18733	35006	51219	67372	83467	99502	15479	31399	47261
29	69825	86279	02673	19005	35277	51489	67641	83734	99769	15745	31664	47525
30	70100	86553	02945	19277	35548	51758	67910	84002	00036	16011	31928	47788
31	70374	86827	03218	19548	35818	52028	68178	84270	00302	16277	32193	48052
32	70649	87100	03491	19820	36089	52298	68447	84537	00569	16542	32458	48316
33	70924	87374	03763	20092	36360	52567	68716	84805	00836	16808	32723	48580
34	71198	87648	04036	20363	36630	52837	68984	85073	01102	17074	32988	48844
35	71473	87921	04309	20635	36901	53107	69253	85340	01369	17340	33252	49108
36	71748	88195	04581	20906	37171	53376	69522	85608	01636	17605	33517	49371
37	72022	88469	04854	21178	37442	53646	69790	85876	01902	17871	33782	49635
38	72297	88742	05126	21450	37712	53915	70059	86143	02169	18137	34046	49899
39	72571	89016	05399	21721	37983	54185	70327	86411	02436	18402	34311	50163
40	72846	89289	05671	21993	38254	54454	70596	86678	02702	18668	34576	50426
41	73121	89563	05944	22264	38524	54724	70864	86946	02969	18933	34840	50690
42	73395	89836	06216	22536	38795	54993	71133	87213	03235	19199	35105	50954
43	73670	90110	06489	22807	39065	55263	71401	87481	03502	19465	35370	51217
44	73944	90383	06761	23079	39335	55532	71670	87748	03768	19730	35634	51481
45	74219	90657	07034	23350	39606	55802	71938	88016	04035	19996	35899	51745
46	74493	90930	07306	23621	39876	56071	72207	88283	04301	20261	36163	52008
47	74768	91204	07579	23893	40147	56341	72475	88551	04568	20527	36428	52272
48	75042	91477	07851	24164	40417	56610	72744	88818	04834	20792	36692	52535
49	75316	91751	08123	24436	40687	56879	73012	89086	05101	21058	36957	52799
50	75591	92024	08396	24707	40958	57149	73280	89353	05367	21323	37221	53063
51	75865	92297	08668	24978	41228	57418	73549	89620	05634	21589	37486	53326
52	76140	92571	08941	25250	41498	57687	73817	89888	05900	21854	37750	53590
53	76414	92844	09213	25521	41769	57957	74085	90155	06166	22119	38015	53853
54	76688	93117	09485	25792	42039	58226	74354	90422	06433	22385	38279	54117
55	76963	93391	09757	26064	42309	58495	74622	90690	06699	22650	38544	54380
56	77237	93664	10030	26335	42580	58765	74890	90957	06965	22916	38808	54643
57	77511	93937	10302	26606	42850	59034	75159	91224	07232	23181	39073	54907
58	77786	94210	10574	26877	43120	59303	75427	91492	07498	23446	39337	55170
59	78060	94484	10846	27148	43390	59572	75695	91759	07764	23712	39601	55434
60	78334	94757	11119	27420	43660	59842	75963	92026	08030	23977	39866	55697
″	35′	34′	33′	32′	31′	30′	29′	28′	27′	26′	25′	24′

4 Deg. Co-Tangent

24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′	″
11. 11	11. 11	11. 11	11. 10	11. 10	11. 10	11. 10	11. 10	11. 10	11. 09	11. 09	11. 09	
38150	21666	05243	88881	72580	56340	40158	24037	07974	91970	76023	60134	60
37875	21392	04970	88609	72309	56069	39889	23769	07707	91703	75758	59870	59
37600	21118	04697	88337	72038	55799	39620	23500	07440	91437	75493	59606	58
37325	20843	04424	88065	71767	55529	39351	23232	07172	91171	75227	59341	57
37050	20569	04150	87793	71496	55259	39082	22964	06905	90905	74962	59077	56
36774	20295	03877	87521	71225	54989	38813	22696	06638	90638	74697	58813	55
36499	20021	03604	87249	70954	54719	38544	22428	06371	90372	74432	58549	54
36224	19747	03331	86977	70683	54449	38275	22160	06104	90106	74167	58284	53
35949	19473	03058	86704	70411	54179	38006	21892	05837	89840	73901	58020	52
35674	19199	02785	86432	70140	53909	37736	21624	05570	89574	73636	57756	51
35399	18925	02512	86160	69869	53639	37467	21356	05302	89308	73371	57492	50
35124	18651	02239	85888	69598	53369	37198	21088	05035	89042	73106	57228	49
34849	18377	01966	85616	69327	53099	36929	20819	04768	88776	72841	56964	48
34574	18102	01693	85344	69056	52829	36660	20551	04501	88510	72576	56699	47
34299	17829	01420	85072	68785	52559	36391	20284	04234	88244	72311	56435	46
34024	17555	01147	84800	68515	52289	36123	20016	03967	87978	72046	56171	45
33749	17281	00874	84529	68244	52019	35854	19748	03700	87712	71781	55907	44
33474	17007	00601	84257	67973	51749	35585	19480	03433	87446	71516	55643	43
33199	16733	00328	83985	67702	51479	35316	19212	03166	87180	71251	55379	42
32924	16459	00055	83713	67431	51209	35047	18944	02900	86914	70986	55115	41
32649	16185	99782	83441	67160	50939	34778	18676	02633	86648	70721	54851	40
32374	15911	99510	83169	66889	50669	34509	18408	02366	86382	70456	54587	39
32099	15637	99237	82897	66618	50400	34240	18140	02099	86116	70191	54323	38
31824	15363	98964	82626	66348	50130	33972	17872	01832	85850	69926	54059	37
31549	15089	98691	82354	66077	49860	33703	17605	01565	85584	69661	53795	36
31274	14816	98418	82082	65806	49590	33434	17337	01298	85318	69396	53531	35
31000	14542	98146	81810	65535	49320	33165	17069	01032	85052	69131	53267	34
30725	14268	97873	81538	65265	49051	32896	16801	00765	84787	68866	53003	33
30450	13994	97600	81267	64994	48781	32628	16533	00498	84521	68601	52739	32
30175	13721	97327	80995	64723	48511	32359	16266	00231	84255	68336	52475	31
29900	13447	97055	80723	64452	48242	32090	15998	99964	83989	68072	52212	30
29626	13173	96782	80452	64182	47972	31822	15730	99698	83723	67807	51948	29
29351	12900	96509	80180	63911	47702	31553	15463	99431	83458	67542	51684	28
29076	12626	96237	79908	63640	47433	31284	15195	99164	83192	67277	51420	27
28802	12352	95964	79637	63370	47163	31016	14927	98898	82926	67012	51156	26
28527	12079	95691	79365	63099	46893	30747	14660	98631	82660	66748	50892	25
28252	11805	95419	79094	62829	46624	30478	14392	98364	82395	66483	50629	24
27978	11531	95146	78822	62558	46354	30210	14124	98098	82129	66218	50365	23
27703	11258	94874	78550	62288	46084	29941	13857	97831	81863	65954	50101	22
27429	10984	94601	78279	62017	45815	29673	13589	97564	81598	65689	49837	21
27154	10711	94329	78007	61746	45546	29404	13322	97298	81332	65424	49574	20
26879	10437	94056	77736	61476	45276	29136	13054	97031	81067	65160	49310	19
26605	10164	93784	77464	61205	45007	28867	12787	96765	80801	64895	49046	18
26330	09890	93511	77193	60935	44737	28599	12519	96498	80535	64630	48783	17
26056	09617	93239	76921	60665	44468	28330	12252	96232	80270	64366	48519	16
25781	09343	92966	76650	60394	44198	28062	11984	95965	80004	64101	48255	15
25507	09070	92694	76379	60124	43929	27793	11717	95699	79739	63837	47992	14
25232	08796	92421	76107	59853	43659	27525	11449	95432	79473	63572	47728	13
24958	08523	92149	75836	59583	43390	27256	11182	95166	79208	63308	47465	12
24684	08249	91877	75564	59313	43121	26988	10914	94899	78942	63043	47201	11
24409	07976	91604	75293	59042	42851	26720	10647	94633	78677	62779	46937	10
24135	07703	91332	75022	58772	42582	26451	10380	94366	78411	62514	46674	9
23860	07429	91059	74750	58502	42313	26183	10112	94100	78146	62250	46410	8
23586	07156	90787	74479	58231	42043	25915	09845	93834	77881	61985	46147	7
23312	06883	90515	74208	57961	41774	25646	09578	93567	77615	61721	45883	6
23037	06609	90243	73936	57691	41505	25378	09310	93301	77350	61456	45620	5
22763	06336	89970	73665	57420	41235	25110	09043	93035	77084	61192	45357	4
22489	06063	89698	73394	57150	40966	24841	08776	92768	76819	60927	45093	3
22214	05790	89426	73123	56880	40697	24573	08508	92502	76554	60663	44830	2
21940	05516	89154	72852	56610	40428	24305	08241	92236	76288	60399	44566	1
21666	05243	88881	72580	56340	40158	24037	07974	91970	76023	60134	44303	0
35′	34′	33′	32′	31′	30′	29′	28′	27′	26′	25′	24′	″

Co-Tangent Deg. 85

Tangent Deg. 85

4 Deg. Sine

	36′	37′	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′
″	8. 90	8. 90	8. 90	8. 90	8. 91	8. 91	8. 91	8. 91	8. 91	8. 91	8. 91	8. 92
0	41685	57350	72975	88535	04039	19487	34881	50219	65504	80734	95911	11034
1	41947	57619	73234	88793	04297	19744	35137	50474	65758	80987	96163	11286
2	42209	57880	73494	89052	04554	20001	35393	50730	66012	81241	96416	11537
3	42470	58141	73754	89311	04812	20258	35649	50985	66266	81494	96668	11789
4	42732	58401	74014	89570	05070	20515	35905	51240	66521	81747	96920	12040
5	42994	58662	74273	89829	05328	20772	36161	51495	66775	82001	97173	12292
6	43255	58923	74533	90088	05586	21029	36417	51750	67029	82254	97425	12544
7	43517	59183	74793	90346	05844	21286	36673	52005	67283	82507	97678	12795
8	43778	59444	75053	90605	06102	21543	36929	52260	67537	82760	97930	13047
9	44040	59704	75312	90864	06359	21800	37185	52515	67791	83014	98182	13298
10	44302	59965	75572	91123	06617	22057	37441	52770	68046	83267	98435	13550
11	44563	60226	75832	91381	06875	22313	37697	53025	68300	83520	98687	13801
12	44825	60486	76091	91640	07133	22570	37953	53280	68554	83773	98940	14052
13	45086	60747	76351	91899	07391	22827	38209	53535	68808	84027	99192	14304
14	45348	61007	76610	92157	07648	23084	38464	53790	69062	84280	99444	14555
15	45609	61268	76870	92416	07906	23341	38720	54045	69316	84533	99696	14807
16	45870	61528	77129	92674	08164	23597	38976	54300	69570	84786	99949	15058
17	46132	61789	77389	92933	08421	23854	39232	54555	69824	85039	00201	15309
18	46393	62049	77649	93192	08679	24111	39488	54810	70078	85292	00453	15561
19	46655	62310	77908	93450	08937	24368	39744	55065	70332	85546	00705	15812
20	46916	62570	78168	93709	09194	24624	39999	55320	70586	85799	00958	16064
21	47177	62831	78427	93967	09452	24881	40255	55575	70840	86052	01210	16315
22	47439	63091	78687	94226	09710	25138	40511	55830	71094	86305	01462	16566
23	47700	63351	78946	94484	09967	25394	40767	56085	71348	86558	01714	16817
24	47961	63612	79205	94743	10225	25651	41023	56339	71602	86811	01966	17069
25	48223	63872	79465	95001	10482	25908	41278	56594	71856	87064	02218	17320
26	48484	64132	79724	95260	10740	26164	41534	56849	72110	87317	02471	17571
27	48745	64393	79984	95518	10997	26421	41790	57104	72364	87570	02723	17822
28	49007	64653	80243	95777	11255	26678	42045	57359	72618	87823	02975	18074
29	49268	64913	80502	96035	11512	26934	42301	57613	72872	88076	03227	18325
30	49529	65174	80762	96294	11770	27191	42557	57868	73125	88329	03479	18576
31	49790	65434	81021	96552	12027	27447	42812	58123	73379	88582	03731	18827
32	50051	65694	81280	96810	12285	27704	43068	58378	73633	88835	03983	19078
33	50313	65954	81540	97069	12542	27960	43324	58632	73887	89088	04235	19329
34	50574	66215	81799	97327	12800	28217	43579	58887	74141	89341	04487	19581
35	50835	66475	82058	97585	13057	28473	43835	59142	74394	89593	04739	19832
36	51096	66735	82317	97844	13314	28730	44090	59396	74648	89846	04991	20083
37	51357	66995	82577	98102	13572	28986	44346	59651	74902	90099	05243	20334
38	51618	67255	82836	98360	13829	29243	44601	59906	75156	90352	05495	20585
39	51879	67515	82095	98619	14086	29499	44857	60160	75409	90605	05747	20836
40	52140	67776	83354	98877	14344	29756	45112	60415	75663	90858	05999	21087
41	52401	68036	83613	99135	14601	30012	45368	60669	75917	91110	06251	21338
42	52662	68296	83873	99393	14858	30268	45623	60924	76170	91363	06503	21589
43	52924	68556	84132	99651	15116	30525	45879	61178	76424	91616	06754	21840
44	53185	68816	84391	99910	15373	30781	46134	61433	76678	91869	07006	22091
45	53446	69076	84650	00168	15630	31037	46390	61688	76931	92121	07258	22342
46	53706	69336	84909	00426	15887	31294	46645	61942	77185	92374	07510	22593
47	53967	69596	85168	00684	16145	31550	46900	62196	77438	92627	07762	22844
48	54228	69856	85427	00942	16402	31806	47156	62451	77692	92880	08014	23095
49	54489	70116	85686	01200	16659	32063	47411	62705	77946	93132	08265	23346
50	54750	70376	85945	01459	16916	32319	47667	62960	78199	93385	08517	23597
51	55011	70636	86204	01717	17173	32575	47922	63214	78453	93637	08769	23848
52	55272	70896	86463	01975	17431	32831	48177	63469	78706	93890	09021	24098
53	55533	71156	86722	02233	17688	33087	48433	63723	78960	94143	09272	24349
54	55794	71416	86981	02491	17945	33344	48688	63978	79213	94395	09524	24600
55	56055	71675	87240	02749	18202	33600	48943	64232	79467	94648	09776	24851
56	56315	71935	87499	03007	18459	33856	49198	64486	79720	94900	10028	25102
57	56576	72195	87758	03265	18716	34112	49454	64741	79974	95153	10279	25352
58	56837	72455	88017	03523	18973	34368	49709	64995	80227	95406	10531	25603
59	57098	72715	88276	03781	19230	34624	49964	65249	80480	95658	10782	25854
60	57358	72975	88535	04039	19487	34881	50219	65504	80734	95911	11034	26105
″	23′	22′	21′	20′	19′	18′	17′	16′	15′	14′	13′	12′

Co-Sine Deg. 85

4 Deg. Co-Sine

36′	37′	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′	
9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	″
85988	85886	85784	85682	85579	85475	85372	85268	85163	85058	84953	84848	60
85987	85885	85783	85680	85577	85474	85370	85266	85162	85057	84952	84846	59
85985	85883	85781	85678	85575	85472	85368	85264	85160	85055	84950	84844	58
85983	85881	85779	85677	85574	85470	85367	85262	85158	85053	84948	84843	57
85981	85880	85777	85675	85572	85469	85365	85261	85156	85051	84946	84841	56
85980	85878	85776	85673	85570	85467	85363	85259	85155	85050	84945	84839	55
85978	85876	85774	85671	85568	85465	85361	85257	85153	85048	84943	84837	54
85976	85875	85772	85670	85567	85463	85360	85256	85151	85046	84941	84835	53
85975	85873	85771	85668	85565	85462	85358	85254	85149	85044	84939	84834	52
85973	85871	85769	85666	85563	85460	85356	85252	85148	85043	84938	84832	51
85971	85869	85767	85665	85562	85458	85354	85250	85146	85041	84936	84830	50
85970	85868	85765	85663	85560	85456	85353	85249	85144	85039	84934	84828	49
85968	85866	85764	85661	85558	85455	85351	85247	85142	85037	84932	84827	48
85966	85864	85762	85659	85556	85453	85349	85245	85141	85036	84931	84825	47
85965	85863	85760	85658	85555	85451	85348	85243	85139	85034	84929	84823	46
85963	85861	85759	85656	85553	85450	85346	85242	85137	85032	84927	84821	45
85961	85859	85757	85654	85551	85448	85344	85240	85135	85030	84925	84820	44
85959	85858	85755	85653	85550	85446	85342	85238	85134	85029	84923	84818	43
85958	85856	85754	85651	85548	85444	85341	85236	85132	85027	84922	84816	42
85956	85854	85752	85649	85546	85443	85339	85235	85130	85025	84921	84814	41
85954	85852	85750	85647	85544	85441	85337	85233	85128	85023	84918	84813	40
85953	85851	85748	85646	85543	85439	85335	85231	85127	85022	84916	84811	39
85951	85849	85747	85644	85541	85437	85334	85229	85125	85020	84915	84809	38
85949	85847	85745	85642	85539	85436	85332	85228	85123	85018	84913	84807	37
85948	85846	85743	85641	85537	85434	85330	85226	85121	85016	84911	84805	36
85946	85844	85742	85639	85536	85432	85328	85224	85120	85015	84909	84804	35
85944	85842	85740	85637	85534	85431	85327	85222	85118	85013	84908	84802	34
85942	85840	85738	85635	85532	85429	85325	85221	85116	85011	84906	84800	33
85941	85839	85736	85634	85531	85427	85323	85219	85114	85009	84904	84798	32
85939	85837	85735	85632	85529	85425	85322	85217	85113	85008	84902	84797	31
85937	85835	85733	85630	85527	85424	85320	85216	85111	85006	84901	84795	30
85936	85834	85731	85629	85525	85422	85318	85214	85109	85004	84899	84793	29
85934	85832	85730	85627	85524	85420	85316	85212	85107	85002	84897	84791	28
85932	85830	85728	85625	85522	85418	85315	85210	85106	85001	84895	84790	27
85931	85829	85726	85623	85520	85417	85313	85209	85104	84999	84894	84788	26
85929	85827	85724	85622	85519	85415	85311	85207	85102	84997	84892	84786	25
85927	85825	85723	85620	85517	85413	85309	85205	85100	84995	84890	84784	24
85926	85823	85721	85618	85515	85412	85308	85203	85099	84994	84888	84783	23
85924	85822	85719	85617	85513	85410	85306	85202	85097	84992	84887	84781	22
85922	85820	85718	85615	85512	85408	85304	85200	85095	84990	84885	84779	21
85920	85818	85716	85613	85510	85406	85302	85198	85093	84988	84883	84777	20
85919	85817	85714	85611	85508	85405	85301	85196	85092	84987	84881	84775	19
85917	85815	85712	85610	85506	85403	85299	85195	85090	84985	84880	84774	18
85915	85813	85711	85608	85505	85401	85297	85193	85088	84983	84878	84772	17
85914	85812	85709	85606	85503	85399	85295	85191	85086	84981	84876	84770	16
85912	85810	85707	85605	85501	85398	85294	85189	85085	84980	84874	84768	15
85910	85808	85706	85603	85500	85396	85292	85188	85083	84978	84872	84767	14
85909	85806	85704	85601	85498	85394	85290	85186	85081	84976	84871	84765	13
85907	85805	85702	85599	85496	85393	85289	85184	85079	84974	84869	84763	12
85905	85803	85701	85598	85494	85391	85287	85182	85078	84973	84867	84761	11
85903	85801	85699	85596	85493	85389	85285	85181	85076	84971	84865	84760	10
85902	85800	85697	85594	85491	85387	85283	85179	85074	84969	84864	84758	9
85900	85798	85695	85592	85489	85386	85282	85177	85072	84967	84862	84756	8
85898	85796	85694	85591	85487	85384	85280	85175	85071	84966	84860	84754	7
85897	85794	85692	85589	85486	85382	85278	85174	85069	84964	84858	84753	6
85895	85793	85690	85587	85484	85380	85276	85172	85067	84962	84857	84751	5
85893	85791	85689	85586	85482	85379	85275	85170	85065	84960	84855	84749	4
85892	85789	85687	85584	85481	85377	85273	85169	85064	84959	84853	84747	3
85890	85788	85685	85582	85479	85375	85271	85167	85062	84957	84851	84745	2
85888	85786	85683	85580	85477	85373	85269	85165	85060	84955	84850	84744	1
85886	85784	85682	85579	85475	85372	85268	85163	85058	84953	84848	84742	0
23′	22′	21′	20′	19′	18′	17′	16′	15′	14′	13′	12′	″

Sine Deg. 85

4 Deg. Tangent

	36′	37′	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′
″	8. 90	8. 90	8. 90	8. 91	8. 91	8. 91	8. 91	8. 91	8. 91	8. 91	8. 92	8. 92
0	55697	71472	87190	02853	18460	34012	49509	64952	80340	95675	10957	26186
1	55961	71734	87452	03114	18720	34270	49767	65208	80596	95930	11211	26440
2	56224	71997	87713	03374	18979	34529	50024	65465	80852	96186	11466	26693
3	56487	72259	87975	03635	19239	34788	50282	65722	81108	96441	11720	26946
4	56751	72522	88236	03895	19498	35047	50540	65979	81364	96696	11974	27200
5	57014	72784	88498	04156	19758	35305	50798	66236	81620	96951	12228	27453
6	57277	73046	88759	04416	20018	35564	51056	66493	81876	97206	12483	27706
7	57540	73309	89021	04677	20277	35823	51313	66750	82132	97461	12737	27960
8	57804	73571	89282	04937	20537	36081	51571	67006	82388	97716	12991	28213
9	58067	73833	89543	05198	20796	36340	51829	67263	82644	97971	13245	28466
10	58330	74096	89805	05458	21056	36598	52086	67520	82900	98226	13499	28719
11	58593	74358	90066	05718	21315	36857	52344	67777	83156	98481	13753	28973
12	58857	74620	90327	05979	21575	37116	52602	68034	83412	98736	14007	29226
13	59120	74882	90589	06239	21834	37374	52859	68290	83667	98991	14261	29479
14	59383	75145	90850	06500	22094	37633	53117	68547	83923	99246	14515	29732
15	59646	75407	91111	06760	22353	37891	53375	68804	84179	99501	14769	29985
16	59909	75669	91373	07020	22612	38150	53632	69060	84435	99756	15023	30239
17	60172	75931	91634	07281	22872	38408	53890	69317	84691	00011	15277	30492
18	60436	76193	91895	07541	23131	38667	54147	69574	84946	00265	15531	30745
19	60699	76456	92156	07801	23391	38925	54405	69830	85202	00520	15785	30998
20	60962	76718	92417	08061	23650	39183	54662	70087	85458	00775	16039	31251
21	61225	76980	92679	08322	23909	39442	54920	70344	85714	01030	16293	31504
22	61488	77242	92940	08582	24169	39700	55177	70600	85969	01285	16547	31757
23	61751	77504	93201	08842	24428	39959	55435	70857	86225	01540	16801	32010
24	62014	77766	93462	09102	24687	40217	55692	71113	86481	01794	17055	32263
25	62277	78028	93723	09363	24947	40475	55950	71370	86736	02049	17309	32516
26	62540	78290	93984	09623	25206	40734	56207	71627	86992	02304	17563	32769
27	62803	78552	94245	09883	25465	40992	56465	71883	87248	02559	17817	33022
28	63066	78814	94507	10143	25724	41250	56722	72140	87503	02813	18071	33275
29	63329	79076	94768	10403	25983	41509	56980	72396	87759	03068	18325	33528
30	63592	79338	95029	10663	26243	41767	57237	72653	88014	03323	18578	33781
31	63855	79600	95290	10923	26502	42025	57494	72909	88270	03578	18832	34034
32	64117	79862	95551	11184	26761	42284	57752	73166	88526	03832	19086	34287
33	64380	80124	95812	11444	27020	42542	58009	73422	88781	04087	19340	34540
34	64643	80386	96073	11704	27279	42800	58266	73678	89037	04342	19594	34793
35	64906	80648	96334	11964	27538	43058	58524	73935	89292	04596	19847	35046
36	65169	80910	96595	12224	27798	43317	58781	74191	89548	04851	20101	35299
37	65432	81172	96856	12484	28057	43575	59038	74448	89803	05105	20355	35551
38	65694	81434	97117	12744	28316	43833	59295	74704	90059	05360	20608	35804
39	65957	81695	97377	13004	28575	44091	59553	74960	90314	05615	20862	36057
40	66220	81957	97638	13264	28834	44349	59810	75217	90570	05869	21116	36310
41	66483	82219	97899	13524	29093	44607	60067	75473	90825	06124	21369	36563
42	66745	82481	98160	13784	29352	44865	60324	75729	91080	06378	21623	36815
43	67008	82743	98421	14044	29611	45124	60582	75986	91336	06633	21877	37068
44	67271	83004	98682	14303	29870	45382	60839	76242	91591	06887	22130	37321
45	67534	83266	98943	14563	30129	45640	61096	76498	91847	07142	22384	37574
46	67796	83528	99203	14823	30388	45898	61353	76754	92102	07396	22638	37826
47	68059	83790	99464	15083	30647	46156	61610	77011	92357	07651	22891	38079
48	68322	84051	99725	15343	30906	46414	61867	77267	92613	07905	23145	38332
49	68584	84313	99986	15603	31165	46672	62124	77523	92868	08160	23398	38584
50	68847	84575	00246	15863	31424	46930	62381	77779	93123	08414	23652	38837
51	69109	84836	00507	16122	31682	47188	62639	78035	93378	08668	23905	39090
52	69372	85098	00768	16382	31941	47446	62896	78291	93634	08923	24159	39342
53	69634	85360	01029	16642	32200	47704	63153	78548	93889	09177	24412	39595
54	69897	85621	01289	16902	32459	47962	63410	78804	94144	09431	24666	39848
55	70160	85883	01550	17161	32718	48219	63667	79060	94399	09686	24919	40100
56	70422	86144	01811	17421	32977	48477	63924	79316	94655	09940	25173	40353
57	70685	86406	02071	17681	33235	48735	64181	79572	94910	10194	25426	40605
58	70947	86667	02332	17941	33494	48993	64438	79828	95165	10449	25680	40858
59	71210	86929	02592	18200	33753	49251	64695	80084	95420	10703	25933	41110
60	71472	87190	02853	18460	34012	49509	64952	80340	95675	10957	26186	41363
″	23′	22′	21′	20′	19′	18′	17′	16′	15′	14′	13′	12′

Co-Tangent Deg. 85

4 Deg. Co-Tangent

36′	37′	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′	
11. 09	11. 09	11. 09	11. 08	11. 08	11. 08	11. 08	11. 08	11. 08	11. 08	11. 07	11. 07	″
44303	28528	12810	97147	81540	65988	50491	35048	19660	04325	89043	73814	60
44039	28266	12548	96886	81280	65730	50233	34792	19404	04070	88789	73560	59
43776	28003	12287	96626	81021	65471	49976	34535	19148	03814	88534	73307	58
43513	27741	12025	96365	80761	65212	49718	34278	18892	03559	88280	73054	57
43249	27478	11764	96105	80502	64953	49460	34021	18636	03304	88026	72800	56
42986	27216	11502	95844	80242	64695	49202	33764	18380	03049	87772	72547	55
42723	26954	11241	95584	79982	64436	48944	33507	18124	02794	87517	72294	54
42460	26691	10979	95323	79723	64177	48687	33250	17868	02539	87263	72040	53
42196	26429	10718	95063	79463	63919	48429	32994	17612	02284	87009	71787	52
41933	26167	10457	94802	79204	63660	48171	32737	17356	02029	86755	71534	51
41670	25904	10195	94542	78944	63402	47914	32480	17100	01774	86501	71281	50
41407	25642	09934	94282	78685	63143	47656	32223	16844	01519	86247	71027	49
41143	25380	09673	94021	78425	62884	47398	31966	16588	01264	85993	70774	48
40880	25118	09411	93761	78166	62626	47141	31710	16333	01009	85739	70521	47
40617	24855	09150	93500	77906	62367	46883	31453	16077	00754	85485	70268	46
40354	24593	08889	93240	77647	62109	46625	31196	15821	00499	85231	70015	45
40091	24331	08627	92980	77388	61850	46368	30940	15565	00244	84977	69761	44
39828	24069	08366	92719	77128	61592	46110	30683	15309	99989	84723	69508	43
39564	23807	08105	92459	76869	61333	45853	30426	15054	99735	84469	69255	42
39301	23544	07844	92199	76609	61075	45595	30170	14798	99480	84215	69002	41
39038	23282	07583	91939	76350	60817	45338	29913	14542	99225	83961	68749	40
38775	23020	07321	91678	76091	60558	45080	29656	14286	98970	83707	68496	39
38512	22758	07060	91418	75831	60300	44823	29400	14031	98715	83453	68243	38
38249	22496	06799	91158	75572	60041	44565	29143	13775	98460	83199	67990	37
37986	22234	06538	90898	75313	59783	44308	28887	13519	98206	82945	67737	36
37723	21972	06277	90637	75053	59525	44050	28630	13264	97951	82691	67484	35
37460	21710	06016	90377	74794	59266	43793	28373	13008	97696	82437	67231	34
37197	21448	05755	90117	74535	59008	43535	28117	12752	97441	82183	66978	33
36934	21186	05493	89857	74276	58750	43278	27860	12497	97187	81929	66725	32
36671	20924	05232	89597	74017	58491	43020	27604	12241	96932	81675	66472	31
36408	20662	04971	89337	73757	58233	42763	27347	11986	96677	81422	66219	30
36145	20400	04710	89077	73498	57975	42506	27091	11730	96422	81168	65966	29
35883	20138	04449	88816	73239	57716	42248	26834	11474	96168	80914	65713	28
35620	19876	04188	88556	72980	57458	41991	26578	11219	95913	80660	65460	27
35357	19614	03927	88296	72721	57200	41734	26322	10963	95658	80406	65207	26
35094	19352	03666	88036	72462	56942	41476	26065	10708	95404	80153	64954	25
34831	19090	03405	87776	72202	56683	41219	25809	10452	95149	79899	64701	24
34568	18828	03144	87516	71943	56425	40962	25552	10197	94895	79645	64449	23
34306	18566	02883	87256	71684	56167	40705	25296	09941	94640	79392	64196	22
34043	18305	02623	86996	71425	55909	40447	25040	09686	94385	79138	63943	21
33780	18043	02362	86736	71166	55651	40190	24783	09430	94131	78884	63690	20
33517	17781	02101	86476	70907	55393	39933	24527	09175	93876	78631	63437	19
33255	17519	01840	86216	70648	55135	39676	24271	08920	93622	78377	63185	18
32992	17257	01579	85956	70389	54876	39418	24014	08664	93367	78123	62932	17
32729	16996	01318	85697	70130	54618	39161	23758	08409	93113	77870	62679	16
32466	16734	01057	85437	69871	54360	38904	23502	08153	92858	77616	62426	15
32204	16472	00797	85177	69612	54102	38647	23246	07898	92604	77362	62174	14
31941	16210	00536	84917	69353	53844	38390	22989	07643	92349	77109	61921	13
31678	15949	00275	84657	69094	53586	38133	22733	07387	92095	76855	61668	12
31416	15687	00014	84397	68835	53328	37876	22477	07132	91840	76602	61416	11
31153	15425	99754	84137	68576	53070	37619	22221	06877	91586	76348	61163	10
30891	15164	99493	83878	68318	52812	37361	21965	06622	91332	76095	60910	9
30628	14902	99232	83618	68059	52554	37104	21709	06366	91077	75841	60658	8
30366	14640	98971	83358	67800	52296	36847	21452	06111	90823	75588	60405	7
30103	14379	98711	83098	67541	52038	36590	21196	05856	90569	75334	60152	6
29840	14117	98450	82839	67282	51781	36333	20940	05601	90314	75081	59900	5
29578	13856	98189	82579	67023	51523	36076	20684	05345	90060	74827	59647	4
29315	13594	97929	82319	66765	51265	35819	20428	05090	89806	74574	59395	3
29053	13333	97668	82059	66506	51007	35562	20172	04835	89551	74320	59142	2
28790	13071	97408	81800	66247	50749	35305	19916	04580	89297	74067	58890	1
28528	12810	97147	81540	65988	50491	35048	19660	04325	89043	73814	58637	0
23′	22′	21′	20′	19′	18′	17′	16′	15′	14′	13′	12′	″

Tangent Deg. 85

4 Deg. Sine

	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	8. 92	8. 92	8. 92	8. 92	8. 92	8. 93	8. 93	8. 93	8. 93	8. 93	8. 93	8. 93
0	26105	41123	56089	71003	85866	00678	15439	30150	44811	59422	73983	88496
1	26356	41373	56338	71251	86114	00925	15685	30395	45055	59665	74226	88738
2	26606	41623	56587	71500	86361	01171	15930	30639	45299	59908	74468	88979
3	26857	41873	56836	71748	86608	01417	16176	30884	45542	60151	74710	89220
4	27108	42122	57085	71996	86855	01664	16422	31129	45786	60394	74952	89462
5	27358	42372	57334	72244	87103	01910	16667	31374	46030	60637	75195	89703
6	27609	42622	57583	72492	87350	02156	16913	31618	46274	60880	75437	89945
7	27860	42872	57832	72740	87597	02403	17158	31863	46518	61123	75679	90186
8	28110	43121	58081	72988	87844	02649	17404	32108	46762	61366	75921	90427
9	28361	43371	58329	73236	88091	02895	17649	32352	47006	61609	76163	90669
10	28611	43621	58578	73484	88338	03142	17895	32597	47249	61852	76406	90910
11	28862	43871	58827	73732	88586	03388	18140	32842	47493	62095	76648	91151
12	29113	44120	59076	73980	88833	03634	18385	33086	47737	62338	76890	91393
13	29363	44370	59325	74228	89080	03881	18631	33331	47981	62581	77132	91634
14	29614	44620	59574	74476	89327	04127	18876	33575	48224	62824	77374	91875
15	29864	44869	59822	74724	89574	04373	19122	33820	48468	63067	77616	92117
16	30115	45119	60071	74972	89821	04619	19367	34064	48712	63310	77858	92358
17	30365	45369	60320	75220	90068	04866	19612	34309	48956	63553	78100	92599
18	30616	45618	60569	75468	90315	05112	19858	34553	49199	63795	78342	92840
19	30866	45868	60817	75715	90562	05358	20103	34798	49443	64038	78584	93082
20	31117	46117	61066	75963	90809	05604	20348	35042	49687	64281	78826	93323
21	31367	46367	61315	76211	91056	05850	20594	35287	49930	64524	79068	93564
22	31618	46617	61564	76459	91303	06096	20839	35531	50174	64767	79310	93805
23	31868	46866	61812	76707	91550	06343	21084	35776	50417	65010	79552	94046
24	32118	47116	62061	76955	91797	06589	21330	36020	50661	65252	79794	94288
25	32369	47365	62310	77202	92044	06835	21575	36265	50905	65495	80036	94529
26	32619	47615	62558	77450	92291	07081	21820	36509	51148	65738	80278	94770
27	32869	47864	62807	77698	92538	07327	22065	36753	51392	65981	80520	95011
28	33120	48114	63055	77946	92785	07573	22311	36998	51635	66223	80762	95252
29	33370	48363	63304	78193	93032	07819	22556	37242	51879	66466	81004	95493
30	33620	48613	63553	78441	93279	08065	22801	37487	52122	66709	81246	95734
31	33871	48862	63801	78689	93525	08311	23046	37731	52366	66951	81488	95975
32	34121	49111	64050	78937	93772	08557	23291	37975	52609	67194	81730	96216
33	34371	49361	64298	79184	94019	08803	23536	38220	52853	67437	81971	96457
34	34622	49610	64547	79432	94266	09049	23781	38464	53096	67679	82213	96698
35	34872	49859	64795	79680	94513	09295	24027	38708	53340	67922	82455	96939
36	35122	50109	65044	79927	94759	09541	24272	38952	53583	68165	82697	97180
37	35372	50358	65292	80175	95006	09787	24517	39197	53827	68407	82939	97421
38	35622	50608	65541	80422	95253	10033	24762	39441	54070	68650	83180	97662
39	35873	50857	65789	80670	95500	10279	25007	39685	54314	68892	83422	97903
40	36123	51106	66038	80918	95746	10524	25252	39929	54557	69135	83664	98144
41	36373	51355	66286	81165	95993	10770	25497	40174	54800	69378	83906	98385
42	36623	51605	66534	81413	96240	11016	25742	40418	55044	69620	84147	98626
43	36873	51854	66783	81660	96487	11262	25987	40662	55287	69863	84389	98867
44	37123	52103	67031	81908	96733	11508	26232	40906	55530	70105	84631	99108
45	37373	52352	67280	82155	96980	11754	26477	41150	55774	70348	84873	99349
46	37623	52602	67528	82403	97227	11999	26722	41394	56017	70590	85114	99589
47	37873	52851	67776	82650	97473	12245	26967	41638	56260	70833	85356	99830
48	38124	53100	68025	82898	97720	12491	27212	41883	56504	71075	85597	00071
49	38374	53349	68273	83145	97966	12737	27457	42127	56747	71318	85839	00312
50	38624	53598	68521	83393	98213	12983	27702	42371	56990	71560	86081	00553
51	38874	53847	68769	83640	98460	13228	27947	42615	57233	71802	86322	00794
52	39124	54097	69018	83887	98706	13474	28191	42859	57476	72045	86564	01034
53	39374	54346	69266	84135	98953	13720	28436	43103	57720	72287	86805	01275
54	39624	54595	69514	84382	99199	13965	28681	43347	57963	72530	87047	01516
55	39873	54844	69762	84630	99446	14211	28926	43591	58206	72772	87289	01757
56	40123	55093	70011	84877	99692	14457	29171	43835	58449	73014	87530	01997
57	40373	55342	70259	85124	99939	14702	29416	44079	58692	73257	87772	02238
58	40623	55591	70507	85372	00185	14948	29660	44323	58936	73499	88013	02479
59	40873	55840	70755	85619	00432	15194	29905	44567	59179	73741	88255	02719
60	41123	56089	71003	85866	00678	15439	30150	44811	59422	73983	88496	02960
″	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Sine Deg. 85

4 Deg. Co-Sine

48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	″
9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	″
84742	84636	84529	84422	84315	84207	84099	83990	83881	83772	83663	83553	60
84740	84634	84527	84420	84313	84205	84097	83988	83880	83770	83661	83551	59
84738	84632	84525	84418	84311	84203	84095	83987	83878	83769	83659	83549	58
84737	84630	84524	84417	84309	84201	84093	83985	83876	83767	83657	83547	57
84735	84629	84522	84415	84307	84200	84092	83983	83874	83765	83655	83545	56
84733	84627	84520	84413	84306	84198	84090	83981	83872	83763	83653	83543	55
84731	84625	84518	84411	84304	84196	84088	83979	83870	83761	83652	83542	54
84730	84623	84517	84409	84302	84194	84086	83978	83869	83759	83650	83540	53
84728	84621	84515	84408	84300	84192	84084	83976	83867	83758	83648	83538	52
84726	84620	84513	84406	84298	84191	84082	83974	83865	83756	83646	83536	51
84724	84618	84511	84404	84297	84189	84081	83972	83863	83754	83644	83534	50
84722	84616	84509	84402	84295	84187	84079	83970	83861	83752	83642	83532	49
84721	84614	84508	84401	84293	84185	84077	83969	83860	83750	83641	83531	48
84719	84613	84506	84399	84291	84183	84075	83967	83858	83748	83639	83529	47
84717	84611	84504	84397	84290	84182	84073	83965	83856	83747	83637	83527	46
84715	84609	84502	84395	84288	84180	84072	83963	83854	83745	83635	83525	45
84714	84607	84501	84393	84286	84178	84070	83961	83852	83743	83633	83523	44
84712	84605	84499	84392	84284	84176	84068	83959	83850	83741	83631	83521	43
84710	84604	84497	84390	84282	84174	84066	83958	83849	83739	83630	83520	42
84708	84602	84495	84388	84281	84173	84064	83956	83847	83738	83628	83518	41
84707	84600	84493	84386	84279	84171	84063	83954	83845	83736	83626	83516	40
84705	84598	84492	84384	84277	84169	84061	83952	83843	83734	83624	83514	39
84703	84597	84490	84383	84275	84167	84059	83950	83841	83732	83622	83512	38
84701	84595	84488	84381	84273	84165	84057	83949	83840	83730	83620	83510	37
84699	84593	84486	84379	84272	84164	84055	83947	83838	83728	83619	83509	36
84698	84591	84484	84377	84270	84162	84054	83945	83836	83727	83617	83507	35
84696	84589	84483	84376	84268	84160	84052	83943	83834	83725	83615	83505	34
84694	84588	84481	84374	84266	84158	84050	83941	83832	83723	83613	83503	33
84692	84586	84479	84372	84264	84156	84048	83940	83830	83721	83611	83501	32
84691	84584	84477	84370	84263	84155	84046	83938	83829	83719	83609	83499	31
84689	84582	84476	84368	84261	84153	84045	83936	83827	83717	83608	83497	30
84687	84581	84474	84367	84259	84151	84043	83934	83825	83716	83606	83496	29
84685	84579	84472	84365	84257	84149	84041	83932	83823	83714	83604	83494	28
84684	84577	84470	84363	84255	84147	84039	83930	83821	83712	83602	83492	27
84682	84575	84468	84361	84254	84146	84037	83929	83820	83710	83600	83490	26
84680	84573	84467	84359	84252	84144	84036	83927	83818	83708	83598	83488	25
84678	84572	84465	84358	84250	84142	84034	83925	83816	83706	83597	83486	24
84676	84570	84463	84356	84248	84140	84032	83923	83814	83705	83595	83485	23
84675	84568	84461	84354	84246	84138	84030	83921	83812	83703	83593	83483	22
84673	84566	84459	84352	84245	84137	84028	83920	83810	83701	83591	83481	21
84671	84565	84458	84350	84243	84135	84026	83918	83809	83699	83589	83479	20
84669	84563	84456	84349	84241	84133	84025	83916	83807	83697	83587	83477	19
84668	84561	84454	84347	84239	84131	84023	83914	83805	83695	83586	83475	18
84666	84559	84452	84345	84237	84129	84021	83912	83803	83694	83584	83474	17
84664	84557	84451	84343	84236	84128	84019	83910	83801	83692	83582	83472	16
84662	84556	84449	84341	84234	84126	84017	83909	83800	83690	83580	83470	15
84660	84554	84447	84340	84232	84124	84016	83907	83798	83688	83578	83468	14
84659	84552	84445	84338	84230	84122	84014	83905	83796	83686	83576	83466	13
84657	84550	84443	84336	84228	84120	84012	83903	83794	83685	83575	83464	12
84655	84549	84442	84334	84227	84119	84010	83901	83792	83683	83573	83463	11
84653	84547	84440	84333	84225	84117	84008	83900	83790	83681	83571	83461	10
84652	84545	84438	84331	84223	84115	84007	83898	83789	83679	83569	83459	9
84650	84543	84436	84329	84221	84113	84005	83896	83787	83677	83567	83457	8
84648	84541	84434	84327	84219	84111	84003	83894	83785	83675	83565	83455	7
84646	84540	84433	84325	84218	84110	84001	83892	83783	83674	83564	83453	6
84645	84538	84431	84324	84216	84108	83999	83890	83781	83672	83562	83451	5
84643	84536	84429	84322	84214	84106	83998	83889	83779	83670	83560	83450	4
84641	84534	84427	84320	84212	84104	83996	83887	83778	83668	83558	83448	3
84639	84533	84426	84318	84210	84102	83994	83885	83776	83666	83556	83446	2
84637	84531	84424	84316	84209	84101	83992	83883	83774	83664	83554	83444	1
84636	84529	84422	84315	84207	84099	83990	83881	83772	83663	83553	83442	0
11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Sine Deg. 85

4 Deg. Tangent

"	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	8. 92	8. 92	8. 92	8. 92	8. 93	8. 93	8. 93	8. 93	8. 93	8. 93	8. 93	8. 94
0	41363	56487	71560	86581	01552	16471	31340	46160	60929	75650	90321	04944
1	41615	56739	71811	86831	01801	16719	31588	46406	61175	75895	90565	05187
2	41868	56991	72062	87081	02050	16968	31835	46653	61421	76139	90809	05430
3	42120	57242	72312	87331	02299	17216	32083	46899	61667	76384	91053	05673
4	42373	57494	72563	87581	02548	17464	32330	47146	61912	76629	91297	05917
5	42625	57745	72814	87831	02797	17712	32577	47392	62158	76874	91541	06160
6	42878	57997	73064	88081	03046	17960	32825	47639	62404	77119	91785	06403
7	43130	58248	73315	88331	03295	18209	33072	47885	62649	77364	92029	06646
8	43382	58500	73566	88580	03544	18457	33319	48132	62895	77609	92273	06890
9	43635	58752	73817	88830	03793	18705	33567	48378	63141	77853	92517	07133
10	43887	59003	74067	89080	04042	18953	33814	48625	63386	78098	92761	07376
11	44140	59255	74318	89330	04291	19201	34061	48871	63632	78343	93005	07619
12	44392	59506	74568	89579	04540	19449	34308	49118	63877	78588	93249	07862
13	44644	59757	74819	89829	04789	19697	34556	49364	64123	78833	93493	08105
14	44897	60009	75070	90079	05037	19945	34803	49610	64368	79077	93737	08349
15	45149	60260	75320	90329	05286	20193	35050	49857	64614	79322	93981	08592
16	45401	60512	75571	90578	05535	20441	35297	50103	64860	79567	94225	08835
17	45653	60763	75821	90828	05784	20689	35544	50349	65105	79811	94469	09078
18	45906	61015	76072	91078	06033	20937	35791	50596	65351	80056	94713	09321
19	46158	61266	76322	91327	06282	21185	36039	50842	65596	80301	94957	09564
20	46410	61517	76573	91577	06530	21433	36286	51088	65842	80545	95200	09807
21	46662	61769	76823	91827	06779	21681	36533	51335	66087	80790	95444	10050
22	46915	62020	77074	92076	07028	21929	36780	51581	66332	81035	95688	10293
23	47167	62271	77324	92326	07277	22177	37027	51827	66578	81279	95932	10536
24	47419	62523	77575	92576	07526	22425	37274	52074	66823	81524	96176	10779
25	47671	62774	77825	92825	07774	22673	37521	52320	67069	81769	96420	11022
26	47923	63025	78076	93075	08023	22921	37768	52566	67314	82013	96663	11265
27	48175	63276	78326	93324	08272	23169	38015	52812	67560	82258	96907	11508
28	48427	63528	78576	93574	08520	23416	38262	53058	67805	82502	97151	11751
29	48680	63779	78827	93823	08769	23664	38509	53305	68050	82747	97395	11994
30	48932	64030	79077	94073	09018	23912	38756	53551	68296	82991	97638	12237
31	49184	64281	79327	94322	09266	24160	39003	53797	68541	83236	97882	12480
32	49436	64533	79578	94572	09515	24408	39250	54043	68786	83480	98126	12722
33	49688	64784	79828	94821	09764	24656	39497	54289	69032	83725	98369	12965
34	49940	65035	80078	95071	10012	24903	39744	54535	69277	83969	98613	13208
35	50192	65286	80329	95320	10261	25151	39991	54781	69522	84214	98857	13451
36	50444	65537	80579	95570	10509	25399	40238	55027	69767	84458	99100	13694
37	50696	65788	80829	95819	10758	25647	40485	55274	70013	84703	99344	13937
38	50948	66039	81080	96068	11007	25894	40732	55520	70258	84947	99588	14180
39	51200	66290	81330	96318	11255	26142	40979	55766	70503	85191	99831	14422
40	51452	66542	81580	96567	11504	26390	41226	56012	70748	85436	00075	14665
41	51704	66793	81830	96817	11752	26637	41472	56258	70994	85680	00318	14908
42	51955	67044	82080	97066	12001	26885	41719	56504	71239	85925	00562	15151
43	52207	67295	82331	97315	12249	27133	41966	56750	71484	86169	00805	15393
44	52459	67546	82581	97565	12498	27380	42213	56996	71729	86413	01049	15636
45	52711	67797	82831	97814	12746	27628	42460	57242	71974	86658	01292	15879
46	52963	68048	83081	98063	12995	27875	42706	57488	72219	86902	01536	16121
47	53215	68299	83331	98312	13243	28123	42953	57733	72464	87146	01779	16364
48	53467	68550	83581	98562	13491	28371	43200	57979	72709	87391	02023	16607
49	53718	68801	83831	98811	13740	28618	43447	58225	72955	87635	02266	16849
50	53970	69052	84081	99060	13988	28866	43693	58471	73200	87879	02510	17092
51	54222	69302	84331	99309	14237	29113	43940	58717	73445	88123	02753	17335
52	54474	69553	84581	99559	14485	29361	44187	58963	73690	88368	02997	17577
53	54725	69804	84832	99808	14733	29608	44433	59209	73935	88612	03240	17820
54	54977	70055	85082	00057	14982	29856	44680	59455	74180	88856	03483	18063
55	55229	70306	85332	00306	15230	30103	44927	59700	74425	89100	03727	18305
56	55481	70557	85582	00555	15478	30351	45173	59946	74670	89344	03970	18548
57	55732	70808	85832	00804	15726	30598	45420	60192	74915	89588	04214	18790
58	55984	71058	86081	01053	15975	30846	45667	60438	75160	89833	04457	19033
59	56236	71309	86331	01303	16223	31093	45913	60684	75405	90077	04700	19275
60	56487	71560	86581	01552	16471	31340	46160	60929	75650	90321	04944	19518
"	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

4 Deg. Co-Tangent

48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	"
11. 07	11. 07	11. 07	11. 07	11. 06	11. 06	11. 06	11. 06	11. 06	11. 06	11. 06	11. 05	
58637	43513	28440	13419	98448	83529	68660	53840	39071	24350	09679	95056	60
58385	43261	28189	13169	98199	83281	68412	53594	38825	24105	09435	94813	59
58132	43009	27938	12919	97950	83032	68165	53347	38579	23861	09191	94570	58
57880	42758	27688	12669	97701	82784	67917	53101	38333	23616	08947	94327	57
57627	42506	27437	12419	97452	82536	67670	52854	38088	23371	08703	94083	56
57375	42255	27186	12169	97203	82288	67423	52608	37842	23126	08459	93840	55
57122	42003	26936	11919	96954	82040	67175	52361	37596	22881	08215	93597	54
56870	41752	26685	11669	96705	81791	66928	52115	37351	22636	07971	93354	53
56618	41500	26434	11420	96456	81543	66681	51868	37105	22391	07727	93110	52
56365	41248	26183	11170	96207	81295	66433	51622	36859	22147	07483	92867	51
56113	40997	25933	10920	95958	81047	66186	51375	36614	21902	07239	92624	50
55860	40745	25682	10670	95709	80799	65939	51129	36368	21657	06995	92381	49
55608	40494	25432	10421	95460	80551	65692	50882	36123	21412	06751	92138	48
55356	40243	25181	10171	95211	80303	65444	50636	35877	21167	06507	91895	47
55103	39991	24930	09921	94963	80055	65197	50390	35632	20923	06263	91651	46
54851	39740	24680	09671	94714	79807	64950	50143	35386	20678	06019	91408	45
54599	39488	24429	09422	94465	79559	64703	49897	35140	20433	05775	91165	44
54347	39237	24179	09172	94216	79311	64456	49651	34895	20189	05531	90922	43
54094	38985	23928	08922	93967	79063	64209	49404	34649	19944	05287	90679	42
53842	38734	23678	08673	93718	78815	63961	49158	34404	19699	05043	90436	41
53590	38482	23427	08423	93470	78567	63714	48912	34158	19455	04800	90193	40
53338	38231	23177	08173	93221	78319	63467	48665	33913	19210	04556	89950	39
53085	37980	22926	07924	92972	78071	63220	48419	33668	18965	04312	89707	38
52833	37729	22676	07674	92723	77823	62973	48173	33422	18721	04068	89464	37
52581	37477	22425	07424	92474	77575	62726	47926	33177	18476	03824	89221	36
52329	37226	22175	07175	92226	77327	62479	47680	32931	18231	03580	88978	35
52077	36975	21924	06925	91977	77079	62232	47434	32686	17987	03337	88735	34
51825	36724	21674	06676	91728	76831	61985	47188	32440	17742	03093	88492	33
51573	36472	21424	06426	91480	76584	61738	46942	32195	17498	02849	88249	32
51320	36221	21173	06177	91231	76336	61491	46695	31950	17253	02605	88006	31
51068	35970	20923	05927	90982	76088	61244	46449	31704	17009	02362	87763	30
50816	35719	20673	05678	90734	75840	60997	46203	31459	16764	02118	87520	29
50564	35467	20422	05428	90485	75592	60750	45957	31214	16520	01874	87278	28
50312	35216	20172	05179	90236	75344	60503	45711	30968	16275	01631	87035	27
50060	34965	19922	04929	89988	75097	60256	45465	30723	16031	01387	86792	26
49808	34714	19671	04680	89739	74849	60009	45219	30478	15786	01143	86549	25
49556	34463	19421	04430	89491	74601	59762	44973	30233	15542	00900	86306	24
49304	34212	19171	04181	89242	74353	59515	44726	29987	15297	00656	86063	23
49052	33961	18920	03932	88993	74106	59268	44480	29742	15053	00412	85820	22
48800	33710	18670	03682	88745	73858	59021	44234	29497	14809	00169	85578	21
48548	33458	18420	03433	88496	73610	58774	43988	29252	14564	99925	85335	20
48296	33207	18170	03183	88248	73363	58528	43742	29006	14320	99682	85092	19
48045	32956	17920	02934	87999	73115	58281	43496	28761	14075	99438	84849	18
47793	32705	17669	02685	87751	72867	58034	43250	28516	13831	99195	84607	17
47541	32454	17419	02435	87502	72620	57787	43004	28271	13587	98951	84364	16
47289	32203	17169	02186	87254	72372	57540	42758	28026	13342	98708	84121	15
47037	31952	16919	01937	87005	72125	57294	42512	27781	13098	98464	83879	14
46785	31701	16669	01688	86757	71877	57047	42267	27536	12854	98221	83636	13
46533	31450	16419	01438	86509	71629	56800	42021	27291	12609	97977	83393	12
46282	31199	16169	01189	86260	71382	56553	41775	27045	12365	97734	83151	11
46030	30948	15919	00940	86012	71134	56307	41529	26800	12121	97490	82908	10
45778	30698	15669	00691	85763	70887	56060	41283	26555	11877	97247	82665	9
45526	30447	15419	00441	85515	70639	55813	41037	26310	11632	97003	82423	8
45275	30196	15168	00192	85267	70392	55567	40791	26065	11388	96760	82180	7
45023	29945	14918	99943	85018	70144	55320	40545	25820	11144	96517	81937	6
44771	29694	14668	99694	84770	69897	55073	40300	25575	10900	96273	81695	5
44519	29443	14418	99445	84522	69649	54827	40054	25330	10656	96030	81452	4
44268	29192	14168	99196	84274	69402	54580	39808	25085	10412	95786	81210	3
44016	28942	13919	98947	84025	69154	54333	39562	24840	10167	95543	80967	2
43764	28691	13669	98697	83777	68907	54087	39316	24595	09923	95300	80725	1
43513	28440	13419	98448	83529	68660	53840	39071	24350	09679	95056	80482	0
11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	"

Co-Tangent Deg. 85

Tangent Deg. 85

5 Deg. Sine

"	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′
	8. 94	8. 94	8. 94	8. 94	8. 94	8. 94	8. 94	8. 95	8. 95	8. 95	8. 95	8. 95
0	02960	17376	31743	46063	60335	74561	88739	02871	16957	30996	44991	58940
1	03201	17616	31982	46301	60573	74797	88975	03106	17191	31230	45224	59172
2	03441	17855	32221	46539	60810	75034	89211	03341	17425	31464	45456	59404
3	03682	18095	32460	46778	61048	75271	89447	03576	17660	31697	45689	59636
4	03923	18335	32699	47016	61285	75507	89683	03811	17894	31931	45922	59868
5	04163	18575	32938	47254	61523	75744	89918	04046	18128	32164	46155	60100
6	04404	18815	33177	47492	61760	75981	90154	04282	18363	32398	46388	60332
7	04644	19054	33416	47731	61997	76217	90390	04517	18597	32631	46620	60564
8	04885	19294	33655	47969	62235	76454	90626	04752	18831	32865	46853	60796
9	05125	19534	33894	48207	62472	76690	90862	04987	19066	33098	47086	61028
10	05366	19774	34133	48445	62709	76927	91098	05222	19300	33332	47319	61260
11	05607	20013	34372	48683	62947	77163	91333	05457	19534	33565	47551	61492
12	05847	20253	34611	48921	63184	77400	91569	05692	19768	33799	47784	61724
13	06088	20493	34850	49159	63421	77637	91805	05927	20002	34032	48017	61956
14	06328	20732	35089	49397	63659	77873	92041	06162	20237	34266	48249	62188
15	06569	20972	35328	49635	63896	78110	92276	06397	20471	34499	48482	62420
16	06809	21212	35566	49874	64133	78346	92512	06632	20705	34733	48715	62652
17	07049	21451	35805	50112	64371	78583	92748	06867	20939	34966	48947	62884
18	07290	21691	36044	50350	64608	78819	92983	07101	21173	35199	49180	63115
19	07530	21931	36283	50588	64845	79055	93219	07336	21408	35433	49413	63347
20	07771	22170	36522	50826	65082	79292	93455	07571	21642	35666	49645	63579
21	08011	22410	36761	51064	65320	79528	93690	07806	21876	35900	49878	63811
22	08251	22649	36999	51302	65557	79765	93926	08041	22110	36133	50111	64043
23	08492	22889	37238	51540	65794	80001	94162	08276	22344	36366	50343	64275
24	08732	23128	37477	51778	66031	80238	94397	08511	22578	36600	50576	64507
25	08972	23368	37716	52016	66268	80474	94633	08746	22812	36833	50808	64738
26	09213	23607	37954	52253	66505	80710	94869	08980	23046	37066	51041	64970
27	09453	23847	38193	52491	66742	80947	95104	09215	23280	37299	51273	65202
28	09693	24086	38432	52729	66980	81183	95340	09450	23514	37533	51506	65434
29	09934	24326	38670	52967	67217	81419	95575	09685	23748	37766	51738	65665
30	10174	24565	38909	53205	67454	81656	95811	09920	23982	37999	51971	65897
31	10414	24805	39148	53443	67691	81892	96046	10154	24216	38232	52203	66129
32	10654	25044	39386	53681	67928	82128	96282	10389	24450	38466	52436	66361
33	10895	25284	39625	53919	68165	82364	96517	10624	24684	38699	52668	66592
34	11135	25523	39864	54156	68402	82601	96753	10858	24918	38932	52901	66824
35	11375	25763	40102	54394	68639	82837	96988	11093	25152	39165	53133	67056
36	11615	26002	40341	54632	68876	83073	97224	11328	25386	39398	53365	67287
37	11855	26241	40579	54870	69113	83309	97459	11563	25620	39632	53598	67519
38	12096	26481	40818	55108	69350	83546	97695	11797	25854	39865	53830	67751
39	12336	26720	41056	55345	69587	83782	97930	12032	26088	40098	54063	67982
40	12576	26959	41295	55583	69824	84018	98165	12267	26322	40331	54295	68214
41	12816	27199	41534	55821	70061	84254	98401	12501	26555	40564	54527	68445
42	13056	27438	41772	56059	70298	84490	98636	12736	26789	40797	54760	68677
43	13296	27677	42011	56296	70535	84727	98872	12970	27023	41030	54992	68909
44	13536	27917	42249	56534	70772	84963	99107	13205	27257	41263	55224	69140
45	13776	28156	42487	56772	71009	85199	99342	13440	27491	41496	55457	69372
46	14016	28395	42726	57009	71246	85435	99578	13674	27725	41729	55689	69603
47	14256	28634	42964	57247	71482	85671	99813	13909	27958	41962	55921	69835
48	14496	28874	43203	57485	71719	85907	00048	14143	28192	42195	56153	70066
49	14736	29113	43441	57722	71956	86143	00284	14378	28426	42428	56386	70298
50	14976	29352	43680	57960	72193	86379	00519	14612	28660	42661	56618	70529
51	15216	29591	43918	58197	72430	86615	00754	14847	28893	42894	56850	70761
52	15456	29830	44156	58435	72667	86851	00989	15081	29127	43127	57082	70992
53	15696	30069	44395	58673	72903	87087	01225	15316	29361	43360	57315	71224
54	15936	30309	44633	58910	73140	87323	01460	15550	29595	43593	57547	71455
55	16176	30548	44871	59148	73377	87559	01695	15785	29828	43826	57779	71686
56	16416	30787	45110	59385	73614	87795	01930	16019	30062	44059	58011	71918
57	16656	31026	45348	59623	73850	88031	02165	16253	30296	44292	58243	72149
58	16896	31265	45586	59860	74087	88267	02401	16488	30529	44525	58475	72381
59	17136	31504	45825	60098	74324	88503	02636	16722	30763	44758	58707	72612
60	17376	31743	46063	60335	74561	88739	02871	16957	30996	44991	58940	72843
"	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′

Co-Sine Deg. 84

5 Deg. Co-Sine

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	"
9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	
83442	83332	83220	83109	82997	82885	82772	82660	82546	82433	82318	82204	60
83440	83330	83219	83107	82995	82883	82771	82658	82544	82431	82317	82202	59
83439	83328	83217	83105	82993	82881	82769	82656	82542	82429	82315	82200	58
83437	83326	83215	83103	82992	82879	82767	82654	82541	82427	82313	82198	57
83435	83324	83213	83102	82990	82878	82765	82652	82539	82425	82311	82196	56
83433	83322	83211	83100	82988	82876	82763	82650	82537	82423	82309	82195	55
83431	83320	83209	83098	82986	82874	82761	82648	82535	82421	82307	82193	54
83429	83319	83207	83096	82984	82872	82759	82646	82533	82419	82305	82191	53
83428	83317	83206	83094	82982	82870	82757	82644	82531	82417	82303	82189	52
83426	83315	83204	83092	82980	82868	82756	82643	82529	82415	82301	82187	51
83424	83313	83202	83090	82979	82866	82754	82641	82527	82414	82299	82185	50
83422	83311	83200	83089	82977	82864	82752	82639	82525	82412	82298	82183	49
83420	83309	83198	83087	82975	82863	82750	82637	82524	82410	82296	82181	48
83418	83308	83196	83085	82973	82861	82748	82635	82522	82408	82294	82179	47
83416	83306	83194	83083	82971	82859	82746	82633	82520	82406	82292	82177	46
83415	83304	83193	83081	82969	82857	82744	82631	82518	82404	82290	82175	45
83413	83302	83191	83079	82967	82855	82742	82629	82516	82402	82288	82174	44
83411	83300	83189	83077	82965	82853	82740	82627	82514	82400	82286	82172	43
83409	83298	83187	83076	82964	82851	82739	82626	82512	82398	82284	82170	42
83407	83296	83185	83074	82962	82849	82737	82624	82510	82396	82282	82168	41
83405	83295	83183	83072	82960	82848	82735	82622	82508	82395	82280	82166	40
83404	83293	83182	83070	82958	82846	82733	82620	82506	82393	82278	82164	39
83402	83291	83180	83068	82956	82844	82731	82618	82505	82391	82277	82162	38
83400	83289	83178	83066	82954	82842	82729	82616	82503	82389	82275	82160	37
83398	83287	83176	83064	82952	82840	82727	82614	82501	82387	82273	82158	36
83396	83285	83174	83062	82950	82838	82725	82612	82499	82385	82271	82156	35
83394	83283	83172	83061	82949	82836	82724	82610	82497	82383	82269	82154	34
83392	83282	83170	83059	82947	82834	82722	82609	82495	82381	82267	82152	33
83391	83280	83169	83057	82945	82833	82720	82607	82493	82379	82265	82151	32
83389	83278	83167	83055	82943	82831	82718	82605	82491	82377	82263	82149	31
83387	83276	83165	83053	82941	82829	82716	82603	82489	82376	82261	82147	30
83385	83274	83163	83051	82939	82827	82714	82601	82488	82374	82259	82145	29
83383	83272	83161	83049	82937	82825	82712	82599	82486	82372	82258	82143	28
83381	83271	83159	83048	82936	82823	82710	82597	82484	82370	82256	82141	27
83380	83269	83157	83046	82934	82821	82708	82595	82482	82368	82254	82139	26
83378	83267	83156	83044	82932	82819	82707	82593	82480	82366	82252	82137	25
83376	83265	83154	83042	82930	82818	82705	82592	82478	82364	82250	82135	24
83374	83263	83152	83040	82928	82816	82703	82590	82476	82362	82248	82133	23
83372	83261	83150	83038	82926	82814	82701	82588	82474	82360	82246	82131	22
83370	83259	83148	83036	82924	82812	82699	82586	82472	82358	82244	82130	21
83368	83258	83146	83035	82922	82810	82697	82584	82470	82357	82242	82128	20
83367	83256	83144	83033	82921	82808	82695	82582	82469	82355	82240	82126	19
83365	83254	83142	83031	82919	82806	82693	82580	82467	82353	82238	82124	18
83363	83252	83141	83029	82917	82804	82692	82578	82465	82351	82237	82122	17
83361	83250	83139	83027	82915	82802	82690	82576	82463	82349	82235	82120	16
83359	83248	83137	83025	82913	82801	82688	82575	82461	82347	82233	82118	15
83357	83246	83135	83023	82911	82799	82686	82573	82459	82345	82231	82116	14
83356	83245	83133	83021	82909	82797	82684	82571	82457	82343	82229	82114	13
83354	83243	83131	83020	82907	82795	82682	82569	82455	82341	82227	82112	12
83352	83241	83129	83018	82906	82793	82680	82567	82453	82339	82225	82110	11
83350	83239	83128	83016	82904	82791	82678	82565	82452	82338	82223	82108	10
83348	83237	83126	83014	82902	82789	82676	82563	82450	82336	82221	82107	9
83346	83235	83124	83012	82900	82787	82675	82561	82448	82334	82219	82105	8
83344	83233	83122	83010	82898	82786	82673	82559	82446	82332	82217	82103	7
83343	83232	83120	83008	82896	82784	82671	82558	82444	82330	82216	82101	6
83341	83230	83118	83007	82894	82782	82669	82556	82442	82328	82214	82099	5
83339	83228	83116	83005	82892	82780	82667	82554	82440	82326	82212	82097	4
83337	83226	83115	83003	82891	82778	82665	82552	82438	82324	82210	82095	3
83335	83224	83113	83001	82889	82776	82663	82550	82436	82322	82208	82093	2
83333	83222	83111	82999	82887	82774	82661	82548	82434	82320	82206	82091	1
83332	83220	83109	82997	82885	82772	82660	82546	82433	82318	82204	82089	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	"

Sine Deg. 84

5 Deg. Tangent

″	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′
	8.94	8.94	8.94	8.94	8.94	8.94	8.95	8.95	8.95	8.95	8.95	8.95
0	19518	34044	48523	62954	77338	91676	05967	20211	34410	48564	62672	76735
1	19760	34286	48764	63194	77577	91914	06204	20448	34647	48799	62907	76970
2	20003	34528	49005	63434	77817	92153	06442	20685	34883	49035	63142	77204
3	20245	34769	49245	63674	78056	92391	06680	20922	35119	49270	63376	77437
4	20488	35011	49486	63914	78295	92630	06918	21159	35355	49506	63611	77671
5	20730	35252	49727	64154	78535	92868	07155	21396	35592	49741	63846	77905
6	20973	35494	49968	64394	78774	93107	07393	21633	35828	49977	64081	78139
7	21215	35736	50209	64635	79013	93345	07631	21870	36064	50212	64315	78373
8	21457	35977	50450	64875	79252	93584	07869	22107	36300	50448	64550	78607
9	21700	36219	50690	65115	79492	93822	08106	22344	36536	50683	64785	78841
10	21942	36461	50931	65355	79731	94061	08344	22581	36773	50918	65019	79075
11	22185	36702	51172	65595	79970	94299	08582	22818	37009	51154	65254	79309
12	22427	36944	51413	65835	80209	94537	08819	23055	37245	51389	65488	79543
13	22669	37185	51653	66075	80449	94776	09057	23292	37481	51625	65723	79777
14	22912	37427	51894	66314	80688	95014	09294	23529	37717	51860	65958	80010
15	23154	37668	52135	66554	80927	95253	09532	23765	37953	52095	66192	80244
16	23396	37910	52376	66794	81166	95491	09770	24002	38189	52331	66427	80478
17	23638	38151	52616	67034	81405	95729	10007	24239	38425	52566	66661	80712
18	23881	38393	52857	67274	81644	95968	10245	24476	38661	52801	66896	80946
19	24123	38634	53098	67514	81883	96206	10482	24713	38897	53036	67130	81180
20	24365	38876	53338	67754	82122	96444	10720	24949	39133	53272	67365	81413
21	24607	39117	53579	67994	82362	96683	10957	25186	39369	53507	67599	81647
22	24850	39358	53820	68234	82601	96921	11195	25423	39605	53742	67834	81881
23	25092	39600	54060	68473	82840	97159	11433	25660	39841	53977	68068	82115
24	25334	39841	54301	68713	83079	97398	11670	25897	40077	54213	68303	82348
25	25576	40083	54541	68953	83318	97636	11907	26133	40313	54448	68537	82582
26	25818	40324	54782	69193	83557	97874	12145	26370	40549	54683	68772	82816
27	26061	40565	55023	69433	83796	98112	12382	26607	40785	54918	69006	83049
28	26303	40807	55263	69672	84035	98350	12620	26843	41021	55153	69241	83283
29	26545	41048	55504	69912	84274	98589	12857	27080	41257	55389	69475	83517
30	26787	41289	55744	70152	84513	98827	13095	27317	41493	55624	69709	83750
31	27029	41531	55985	70392	84752	99065	13332	27553	41729	55859	69944	83984
32	27271	41772	56225	70631	84991	99303	13570	27790	41965	56094	70178	84218
33	27513	42013	56466	70871	85229	99541	13807	28027	42200	56329	70413	84451
34	27755	42254	56706	71111	85468	99779	14044	28263	42436	56564	70647	84685
35	27997	42496	56947	71350	85707	00018	14282	28500	42672	56799	70881	84918
36	28239	42737	57187	71590	85946	00256	14519	28736	42908	57034	71116	85152
37	28481	42978	57428	71830	86185	00494	14756	28973	43144	57269	71350	85386
38	28723	43219	57668	72069	86424	00732	14994	29209	43380	57504	71584	85619
39	28965	43461	57908	72309	86663	00970	15231	29446	43615	57739	71818	85853
40	29207	43702	58149	72549	86902	01208	15468	29683	43851	57974	72053	86086
41	29449	43943	58389	72788	87140	01446	15706	29919	44087	58209	72287	86320
42	29691	44184	58630	73028	87379	01684	15943	30156	44323	58444	72521	86553
43	29933	44425	58870	73267	87618	01922	16180	30392	44558	58679	72755	86787
44	30175	44666	59110	73507	87857	02160	16417	30628	44794	58914	72990	87020
45	30417	44908	59351	73746	88096	02398	16654	30865	45030	59149	73224	87254
46	30659	45149	59591	73986	88334	02636	16892	31101	45266	59384	73458	87487
47	30901	45390	59831	74226	88573	02874	17129	31338	45501	59619	73692	87721
48	31143	45631	60071	74465	88812	03112	17366	31574	45737	59854	73926	87954
49	31385	45872	60312	74705	89051	03350	17603	31811	45973	60089	74161	88187
50	31626	46113	60552	74944	89289	03588	17840	32047	46208	60324	74395	88421
51	31868	46354	60792	75183	89528	03826	18078	32283	46444	60559	74629	88654
52	32110	46595	61033	75423	89767	04064	18315	32520	46679	60794	74863	88888
53	32352	46836	61273	75662	90005	04302	18552	32756	46915	61029	75097	89121
54	32594	47077	61513	75902	90244	04540	18789	32993	47151	61263	75331	89354
55	32835	47318	61753	76141	90483	04777	19026	33229	47386	61498	75565	89588
56	33077	47559	61993	76381	90721	05015	19263	33465	47622	61733	75799	89821
57	33319	47800	62234	76620	90960	05253	19500	33702	47857	61968	76033	90054
58	33561	48041	62474	76859	91198	05491	19737	33938	48093	62203	76267	90288
59	33802	48282	62714	77099	91437	05729	19974	34174	48328	62437	76501	90521
60	34044	48523	62954	77338	91676	05967	20211	34410	48564	62672	76735	90754
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′

Co-Tangent Deg. 84

5 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	″
11.05	11.05	11.05	11.05	11.05	11.05	11.04	11.04	11.04	11.04	11.04	11.04	
80482	65956	51477	37046	22662	08324	94033	79789	65590	51436	37328	23265	60
80240	65714	51236	36806	22423	08086	93796	79552	65353	51201	37093	23030	59
79997	65472	50995	36566	22183	07847	93558	79315	65117	50965	36858	22796	58
79755	65231	50755	36326	21944	07609	93320	79078	[illegible]	50730	36624	22563	57
79512	64989	50514	36086	21705	07370	93082	78841	64645	50494	36389	22329	56
79270	64748	50273	35846	21465	07132	92845	78604	64408	50259	36154	22095	55
79027	64506	50032	35606	21226	06893	92607	78367	64172	50023	35919	21861	54
78785	64264	49791	35365	20987	06655	92369	78130	63936	49788	35685	21627	53
78543	64023	49550	35125	20748	06416	92131	77893	63700	49552	35450	21393	52
78300	63781	49310	34885	20508	06178	91894	77656	63464	49317	35215	21159	51
78058	63539	49069	34645	20269	05939	91656	77419	63227	49082	34981	20925	50
77815	63298	48828	34405	20030	05701	91418	77182	62991	48846	34746	20691	49
77573	63056	48587	34165	19791	05463	91181	76945	62755	48611	34512	20457	48
77331	62815	48347	33925	19551	05224	90943	76708	62519	48375	34277	20223	47
77088	62573	48106	33686	19312	04986	90706	76471	62283	48140	34042	19990	46
76846	62332	47865	33446	19073	04747	90468	76235	62047	47905	33808	19756	45
76604	62090	47624	33206	18834	04509	90230	75998	61811	47669	33573	19522	44
76362	61849	47384	32966	18595	04271	89993	75761	61575	47434	33339	19288	43
76119	61607	47143	32726	18356	04032	89755	75524	61339	47199	33104	19054	42
75877	61366	46902	32486	18117	03794	89518	75287	61103	46964	32870	18820	41
75635	61124	46662	32246	17878	03556	89280	75051	60867	46728	32635	18587	40
75393	60883	46421	32006	17638	03317	89043	74814	60631	46493	32401	18353	39
75150	60642	46180	31766	17399	03079	88805	74577	60395	46258	32166	18119	38
74908	60400	45940	31527	17160	02841	88567	74340	60159	46023	31932	17885	37
74666	60159	45699	31287	16921	02602	88330	74103	59923	45787	31697	17652	36
74424	59917	45459	31047	16682	02364	88093	73867	59687	45552	31463	17418	35
74182	59676	45218	30807	16443	02126	87855	73630	59451	45317	31228	17184	34
73939	59435	44977	30567	16204	01888	87618	73393	59215	45082	30994	16951	33
73697	59193	44737	30328	15965	01650	87380	73157	58979	44847	30759	16717	32
73455	58952	44496	30088	15726	01411	87143	72920	58743	44611	30525	16483	31
73213	58711	44256	29848	15487	01173	86905	72683	58507	44376	30291	16250	30
72971	58469	44015	29608	15248	00935	86668	72447	58271	44141	30056	16016	29
72729	58228	43775	29369	15009	00697	86430	72210	58035	43906	29822	15782	28
72487	57987	43534	29129	14771	00459	86193	71973	57800	43671	29587	15549	27
72245	57746	43294	28889	14532	00221	85956	71737	57564	43436	29353	15315	26
72003	57504	43053	28650	14293	99982	85718	71500	57328	43201	29119	15082	25
71761	57263	42813	28410	14054	99744	85481	71264	57092	42966	28884	14848	24
71519	57022	42572	28170	13815	99506	85244	71027	56856	42731	28650	14614	23
71277	56781	42332	27931	13576	99268	85006	70791	56620	42496	28416	14381	22
71035	56539	42092	27691	13337	99030	84769	70554	56385	42261	28182	14147	21
70793	56298	41851	27451	13098	98792	84532	70317	56149	42026	27947	13914	20
70551	56057	41611	27212	12860	98554	84294	70081	55913	41791	27713	13680	19
70309	55816	41370	26972	12621	98316	84057	69844	55677	41556	27479	13447	18
70067	55575	41130	26733	12382	98078	83820	69608	55442	41321	27245	13213	17
69825	55334	40890	26493	12143	97840	83583	69372	55206	41086	27010	12980	16
69583	55092	40649	26254	11904	97602	83346	69135	54970	40851	26776	12746	15
69341	54851	40409	26014	11666	97364	83108	68899	54734	40616	26542	12513	14
69099	54610	40169	25774	11427	97126	82871	68662	54499	40381	26308	12279	13
68857	54369	39929	25535	11188	96888	82634	68426	54263	40146	26074	12046	12
68615	54128	39688	25295	10949	96650	82397	68189	54027	39911	25839	11813	11
68374	53887	39448	25056	10711	96412	82160	67953	53792	39676	25605	11579	10
68132	53646	39208	24817	10472	96174	81922	67717	53556	39441	25371	11346	9
67890	53405	38967	24577	10233	95936	81685	67480	53321	39206	25137	11112	8
67648	53164	38727	24338	09995	95698	81448	67244	53085	38971	24903	10879	7
67406	52923	38487	24098	09756	95460	81211	67007	52849	38737	24669	10646	6
67165	52682	38247	23859	09517	95223	80974	66771	52614	38502	24435	10412	5
66923	52441	38007	23619	09279	94985	80737	66535	52378	38267	24201	10179	4
66681	52200	37766	23380	09040	94747	80500	66298	52143	38032	23967	09946	3
66439	51959	37526	23141	08802	94509	80263	66062	51907	37797	23733	09712	2
66198	51718	37286	22901	08563	94271	80026	65826	51672	37563	23499	09479	1
65956	51477	37046	22662	08324	94033	79789	65590	51436	37328	23265	09246	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	″

Tangent Deg. 84

5 Deg. Sine

″	12′	13′	14′	15′	16′	17′	18′	19′	20′	21′	22′	23′
	8. 95	8. 95	8. 96	8. 96	8. 96	8. 96	8. 96	8. 96	8. 96	8. 96	8. 97	8. 97
0	72843	86703	00517	14288	28014	41697	55337	68934	82487	95999	09468	22895
1	73075	86933	00747	14517	28243	41925	55564	69160	82713	96224	09692	23118
2	73306	87164	00977	14746	28471	42153	55791	69386	82939	96448	09916	23342
3	73537	87394	01207	14975	28700	42380	56018	69612	83164	96673	10140	23565
4	73769	87625	01437	15204	28928	42608	56245	69839	83390	96898	10364	23788
5	74000	87855	01666	15433	29156	42836	56472	70065	83615	97123	10588	24012
6	74231	88086	01896	15662	29385	43063	56699	70291	83840	97347	10812	24235
7	74463	88317	02126	15891	29613	43291	56926	70517	84066	97572	11036	24458
8	74694	88547	02356	16121	29841	43519	57152	70743	84291	97797	11260	24682
9	74925	88778	02586	16350	30070	43746	57379	70969	84517	98022	11484	24905
10	75156	89008	02815	16579	30298	43974	57606	71196	84742	98246	11708	25128
11	75388	89239	03045	16808	30526	44201	57833	71422	84968	98471	11932	25352
12	75619	89469	03275	17037	30754	44429	58060	71648	85193	98696	12156	25575
13	75850	89700	03505	17266	30983	44656	58287	71874	85418	98921	12380	25798
14	76081	89930	03734	17495	31211	44884	58513	72100	85644	99145	12604	26022
15	76312	90160	03964	17724	31439	45111	58740	72326	85869	99370	12828	26245
16	76544	90391	04194	17952	31667	45339	58967	72552	86095	99595	13052	26468
17	76775	90621	04423	18181	31896	45566	59194	72778	86320	99819	13276	26691
18	77006	90852	04653	18410	32124	45794	59421	73004	86545	00044	13500	26915
19	77237	91082	04883	18639	32352	46021	59647	73230	86771	00268	13724	27138
20	77468	91312	05112	18868	32580	46249	59874	73456	86996	00493	13948	27361
21	77699	91543	05342	19097	32808	46476	60101	73682	87221	00718	14172	27584
22	77930	91773	05572	19326	33037	46704	60327	73908	87446	00942	14396	27807
23	78161	92003	05801	19555	33265	46931	60554	74134	87672	01167	14620	28031
24	78392	92234	06031	19784	33493	47158	60781	74360	87897	01391	14844	28254
25	78623	92464	06260	20013	33721	47386	61008	74586	88122	01616	15067	28477
26	78855	92694	06490	20241	33949	47613	61234	74812	88348	01840	15291	28700
27	79086	92925	06719	20470	34177	47841	61461	75038	88573	02065	15515	28923
28	79317	93155	06949	20699	34405	48068	61687	75264	88798	02289	15739	29146
29	79548	93385	07179	20928	34633	48295	61914	75490	89023	02514	15963	29369
30	79779	93615	07408	21157	34861	48523	62141	75716	89248	02738	16186	29592
31	80010	93846	07638	21385	35089	48750	62367	75942	89474	02963	16410	29816
32	80241	94076	07867	21614	35317	48977	62594	76168	89699	03187	16634	30039
33	80471	94306	08096	21843	35545	49205	62820	76394	89924	03412	16858	30262
34	80702	94536	08326	22072	35773	49432	63047	76619	90149	03636	17081	30485
35	80933	94767	08555	22300	36001	49659	63274	76845	90374	03861	17305	30708
36	81164	94997	08785	22529	36229	49886	63500	77071	90599	04085	17529	30931
37	81395	95227	09014	22758	36457	50114	63727	77297	90824	04310	17753	31154
38	81626	95457	09244	22986	36685	50341	63953	77523	91049	04534	17976	31377
39	81857	95687	09473	23215	36913	50568	64180	77748	91275	04758	18200	31600
40	82088	95917	09702	23444	37141	50795	64406	77974	91500	04983	18424	31823
41	82319	96147	09932	23672	37369	51023	64633	78200	91725	05207	18647	32046
42	82550	96378	10161	23901	37597	51250	64859	78426	91950	05431	18871	32269
43	82780	96608	10391	24130	37825	51477	65086	78652	92175	05656	19095	32492
44	83011	96838	10620	24358	38053	51704	65312	78877	92400	05880	19318	32715
45	83242	97068	10849	24587	38281	51931	65539	79103	92625	06104	19542	32937
46	83473	97298	11079	24815	38509	52158	65765	79329	92850	06329	19765	33160
47	83704	97528	11308	25044	38736	52385	65991	79554	93075	06553	19989	33383
48	83934	97758	11537	25273	38964	52613	66218	79780	93300	06777	20213	33606
49	84165	97988	11766	25501	39192	52840	66444	80006	93525	07002	20436	33829
50	84396	98218	11996	25730	39420	53067	66671	80231	93750	07226	20660	34052
51	84627	98448	12225	25958	39648	53294	66897	80457	93975	07450	20883	34275
52	84857	98678	12454	26187	39876	53521	67123	80683	94200	07674	21107	34498
53	85088	98908	12683	26415	40103	53748	67350	80908	94425	07898	21330	34720
54	85319	99138	12913	26644	40331	53975	67576	81134	94649	08123	21554	34943
55	85549	99368	13142	26872	40559	54202	67802	81360	94874	08347	21777	35166
56	85780	99598	13371	27101	40787	54429	68029	81585	95099	08571	22001	35389
57	86011	99828	13600	27329	41014	54656	68255	81811	95324	08795	22224	35612
58	86241	00057	13829	27558	41242	54883	68481	82036	95549	09019	22448	35834
59	86472	00287	14059	27786	41470	55110	68707	82262	95774	09244	22671	36057
60	86703	00517	14288	28014	41697	55337	68934	82487	95999	09468	22895	36280
″	47′	46′	45′	44′	43′	42′	41′	40′	39′	38′	37′	36′

Co-Sine Deg. 84

5 Deg. Co-Sine

12′	13′	14′	15′	16′	17′	18′	19′	20′	21′	22′	23′	″
9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	
82089	81974	81859	81743	81626	81510	81393	81275	81158	81040	80921	80802	60
82087	81972	81857	81741	81625	81508	81391	81273	81156	81038	80919	80800	59
82085	81970	81855	81739	81623	81506	81389	81271	81154	81036	80917	80798	58
82084	81968	81853	81737	81621	81504	81387	81270	81152	81034	80915	80796	57
82082	81966	81851	81735	81619	81502	81385	81268	81150	81032	80913	80794	56
82080	81965	81849	81733	81617	81500	81383	81266	81148	81030	80911	80792	55
82078	81963	81847	81731	81615	81498	81381	81264	81146	81028	80909	80790	54
82076	81961	81845	81729	81613	81496	81379	81262	81144	81026	80907	80788	53
82074	81959	81843	81727	81611	81494	81377	81260	81142	81024	80905	80786	52
82072	81957	81841	81725	81609	81492	81375	81258	81140	81022	80903	80784	51
82070	81955	81839	81723	81607	81490	81373	81256	81138	81020	80901	80782	50
82068	81953	81837	81721	81605	81488	81371	81254	81136	81018	80899	80780	49
82066	81951	81835	81719	81603	81486	81369	81252	81134	81016	80897	80778	48
82064	81949	81834	81718	81601	81484	81367	81250	81132	81014	80895	80776	47
82062	81947	81832	81716	81599	81483	81365	81248	81130	81012	80893	80774	46
82061	81945	81830	81714	81597	81481	81363	81246	81128	81010	80891	80772	45
82059	81943	81828	81712	81595	81479	81362	81244	81126	81008	80889	80770	44
82057	81941	81826	81710	81593	81477	81360	81242	81124	81006	80887	80768	43
82055	81940	81824	81708	81591	81475	81358	81240	81122	81004	80885	80766	42
82053	81938	81822	81706	81590	81473	81356	81238	81120	81002	80883	80764	41
82051	81936	81820	81704	81588	81471	81354	81236	81118	81000	80881	80762	40
82049	81934	81818	81702	81586	81469	81352	81234	81116	80998	80879	80761	39
82047	81932	81816	81700	81584	81467	81350	81232	81114	80996	80878	80759	38
82045	81930	81814	81698	81582	81465	81348	81230	81112	80994	80876	80757	37
82043	81928	81812	81696	81580	81463	81346	81228	81110	80992	80874	80755	36
82041	81926	81810	81694	81578	81461	81344	81226	81108	80990	80872	80753	35
82039	81924	81808	81692	81576	81459	81342	81224	81107	80988	80870	80751	34
82038	81922	81806	81690	81574	81457	81340	81222	81105	80986	80868	80749	33
82036	81920	81805	81688	81572	81455	81338	81221	81103	80984	80866	80747	32
82034	81918	81803	81687	81570	81453	81336	81219	81101	80982	80864	80745	31
82032	81916	81801	81685	81568	81451	81334	81217	81099	80980	80862	80743	30
82030	81914	81799	81683	81566	81449	81332	81215	81097	80978	80860	80741	29
82028	81913	81797	81681	81564	81447	81330	81213	81095	80976	80858	80739	28
82026	81911	81795	81679	81562	81445	81328	81211	81093	80974	80856	80737	27
82024	81909	81793	81677	81560	81444	81326	81209	81091	80972	80854	80735	26
82022	81907	81791	81675	81558	81442	81324	81207	81089	80970	80852	80733	25
82020	81905	81789	81673	81557	81440	81322	81205	81087	80968	80850	80731	24
82018	81903	81787	81671	81555	81438	81320	81203	81085	80967	80848	80729	23
82016	81901	81785	81669	81553	81436	81318	81201	81083	80965	80846	80727	22
82014	81899	81783	81667	81551	81434	81317	81199	81081	80963	80844	80725	21
82013	81897	81781	81665	81549	81432	81315	81197	81079	80961	80842	80723	20
82011	81895	81779	81663	81547	81430	81313	81195	81077	80959	80840	80721	19
82009	81893	81778	81661	81545	81428	81311	81193	81075	80957	80838	80719	18
82007	81891	81776	81659	81543	81426	81309	81191	81073	80955	80836	80717	17
82005	81889	81774	81657	81541	81424	81307	81189	81071	80953	80834	80715	16
82003	81888	81772	81656	81539	81422	81305	81187	81069	80951	80832	80713	15
82001	81886	81770	81654	81537	81420	81303	81185	81067	80949	80830	80711	14
81999	81884	81768	81652	81535	81418	81301	81183	81065	80947	80828	80709	13
81997	81882	81766	81650	81533	81416	81299	81181	81063	80945	80826	80707	12
81995	81880	81764	81648	81531	81414	81297	81179	81061	80943	80824	80705	11
81993	81878	81762	81646	81529	81412	81295	81177	81059	80941	80822	80703	10
81991	81876	81760	81644	81527	81410	81293	81175	81057	80939	80820	80701	9
81990	81874	81758	81642	81525	81408	81291	81173	81055	80937	80818	80699	8
81988	81872	81756	81640	81523	81406	81289	81171	81053	80935	80816	80697	7
81986	81870	81754	81638	81521	81405	81287	81169	81051	80933	80814	80695	6
81984	81868	81752	81636	81520	81403	81285	81167	81049	80931	80812	80693	5
81982	81866	81750	81634	81518	81401	81283	81166	81047	80929	80810	80691	4
81980	81864	81749	81632	81516	81399	81281	81164	81045	80927	80808	80689	3
81978	81862	81747	81630	81514	81397	81279	81162	81043	80925	80806	80687	2
81976	81861	81745	81628	81512	81395	81277	81160	81042	80923	80804	80685	1
81974	81859	81743	81626	81510	81393	81275	81158	81040	80921	80802	80683	0
47′	46′	45′	44′	43′	42′	41′	40′	39′	38′	37′	36′	″

Sine Deg. 84

5 Deg. Tangent

"	12′	13′	14′	15′	16′	17′	18′	19′	20′	21′	22′	23′
	8. 95	8. 96	8. 96	8. 96	8. 96	8. 96	8. 96	8. 96	8. 97	8. 97	8. 97	8. 97
0	90754	04728	18659	32545	46388	60188	73944	87658	01330	14959	28547	42092
1	90987	04961	18890	32776	46618	60417	74173	87886	01557	15186	28773	42318
2	91221	05193	19122	33007	46849	60647	74402	88115	01785	15413	28999	42543
3	91454	05426	19354	33238	47079	60876	74631	88343	02012	15640	29225	42769
4	91687	05658	19586	33469	47309	61106	74860	88571	02240	15866	29451	42994
5	91920	05891	19818	33700	47540	61336	75089	88799	02467	16093	29677	43219
6	92154	06123	20049	33931	47770	61565	75318	89027	02695	16320	29903	43445
7	92387	06356	20281	34162	48000	61795	75546	89255	02922	16547	30129	43670
8	92620	06588	20513	34393	48230	62024	75775	89484	03149	16773	30355	43895
9	92853	06821	20744	34624	48461	62254	76004	89712	03377	17000	30581	44121
10	93086	07053	20976	34855	48691	62483	76233	89940	03604	17227	30807	44346
11	93319	07286	21208	35086	48921	62713	76462	90168	03832	17453	31033	44571
12	93553	07518	21439	35317	49151	62942	76690	90396	04059	17680	31259	44797
13	93786	07750	21671	35548	49382	63172	76919	90624	04286	17907	31485	45022
14	94019	07983	21903	35779	49612	63401	77148	90852	04514	18133	31711	45247
15	94252	08215	22134	36010	49842	63631	77377	91080	04741	18360	31937	45472
16	94485	08447	22366	36241	50072	63860	77605	91308	04968	18587	32163	45698
17	94718	08680	22598	36472	50302	64090	77834	91536	05196	18813	32389	45923
18	94951	08912	22829	36702	50532	64319	78063	91764	05423	19040	32615	46148
19	95184	09144	23061	36933	50762	64549	78292	91992	05650	19266	32841	46373
20	95417	09377	23292	37164	50993	64778	78520	92220	05878	19493	33067	46599
21	95650	09609	23524	37395	51223	65007	78749	92448	06105	19720	33292	46824
22	95883	09841	23755	37626	51453	65237	78978	92676	06332	19946	33518	47049
23	96116	10074	23987	37857	51683	65466	79206	92904	06559	20173	33744	47274
24	96349	10306	24218	38087	51913	65695	79435	93132	06787	20399	33970	47499
25	96582	10538	24450	38318	52143	65925	79664	93360	07014	20626	34196	47724
26	96815	10770	24681	38549	52373	66154	79892	93588	07241	20852	34422	47949
27	97048	11002	24913	38780	52603	66383	80121	93816	07468	21079	34647	48175
28	97281	11235	25144	39010	52833	66613	80349	94044	07695	21305	34873	48400
29	97514	11467	25376	39241	53063	66842	80578	94271	07923	21532	35099	48625
30	97747	11699	25607	39472	53293	67071	80807	94499	08150	21758	35325	48850
31	97980	11931	25839	39703	53523	67301	81035	94727	08377	21985	35551	49075
32	98213	12163	26070	39933	53753	67530	81264	94955	08604	22211	35776	49300
33	98445	12395	26302	40164	53983	67759	81492	95183	08831	22437	36002	49525
34	98678	12628	26533	40395	54213	67988	81721	95411	09058	22664	36228	49750
35	98911	12860	26764	40625	54443	68218	81949	95638	09285	22890	36453	49975
36	99144	13092	26996	40856	54673	68447	82178	95866	09512	23117	36679	50200
37	99377	13324	27227	41087	54903	68676	82406	96094	09740	23343	36905	50425
38	99610	13556	27458	41317	55133	68905	82635	96322	09967	23569	37130	50650
39	99842	13788	27690	41548	55363	69134	82863	96550	10194	23796	37356	50875
40	00075	14020	27921	41778	55592	69363	83092	96777	10421	24022	37582	51100
41	00308	14252	28152	42009	55822	69593	83320	97005	10648	24248	37807	51325
42	00541	14484	28384	42240	56052	69822	83549	97233	10875	24475	38033	51550
43	00774	14716	28615	42470	56282	70051	83777	97460	11102	24701	38259	51775
44	01006	14948	28846	42701	56512	70280	84005	97688	11329	24927	38484	52000
45	01239	15180	29078	42931	56742	70509	84234	97916	11556	25154	38710	52225
46	01472	15412	29309	43162	56972	70738	84462	98144	11783	25380	38935	52450
47	01704	15644	29540	43392	57201	70967	84690	98371	12010	25606	39161	52674
48	01937	15876	29771	43623	57431	71196	84919	98599	12237	25832	39387	52899
49	02170	16108	30002	43853	57661	71425	85147	98826	12464	26059	39612	53124
50	02402	16340	30234	44084	57891	71654	85376	99054	12691	26285	39838	53349
51	02635	16572	30465	44314	58120	71883	85604	99282	12917	26511	40063	53574
52	02868	16804	30696	44545	58350	72113	85832	99509	13144	26737	40289	53799
53	03100	17036	30927	44775	58580	72342	86060	99737	13371	26964	40514	54024
54	03333	17268	31158	45006	58810	72571	86289	99965	13598	27190	40740	54248
55	03566	17499	31390	45236	59039	72800	86517	00192	13825	27416	40965	54473
56	03798	17731	31621	45466	59269	73028	86745	00420	14052	27642	41191	54698
57	04031	17963	31852	45697	59499	73257	86974	00647	14279	27868	41416	54923
58	04263	18195	32083	45927	59728	73486	87202	00875	14506	28094	41642	55147
59	04496	18427	32314	46158	59958	73715	87430	01102	14732	28321	41867	55372
60	04728	18659	32545	46388	60188	73944	87658	01330	14959	28547	42092	55597
"	47′	46′	45′	44′	43′	42′	41′	40′	39′	38′	37′	36′

5 Deg. Co-Tangent

12′	13′	14′	15′	16′	17′	18′	19′	20′	21′	22′	23′	"
11. 04	11. 03	11. 03	11. 03	11. 03	11. 03	11. 03	11. 03	11. 02	11. 02	11. 02	11. 02	
09246	95272	81341	67455	53612	39812	26056	12342	98670	85041	71453	57908	60
09013	95039	81110	67224	53382	39583	25827	12114	98443	84814	71227	57682	59
08779	94807	80878	66993	53151	39353	25598	11885	98215	84587	71001	57457	58
08546	94574	80646	66762	52921	39124	25369	11657	97988	84360	70775	57231	57
08313	94342	80414	66531	52691	38894	25140	11429	97760	84134	70549	57006	56
08080	94109	80182	66300	52460	38664	24911	11201	97533	83907	70323	56781	55
07846	93877	79951	66069	52230	38435	24681	10973	97305	83680	70097	56555	54
07613	93644	79719	65838	52000	38205	24454	10745	97078	83453	69871	56330	53
07380	93412	79487	65607	51770	37976	24225	10516	96851	83227	69645	56105	52
07147	93179	79256	65376	51539	37746	23996	10288	96623	83000	69419	55879	51
06914	92947	79024	65145	51309	37517	23767	10060	96396	82773	69193	55654	50
06681	92714	78792	64914	51079	37287	23538	09832	96168	82547	68967	55429	49
06447	92482	78561	64683	50849	37058	23310	09604	95941	82320	68741	55203	48
06214	92250	78329	64452	50618	36828	23081	09376	95714	82093	68515	54978	47
05981	92017	78097	64221	50388	36599	22852	09148	95486	81867	68289	54753	46
05748	91785	77866	63990	50158	36369	22623	08920	95259	81640	68063	54528	45
05515	91553	77634	63759	49928	36140	22395	08692	95032	81413	67837	54302	44
05282	91320	77402	63528	49698	35910	22166	08464	94804	81187	67611	54077	43
05049	91088	77171	63298	49468	35681	21937	08236	94577	80960	67385	53852	42
04816	90856	76939	63067	49238	35451	21708	08008	94350	80734	67159	53627	41
04583	90623	76708	62836	49007	35222	21480	07780	94122	80507	66933	53401	40
04350	90391	76476	62605	48777	34993	21251	07552	93895	80280	66708	53176	39
04117	90159	76245	62374	48547	34763	21022	07324	93668	80054	66482	52951	38
03884	89926	76013	62143	48317	34534	20794	07096	93441	79827	66256	52726	37
03651	89694	75782	61913	48087	34305	20565	06868	93213	79601	66030	52501	36
03418	89462	75550	61682	47857	34075	20336	06640	92986	79374	65804	52276	35
03185	89230	75319	61451	47627	33846	20108	06412	92759	79148	65578	52051	34
02952	88998	75087	61220	47397	33617	19879	06184	92532	78921	65353	51825	33
02719	88765	74856	60990	47167	33387	19651	05956	92305	78695	65127	51600	32
02486	88533	74624	60759	46937	33158	19422	05729	92077	78468	64901	51375	31
02253	88301	74393	60528	46707	32929	19193	05501	91850	78242	64675	51150	30
02020	88069	74161	60297	46477	32699	18965	05273	91623	78015	64449	50925	29
01787	87837	73930	60067	46247	32470	18736	05045	91396	77789	64224	50700	28
01555	87605	73698	59836	46017	32241	18508	04817	91169	77563	63998	50475	27
01322	87372	73467	59605	45787	32012	18279	04589	90942	77336	63772	50250	26
01089	87140	73236	59375	45557	31782	18051	04362	90715	77110	63547	50025	25
00856	86908	73004	59144	45327	31553	17822	04134	90488	76883	63321	49800	24
00623	86676	72773	58913	45097	31324	17594	03906	90260	76657	63095	49575	23
00390	86444	72542	58683	44867	31095	17365	03678	90033	76431	62870	49350	22
00158	86212	72310	58452	44637	30866	17137	03450	89806	76204	62644	49125	21
99925	85980	72079	58222	44408	30637	16908	03223	89579	75978	62418	48900	20
99692	85748	71848	57991	44178	30407	16680	02995	89352	75752	62193	48675	19
99459	85516	71616	57760	43948	30178	16451	02767	89125	75525	61967	48450	18
99226	85284	71385	57530	43718	29949	16223	02540	88898	75299	61741	48225	17
98994	85052	71154	57299	43488	29720	15995	02312	88671	75073	61516	48000	16
98761	84820	70922	57069	43258	29491	15766	02084	88444	74846	61290	47775	15
98528	84588	70691	56838	43028	29262	15538	01856	88217	74620	61065	47550	14
98296	84356	70460	56608	42799	29033	15310	01629	87990	74394	60839	47326	13
98063	84124	70229	56377	42569	28804	15081	01401	87763	74168	60613	47101	12
97830	83892	69998	56147	42339	28575	14853	01174	87536	73941	60388	46876	11
97598	83660	69766	55916	42109	28346	14624	00946	87309	73715	60162	46651	10
97365	83428	69535	55686	41880	28117	14396	00718	87083	73489	59937	46426	9
97132	83196	69304	55455	41650	27887	14168	00491	86856	73263	59711	46201	8
96900	82964	69073	55225	41420	27658	13940	00263	86629	73036	59486	45976	7
96667	82732	68842	54994	41190	27429	13711	00035	86402	72810	59260	45752	6
96434	82501	68610	54764	40961	27200	13483	99808	86175	72584	59035	45527	5
96202	82269	68379	54534	40731	26972	13255	99580	85948	72358	58809	45302	4
95969	82037	68148	54303	40501	26743	13026	99353	85721	72132	58584	45077	3
95737	81805	67917	54073	40272	26514	12798	99125	85494	71906	58358	44853	2
95504	81573	67686	53842	40042	26285	12570	98898	85268	71679	58133	44628	1
95272	81341	67455	53612	39812	26056	12342	98670	85041	71453	57908	44403	0
47′	46′	45′	44′	43′	42′	41′	40′	39′	38′	37′	36′	"

Co-Tangent Deg. 84 Tangent Deg. 84

5 Deg. Sine

″	24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′
	8. 97	8. 97	8. 97	8. 97	8. 97	8. 98	8. 98	8. 98	8. 98	8. 98	8. 98	8. 98
0	36280	49624	62926	76188	89408	02589	15729	28829	41889	54910	67891	80834
1	36503	49846	63147	76408	89628	02808	15947	29047	42106	55126	68107	81049
2	36725	50068	63369	76629	89848	03027	16166	29265	42324	55343	68323	81264
3	36948	50290	63590	76850	90068	03247	16385	29483	42541	55560	68539	81480
4	37171	50512	63811	77070	90288	03466	16603	29701	42758	55776	68755	81695
5	37393	50734	64033	77291	90508	03685	16822	29919	42976	55993	68971	81910
6	37616	50956	64254	77512	90728	03904	17041	30137	43193	56210	69187	82126
7	37839	51178	64475	77732	90948	04124	17259	30354	43410	56426	69403	82341
8	38061	51400	64697	77953	91168	04343	17478	30572	43627	56643	69619	82556
9	38284	51622	64918	78173	91388	04562	17696	30790	43845	56859	69835	82772
10	38507	51844	65139	78394	91608	04781	17915	31008	44062	57076	70051	82987
11	38729	52066	65360	78614	91828	05001	18133	31226	44279	57293	70267	83202
12	38952	52287	65582	78835	92048	05220	18352	31444	44496	57509	70483	83417
13	39175	52509	65803	79056	92268	05439	18570	31662	44714	57726	70699	83633
14	39397	52731	66024	79276	92487	05658	18789	31880	44931	57942	70915	83848
15	39620	52953	66245	79497	92707	05877	19007	32098	45148	58159	71130	84063
16	39842	53175	66467	79717	92927	06097	19226	32315	45365	58375	71346	84278
17	40065	53397	66688	79938	93147	06316	19444	32533	45582	58592	71562	84494
18	40287	53619	66909	80158	93367	06535	19663	32751	45799	58808	71778	84709
19	40510	53841	67130	80379	93587	06754	19881	32969	46017	59025	71994	84924
20	40732	54062	67351	80599	93806	06973	20100	33187	46234	59241	72210	85139
21	40955	54284	67572	80820	94026	07192	20318	33404	46451	59458	72425	85354
22	41177	54506	67793	81040	94246	07411	20537	33622	46668	59674	72641	85569
23	41400	54728	68015	81260	94466	07630	20755	33840	46885	59891	72857	85785
24	41622	54950	68236	81481	94685	07850	20974	34058	47102	60107	73073	86000
25	41845	55171	68457	81701	94905	08069	21192	34275	47319	60323	73289	86215
26	42067	55393	68678	81922	95125	08288	21410	34493	47536	60540	73504	86430
27	42290	55615	68899	82142	95345	08507	21629	34711	47753	60756	73720	86645
28	42512	55837	69120	82362	95564	08726	21847	34928	47970	60973	73936	86860
29	42735	56058	69341	82583	95784	08945	22065	35146	48187	61189	74152	87075
30	42957	56280	69562	82803	96004	09164	22284	35364	48404	61405	74367	87290
31	43179	56502	69783	83023	96223	09383	22502	35581	48621	61622	74583	87505
32	43402	56723	70004	83244	96443	09602	22720	35799	48838	61838	74799	87720
33	43624	56945	70225	83464	96663	09821	22939	36017	49055	62054	75014	87935
34	43846	57167	70446	83684	96882	10040	23157	36234	49272	62271	75230	88150
35	44069	57388	70667	83905	97102	10259	23375	36452	49489	62487	75446	88365
36	44291	57610	70888	84125	97321	10478	23594	36670	49706	62703	75661	88580
37	44513	57832	71109	84345	97541	10696	23812	36887	49923	62920	75877	88795
38	44736	58053	71330	84566	97761	10915	24030	37105	50140	63136	76093	89010
39	44958	58275	71551	84786	97980	11134	24248	37322	50357	63352	76308	89225
40	45180	58497	71772	85006	98200	11353	24466	37540	50574	63568	76524	89440
41	45403	58718	71993	85226	98419	11572	24685	37758	50791	63785	76739	89655
42	45625	58940	72213	85446	98639	11791	24903	37975	51008	64001	76955	89870
43	45847	59161	72434	85667	98858	12010	25121	38193	51225	64217	77171	90085
44	46069	59383	72655	85887	99078	12229	25339	38410	51441	64433	77386	90300
45	46292	59604	72876	86107	99297	12447	25557	38628	51658	64650	77602	90515
46	46514	59826	73097	86327	99517	12666	25776	38845	51875	64866	77817	90730
47	46736	60047	73318	86547	99736	12885	25994	39063	52092	65082	78033	90945
48	46958	60269	73539	86767	99956	13104	26212	39280	52309	65298	78248	91160
49	47180	60490	73759	86988	00175	13323	26430	39498	52526	65514	78464	91374
50	47403	60712	73980	87208	00395	13541	26648	39715	52742	65730	78679	91589
51	47625	60933	74201	87428	00614	13760	26866	39932	52959	65946	78895	91804
52	47847	61155	74422	87648	00834	13979	27084	40150	53176	66163	79110	92019
53	48069	61376	74643	87868	01053	14198	27302	40367	53393	66379	79326	92234
54	48291	61598	74863	88088	01272	14417	27521	40585	53609	66595	79541	92449
55	48513	61819	75084	88308	01492	14635	27739	40802	53826	66811	79757	92663
56	48735	62041	75305	88528	01711	14854	27957	41020	54043	67027	79972	92878
57	48957	62262	75526	88748	01931	15073	28175	41237	54260	67243	80187	93093
58	49180	62483	75746	88968	02150	15291	28393	41454	54476	67459	80403	93308
59	49402	62705	75967	89188	02369	15510	28611	41672	54693	67675	80618	93522
60	49624	62926	76188	89408	02589	15729	28829	41889	54910	67891	80834	93737
″	35′	34′	33′	32′	31′	30′	29′	28′	27′	26′	25′	24′

Co-Sine Deg. 84

5 Deg. Co-Sine

24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′	″
9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	
80683	80563	80443	80323	80202	80081	79960	79838	79716	79593	79470	79347	60
80681	80561	80441	80321	80200	80079	79958	79836	79714	79591	79468	79345	59
80679	80559	80439	80319	80198	80077	79956	79834	79712	79589	79466	79343	58
80677	80557	80437	80317	80196	80075	79954	79832	79710	79587	79464	79341	57
80675	80555	80435	80315	80194	80073	79952	79830	79708	79585	79462	79339	56
80673	80553	80433	80313	80192	80071	79950	79828	79706	79583	79460	79337	55
80671	80551	80431	80311	80190	80069	79948	79826	79704	79581	79458	79335	54
80669	80549	80429	80309	80188	80067	79946	79824	79701	79579	79456	79333	53
80667	80547	80427	80307	80186	80065	79944	79822	79699	79577	79454	79330	52
80665	80545	80425	80305	80184	80063	79942	79820	79697	79575	79452	79328	51
80663	80543	80423	80303	80182	80061	79939	79818	79695	79573	79450	79326	50
80661	80541	80421	80301	80180	80059	79937	79816	79693	79571	79448	79324	49
80659	80539	80419	80299	80178	80057	79935	79814	79691	79569	79446	79322	48
80657	80537	80417	80297	80176	80055	79933	79812	79689	79567	79444	79320	47
80655	80535	80415	80295	80174	80053	79931	79809	79687	79565	79441	79318	46
80653	80533	80413	80293	80172	80051	79929	79807	79685	79562	79439	79316	45
80651	80531	80411	80291	80170	80049	79927	79805	79683	79560	79437	79314	44
80649	80529	80409	80289	80168	80047	79925	79803	79681	79558	79435	79312	43
80647	80527	80407	80287	80166	80045	79923	79801	79679	79556	79433	79310	42
80645	80525	80405	80285	80164	80043	79921	79799	79677	79554	79431	79308	41
80643	80523	80403	80283	80162	80041	79919	79797	79675	79552	79429	79306	40
80641	80521	80401	80281	80160	80039	79917	79795	79673	79550	79427	79304	39
80639	80519	80399	80279	80158	80037	79915	79793	79671	79548	79425	79302	38
80637	80517	80397	80277	80156	80035	79913	79791	79669	79546	79423	79300	37
80635	80515	80395	80275	80154	80033	79911	79789	79667	79544	79421	79297	36
80633	80513	80393	80273	80152	80031	79909	79787	79665	79542	79419	79295	35
80631	80511	80391	80271	80150	80029	79907	79785	79663	79540	79417	79293	34
80629	80509	80389	80269	80148	80027	79905	79783	79661	79538	79415	79291	33
80627	80507	80387	80267	80146	80025	79903	79781	79659	79536	79413	79289	32
80625	80505	80385	80265	80144	80023	79901	79779	79657	79534	79411	79287	31
80623	80503	80383	80263	80142	80021	79899	79777	79655	79532	79409	79285	30
80621	80501	80381	80261	80140	80019	79897	79775	79652	79530	79407	79283	29
80619	80499	80379	80259	80138	80017	79895	79773	79650	79528	79405	79281	28
80617	80497	80377	80257	80136	80014	79893	79771	79648	79526	79402	79279	27
80615	80495	80375	80255	80134	80012	79891	79769	79646	79524	79400	79277	26
80613	80493	80373	80253	80132	80010	79889	79767	79644	79522	79398	79275	25
80611	80491	80371	80251	80130	80008	79887	79765	79642	79519	79396	79273	24
80609	80489	80369	80249	80128	80006	79885	79763	79640	79517	79394	79271	23
80607	80487	80367	80247	80126	80004	79883	79761	79638	79515	79392	79269	22
80605	80485	80365	80245	80124	80002	79881	79759	79636	79513	79390	79267	21
80603	80483	80363	80243	80122	80000	79879	79757	79634	79511	79388	79265	20
80601	80481	80361	80241	80120	79998	79877	79754	79632	79509	79386	79262	19
80599	80479	80359	80239	80118	79996	79875	79752	79630	79507	79384	79260	18
80597	80477	80357	80237	80116	79994	79873	79750	79628	79505	79382	79258	17
80595	80475	80355	80235	80114	79992	79870	79748	79626	79503	79380	79256	16
80593	80473	80353	80233	80112	79990	79868	79746	79624	79501	79378	79254	15
80591	80471	80351	80231	80110	79988	79866	79744	79622	79499	79376	79252	14
80589	80469	80349	80229	80108	79986	79864	79742	79620	79497	79374	79250	13
80587	80467	80347	80226	80105	79984	79862	79740	79618	79495	79372	79248	12
80585	80465	80345	80224	80103	79982	79860	79738	79616	79493	79370	79246	11
80583	80463	80343	80222	80101	79980	79858	79736	79614	79491	79368	79244	10
80581	80461	80341	80220	80099	79978	79856	79734	79612	79489	79365	79242	9
80579	80459	80339	80218	80097	79976	79854	79732	79610	79487	79363	79240	8
80577	80457	80337	80216	80095	79974	79852	79730	79607	79485	79361	79238	7
80575	80455	80335	80214	80093	79972	79850	79728	79605	79483	79359	79236	6
80573	80453	80333	80212	80091	79970	79848	79726	79603	79480	79357	79234	5
80571	80451	80331	80210	80089	79968	79846	79724	79601	79478	79355	79231	4
80569	80449	80329	80208	80087	79966	79844	79722	79599	79476	79353	79229	3
80567	80447	80327	80206	80085	79964	79842	79720	79597	79474	79351	79227	2
80565	80445	80325	80204	80083	79962	79840	79718	79595	79472	79349	79225	1
80563	80443	80323	80202	80081	79960	79838	79716	79593	79470	79347	79223	0
35′	34′	33′	32′	31′	30′	29′	28′	27′	26′	25′	24′	″

Sine Deg. 84

5 Deg. Tangent

	24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′
″	8. 97	8. 97	8. 97	8. 97	8. 98	8. 98	8. 98	8. 98	8. 98	8. 98	8. 98	8. 99
0	55597	69060	82483	95865	09206	22507	35769	48991	62173	75317	88421	01487
1	55822	69284	82706	96087	09428	22729	35990	49211	62393	75535	88639	01704
2	56046	69508	82929	96310	09650	22950	36210	49431	62612	75754	88857	01922
3	56271	69732	83153	96533	09872	23171	36431	49651	62831	75973	89075	02139
4	56496	69956	83376	96755	10094	23393	36652	49871	63051	76191	89293	02356
5	56720	70180	83599	96978	10316	23614	36872	50091	63270	76410	89511	02574
6	56945	70404	83823	97201	10538	23835	37093	50311	63489	76629	89729	02791
7	57170	70628	84046	97423	10760	24057	37314	50531	63709	76847	89947	03009
8	57394	70852	84269	97646	10982	24278	37534	50751	63928	77066	90165	03226
9	57619	71076	84493	97868	11204	24499	37755	50971	64147	77285	90383	03443
10	57844	71300	84716	98091	11426	24720	37975	51191	64367	77503	90601	03661
11	58068	71524	84939	98314	11648	24942	38196	51411	64586	77722	90819	03878
12	58293	71748	85162	98536	11870	25163	38416	51630	64805	77941	91037	04095
13	58517	71972	85386	98759	12091	25384	38637	51850	65024	78159	91255	04313
14	58742	72196	85609	98981	12313	25605	38858	52070	65244	78378	91473	04530
15	58967	72420	85832	99204	12535	25827	39078	52290	65463	78596	91691	04747
16	59191	72644	86055	99426	12757	26048	39299	52510	65682	78815	91909	04964
17	59416	72867	86278	99649	12979	26269	39519	52730	65901	79033	92127	05182
18	59640	73091	86502	99871	13201	26490	39740	52950	66120	79252	92345	05399
19	59865	73315	86725	00094	13423	26711	39960	53169	66340	79470	92563	05616
20	60089	73539	86948	00316	13644	26932	40181	53389	66559	79689	92781	05833
21	60314	73763	87171	00539	13866	27153	40401	53609	66778	79908	92998	06051
22	60538	73987	87394	00761	14088	27375	40622	53829	66997	80126	93216	06268
23	60763	74210	87617	00984	14310	27596	40842	54049	67216	80345	93434	06485
24	60987	74434	87840	01206	14531	27817	41062	54268	67435	80563	93652	06702
25	61212	74658	88063	01428	14753	28038	41283	54488	67654	80781	93870	06919
26	61436	74882	88287	01651	14975	28259	41503	54708	67873	81000	94088	07137
27	61661	75105	88510	01873	15197	28480	41724	54928	68093	81218	94305	07354
28	61885	75329	88733	02096	15418	28701	41944	55148	68312	81437	94523	07571
29	62109	75553	88956	02318	15640	28922	42164	55367	68531	81655	94741	07788
30	62334	75777	89179	02540	15862	29143	42385	55587	68750	81874	94959	08005
31	62558	76000	89402	02763	16083	29364	42605	55807	68969	82092	95176	08222
32	62782	76224	89625	02985	16305	29585	42826	56026	69188	82310	95394	08439
33	63007	76448	89848	03207	16527	29806	43046	56246	69407	82529	95612	08656
34	63231	76671	90071	03430	16748	30027	43266	56466	69626	82747	95830	08874
35	63456	76895	90294	03652	16970	30248	43486	56685	69845	82966	96047	09091
36	63680	77119	90517	03874	17192	30469	43707	56905	70064	83184	96265	09308
37	63904	77342	90740	04097	17413	30690	43927	57125	70283	83402	96483	09525
38	64128	77566	90963	04319	17635	30911	44147	57344	70502	83621	96700	09742
39	64353	77790	91186	04541	17857	31132	44368	57564	70721	83839	96918	09959
40	64577	78013	91408	04763	18078	31353	44588	57783	70940	84057	97136	10176
41	64801	78237	91631	04986	18300	31574	44808	58003	71159	84275	97353	10393
42	65026	78460	91854	05208	18521	31795	45028	58223	71378	84494	97571	10610
43	65250	78684	92077	05430	18743	32016	45249	58442	71597	84712	97789	10827
44	65474	78907	92300	05652	18964	32236	45469	58662	71816	84930	98006	11044
45	65698	79131	92523	05874	19186	32457	45689	58881	72034	85149	98224	11261
46	65922	79354	92746	06097	19407	32678	45909	59101	72253	85367	98441	11478
47	66147	79578	92969	06319	19629	32899	46129	59320	72472	85585	98659	11695
48	66371	79802	93191	06541	19850	33120	46350	59540	72691	85803	98877	11912
49	66595	80025	93414	06763	20072	33341	46570	59759	72910	86021	99094	12128
50	66819	80248	93637	06985	20293	33561	46790	59979	73129	86240	99312	12345
51	67043	80472	93860	07207	20515	33782	47010	60198	73348	86458	99529	12562
52	67268	80695	94083	07430	20736	34003	47230	60418	73566	86676	99747	12779
53	67492	80919	94305	07652	20958	34224	47450	60637	73785	86894	99964	12996
54	67716	81142	94528	07874	21179	34445	47670	60857	74004	87112	00182	13213
55	67940	81366	94751	08096	21401	34665	47890	61076	74223	87330	00399	13430
56	68164	81589	94974	08318	21622	34886	48111	61296	74442	87549	00617	13647
57	68388	81813	95196	08540	21843	35107	48331	61515	74660	87767	00834	13863
58	68612	82036	95419	08762	22065	35328	48551	61734	74879	87985	01052	14080
59	68836	82259	95642	08984	22286	35548	48771	61954	75098	88203	01269	14297
60	69060	82483	95865	09206	22507	35769	48991	62173	75317	88421	01487	14514
″	35′	34′	33′	32′	31′	30′	29′	28′	27′	26′	25′	24′

5 Deg. Co-Tangent

24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′	
11. 02	11. 02	11. 02	11. 02	11. 01	11. 01	11. 01	11. 01	11. 01	11. 01	11. 01	11. 00	″
44403	30940	17517	04135	90794	77493	64231	51009	37827	24683	11579	98513	60
44178	30716	17294	03913	90572	77271	64010	50789	37607	24465	11361	98296	59
43954	30492	17071	03690	90350	77050	63790	50569	37388	24246	11143	98078	58
43729	30268	16847	03467	90128	76829	63569	50349	37169	24027	10925	97861	57
43504	30044	16624	03245	89906	76607	63348	50129	36949	23809	10707	97644	56
43280	29820	16401	03022	89684	76386	63128	49909	36730	23590	10489	97426	55
43055	29596	16177	02799	89462	76165	62907	49689	36511	23371	10271	97209	54
42830	29372	15954	02577	89240	75943	62686	49469	36291	23153	10053	96991	53
42606	29148	15731	02354	89018	75722	62466	49249	36072	22934	09835	96774	52
42381	28924	15507	02132	88796	75501	62245	49029	35853	22715	09617	96557	51
42156	28700	15284	01909	88574	75280	62025	48809	35633	22497	09399	96339	50
41932	28476	15061	01686	88352	75058	61804	48589	35414	22278	09181	96122	49
41707	28252	14838	01464	88130	74837	61584	48370	35195	22059	08963	95905	48
41483	28028	14614	01241	87909	74616	61363	48150	34976	21841	08745	95687	47
41258	27804	14391	01019	87687	74395	61142	47930	34756	21622	08527	95470	46
41033	27580	14168	00796	87465	74173	60922	47710	34537	21404	08309	95253	45
40809	27356	13945	00574	87243	73952	60701	47490	34318	21185	08091	95036	44
40584	27133	13722	00351	87021	73731	60481	47270	34099	20967	07873	94818	43
40360	26909	13498	00129	86799	73510	60260	47050	33880	20748	07655	94601	42
40135	26685	13275	99906	86577	73289	60040	46831	33660	20530	07437	94384	41
39911	26461	13052	99684	86356	73068	59819	46611	33441	20311	07219	94167	40
39686	26237	12829	99461	86134	72847	59599	46391	33222	20092	07002	93949	39
39462	26013	12606	99239	85912	72625	59378	46171	33003	19874	06784	93732	38
39237	25790	12383	99016	85690	72404	59158	45951	32784	19655	06566	93515	37
39013	25566	12160	98794	85469	72183	58938	45732	32565	19437	06348	93298	36
38788	25342	11937	98572	85247	71962	58717	45512	32346	19219	06130	93081	35
38564	25118	11713	98349	85025	71741	58497	45292	32127	19000	05912	92863	34
38339	24895	11490	98127	84803	71520	58276	45072	31907	18782	05695	92646	33
38115	24671	11267	97904	84582	71299	58056	44852	31688	18563	05477	92429	32
37891	24447	11044	97682	84360	71078	57836	44633	31469	18345	05259	92212	31
37666	24223	10821	97460	84138	70857	57615	44413	31250	18126	05041	91995	30
37442	24000	10598	97237	83917	70636	57395	44193	31031	17908	04824	91778	29
37218	23776	10375	97015	83695	70415	57174	43974	30812	17690	04606	91561	28
36993	23552	10152	96793	83473	70194	56954	43754	30593	17471	04388	91344	27
36769	23329	09929	96570	83252	69973	56734	43534	30374	17253	04170	91126	26
36544	23105	09706	96348	83030	69752	56514	43315	30155	17034	03953	90909	25
36320	22881	09483	96126	82808	69531	56293	43095	29936	16816	03735	90692	24
36096	22658	09260	95903	82587	69310	56073	42875	29717	16598	03517	90475	23
35872	22434	09037	95681	82365	69089	55853	42656	29498	16379	03300	90258	22
35647	22210	08814	95459	82143	68868	55632	42436	29279	16161	03082	90041	21
35423	21987	08592	95237	81922	68647	55412	42217	29060	15943	02864	89824	20
35199	21763	08369	95014	81700	68426	55192	41997	28841	15725	02647	89607	19
34974	21540	08146	94792	81479	68205	54972	41777	28622	15506	02429	89390	18
34750	21316	07923	94570	81257	67984	54751	41558	28403	15288	02211	89173	17
34526	21093	07700	94348	81036	67764	54531	41338	28184	15070	01994	88956	16
34302	20869	07477	94126	80814	67543	54311	41119	27966	14851	01776	88739	15
34078	20646	07254	93903	80593	67322	54091	40899	27747	14633	01559	88522	14
33853	20422	07031	93681	80371	67101	53871	40680	27528	14415	01341	88305	13
33629	20198	06809	93459	80150	66880	53650	40460	27309	14197	01123	88088	12
33405	19975	06586	93237	79928	66659	53430	40241	27090	13979	00906	87872	11
33181	19752	06363	93015	79707	66439	53210	40021	26871	13760	00688	87655	10
32957	19528	06140	92793	79485	66218	52990	39802	26652	13542	00471	87438	9
32732	19305	05917	92570	79264	65997	52770	39582	26434	13324	00253	87221	8
32508	19081	05695	92348	79042	65776	52550	39363	26215	13106	00036	87004	7
32284	18858	05472	92126	78821	65555	52330	39143	25996	12888	99818	86787	6
32060	18634	05249	91904	78599	65335	52110	38924	25777	12670	99601	86570	5
31836	18411	05026	91682	78378	65114	51889	38704	25558	12451	99383	86353	4
31612	18187	04804	91460	78157	64893	51660	38485	25340	12233	99166	86137	3
31388	17964	04581	91238	77935	64672	51449	38266	25121	12015	98948	85920	2
31164	17741	04358	91016	77714	64452	51229	38046	24902	11797	98731	85703	1
30940	17517	04135	90794	77493	64231	51009	37827	24683	11579	98513	85486	0
35′	34′	33′	32′	31′	30′	29′	28′	27′	26′	25′	24′	″

Co-Tangent Deg. 84

Tangent Deg. 84

5 Deg. Sine

″	36′	37′	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′
	8. 98	8. 99	8. 99	8. 99	8. 99	8. 99	8. 99	8. 99	8. 99	9. 00	9. 00	9. 00
0	93737	06602	19429	32217	44968	57681	70356	82994	95595	08160	20687	33179
1	93952	06816	19642	32430	45180	57892	70567	83205	95805	08369	20896	33387
2	94167	07030	19856	32643	45392	58104	70778	83415	96015	08578	21104	33594
3	94381	07244	20069	32856	45604	58315	70989	83625	96225	08787	21313	33802
4	94596	07458	20283	33069	45817	58527	71200	83836	96434	08996	21521	34010
5	94811	07673	20496	33281	46029	58738	71411	84046	96644	09205	21730	34218
6	95025	07887	20709	33494	46241	58950	71622	84256	96854	09414	21938	34426
7	95240	08101	20923	33707	46453	59161	71833	84466	97063	09623	22147	34634
8	95455	08315	21136	33920	46665	59373	72043	84677	97273	09832	22355	34841
9	95669	08529	21350	34132	46877	59584	72254	84887	97482	10041	22563	35049
10	95884	08743	21563	34345	47089	59796	72465	85097	97692	10250	22772	35257
11	96099	08957	21776	34558	47301	60007	72676	85307	97902	10459	22980	35465
12	96313	09171	21990	34770	47513	60219	72887	85518	98111	10668	23189	35673
13	96528	09385	22203	34983	47726	60430	73098	85728	98321	10877	23397	35880
14	96742	09598	22416	35196	47938	60642	73308	85938	98530	11086	23605	36088
15	96957	09812	22629	35408	48150	60853	73519	86148	98740	11295	23814	36296
16	97172	10026	22843	35621	48362	61065	73730	86358	98950	11504	24022	36504
17	97386	10240	23056	35834	48574	61276	73941	86568	99159	11713	24230	36711
18	97601	10454	23269	36046	48786	61487	74152	86779	99369	11922	24439	36919
19	97815	10668	23483	36259	48998	61699	74362	86989	99578	12131	24647	37127
20	98030	10882	23696	36472	49210	61910	74573	87199	99788	12340	24855	37334
21	98244	11096	23909	36684	49422	62121	74784	87409	99997	12549	25064	37542
22	98459	11310	24122	36897	49634	62333	74994	87619	00207	12757	25272	37750
23	98673	11524	24336	37109	49846	62544	75205	87829	00416	12966	25480	37957
24	98888	11737	24549	37322	50058	62755	75416	88039	00626	13175	25688	38165
25	99102	11951	24762	37535	50269	62967	75627	88249	00835	13384	25897	38373
26	99317	12165	24975	37747	50481	63178	75837	88459	01044	13593	26105	38580
27	99531	12379	25188	37960	50693	63389	76048	88669	01254	13802	26313	38788
28	99746	12593	25402	38172	50905	63601	76259	88879	01463	14011	26521	38996
29	99960	12806	25615	38385	51117	63812	76469	89089	01673	14219	26729	39203
30	00174	13020	25828	38597	51329	64023	76680	89299	01882	14428	26938	39411
31	00389	13234	26041	38810	51541	64234	76891	89510	02092	14637	27146	39618
32	00603	13448	26254	39022	51753	64446	77101	89720	02301	14846	27354	39826
33	00818	13662	26467	39235	51965	64657	77312	89930	02510	15054	27562	40033
34	01032	13875	26680	39447	52176	64868	77522	90139	02720	15263	27770	40241
35	01246	14089	26893	39660	52388	65079	77733	90349	02929	15472	27978	40449
36	01461	14303	27106	39872	52600	65290	77944	90559	03138	15681	28187	40656
37	01675	14516	27320	40085	52812	65502	78154	90769	03348	15889	28395	40864
38	01889	14730	27533	40297	53024	65713	78365	90979	03557	16098	28603	41071
39	02104	14944	27746	40509	53236	65924	78575	91189	03766	16307	28811	41279
40	02318	15158	27959	40722	53447	66135	78786	91399	03976	16516	29019	41486
41	02532	15371	28172	40934	53659	66346	78996	91609	04185	16724	29227	41694
42	02747	15585	28385	41147	53871	66557	79207	91819	04394	16933	29435	41901
43	02961	15798	28598	41359	54083	66769	79417	92029	04604	17142	29643	42109
44	03175	16012	28811	41571	54294	66980	79628	92239	04813	17350	29851	42316
45	03390	16226	29024	41784	54506	67191	79838	92449	05022	17559	30059	42523
46	03604	16439	29237	41996	54718	67402	80049	92658	05231	17768	30267	42731
47	03818	16653	29450	42208	54929	67613	80259	92868	05441	17976	30475	42938
48	04032	16867	29663	42421	55141	67824	80470	93078	05650	18185	30683	43146
49	04246	17080	29876	42633	55353	68035	80680	93288	05859	18393	30891	43353
50	04461	17294	30089	42845	55565	68246	80891	93498	06068	18602	31099	43560
51	04675	17507	30301	43058	55776	68457	81101	93708	06277	18811	31307	43768
52	04889	17721	30514	43270	55988	68668	81311	93917	06487	19019	31515	43975
53	05103	17934	30727	43482	56200	68879	81522	94127	06696	19228	31723	44183
54	05317	18148	30940	43695	56411	69090	81732	94337	06905	19436	31931	44390
55	05532	18361	31153	43907	56623	69301	81943	94547	07114	19645	32139	44597
56	05746	18575	31366	44119	56834	69512	82153	94757	07323	19853	32347	44805
57	05960	18788	31579	44331	57046	69723	82363	94966	07532	20062	32555	45012
58	06174	19002	31792	44543	57258	69934	82574	95176	07742	20270	32763	45219
59	06388	19215	32004	44756	57469	70145	82784	95386	07951	20479	32971	45427
60	06602	19429	32217	44968	57681	70356	82994	95595	08160	20687	33179	45634
″	23′	22′	21′	20′	19′	18′	17′	16′	15′	14′	13′	12′

Co-Sine Deg. 84

5 Deg. Co-Sine

36′	37′	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′	″
9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	9. 99	
79223	79099	78975	78850	78725	78599	78473	78347	78220	78093	77966	77838	60
79221	79097	78973	78848	78723	78597	78471	78345	78218	78091	77964	77836	59
79219	79095	78971	78846	78721	78595	78469	78343	78216	78089	77962	77834	58
79217	79093	78969	78844	78719	78593	78467	78341	78214	78087	77960	77832	57
79215	79091	78966	78842	78716	78591	78465	78339	78212	78085	77957	77830	56
79213	79089	78964	78840	78714	78589	78463	78337	78210	78083	77955	77828	55
79211	79087	78962	78837	78712	78587	78461	78334	78208	78081	77953	77825	54
79209	79085	78960	78835	78710	78585	78459	78332	78206	78079	77951	77823	53
79207	79083	78958	78833	78708	78582	78457	78330	78204	78076	77949	77821	52
79205	79081	78956	78831	78706	78580	78454	78328	78201	78074	77947	77819	51
79203	79078	78954	78829	78704	78578	78452	78326	78199	78072	77945	77817	50
79201	79076	78952	78827	78702	78576	78450	78324	78197	78070	77943	77815	49
79198	79074	78950	78825	78700	78574	78448	78322	78195	78068	77940	77813	48
79196	79072	78948	78823	78698	78572	78446	78320	78193	78066	77938	77811	47
79194	79070	78946	78821	78696	78570	78444	78318	78191	78064	77936	77808	46
79192	79068	78944	78819	78693	78568	78442	78315	78189	78062	77934	77806	45
79190	79066	78942	78817	78691	78566	78440	78313	78187	78059	77932	77804	44
79188	79064	78939	78815	78689	78564	78438	78311	78184	78057	77930	77802	43
79186	79062	78937	78812	78687	78562	78436	78309	78182	78055	77928	77800	42
79184	79060	78935	78810	78685	78559	78433	78307	78180	78053	77926	77798	41
79182	79058	78933	78808	78683	78557	78431	78305	78178	78051	77923	77796	40
79180	79056	78931	78806	78681	78555	78429	78303	78176	78049	77921	77793	39
79178	79054	78929	78804	78679	78553	78427	78301	78174	78047	77919	77791	38
79176	79052	78927	78802	78677	78551	78425	78299	78172	78045	77917	77789	37
79174	79049	78925	78800	78675	78549	78423	78296	78170	78042	77915	77787	36
79172	79047	78923	78798	78673	78547	78421	78294	78168	78040	77913	77785	35
79170	79045	78921	78796	78670	78545	78419	78292	78165	78038	77911	77783	34
79167	79043	78919	78794	78668	78543	78417	78290	78163	78036	77909	77781	33
79165	79041	78917	78792	78666	78541	78414	78288	78161	78034	77906	77778	32
79163	79039	78914	78790	78664	78538	78412	78286	78159	78032	77904	77776	31
79161	79037	78912	78787	78662	78536	78410	78284	78157	78030	77902	77774	30
79159	79035	78910	78785	78660	78534	78408	78282	78155	78028	77900	77772	29
79157	79033	78908	78783	78658	78532	78406	78280	78153	78025	77898	77770	28
79155	79031	78906	78781	78656	78530	78404	78277	78151	78023	77896	77768	27
79153	79029	78904	78779	78654	78528	78402	78275	78148	78021	77894	77766	26
79151	79027	78902	78777	78652	78526	78400	78273	78146	78019	77892	77764	25
79149	79025	78900	78775	78650	78524	78398	78271	78144	78017	77889	77761	24
79147	79023	78898	78773	78647	78522	78396	78269	78142	78015	77887	77759	23
79145	79020	78896	78771	78645	78520	78393	78267	78140	78013	77885	77757	22
79143	79018	78894	78769	78643	78517	78391	78265	78138	78011	77883	77755	21
79141	79016	78892	78767	78641	78515	78389	78263	78136	78009	77881	77753	20
79139	79014	78890	78764	78639	78513	78387	78261	78134	78006	77879	77751	19
79136	79012	78887	78762	78637	78511	78385	78258	78132	78004	77877	77749	18
79134	79010	78885	78760	78635	78509	78383	78256	78129	78002	77874	77746	17
79132	79008	78883	78758	78633	78507	78381	78254	78127	78000	77872	77744	16
79130	79006	78881	78756	78631	78505	78379	78252	78125	77998	77870	77742	15
79128	79004	78879	78754	78629	78503	78377	78250	78123	77996	77868	77740	14
79126	79002	78877	78752	78626	78501	78374	78248	78121	77994	77866	77738	13
79124	79000	78875	78750	78624	78499	78372	78246	78119	77992	77864	77736	12
79122	78998	78873	78748	78622	78496	78370	78244	78117	77989	77862	77734	11
79120	78996	78871	78746	78620	78494	78368	78242	78115	77987	77860	77731	10
79118	78993	78869	78744	78618	78492	78366	78239	78112	77985	77857	77729	9
79116	78991	78867	78742	78616	78490	78364	78237	78110	77983	77855	77727	8
79114	78989	78865	78739	78614	78488	78362	78235	78108	77981	77853	77725	7
79112	78987	78862	78737	78612	78486	78360	78233	78106	77979	77851	77723	6
79110	78985	78860	78735	78610	78484	78358	78231	78104	77977	77849	77721	5
79107	78983	78858	78733	78608	78482	78356	78229	78102	77975	77847	77719	4
79105	78981	78856	78731	78606	78480	78353	78227	78100	77972	77845	77717	3
79103	78979	78854	78729	78603	78478	78351	78225	78098	77970	77842	77714	2
79101	78977	78852	78727	78601	78475	78349	78223	78096	77968	77840	77712	1
79099	78975	78850	78725	78599	78473	78347	78220	78093	77966	77838	77710	0
23′	22′	21′	20′	19′	18′	17′	16′	15′	14′	13′	12′	″

Sine Deg. 84

5 Deg. Tangent

″	36′	37′	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′
	8.99	8.99	8.99	8.99	8.99	8.99	8.99	9.00	9.00	9.00	9.00	9.00
0	14514	27503	40454	53367	66243	79081	91883	04647	17375	30066	42721	55340
1	14731	27719	40670	53582	66457	79295	92096	04860	17587	30278	42932	55550
2	14948	27935	40885	53797	66672	79509	92309	05072	17799	30489	43143	55760
3	15164	28151	41101	54012	66886	79722	92522	05285	18010	30700	43353	55970
4	15381	28368	41316	54227	67100	79936	92735	05497	18222	30911	43564	56180
5	15598	28584	41532	54442	67314	80150	92948	05709	18434	31122	43774	56390
6	15815	28800	41747	54657	67529	80363	93161	05922	18646	31333	43985	56600
7	16031	29016	41963	54871	67743	80577	93374	06134	18858	31545	44196	56810
8	16248	29232	42178	55086	67957	80790	93587	06346	19069	31756	44406	57020
9	16465	29448	42393	55301	68171	81004	93800	06559	19281	31967	44617	57230
10	16681	29664	42609	55516	68385	81218	94013	06771	19493	32178	44827	57440
11	16898	29880	42824	55731	68600	81431	94226	06983	19704	32389	45038	57650
12	17115	30096	43040	55945	68814	81645	94439	07196	19916	32600	45248	57860
13	17331	30312	43255	56160	69028	81858	94652	07408	20128	32811	45459	58070
14	17548	30528	43471	56375	69242	82072	94864	07620	20340	33022	45669	58280
15	17765	30744	43686	56590	69456	82285	95077	07833	20551	33234	45880	58490
16	17981	30960	43901	56805	69670	82499	95290	08045	20763	33445	46090	58700
17	18198	31176	44117	57019	69884	82712	95503	08257	20975	33656	46300	58909
18	18415	31392	44332	57234	70099	82926	95716	08469	21186	33867	46511	59119
19	18631	31608	44547	57449	70313	83139	95929	08682	21398	34078	46721	59329
20	18848	31824	44763	57663	70527	83353	96142	08894	21610	34289	46932	59539
21	19064	32040	44978	57878	70741	83566	96355	09106	21821	34500	47142	59749
22	19281	32256	45193	58093	70955	83780	96567	09318	22033	34711	47353	59958
23	19498	32472	45409	58307	71169	83993	96780	09531	22244	34922	47563	60168
24	19714	32688	45624	58522	71383	84206	96993	09743	22456	35133	47773	60378
25	19931	32904	45839	58737	71597	84420	97206	09955	22667	35344	47984	60588
26	20147	33120	46054	58951	71811	84633	97419	10167	22879	35555	48194	60798
27	20364	33336	46270	59166	72025	84847	97631	10379	23091	35766	48404	61007
28	20580	33552	46485	59381	72239	85060	97844	10591	23302	35977	48615	61217
29	20797	33767	46700	59595	72453	85273	98057	10804	23514	36187	48825	61427
30	21013	33983	46915	59810	72667	85487	98270	11016	23725	36398	49035	61637
31	21230	34199	47131	60024	72881	85700	98482	11228	23937	36609	49246	61846
32	21446	34415	47346	60239	73095	85913	98695	11440	24148	36820	49456	62056
33	21663	34631	47561	60454	73309	86127	98908	11652	24360	37031	49666	62266
34	21879	34847	47776	60668	73523	86340	99121	11864	24571	37242	49877	62475
35	22096	35062	47991	60883	73737	86553	99333	12076	24783	37453	50087	62685
36	22312	35278	48207	61097	73951	86767	99546	12288	24994	37664	50297	62895
37	22528	35494	48422	61312	74164	86980	99759	12500	25206	37875	50507	63104
38	22745	35710	48637	61526	74378	87193	99971	12712	25417	38085	50718	63314
39	22961	35925	48852	61741	74592	87407	00184	12924	25629	38296	50928	63524
40	23178	36141	49067	61955	74806	87620	00397	13136	25840	38507	51138	63733
41	23394	36357	49282	62170	75020	87833	00609	13349	26051	38718	51348	63943
42	23610	36573	49497	62384	75234	88046	00822	13561	26263	38929	51559	64152
43	23827	36786	49712	62599	75448	88260	01034	13773	26474	39139	51769	64362
44	24043	37004	49927	62813	75662	88473	01247	13985	26686	39350	51979	64572
45	24259	37220	50143	63028	75875	88686	01460	14197	26897	39561	52189	64781
46	24476	37436	50358	63242	76089	88899	01672	14408	27108	39772	52399	64991
47	24692	37651	50573	63457	76303	89112	01885	14620	27320	39983	52609	65200
48	24908	37867	50788	63671	76517	89326	02097	14832	27531	40193	52820	65410
49	25125	38083	51003	63885	76731	89539	02310	15044	27742	40404	53030	65619
50	25341	38298	51218	64100	76944	89752	02522	15256	27954	40615	53240	65829
51	25557	38514	51433	64314	77158	89965	02735	15468	28165	40825	53450	66039
52	25773	38729	51648	64528	77372	90178	02947	15680	28376	41036	53660	66248
53	25990	38945	51863	64743	77586	90391	03160	15892	28588	41247	53870	66458
54	26206	39161	52078	64957	77799	90604	03372	16104	28799	41458	54080	66667
55	26422	39376	52293	65172	78013	90817	03585	16316	29010	41668	54290	66876
56	26638	39592	52508	65386	78227	91031	03797	16528	29221	41879	54500	67086
57	26854	39807	52723	65600	78440	91244	04010	16740	29433	42090	54710	67295
58	27071	40023	52937	65814	78654	91457	04222	16951	29644	42300	54920	67505
59	27287	40239	53152	66029	78868	91670	04435	17163	29855	42511	55130	67714
60	27503	40454	53367	66243	79081	91883	04647	17375	30066	42721	55340	67924
″	23′	22′	21′	20′	19′	18′	17′	16′	15′	14′	13′	12′

5 Deg. Co-Tangent

36′	37′	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′	″
11.00	11.00	11.00	11.00	11.00	11.00	11.00	10.99	10.99	10.99	10.99	10.99	
85486	72497	59546	46633	33757	20919	08117	95353	82625	69934	57279	44660	60
85269	72281	59330	46418	33543	20705	07904	95140	82413	69722	57068	44450	59
85052	72065	59115	46203	33328	20491	07691	94928	82201	69511	56857	44240	58
84836	71849	58899	45988	33114	20278	07478	94715	81990	69300	56647	44030	57
84619	71632	58684	45773	32900	20064	07265	94503	81778	69089	56436	43820	56
84402	71416	58468	45558	32686	19850	07052	94291	81566	68878	56226	43610	55
84185	71200	58253	45343	32471	19637	06839	94078	81354	68667	56015	43400	54
83969	70984	58037	45129	32257	19423	06626	93866	81142	68455	55804	43190	53
83752	70768	57822	44914	32043	19210	06413	93654	80931	68244	55594	42980	52
83535	70552	57607	44699	31829	18996	06200	93441	80719	68033	55383	42770	51
83319	70336	57391	44484	31615	18782	05987	93229	80507	67822	55173	42560	50
83102	70120	57176	44269	31400	18569	05774	93017	80296	67611	54962	42350	49
82885	69904	56960	44055	31186	18355	05561	92804	80084	67400	54752	42140	48
82669	69688	56745	43840	30972	18142	05348	92592	79872	67189	54541	41930	47
82452	69472	56529	43625	30758	17928	05136	92380	79660	66978	54331	41720	46
82235	69256	56314	43410	30544	17715	04923	92167	79449	66766	54120	41510	45
82019	69040	56099	43195	30330	17501	04710	91955	79237	66555	53910	41300	44
81802	68824	55883	42981	30116	17288	04497	91743	79025	66344	53700	41091	43
81585	68608	55668	42766	29901	17074	04284	91531	78814	66133	53489	40881	42
81369	68392	55453	42551	29687	16861	04071	91318	78602	65922	53279	40671	41
81152	68176	55237	42337	29473	16647	03858	91106	78390	65711	53068	40461	40
80936	67960	55022	42122	29259	16434	03645	90894	78179	65500	52858	40251	39
80719	67744	54807	41907	29045	16220	03433	90682	77967	65289	52647	40042	38
80502	67528	54591	41693	28831	16007	03220	90469	77756	65078	52437	39832	37
80286	67312	54376	41478	28617	15794	03007	90257	77544	64867	52227	39622	36
80069	67096	54161	41263	28403	15580	02794	90045	77333	64656	52016	39412	35
79853	66880	53946	41049	28189	15367	02581	89833	77121	64445	51806	39202	34
79636	66664	53730	40834	27975	15153	02369	89621	76909	64234	51596	38993	33
79420	66448	53515	40619	27761	14940	02156	89409	76698	64023	51385	38783	32
79203	66233	53300	40405	27547	14727	01943	89196	76486	63813	51175	38573	31
78987	66017	53085	40190	27333	14513	01730	88984	76275	63602	50965	38363	30
78770	65801	52869	39976	27119	14300	01518	88772	76063	63391	50754	38154	29
78554	65585	52654	39761	26905	14087	01305	88560	75852	63180	50544	37944	28
78337	65369	52439	39546	26691	13873	01092	88348	75640	62969	50334	37734	27
78121	65153	52224	39332	26477	13660	00879	88136	75429	62758	50123	37525	26
77904	64938	52009	39117	26263	13447	00667	87924	75217	62547	49913	37315	25
77688	64722	51793	38903	26049	13233	00454	87712	75006	62336	49703	37105	24
77472	64506	51578	38688	25836	13020	00241	87500	74794	62125	49493	36896	23
77255	64290	51363	38474	25622	12807	00029	87288	74583	61915	49282	36686	22
77039	64075	51148	38259	25408	12593	99816	87076	74371	61704	49072	36476	21
76822	63859	50933	38045	25194	12380	99603	86864	74160	61493	48862	36267	20
76606	63643	50718	37830	24980	12167	99391	86651	73949	61282	48652	36057	19
76390	63427	50503	37616	24766	11954	99178	86439	73737	61071	48441	35848	18
76173	63212	50288	37401	24552	11740	98966	86227	73526	60861	48231	35638	17
75957	62996	50073	37187	24338	11527	98753	86015	73314	60650	48021	35428	16
75741	62780	49857	36972	24125	11314	98540	85803	73103	60439	47811	35219	15
75524	62564	49642	36758	23911	11101	98328	85592	72892	60228	47601	35009	14
75308	62349	49427	36543	23697	10888	98115	85380	72680	60017	47391	34800	13
75092	62133	49212	36329	23483	10674	97903	85168	72469	59807	47180	34590	12
74875	61917	48997	36115	23269	10461	97690	84956	72258	59596	46970	34381	11
74659	61702	48782	35900	23056	10248	97478	84744	72046	59385	46760	34171	10
74443	61486	48567	35686	22842	10035	97265	84532	71835	59175	46550	33961	9
74227	61271	48352	35472	22628	09822	97053	84320	71624	58964	46340	33752	8
74010	61055	48137	35257	22414	09609	96840	84108	71412	58753	46130	33542	7
73794	60839	47922	35043	22201	09396	96628	83896	71201	58542	45920	33333	6
73578	60624	47707	34828	21987	09183	96415	83684	70990	58332	45710	33124	5
73362	60408	47492	34614	21773	08969	96203	83472	70779	58121	45500	32914	4
73146	60193	47277	34400	21560	08756	95990	83260	70567	57910	45290	32705	3
72929	59977	47063	34186	21346	08543	95778	83049	70356	57700	45080	32495	2
72713	59761	46848	33971	21132	08330	95565	82837	70145	57489	44870	32286	1
72497	59546	46633	33757	20919	08117	95353	82625	69934	57279	44660	32076	0
23′	22′	21′	20′	19′	18′	17′	16′	15′	14′	13′	12′	″

Co-Tangent Deg. 84

Tangent Deg. 84

5 Deg. Sine

	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	9.00	9.00	9.00	9.00	9.00	9.01	9.01	9.01	9.01	9.01	9.01	9.01
0	45634	58053	70436	82784	95096	07374	19616	31823	43996	56135	68239	80309
1	45841	58260	70642	82990	95301	07578	19820	32026	44199	56337	68440	80510
2	46048	58466	70848	83195	95506	07782	20023	32230	44401	56539	68642	80711
3	46256	58673	71054	83400	95711	07987	20227	32433	44604	56741	68843	80912
4	46463	58880	71261	83606	95916	08191	20431	32636	44806	56943	69045	81113
5	46670	59086	71467	83811	96121	08395	20634	32839	45009	57145	69246	81314
6	46877	59293	71673	84017	96326	08599	20838	33042	45212	57347	69447	81514
7	47085	59499	71879	84222	96531	08804	21042	33245	45414	57549	69649	81715
8	47292	59706	72085	84428	96735	09008	21246	33448	45617	57751	69850	81916
9	47499	59913	72291	84633	96940	09212	21449	33651	45819	57952	70052	82117
10	47706	60119	72497	84839	97145	09416	21653	33855	46022	58154	70253	82318
11	47913	60326	72703	85044	97350	09621	21856	34058	46224	58356	70454	82518
12	48121	60532	72909	85249	97555	09825	22060	34261	46427	58558	70656	82719
13	48328	60739	73115	85455	97759	10029	22264	34464	46629	58760	70857	82920
14	48535	60946	73321	85660	97964	10233	22467	34667	46832	58962	71058	83121
15	48742	61152	73527	85865	98169	10437	22671	34870	47034	59164	71260	83321
16	48949	61359	73732	86071	98374	10642	22875	35073	47236	59366	71461	83522
17	49156	61565	73938	86276	98579	10846	23078	35276	47439	59568	71662	83723
18	49363	61772	74144	86481	98783	11050	23282	35479	47641	59770	71864	83924
19	49570	61978	74350	86687	98988	11254	23485	35682	47844	59971	72065	84124
20	49778	62185	74556	86892	99193	11458	23689	35885	48046	60173	72266	84325
21	49985	62391	74762	87097	99397	11662	23892	36088	48249	60375	72467	84526
22	50192	62598	74968	87303	99602	11866	24096	36291	48451	60577	72669	84726
23	50399	62804	75174	87508	99807	12071	24299	36494	48653	60779	72870	84927
24	50606	63011	75380	87713	00011	12275	24503	36697	48856	60980	73071	85128
25	50813	63217	75585	87918	00216	12479	24706	36900	49058	61182	73272	85328
26	51020	63423	75791	88124	00421	12683	24910	37102	49260	61384	73474	85529
27	51227	63630	75997	88329	00625	12887	25113	37305	49463	61586	73675	85730
28	51434	63836	76203	88534	00830	13091	25317	37508	49665	61788	73876	85930
29	51641	64043	76409	88739	01035	13295	25520	37711	49867	61989	74077	86131
30	51848	64249	76615	88945	01239	13499	25724	37914	50070	62191	74278	86332
31	52055	64455	76820	89150	01444	13703	25927	38117	50272	62393	74479	86532
32	52262	64662	77026	89355	01649	13907	26131	38320	50474	62595	74681	86733
33	52469	64868	77232	89560	01853	14111	26334	38523	50677	62796	74882	86933
34	52676	65075	77438	89765	02058	14315	26538	38725	50879	62998	75083	87134
35	52883	65281	77643	89971	02262	14519	26741	38928	51081	63200	75284	87335
36	53090	65487	77849	90176	02467	14723	26944	39131	51283	63401	75485	87535
37	53297	65694	78055	90381	02671	14927	27148	39334	51486	63603	75686	87736
38	53503	65900	78261	90586	02876	15131	27351	39537	51688	63805	75887	87936
39	53710	66106	78466	90791	03081	15335	27555	39740	51890	64006	76088	88137
40	53917	66312	78672	90996	03285	15539	27758	39942	52092	64208	76290	88337
41	54124	66519	78878	91201	03490	15743	27961	40145	52295	64410	76491	88538
42	54331	66725	79083	91406	03694	15947	28165	40348	52497	64611	76692	88738
43	54538	66931	79289	91611	03899	16151	28368	40551	52699	64813	76893	88939
44	54745	67138	79495	91817	04103	16355	28571	40753	52901	65014	77094	89139
45	54952	67344	79700	92022	04308	16559	28775	40956	53103	65216	77295	89340
46	55158	67550	79906	92227	04512	16762	28978	41159	53305	65418	77496	89540
47	55365	67756	80112	92432	04717	16966	29181	41362	53508	65619	77697	89741
48	55572	67962	80317	92637	04921	17170	29385	41564	53710	65821	77898	89941
49	55779	68169	80523	92842	05125	17374	29588	41767	53912	66022	78099	90141
50	55986	68375	80729	93047	05330	17578	29791	41970	54114	66224	78300	90342
51	56192	68581	80934	93252	05534	17782	29994	42172	54316	66425	78501	90542
52	56399	68787	81140	93457	05739	17986	30198	42375	54518	66627	78702	90743
53	56606	68993	81345	93662	05943	18189	30401	42578	54720	66829	78903	90943
54	56813	69200	81551	93867	06147	18393	30604	42780	54922	67030	79104	91144
55	57019	69406	81756	94072	06352	18597	30807	42983	55124	67232	79305	91344
56	57226	69612	81962	94277	06556	18801	31011	43186	55326	67433	79506	91544
57	57433	69818	82167	94482	06761	19005	31214	43388	55529	67635	79706	91745
58	57640	70024	82373	94687	06965	19208	31417	43591	55731	67836	79907	91945
59	57846	70230	82579	94891	07169	19412	31620	43794	55933	68037	80108	92145
60	58053	70436	82784	95096	07374	19616	31823	43996	56135	68239	80309	92346
″	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Sine Deg. 84

5 Deg. Co-Sine

48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	″
77710	77582	77453	77323	77194	77064	76933	76803	76672	76540	76408	76276	60
77708	77579	77451	77321	77192	77062	76931	76801	76669	76538	76406	76274	59
77706	77577	77448	77319	77190	77060	76929	76798	76667	76536	76404	76272	58
77704	77575	77446	77317	77187	77057	76927	76796	76665	76534	76402	76269	57
77702	77573	77444	77315	77185	77055	76925	76794	76663	76531	76400	76267	56
77699	77571	77442	77313	77183	77053	76923	76792	76661	76529	76397	76265	55
77697	77569	77440	77311	77181	77051	76920	76790	76659	76527	76395	76263	54
77695	77567	77438	77308	77179	77049	76918	76787	76656	76525	76393	76261	53
77693	77564	77435	77306	77177	77046	76916	76785	76654	76523	76391	76258	52
77691	77562	77433	77304	77174	77044	76914	76783	76652	76520	76388	76256	51
77689	77560	77431	77302	77172	77042	76912	76781	76650	76518	76386	76254	50
77687	77558	77429	77300	77170	77040	76910	76779	76648	76516	76384	76252	49
77684	77556	77427	77298	77168	77038	76907	76777	76645	76514	76382	76250	48
77682	77554	77425	77295	77166	77036	76905	76774	76643	76512	76380	76247	47
77680	77552	77423	77293	77164	77033	76903	76772	76641	76509	76377	76245	46
77678	77549	77420	77291	77161	77031	76901	76770	76639	76507	76375	76243	45
77676	77547	77418	77289	77159	77029	76899	76768	76637	76505	76373	76241	44
77674	77545	77416	77287	77157	77027	76896	76766	76634	76503	76371	76239	43
77672	77543	77414	77285	77155	77025	76894	76763	76632	76501	76369	76236	42
77669	77541	77412	77282	77153	77023	76892	76761	76630	76498	76366	76234	41
77667	77539	77410	77280	77151	77020	76890	76759	76628	76496	76364	76232	40
77665	77537	77408	77278	77148	77018	76888	76757	76626	76494	76362	76230	39
77663	77534	77405	77276	77146	77016	76886	76755	76623	76492	76360	76228	38
77661	77532	77403	77274	77144	77014	76883	76753	76621	76490	76358	76225	37
77659	77530	77401	77272	77142	77012	76881	76750	76619	76487	76355	76223	36
77657	77528	77399	77269	77140	77010	76879	76748	76617	76485	76353	76221	35
77654	77526	77397	77267	77138	77007	76877	76746	76615	76483	76351	76219	34
77652	77524	77395	77265	77135	77005	76875	76744	76613	76481	76349	76216	33
77650	77521	77392	77263	77133	77003	76873	76742	76610	76479	76347	76214	32
77648	77519	77390	77261	77131	77001	76870	76739	76608	76476	76344	76212	31
77646	77517	77388	77259	77129	76999	76868	76737	76606	76474	76342	76210	30
77644	77515	77386	77257	77127	76997	76866	76735	76604	76472	76340	76208	29
77642	77513	77384	77254	77125	76994	76864	76733	76602	76470	76338	76205	28
77639	77511	77382	77252	77122	76992	76862	76731	76599	76468	76336	76203	27
77637	77509	77380	77250	77120	76990	76859	76728	76597	76465	76333	76201	26
77635	77506	77377	77248	77118	76988	76857	76726	76595	76463	76331	76199	25
77633	77504	77375	77246	77116	76986	76855	76724	76593	76461	76329	76197	24
77631	77502	77373	77244	77114	76983	76853	76722	76591	76459	76327	76194	23
77629	77500	77371	77241	77112	76981	76851	76720	76588	76457	76325	76192	22
77627	77498	77369	77239	77109	76979	76849	76718	76586	76454	76322	76190	21
77624	77496	77367	77237	77107	76977	76846	76715	76584	76452	76320	76188	20
77622	77494	77364	77235	77105	76975	76844	76713	76582	76450	76318	76186	19
77620	77491	77362	77233	77103	76973	76842	76711	76580	76448	76316	76183	18
77618	77489	77360	77231	77101	76970	76840	76709	76577	76446	76314	76181	17
77616	77487	77358	77228	77099	76968	76838	76707	76575	76444	76311	76179	16
77614	77485	77356	77226	77096	76966	76835	76704	76573	76441	76309	76177	15
77612	77483	77354	77224	77094	76964	76833	76702	76571	76439	76307	76174	14
77609	77481	77351	77222	77092	76962	76831	76700	76569	76437	76305	76172	13
77607	77479	77349	77220	77090	76960	76829	76698	76566	76435	76303	76170	12
77605	77476	77347	77218	77088	76957	76827	76696	76564	76433	76300	76168	11
77603	77474	77345	77215	77086	76955	76825	76694	76562	76430	76298	76166	10
77601	77472	77343	77213	77083	76953	76822	76691	76560	76428	76296	76163	9
77599	77470	77341	77211	77081	76951	76820	76689	76558	76426	76294	76161	8
77597	77468	77339	77209	77079	76949	76818	76687	76556	76424	76292	76159	7
77594	77466	77336	77207	77077	76947	76816	76685	76553	76422	76289	76157	6
77592	77463	77334	77205	77075	76944	76814	76683	76551	76419	76287	76155	5
77590	77461	77332	77202	77073	76942	76811	76680	76549	76417	76285	76152	4
77588	77459	77330	77200	77070	76940	76809	76678	76547	76415	76283	76150	3
77586	77457	77328	77198	77068	76938	76807	76676	76545	76413	76280	76148	2
77584	77455	77326	77196	77066	76936	76805	76674	76542	76411	76278	76146	1
77582	77453	77323	77194	77064	76933	76803	76672	76540	76408	76276	76143	0
11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Sine Deg. 84

5 Deg. Tangent

″	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9.00	9.00	9.00	9.01	9.01	9.01	9.01	9.01	9.01	9.01	9.01	9.02
0	67924	80471	92984	05461	17903	30310	42682	55021	67325	79594	91831	04033
1	68133	80680	93192	05668	18110	30516	42888	55226	67529	79799	92034	04236
2	68343	80889	93400	05876	18317	30723	43094	55431	67734	80003	92238	04439
3	68552	81098	93608	06083	18524	30929	43300	55637	67939	80207	92442	04642
4	68761	81307	93816	06291	18731	31136	43506	55842	68144	80411	92645	04845
5	68971	81515	94025	06499	18938	31342	43712	56047	68348	80615	92849	05048
6	69180	81724	94233	06706	19145	31549	43918	56252	68553	80820	93052	05252
7	69389	81933	94441	06914	19352	31755	44124	56458	68758	81024	93256	05455
8	69599	82142	94649	07122	19559	31961	44329	56663	68962	81228	93460	05658
9	69808	82350	94857	07329	19766	32168	44535	56868	69167	81432	93663	05861
10	70017	82559	95065	07537	19973	32374	44741	57074	69372	81636	93867	06064
11	70227	82768	95274	07744	20180	32581	44947	57279	69577	81840	94070	06267
12	70436	82977	95482	07952	20387	32787	45153	57484	69781	82044	94274	06470
13	70645	83185	95690	08159	20594	32993	45359	57689	69986	82249	94477	06673
14	70855	83394	95898	08367	20801	33200	45564	57895	70191	82453	94681	06876
15	71064	83603	96106	08574	21008	33406	45770	58100	70395	82657	94884	07079
16	71273	83811	96314	08782	21215	33612	45976	58305	70600	82861	95088	07281
17	71482	84020	96522	08989	21421	33819	46182	58510	70804	83065	95291	07484
18	71692	84229	96730	09197	21628	34025	46387	58715	71009	83269	95495	07687
19	71901	84437	96938	09404	21835	34231	46593	58921	71214	83473	95698	07890
20	72110	84646	97146	09612	22042	34438	46799	59126	71418	83677	95902	08093
21	72319	84855	97354	09819	22249	34644	47005	59331	71623	83881	96105	08296
22	72529	85063	97563	10027	22456	34850	47210	59536	71827	84085	96309	08499
23	72738	85272	97771	10234	22663	35057	47416	59741	72032	84289	96512	08702
24	72947	85480	97979	10442	22870	35263	47622	59946	72237	84493	96716	08905
25	73156	85689	98187	10649	23076	35469	47827	60151	72441	84697	96919	09108
26	73365	85898	98395	10856	23283	35675	48033	60356	72646	84901	97122	09310
27	73575	86106	98603	11064	23490	35882	48239	60562	72850	85105	97326	09513
28	73784	86315	98811	11271	23697	36088	48444	60767	73055	85309	97529	09716
29	73993	86523	99018	11479	23904	36294	48650	60972	73259	85513	97733	09919
30	74202	86732	99226	11686	24110	36500	48856	61177	73464	85717	97936	10122
31	74411	86940	99434	11893	24317	36707	49061	61382	73668	85921	98139	10325
32	74620	87149	99642	12101	24524	36913	49267	61587	73873	86125	98343	10527
33	74829	87357	99850	12308	24731	37119	49473	61792	74077	86329	98546	10730
34	75038	87566	00058	12515	24938	37325	49678	61997	74282	86532	98749	10933
35	75247	87774	00266	12723	25144	37531	49884	62202	74486	86736	98953	11136
36	75457	87983	00474	12930	25351	37737	50089	62407	74691	86940	99156	11339
37	75666	88191	00682	13137	25558	37944	50295	62612	74895	87144	99359	11541
38	75875	88400	00890	13345	25764	38150	50501	62817	75099	87348	99563	11744
39	76084	88608	01098	13552	25971	38356	50706	63022	75304	87552	99766	11947
40	76293	88817	01305	13759	26178	38562	50912	63227	75508	87756	99969	12150
41	76502	89025	01513	13966	26385	38768	51117	63432	75713	87959	00173	12352
42	76711	89234	01721	14174	26591	38974	51323	63637	75917	88163	00376	12555
43	76920	89442	01929	14381	26798	39180	51528	63842	76121	88367	00579	12758
44	77129	89650	02137	14588	27005	39386	51734	64047	76326	88571	00782	12960
45	77338	89859	02345	14795	27211	39592	51939	64252	76530	88775	00986	13163
46	77547	90067	02552	15003	27418	39799	52145	64457	76735	88979	01189	13366
47	77756	90276	02760	15210	27624	40005	52350	64662	76939	89182	01392	13568
48	77965	90484	02968	15417	27831	40211	52556	64866	77143	89386	01595	13771
49	78174	90692	03176	15624	28038	40417	52761	65071	77348	89590	01799	13974
50	78383	90901	03383	15831	28244	40623	52967	65276	77552	89794	02002	14176
51	78591	91109	03591	16038	28451	40829	53172	65481	77756	89997	02205	14379
52	78800	91317	03799	16246	28657	41035	53377	65686	77960	90201	02408	14582
53	79009	91526	04007	16453	28864	41241	53583	65891	78165	90405	02611	14784
54	79218	91734	04214	16660	29071	41447	53788	66096	78369	90609	02814	14987
55	79427	91942	04422	16867	29277	41653	53994	66301	78573	90812	03018	15189
56	79636	92150	04630	17074	29484	41859	54199	66505	78778	91016	03221	15392
57	79845	92359	04838	17281	29690	42065	54404	66710	78982	91220	03424	15595
58	80054	92567	05045	17488	29897	42270	54610	66915	79186	91423	03627	15797
59	80262	92775	05253	17695	30103	42476	54815	67120	79390	91627	03830	16000
60	80471	92984	05461	17903	30310	42682	55021	67325	79594	91831	04033	16202
″	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Tangent Deg. 84

5 Deg. Co-Tangent

48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	″
10.99	10.99	10.99	10.98	10.98	10.98	10.98	10.98	10.98	10.98	10.98	10.97	
32076	19529	07016	94539	82097	69690	57318	44979	32675	20406	08169	95967	60
31867	19320	06808	94332	81890	69484	57112	44774	32471	20201	07966	95764	59
31657	19111	06600	94124	81683	69277	56906	44569	32266	19997	07762	95561	58
31448	18902	06392	93917	81476	69071	56700	44363	32061	19793	07558	95358	57
31239	18693	06184	93709	81269	68864	56494	44158	31856	19589	07355	95155	56
31029	18485	05975	93501	81062	68658	56288	43953	31652	19385	07151	94952	55
30820	18276	05767	93294	80855	68451	56082	43748	31447	19180	06948	94748	54
30611	18067	05559	93086	80648	68245	55876	43542	31242	18976	06744	94545	53
30401	17858	05351	92878	80441	68039	55671	43337	31038	18772	06540	94342	52
30192	17650	05143	92671	80234	67832	55465	43132	30833	18568	06337	94139	51
29983	17441	04935	92463	80027	67626	55259	42926	30628	18364	06133	93936	50
29773	17232	04726	92256	79820	67419	55053	42721	30423	18160	05930	93733	49
29564	17023	04518	92048	79613	67213	54847	42516	30219	17956	05726	93530	48
29355	16815	04310	91841	79406	67007	54641	42311	30014	17751	05523	93327	47
29145	16606	04102	91633	79199	66800	54436	42105	29809	17547	05319	93124	46
28936	16397	03894	91426	78992	66594	54230	41900	29605	17343	05116	92921	45
28727	16189	03686	91218	78785	66388	54024	41695	29400	17139	04912	92719	44
28518	15980	03478	91011	78579	66181	53818	41490	29196	16935	04709	92516	43
28308	15771	03270	90803	78371	65975	53613	41285	28991	16731	04505	92313	42
28099	15563	03062	90596	78165	65769	53407	41079	28786	16527	04302	92110	41
27890	15354	02854	90388	77958	65562	53201	40874	28582	16323	04098	91907	40
27681	15145	02646	90181	77751	65356	52995	40669	28377	16119	03895	91704	39
27471	14937	02437	89973	77544	65150	52790	40464	28173	15915	03691	91501	38
27262	14728	02229	89766	77337	64943	52584	40259	27968	15711	03488	91298	37
27053	14520	02021	89558	77130	64737	52378	40054	27763	15507	03284	91095	36
26844	14311	01813	89351	76924	64531	52173	39849	27559	15303	03081	90892	35
26635	14102	01605	89144	76717	64325	51967	39644	27354	15099	02878	90690	34
26425	13894	01397	88936	76510	64118	51761	39438	27150	14895	02674	90487	33
26216	13685	01189	88729	76303	63912	51556	39233	26945	14691	02471	90284	32
26007	13477	00982	88521	76096	63706	51350	39028	26741	14487	02267	90081	31
25798	13268	00774	88314	75890	63500	51144	38823	26536	14283	02064	89878	30
25589	13060	00566	88107	75683	63293	50939	38618	26332	14079	01861	89675	29
25380	12851	00358	87899	75476	63087	50733	38413	26127	13875	01657	89473	28
25171	12643	00150	87692	75269	62881	50527	38208	25923	13671	01454	89270	27
24962	12434	99942	87485	75062	62675	50322	38003	25718	13468	01251	89067	26
24753	12226	99734	87277	74856	62469	50116	37798	25514	13264	01047	88864	25
24543	12017	99526	87070	74649	62263	49911	37593	25309	13060	00844	88661	24
24334	11809	99318	86863	74442	62056	49705	37388	25105	12856	00641	88459	23
24125	11600	99110	86655	74236	61850	49499	37183	24901	12652	00437	88256	22
23916	11392	98902	86448	74029	61644	49294	36978	24696	12448	00234	88053	21
23707	11183	98695	86241	73822	61438	49088	36773	24492	12244	00031	87850	20
23498	10975	98487	86034	73615	61232	48883	36568	24287	12041	99827	87648	19
23289	10766	98279	85826	73409	61026	48677	36363	24083	11837	99624	87445	18
23080	10558	98071	85619	73202	60820	48472	36158	23879	11633	99421	87242	17
22871	10350	97863	85412	72995	60614	48266	35953	23674	11429	99218	87040	16
22662	10141	97655	85205	72789	60408	48061	35748	23470	11225	99014	86837	15
22453	09933	97448	84997	72582	60201	47855	35543	23265	11021	98811	86634	14
22244	09724	97240	84790	72376	59995	47650	35338	23061	10818	98608	86432	13
22035	09516	97032	84583	72169	59789	47444	35134	22857	10614	98405	86229	12
21826	09308	96824	84376	71962	59583	47239	34929	22652	10410	98201	86026	11
21617	09099	96617	84169	71756	59377	47033	34724	22448	10206	97998	85824	10
21409	08891	96409	83962	71549	59171	46828	34519	22244	10003	97795	85621	9
21200	08683	96201	83754	71343	58965	46623	34314	22040	09799	97592	85418	8
20991	08474	95993	83547	71136	58759	46417	34109	21835	09595	97389	85216	7
20782	08266	95786	83340	70929	58553	46212	33904	21631	09391	97186	85013	6
20573	08058	95578	83133	70723	58347	46006	33699	21427	09188	96982	84811	5
20364	07850	95370	82926	70516	58141	45801	33495	21222	08984	96779	84608	4
20155	07641	95162	82719	70310	57935	45596	33290	21018	08780	96576	84405	3
19946	07433	94955	82512	70103	57730	45390	33085	20814	08577	96373	84203	2
19738	07225	94747	82305	69897	57524	45185	32880	20610	08373	96170	84000	1
19529	07016	94539	82097	69690	57318	44979	32675	20406	08169	95967	83798	0
11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Tangent Deg. 84

6 Deg. Sine

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′
″	9.01	9.02	9.02	9.02	9.02	9.02	9.02	9.02	9.02	9.02	9.03	9.03
0	92346	04348	16318	28254	40157	52027	63865	75669	87442	99182	10890	22567
1	92546	04548	16517	28453	40355	52225	64062	75866	87638	99378	11085	22761
2	92746	04748	16716	28651	40553	52422	64259	76062	87834	99573	11280	22956
3	92947	04948	16915	28850	40751	52620	64456	76259	88030	99768	11475	23150
4	93147	05147	17115	29049	40949	52817	64653	76455	88226	99964	11670	23344
5	93347	05347	17314	29247	41147	53015	64849	76652	88421	00159	11865	23538
6	93547	05547	17513	29446	41345	53212	65046	76848	88617	00354	12060	23733
7	93748	05747	17712	29644	41544	53410	65243	77044	88813	00550	12254	23927
8	93948	05946	17911	29843	41742	53607	65440	77241	89009	00745	12449	24121
9	94148	06146	18110	30042	41940	53805	65637	77437	89205	00940	12644	24316
10	94348	06346	18310	30240	42138	54002	65834	77634	89401	01136	12839	24510
11	94549	06545	18509	30439	42336	54200	66031	77830	89597	01331	13034	24704
12	94749	06745	18708	30637	42534	54397	66228	78026	89792	01526	13228	24898
13	94949	06945	18907	30836	42732	54595	66425	78223	89988	01722	13423	25093
14	95149	07144	19106	31034	42930	54792	66622	78419	90184	01917	13618	25287
15	95350	07344	19305	31233	43128	54990	66819	78616	90380	02112	13813	25481
16	95550	07544	19504	31431	43326	55187	67016	78812	90576	02307	14007	25675
17	95750	07743	19703	31630	43524	55384	67213	79008	90772	02503	14202	25869
18	95950	07943	19902	31828	43721	55582	67409	79205	90967	02698	14397	26064
19	96150	08142	20101	32027	43919	55779	67606	79401	91163	02893	14591	26258
20	96350	08342	20300	32225	44117	55977	67803	79597	91359	03088	14786	26452
21	96550	08542	20499	32424	44315	56174	68000	79793	91555	03284	14981	26646
22	96751	08741	20698	32622	44513	56371	68197	79990	91750	03479	15175	26840
23	96951	08941	20897	32821	44711	56569	68394	80186	91946	03674	15370	27034
24	97151	09140	21096	33019	44909	56766	68590	80382	92142	03869	15565	27229
25	97351	09340	21295	33218	45107	56963	68787	80579	92338	04064	15759	27423
26	97551	09539	21494	33416	45305	57161	68984	80775	92533	04260	15954	27617
27	97751	09739	21693	33614	45503	57358	69181	80971	92729	04455	16149	27811
28	97951	09938	21892	33813	45700	57555	69377	81167	92925	04650	16343	28005
29	98151	10138	22091	34011	45898	57753	69574	81363	93120	04845	16538	28199
30	98351	10337	22290	34210	46096	57950	69771	81560	93316	05040	16733	28393
31	98551	10537	22489	34408	46294	58147	69968	81756	93512	05235	16927	28587
32	98751	10736	22688	34606	46492	58344	70164	81952	93707	05431	17122	28781
33	98951	10936	22887	34805	46690	58542	70361	82148	93903	05626	17316	28975
34	99151	11135	23086	35003	46887	58739	70558	82344	94099	05821	17511	29169
35	99351	11335	23285	35201	47085	58936	70755	82541	94294	06016	17706	29364
36	99551	11534	23483	35400	47283	59133	70951	82737	94490	06211	17900	29558
37	99751	11734	23682	35598	47481	59331	71148	82933	94686	06406	18095	29752
38	99951	11933	23881	35796	47679	59528	71345	83129	94881	06601	18289	29946
39	00151	12132	24080	35995	47876	59725	71541	83325	95077	06796	18484	30140
40	00351	12332	24279	36193	48074	59922	71738	83521	95272	06991	18678	30334
41	00551	12531	24478	36391	48272	60120	71935	83717	95468	07186	18873	30528
42	00751	12731	24677	36590	48470	60317	72131	83914	95663	07381	19067	30722
43	00951	12930	24875	36788	48667	60514	72328	84110	95859	07576	19262	30916
44	01151	13129	25074	36986	48865	60711	72525	84306	96055	07771	19456	31109
45	01351	13329	25273	37184	49063	60908	72721	84502	96250	07966	19651	31303
46	01551	13528	25472	37383	49260	61105	72918	84698	96446	08161	19845	31497
47	01751	13727	25671	37581	49458	61303	73114	84894	96641	08356	20040	31691
48	01951	13927	25869	37779	49656	61500	73311	85090	96837	08551	20234	31885
49	02150	14126	26068	37977	49853	61697	73508	85286	97032	08746	20429	32079
50	02350	14325	26267	38175	50051	61894	73704	85482	97228	08941	20623	32273
51	02550	14525	26466	38374	50249	62091	73901	85678	97423	09136	20817	32467
52	02750	14724	26664	38572	50446	62288	74097	85874	97619	09331	21012	32661
53	02950	14923	26863	38770	50644	62485	74294	86070	97814	09526	21206	32855
54	03150	15122	27062	38968	50842	62682	74490	86266	98010	09721	21401	33049
55	03350	15322	27261	39166	51039	62879	74687	86462	98205	09916	21595	33242
56	03549	15521	27459	39364	51237	63076	74883	86658	98400	10111	21789	33436
57	03749	15720	27658	39563	51434	63273	75080	86854	98596	10306	21984	33630
58	03949	15919	27857	39761	51632	63470	75276	87050	98791	10501	22178	33824
59	04149	16119	28055	39959	51830	63667	75473	87246	98987	10696	22373	34018
60	04348	16318	28254	40157	52027	63865	75669	87442	99182	10890	22567	34212
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′

Co-Sine Deg. 83

6 Deg. Co-Sine

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	
9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	″
76143	76011	75877	75743	75609	75475	75340	75205	75069	74933	74797	74660	60
76141	76008	75875	75741	75607	75473	75338	75203	75067	74931	74795	74658	59
76139	76006	75873	75739	75605	75470	75336	75200	75065	74929	74793	74656	58
76137	76004	75871	75737	75603	75468	75333	75198	75063	74927	74790	74654	57
76135	76002	75868	75735	75600	75466	75331	75196	75060	74924	74788	74651	56
76132	75999	75866	75732	75598	75464	75329	75194	75058	74922	74786	74649	55
76130	75997	75864	75730	75596	75461	75327	75191	75056	74920	74783	74647	54
76128	75995	75862	75728	75594	75459	75324	75189	75054	74918	74781	74644	53
76126	75993	75859	75726	75591	75457	75322	75187	75051	74915	74779	74642	52
76124	75991	75857	75723	75589	75455	75320	75185	75049	74913	74777	74640	51
76121	75988	75855	75721	75587	75453	75318	75182	75047	74911	74774	74638	50
76119	75986	75853	75719	75585	75450	75315	75180	75044	74908	74772	74635	49
76117	75984	75850	75717	75583	75448	75313	75178	75042	74906	74770	74633	48
76115	75982	75848	75714	75580	75446	75311	75176	75040	74904	74768	74631	47
76112	75979	75846	75712	75578	75444	75309	75173	75038	74902	74765	74628	46
76110	75977	75844	75710	75576	75441	75306	75171	75035	74899	74763	74626	45
76108	75975	75842	75708	75574	75439	75304	75169	75033	74897	74761	74624	44
76106	75973	75839	75706	75571	75437	75302	75167	75031	74895	74758	74622	43
76104	75971	75837	75703	75569	75435	75300	75164	75029	74893	74756	74619	42
76101	75968	75835	75701	75567	75432	75297	75162	75026	74890	74754	74617	41
76099	75966	75833	75699	75565	75430	75295	75160	75024	74888	74752	74615	40
76097	75964	75830	75697	75562	75428	75293	75158	75022	74886	74749	74613	39
76095	75962	75828	75694	75560	75426	75291	75155	75020	74883	74747	74610	38
76093	75959	75826	75692	75558	75423	75288	75153	75017	74881	74745	74608	37
76090	75957	75824	75690	75556	75421	75286	75151	75015	74879	74742	74606	36
76088	75955	75822	75688	75553	75419	75284	75148	75013	74877	74740	74603	35
76086	75953	75819	75685	75551	75417	75282	75146	75011	74874	74738	74601	34
76084	75951	75817	75683	75549	75414	75279	75144	75008	74872	74736	74599	33
76081	75948	75815	75681	75547	75412	75277	75142	75006	74870	74733	74597	32
76079	75946	75813	75679	75544	75410	75275	75139	75004	74868	74731	74594	31
76077	75944	75810	75676	75542	75408	75273	75137	75001	74865	74729	74592	30
76075	75942	75808	75674	75540	75405	75270	75135	74999	74863	74727	74590	29
76073	75939	75806	75672	75538	75403	75268	75133	74997	74861	74724	74587	28
76070	75937	75804	75670	75535	75401	75266	75130	74995	74859	74722	74585	27
76068	75935	75801	75668	75533	75399	75264	75128	74992	74856	74720	74583	26
76066	75933	75799	75665	75531	75396	75261	75126	74990	74854	74717	74581	25
76064	75931	75797	75663	75529	75394	75259	75124	74988	74852	74715	74578	24
76062	75928	75795	75661	75527	75392	75257	75121	74986	74849	74713	74576	23
76059	75926	75793	75659	75524	75390	75255	75119	74983	74847	74711	74574	22
76057	75924	75790	75656	75522	75387	75252	75117	74981	74845	74708	74571	21
76055	75922	75788	75654	75520	75385	75250	75115	74979	74843	74706	74569	20
76053	75919	75786	75652	75518	75383	75248	75112	74977	74840	74704	74567	19
76050	75917	75784	75650	75515	75381	75246	75110	74974	74838	74701	74565	18
76048	75915	75781	75647	75513	75378	75243	75108	74972	74836	74699	74562	17
76046	75913	75779	75645	75511	75376	75241	75106	74970	74834	74697	74560	16
76044	75911	75777	75643	75509	75374	75239	75103	74967	74831	74695	74558	15
76042	75908	75775	75641	75506	75372	75237	75101	74965	74829	74692	74555	14
76039	75906	75772	75638	75504	75369	75234	75099	74963	74827	74690	74553	13
76037	75904	75770	75636	75502	75367	75232	75097	74961	74824	74688	74551	12
76035	75902	75768	75634	75500	75365	75230	75094	74958	74822	74686	74549	11
76033	75899	75766	75632	75497	75363	75227	75092	74956	74820	74683	74546	10
76030	75897	75764	75630	75495	75360	75225	75090	74954	74818	74681	74544	9
76028	75895	75761	75627	75493	75358	75223	75087	74952	74815	74679	74542	8
76026	75893	75759	75625	75491	75356	75221	75085	74949	74813	74676	74539	7
76024	75891	75757	75623	75488	75354	75218	75083	74947	74811	74674	74537	6
76022	75888	75755	75621	75486	75351	75216	75081	74945	74808	74672	74535	5
76019	75886	75752	75618	75484	75349	75214	75078	74942	74806	74670	74533	4
76017	75884	75750	75616	75482	75347	75212	75076	74940	74804	74667	74530	3
76015	75882	75748	75614	75479	75345	75209	75074	74938	74802	74665	74528	2
76013	75879	75746	75612	75477	75342	75207	75072	74936	74799	74663	74526	1
76011	75877	75743	75609	75475	75340	75205	75069	74933	74797	74660	74523	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	″

Sine Deg. 83

6 Deg. Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′
″	9.02	9.02	9.02	9.02	9.02	9.02	9.02	9.03	9.03	9.03	9.03	9.03
0	16202	28338	40441	52510	64548	76552	88524	00464	12373	24249	36093	47906
1	16405	28540	40642	52711	64748	76752	88724	00663	12571	24446	36290	48103
2	16607	28742	40844	52912	64948	76952	88923	00862	12769	24644	36488	48300
3	16810	28944	41045	53113	65149	77152	89122	01061	12967	24842	36685	48496
4	17012	29146	41246	53314	65349	77351	89321	01259	13165	25039	36882	48693
5	17215	29348	41448	53515	65549	77551	89521	01458	13363	25237	37079	48889
6	17417	29550	41649	53716	65750	77751	89720	01657	13562	25435	37276	49086
7	17620	29752	41850	53916	65950	77951	89919	01855	13760	25632	37473	49283
8	17822	29954	42052	54117	66150	78150	90118	02054	13958	25830	37670	49479
9	18025	30155	42253	54318	66350	78350	90317	02253	14156	26027	37867	49676
10	18227	30357	42455	54519	66551	78550	90517	02451	14354	26225	38064	49872
11	18430	30559	42656	54720	66751	78749	90716	02650	14552	26423	38261	50069
12	18632	30761	42857	54921	66951	78949	90915	02849	14750	26620	38458	50265
13	18834	30963	43059	55121	67151	79149	91114	03047	14948	26818	38656	50462
14	19037	31165	43260	55322	67352	79349	91313	03246	15146	27015	38853	50658
15	19239	31367	43461	55523	67552	79548	91512	03444	15345	27213	39050	50855
16	19442	31569	43662	55724	67752	79748	91712	03643	15543	27410	39247	51051
17	19644	31770	43864	55924	67952	79948	91911	03842	15741	27608	39444	51248
18	19846	31972	44065	56125	68152	80147	92110	04040	15939	27805	39641	51444
19	20049	32174	44266	56326	68353	80347	92309	04239	16137	28003	39838	51641
20	20251	32376	44468	56526	68553	80546	92508	04437	16335	28200	40035	51837
21	20453	32578	44669	56727	68753	80746	92707	04636	16533	28398	40231	52034
22	20656	32779	44870	56928	68953	80946	92906	04834	16731	28595	40428	52230
23	20858	32981	45071	57129	69153	81145	93105	05033	16929	28793	40625	52427
24	21060	33183	45273	57329	69353	81345	93304	05231	17127	28990	40822	52623
25	21263	33385	45474	57530	69553	81545	93503	05430	17325	29188	41019	52819
26	21465	33587	45675	57731	69754	81744	93702	05629	17523	29385	41216	53016
27	21667	33788	45876	57931	69954	81944	93901	05827	17721	29583	41413	53212
28	21870	33990	46077	58132	70154	82143	94100	06026	17919	29780	41610	53409
29	22072	34192	46279	58332	70354	82343	94299	06224	18117	29978	41807	53605
30	22274	34393	46480	58533	70554	82542	94498	06422	18315	30175	42004	53801
31	22476	34595	46681	58734	70754	82742	94697	06621	18513	30372	42201	53998
32	22679	34797	46882	58934	70954	82941	94896	06819	18710	30570	42398	54194
33	22881	34999	47083	59135	71154	83141	95095	07018	18908	30767	42594	54390
34	23083	35200	47284	59336	71354	83340	95294	07216	19106	30965	42791	54587
35	23285	35402	47485	59536	71554	83540	95493	07415	19304	31162	42988	54783
36	23488	35604	47686	59737	71754	83739	95692	07613	19502	31359	43185	54979
37	23690	35805	47888	59937	71954	83939	95891	07812	19700	31557	43382	55176
38	23892	36007	48089	60138	72154	84138	96090	08010	19898	31754	43579	55372
39	24094	36208	48290	60338	72354	84338	96289	08208	20096	31951	43775	55568
40	24296	36410	48491	60539	72554	84537	96488	08407	20294	32149	43972	55764
41	24499	36612	48692	60739	72754	84737	96687	08605	20491	32346	44169	55961
42	24701	36813	48893	60940	72954	84936	96886	08803	20689	32543	44366	56157
43	24903	37015	49094	61140	73154	85136	97085	09002	20887	32741	44563	56353
44	25105	37216	49295	61341	73354	85335	97284	09200	21085	32938	44759	56550
45	25307	37418	49496	61541	73554	85534	97482	09398	21283	33135	44956	56746
46	25509	37620	49697	61742	73754	85734	97681	09597	21480	33332	45153	56942
47	25711	37821	49898	61942	73954	85933	97880	09795	21678	33530	45350	57138
48	25913	38023	50099	62143	74154	86133	98079	09993	21876	33727	45546	57334
49	26116	38224	50300	62343	74354	86332	98278	10192	22074	33924	45743	57531
50	26318	38426	50501	62544	74554	86531	98477	10390	22272	34121	45940	57727
51	26520	38627	50702	62744	74754	86731	98675	10588	22469	34319	46136	57923
52	26722	38829	50903	62945	74953	86930	98874	10787	22667	34516	46333	58119
53	26924	39030	51104	63145	75153	87129	99073	10985	22865	34713	46530	58315
54	27126	39232	51305	63345	75353	87329	99272	11183	23063	34910	46727	58511
55	27328	39433	51506	63546	75553	87528	99471	11381	23260	35107	46923	58708
56	27530	39635	51707	63746	75753	87727	99669	11580	23458	35305	47120	58904
57	27732	39836	51908	63947	75953	87927	99868	11778	23656	35502	47317	59100
58	27934	40038	52109	64147	76153	88126	00067	11976	23853	35699	47513	59296
59	28136	40239	52310	64347	76352	88325	00266	12174	24051	35896	47710	59492
60	28338	40441	52510	64548	76552	88524	00464	12373	24249	36093	47906	59688
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′

6 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	
10.97	10.97	10.97	10.97	10.97	10.97	10.97	10.96	10.96	10.96	10.96	10.96	″
83798	71662	59559	47490	35452	23448	11476	99536	87627	75751	63907	52094	60
83595	71460	59358	47289	35252	23248	11276	99337	87429	75554	63710	51897	59
83393	71258	59156	47088	35052	23048	11077	99138	87231	75356	63512	51700	58
83190	71056	58955	46887	34851	22848	10878	98939	87033	75158	63315	51504	57
82988	70854	58754	46686	34651	22649	10679	98741	86835	74961	63118	51307	56
82785	70652	58552	46485	34451	22449	10479	98542	86637	74763	62921	51111	55
82583	70450	58351	46284	34250	22249	10280	98343	86438	74565	62724	50914	54
82380	70248	58150	46084	34050	22049	10081	98145	86240	74368	62527	50717	53
82178	70046	57948	45883	33850	21850	09882	97946	86042	74170	62330	50521	52
81975	69845	57747	45682	33650	21650	09683	97747	85844	73973	62133	50324	51
81773	69643	57545	45481	33449	21450	09483	97549	85646	73775	61936	50128	50
81570	69441	57344	45280	33249	21251	09284	97350	85448	73577	61739	49931	49
81368	69239	57143	45079	33049	21051	09085	97151	85250	73380	61542	49735	48
81166	69037	56941	44879	32849	20851	08886	96953	85052	73182	61344	49538	47
80963	68835	56740	44678	32648	20651	08687	96754	84854	72985	61147	49342	46
80761	68633	56539	44477	32448	20452	08488	96556	84655	72787	60950	49145	45
80558	68431	56338	44276	32248	20252	08288	96357	84457	72590	60753	48949	44
80356	68230	56136	44076	32048	20052	08089	96158	84259	72392	60556	48752	43
80154	68028	55935	43875	31848	19853	07890	95960	84061	72195	60359	48556	42
79951	67826	55734	43674	31647	19653	07691	95761	83863	71997	60162	48359	41
79749	67624	55532	43474	31447	19454	07492	95563	83665	71800	59965	48163	40
79547	67422	55331	43273	31247	19254	07293	95364	83467	71602	59769	47966	39
79344	67221	55130	43072	31047	19054	07094	95166	83269	71405	59572	47770	38
79142	67019	54929	42871	30847	18855	06895	94967	83071	71207	59375	47573	37
78940	66817	54727	42671	30647	18655	06696	94769	82873	71010	59178	47377	36
78737	66615	54526	42470	30447	18455	06497	94570	82675	70812	58981	47181	35
78535	66413	54325	42269	30246	18256	06298	94371	82477	70615	58784	46984	34
78333	66212	54124	42069	30046	18056	06099	94173	82279	70417	58587	46788	33
78130	66010	53923	41868	29846	17857	05900	93974	82081	70220	58390	46591	32
77928	65808	53721	41668	29646	17657	05701	93776	81883	70022	58193	46395	31
77726	65607	53520	41467	29446	17458	05502	93578	81685	69825	57996	46199	30
77524	65405	53319	41266	29246	17258	05303	93379	81487	69628	57799	46002	29
77321	65203	53118	41066	29046	17059	05104	93181	81290	69430	57602	45806	28
77119	65001	52917	40865	28846	16859	04905	92982	81092	69233	57406	45610	27
76917	64800	52716	40664	28646	16660	04706	92784	80894	69035	57209	45413	26
76715	64598	52515	40464	28446	16460	04507	92585	80696	68838	57012	45217	25
76512	64396	52314	40263	28246	16261	04308	92387	80498	68641	56815	45021	24
76310	64195	52112	40063	28046	16061	04109	92188	80300	68443	56618	44824	23
76108	63993	51911	39862	27846	15862	03910	91990	80102	68246	56421	44628	22
75906	63792	51710	39662	27646	15662	03711	91792	79904	68049	56225	44432	21
75704	63590	51509	39461	27446	15463	03512	91593	79706	67851	56028	44236	20
75501	63388	51308	39261	27246	15263	03313	91395	79509	67654	55831	44039	19
75299	63187	51107	39060	27046	15064	03114	91197	79311	67457	55634	43843	18
75097	62985	50906	38860	26846	14864	02915	90998	79113	67259	55437	43647	17
74895	62784	50705	38659	26646	14665	02716	90800	78915	67062	55241	43450	16
74693	62582	50504	38459	26446	14466	02518	90602	78717	66865	55044	43254	15
74491	62380	50303	38258	26246	14266	02319	90403	78520	66668	54847	43058	14
74289	62179	50102	38058	26046	14067	02120	90205	78322	66470	54650	42862	13
74087	61977	49901	37857	25846	13867	01921	90007	78124	66273	54454	42666	12
73884	61776	49700	37657	25646	13668	01722	89808	77926	66076	54257	42469	11
73682	61574	49499	37456	25446	13469	01523	89610	77728	65879	54060	42273	10
73480	61373	49298	37256	25246	13269	01325	89412	77531	65681	53864	42077	9
73278	61171	49097	37055	25047	13070	01126	89213	77333	65484	53667	41881	8
73076	60970	48896	36855	24847	12871	00927	89015	77135	65287	53470	41685	7
72874	60768	48695	36655	24647	12671	00728	88817	76937	65090	53273	41489	6
72672	60567	48494	36454	24447	12472	00529	88619	76740	64893	53077	41292	5
72470	60365	48293	36254	24247	12273	00331	88420	76542	64695	52880	41096	4
72268	60164	48092	36053	24047	12073	00132	88222	76344	64498	52683	40900	3
72066	59962	47891	35853	23847	11874	99933	88024	76147	64301	52487	40704	2
71864	59761	47690	35653	23648	11675	99734	87826	75949	64104	52290	40508	1
71662	59559	47490	35452	23448	11476	99536	87627	75751	63907	52094	40312	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	″

Co-Tangent Deg. 83

Tangent Deg. 83

6 Deg. Sine

	12′	13′	14′	15′	16′	17′	18′	19′	20′	21′	22′	23′
″	9.03	9.03	9.03	9.03	9.03	9.03	9.04	9.04	9.04	9.04	9.04	9.04
0	34212	45825	57407	68958	80477	91966	03424	14852	26249	37617	48954	60261
1	34405	46018	57600	69150	80669	92157	03615	15042	26439	37806	49142	60449
2	34599	46211	57792	69342	80861	92349	03806	15233	26629	37995	49331	60637
3	34793	46405	57985	69534	81052	92540	03997	15423	26819	38184	49520	60825
4	34987	46598	58178	69727	81244	92731	04187	15613	27008	38373	49708	61014
5	35181	46791	58371	69919	81436	92922	04378	15803	27198	38563	49897	61202
6	35374	46984	58563	70111	81628	93113	04569	15993	27388	38752	50086	61390
7	35568	47178	58756	70303	81819	93305	04759	16183	27577	38941	50274	61578
8	35762	47371	58949	70495	82011	93496	04950	16374	27767	39130	50463	61766
9	35956	47564	59141	70687	82203	93687	05141	16564	27956	39319	50652	61954
10	36149	47757	59334	70880	82394	93878	05331	16754	28146	39508	50840	62143
11	36343	47951	59527	71072	82586	94069	05522	16944	28336	39697	51029	62331
12	36537	48144	59719	71264	82778	94260	05712	17134	28525	39886	51218	62519
13	36731	48337	59912	71456	82969	94451	05903	17324	28715	40076	51406	62707
14	36924	48530	60105	71648	83161	94643	06094	17514	28904	40265	51595	62895
15	37118	48723	60297	71840	83352	94834	06284	17704	29094	40454	51783	63083
16	37312	48916	60490	72033	83544	95025	06475	17894	29284	40643	51972	63271
17	37505	49110	60683	72225	83736	95216	06665	18084	29473	40832	52160	63459
18	37699	49303	60875	72417	83927	95407	06856	18274	29663	41021	52349	63647
19	37893	49496	61068	72609	84119	95598	07046	18465	29852	41210	52538	63835
20	38086	49689	61261	72801	84310	95789	07237	18655	30042	41399	52726	64023
21	38280	49882	61453	72993	84502	95980	07428	18845	30231	41588	52915	64211
22	38473	50075	61646	73185	84693	96171	07618	19035	30421	41777	53103	64399
23	38667	50268	61838	73377	84885	96362	07809	19225	30610	41966	53292	64587
24	38861	50461	62031	73569	85077	96553	07999	19415	30800	42155	53480	64775
25	39054	50654	62223	73761	85268	96744	08190	19605	30989	42344	53669	64963
26	39248	50848	62416	73953	85460	96935	08380	19795	31179	42533	53857	65151
27	39441	51041	62608	74145	85651	97126	08571	19985	31368	42722	54046	65339
28	39635	51234	62801	74337	85843	97317	08761	20175	31558	42911	54234	65527
29	39829	51427	62994	74529	86034	97508	08952	20365	31747	43100	54423	65715
30	40022	51620	63186	74721	86226	97699	09142	20555	31937	43289	54611	65903
31	40216	51813	63379	74913	86417	97890	09333	20745	32126	43478	54799	66091
32	40409	52006	63571	75105	86609	98081	09523	20934	32316	43667	54988	66279
33	40603	52199	63764	75297	86800	98272	09713	21124	32505	43856	55176	66467
34	40796	52392	63956	75489	86991	98463	09904	21314	32695	44045	55365	66655
35	40990	52585	64149	75681	87183	98654	10094	21504	32884	44234	55553	66843
36	41183	52778	64341	75873	87374	98845	10285	21694	33073	44422	55742	67031
37	41377	52971	64533	76065	87566	99036	10475	21884	33263	44611	55930	67219
38	41570	53164	64726	76257	87757	99227	10665	22074	33452	44800	56118	67407
39	41764	53357	64918	76449	87949	99418	10856	22264	33642	44989	56307	67595
40	41957	53550	65111	76641	88140	99608	11046	22454	33831	45178	56495	67783
41	42151	53743	65303	76833	88331	99799	11237	22644	34020	45367	56684	67970
42	42344	53936	65496	77025	88523	99990	11427	22833	34210	45556	56872	68158
43	42538	54128	65688	77217	88714	00181	11617	23023	34399	45745	57060	68346
44	42731	54321	65880	77408	88905	00372	11808	23213	34588	45933	57249	68534
45	42925	54514	66073	77600	89097	00563	11998	23403	34778	46122	57437	68722
46	43118	54707	66265	77792	89288	00754	12188	23593	34967	46311	57625	68910
47	43311	54900	66458	77984	89480	00944	12379	23783	35156	46500	57814	69097
48	43505	55093	66650	78176	89671	00135	12569	23972	35346	46689	58002	69285
49	43698	55286	66842	78368	89862	01326	12759	24162	35535	46877	58190	69473
50	43892	55479	67035	78559	90054	01517	12950	24352	35724	47066	58378	69661
51	44085	55672	67227	78751	90245	01708	13140	24542	35913	47255	58567	69849
52	44278	55864	67419	78943	90436	01898	13330	24732	36103	47444	58755	70036
53	44472	56057	67612	79135	90627	02089	13520	24921	36292	47633	58943	70224
54	44665	56250	67804	79327	90819	02280	13711	25111	36481	47821	59132	70412
55	44858	56443	67996	79519	91010	02471	13901	25301	36670	48010	59320	70600
56	45052	56636	68188	79710	91201	02661	14091	25491	36860	48199	59508	70787
57	45245	56828	68381	79902	91392	02852	14281	25680	37049	48388	59696	70975
58	45438	57021	68573	80094	91584	03043	14472	25870	37238	48576	59884	71163
59	45632	57214	68765	80286	91775	03234	14662	26060	37427	48765	60073	71351
60	45825	57407	68958	80477	91966	03424	14852	26249	37617	48954	60261	71538
″	47′	46′	45′	44′	43′	42′	41′	40′	39′	38′	37′	36′

Co-Sine Deg. 83

6 Deg. Co-Sine

12′	13′	14′	15′	16′	17′	18′	19′	20′	21′	22′	23′	
9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	″
74523	74386	74248	74110	73971	73833	73693	73554	73414	73273	73132	72991	60
74521	74384	74246	74108	73969	73830	73691	73551	73411	73271	73130	72989	59
74519	74381	74244	74105	73967	73828	73689	73549	73409	73268	73128	72987	58
74517	74379	74241	74103	73965	73826	73686	73547	73407	73266	73125	72984	57
74514	74377	74239	74101	73962	73823	73684	73544	73404	73264	73123	72982	56
74512	74374	74237	74098	73960	73821	73682	73542	73402	73261	73121	72979	55
74510	74372	74234	74096	73958	73819	73679	73540	73400	73259	73118	72977	54
74507	74370	74232	74094	73955	73816	73677	73537	73397	73257	73116	72975	53
74505	74368	74230	74092	73953	73814	73675	73535	73395	73254	73114	72972	52
74503	74365	74227	74089	73951	73812	73672	73533	73393	73252	73111	72970	51
74501	74363	74225	74087	73948	73809	73670	73530	73390	73250	73109	72968	50
74498	74361	74223	74085	73946	73807	73668	73528	73388	73247	73107	72965	49
74496	74358	74221	74082	73944	73805	73665	73526	73386	73245	73104	72963	48
74494	74356	74218	74080	73941	73802	73663	73523	73383	73243	73102	72961	47
74491	74354	74216	74078	73939	73800	73661	73521	73381	73240	73099	72958	46
74489	74352	74214	74075	73937	73798	73658	73519	73378	73238	73097	72956	45
74487	74349	74211	74073	73934	73795	73656	73516	73376	73236	73095	72954	44
74484	74347	74209	74071	73932	73793	73654	73514	73374	73233	73092	72951	43
74482	74345	74207	74068	73930	73791	73651	73512	73371	73231	73090	72949	42
74480	74342	74204	74066	73927	73788	73649	73509	73369	73229	73088	72946	41
74478	74340	74202	74064	73925	73786	73647	73507	73367	73226	73085	72944	40
74475	74338	74200	74062	73923	73784	73644	73505	73364	73224	73083	72942	39
74473	74335	74198	74059	73921	73782	73642	73502	73362	73222	73081	72939	38
74471	74333	74195	74057	73918	73779	73640	73500	73360	73219	73078	72937	37
74468	74331	74193	74055	73916	73777	73637	73498	73357	73217	73076	72935	36
74466	74329	74191	74052	73914	73775	73635	73495	73355	73215	73074	72932	35
74464	74326	74188	74050	73911	73772	73633	73493	73353	73212	73071	72930	34
74462	74324	74186	74048	73909	73770	73630	73491	73350	73210	73069	72928	33
74459	74322	74184	74045	73907	73768	73628	73488	73348	73208	73067	72925	32
74457	74319	74181	74043	73904	73765	73626	73486	73346	73205	73064	72923	31
74455	74317	74179	74041	73902	73763	73623	73484	73343	73203	73062	72921	30
74452	74315	74177	74038	73900	73761	73621	73481	73341	73200	73060	72918	29
74450	74313	74175	74036	73897	73758	73619	73479	73339	73198	73057	72916	28
74448	74310	74172	74034	73895	73756	73616	73477	73336	73196	73055	72913	27
74446	74308	74170	74032	73893	73754	73614	73474	73334	73193	73052	72911	26
74443	74306	74168	74029	73890	73751	73612	73472	73332	73191	73050	72909	25
74441	74303	74165	74027	73888	73749	73609	73470	73329	73189	73048	72906	24
74439	74301	74163	74025	73886	73747	73607	73467	73327	73186	73045	72904	23
74436	74299	74161	74022	73884	73744	73605	73465	73325	73184	73043	72902	22
74434	74296	74158	74020	73881	73742	73603	73463	73322	73182	73041	72899	21
74432	74294	74156	74018	73879	73740	73600	73460	73320	73179	73038	72897	20
74430	74292	74154	74015	73877	73737	73598	73458	73318	73177	73036	72895	19
74427	74290	74151	74013	73874	73735	73596	73456	73315	73175	73034	72892	18
74425	74287	74149	74011	73872	73733	73593	73453	73313	73172	73031	72890	17
74423	74285	74147	74008	73870	73730	73591	73451	73311	73170	73029	72888	16
74420	74283	74145	74006	73867	73728	73589	73449	73308	73168	73027	72885	15
74418	74280	74142	74004	73865	73726	73586	73446	73306	73165	73024	72883	14
74416	74278	74140	74001	73863	73723	73584	73444	73304	73163	73022	72880	13
74413	74276	74138	73999	73860	73721	73582	73442	73301	73161	73020	72878	12
74411	74273	74135	73997	73858	73719	73579	73439	73299	73158	73017	72876	11
74409	74271	74133	73995	73856	73716	73577	73437	73297	73156	73015	72873	10
74407	74269	74131	73992	73853	73714	73575	73435	73294	73154	73012	72871	9
74404	74267	74128	73990	73851	73712	73572	73432	73292	73151	73010	72869	8
74402	74264	74126	73988	73849	73710	73570	73430	73290	73149	73008	72866	7
74400	74262	74124	73985	73846	73707	73568	73428	73287	73146	73005	72864	6
74397	74260	74122	73983	73844	73705	73565	73425	73285	73144	73003	72862	5
74395	74257	74119	73981	73842	73703	73563	73423	73283	73142	73001	72859	4
74393	74255	74117	73978	73839	73700	73561	73421	73280	73139	72998	72857	3
74391	74253	74115	73976	73837	73698	73558	73418	73278	73137	72996	72854	2
74388	74250	74112	73974	73835	73696	73556	73416	73276	73135	72994	72852	1
74386	74248	74110	73971	73833	73693	73554	73414	73273	73132	72991	72850	0
47′	46′	45′	44′	43′	42′	41′	40′	39′	38′	37′	36′	″

Sine Deg. 83

Deg. Tangent — 6 Deg. Co-Tangent

"	12′	13′	14′	15′	16′	17′	18′	19′	20′	21′	22′	23′	12′	13′	14′	15′	16′	17′	18′	19′	20′	21′	22′	23′	"
	9.03	9.03	9.03	9.03	9.04	9.04	9.04	9.04	9.04	9.04	9.04	9.04	10.96	10.96	10.96	10.96	10.95	10.95	10.95	10.95	10.95	10.95	10.95	10.95	
0	59688	71439	83159	94848	06506	18134	29731	41299	52836	64343	75821	87270	40312	28561	16841	05152	93494	81866	70269	58701	47164	35657	24179	12730	60
1	59884	71635	83354	95042	06700	18327	29924	41491	53028	64535	76012	87460	40116	28365	16646	04958	93300	81673	70076	58509	46972	35465	23988	12540	59
2	60080	71830	83549	95237	06894	18521	30117	41684	53220	64727	76203	87651	39920	28170	16451	04763	93106	81479	69883	58316	46780	35273	23797	12349	58
3	60277	72026	83744	95431	07088	18714	30310	41876	53412	64918	76394	87841	39723	27974	16256	04569	92912	81286	69690	58124	46588	35082	23606	12159	57
4	60473	72221	83939	95626	07282	18908	30503	42069	53604	65110	76585	88032	39527	27779	16061	04374	92718	81092	69497	57931	46396	34890	23415	11968	56
5	60669	72417	84134	95820	07476	19101	30696	42261	53796	65301	76776	88222	39331	27583	15866	04180	92524	80899	69304	57739	46204	34699	23224	11778	55
6	60865	72612	84329	96015	07670	19295	30889	42454	53988	65493	76967	88413	39135	27388	15671	03985	92330	80705	69111	57546	46012	34507	23033	11587	54
7	61061	72808	84524	96209	07864	19488	31082	42646	54180	65684	77158	88603	38939	27192	15476	03791	92136	80512	68918	57354	45820	34316	22842	11397	53
8	61257	73003	84719	96404	08058	19682	31275	42839	54372	65876	77349	88794	38743	26997	15281	03596	91942	80318	68725	57161	45628	34124	22651	11206	52
9	61453	73199	84914	96598	08252	19875	31468	43031	54564	66067	77540	88984	38547	26801	15086	03402	91748	80125	68532	56969	45436	33933	22460	11016	51
10	61649	73394	85109	96793	08446	20069	31661	43223	54756	66258	77731	89175	38351	26606	14891	03207	91554	79931	68339	56777	45244	33742	22269	10825	50
11	61845	73590	85304	96987	08640	20262	31854	43416	54948	66450	77922	89365	38155	26410	14696	03013	91360	79738	68146	56584	45052	33550	22078	10635	49
12	62041	73785	85499	97182	08834	20456	32047	43608	55140	66641	78113	89556	37959	26215	14501	02818	91166	79544	67953	56392	44860	33359	21887	10444	48
13	62237	73981	85694	97376	09028	20649	32240	43801	55332	66833	78304	89746	37763	26019	14306	02624	90972	79351	67760	56199	44668	33167	21696	10254	47
14	62433	74176	85889	97571	09222	20842	32433	43993	55524	67024	78495	89937	37567	25824	14111	02429	90778	79158	67567	56007	44476	32976	21505	10063	46
15	62629	74372	86084	97765	09416	21036	32626	44186	55716	67216	78686	90127	37371	25628	13916	02235	90584	78964	67374	55814	44284	32784	21314	09873	45
16	62825	74567	86279	97959	09610	21229	32819	44378	55907	67407	78877	90318	37175	25433	13721	02041	90390	78771	67181	55622	44093	32593	21123	09682	44
17	63021	74763	86474	98154	09803	21423	33012	44570	56099	67599	79068	90508	36979	25237	13526	01846	90197	78577	66988	55430	43901	32401	20932	09492	43
18	63217	74958	86669	98348	09997	21616	33205	44763	56291	67790	79259	90698	36783	25042	13331	01652	90003	78384	66795	55237	43709	32210	20741	09302	42
19	63413	75154	86863	98543	10191	21809	33397	44955	56483	67981	79450	90889	36587	24846	13137	01457	89809	78191	66603	55045	43517	32019	20550	09111	41
20	63609	75349	87058	98737	10385	22003	33590	45148	56675	68173	79641	91079	36391	24651	12942	01263	89615	77997	66410	54852	43325	31827	20359	08921	40
21	63805	75544	87253	98931	10579	22196	33783	45340	56867	68364	79832	91270	36195	24456	12747	01069	89421	77804	66217	54660	43133	31636	20168	08730	39
22	64000	75740	87448	99126	10773	22390	33976	45532	57059	68555	80022	91460	36000	24260	12552	00874	89227	77610	66024	54468	42941	31445	19978	08540	38
23	64196	75935	87643	99320	10967	22583	34169	45725	57251	68747	80213	91650	35804	24065	12357	00680	89033	77417	65831	54275	42749	31253	19787	08350	37
24	64392	76131	87838	99515	11161	22776	34362	45917	57442	68938	80404	91841	35608	23869	12162	00485	88839	77224	65638	54083	42558	31062	19596	08159	36
25	64588	76326	88033	99709	11354	22970	34555	46109	57634	69129	80595	92031	35412	23674	11967	00291	88646	77030	65445	53891	42366	30871	19405	07969	35
26	64784	76521	88228	99903	11548	23163	34747	46302	57826	69321	80786	92222	35216	23479	11772	00097	88452	76837	65253	53698	42174	30679	19214	07778	34
27	64980	76717	88422	00098	11742	23356	34940	46494	58018	69512	80977	92412	35020	23283	11578	99902	88258	76644	65060	53506	41982	30488	19023	07588	33
28	65176	76912	88617	00292	11936	23550	35133	46686	58210	69703	81167	92602	34824	23088	11383	99708	88064	76450	64867	53314	41790	30297	18833	07398	32
29	65372	77107	88812	00486	12130	23743	35326	46879	58402	69895	81358	92793	34628	22893	11188	99514	87870	76257	64674	53121	41598	30105	18642	07207	31
30	65567	77303	89007	00681	12324	23936	35519	47071	58593	70086	81549	92983	34433	22697	10993	99319	87676	76064	64481	52929	41407	29914	18451	07017	30
31	65763	77498	89202	00875	12517	24129	35711	47263	58785	70277	81740	93173	34237	22502	10798	99125	87483	75871	64289	52737	41215	29723	18260	06827	29
32	65959	77693	89397	01069	12711	24323	35904	47456	58977	70469	81931	93363	34041	22307	10603	98931	87289	75677	64096	52544	41023	29531	18069	06637	28
33	66155	77889	89591	01263	12905	24516	36097	47648	59169	70660	82122	93554	33845	22111	10409	98737	87095	75484	63903	52352	40831	29340	17878	06446	27
34	66351	78084	89786	01458	13099	24709	36290	47840	59360	70851	82312	93744	33649	21916	10214	98542	86901	75291	63710	52160	40640	29149	17688	06256	26
35	66547	78279	89981	01652	13292	24903	36482	48032	59552	71042	82503	93934	33453	21721	10019	98348	86708	75097	63518	51968	40448	28958	17497	06066	25
36	66742	78474	90176	01846	13486	25096	36675	48225	59744	71234	82694	94125	33258	21526	09824	98154	86514	74904	63325	51775	40256	28766	17306	05875	24
37	66938	78670	90370	02040	13680	25289	36868	48417	59936	71425	82885	94315	33062	21330	09630	97960	86320	74711	63132	51583	40064	28575	17115	05685	23
38	67134	78865	90565	02235	13874	25482	37061	48609	60127	71616	83075	94505	32866	21135	09435	97765	86126	74518	62939	51391	39873	28384	16925	05495	22
39	67330	79060	90760	02429	14067	25675	37253	48801	60319	71807	83266	94695	32670	20940	09240	97571	85933	74325	62747	51199	39681	28193	16734	05305	21
40	67526	79256	90955	02623	14261	25869	37446	48993	60511	71999	83457	94886	32474	20744	09045	97377	85739	74131	62554	51007	39489	28001	16543	05114	20
41	67721	79451	91149	02817	14455	26062	37639	49186	60703	72190	83648	95076	32279	20549	08851	97183	85545	73938	62361	50814	39297	27810	16352	04924	19
42	67917	79646	91344	03012	14649	26255	37831	49378	60894	72381	83838	95266	32083	20354	08656	96988	85351	73745	62169	50622	39106	27619	16162	04734	18
43	68113	79841	91539	03206	14842	26448	38024	49570	61086	72572	84029	95456	31887	20159	08461	96794	85158	73552	61976	50430	38914	27428	15971	04544	17
44	68308	80036	91734	03400	15036	26641	38217	49762	61278	72763	84220	95646	31692	19964	08266	96600	84964	73359	61783	50238	38722	27237	15780	04354	16
45	68504	80232	91928	03594	15230	26835	38410	49954	61469	72955	84410	95837	31496	19768	08072	96406	84770	73165	61590	50046	38531	27045	15590	04163	15
46	68700	80427	92123	03788	15423	27028	38602	50147	61661	73146	84601	96027	31300	19573	07877	96212	84577	72972	61398	49853	38339	26854	15399	03973	14
47	68896	80622	92318	03982	15617	27221	38795	50339	61853	73337	84792	96217	31104	19378	07682	96018	84383	72779	61205	49661	38147	26663	15208	03783	13
48	69091	80817	92512	04177	15811	27414	38987	50531	62044	73528	84982	96407	30909	19183	07488	95823	84189	72586	61013	49469	37956	26472	15018	03593	12
49	69287	81012	92707	04371	16004	27607	39180	50723	62236	73719	85173	96597	30713	18988	07293	95629	83996	72393	60810	49277	37764	26281	14827	03403	11
50	69483	81208	92902	04565	16198	27800	39373	50915	62428	73910	85364	96788	30517	18792	07098	95435	83802	72200	60627	49085	37572	26090	14636	03212	10
51	69678	81403	93096	04759	16391	27993	39565	51107	62619	74102	85554	96978	30322	18597	06904	95241	83609	72007	60435	48893	37381	25898	14446	03022	9
52	69874	81598	93291	04953	16585	28187	39758	51299	62811	74293	85745	97168	30126	18402	06709	95047	83415	71813	60242	48701	37189	25707	14255	02832	8
53	70070	81793	93485	05147	16779	28380	39951	51491	63002	74484	85936	97358	29930	18207	06515	94853	83221	71620	60049	48509	36998	25516	14064	02642	7
54	70265	81988	93680	05341	16972	28573	40143	51684	63194	74675	86126	97548	29735	18012	06320	94659	83028	71427	59857	48316	36806	25325	13874	02452	6
55	70461	82183	93875	05535	17166	28766	40336	51876	63386	74866	86317	97738	29539	17817	06125	94465	82834	71234	59664	48124	36614	25134	13683	02262	5
56	70657	82378	94069	05730	17359	28959	40528	52068	63577	75057	86507	97928	29343	17622	05931	94270	82641	71041	59472	47932	36423	24943	13493	02072	4
57	70852	82573	94264	05924	17553	29152	40721	52260	63769	75248	86698	98118	29148	17427	05736	94076	82447	70848	59279	47740	36231	24752	13302	01882	3
58	71048	82769	94458	06118	17747	29345	40913	52452	63960	75439	86889	98309	28952	17231	05542	93882	82253	70655	59087	47548	36040	24561	13111	01691	2
59	71243	82964	94653	06312	17940	29538	41106	52644	64152	75630	87079	98499	28757	17036	05347	93688	82060	70462	58894	47356	35848	24370	12921	01501	1
60	71439	83159	94848	06506	18134	29731	41299	52836	64343	75821	87270	98689	28561	16841	05152	93494	81866	70269	58701	47164	35657	24179	12730	01311	0
"	47′	46′	45′	44′	43′	42′	41′	40′	39′	38′	37′	36′	47′	46′	45′	44′	43′	42′	41′	40′	39′	38′	37′	36′	"

Co-Tangent Deg. 83 — Tangent Deg. 83

6 Deg. Sine

	24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′
″	9.04	9.04	9.04	9.05	9.05	9.05	9.05	9.05	9.05	9.05	9.05	9.05
0	71538	82786	94005	05194	16354	27485	38588	49661	60706	71723	82711	93672
1	71726	82974	94192	05380	16540	27671	38772	49846	60890	71906	82894	93854
2	71914	83161	94378	05567	16726	27856	38957	50030	61074	72090	83077	94037
3	72102	83348	94565	05753	16911	28041	39142	50214	61258	72273	83260	94219
4	72289	83535	94752	05939	17097	28226	39327	50398	61442	72456	83443	94402
5	72477	83722	94938	06125	17283	28412	39511	50583	61625	72640	83626	94584
6	72665	83909	95125	06311	17469	28597	39696	50767	61809	72823	83809	94766
7	72852	84097	95312	06498	17654	28782	39881	50951	61993	73006	83992	94949
8	73040	84284	95498	06684	17840	28967	40066	51136	62177	73190	84174	95131
9	73227	84471	95685	06870	18026	29152	40250	51320	62361	73373	84357	95313
10	73415	84658	95872	07056	18211	29338	40435	51504	62544	73556	84540	95496
11	73603	84845	96058	07242	18397	29523	40620	51688	62728	73740	84723	95678
12	73790	85032	96245	07428	18583	29708	40805	51872	62912	73923	84906	95861
13	73978	85219	96432	07615	18768	29893	40989	52057	63096	74106	85089	96043
14	74166	85407	96618	07801	18954	30078	41174	52241	63279	74290	85271	96225
15	74353	85594	96805	07987	19140	30264	41359	52425	63463	74473	85454	96408
16	74541	85781	96991	08173	19325	30449	41543	52609	63647	74656	85637	96590
17	74728	85968	97178	08359	19511	30634	41728	52794	63831	74839	85820	96772
18	74916	86155	97365	08545	19697	30819	41913	52978	64014	75023	86003	96954
19	75103	86342	97551	08731	19882	31004	42097	53162	64198	75206	86185	97137
20	75291	86529	97738	08917	20068	31189	42282	53346	64382	75389	86368	97319
21	75479	86716	97924	09103	20253	31374	42467	53530	64565	75572	86551	97501
22	75666	86903	98111	09289	20439	31559	42651	53714	64749	75755	86734	97684
23	75854	87090	98297	09476	20624	31745	42836	53899	64933	75939	86916	97866
24	76041	87277	98484	09662	20810	31930	43020	54083	65116	76122	87099	98048
25	76229	87464	98671	09848	20996	32115	43205	54267	65300	76305	87282	98230
26	76416	87651	98857	10034	21181	32300	43390	54451	65484	76488	87464	98413
27	76604	87838	99044	10220	21367	32485	43574	54635	65667	76671	87647	98595
28	76791	88025	99230	10406	21552	32670	43759	54819	65851	76854	87830	98777
29	76979	88212	99417	10592	21738	32855	43943	55003	66035	77038	88012	98959
30	77166	88399	99603	10778	21923	33040	44128	55187	66218	77221	88195	99142
31	77354	88586	99790	10964	22109	33225	44313	55371	66402	77404	88378	99324
32	77541	88773	99976	11150	22294	33410	44497	55555	66585	77587	88560	99506
33	77728	88960	00162	11336	22480	33595	44682	55740	66769	77770	88743	99688
34	77916	89147	00349	11522	22665	33780	44866	55924	66953	77953	88926	99870
35	78103	89334	00535	11708	22851	33965	45051	56108	67136	78136	89108	00052
36	78291	89521	00722	11894	23036	34150	45235	56292	67320	78319	89291	00235
37	78478	89708	00908	12080	23222	34335	45420	56476	67503	78503	89474	00417
38	78666	89895	01095	12265	23407	34520	45604	56660	67687	78686	89656	00599
39	78853	90082	01281	12451	23593	34705	45789	56844	67870	78869	89839	00781
40	79040	90269	01468	12637	23778	34890	45973	57028	68054	79052	90022	00963
41	79228	90455	01654	12823	23964	35075	46158	57212	68237	79235	90204	01145
42	79415	90642	01840	13009	24149	35260	46342	57396	68421	79418	90387	01327
43	79602	90829	02027	13195	24334	35445	46527	57580	68604	79601	90569	01510
44	79790	91016	02213	13381	24520	35630	46711	57764	68788	79784	90752	01692
45	79977	91203	02399	13567	24705	35815	46895	57948	68971	79967	90934	01874
46	80164	91390	02586	13753	24891	36000	47080	58132	69155	80150	91117	02056
47	80352	91577	02772	13939	25076	36185	47264	58316	69338	80333	91299	02238
48	80539	91763	02959	14124	25261	36369	47449	58500	69522	80516	91482	02420
49	80726	91950	03145	14310	25447	36554	47633	58683	69705	80699	91665	02602
50	80914	92137	03331	14496	25632	36739	47818	58867	69889	80882	91847	02784
51	81101	92324	03518	14682	25817	36924	48002	59051	70072	81065	92030	02966
52	81288	92511	03704	14868	26003	37109	48186	59235	70256	81248	92212	03148
53	81476	92698	03890	15054	26188	37294	48371	59419	70439	81431	92395	03330
54	81663	92884	04076	15239	26373	37479	48555	59603	70623	81614	92577	03512
55	81850	93071	04263	15425	26559	37663	48739	59787	70806	81797	92760	03694
56	82037	93258	04449	15611	26744	37848	48924	59971	70989	81980	92942	03876
57	82225	93445	04635	15797	26929	38033	49108	60155	71173	82163	93124	04058
58	82412	93631	04822	15983	27115	38218	49293	60339	71356	82346	93307	04240
59	82599	93818	05008	16168	27300	38403	49477	60522	71540	82529	93489	04422
60	82786	94005	05194	16354	27485	38588	49661	60706	71723	82711	93672	04604
″	35′	34′	33′	32′	31′	30′	29′	28′	27′	26′	25′	24′

Co-Sine Deg. 83

6 Deg. Co-Sine

24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′	″
9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	
72850	72708	72566	72423	72280	72137	71993	71849	71704	71559	71414	71268	60
72847	72705	72563	72421	72278	72134	71990	71846	71702	71557	71412	71266	59
72845	72703	72561	72418	72275	72132	71988	71844	71699	71554	71409	71264	58
72843	72701	72558	72416	72273	72129	71986	71841	71697	71552	71407	71261	57
72840	72698	72556	72413	72270	72127	71983	71839	71695	71550	71404	71259	56
72838	72696	72554	72411	72268	72125	71981	71837	71692	71547	71402	71256	55
72836	72694	72551	72409	72266	72122	71978	71834	71690	71545	71400	71254	54
72833	72691	72549	72406	72263	72120	71976	71832	71687	71542	71397	71251	53
72831	72689	72547	72404	72261	72117	71974	71829	71685	71540	71395	71249	52
72828	72687	72544	72402	72258	72115	71971	71827	71682	71538	71392	71247	51
72826	72684	72542	72399	72256	72113	71969	71825	71680	71535	71390	71244	50
72824	72682	72539	72397	72254	72110	71966	71822	71678	71533	71387	71242	49
72821	72679	72537	72394	72251	72108	71964	71820	71675	71530	71385	71239	48
72819	72677	72535	72392	72249	72105	71962	71817	71673	71528	71383	71237	47
72817	72675	72532	72390	72247	72103	71959	71815	71670	71525	71380	71234	46
72814	72672	72530	72387	72244	72101	71957	71813	71668	71523	71378	71232	45
72812	72670	72528	72385	72242	72098	71954	71810	71666	71521	71375	71230	44
72810	72668	72525	72382	72239	72096	71952	71808	71663	71518	71373	71227	43
72807	72665	72523	72380	72237	72093	71950	71805	71661	71516	71370	71225	42
72805	72663	72520	72378	72235	72091	71947	71803	71658	71513	71368	71222	41
72802	72660	72518	72375	72232	72089	71945	71801	71656	71511	71366	71220	40
72800	72658	72516	72373	72230	72086	71942	71798	71654	71509	71363	71217	39
72798	72656	72513	72371	72227	72084	71940	71796	71651	71506	71361	71215	38
72795	72653	72511	72368	72225	72081	71938	71793	71649	71504	71358	71213	37
72793	72651	72509	72366	72223	72079	71935	71791	71646	71501	71356	71210	36
72791	72649	72506	72363	72220	72077	71933	71789	71644	71499	71353	71208	35
72788	72646	72504	72361	72218	72074	71930	71786	71641	71496	71351	71205	34
72786	72644	72501	72359	72215	72072	71928	71784	71639	71494	71349	71203	33
72784	72641	72499	72356	72213	72070	71926	71781	71637	71492	71346	71200	32
72781	72639	72497	72354	72211	72067	71923	71779	71634	71489	71344	71198	31
72779	72637	72494	72351	72208	72065	71921	71776	71632	71487	71341	71196	30
72776	72634	72492	72349	72206	72062	71918	71774	71629	71484	71339	71193	29
72774	72632	72490	72347	72204	72060	71916	71772	71627	71482	71336	71191	28
72772	72630	72487	72344	72201	72058	71914	71769	71625	71479	71334	71188	27
72769	72627	72485	72342	72199	72055	71911	71767	71622	71477	71332	71186	26
72767	72625	72482	72340	72196	72053	71909	71764	71620	71475	71329	71183	25
72765	72623	72480	72337	72194	72050	71906	71762	71617	71472	71327	71181	24
72762	72620	72478	72335	72192	72048	71904	71760	71615	71470	71324	71178	23
72760	72618	72475	72332	72189	72046	71902	71757	71612	71467	71322	71176	22
72758	72615	72473	72330	72187	72043	71899	71755	71610	71465	71319	71174	21
72755	72613	72471	72328	72184	72041	71897	71752	71608	71463	71317	71171	20
72753	72611	72468	72325	72182	72038	71894	71750	71605	71460	71315	71169	19
72750	72608	72466	72323	72180	72036	71892	71748	71603	71458	71312	71166	18
72748	72606	72463	72320	72177	72034	71890	71745	71600	71455	71310	71164	17
72746	72604	72461	72318	72175	72031	71887	71743	71598	71453	71307	71161	16
72743	72601	72459	72316	72172	72029	71885	71740	71596	71450	71305	71159	15
72741	72599	72456	72313	72170	72026	71882	71738	71593	71448	71302	71157	14
72739	72596	72454	72311	72168	72024	71880	71736	71591	71446	71300	71154	13
72736	72594	72451	72309	72165	72022	71878	71733	71588	71443	71298	71152	12
72734	72592	72449	72306	72163	72019	71875	71731	71586	71441	71295	71149	11
72732	72589	72447	72304	72160	72017	71873	71728	71583	71438	71293	71147	10
72729	72587	72444	72301	72158	72014	71870	71726	71581	71436	71290	71144	9
72727	72585	72442	72299	72156	72012	71868	71723	71579	71433	71288	71142	8
72724	72582	72440	72297	72153	72010	71866	71721	71576	71431	71285	71140	7
72722	72580	72437	72294	72151	72007	71863	71719	71574	71429	71283	71137	6
72720	72577	72435	72292	72149	72005	71861	71716	71571	71426	71281	71135	5
72717	72575	72432	72289	72146	72002	71858	71714	71569	71424	71278	71132	4
72715	72573	72430	72287	72144	72000	71856	71711	71567	71421	71276	71130	3
72713	72570	72428	72285	72141	71998	71853	71709	71564	71419	71273	71127	2
72710	72568	72425	72282	72139	71995	71851	71707	71562	71417	71271	71125	1
72708	72566	72423	72280	72137	71993	71849	71704	71559	71414	71268	71122	0
35′	34′	33′	32′	31′	30′	29′	28′	27′	26′	25′	24′	″

Sine Deg. 83

6 Deg. Tangent

	24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′
″	9. 04	9. 05	9. 05	9. 05	9. 05	9. 05	9. 05	9. 05	9. 05	9. 06	9. 06	9. 06
0	98689	10078	21439	32771	44074	55349	66595	77813	89002	00164	11297	22403
1	98879	10268	21628	32960	44262	55536	66782	77999	89188	00349	11483	22588
2	99069	10458	21817	33148	44450	55724	66969	78186	89375	00535	11668	22773
3	99259	10647	22007	33337	44639	55912	67156	78373	89561	00721	11853	22958
4	99449	10837	22196	33526	44827	56099	67343	78559	89747	00907	12039	23143
5	99639	11026	22385	33714	45015	56287	67531	78746	89933	01093	12224	23328
6	99829	11216	22574	33903	45203	56475	67718	78933	90120	01278	12409	23512
7	00019	11405	22763	34091	45391	56662	67905	79119	90306	01464	12595	23697
8	00209	11595	22952	34280	45579	56850	68092	79306	90492	01650	12780	23882
9	00399	11784	23141	34468	45767	57037	68279	79493	90678	01836	12965	24067
10	00589	11974	23330	34657	45955	57225	68466	79679	90864	02021	13150	24252
11	00779	12163	23519	34845	46143	57413	68653	79866	91050	02207	13336	24436
12	00969	12353	23708	35034	46331	57600	68841	80053	91237	02393	13521	24621
13	01159	12542	23897	35223	46519	57788	69028	80239	91423	02578	13706	24806
14	01349	12732	24086	35411	46707	57975	69215	80426	91609	02764	13891	24991
15	01539	12921	24275	35600	46895	58163	69402	80613	91795	02950	14076	25176
16	01729	13111	24464	35788	47084	58350	69589	80799	91981	03135	14262	25360
17	01919	13300	24653	35977	47272	58538	69776	80986	92167	03321	14447	25545
18	02109	13490	24842	36165	47460	58725	69963	81172	92354	03507	14632	25730
19	02299	13679	25031	36354	47648	58913	70150	81359	92540	03692	14817	25915
20	02489	13869	25220	36542	47836	59101	70337	81545	92726	03878	15002	26099
21	02678	14058	25409	36730	48024	59288	70524	81732	92912	04064	15188	26284
22	02868	14247	25598	36919	48211	59476	70711	81919	93098	04249	15373	26469
23	03058	14437	25787	37107	48399	59663	70898	82105	93284	04435	15558	26653
24	03248	14626	25975	37296	48587	59851	71085	82292	93470	04620	15743	26838
25	03438	14816	26164	37484	48775	60038	71272	82478	93656	04806	15928	27023
26	03628	15005	26353	37673	48963	60225	71459	82665	93842	04992	16113	27207
27	03818	15194	26542	37861	49151	60413	71646	82851	94028	05177	16299	27392
28	04008	15384	26731	38049	49339	60600	71833	83038	94214	05363	16484	27577
29	04197	15573	26920	38238	49527	60788	72020	83224	94400	05548	16669	27761
30	04387	15762	27109	38426	49715	60975	72207	83411	94586	05734	16854	27946
31	04577	15952	27298	38615	49903	61163	72394	83597	94772	05920	17039	28131
32	04767	16141	27486	38803	50091	61350	72581	83784	94958	06105	17224	28315
33	04957	16330	27675	38991	50279	61538	72768	83970	95144	06291	17409	28500
34	05146	16520	27864	39180	50467	61725	72955	84157	95330	06476	17594	28685
35	05336	16709	28053	39368	50654	61912	73142	84343	95516	06662	17779	28869
36	05526	16898	28242	39556	50842	62100	73329	84530	95702	06847	17964	29054
37	05716	17088	28431	39745	51030	62287	73516	84716	95888	07033	18149	29238
38	05906	17277	28619	39933	51218	62474	73703	84903	96074	07218	18334	29423
39	06095	17466	28808	40121	51406	62662	73890	85089	96260	07404	18519	29607
40	06285	17656	28997	40310	51594	62849	74076	85275	96446	07589	18704	29792
41	06475	17845	29186	40498	51782	63037	74263	85462	96632	07775	18889	29977
42	06665	18034	29375	40686	51969	63224	74450	85648	96818	07960	19074	30161
43	06854	18223	29563	40875	52157	63411	74637	85835	97004	08146	19259	30346
44	07044	18413	29752	41063	52345	63599	74824	86021	97190	08331	19444	30530
45	07234	18602	29941	41251	52533	63786	75011	86207	97376	08517	19629	30715
46	07423	18791	30130	41439	52721	63973	75198	86394	97562	08702	19814	30899
47	07613	18980	30318	41628	52908	64161	75384	86580	97748	08887	19999	31084
48	07803	19169	30507	41816	53096	64348	75571	86766	97934	09073	20184	31268
49	07993	19359	30696	42004	53284	64535	75758	86953	98119	09258	20369	31453
50	08182	19548	30884	42192	53472	64722	75945	87139	98305	09444	20554	31637
51	08372	19737	31073	42381	53659	64910	76132	87325	98491	09629	20739	31822
52	08562	19926	31262	42569	53847	65097	76318	87512	98677	09814	20924	32006
53	08751	20115	31451	42757	54035	65284	76505	87698	98863	10000	21109	32191
54	08941	20304	31639	42945	54222	65471	76692	87884	99049	10185	21294	32375
55	09130	20494	31828	43133	54410	65659	76879	88071	99235	10371	21479	32560
56	09320	20683	32017	43322	54598	65846	77066	88257	99420	10556	21664	32744
57	09510	20872	32205	43510	54786	66033	77252	88443	99606	10741	21849	32929
58	09099	21061	32394	43698	54973	66220	77439	88630	99792	10927	22034	33113
59	09889	21250	32582	43886	55161	66408	77626	88816	99978	11112	22218	33297
60	10078	21439	32771	44074	55349	66595	77813	89002	00164	11297	22403	33482
″	35′	34′	33′	32′	31′	30′	29′	28′	27′	26′	25′	24′

Co-Tangent Deg. 83

6 Deg. Co-Tangent

24′	25′	26′	27′	28′	29′	30′	31′	32′	33′	34′	35′	
10. 95	10. 94	10. 94	10. 94	10. 94	10. 94	10. 94	10. 94	10. 94	10. 93	10. 93	10. 93	″
01311	89922	78561	67229	55926	44651	33405	22187	10998	99836	88703	77597	60
01121	89732	78372	67040	55738	44464	33218	22001	10812	99651	88517	77412	59
00931	89542	78183	66852	55550	44276	33031	21814	10625	99465	88332	77227	58
00741	89353	77993	66663	55361	44088	32844	21627	10439	99279	88147	77042	57
00551	89163	77804	66474	55173	43901	32657	21441	10253	99093	87961	76857	56
00361	88974	77615	66286	54985	43713	32469	21254	10067	98907	87776	76672	55
00171	88784	77426	66097	54797	43525	32282	21067	09880	98722	87591	76488	54
99981	88595	77237	65909	54609	43338	32095	20881	09694	98536	87405	76303	53
99791	88405	77048	65720	54421	43150	31908	20694	09508	98350	87220	76118	52
99601	88216	76859	65532	54233	42963	31721	20507	09322	98164	87035	75933	51
99411	88026	76670	65343	54045	42775	31534	20321	09136	97979	86850	75748	50
99221	87837	76481	65155	53857	42587	31347	20134	08950	97793	86664	75564	49
99031	87647	76292	64966	53669	42400	31159	19947	08763	97607	86479	75379	48
98841	87458	76103	64777	53481	42212	30972	19761	08577	97422	86294	75194	47
98651	87268	75914	64589	53293	42025	30785	19574	08391	97236	86109	75009	46
98461	87079	75725	64400	53105	41837	30598	19387	08205	97050	85924	74824	45
98271	86889	75536	64212	52916	41650	30411	19201	08019	96865	85738	74640	44
98081	86700	75347	64023	52728	41462	30224	19014	07833	96679	85553	74455	43
97891	86510	75158	63835	52540	41275	30037	18828	07646	96493	85368	74270	42
97701	86321	74969	63646	52352	41087	29850	18641	07460	96308	85183	74085	41
97511	86131	74780	63458	52164	40899	29663	18455	07274	96122	84998	73901	40
97322	85942	74591	63270	51976	40712	29476	18268	07088	95936	84812	73716	39
97132	85753	74402	63081	51789	40524	29289	18081	06902	95751	84627	73531	38
96942	85563	74213	62893	51601	40337	29102	17895	06716	95565	84442	73347	37
96752	85374	74025	62704	51413	40149	28915	17708	06530	95380	84257	73162	36
96562	85184	73836	62516	51225	39962	28728	17522	06344	95194	84072	72977	35
96372	84995	73647	62327	51037	39775	28541	17335	06158	95008	83887	72793	34
96182	84806	73458	62139	50849	39587	28354	17149	05972	94823	83701	72608	33
95992	84616	73269	61951	50661	39400	28167	16962	05786	94637	83516	72423	32
95803	84427	73080	61762	50473	39212	27980	16776	05600	94452	83331	72239	31
95613	84238	72891	61574	50285	39025	27793	16589	05414	94266	83146	72054	30
95423	84048	72702	61385	50097	38837	27605	16403	05228	94080	82961	71869	29
95233	83859	72514	61197	49909	38650	27419	16216	05042	93895	82776	71685	28
95043	83670	72325	61009	49721	38462	27232	16030	04856	93709	82591	71500	27
94854	83480	72136	60820	49533	38275	27045	15843	04670	93524	82406	71315	26
94664	83291	71947	60632	49346	38088	26858	15657	04484	93338	82221	71131	25
94474	83102	71758	60444	49158	37900	26671	15470	04298	93153	82036	70946	24
94284	82912	71569	60255	48970	37713	26484	15284	04112	92967	81851	70762	23
94094	82723	71381	60067	48782	37526	26297	15097	03926	92782	81666	70577	22
93905	82534	71192	59879	48594	37338	26110	14911	03740	92596	81481	70393	21
93715	82344	71003	59690	48406	37151	25924	14725	03554	92411	81296	70208	20
93525	82155	70814	59502	48218	36963	25737	14538	03368	92225	81111	70023	19
93335	81966	70625	59314	48031	36776	25550	14352	03182	92040	80926	69839	18
93146	81777	70437	59125	47843	36589	25363	14165	02996	91854	80741	69654	17
92956	81587	70248	58937	47655	36401	25176	13979	02810	91669	80556	69470	16
92766	81398	70059	58749	47467	36214	24989	13793	02624	91483	80371	69285	15
92577	81209	69870	58561	47279	36027	24802	13606	02438	91298	80186	69101	14
92387	81020	69682	58372	47092	35839	24616	13420	02252	91113	80001	68916	13
92197	80831	69493	58184	46904	35652	24429	13234	02066	90927	79816	68732	12
92007	80641	69304	57996	46716	35465	24242	13047	01881	90742	79631	68547	11
91818	80452	69116	57808	46528	35278	24055	12861	01695	90556	79446	68363	10
91628	80263	68927	57619	46341	35090	23868	12675	01509	90371	79261	68178	9
91438	80074	68738	57431	46153	34903	23682	12488	01323	90186	79076	67994	8
91249	79885	68549	57243	45965	34716	23495	12302	01137	90000	78891	67809	7
91059	79696	68361	57055	45777	34529	23308	12116	00951	89815	78706	67625	6
90870	79506	68172	56867	45590	34341	23121	11929	00765	89629	78521	67440	5
90680	79317	67983	56678	45402	34154	22934	11743	00580	89444	78336	67256	4
90490	79128	67795	56490	45214	33967	22748	11557	00394	89259	78151	67071	3
90301	78939	67606	56302	45027	33780	22561	11370	00208	89073	77966	66887	2
90111	78750	67418	56114	44839	33592	22374	11184	00022	88888	77782	66703	1
89922	78561	67229	55926	44651	33405	22187	10998	99836	88703	77597	66518	0
35′	34′	33′	32′	31′	30′	29′	28′	27′	26′	25′	24′	″

Tangent Deg. 83

6 Deg. Sine

″	36′	37′	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′
	9.06	9.06	9.06	9.06	9.06	9.06	9.06	9.06	9.06	9.07	9.07	9.07
0	04604	15509	26386	37235	48057	58852	69619	80360	91074	01761	12421	23055
1	04786	15690	26567	37416	48237	59032	69799	80539	91252	01939	12599	23232
2	04968	15872	26748	37596	48417	59211	69978	80718	91430	02116	12776	23409
3	05150	16053	26929	37777	48598	59391	70157	80896	91609	02294	12953	23586
4	05332	16235	27110	37957	48778	59571	70336	81075	91787	02472	13131	23763
5	05514	16416	27291	38138	48958	59750	70515	81254	91965	02650	13308	23940
6	05696	16598	27472	38319	49138	59930	70695	81433	92144	02828	13486	24117
7	05878	16779	27653	38499	49318	60109	70874	81611	92322	03006	13663	24294
8	06060	16961	27834	38680	49498	60289	71053	81790	92500	03184	13840	24471
9	06242	17142	28015	38860	49678	60469	71232	81969	92678	03361	14018	24648
10	06424	17324	28196	39041	49858	60648	71411	82147	92857	03539	14195	24825
11	06606	17505	28377	39221	50038	60828	71591	82326	93035	03717	14373	25002
12	06787	17686	28558	39402	50218	61008	71770	82505	93213	03895	14550	25179
13	06969	17868	28739	39582	50398	61187	71949	82684	93391	04073	14727	25356
14	07151	18049	28920	39763	50578	61367	72128	82862	93570	04251	14905	25532
15	07333	18231	29101	39943	50758	61546	72307	83041	93748	04428	15082	25709
16	07515	18412	29282	40124	50938	61726	72486	83220	93926	04606	15259	25886
17	07697	18593	29463	40304	51118	61905	72665	83398	94104	04784	15437	26063
18	07879	18775	29643	40485	51298	62085	72844	83577	94283	04962	15614	26240
19	08060	18956	29824	40665	51478	62265	73024	83756	94461	05139	15791	26417
20	08242	19138	30005	40846	51658	62444	73203	83934	94639	05317	15969	26594
21	08424	19319	30186	41026	51838	62624	73382	84113	94817	05495	16146	26771
22	08606	19500	30367	41206	52018	62803	73561	84291	94995	05673	16323	26947
23	08788	19682	30548	41387	52198	62983	73740	84470	95174	05850	16501	27124
24	08969	19863	30729	41567	52378	63162	73919	84649	95352	06028	16678	27301
25	09151	20044	30910	41748	52558	63342	74098	84827	95530	06206	16855	27478
26	09333	20226	31091	41928	52738	63521	74277	85006	95708	06383	17032	27655
27	09515	20407	31271	42108	52918	63701	74456	85184	95886	06561	17210	27832
28	09697	20588	31452	42289	53098	63880	74635	85363	96064	06739	17387	28008
29	09878	20769	31633	42469	53278	64060	74814	85542	96242	06917	17564	28185
30	10060	20951	31814	42650	53458	64239	74993	85720	96421	07094	17741	28362
31	10242	21132	31995	42830	53638	64418	75172	85899	96599	07272	17919	28539
32	10423	21313	32176	43010	53818	64598	75351	86077	96777	07450	18096	28716
33	10605	21495	32356	43191	53998	64777	75530	86256	96955	07627	18273	28892
34	10787	21676	32537	43371	54177	64957	75709	86434	97133	07805	18450	29069
35	10969	21857	32718	43551	54357	65136	75888	86613	97311	07982	18627	29246
36	11150	22038	32899	43732	54537	65316	76067	86791	97489	08160	18805	29423
37	11332	22220	33079	43912	54717	65495	76246	86970	97667	08338	18982	29599
38	11514	22401	33260	44092	54897	65674	76425	87148	97845	08515	19159	29776
39	11695	22582	33441	44273	55077	65854	76604	87327	98023	08693	19336	29953
40	11877	22763	33622	44453	55257	66033	76783	87505	98201	08871	19513	30130
41	12059	22944	33802	44633	55436	66213	76962	87684	98379	09048	19690	30306
42	12240	23126	33983	44813	55616	66392	77141	87862	98557	09226	19868	30483
43	12422	23307	34164	44994	55796	66571	77320	88041	98735	09403	20045	30660
44	12604	23488	34345	45174	55976	66751	77498	88219	98913	09581	20222	30836
45	12785	23669	34525	45354	56156	66930	77677	88398	99091	09758	20399	31013
46	12967	23850	34706	45534	56336	67109	77856	88576	99269	09936	20576	31190
47	13149	24031	34887	45715	56515	67288	78035	88755	99447	10114	20753	31367
48	13330	24213	35067	45895	56695	67468	78214	88933	99625	10291	20930	31543
49	13512	24394	35248	46075	56875	67647	78393	89112	99803	10469	21107	31720
50	13693	24575	35429	46255	57055	67827	78572	89290	99981	10646	21285	31896
51	13875	24756	35609	46436	57234	68006	78751	89468	00159	10824	21462	32073
52	14057	24937	35790	46616	57414	68185	78929	89647	00337	10001	21639	32250
53	14238	25118	35971	46796	57594	68365	79108	89825	00515	11179	21816	32426
54	14420	25299	36151	46976	57774	68544	79287	90004	00693	11356	21993	32603
55	14601	25480	36332	47156	57953	68723	79466	90182	00871	11534	22170	32780
56	14783	25662	36513	47337	58133	68902	79645	90360	01049	11711	22347	32956
57	14964	25843	36693	47517	58313	69082	79824	90539	01227	11889	22524	33133
58	15146	26024	36874	47697	58492	69261	80002	90717	01405	12066	22701	33309
59	15327	26205	37055	47877	58672	69440	80181	90895	01583	12244	22878	33486
60	15509	26386	37235	48057	58852	69619	80360	91074	01761	12421	23055	33663
″	23′	22′	21′	20′	19′	18′	17′	16′	15′	14′	13′	12′

6 Deg. Co-Sine

36′	37′	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′	″
9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	
71122	70976	70829	70682	70535	70387	70239	70090	69941	69792	69642	69492	60
71120	70974	70827	70680	70532	70385	70236	70088	69939	69789	69640	69490	59
71118	70971	70825	70677	70530	70382	70234	70085	69936	69787	69637	69487	58
71115	70969	70822	70675	70527	70380	70231	70083	69934	69784	69635	69485	57
71113	70966	70820	70672	70525	70377	70229	70080	69931	69782	69632	69482	56
71110	70964	70817	70670	70523	70375	70226	70078	69929	69779	69630	69480	55
71108	70961	70815	70668	70520	70372	70224	70075	69926	69777	69627	69477	54
71105	70959	70812	70665	70518	70370	70221	70073	69924	69774	69625	69475	53
71103	70957	70810	70663	70515	70367	70219	70070	69921	69772	69622	69472	52
71101	70954	70807	70660	70513	70365	70217	70068	69919	69769	69620	69470	51
71098	70952	70805	70658	70510	70362	70214	70065	69916	69767	69617	69467	50
71096	70949	70802	70655	70508	70360	70212	70063	69914	69764	69615	69465	49
71093	70947	70800	70653	70505	70357	70209	70060	69911	69762	69612	69462	48
71091	70944	70798	70650	70503	70355	70207	70058	69909	69759	69610	69460	47
71088	70942	70795	70648	70500	70352	70204	70055	69906	69757	69607	69457	46
71086	70939	70793	70645	70498	70350	70202	70053	69904	69754	69605	69455	45
71083	70937	70790	70643	70495	70347	70199	70050	69901	69752	69602	69452	44
71081	70935	70788	70641	70493	70345	70197	70048	69899	69749	69600	69449	43
71079	70932	70785	70638	70491	70343	70194	70046	69896	69747	69597	69447	42
71076	70930	70783	70636	70488	70340	70192	70043	69894	69745	69595	69444	41
71074	70927	70780	70633	70486	70338	70189	70041	69891	69742	69592	69442	40
71071	70925	70778	70631	70483	70335	70187	70038	69889	69740	69590	69439	39
71069	70922	70776	70628	70481	70333	70184	70036	69886	69737	69587	69437	38
71066	70920	70773	70626	70478	70330	70182	70033	69884	69735	69585	69434	37
71064	70917	70771	70623	70476	70328	70179	70031	69882	69732	69582	69432	36
71062	70915	70768	70621	70473	70325	70177	70028	69879	69730	69580	69429	35
71059	70913	70766	70618	70471	70323	70174	70026	69877	69727	69577	69427	34
71057	70910	70763	70616	70468	70320	70172	70023	69874	69725	69575	69424	33
71054	70908	70761	70614	70466	70318	70169	70021	69872	69722	69572	69422	32
71052	70905	70758	70611	70463	70315	70167	70018	69869	69720	69570	69419	31
71049	70903	70756	70609	70461	70313	70165	70016	69867	69717	69567	69417	30
71047	70900	70753	70606	70458	70310	70162	70013	69864	69715	69565	69414	29
71044	70898	70751	70604	70456	70308	70160	70011	69862	69712	69562	69412	28
71042	70895	70749	70601	70454	70306	70157	70008	69859	69710	69560	69409	27
71040	70893	70746	70599	70451	70303	70155	70006	69857	69707	69557	69407	26
71037	70891	70744	70596	70449	70301	70152	70003	69854	69705	69555	69404	25
71035	70888	70741	70594	70446	70298	70150	70001	69852	69702	69552	69402	24
71032	70886	70739	70591	70444	70296	70147	69998	69849	69700	69550	69399	23
71030	70883	70736	70589	70441	70293	70145	69996	69847	69697	69547	69397	22
71027	70881	70734	70586	70439	70291	70142	69993	69844	69695	69545	69394	21
71025	70878	70731	70584	70436	70288	70140	69991	69842	69692	69542	69392	20
71023	70876	70729	70582	70434	70286	70137	69988	69839	69690	69540	69389	19
71020	70873	70726	70579	70431	70283	70135	69986	69837	69687	69537	69387	18
71018	70871	70724	70577	70429	70281	70132	69983	69834	69685	69535	69384	17
71015	70869	70722	70574	70426	70278	70130	69981	69832	69682	69532	69382	16
71013	70866	70719	70572	70424	70276	70127	69978	69829	69680	69530	69379	15
71010	70864	70717	70569	70422	70273	70125	69976	69827	69677	69527	69377	14
71008	70861	70714	70567	70419	70271	70122	69974	69824	69675	69525	69374	13
71005	70859	70712	70564	70417	70268	70120	69971	69822	69672	69522	69372	12
71003	70856	70709	70562	70414	70266	70117	69969	69819	69670	69520	69369	11
71001	70854	70707	70559	70412	70263	70115	69966	69817	69667	69517	69367	10
70998	70851	70704	70557	70409	70261	70112	69964	69814	69665	69515	69364	9
70996	70849	70702	70555	70407	70259	70110	69961	69812	69662	69512	69362	8
70993	70847	70699	70552	70404	70256	70108	69959	69809	69660	69510	69359	7
70991	70844	70697	70550	70402	70254	70105	69956	69807	69657	69507	69357	6
70988	70842	70695	70547	70399	70251	70103	69954	69804	69655	69505	69354	5
70986	70839	70692	70545	70397	70249	70100	69951	69802	69652	69502	69352	4
70983	70837	70690	70542	70394	70246	70098	69949	69799	69650	69500	69349	3
70981	70834	70687	70540	70392	70244	70095	69946	69797	69647	69497	69347	2
70979	70832	70685	70537	70389	70241	70093	69944	69794	69645	69495	69344	1
70976	70829	70682	70535	70387	70239	70090	69941	69792	69642	69492	69342	0
23′	22′	21′	20′	19′	18′	17′	16′	15′	14′	13′	12′	″

Co-Sine Deg. 83

Sine Deg. 83

6 Deg. Tangent

″	36′	37′	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′
	9. 06	9. 06	9. 06	9. 06	9. 06	9. 06	9. 06	9. 07	9. 07	9. 07	9. 07	9. 07
0	33482	44533	55556	66553	77522	88465	99381	10270	21133	31969	42779	53563
1	33666	44717	55740	66736	77705	88647	99562	10451	21313	32149	42959	53742
2	33851	44901	55923	66919	77887	88829	99744	10632	21494	32330	43139	53922
3	34035	45085	56107	67102	78070	89011	99926	10814	21675	32510	43319	54101
4	34219	45268	56290	67285	78253	89193	00107	10995	21856	32690	43499	54281
5	34404	45452	56474	67468	78435	89376	00289	11176	22037	32871	43679	54460
6	34588	45636	56657	67651	78618	89558	00471	11357	22217	33051	43858	54640
7	34772	45820	56841	67834	78800	89740	00652	11538	22398	33231	44038	54819
8	34957	46004	57024	68017	78983	89922	00834	11720	22579	33412	44218	54999
9	35141	46188	57208	68200	79165	90104	01016	11901	22760	33592	44398	55178
10	35325	46372	57391	68383	79348	90286	01197	12082	22940	33772	44578	55358
11	35510	46556	57574	68566	79530	90468	01379	12263	23121	33953	44758	55537
12	35694	46740	57758	68749	79713	90650	01561	12444	23302	34133	44938	55717
13	35878	46923	57941	68932	79895	90832	01742	12626	23483	34313	45118	55896
14	36063	47107	58125	69115	80078	91014	01924	12807	23663	34494	45298	56075
15	36247	47291	58308	69298	80260	91196	02105	12988	23844	34674	45477	56255
16	36431	47475	58491	69481	80443	91378	02287	13169	24025	34854	45657	56434
17	36616	47659	58675	69664	80625	91560	02469	13350	24205	35034	45837	56614
18	36800	47843	58858	69847	80808	91742	02650	13531	24386	35215	46017	56793
19	36984	48026	59042	70029	80990	91924	02832	13713	24567	35395	46197	56972
20	37168	48210	59225	70212	81173	92106	03013	13894	24748	35575	46376	57152
21	37353	48394	59408	70395	81355	92288	03195	14075	24928	35755	46556	57331
22	37537	48578	59592	70578	81538	92470	03376	14256	25109	35936	46736	57511
23	37721	48762	59775	70761	81720	92652	03558	14437	25290	36116	46916	57690
24	37905	48945	59958	70944	81903	92834	03740	14618	25470	36296	47096	57869
25	38090	49129	60142	71127	82085	93016	03921	14799	25651	36476	47275	58049
26	38274	49313	60325	71310	82267	93198	04103	14980	25831	36656	47455	58228
27	38458	49497	60508	71492	82450	93380	04284	15161	26012	36837	47635	58407
28	38642	49680	60691	71675	82632	93562	04466	15342	26193	37017	47815	58587
29	38826	49864	60875	71858	82815	93744	04647	15523	26373	37197	47994	58766
30	39011	50048	61058	72041	82997	93926	04829	15704	26554	37377	48174	58945
31	39195	50232	61241	72224	83179	94108	05010	15886	26735	37557	48354	59124
32	39379	50415	61425	72407	83362	94290	05192	16067	26915	37737	48534	59304
33	39563	50599	61608	72589	83544	94472	05373	16248	27096	37918	48713	59483
34	39747	50783	61791	72772	83726	94654	05554	16429	27276	38098	48893	59662
35	39931	50966	61974	72955	83909	94836	05736	16610	27457	38278	49073	59842
36	40116	51150	62158	73138	84091	95018	05917	16791	27637	38458	49252	60021
37	40300	51334	62341	73321	84273	95199	06099	16972	27818	38638	49432	60200
38	40484	51518	62524	73503	84456	95381	06280	17153	27999	38818	49612	60379
39	40668	51701	62707	73686	84638	95563	06462	17334	28179	38998	49791	60559
40	40852	51885	62890	73869	84820	95745	06643	17515	28360	39178	49971	60738
41	41036	52068	63074	74052	85003	95927	06824	17696	28540	39359	50151	60917
42	41220	52252	63257	74234	85185	96109	07006	17876	28721	39539	50330	61096
43	41404	52436	63440	74417	85367	96291	07187	18057	28901	39719	50510	61275
44	41588	52619	63623	74600	85549	96472	07369	18238	29082	39899	50690	61455
45	41773	52803	63806	74782	85732	96654	07550	18419	29262	40079	50869	61634
46	41957	52987	63989	74965	85914	96836	07731	18600	29443	40259	51049	61813
47	42141	53170	64173	75148	86096	97018	07913	18781	29623	40439	51229	61992
48	42325	53354	64356	75331	86278	97200	08094	18962	29804	40619	51408	62171
49	42509	53537	64539	75513	86461	97381	08275	19143	29984	40799	51588	62351
50	42693	53721	64722	75696	86643	97563	08457	19324	30165	40979	51767	62530
51	42877	53905	64905	75879	86825	97745	08638	19505	30345	41159	51947	62709
52	43061	54088	65088	76061	87007	97927	08819	19686	30526	41339	52127	62888
53	43245	54272	65271	76244	87190	98109	09001	19867	30706	41519	52306	63067
54	43429	54455	65454	76427	87372	98290	09182	20047	30886	41699	52486	63246
55	43613	54639	65638	76609	87554	98472	09363	20228	31067	41879	52665	63425
56	43797	54822	65821	76792	87736	98654	09545	20409	31247	42059	52845	63605
57	43981	55006	66004	76974	87918	98835	09726	20590	31428	42239	53024	63784
58	44165	55189	66187	77157	88101	99017	09907	20771	31608	42419	53204	63963
59	44349	55373	66370	77340	88283	99199	10089	20952	31788	42599	53383	64142
60	44533	55556	66553	77522	88465	99381	10270	21133	31969	42779	53563	64321
″	23′	22′	21′	20′	19′	18′	17′	16′	15′	14′	13′	12′

Co-Tangent Deg. 83

6 Deg. Co-Tangent

36′	37′	38′	39′	40′	41′	42′	43′	44′	45′	46′	47′	″
10. 93	10. 93	10. 93	10. 93	10. 93	10. 93	10. 93	10. 92	10. 92	10. 92	10. 92	10. 92	
66518	55467	44444	33447	22478	11535	00619	89730	78867	68031	57221	46437	60
66334	55283	44260	33264	22295	11353	00438	89549	78687	67851	57041	46258	59
66149	55099	44077	33081	22113	11171	00256	89368	78506	67670	56861	46078	58
65965	54915	43893	32898	21930	10989	00074	89186	78325	67490	56681	45899	57
65781	54732	43710	32715	21747	10807	99893	89005	78144	67310	56501	45719	56
65596	54548	43526	32532	21565	10624	99711	88824	77963	67129	56321	45540	55
65412	54364	43343	32349	21382	10442	99529	88643	77783	66949	56142	45360	54
65228	54180	43159	32166	21200	10260	99348	88462	77602	66769	55962	45181	53
65043	53996	42976	31983	21017	10078	99166	88280	77421	66588	55782	45001	52
64859	53812	42792	31800	20835	09896	98984	88099	77240	66408	55602	44822	51
64675	53628	42609	31617	20652	09714	98803	87918	77060	66228	55422	44642	50
64490	53444	42426	31434	20470	09532	98621	87737	76879	66047	55242	44463	49
64306	53260	42242	31251	20287	09350	98439	87556	76698	65867	55062	44283	48
64122	53077	42059	31068	20105	09168	98258	87374	76517	65687	54882	44104	47
63937	52893	41875	30885	19922	08986	98076	87193	76337	65506	54702	43925	46
63753	52709	41692	30702	19740	08804	97895	87012	76156	65326	54523	43745	45
63569	52525	41509	30519	19557	08622	97713	86831	75975	65146	54343	43566	44
63384	52341	41325	30336	19375	08440	97531	86650	75795	64966	54163	43386	43
63200	52157	41142	30153	19192	08258	97350	86469	75614	64785	53983	43207	42
63016	51974	40958	29971	19010	08076	97168	86287	75433	64605	53803	43028	41
62832	51790	40775	29788	18827	07894	96987	86106	75252	64425	53624	42848	40
62647	51606	40592	29605	18645	07712	96805	85925	75072	64245	53444	42669	39
62463	51422	40408	29422	18462	07530	96624	85744	74891	64064	53264	42489	38
62279	51238	40225	29239	18280	07348	96442	85563	74710	63884	53084	42310	37
62095	51055	40042	29056	18097	07166	96260	85382	74530	63704	52904	42131	36
61910	50871	39858	28873	17915	06984	96079	85201	74349	63524	52725	41951	35
61726	50687	39675	28690	17733	06802	95897	85020	74169	63344	52545	41772	34
61542	50503	39492	28508	17550	06620	95716	84839	73988	63163	52365	41593	33
61358	50320	39309	28325	17368	06438	95534	84658	73807	62983	52185	41413	32
61174	50136	39125	28142	17185	06256	95353	84477	73627	62803	52006	41234	31
60989	49952	38942	27959	17003	06074	95171	84296	73446	62623	51826	41055	30
60805	49768	38759	27776	16821	05892	94990	84114	73265	62443	51646	40876	29
60621	49585	38575	27593	16638	05710	94808	83933	73085	62263	51466	40696	28
60437	49401	38392	27411	16456	05528	94627	83752	72904	62082	51287	40517	27
60253	49217	38209	27228	16274	05346	94446	83571	72724	61902	51107	40338	26
60069	49034	38026	27045	16091	05164	94264	83390	72543	61722	50927	40158	25
59884	48850	37842	26862	15909	04982	94083	83209	72363	61542	50748	39979	24
59700	48666	37659	26679	15727	04801	93901	83028	72182	61362	50568	39800	23
59516	48482	37476	26497	15544	04619	93720	82847	72001	61182	50388	39621	22
59332	48299	37293	26314	15362	04437	93538	82666	71821	61002	50209	39441	21
59148	48115	37110	26131	15180	04255	93357	82485	71640	60822	50029	39262	20
58964	47932	36926	25948	14997	04073	93176	82304	71460	60641	49849	39083	19
58780	47748	36743	25766	14815	03891	92994	82124	71279	60461	49670	38904	18
58596	47564	36560	25583	14633	03709	92813	81943	71099	60281	49490	38725	17
58412	47381	36377	25400	14451	03528	92631	81762	70918	60101	49310	38545	16
58227	47197	36194	25218	14268	03346	92450	81581	70738	59921	49131	38366	15
58043	47013	36011	25035	14086	03164	92269	81400	70557	59741	48951	38187	14
57859	46830	35827	24852	13904	02982	92087	81219	70377	59561	48771	38008	13
57675	46646	35644	24669	13722	02800	91906	81038	70196	59381	48592	37829	12
57491	46463	35461	24487	13539	02619	91725	80857	70016	59201	48412	37649	11
57307	46279	35278	24304	13357	02437	91543	80676	69835	59021	48233	37470	10
57123	46095	35095	24121	13175	02255	91362	80495	69655	58841	48053	37291	9
56939	45912	34912	23939	12993	02073	91181	80314	69474	58661	47873	37112	8
56755	45728	34729	23756	12810	01891	90999	80133	69294	58481	47694	36933	7
56571	45545	34546	23573	12628	01710	90818	79953	69114	58301	47514	36754	6
56387	45361	34362	23391	12446	01528	90637	79772	68933	58121	47335	36575	5
56203	45178	34179	23208	12264	01346	90455	79591	68753	57941	47155	36395	4
56019	44994	33996	23026	12082	01165	90274	79410	68572	57761	46976	36216	3
55835	44811	33813	22843	11899	00983	90093	79229	68392	57581	46796	36037	2
55651	44627	33630	22660	11717	00801	89911	79048	68212	57401	46617	35858	1
55467	44444	33447	22478	11535	00619	89730	78867	68031	57221	46437	35679	0
23′	22′	21′	20′	19′	18′	17′	16′	15′	14′	13′	12′	″

Tangent Deg. 83

6 Deg. Sine

″	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.08	9.08	9.08	9.08	9.08
0	33663	44244	54799	65329	75832	86310	96762	07189	17590	27966	38317	48643
1	33839	44420	54975	65504	76007	86484	96936	07362	17763	28139	38490	48815
2	34016	44596	55151	65679	76182	86659	97110	07536	17936	28312	38662	48987
3	34192	44772	55326	65854	76357	86833	97284	07709	18110	28484	38834	49159
4	34369	44948	55502	66030	76531	87007	97458	07883	18283	28657	39007	49331
5	34545	45125	55678	66205	76706	87182	97632	08056	18456	28830	39179	49503
6	34722	45301	55853	66380	76881	87356	97806	08230	18629	29003	39351	49675
7	34898	45477	56029	66555	77056	87531	97980	08404	18802	29175	39523	49847
8	35075	45653	56205	66730	77231	87705	98154	08577	18975	29348	39696	50018
9	35251	45829	56380	66906	77405	87879	98328	08751	19148	29521	39868	50190
10	35428	46005	56556	67081	77580	88054	98502	08924	19321	29693	40040	50362
11	35604	46181	56732	67256	77755	88228	98675	09098	19494	29866	40212	50534
12	35781	46357	56907	67431	77930	88402	98849	09271	19667	30039	40385	50706
13	35957	46533	57083	67606	78104	88577	99023	09445	19840	30211	40557	50878
14	36134	46709	57258	67782	78279	88751	99197	09618	20013	30384	40729	51049
15	36310	46885	57434	67957	78454	88925	99371	09791	20187	30556	40901	51221
16	36487	47061	57610	68132	78629	89100	99545	09965	20360	30729	41073	51393
17	36663	47237	57785	68307	78803	89274	99719	10138	20533	30902	41246	51565
18	36840	47413	57961	68482	78978	89448	99893	10312	20706	31074	41418	51736
19	37016	47589	58136	68657	79153	89622	00067	10485	20879	31247	41590	51908
20	37193	47765	58312	68833	79327	89797	00240	10659	21052	31419	41762	52080
21	37369	47941	58487	69008	79502	89971	00414	10832	21225	31592	41934	52252
22	37545	48117	58663	69183	79677	90145	00588	11006	21398	31765	42107	52423
23	37722	48293	58839	69358	79852	90319	00762	11179	21571	31937	42279	52595
24	37898	48469	59014	69533	80026	90494	00936	11352	21744	32110	42451	52767
25	38075	48645	59190	69708	80201	90668	01110	11526	21917	32282	42623	52939
26	38251	48821	59365	69883	80376	90842	01283	11699	22090	32455	42795	53110
27	38427	48997	59541	70058	80550	91016	01457	11872	22263	32627	42967	53282
28	38604	49173	59716	70233	80725	91191	01631	12046	22435	32800	43139	53454
29	38780	49349	59892	70408	80899	91365	01805	12219	22608	32972	43311	53626
30	38957	49525	60067	70584	81074	91539	01979	12393	22781	33145	43484	53797
31	39133	49701	60243	70759	81249	91713	02152	12566	22954	33317	43656	53969
32	39309	49877	60418	70934	81423	91887	02326	12739	23127	33490	43828	54141
33	39486	50053	60594	71109	81598	92062	02500	12913	23300	33662	44000	54312
34	39662	50228	60769	71284	81773	92236	02674	13086	23473	33835	44172	54484
35	39838	50404	60944	71459	81947	92410	02847	13259	23646	34007	44344	54656
36	40015	50580	61120	71634	82122	92584	03021	13433	23819	34180	44516	54827
37	40191	50756	61295	71809	82296	92758	03195	13606	23992	34352	44688	54999
38	40367	50932	61471	71984	82471	92932	03369	13779	24165	34525	44860	55170
39	40543	51108	61646	72159	82646	93107	03542	13953	24338	34697	45032	55342
40	40720	51284	61822	72334	82820	93281	03716	14126	24510	34870	45204	55514
41	40896	51460	61997	72509	82995	93455	03890	14299	24683	35042	45376	55685
42	41072	51635	62172	72684	83169	93629	04063	14472	24856	35215	45548	55857
43	41249	51811	62348	72859	83344	93803	04237	14646	25029	35387	45720	56029
44	41425	51987	62523	73034	83518	93977	04411	14819	25202	35560	45892	56200
45	41601	52163	62699	73209	83693	94151	04584	14992	25375	35732	46064	56372
46	41777	52339	62874	73384	83867	94325	04758	15165	25547	35904	46236	56543
47	41954	52514	63049	73558	84042	94500	04932	15339	25720	36077	46408	56715
48	42130	52690	63225	73733	84216	94674	05105	15512	25893	36249	46580	56886
49	42306	52866	63400	73908	84391	94848	05279	15685	26066	36422	46752	57058
50	42482	53042	63575	74083	84565	95022	05453	15858	26239	36594	46924	57230
51	42658	53218	63751	74258	84740	95196	05626	16032	26411	36766	47096	57401
52	42835	53393	63926	74433	84914	95370	05800	16205	26584	36939	47268	57573
53	43011	53569	64101	74608	85089	95544	05974	16378	26757	37111	47440	57744
54	43187	53745	64277	74783	85263	95718	06147	16551	26930	37283	47612	57916
55	43363	53921	64452	74958	85438	95892	06321	16724	27103	37456	47784	58087
56	43539	54096	64627	75133	85612	96066	06494	16897	27275	37628	47956	58259
57	43715	54272	64803	75307	85787	96240	06668	17071	27448	37800	48128	58430
58	43892	54448	64978	75482	85961	96414	06842	17244	27621	37973	48300	58602
59	44068	54624	65153	75657	86135	96588	07015	17417	27794	38145	48472	58773
60	44244	54799	65329	75832	86310	96762	07189	17590	27966	38317	48643	58945
″	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Sine Deg. 83

6 Deg. Co-Sine

48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	″
9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99	
69342	69191	69040	68888	68736	68584	68431	68278	68125	67971	67817	67662	60
69339	69188	69037	68886	68734	68581	68429	68275	68122	67968	67814	67659	59
69337	69186	69035	68883	68731	68579	68426	68273	68119	67966	67811	67657	58
69334	69183	69032	68880	68728	68576	68423	68270	68117	67963	67809	67654	57
69332	69181	69030	68878	68726	68574	68421	68268	68114	67960	67806	67652	56
69329	69178	69027	68875	68723	68571	68418	68265	68112	67958	67804	67649	55
69327	69176	69024	68873	68721	68569	68416	68263	68109	67955	67801	67647	54
69324	69173	69022	68870	68718	68566	68413	68260	68107	67953	67799	67644	53
69322	69171	69019	68868	68716	68563	68411	68258	68104	67950	67796	67641	52
69319	69168	69017	68865	68713	68561	68408	68255	68102	67948	67793	67639	51
69317	69166	69014	68863	68711	68558	68406	68252	68099	67945	67791	67636	50
69314	69163	69012	68860	68708	68556	68403	68250	68096	67943	67788	67634	49
69311	69161	69009	68858	68706	68553	68400	68247	68094	67940	67786	67631	48
69309	69158	69007	68855	68703	68551	68398	68245	68091	67937	67783	67628	47
69306	69156	69004	68853	68701	68548	68395	68242	68089	67935	67781	67626	46
69304	69153	69002	68850	68698	68546	68393	68240	68086	67932	67778	67623	45
69301	69151	68999	68848	68696	68543	68390	68237	68084	67930	67775	67621	44
69299	69148	68997	68845	68693	68541	68388	68235	68081	67927	67773	67618	43
69296	69145	68994	68842	68690	68538	68385	68232	68078	67925	67770	67616	42
69294	69143	68992	68840	68688	68535	68383	68229	68076	67922	67768	67613	41
69291	69140	68989	68837	68685	68533	68380	68227	68073	67919	67765	67610	40
69289	69138	68987	68835	68683	68530	68378	68224	68071	67917	67763	67608	39
69286	69135	68984	68832	68680	68528	68375	68222	68068	67914	67760	67605	38
69284	69133	68982	68830	68678	68525	68372	68219	68066	67912	67757	67603	37
69281	69130	68979	68827	68675	68523	68370	68217	68063	67909	67755	67600	36
69279	69128	68976	68825	68673	68520	68367	68214	68061	67907	67752	67598	35
69276	69125	68974	68822	68670	68518	68365	68212	68058	67904	67750	67595	34
69274	69123	68971	68820	68668	68515	68362	68209	68055	67901	67747	67592	33
69271	69120	68969	68817	68665	68513	68360	68206	68053	67899	67745	67590	32
69269	69118	68966	68815	68663	68510	68357	68204	68050	67896	67742	67587	31
69266	69115	68964	68812	68660	68507	68355	68201	68048	67894	67739	67585	30
69264	69113	68961	68810	68657	68505	68352	68199	68045	67891	67737	67582	29
69261	69110	68959	68807	68655	68502	68349	68196	68043	67889	67734	67579	28
69259	69108	68956	68805	68652	68500	68347	68194	68040	67886	67732	67577	27
69256	69105	68954	68802	68650	68497	68344	68191	68037	67883	67729	67574	26
69254	69103	68951	68799	68647	68495	68342	68189	68035	67881	67726	67572	25
69251	69100	68949	68797	68645	68492	68339	68186	68032	67878	67724	67569	24
69249	69098	68946	68794	68642	68490	68337	68183	68030	67876	67721	67567	23
69246	69095	68944	68792	68640	68487	68334	68181	68027	67873	67719	67564	22
69244	69093	68941	68789	68637	68485	68332	68178	68025	67871	67716	67561	21
69241	69090	68939	68787	68635	68482	68329	68176	68022	67868	67714	67559	20
69239	69088	68936	68784	68632	68479	68327	68173	68020	67865	67711	67556	19
69236	69085	68934	68782	68630	68477	68324	68171	68017	67863	67708	67554	18
69234	69082	68931	68779	68627	68474	68321	68168	68014	67860	67706	67551	17
69231	69080	68928	68777	68624	68472	68319	68166	68012	67858	67703	67548	16
69229	69077	68926	68774	68622	68469	68316	68163	68009	67855	67701	67546	15
69226	69075	68923	68772	68619	68467	68314	68160	68007	67853	67698	67543	14
69224	69072	68921	68769	68617	68464	68311	68158	68004	67850	67696	67541	13
69221	69070	68918	68767	68614	68462	68309	68155	68002	67847	67693	67538	12
69218	69067	68916	68764	68612	68459	68306	68153	67999	67845	67690	67536	11
69216	69065	68913	68761	68609	68457	68304	68150	67996	67842	67688	67533	10
69213	69062	68911	68759	68607	68454	68301	68148	67994	67840	67685	67530	9
69211	69060	68908	68756	68604	68451	68298	68145	67991	67837	67683	67528	8
69208	69057	68906	68754	68602	68449	68296	68142	67989	67835	67680	67525	7
69206	69055	68903	68751	68599	68446	68293	68140	67986	67832	67677	67523	6
69203	69052	68901	68749	68596	68444	68291	68137	67984	67829	67675	67520	5
69201	69050	68898	68746	68594	68441	68288	68135	67981	67827	67672	67517	4
69198	69047	68896	68744	68591	68439	68286	68132	67978	67824	67670	67515	3
69196	69045	68893	68741	68589	68436	68283	68130	67976	67822	67667	67512	2
69193	69042	68891	68739	68586	68434	68281	68127	67973	67819	67665	67510	1
69191	69040	68888	68736	68584	68431	68278	68125	67971	67817	67662	67507	0
11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Sine Deg. 83

6 Deg. Tangent

″	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9.07	9.07	9.07	9.07	9.08	9.08	9.08	9.08	9.08	9.08	9.08	9.08
0	64321	75053	85760	96441	07096	17726	28331	38911	49466	59996	70501	80981
1	64500	75232	85938	96618	07273	17903	28507	39087	49641	60171	70676	81156
2	64679	75410	86116	96796	07451	18080	28684	39263	49817	60346	70851	81330
3	64858	75589	86294	96974	07628	18257	28861	39439	49993	60521	71025	81505
4	65037	75768	86472	97152	07805	18434	29037	39615	50168	60697	71200	81679
5	65216	75946	86651	97329	07983	18611	29214	39791	50344	60872	71375	81854
6	65395	76125	86829	97507	08160	18788	29390	39967	50520	61047	71550	82028
7	65574	76304	87007	97685	08337	18965	29567	40143	50695	61222	71725	82203
8	65753	76482	87185	97863	08515	19141	29743	40319	50871	61398	71900	82377
9	65932	76661	87363	98040	08692	19318	29919	40496	51047	61573	72074	82551
10	66111	76839	87542	98218	08869	19495	30096	40672	51222	61748	72249	82726
11	66290	77018	87720	98396	09047	19672	30272	40848	51398	61923	72424	82900
12	66469	77196	87898	98574	09224	19849	30449	41024	51574	62099	72599	83075
13	66648	77375	88076	98751	09401	20026	30625	41200	51749	62274	72774	83249
14	66827	77554	88254	98929	09579	20203	30802	41376	51925	62449	72948	83423
15	67006	77732	88432	99107	09756	20380	30978	41552	52100	62624	73123	83598
16	67185	77911	88610	99284	09933	20556	31155	41728	52276	62799	73298	83772
17	67364	78089	88788	99462	10110	20733	31331	41904	52452	62975	73473	83947
18	67543	78268	88967	99640	10288	20910	31507	42080	52627	63150	73648	84121
19	67722	78446	89145	99817	10465	21087	31684	42256	52803	63325	73822	84295
20	67901	78625	89323	99995	10642	21264	31860	42432	52978	63500	73997	84470
21	68080	78803	89501	00173	10819	21441	32037	42608	53154	63675	74172	84644
22	68259	78982	89679	00350	10997	21617	32213	42784	53329	63850	74347	84818
23	68438	79160	89857	00528	11174	21794	32389	42960	53505	64025	74521	84993
24	68617	79339	90035	00706	11351	21971	32566	43136	53681	64201	74696	85167
25	68796	79517	90213	00883	11528	22148	32742	43312	53856	64376	74871	85341
26	68975	79696	90391	01061	11705	22325	32919	43488	54032	64551	75045	85515
27	69154	79874	90569	01239	11883	22501	33095	43663	54207	64726	75220	85690
28	69333	80053	90747	01416	12060	22678	33271	43839	54383	64901	75395	85864
29	69511	80231	90925	01594	12237	22855	33448	44015	54558	65076	75570	86038
30	69690	80410	91103	01771	12414	23032	33624	44191	54734	65251	75744	86213
31	69869	80588	91281	01949	12591	23208	33800	44367	54909	65426	75919	86387
32	70048	80766	91459	02127	12768	23385	33977	44543	55085	65601	76094	86561
33	70227	80945	91637	02304	12946	23562	34153	44719	55260	65776	76268	86735
34	70406	81123	91815	02482	13123	23739	34329	44895	55436	65952	76443	86910
35	70585	81302	91993	02659	13300	23915	34506	45071	55611	66127	76617	87084
36	70763	81480	92171	02837	13477	24092	34682	45247	55787	66302	76792	87258
37	70942	81658	92349	03014	13654	24269	34858	45422	55962	66477	76967	87432
38	71121	81837	92527	03192	13831	24445	35034	45598	56137	66652	77141	87607
39	71300	82015	92705	03369	14008	24622	35211	45774	56313	66827	77316	87781
40	71479	82194	92883	03547	14185	24799	35387	45950	56488	67002	77491	87955
41	71657	82372	93061	03724	14363	24975	35563	46126	56664	67177	77665	88129
42	71836	82550	93239	03902	14540	25152	35739	46302	56839	67352	77840	88303
43	72015	82729	93417	04079	14717	25329	35916	46478	57015	67527	78014	88478
44	72194	82907	93595	04257	14894	25505	36092	46653	57190	67702	78189	88652
45	72373	83085	93773	04434	15071	25682	36268	46829	57365	67877	78364	88826
46	72551	83264	93951	04612	15248	25859	36444	47005	57541	68052	78538	89000
47	72730	83442	94128	04789	15425	26035	36621	47181	57716	68227	78713	89174
48	72909	83620	94306	04967	15602	26212	36797	47357	57892	68402	78887	89348
49	73088	83799	94484	05144	15779	26389	36973	47532	58067	68577	79062	89522
50	73266	83977	94662	05322	15956	26565	37149	47708	58242	68752	79236	89697
51	73445	84155	94840	05499	16133	26742	37325	47884	58418	68927	79411	89871
52	73624	84334	95018	05677	16310	26918	37502	48060	58593	69102	79585	90045
53	73802	84512	95196	05854	16487	27095	37678	48235	58768	69276	79760	90219
54	73981	84690	95374	06032	16664	27272	37854	48411	58944	69451	79934	90393
55	74160	84868	95551	06209	16841	27448	38030	48587	59119	69626	80109	90567
56	74338	85047	95729	06386	17018	27625	38206	48763	59294	69801	80284	90741
57	74517	85225	95907	06564	17195	27801	38382	48938	59470	69976	80458	90915
58	74696	85403	96085	06741	17372	27978	38558	49114	59645	70151	80632	91089
59	74874	85581	96263	06919	17549	28154	38735	49290	59820	70326	80807	91264
60	75053	85760	96441	07096	17726	28331	38911	49466	59996	70501	80981	91438
″	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Tangent Deg. 83

6 Deg. Co-Tangent

48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	″
10.92	10.92	10.92	10.92	10.91	10.91	10.91	10.91	10.91	10.91	10.91	10.91	
35679	24947	14240	03559	92904	82274	71669	61089	50534	40004	29499	19019	60
35500	24768	14062	03382	92727	82097	71493	60913	50359	39829	29324	18844	59
35321	24590	13884	03204	92549	81920	71316	60737	50183	39654	29149	18670	58
35142	24411	13706	03026	92372	81743	71139	60561	50007	39479	28975	18495	57
34963	24232	13528	02848	92195	81566	70963	60385	49832	39303	28800	18321	56
34784	24054	13349	02671	92017	81389	70786	60209	49656	39128	28625	18146	55
34605	23875	13171	02493	91840	81212	70610	60033	49480	38953	28450	17972	54
34426	23696	12993	02315	91663	81035	70433	59857	49305	38778	28275	17797	53
34247	23518	12815	02137	91485	80859	70257	59681	49129	38602	28100	17623	52
34068	23339	12637	01960	91308	80682	70081	59504	48953	38427	27926	17449	51
33889	23161	12458	01782	91131	80505	69904	59328	48778	38252	27751	17274	50
33710	22982	12280	01604	90953	80328	69728	59152	48602	38077	27576	17100	49
33531	22804	12102	01426	90776	80151	69551	58976	48426	37901	27401	16925	48
33352	22625	11924	01249	90599	79974	69375	58800	48251	37726	27226	16751	47
33173	22446	11746	01071	90421	79797	69198	58624	48075	37551	27052	16577	46
32994	22268	11568	00893	90244	79620	69022	58448	47900	37376	26877	16402	45
32815	22089	11390	00716	90067	79444	68845	58272	47724	37201	26702	16228	44
32636	21911	11212	00538	89890	79267	68669	58096	47548	37025	26527	16053	43
32457	21732	11033	00360	89712	79090	68493	57920	47373	36850	26352	15879	42
32278	21554	10855	00183	89535	78913	68316	57744	47197	36675	26178	15705	41
32099	21375	10677	00005	89358	78736	68140	57568	47022	36500	26003	15530	40
31920	21197	10499	99827	89181	78559	67963	57392	46846	36325	25828	15356	39
31741	21018	10321	99650	89003	78383	67787	57216	46671	36150	25653	15182	38
31562	20840	10143	99472	88826	78206	67611	57040	46495	35975	25479	15007	37
31383	20661	09965	99294	88649	78029	67434	56864	46319	35799	25304	14833	36
31204	20483	09787	99117	88472	77852	67258	56688	46144	35624	25129	14659	35
31025	20304	09609	98939	88295	77675	67081	56512	45968	35449	24955	14485	34
30846	20126	09431	98761	88117	77499	66905	56337	45793	35274	24780	14310	33
30667	19947	09253	98584	87940	77322	66729	56161	45617	35099	24605	14136	32
30489	19769	09075	98406	87763	77145	66552	55985	45442	34924	24430	13962	31
30310	19590	08897	98229	87586	76968	66376	55809	45266	34749	24256	13787	30
30131	19412	08719	98051	87409	76792	66200	55633	45091	34574	24081	13613	29
29952	19234	08541	97873	87232	76615	66023	55457	44915	34399	23906	13439	28
29773	19055	08363	97696	87054	76438	65847	55281	44740	34224	23732	13265	27
29594	18877	08185	97518	86877	76261	65671	55105	44564	34048	23557	13090	26
29415	18698	08007	97341	86700	76085	65494	54929	44389	33873	23383	12916	25
29237	18520	07829	97163	86523	75908	65318	54753	44213	33698	23208	12742	24
29058	18342	07651	96986	86346	75731	65142	54578	44038	33523	23033	12568	23
28879	18163	07473	96808	86169	75555	64966	54402	43863	33348	22859	12393	22
28700	17985	07295	96631	85992	75378	64789	54226	43687	33173	22684	12219	21
28521	17806	07117	96453	85815	75201	64613	54050	43512	32998	22509	12045	20
28343	17628	06939	96276	85637	75025	64437	53874	43336	32823	22335	11871	19
28164	17450	06761	96098	85460	74848	64261	53698	43161	32648	22160	11697	18
27985	17271	06583	95921	85283	74671	64084	53522	42985	32473	21986	11522	17
27806	17093	06405	95743	85106	74495	63908	53347	42810	32298	21811	11348	16
27627	16915	06227	95566	84929	74318	63732	53171	42635	32123	21636	11174	15
27449	16736	06049	95388	84752	74141	63556	52995	42459	31948	21462	11000	14
27270	16558	05872	95211	84575	73965	63379	52819	42284	31773	21287	10826	13
27091	16380	05694	95033	84398	73788	63203	52643	42108	31598	21113	10652	12
26912	16201	05516	94856	84221	73611	63027	52468	41933	31423	20938	10478	11
26734	16023	05338	94678	84044	73435	62851	52292	41758	31248	20764	10303	10
26555	15845	05160	94501	83867	73258	62675	52116	41582	31073	20589	10129	9
26376	15666	04982	94323	83690	73082	62498	51940	41407	30898	20415	09955	8
26198	15488	04804	94146	83513	72905	62322	51765	41232	30724	20240	09781	7
26019	15310	04626	93968	83336	72728	62146	51589	41056	30549	20066	09607	6
25840	15132	04449	93791	83159	72552	61970	51413	40881	30374	19891	09433	5
25662	14953	04271	93614	82982	72375	61794	51237	40706	30199	19716	09259	4
25483	14775	04093	93436	82805	72199	61618	51062	40530	30024	19542	09085	3
25304	14597	03915	93259	82628	72022	61442	50886	40355	29849	19368	08911	2
25126	14419	03737	93081	82451	71846	61265	50710	40180	29674	19193	08736	1
24947	14240	03559	92904	82274	71669	61089	50534	40004	29499	19019	08562	0
11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Tangent Deg. 83

7 Deg. Sine

′ ″	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
	9.085	9.086	9.087	9.088	9.089	9.091	9.092	9.093	9.094	9.095	9.096	9.097	9.098	9.099	9.100
0	8945	9221	9473	9700	9903	0082	0237	0367	0474	0556	0615	0651	0662	0651	0616
1	9116	9392	9644	9871	0073	0252	0406	0536	0642	0724	0783	0818	0829	0817	0782
2	9288	9563	9814	0041	0243	0421	0575	0704	0810	0892	0950	0985	0996	0983	0948
3	9459	9734	9985	0211	0413	0590	0744	0873	0978	1060	1118	1152	1162	1150	1114
4	9631	9905	0156	0381	0583	0760	0913	1042	1146	1228	1285	1319	1329	1316	1280
5	9802	0076	0326	0552	0753	0929	1082	1210	1315	1395	1452	1486	1496	1482	1445
6	9973	0248	0497	0722	0922	1099	1251	1379	1483	1563	1620	1653	1662	1648	1611
7	0145	0419	0668	0892	1092	1268	1420	1547	1651	1731	1787	1820	1829	1815	1777
8	0316	0590	0838	1062	1262	1437	1589	1716	1819	1899	1955	1987	1996	1981	1943
9	0488	0761	1009	1232	1432	1607	1758	1885	1987	2067	2122	2154	2162	2147	2109
10	0659	0932	1179	1403	1602	1776	1927	2053	2156	2234	2289	2321	2329	2313	2275
11	0831	1103	1350	1573	1771	1946	2096	2222	2324	2402	2457	2488	2495	2480	2441
12	1002	1274	1521	1743	1941	2115	2265	2390	2492	2570	2624	2655	2662	2646	2606
13	1173	1445	1691	1913	2111	2284	2434	2559	2660	2738	2792	2822	2829	2812	2772
14	1345	1616	1862	2083	2281	2454	2603	2727	2828	2905	2959	2989	2995	2978	2938
15	1516	1786	2032	2253	2450	2623	2771	2896	2996	3073	3126	3156	3162	3144	3104
16	1688	1957	2203	2424	2620	2792	2940	3064	3165	3241	3294	3323	3328	3311	3270
17	1859	2128	2373	2594	2790	2962	3109	3233	3333	3409	3461	3490	3495	3477	3435
18	2030	2299	2544	2764	2960	3131	3278	3402	3501	3576	3628	3657	3661	3643	3601
19	2202	2470	2714	2934	3129	3300	3447	3570	3669	3744	3796	3824	3828	3809	3767
20	2373	2641	2885	3104	3299	3470	3616	3739	3837	3912	3963	3990	3995	3975	3933
21	2544	2812	3055	3274	3469	3639	3785	3907	4005	4080	4130	4157	4161	4141	4098
22	2716	2983	3226	3444	3638	3808	3954	4076	4173	4247	4298	4324	4328	4308	4264
23	2887	3154	3396	3614	3808	3977	4123	4244	4341	4415	4465	4491	4494	4474	4430
24	3058	3325	3567	3785	3978	4147	4292	4413	4510	4583	4632	4658	4661	4640	4596
25	3230	3496	3737	3955	4147	4316	4461	4581	4678	4750	4799	4825	4827	4806	4761
26	3401	3667	3908	4125	4317	4485	4629	4749	4846	4918	4967	4992	4994	4972	4927
27	3572	3838	4078	4295	4487	4655	4798	4918	5014	5086	5134	5159	5160	5138	5093
28	3743	4008	4249	4465	4656	4824	4967	5086	5182	5253	5301	5326	5327	5304	5259
29	3915	4179	4419	4635	4826	4993	5136	5255	5350	5421	5469	5493	5493	5470	5424
30	4086	4350	4590	4805	4996	5162	5305	5423	5518	5589	5636	5659	5660	5636	5590
31	4257	4521	4760	4975	5165	5332	5474	5592	5686	5756	5803	5826	5826	5802	5756
32	4429	4692	4931	5145	5335	5501	5642	5760	5854	5924	5970	5993	5993	5969	5921
33	4600	4863	5101	5315	5505	5670	5811	5929	6022	6092	6138	6160	6159	6135	6087
34	4771	5034	5272	5485	5674	5839	5980	6097	6190	6259	6305	6327	6325	6301	6253
35	4942	5204	5442	5655	5844	6008	6149	6265	6358	6427	6472	6494	6492	6467	6418
36	5114	5375	5612	5825	6014	6178	6318	6434	6526	6594	6639	6661	6658	6633	6584
37	5285	5546	5783	5995	6183	6347	6487	6602	6694	6762	6806	6827	6825	6799	6750
38	5456	5717	5953	6165	6353	6516	6655	6771	6862	6930	6974	6994	6991	6965	6915
39	5627	5888	6124	6335	6522	6685	6824	6939	7030	7097	7141	7161	7158	7131	7081
40	5798	6059	6294	6505	6692	6854	6993	7107	7198	7265	7308	7328	7324	7297	7247
41	5970	6229	6464	6675	6861	7024	7162	7276	7366	7432	7475	7495	7490	7463	7412
42	6141	6400	6635	6845	7031	7193	7330	7444	7534	7600	7642	7661	7657	7629	7578
43	6312	6571	6805	7015	7201	7362	7499	7612	7702	7768	7810	7828	7823	7795	7744
44	6483	6742	6976	7185	7370	7531	7668	7781	7870	7935	7977	7995	7990	7961	7909
45	6654	6912	7146	7355	7540	7700	7837	7949	8038	8103	8144	8162	8156	8127	8075
46	6826	7083	7316	7525	7709	7869	8005	8118	8206	8270	8311	8328	8322	8293	8240
47	6997	7254	7487	7695	7879	8038	8174	8286	8374	8438	8478	8495	8489	8459	8406
48	7168	7425	7657	7865	8048	8208	8343	8454	8542	8605	8645	8662	8655	8625	8572
49	7339	7595	7827	8035	8218	8377	8512	8623	8710	8773	8813	8829	8821	8791	8737
50	7510	7766	7998	8205	8387	8546	8680	8791	8877	8940	8980	8995	8988	8957	8903
51	7681	7937	8168	8375	8557	8715	8849	8959	9045	9108	9147	9162	9154	9123	9068
52	7852	8108	8338	8544	8726	8884	9018	9127	9213	9275	9314	9329	9320	9289	9234
53	8024	8278	8509	8714	8896	9053	9186	9296	9381	9443	9481	9496	9487	9455	9399
54	8195	8449	8679	8884	9065	9222	9355	9464	9549	9610	9648	9662	9653	9621	9565
55	8366	8620	8849	9054	9235	9391	9524	9632	9717	9778	9815	9829	9819	9787	9730
56	8537	8790	9019	9224	9404	9560	9692	9801	9885	9945	9982	9996	9986	9952	9896
57	8708	8961	9190	9394	9574	9729	9861	9969	0053	0113	0149	0162	0152	0118	0062
58	8879	9132	9360	9564	9743	9898	0030	0137	0221	0280	0316	0329	0318	0284	0227
59	9050	9302	9530	9734	9913	0068	0198	0305	0388	0448	0484	0496	0485	0450	0393
60	9221	9473	9700	9903	0082	0237	0367	0474	0556	0615	0651	0662	0651	0616	0558
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Sine Deg. 82

7 Deg. Co-Sine

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
9.996	9.996	9.996	9.996	9.996	9.996	9.996	9.996	9.996	9.996	9.996	9.996	9.996	9.996	9.996	″
7507	7352	7196	7040	6884	6727	6570	6412	6254	6096	5937	5778	5619	5459	5299	60
7505	7349	7194	7037	6881	6724	6567	6410	6252	6093	5935	5776	5616	5456	5296	59
7502	7347	7191	7035	6878	6722	6564	6407	6249	6091	5932	5773	5614	5454	5294	58
7499	7344	7188	7032	6876	6719	6562	6404	6246	6088	5929	5770	5611	5451	5291	57
7497	7341	7186	7030	6873	6716	6559	6402	6244	6085	5927	5768	5608	5448	5288	56
7494	7339	7183	7027	6871	6714	6557	6399	6241	6083	5924	5765	5606	5446	5286	55
7492	7336	7181	7024	6868	6711	6554	6396	6238	6080	5921	5762	5603	5443	5283	54
7489	7334	7178	7022	6865	6709	6551	6394	6236	6077	5919	5760	5600	5440	5280	53
7486	7331	7175	7019	6863	6706	6549	6391	6233	6075	5916	5757	5598	5438	5278	52
7484	7328	7173	7017	6860	6703	6546	6388	6231	6072	5913	5754	5595	5435	5275	51
7481	7326	7170	7014	6858	6701	6543	6386	6228	6070	5911	5752	5592	5432	5272	50
7479	7323	7168	7011	6855	6698	6541	6383	6225	6067	5908	5749	5590	5430	5270	49
7476	7321	7165	7009	6852	6695	6538	6381	6223	6064	5906	5746	5587	5427	5267	48
7473	7318	7162	7006	6850	6693	6536	6378	6220	6062	5903	5744	5584	5424	5264	47
7471	7316	7160	7004	6847	6690	6533	6375	6217	6059	5900	5741	5582	5422	5261	46
7468	7313	7157	7001	6844	6688	6530	6373	6215	6056	5898	5738	5579	5419	5259	45
7466	7310	7155	6998	6842	6685	6528	6370	6212	6054	5895	5736	5576	5416	5256	44
7463	7308	7152	6996	6839	6682	6525	6367	6209	6051	5892	5733	5574	5414	5253	43
7461	7305	7149	6993	6837	6680	6522	6365	6207	6048	5890	5730	5571	5411	5251	42
7458	7303	7147	6991	6834	6677	6520	6362	6204	6046	5887	5728	5568	5408	5248	41
7455	7300	7144	6988	6831	6675	6517	6360	6202	6043	5884	5725	5566	5406	5245	40
7453	7297	7142	6985	6829	6672	6515	6357	6199	6040	5882	5723	5563	5403	5243	39
7450	7295	7139	6983	6826	6669	6512	6354	6196	6038	5879	5720	5560	5400	5240	38
7448	7292	7136	6980	6824	6667	6509	6352	6194	6035	5876	5717	5558	5398	5237	37
7445	7290	7134	6978	6821	6664	6507	6349	6191	6033	5874	5715	5555	5395	5235	36
7442	7287	7131	6975	6818	6661	6504	6346	6188	6030	5871	5712	5552	5392	5232	35
7440	7284	7129	6972	6816	6659	6501	6344	6186	6027	5868	5709	5550	5390	5229	34
7437	7282	7126	6970	6813	6656	6499	6341	6183	6025	5866	5707	5547	5387	5227	33
7435	7279	7123	6967	6811	6654	6496	6339	6180	6022	5863	5704	5544	5384	5224	32
7432	7277	7121	6965	6808	6651	6494	6336	6178	6019	5860	5701	5542	5382	5221	31
7429	7274	7118	6962	6805	6648	6491	6333	6175	6017	5858	5699	5539	5379	5219	30
7427	7271	7116	6959	6803	6646	6488	6331	6173	6014	5855	5696	5536	5376	5216	29
7424	7269	7113	6957	6800	6643	6486	6328	6170	6011	5853	5693	5534	5374	5213	28
7422	7266	7110	6954	6797	6640	6483	6325	6167	6009	5850	5691	5531	5371	5211	27
7419	7264	7108	6951	6795	6638	6480	6323	6165	6006	5847	5688	5528	5368	5208	26
7417	7261	7105	6949	6792	6635	6478	6320	6162	6003	5845	5685	5526	5366	5205	25
7414	7258	7103	6946	6790	6633	6475	6317	6159	6001	5842	5683	5523	5363	5203	24
7411	7256	7100	6944	6787	6630	6473	6315	6157	5998	5839	5680	5520	5360	5200	23
7409	7253	7097	6941	6784	6627	6470	6312	6154	5996	5837	5677	5518	5358	5197	22
7406	7251	7095	6938	6782	6625	6467	6310	6151	5993	5834	5675	5515	5355	5195	21
7404	7248	7092	6936	6779	6622	6465	6307	6149	5990	5831	5672	5512	5352	5192	20
7401	7245	7090	6933	6777	6620	6462	6304	6146	5988	5829	5669	5510	5350	5189	19
7398	7243	7087	6931	6774	6617	6459	6302	6143	5985	5826	5667	5507	5347	5187	18
7396	7240	7084	6928	6771	6614	6457	6299	6141	5982	5823	5664	5504	5344	5184	17
7393	7238	7082	6925	6769	6612	6454	6296	6138	5980	5821	5661	5502	5342	5181	16
7391	7235	7079	6923	6766	6609	6452	6294	6136	5977	5818	5659	5499	5339	5179	15
7388	7232	7077	6920	6763	6606	6449	6291	6133	5974	5815	5656	5496	5336	5176	14
7385	7230	7074	6918	6761	6604	6446	6288	6130	5972	5813	5653	5494	5334	5173	13
7383	7227	7071	6915	6758	6601	6444	6286	6128	5969	5810	5651	5491	5331	5171	12
7380	7225	7069	6912	6756	6599	6441	6283	6125	5966	5807	5648	5488	5328	5168	11
7378	7222	7066	6910	6753	6596	6438	6281	6122	5964	5805	5645	5486	5326	5165	10
7375	7219	7064	6907	6750	6593	6436	6278	6120	5961	5802	5643	5483	5323	5162	9
7373	7217	7061	6905	6748	6591	6433	6275	6117	5958	5799	5640	5480	5320	5160	8
7370	7214	7058	6902	6745	6588	6431	6273	6114	5956	5797	5637	5478	5318	5157	7
7367	7212	7056	6899	6743	6585	6428	6270	6112	5953	5794	5635	5475	5315	5154	6
7365	7209	7053	6897	6740	6583	6425	6267	6109	5951	5792	5632	5472	5312	5152	5
7362	7207	7050	6894	6737	6580	6423	6265	6107	5948	5789	5629	5470	5310	5149	4
7360	7204	7048	6891	6735	6578	6420	6262	6104	5945	5786	5627	5467	5307	5146	3
7357	7201	7045	6889	6732	6575	6417	6260	6101	5943	5784	5624	5464	5304	5144	2
7354	7199	7043	6886	6729	6572	6415	6257	6099	5940	5781	5622	5462	5302	5141	1
7352	7196	7040	6884	6727	6570	6412	6254	6096	5937	5778	5619	5459	5299	5138	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Sine Deg. 82

7 Deg. Tangent

″	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
	9.089	9.090	9.091	9.092	9.093	9.094	9.095	9.096	9.097	9.098	9.099	9.100	9.101	9.102	9.103
0	1438	1869	2277	2660	3020	3355	3667	3955	4219	4460	4678	4872	5044	5192	5317
1	1612	2043	2450	2833	3192	3527	3839	4126	4390	4631	4848	5042	5213	5361	5486
2	1786	2217	2623	3006	3365	3699	4010	4297	4561	4801	5018	5212	5382	5530	5654
3	1960	2390	2797	3179	3537	3871	4182	4469	4732	4972	5188	5381	5552	5699	5823
4	2134	2564	2970	3352	3710	4043	4354	4640	4903	5142	5358	5551	5721	5868	5991
5	2308	2738	3143	3525	3882	4215	4525	4811	5074	5313	5528	5721	5890	6036	6160
6	2482	2911	3316	3697	4054	4387	4697	4982	5244	5483	5698	5890	6059	6205	6328
7	2656	3085	3490	3870	4227	4559	4868	5154	5415	5654	5868	6060	6229	6374	6497
8	2830	3258	3663	4043	4399	4731	5040	5325	5586	5824	6039	6230	6398	6543	6665
9	3004	3432	3836	4216	4572	4903	5212	5496	5757	5994	6209	6399	6567	6712	6834
10	3178	3606	4009	4389	4744	5075	5383	5667	5928	6165	6379	6569	6737	6881	7002
11	3352	3779	4182	4561	4916	5247	5555	5838	6099	6335	6549	6739	6906	7050	7171
12	3526	3953	4356	4734	5089	5419	5726	6010	6269	6506	6719	6908	7075	7219	7339
13	3700	4126	4529	4907	5261	5591	5898	6181	6440	6676	6889	7078	7244	7388	7508
14	3874	4300	4702	5080	5433	5763	6070	6352	6611	6847	7059	7248	7414	7556	7676
15	4048	4474	4875	5252	5606	5935	6241	6523	6782	7017	7229	7417	7583	7725	7845
16	4222	4647	5048	5425	5778	6107	6413	6694	6953	7187	7399	7587	7752	7894	8013
17	4396	4821	5221	5598	5951	6279	6584	6866	7123	7358	7569	7757	7921	8063	8182
18	4570	4994	5395	5771	6123	6451	6756	7037	7294	7528	7739	7926	8090	8232	8350
19	4744	5168	5568	5943	6295	6623	6927	7208	7465	7698	7909	8096	8260	8401	8519
20	4918	5341	5741	6116	6468	6795	7099	7379	7636	7869	8079	8265	8429	8569	8687
21	5092	5515	5914	6289	6640	6967	7270	7550	7806	8039	8249	8435	8598	8738	8856
22	5265	5688	6087	6462	6812	7139	7442	7721	7977	8209	8419	8604	8767	8907	9024
23	5439	5862	6260	6634	6984	7311	7613	7892	8148	8380	8589	8774	8936	9076	9192
24	5613	6035	6433	6807	7157	7483	7785	8064	8319	8550	8758	8944	9106	9245	9361
25	5787	6209	6606	6980	7329	7655	7956	8235	8489	8720	8928	9113	9275	9413	9529
26	5961	6382	6779	7152	7501	7827	8128	8406	8660	8891	9098	9283	9444	9582	9698
27	6135	6556	6952	7325	7674	7998	8299	8577	8831	9061	9268	9452	9613	9751	9866
28	6309	6729	7126	7498	7846	8170	8471	8748	9001	9231	9438	9622	9782	9920	0035
29	6483	6903	7299	7670	8018	8342	8642	8919	9172	9402	9608	9791	9951	0089	0203
30	6657	7076	7472	7843	8190	8514	8814	9090	9343	9572	9778	9961	0121	0257	0371
31	6830	7250	7645	8016	8363	8686	8985	9261	9513	9742	9948	0130	0290	0426	0540
32	7004	7423	7818	8188	8535	8858	9157	9432	9684	9913	0118	0300	0459	0595	0708
33	7178	7597	7991	8361	8707	9030	9328	9603	9855	0083	0288	0469	0628	0764	0876
34	7352	7770	8164	8534	8879	9201	9500	9774	0025	0253	0458	0639	0797	0932	1045
35	7526	7943	8337	8706	9052	9373	9671	9945	0196	0423	0627	0808	0966	1101	1213
36	7700	8117	8510	8879	9224	9545	9843	0116	0367	0594	0797	0978	1135	1270	1381
37	7873	8290	8683	9051	9396	9717	0014	0287	0537	0764	0967	1147	1304	1438	1550
38	8047	8464	8856	9224	9568	9889	0185	0458	0708	0934	1137	1317	1473	1607	1718
39	8221	8637	9029	9397	9741	0061	0357	0629	0879	1104	1307	1486	1643	1776	1886
40	8395	8810	9202	9569	9913	0232	0528	0800	1049	1275	1477	1656	1812	1945	2055
41	8569	8984	9375	9742	0085	0404	0700	0971	1220	1445	1647	1825	1981	2113	2223
42	8742	9157	9548	9914	0257	0576	0871	1142	1390	1615	1816	1995	2150	2282	2391
43	8916	9331	9721	0087	0429	0748	1042	1313	1561	1785	1986	2164	2319	2451	2560
44	9090	9504	9894	0260	0601	0919	1214	1484	1732	1956	2156	2334	2488	2619	2728
45	9264	9677	0067	0432	0774	1091	1385	1655	1902	2126	2326	2503	2657	2788	2896
46	9437	9851	0240	0605	0946	1263	1556	1826	2073	2296	2496	2672	2826	2957	3064
47	9611	0024	0413	0777	1118	1435	1728	1997	2243	2466	2666	2842	2995	3125	3233
48	9785	0197	0586	0950	1290	1606	1899	2168	2414	2636	2835	3011	3164	3294	3401
49	9959	0371	0759	1122	1462	1778	2071	2339	2585	2806	3005	3181	3333	3463	3569
50	0132	0544	0931	1295	1634	1950	2242	2510	2755	2977	3175	3350	3502	3631	3738
51	0306	0717	1104	1467	1806	2122	2413	2681	2926	3147	3345	3519	3671	3800	3906
52	0480	0891	1277	1640	1979	2293	2585	2852	3096	3317	3514	3689	3840	3968	4074
53	0654	1064	1450	1812	2151	2465	2756	3023	3267	3487	3684	3858	4009	4137	4242
54	0827	1237	1623	1985	2323	2637	2927	3194	3437	3657	3854	4028	4178	4306	4410
55	1001	1411	1796	2157	2495	2809	3098	3365	3608	3827	4024	4197	4347	4474	4579
56	1175	1584	1969	2330	2667	2980	3270	3536	3778	3997	4193	4366	4516	4643	4747
57	1348	1757	2142	2502	2839	3152	3441	3707	3949	4168	4363	4536	4685	4811	4915
58	1522	1930	2315	2675	3011	3324	3612	3878	4119	4338	4533	4705	4854	4980	5083
59	1696	2104	2487	2847	3183	3495	3784	4048	4290	4508	4703	4874	5023	5149	5251
60	1869	2277	2660	3020	3355	3667	3955	4219	4460	4678	4872	5044	5192	5317	5420
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Tangent Deg. 82

7 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	″
10.910	10.909	10.908	10.907	10.906	10.905	10.904	10.903	10.902	10.901	10.900	10.899	10.898	10.897	10.896	″
8562	8131	7723	7340	6980	6645	6333	6045	5781	5540	5322	5128	4956	4808	4683	60
8388	7957	7550	7167	6808	6473	6161	5874	5610	5369	5152	4958	4787	4639	4514	59
8214	7783	7377	6994	6635	6301	5990	5703	5439	5199	4982	4788	4618	4470	4346	58
8040	7610	7203	6821	6463	6129	5818	5531	5268	5028	4812	4619	4448	4301	4177	57
7866	7436	7030	6648	6290	5957	5646	5360	5097	4858	4642	4449	4279	4132	4009	56
7692	7262	6857	6475	6118	5785	5475	5189	4926	4687	4472	4279	4110	3964	3840	55
7518	7089	6684	6303	5946	5613	5303	5018	4756	4517	4302	4110	3941	3795	3672	54
7344	6915	6510	6130	5773	5441	5132	4846	4585	4346	4132	3940	3771	3626	3503	53
7170	6742	6337	5957	5601	5269	4960	4675	4414	4176	3961	3770	3602	3457	3335	52
6996	6568	6164	5784	5428	5097	4788	4504	4243	4006	3791	3601	3433	3288	3166	51
6822	6394	5991	5611	5256	4925	4617	4333	4072	3835	3621	3431	3263	3119	2998	50
6648	6221	5818	5439	5084	4753	4445	4162	3901	3665	3451	3261	3094	2950	2829	49
6474	6047	5644	5266	4911	4581	4274	3990	3731	3494	3281	3092	2925	2781	2661	48
6300	5874	5471	5093	4739	4409	4102	3819	3560	3324	3111	2922	2756	2612	2492	47
6126	5700	5298	4920	4567	4237	3930	3648	3389	3153	2941	2752	2586	2444	2324	46
5952	5526	5125	4748	4394	4065	3759	3477	3218	2983	2771	2583	2417	2275	2155	45
5778	5353	4952	4575	4222	3893	3587	3306	3047	2813	2601	2413	2248	2106	1987	44
5604	5179	4779	4402	4049	3721	3416	3134	2877	2642	2431	2243	2079	1937	1818	43
5430	5006	4605	4229	3877	3549	3244	2963	2706	2472	2261	2074	1910	1768	1650	42
5256	4832	4432	4057	3705	3377	3073	2792	2535	2302	2091	1904	1740	1599	1481	41
5082	4659	4259	3884	3532	3205	2901	2621	2364	2131	1921	1735	1571	1431	1313	40
4908	4485	4086	3711	3360	3033	2730	2450	2194	1961	1751	1565	1402	1262	1144	39
4735	4312	3913	3538	3188	2861	2558	2279	2023	1791	1581	1396	1233	1093	0976	38
4561	4138	3740	3366	3016	2689	2387	2108	1852	1620	1411	1226	1064	0924	0808	37
4387	3965	3567	3193	2843	2517	2215	1936	1681	1450	1242	1056	0894	0755	0639	36
4213	3791	3394	3020	2671	2345	2044	1765	1511	1280	1072	0887	0725	0587	0471	35
4039	3618	3221	2848	2499	2173	1872	1594	1340	1109	0902	0717	0556	0418	0302	34
3865	3444	3048	2675	2326	2002	1701	1423	1169	0939	0732	0548	0387	0249	0134	33
3691	3271	2874	2502	2154	1830	1529	1252	0999	0769	0562	0378	0218	0080	9965	32
3517	3097	2701	2330	1982	1658	1358	1081	0828	0598	0392	0209	0049	9911	9797	31
3343	2924	2528	2157	1810	1486	1186	0910	0657	0428	0222	0039	9879	9743	9629	30
3170	2750	2355	1984	1637	1314	1015	0739	0487	0258	0052	9870	9710	9574	9460	29
2996	2577	2182	1812	1465	1142	0843	0568	0316	0087	9882	9700	9541	9405	9292	28
2822	2403	2009	1639	1293	0970	0672	0397	0145	9917	9712	9531	9372	9236	9124	27
2648	2230	1836	1466	1121	0799	0500	0226	9975	9747	9542	9361	9203	9068	8955	26
2474	2057	1663	1294	0948	0627	0329	0055	9804	9577	9373	9192	9034	8899	8787	25
2300	1883	1490	1121	0776	0455	0157	9884	9633	9406	9203	9022	8865	8730	8619	24
2127	1710	1317	0949	0604	0283	9986	9713	9463	9236	9033	8853	8696	8562	8450	23
1953	1536	1144	0776	0432	0111	9815	9542	9292	9066	8863	8683	8527	8393	8282	22
1779	1363	0971	0603	0259	9939	9643	9371	9121	8896	8693	8514	8357	8224	8114	21
1605	1190	0798	0431	0087	9768	9472	9200	8951	8725	8523	8344	8188	8055	7945	20
1431	1016	0625	0258	9915	9596	9300	9029	8780	8555	8353	8175	8019	7887	7777	19
1258	0843	0452	0086	9743	9424	9129	8858	8610	8385	8184	8005	7850	7718	7609	18
1084	0669	0279	9913	9571	9252	8958	8687	8439	8215	8014	7836	7681	7549	7440	17
0910	0496	0106	9740	9399	9081	8786	8516	8268	8044	7844	7666	7512	7381	7272	16
0736	0323	9933	9568	9226	8909	8615	8345	8098	7874	7674	7497	7343	7212	7104	15
0563	0149	9760	9395	9054	8737	8444	8174	7927	7704	7504	7328	7174	7043	0936	14
0389	9976	9587	9223	8882	8565	8272	8003	7757	7534	7334	7158	7005	6875	6767	13
0215	9803	9414	9050	8710	8394	8101	7832	7586	7364	7165	6989	6836	6706	6599	12
0041	9629	9241	8878	8538	8222	7929	7661	7415	7194	6995	6819	6667	6537	6431	11
9868	9456	9069	8705	8366	8050	7758	7490	7245	7023	6825	6650	6498	6369	6262	10
9694	9283	8896	8533	8194	7878	7587	7319	7074	6853	6655	6481	6329	6200	6094	9
9520	9109	8723	8360	8021	7707	7415	7148	6904	6683	6486	6311	6160	6032	5926	8
9346	8936	8550	8188	7849	7535	7244	6977	6733	6513	6316	6142	5991	5863	5758	7
9173	8763	8377	8015	7677	7362	7073	6806	6563	6343	6146	5972	5822	5694	5590	6
8999	8589	8204	7843	7505	7191	6902	6635	6392	6173	5976	5803	5653	5526	5421	5
8825	8416	8031	7670	7333	7020	6730	6464	6222	6003	5807	5634	5484	5357	5253	4
8652	8243	7858	7498	7161	6848	6559	6293	6051	5832	5637	5464	5315	5189	5085	3
8478	8070	7685	7325	6989	6676	6388	6122	5881	5662	5467	5295	5146	5020	4917	2
8304	7896	7513	7153	6817	6505	6216	5952	5710	5492	5297	5126	4977	4851	4749	1
8131	7723	7340	6980	6645	6333	6045	5781	5540	5322	5128	4956	4808	4683	4580	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Tangent Deg. 82

7 Deg. Sine

"	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9. 101	9. 102	9. 103	9. 104	9. 105	9. 105	9. 106	9. 107	9. 108	9. 109	9. 110	9. 111	9. 112	9. 113	9. 114
0	0558	0477	0373	0246	0096	9924	9729	9512	9272	9010	8726	8420	8092	7742	7370
1	0724	0642	0538	0410	0260	0088	9892	9675	9435	9172	8888	8581	8253	7902	7530
2	0889	0807	0702	0575	0424	0251	0056	9837	9597	9334	9050	8743	8414	8063	7691
3	1055	0972	0867	0739	0588	0415	0219	0000	9760	9496	9211	8904	8575	8224	7851
4	1220	1137	1032	0903	0752	0578	0382	0163	9922	9659	9373	9065	8736	8384	8011
5	1386	1303	1197	1068	0916	0742	0545	0326	0084	9821	9535	9227	8897	8545	8171
6	1551	1468	1361	1232	1080	0906	0708	0489	0247	9983	9696	9388	9058	8706	8332
7	1716	1633	1526	1396	1244	1069	0872	0652	0409	0145	9858	9549	9219	8866	8492
8	1882	1798	1691	1561	1408	1233	1035	0814	0572	0307	0020	9711	9380	9027	8652
9	2047	1963	1855	1725	1572	1396	1198	0977	0734	0469	0182	9872	9541	9187	8812
10	2213	2128	2020	1889	1736	1560	1361	1140	0897	0631	0343	0033	9702	9348	8973
11	2378	2293	2185	2054	1900	1723	1524	1303	1059	0793	0505	0195	9863	9509	9133
12	2544	2458	2349	2218	2064	1887	1687	1466	1221	0955	0667	0356	0024	9669	9293
13	2709	2623	2514	2382	2228	2050	1851	1628	1384	1117	0828	0517	0184	9830	9453
14	2875	2788	2679	2546	2392	2214	2014	1791	1546	1279	0990	0679	0345	9990	9614
15	3040	2953	2843	2711	2555	2377	2177	1954	1709	1441	1152	0840	0506	0151	9774
16	3205	3118	3008	2875	2719	2541	2340	2117	1871	1603	1313	1001	0667	0311	9934
17	3371	3283	3173	3039	2883	2704	2503	2279	2033	1765	1475	1162	0828	0472	0094
18	3536	3448	3337	3204	3047	2868	2666	2442	2196	1927	1637	1324	0989	0633	0254
19	3702	3613	3502	3368	3211	3031	2829	2605	2358	2089	1798	1485	1150	0793	0415
20	3867	3778	3667	3532	3375	3195	2993	2768	2521	2251	1960	1646	1311	0954	0575
21	4032	3943	3831	3696	3539	3358	3156	2930	2683	2413	2121	1808	1472	1114	0735
22	4198	4108	3996	3860	3702	3522	3319	3093	2845	2575	2283	1969	1633	1275	0895
23	4363	4273	4160	4025	3866	3685	3482	3256	3008	2737	2445	2130	1794	1435	1055
24	4528	4438	4325	4189	4030	3849	3645	3419	3170	2899	2606	2291	1954	1596	1215
25	4694	4603	4490	4353	4194	4012	3808	3581	3332	3061	2768	2453	2115	1756	1375
26	4859	4768	4654	4517	4358	4176	3971	3744	3495	3223	2929	2614	2276	1917	1536
27	5024	4933	4819	4681	4522	4339	4184	3907	3657	3385	3091	2775	2437	2077	1696
28	5190	5098	4983	4846	4685	4503	4297	4069	3819	3547	3253	2936	2598	2238	1856
29	5355	5263	5148	5010	4849	4666	4460	4232	3982	3709	3414	3097	2759	2398	2016
30	5520	5428	5312	5174	5013	4829	4623	4395	4144	3871	3576	3259	2920	2559	2176
31	5686	5593	5477	5338	5177	4993	4786	4557	4306	4033	3737	3420	3080	2719	2336
32	5851	5758	5641	5502	5341	5156	4949	4720	4468	4195	3899	3581	3241	2880	2496
33	6016	5923	5806	5667	5504	5320	5112	4883	4631	4357	4060	3742	3402	3040	2656
34	6182	6088	5970	5831	5668	5483	5275	5045	4793	4519	4222	3903	3563	3200	2816
35	6347	6252	6135	5995	5832	5646	5438	5208	4955	4680	4383	4064	3724	3361	2977
36	6512	6417	6300	6159	5996	5810	5601	5371	5118	4842	4545	4226	3884	3521	3137
37	6677	6582	6464	6323	6159	5973	5764	5533	5280	5004	4707	4387	4045	3682	3297
38	6843	6747	6629	6487	6323	6137	5927	5696	5442	5166	4868	4548	4206	3842	3457
39	7008	6912	6793	6651	6487	6300	6090	5859	5604	5328	5030	4709	4367	4003	3617
40	7173	7077	6958	6815	6651	6463	6253	6021	5767	5490	5191	4870	4528	4163	3777
41	7338	7242	7122	6980	6814	6627	6416	6184	5929	5652	5353	5031	4688	4323	3937
42	7504	7407	7286	7144	6978	6790	6579	6346	6091	5814	5514	5193	4849	4484	4097
43	7669	7571	7451	7308	7142	6953	6742	6509	6253	5975	5676	5354	5010	4644	4257
44	7834	7736	7615	7472	7306	7117	6905	6672	6416	6137	5837	5515	5171	4805	4417
45	7999	7901	7780	7636	7469	7280	7068	6834	6578	6299	5998	5676	5331	4965	4577
46	8165	8066	7944	7800	7633	7443	7231	6997	6740	6461	6160	5837	5492	5125	4737
47	8330	8231	8109	7964	7797	7607	7394	7159	6902	6623	6321	5998	5653	5286	4897
48	8495	8396	8273	8128	7960	7770	7557	7322	7064	6785	6483	6159	5814	5446	5057
49	8660	8560	8438	8292	8124	7933	7720	7484	7227	6946	6644	6320	5974	5607	5217
50	8825	8725	8602	8456	8288	8097	7883	7647	7389	7108	6806	6481	6135	5767	5377
51	8991	8890	8767	8620	8451	8260	8046	7809	7551	7270	6967	6642	6296	5927	5537
52	9156	9055	8931	8784	8615	8423	8209	7972	7713	7432	7129	6803	6456	6088	5697
53	9321	9220	9095	8948	8779	8586	8372	8135	7875	7594	7290	6965	6617	6248	5857
54	9486	9384	9260	9112	8942	8750	8535	8297	8037	7755	7452	7126	6778	6408	6017
55	9651	9549	9424	9276	9106	8913	8697	8460	8199	7917	7613	7287	6938	6569	6177
56	9816	9714	9589	9440	9270	9076	8860	8622	8362	8079	7774	7448	7099	6729	6337
57	9982	9879	9753	9604	9433	9239	9023	8785	8524	8241	7936	7609	7260	6889	6497
58	0147	0043	9917	9768	9597	9403	9186	8947	8686	8403	8097	7770	7420	7049	6657
59	0312	0208	0082	9932	9760	9566	9349	9110	8848	8564	8259	7931	7581	7210	6817
60	0477	0373	0246	0096	9924	9729	9512	9272	9010	8726	8420	8092	7742	7370	6977
"	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Sine Deg. 82

7 Deg. Co-Sine

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	"
9. 996	9. 996	9. 996	9. 996	9. 996	9. 996	9. 996	9. 996	9. 996	9. 996	9. 996	9. 996	9. 996	9. 996	9. 996	
5138	4977	4816	4655	4493	4330	4167	4004	3841	3677	3513	3348	3183	3018	2852	60
5136	4975	4814	4652	4490	4327	4165	4002	3838	3674	3510	3345	3180	3015	2849	59
5133	4972	4811	4649	4487	4325	4162	3999	3835	3671	3507	3342	3177	3012	2846	58
5130	4969	4808	4646	4484	4322	4159	3996	3833	3669	3504	3340	3175	3009	2843	57
5128	4967	4805	4644	4482	4319	4157	3993	3830	3666	3502	3337	3172	3007	2841	56
5125	4964	4803	4641	4479	4317	4154	3991	3827	3663	3499	3334	3169	3004	2838	55
5122	4961	4800	4638	4476	4314	4151	3988	3824	3660	3496	3331	3166	3001	2835	54
5120	4959	4797	4636	4474	4311	4148	3985	3822	3658	3493	3329	3164	2998	2832	53
5117	4956	4795	4633	4471	4308	4146	3982	3819	3655	3491	3326	3161	2995	2830	52
5114	4953	4792	4630	4468	4306	4143	3980	3816	3652	3488	3323	3158	2993	2827	51
5112	4951	4789	4628	4466	4303	4140	3977	3813	3649	3485	3320	3155	2990	2824	50
5109	4948	4787	4625	4463	4300	4138	3974	3811	3647	3482	3318	3153	2987	2821	49
5106	4945	4784	4622	4460	4298	4135	3972	3808	3644	3480	3315	3150	2984	2819	48
5104	4943	4781	4619	4457	4295	4132	3969	3805	3641	3477	3312	3147	2982	2816	47
5101	4940	4779	4617	4455	4292	4129	3966	3803	3639	3474	3309	3144	2979	2813	46
5098	4937	4776	4614	4452	4289	4127	3963	3800	3636	3471	3307	3142	2976	2810	45
5096	4935	4773	4611	4449	4287	4124	3961	3797	3633	3469	3304	3139	2973	2808	44
5093	4932	4770	4609	4447	4284	4121	3958	3794	3630	3466	3301	3136	2971	2805	43
5090	4929	4768	4606	4444	4281	4118	3955	3792	3628	3463	3298	3133	2968	2802	42
5087	4926	4765	4603	4441	4279	4116	3953	3789	3625	3460	3296	3131	2965	2799	41
5085	4924	4762	4601	4438	4276	4113	3950	3786	3622	3458	3293	3128	2962	2796	40
5082	4921	4760	4598	4436	4273	4110	3947	3783	3619	3455	3290	3125	2960	2794	39
5079	4918	4757	4595	4433	4271	4108	3944	3781	3617	3452	3287	3122	2957	2791	38
5077	4916	4754	4593	4430	4268	4105	3942	3778	3614	3450	3285	3120	2954	2788	37
5074	4913	4752	4590	4428	4265	4102	3939	3775	3611	3447	3282	3117	2951	2785	36
5071	4910	4749	4587	4425	4262	4099	3936	3772	3608	3444	3279	3114	2949	2783	35
5069	4908	4746	4584	4422	4260	4097	3933	3770	3606	3441	3276	3111	2946	2780	34
5066	4905	4744	4582	4420	4257	4094	3931	3767	3603	3439	3274	3109	2943	2777	33
5063	4902	4741	4579	4417	4254	4091	3928	3764	3600	3436	3271	3106	2940	2774	32
5061	4900	4738	4576	4414	4252	4089	3925	3762	3597	3433	3268	3103	2937	2772	31
5058	4897	4735	4574	4411	4249	4086	3923	3759	3595	3430	3265	3100	2935	2769	30
5055	4894	4733	4571	4409	4246	4083	3920	3756	3592	3428	3263	3098	2932	2766	29
5053	4892	4730	4568	4406	4243	4080	3917	3753	3589	3425	3260	3095	2929	2763	28
5050	4889	4727	4566	4403	4241	4078	3914	3751	3587	3422	3257	3092	2926	2760	27
5047	4886	4725	4563	4401	4238	4075	3912	3748	3584	3419	3254	3089	2924	2758	26
5045	4883	4722	4560	4398	4235	4072	3909	3745	3581	3417	3252	3087	2921	2755	25
5042	4881	4719	4557	4395	4233	4070	3906	3742	3578	3414	3249	3084	2918	2752	24
5039	4878	4717	4555	4392	4230	4067	3903	3740	3576	3411	3246	3081	2915	2749	23
5037	4875	4714	4552	4390	4227	4064	3901	3737	3573	3408	3243	3078	2913	2747	22
5034	4873	4711	4549	4387	4224	4061	3898	3734	3570	3406	3241	3075	2910	2744	21
5031	4870	4708	4547	4384	4222	4059	3895	3732	3567	3403	3238	3073	2907	2741	20
5028	4867	4706	4544	4382	4219	4056	3893	3729	3565	3400	3235	3070	2904	2738	19
5026	4865	4703	4541	4379	4216	4053	3890	3726	3562	3397	3232	3067	2902	2736	18
5023	4862	4700	4538	4376	4214	4051	3887	3723	3559	3395	3230	3064	2899	2733	17
5020	4859	4698	4536	4373	4211	4048	3884	3721	3556	3392	3227	3062	2896	2730	16
5018	4857	4695	4533	4371	4208	4045	3882	3718	3554	3389	3224	3059	2893	2727	15
5015	4854	4692	4530	4368	4205	4042	3879	3715	3551	3386	3221	3056	2891	2724	14
5012	4851	4690	4528	4365	4203	4040	3876	3712	3548	3384	3219	3053	2888	2722	13
5010	4849	4687	4525	4363	4200	4037	3873	3710	3545	3381	3216	3051	2885	2719	12
5007	4846	4684	4522	4360	4197	4034	3871	3707	3543	3378	3213	3048	2882	2716	11
5004	4843	4682	4520	4357	4195	4031	3868	3704	3540	3375	3210	3045	2879	2713	10
5002	4840	4679	4517	4355	4192	4029	3865	3701	3537	3373	3208	3042	2877	2711	9
4999	4838	4676	4514	4352	4189	4026	3863	3699	3535	3370	3205	3040	2874	2708	8
4996	4835	4673	4511	4349	4186	4023	3860	3696	3532	3367	3202	3037	2871	2705	7
4994	4832	4671	4509	4346	4184	4021	3857	3693	3529	3364	3199	3034	2868	2702	6
4991	4830	4668	4506	4344	4181	4018	3854	3691	3526	3362	3197	3031	2866	2700	5
4988	4827	4665	4503	4341	4178	4015	3852	3688	3524	3359	3194	3029	2863	2697	4
4986	4824	4663	4501	4338	4176	4012	3849	3685	3521	3356	3191	3026	2860	2694	3
4983	4822	4660	4498	4336	4173	4010	3846	3682	3518	3353	3188	3023	2857	2691	2
4980	4819	4657	4495	4333	4170	4007	3843	3680	3515	3351	3186	3020	2855	2688	1
4977	4816	4655	4493	4330	4167	4004	3841	3677	3513	3348	3183	3018	2852	2686	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	"

Sine Deg. 82

7 Deg. Tangent

"	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9. 104	9. 105	9. 106	9. 107	9. 108	9. 109	9. 110	9. 111	9. 112	9. 113	9. 114	9. 115	9. 116	9. 117	9. 118
0	5420	5500	5557	5591	5604	5594	5562	5508	5431	5333	5213	5072	4909	4724	4518
1	5588	5667	5724	5759	5770	5760	5728	5673	5597	5498	5378	5236	5073	4888	4681
2	5756	5835	5892	5926	5937	5926	5894	5839	5762	5663	5542	5400	5236	5051	4844
3	5924	6003	6059	6093	6104	6093	6060	6004	5927	5828	5707	5564	5400	5214	5007
4	6092	6171	6226	6260	6271	6259	6225	6170	6092	5993	5871	5728	5564	5378	5170
5	6261	6338	6394	6427	6437	6425	6391	6335	6257	6157	6036	5893	5728	5541	5333
6	6429	6506	6561	6594	6604	6592	6557	6501	6423	6322	6200	6057	5891	5705	5497
7	6597	6674	6729	6761	6770	6758	6723	6666	6588	6487	6365	6221	6055	5868	5660
8	6765	6842	6896	6928	6937	6924	6889	6832	6753	6652	6529	6385	6219	6031	5823
9	6933	7010	7063	7095	7104	7090	7055	6998	6918	6817	6694	6549	6383	6195	5986
10	7101	7177	7231	7262	7270	7257	7221	7163	7083	6982	6858	6713	6546	6358	6149
11	7269	7345	7398	7429	7437	7423	7387	7329	7248	7146	7022	6877	6710	6521	6312
12	7437	7513	7565	7596	7604	7589	7553	7494	7414	7311	7187	7041	6874	6685	6475
13	7606	7680	7733	7763	7770	7755	7719	7660	7579	7476	7351	7205	7037	6848	6638
14	7774	7848	7900	7930	7937	7922	7884	7825	7744	7641	7516	7369	7201	7011	6800
15	7942	8016	8068	8097	8103	8088	8050	7991	7909	7805	7680	7533	7365	7175	6963
16	8110	8184	8235	8264	8270	8254	8216	8156	8074	7970	7845	7697	7528	7338	7126
17	8278	8351	8402	8431	8437	8420	8382	8322	8239	8135	8009	7861	7692	7501	7289
18	8446	8519	8570	8598	8603	8587	8548	8487	8404	8300	8173	8025	7856	7665	7452
19	8614	8687	8737	8764	8770	8753	8714	8652	8569	8464	8338	8189	8019	7828	7615
20	8782	8854	8904	8931	8936	8919	8879	8818	8734	8629	8502	8353	8183	7991	7778
21	8950	9022	9071	9098	9103	9085	9045	8983	8900	8794	8666	8517	8347	8155	7941
22	9118	9190	9239	9265	9269	9251	9211	9149	9065	8959	8831	8681	8510	8318	8104
23	9286	9357	9406	9432	9436	9418	9377	9314	9230	9123	8995	8845	8674	8481	8267
24	9454	9525	9573	9599	9602	9584	9543	9480	9395	9288	9159	9009	8838	8644	8430
25	9622	9693	9741	9766	9769	9750	9709	9645	9560	9453	9324	9173	9001	8808	8593
26	9790	9860	9908	9933	9936	9916	9874	9811	9725	9617	9488	9337	9165	8971	8756
27	9958	0028	0075	0100	0102	0082	0040	9976	9890	9782	9652	9501	9328	9134	8919
28	0126	0196	0242	0267	0269	0248	0206	0141	0055	9947	9817	9665	9492	9297	9082
29	0294	0363	0410	0434	0435	0414	0372	0307	0220	0111	9981	9829	9656	9461	9244
30	0462	0531	0577	0600	0602	0581	0537	0472	0385	0276	0145	9993	9819	9624	9407
31	0630	0699	0744	0767	0768	0747	0703	0638	0550	0441	0310	0157	9983	9787	9570
32	0798	0866	0911	0934	0935	0913	0869	0803	0715	0605	0474	0321	0146	9950	9733
33	0966	1034	1079	1101	1101	1079	1035	0968	0880	0770	0638	0485	0310	0114	9896
34	1134	1201	1246	1268	1268	1245	1200	1134	1045	0935	0803	0649	0474	0277	0059
35	1302	1369	1413	1435	1434	1411	1366	1299	1210	1099	0967	0813	0637	0440	0222
36	1470	1537	1580	1602	1601	1577	1532	1464	1375	1264	1131	0977	0801	0603	0384
37	1638	1704	1747	1768	1767	1743	1698	1630	1540	1429	1295	1141	0964	0766	0547
38	1806	1872	1915	1935	1933	1909	1863	1795	1705	1593	1460	1304	1128	0930	0710
39	1974	2039	2082	2102	2100	2076	2029	1961	1870	1758	1624	1468	1291	1093	0873
40	2142	2207	2249	2269	2260	2242	2195	2126	2035	1922	1788	1632	1455	1256	1036
41	2310	2374	2416	2436	2433	2408	2360	2291	2200	2087	1952	1796	1618	1419	1199
42	2478	2542	2583	2602	2599	2574	2526	2457	2365	2252	2117	1960	1782	1582	1361
43	2646	2709	2751	2769	2766	2740	2692	2622	2530	2416	2281	2124	1945	1745	1524
44	2814	2877	2918	2936	2932	2906	2857	2787	2695	2581	2445	2288	2109	1909	1687
45	2982	3045	3085	3103	3098	3072	3023	2952	2860	2745	2609	2452	2272	2072	1850
46	3150	3212	3252	3270	3265	3238	3189	3118	3025	2910	2774	2615	2436	2235	2013
47	3317	3380	3419	3436	3431	3404	3354	3283	3190	3075	2938	2779	2599	2398	2175
48	3485	3547	3586	3603	3598	3570	3520	3448	3355	3239	3102	2943	2763	2561	2338
49	3653	3715	3753	3770	3764	3736	3686	3614	3520	3404	3266	3107	2926	2724	2501
50	3821	3882	3921	3937	3930	3902	3851	3779	3684	3568	3430	3271	3090	2887	2664
51	3989	4050	4088	4103	4097	4068	4017	3944	3849	3733	3595	3435	3253	3051	2826
52	4157	4217	4255	4270	4263	4234	4183	4109	4014	3897	3759	3599	3417	3214	2989
53	4325	4385	4422	4437	4430	4400	4348	4275	4179	4062	3923	3762	3580	3377	3152
54	4493	4552	4589	4604	4596	4566	4514	4440	4344	4226	4087	3926	3744	3540	3315
55	4660	4719	4756	4770	4762	4732	4680	4605	4509	4391	4251	4090	3907	3703	3477
56	4828	4887	4923	4937	4929	4898	4845	4770	4674	4555	4415	4254	4071	3866	3640
57	4996	5054	5090	5104	5095	5064	5011	4936	4839	4720	4580	4418	4234	4029	3803
58	5164	5222	5257	5270	5261	5230	5176	5101	5004	4884	4744	4581	4397	4192	3966
59	5332	5389	5424	5437	5428	5396	5342	5266	5168	5049	4908	4745	4561	4355	4128
60	5500	5557	5591	5604	5594	5562	5508	5431	5333	5213	5072	4909	4724	4518	4291
"	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

7 Deg. Co-Tangent

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	"
10. 895	10. 894	10. 893	10. 892	10. 891	10. 890	10. 889	10. 888	10. 887	10. 886	10. 885	10. 884	10. 883	10. 882	10. 881	
4580	4500	4443	4409	4396	4406	4438	4492	4569	4667	4787	4928	5091	5276	5482	60
4412	4333	4276	4241	4230	4240	4272	4327	4403	4502	4622	4764	4927	5112	5319	59
4244	4165	4108	4074	4063	4074	4106	4161	4238	4337	4458	4600	4764	4949	5156	58
4076	3997	3941	3907	3896	3907	3940	3996	4073	4172	4293	4436	4600	4786	4993	57
3908	3829	3774	3740	3729	3741	3775	3830	3908	4007	4129	4272	4436	4622	4830	56
3739	3662	3606	3573	3563	3575	3609	3665	3743	3843	3964	4107	4272	4459	4667	55
3571	3494	3439	3406	3396	3408	3443	3499	3577	3678	3800	3943	4109	4295	4503	54
3403	3326	3271	3239	3230	3242	3277	3334	3412	3513	3635	3779	3945	4132	4340	53
3235	3158	3104	3072	3063	3076	3111	3168	3247	3348	3471	3615	3781	3969	4177	52
3067	2990	2937	2905	2896	2910	2945	3002	3082	3183	3306	3451	3617	3805	4014	51
2899	2823	2769	2738	2730	2743	2779	2837	2917	3018	3142	3287	3454	3642	3851	50
2731	2655	2602	2571	2563	2577	2613	2671	2752	2854	2978	3123	3290	3479	3688	49
2563	2487	2435	2404	2396	2411	2447	2506	2586	2689	2813	2959	3126	3315	3525	48
2394	2320	2267	2237	2230	2245	2281	2340	2421	2524	2649	2795	2963	3152	3362	47
2226	2152	2100	2070	2063	2078	2116	2175	2256	2359	2484	2631	2799	2989	3200	46
2058	1984	1932	1903	1897	1912	1950	2009	2091	2195	2320	2467	2635	2825	3037	45
1890	1816	1765	1736	1730	1746	1784	1844	1926	2030	2155	2303	2472	2662	2874	44
1722	1649	1598	1569	1563	1580	1618	1678	1761	1865	1991	2139	2308	2499	2711	43
1554	1481	1430	1402	1397	1413	1452	1513	1596	1700	1827	1975	2144	2335	2548	42
1386	1313	1263	1236	1230	1247	1286	1348	1431	1536	1662	1811	1981	2172	2385	41
1218	1146	1096	1069	1064	1081	1121	1182	1266	1371	1498	1647	1817	2009	2222	40
1050	0978	0929	0902	0897	0915	0955	1017	1100	1206	1334	1483	1653	1845	2059	39
0882	0810	0761	0735	0731	0749	0789	0851	0935	1041	1169	1319	1490	1682	1896	38
0714	0643	0594	0568	0564	0582	0623	0686	0770	0877	1005	1155	1326	1519	1733	37
0546	0475	0427	0401	0398	0416	0457	0520	0605	0712	0841	0991	1162	1356	1570	36
0378	0307	0259	0234	0231	0250	0291	0355	0440	0547	0676	0827	0999	1192	1407	35
0210	0140	0092	0067	0064	0084	0126	0189	0275	0383	0512	0663	0835	1029	1244	34
0042	9972	9925	9900	9898	9918	9960	0024	0110	0218	0348	0499	0672	0866	1081	33
9874	9804	9758	9733	9731	9752	9794	9859	9945	0053	0183	0335	0508	0703	0918	32
9706	9637	9590	9566	9565	9586	9628	9693	9780	9889	0019	0171	0344	0539	0756	31
9538	9469	9423	9400	9398	9419	9463	9528	9615	9724	9855	0007	0181	0376	0593	30
9370	9301	9256	9233	9232	9253	9297	9362	9450	9559	9690	9843	0017	0213	0430	29
9202	9134	9089	9066	9065	9087	9131	9197	9285	9395	9526	9679	9854	0050	0267	28
9034	8966	8921	8899	8899	8921	8965	9032	9120	9230	9362	9515	9690	9886	0104	27
8866	8799	8754	8732	8732	8755	8800	8866	8955	9065	9197	9351	9526	9723	9941	26
8698	8631	8587	8565	8566	8589	8634	8701	8790	8901	9033	9187	9363	9560	9778	25
8530	8463	8420	8398	8399	8423	8468	8536	8625	8736	8869	9023	9199	9397	9616	24
8362	8296	8253	8232	8233	8257	8302	8370	8460	8571	8705	8859	9036	9234	9453	23
8194	8128	8085	8065	8067	8091	8137	8205	8295	8407	8540	8696	8872	9070	9290	22
8026	7961	7918	7898	7900	7924	7971	8039	8130	8242	8376	8532	8709	8907	9127	21
7858	7793	7751	7731	7734	7758	7805	7874	7965	8078	8212	8368	8545	8744	8964	20
7690	7626	7584	7564	7567	7592	7640	7709	7800	7913	8048	8204	8382	8581	8801	19
7522	7458	7417	7398	7401	7426	7474	7543	7635	7748	7883	8040	8218	8418	8639	18
7354	7291	7249	7231	7234	7260	7308	7378	7470	7584	7719	7876	8055	8255	8476	17
7186	7123	7082	7064	7068	7094	7143	7213	7305	7419	7555	7712	7891	8091	8313	16
7018	6955	6915	6897	6902	6928	6977	7048	7140	7255	7391	7548	7728	7928	8150	15
6850	6788	6748	6730	6735	6762	6811	6882	6975	7090	7226	7385	7564	7765	7987	14
6683	6620	6581	6564	6569	6596	6646	6717	6810	6925	7062	7221	7401	7602	7825	13
6515	6453	6414	6397	6402	6430	6480	6552	6645	6761	6898	7057	7237	7439	7662	12
6347	6285	6247	6230	6236	6264	6314	6386	6480	6596	6734	6893	7074	7276	7499	11
6179	6118	6079	6063	6070	6098	6149	6221	6316	6432	6570	6729	6910	7113	7336	10
6011	5950	5912	5897	5903	5932	5983	6056	6151	6267	6405	6565	6747	6949	7174	9
5843	5783	5745	5730	5737	5766	5817	5891	5986	6103	6241	6401	6583	6786	7011	8
5675	5615	5578	5563	5570	5600	5652	5725	5821	5938	6077	6238	6420	6623	6848	7
5507	5448	5411	5396	5404	5434	5486	5560	5656	5774	5913	6074	6256	6460	6685	6
5340	5281	5244	5230	5238	5268	5320	5395	5491	5609	5749	5910	6093	6297	6523	5
5172	5113	5077	5063	5071	5102	5155	5230	5326	5445	5585	5746	5929	6134	6360	4
5004	4946	4910	4896	4905	4936	4989	5064	5161	5280	5420	5582	5766	5971	6197	3
4836	4778	4743	4730	4739	4770	4824	4899	4996	5116	5256	5419	5603	5808	6034	2
4668	4611	4576	4563	4572	4604	4658	4734	4832	4951	5092	5255	5439	5645	5872	1
4500	4443	4409	4396	4406	4438	4492	4569	4667	4787	4928	5091	5276	5482	5709	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	"

Co-Tangent Deg. 82

Tangent Deg. 82

7 Deg. Sine

"	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9. 115	9. 116	9. 117	9. 118	9. 119	9. 120	9. 121	9. 122	9. 123	9. 124	9. 125	9. 126	9. 127	9. 127	9. 128
0	6977	6562	6125	5667	5188	4688	4167	3624	3061	2477	1872	1246	0600	9934	9247
1	7137	6721	6284	5826	5347	4846	4324	3782	3218	2634	2028	1402	0756	0089	9402
2	7297	6881	6444	5985	5505	5004	4482	3939	3375	2790	2185	1558	0912	0244	9557
3	7456	7040	6603	6144	5664	5162	4640	4097	3532	2947	2341	1715	1067	0400	9712
4	7616	7200	6762	6303	5822	5321	4798	4254	3689	3104	2497	1871	1223	0555	9867
5	7776	7360	6921	6462	5981	5479	4956	4411	3846	3260	2654	2027	1379	0711	0022
6	7936	7519	7080	6621	6139	5637	5113	4569	4003	3417	2810	2183	1534	0866	0177
7	8096	7679	7240	6779	6298	5795	5271	4726	4160	3574	2967	2339	1690	1021	0332
8	8256	7838	7399	6938	6456	5953	5429	4884	4318	3731	3123	2495	1846	1177	0487
9	8416	7998	7558	7097	6615	6111	5587	5041	4475	3887	3279	2651	2002	1332	0642
10	8576	8157	7717	7256	6773	6269	5744	5198	4632	4044	3436	2807	2157	1487	0797
11	8736	8317	7876	7415	6932	6427	5902	5356	4789	4201	3592	2963	2313	1643	0952
12	8895	8476	8035	7573	7090	6585	6060	5513	4946	4357	3748	3119	2469	1798	1107
13	9055	8636	8195	7732	7248	6744	6218	5671	5103	4514	3905	3275	2624	1953	1262
14	9215	8795	8354	7891	7407	6902	6375	5828	5260	4671	4061	3431	2780	2109	1417
15	9375	8955	8513	8050	7565	7060	6533	5985	5417	4827	4217	3587	2936	2264	1572
16	9535	9114	8672	8208	7724	7218	6691	6143	5574	4984	4374	3743	3091	2419	1727
17	9695	9274	8831	8367	7882	7376	6848	6300	5731	5141	4530	3899	3247	2574	1882
18	9854	9433	8990	8526	8040	7534	7006	6457	5888	5297	4686	4055	3402	2730	2037
19	0014	9593	9149	8685	8199	7692	7164	6615	6045	5454	4843	4211	3558	2885	2192
20	0174	9752	9308	8843	8357	7850	7322	6772	6202	5611	4999	4367	3714	3040	2347
21	0334	9911	9467	9002	8516	8008	7479	6929	6359	5767	5155	4523	3869	3196	2501
22	0494	0071	9627	9161	8674	8166	7637	7087	6516	5924	5312	4678	4025	3351	2656
23	0653	0230	9786	9320	8832	8324	7795	7244	6673	6081	5468	4834	4180	3506	2811
24	0813	0390	9945	9478	8991	8482	7952	7401	6830	6237	5624	4990	4336	3661	2966
25	0973	0549	0104	9637	9149	8640	8110	7559	6987	6394	5780	5146	4492	3817	3121
26	1133	0709	0263	9796	9307	8798	8268	7716	7144	6551	5937	5302	4647	3972	3276
27	1293	0868	0422	9954	9466	8956	8425	7873	7301	6707	6093	5458	4803	4127	3431
28	1452	1027	0581	0113	9624	9114	8583	8031	7458	6864	6249	5614	4958	4282	3586
29	1612	1187	0740	0272	9783	9272	8740	8188	7614	7020	6405	5770	5114	4438	3741
30	1772	1346	0899	0431	9941	9430	8898	8345	7771	7177	6562	5926	5269	4593	3896
31	1932	1506	1058	0589	0099	9588	9056	8502	7928	7333	6718	6082	5425	4748	4050
32	2091	1665	1217	0748	0257	9746	9213	8660	8085	7490	6874	6238	5581	4903	4205
33	2251	1824	1376	0907	0416	9904	9371	8817	8242	7647	7030	6394	5736	5058	4360
34	2411	1984	1535	1065	0574	0062	9529	8974	8399	7803	7187	6549	5892	5214	4515
35	2571	2143	1694	1224	0732	0220	9686	9132	8556	7960	7343	6705	6047	5369	4670
36	2730	2302	1853	1383	0891	0378	9844	9289	8713	8116	7499	6861	6203	5524	4825
37	2890	2462	2012	1541	1049	0536	0001	9446	8870	8273	7655	7017	6358	5679	4980
38	3050	2621	2171	1700	1207	0694	0159	9603	9027	8429	7811	7173	6514	5834	5134
39	3209	2780	2330	1858	1366	0852	0316	9760	9184	8586	7968	7329	6669	5989	5289
40	3369	2940	2489	2017	1524	1009	0474	9918	9340	8742	8124	7485	6825	6145	5444
41	3529	3099	2648	2176	1682	1167	0632	0075	9497	8899	8280	7640	6980	6300	5599
42	3688	3258	2807	2334	1840	1325	0789	0232	9654	9056	8436	7796	7136	6455	5754
43	3848	3418	2966	2493	1999	1483	0947	0389	9811	9212	8592	7952	7291	6610	5909
44	4008	3577	3125	2652	2157	1641	1104	0547	9968	9369	8748	8108	7447	6765	6063
45	4167	3736	3284	2810	2315	1799	1262	0704	0125	9525	8905	8264	7602	6920	6218
46	4327	3896	3443	2969	2473	1957	1419	0861	0282	9682	9061	8419	7758	7075	6373
47	4487	4055	3602	3127	2632	2115	1577	1018	0438	9838	9217	8575	7913	7231	6528
48	4646	4214	3761	3286	2790	2273	1734	1175	0595	9994	9373	8731	8069	7386	6683
49	4806	4374	3920	3444	2948	2430	1892	1332	0752	0151	9529	8887	8224	7541	6837
50	4966	4533	4079	3603	3106	2588	2049	1490	0909	0307	9685	9043	8380	7696	6992
51	5125	4692	4237	3762	3264	2746	2207	1647	1066	0464	9841	9198	8535	7851	7147
52	5285	4851	4396	3920	3423	2904	2364	1804	1223	0620	9998	9354	8690	8006	7302
53	5445	5011	4555	4079	3581	3062	2522	1961	1379	0777	0154	9510	8846	8161	7456
54	5604	5170	4714	4237	3739	3220	2679	2118	1536	0933	0310	9666	9001	8316	7611
55	5764	5329	4873	4396	3897	3378	2837	2275	1693	1090	0466	9822	9157	8471	7766
56	5923	5488	5032	4554	4055	3535	2994	2432	1850	1246	0622	9977	9312	8626	7921
57	6083	5648	5191	4713	4214	3693	3152	2590	2006	1403	0778	0133	9467	8782	8075
58	6243	5807	5350	4871	4372	3851	3309	2747	2163	1559	0934	0289	9623	8937	8230
59	6402	5966	5509	5030	4530	4009	3467	2904	2320	1715	1090	0444	9778	9092	8385
60	6562	6125	5667	5188	4688	4167	3624	3061	2477	1872	1246	0600	9934	9247	8539
"	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Sine Deg. 82

7 Deg. Co-Sine

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	"
9. 996	9. 996	9. 996	9. 996	9. 996	9. 996	9. 996	9. 996	9. 996	9. 996	9. 996	9. 996	9. 996	9. 996	9. 996	
2686	2519	2352	2185	2017	1849	1681	1512	1343	1174	1004	0834	0663	0492	0321	60
2683	2516	2349	2182	2015	1847	1678	1509	1340	1171	1001	0831	0660	0489	0318	59
2680	2514	2347	2179	2012	1844	1675	1507	1338	1168	0998	0828	0657	0486	0315	58
2677	2511	2344	2177	2009	1841	1673	1504	1335	1165	0995	0825	0654	0483	0312	57
2675	2508	2341	2174	2006	1838	1670	1501	1332	1162	0992	0822	0652	0481	0309	56
2672	2505	2338	2171	2003	1835	1667	1498	1329	1160	0990	0819	0649	0478	0306	55
2669	2502	2336	2168	2001	1833	1664	1495	1326	1157	0987	0816	0646	0475	0303	54
2666	2500	2333	2165	1998	1830	1661	1493	1323	1154	0984	0814	0643	0472	0301	53
2663	2497	2330	2163	1995	1827	1659	1490	1321	1151	0981	0811	0640	0469	0298	52
2661	2494	2327	2160	1992	1824	1656	1487	1318	1148	0978	0808	0637	0466	0295	51
2658	2491	2324	2157	1989	1821	1653	1484	1315	1145	0975	0805	0634	0463	0292	50
2655	2489	2322	2154	1987	1819	1650	1481	1312	1143	0973	0802	0632	0461	0289	49
2652	2486	2319	2152	1984	1816	1647	1478	1309	1140	0970	0799	0629	0458	0286	48
2650	2483	2316	2149	1981	1813	1644	1476	1306	1137	0967	0797	0626	0455	0283	47
2647	2480	2313	2146	1978	1810	1642	1473	1304	1134	0964	0794	0623	0452	0281	46
2644	2477	2310	2143	1975	1807	1639	1470	1301	1131	0961	0791	0620	0449	0278	45
2641	2475	2308	2140	1973	1805	1636	1467	1298	1128	0958	0788	0617	0446	0275	44
2639	2472	2305	2138	1970	1802	1633	1464	1295	1126	0956	0785	0615	0443	0272	43
2636	2469	2302	2135	1967	1799	1630	1462	1292	1123	0953	0782	0612	0441	0269	42
2633	2466	2299	2132	1964	1796	1628	1459	1290	1120	0950	0780	0609	0438	0266	41
2630	2464	2297	2129	1961	1793	1625	1456	1287	1117	0947	0777	0606	0435	0263	40
2627	2461	2294	2126	1959	1791	1622	1453	1284	1114	0944	0774	0603	0432	0260	39
2625	2458	2291	2124	1956	1788	1619	1450	1281	1111	0941	0771	0600	0429	0258	38
2622	2455	2288	2121	1953	1785	1616	1447	1278	1109	0939	0768	0597	0426	0255	37
2619	2452	2285	2118	1950	1782	1614	1445	1275	1106	0936	0765	0595	0423	0252	36
2616	2450	2283	2115	1947	1779	1611	1442	1273	1103	0933	0762	0592	0421	0249	35
2614	2447	2280	2112	1945	1776	1608	1439	1270	1100	0930	0760	0589	0418	0246	34
2611	2444	2277	2110	1942	1774	1605	1436	1267	1097	0927	0757	0586	0415	0243	33
2608	2441	2274	2107	1939	1771	1602	1433	1264	1094	0924	0754	0583	0412	0240	32
2605	2439	2271	2104	1936	1768	1600	1431	1261	1092	0922	0751	0580	0409	0238	31
2602	2436	2269	2101	1933	1765	1597	1428	1258	1089	0919	0748	0577	0406	0235	30
2600	2433	2266	2098	1931	1762	1594	1425	1256	1086	0916	0745	0575	0403	0232	29
2597	2430	2263	2096	1928	1760	1591	1422	1253	1083	0913	0743	0572	0401	0229	28
2594	2427	2260	2093	1925	1757	1588	1419	1250	1080	0910	0740	0569	0398	0226	27
2591	2425	2258	2090	1922	1754	1585	1416	1247	1077	0907	0737	0566	0395	0223	26
2589	2422	2255	2087	1919	1751	1583	1414	1244	1075	0905	0734	0563	0392	0220	25
2586	2419	2252	2084	1917	1748	1580	1411	1241	1072	0902	0731	0560	0389	0218	24
2583	2416	2249	2082	1914	1746	1577	1408	1239	1069	0899	0728	0558	0386	0215	23
2580	2414	2246	2079	1911	1743	1574	1405	1236	1066	0896	0726	0555	0383	0212	22
2577	2411	2244	2076	1908	1740	1571	1402	1233	1063	0893	0723	0552	0381	0209	21
2575	2408	2241	2073	1905	1737	1569	1400	1230	1060	0890	0720	0549	0378	0206	20
2572	2405	2238	2071	1903	1734	1566	1397	1227	1058	0887	0717	0546	0375	0203	19
2569	2402	2235	2068	1900	1732	1563	1394	1225	1055	0885	0714	0543	0372	0200	18
2566	2400	2232	2065	1897	1729	1560	1391	1222	1052	0882	0711	0540	0369	0198	17
2564	2397	2230	2062	1894	1726	1557	1388	1219	1049	0879	0708	0538	0366	0195	16
2561	2394	2227	2059	1891	1723	1554	1385	1216	1046	0876	0706	0535	0363	0192	15
2558	2391	2224	2057	1889	1720	1552	1383	1213	1043	0873	0703	0532	0361	0189	14
2555	2388	2221	2054	1886	1718	1549	1380	1210	1041	0870	0700	0529	0358	0186	13
2552	2386	2219	2051	1883	1715	1546	1377	1208	1038	0868	0697	0526	0355	0183	12
2550	2383	2216	2048	1880	1712	1543	1374	1205	1035	0865	0694	0523	0352	0180	11
2547	2380	2213	2045	1877	1709	1540	1371	1202	1032	0862	0691	0520	0349	0177	10
2544	2377	2210	2043	1875	1706	1538	1369	1199	1029	0859	0689	0518	0346	0175	9
2541	2375	2207	2040	1872	1703	1535	1366	1196	1026	0856	0686	0515	0343	0172	8
2539	2372	2205	2037	1869	1701	1532	1363	1193	1024	0853	0683	0512	0341	0169	7
2536	2369	2202	2034	1866	1698	1529	1360	1191	1021	0851	0680	0509	0338	0166	6
2533	2366	2199	2031	1863	1695	1526	1357	1188	1018	0848	0677	0506	0335	0163	5
2530	2363	2196	2029	1861	1692	1524	1354	1185	1015	0845	0674	0503	0332	0160	4
2527	2361	2193	2026	1858	1689	1521	1352	1182	1012	0842	0671	0500	0329	0157	3
2525	2358	2191	2023	1855	1687	1518	1349	1179	1009	0839	0669	0498	0326	0155	2
2522	2355	2188	2020	1852	1684	1515	1346	1176	1007	0836	0666	0495	0323	0152	1
2519	2352	2185	2017	1849	1681	1512	1343	1174	1004	0834	0663	0492	0321	0149	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	"

Sine Deg. 82

7 Deg. Tangent

"	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9. 119	9. 120	9 121	9. 122	9. 123	9. 124	9. 125	9. 126	9. 127	9. 128	9. 129	9. 130	9. 130	9. 131	9. 132
0	4291	4043	3773	3482	3171	2839	2486	2112	1718	1303	0868	0413	9937	9442	8926
1	4454	4205	3935	3644	3332	3000	2646	2272	1878	1463	1027	0572	0096	9600	9084
2	4616	4367	4097	3806	3494	3161	2807	2432	2038	1622	1187	0731	0254	9758	9242
3	4779	4530	4259	3967	3655	3321	2967	2593	2198	1782	1346	0889	0413	9916	9400
4	4942	4692	4421	4129	3816	3482	3128	2753	2357	1941	1505	1048	0572	0075	9558
5	5104	4854	4583	4291	3977	3643	3289	2913	2517	2101	1664	1207	0730	0233	9716
6	5267	5017	4745	4452	4139	3804	3449	3073	2677	2261	1823	1366	0889	0391	9873
7	5430	5179	4907	4614	4300	3965	3610	3234	2837	2420	1983	1525	1047	0549	0031
8	5592	5341	5069	4775	4461	4126	3770	3394	2997	2580	2142	1684	1206	0707	0189
9	5755	5503	5231	4937	4622	4287	3931	3554	3157	2739	2301	1843	1364	0866	0347
10	5918	5666	5393	5099	4784	4448	4091	3714	3317	2899	2460	2002	1523	1024	0505
11	6080	5828	5555	5260	4945	4609	4252	3875	3477	3058	2619	2160	1681	1182	0663
12	6243	5990	5717	5422	5106	4770	4413	4035	3636	3218	2779	2319	1840	1340	0821
13	6406	6153	5878	5583	5267	4931	4573	4195	3796	3377	2938	2478	1998	1498	0978
14	6568	6315	6040	5745	5429	5091	4734	4355	3956	3537	3097	2637	2157	1657	1136
15	6731	6477	6202	5907	5590	5252	4894	4515	4116	3696	3256	2796	2315	1815	1294
16	6894	6639	6364	6068	5751	5413	5055	4676	4276	3856	3415	2955	2474	1973	1452
17	7056	6802	6526	6230	5912	5574	5215	4836	4436	4015	3574	3113	2632	2131	1610
18	7219	6964	6688	6391	6073	5735	5376	4996	4596	4175	3734	3272	2791	2289	1768
19	7381	7126	6850	6553	6235	5896	5536	5156	4755	4334	3893	3431	2949	2447	1925
20	7544	7288	7012	6714	6396	6057	5697	5316	4915	4494	4052	3590	3108	2605	2083
21	7706	7451	7174	6876	6557	6217	5857	5476	5075	4653	4211	3749	3266	2764	2241
22	7869	7613	7336	7037	6718	6378	6018	5636	5235	4813	4370	3907	3425	2922	2399
23	8032	7775	7497	7199	6879	6539	6178	5797	5395	4972	4529	4066	3583	3080	2557
24	8194	7937	7659	7360	7041	6700	6339	5957	5554	5132	4688	4225	3741	3238	2714
25	8357	8099	7821	7522	7202	6861	6499	6117	5714	5291	4848	4384	3900	3396	2872
26	8519	8262	7983	7683	7363	7022	6660	6277	5874	5450	5007	4543	4058	3554	3030
27	8682	8424	8145	7845	7524	7182	6820	6437	6034	5610	5166	4701	4217	3712	3188
28	8844	8586	8307	8006	7685	7343	6980	6597	6193	5769	5325	4860	4375	3870	3345
29	9007	8748	8469	8168	7846	7504	7141	6757	6353	5929	5484	5019	4534	4028	3503
30	9169	8910	8630	8329	8007	7665	7301	6917	6513	6088	5643	5178	4692	4186	3661
31	9332	9073	8792	8491	8169	7826	7462	7078	6673	6248	5802	5336	4850	4345	3819
32	9494	9235	8954	8652	8330	7986	7622	7238	6832	6407	5961	5495	5009	4503	3976
33	9657	9397	9116	8814	8491	8147	7783	7398	6992	6566	6120	5654	5167	4661	4134
34	9819	9559	9278	8975	8652	8308	7943	7558	7152	6726	6279	5812	5326	4819	4292
35	9982	9721	9439	9137	8813	8469	8103	7718	7312	6885	6438	5971	5484	4977	4450
36	0144	9883	9601	9298	8974	8629	8264	7878	7471	7045	6597	6130	5642	5135	4607
37	0307	0045	9763	9459	9135	8790	8424	8038	7631	7204	6756	6289	5801	5293	4765
38	0469	0208	9925	9621	9296	8951	8585	8198	7791	7363	6915	6447	5959	5451	4923
39	0632	0370	0087	9782	9457	9112	8745	8358	7951	7523	7074	6606	6117	5609	5080
40	0794	0532	0248	9944	9618	9272	8905	8518	8110	7682	7233	6765	6276	5767	5238
41	0957	0694	0410	0105	9779	9433	9066	8678	8270	7841	7392	6923	6434	5925	5396
42	1119	0856	0572	0267	9941	9594	9226	8838	8430	8001	7552	7082	6593	6083	5553
43	1282	1018	0734	0428	0102	9754	9387	8998	8589	8160	7711	7241	6751	6241	5711
44	1444	1180	0895	0589	0263	9915	9547	9158	8749	8319	7870	7399	6909	6399	5869
45	1607	1342	1057	0751	0424	0076	9707	9318	8909	8479	8029	7558	7068	6557	6026
46	1769	1504	1219	0912	0585	0237	9868	9478	9068	8638	8187	7717	7226	6715	6184
47	1932	1667	1381	1074	0746	0397	0028	9638	9228	8797	8346	7875	7384	6873	6342
48	2094	1829	1542	1235	0907	0558	0188	9798	9388	8957	8505	8034	7542	7031	6499
49	2256	1991	1704	1396	1068	0719	0349	9958	9547	9116	8664	8193	7701	7189	6657
50	2419	2153	1866	1558	1229	0879	0509	0118	9707	9275	8823	8351	7859	7347	6815
51	2581	2315	2027	1719	1390	1040	0669	0278	9867	9435	8982	8510	8017	7505	6972
52	2744	2477	2189	1880	1551	1201	0830	0438	0026	9594	9141	8669	8176	7663	7130
53	2906	2639	2351	2042	1712	1361	0990	0598	0186	9753	9300	8827	8334	7821	7287
54	3068	2801	2512	2203	1873	1522	1150	0758	0345	9912	9459	8986	8492	7979	7445
55	3231	2963	2674	2364	2034	1683	1311	0918	0505	0072	9618	9144	8650	8137	7603
56	3393	3125	2836	2526	2195	1843	1471	1078	0665	0231	9777	9303	8809	8294	7760
57	3555	3287	2997	2687	2356	2004	1631	1238	0824	0390	9936	9462	8967	8452	7918
58	3718	3449	3159	2848	2517	2164	1791	1398	0984	0550	0095	9620	9125	8610	8075
59	3880	3611	3321	3010	2678	2325	1952	1558	1144	0709	0254	9779	9283	8768	8233
60	4043	3773	3482	3171	2839	2486	2112	1718	1303	0868	0413	9937	9442	8926	8391
"	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Tangent Deg. 82

7 Deg. Co-Tangent

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	"
10. 880	10. 879	10. 878	10. 877	10. 876	10. 875	10. 874	10. 873	10. 872	10. 871	10. 870	10. 869	10. 869	10. 868	10. 867	
5709	5957	6227	6518	6829	7161	7514	7888	8282	8697	9132	9587	0063	0558	1074	60
5546	5795	6065	6356	6668	7000	7354	7728	8122	8537	8973	9428	9904	0400	0916	59
5384	5633	5903	6194	6506	6839	7193	7568	7962	8378	8813	9269	9746	0242	0758	58
5221	5470	5741	6033	6345	6679	7033	7407	7802	8218	8654	9111	9587	0084	0600	57
5058	5308	5579	5871	6184	6518	6872	7247	7643	8059	8495	8952	9428	9925	0442	56
4896	5146	5417	5709	6023	6357	6711	7087	7483	7899	8336	8793	9270	9767	0284	55
4733	4983	5255	5548	5861	6196	6551	6927	7323	7739	8177	8634	9111	9609	0127	54
4570	4821	5093	5386	5700	6035	6390	6766	7163	7580	8017	8475	8953	9451	9969	53
4408	4659	4931	5225	5539	5874	6230	6606	7003	7420	7858	8316	8794	9293	9811	52
4245	4497	4769	5063	5378	5713	6069	6446	6843	7261	7699	8157	8636	9134	9653	51
4082	4334	4607	4901	5216	5552	5909	6286	6683	7101	7540	7998	8477	8976	9495	50
3920	4172	4445	4740	5055	5391	5748	6125	6523	6942	7381	7840	8319	8818	9337	49
3757	4010	4283	4578	4894	5230	5587	5965	6364	6782	7221	7681	8160	8660	9179	48
3594	3847	4122	4417	4733	5069	5427	5805	6204	6623	7062	7522	8002	8502	9022	47
3432	3685	3960	4255	4571	4909	5266	5645	6044	6463	6903	7363	7843	8343	8864	46
3269	3523	3798	4093	4410	4748	5106	5485	5884	6304	6744	7204	7685	8185	8706	45
3106	3361	3636	3932	4249	4587	4945	5324	5724	6144	6585	7045	7526	8027	8548	44
2944	3198	3474	3770	4088	4426	4785	5164	5564	5985	6426	6887	7368	7869	8390	43
2781	3036	3312	3609	3927	4265	4624	5004	5404	5825	6266	6728	7209	7711	8232	42
2619	2874	3150	3447	3765	4104	4464	4844	5245	5666	6107	6569	7051	7553	8075	41
2456	2712	2988	3286	3604	3943	4303	4684	5085	5506	5948	6410	6892	7395	7917	40
2294	2549	2826	3124	3443	3783	4143	4524	4925	5347	5789	6251	6734	7236	7759	39
2131	2387	2664	2963	3282	3622	3982	4364	4765	5187	5630	6093	6575	7078	7601	38
1968	2225	2503	2801	3121	3461	3822	4203	4605	5028	5471	5934	6417	6920	7443	37
1806	2063	2341	2640	2959	3300	3661	4043	4446	4868	5312	5775	6259	6762	7286	36
1643	1901	2179	2478	2798	3139	3501	3883	4286	4709	5152	5616	6100	6604	7128	35
1481	1738	2017	2317	2637	2978	3340	3723	4126	4550	4993	5457	5942	6446	6970	34
1318	1576	1855	2155	2476	2818	3180	3563	3966	4390	4834	5299	5783	6288	6812	33
1156	1414	1693	1994	2315	2657	3020	3403	3807	4231	4675	5140	5625	6130	6655	32
0993	1252	1531	1832	2154	2496	2859	3243	3647	4071	4516	4981	5466	5972	6497	31
0831	1090	1370	1671	1993	2335	2699	3083	3487	3912	4357	4822	5308	5814	6339	30
0668	0927	1208	1509	1831	2174	2538	2922	3327	3752	4198	4664	5150	5655	6181	29
0506	0765	1046	1348	1670	2014	2378	2762	3168	3593	4039	4505	4991	5497	6024	28
0343	0603	0884	1186	1509	1853	2217	2602	3008	3434	3880	4346	4833	5339	5866	27
0181	0441	0722	1025	1348	1692	2057	2442	2848	3274	3721	4188	4674	5181	5708	26
0018	0279	0561	0863	1187	1531	1897	2282	2688	3115	3562	4029	4516	5023	5550	25
9856	0117	0399	0702	1026	1371	1736	2122	2529	2955	3403	3870	4358	4865	5393	24
9693	9955	0237	0541	0865	1210	1576	1962	2369	2796	3244	3711	4199	4707	5235	23
9531	9792	0075	0379	0704	1049	1415	1802	2209	2637	3085	3553	4041	4549	5077	22
9368	9630	9913	0218	0543	0888	1255	1642	2049	2477	2926	3394	3883	4391	4920	21
9206	9468	9752	0056	0382	0728	1095	1482	1890	2318	2767	3235	3724	4233	4762	20
9043	9306	9590	9895	0221	0567	0934	1322	1730	2159	2608	3077	3566	4075	4604	19
8881	9144	9428	9733	0059	0406	0774	1162	1570	1999	2448	2918	3407	3917	4447	18
8718	8982	9266	9572	9898	0246	0613	1002	1411	1840	2289	2759	3249	3759	4289	17
8556	8820	9105	9411	9737	0085	0453	0842	1251	1681	2130	2601	3091	3601	4131	16
8393	8658	8943	9249	9576	9924	0293	0682	1091	1521	1971	2442	2932	3443	3974	15
8231	8496	8781	9088	9415	9763	0132	0522	0932	1362	1813	2283	2774	3285	3816	14
8068	8333	8619	8926	9254	9603	9972	0362	0772	1203	1654	2125	2616	3127	3658	13
7906	8171	8458	8765	9093	9442	9812	0202	0612	1043	1495	1966	2458	2969	3501	12
7744	8009	8296	8604	8932	9281	9651	0042	0453	0884	1336	1807	2299	2811	3343	11
7581	7847	8134	8442	8771	9121	9491	9882	0293	0725	1177	1649	2141	2653	3185	10
7419	7685	7973	8281	8610	8960	9331	9722	0133	0565	1018	1490	1983	2495	3028	9
7256	7523	7811	8120	8449	8799	9170	9562	9974	0406	0859	1331	1824	2337	2870	8
7094	7361	7649	7958	8288	8639	9010	9402	9814	0247	0700	1173	1666	2179	2713	7
6932	7199	7488	7797	8127	8478	8850	9242	9655	0088	0541	1014	1508	2021	2555	6
6769	7037	7326	7636	7966	8317	8689	9082	9495	9928	0382	0856	1350	1863	2397	5
6607	6875	7164	7474	7805	8157	8529	8922	9335	9769	0223	0697	1191	1706	2240	4
6445	6713	7003	7313	7644	7996	8369	8762	9176	9610	0064	0538	1033	1548	2082	3
6282	6551	6841	7152	7483	7836	8209	8602	9016	9450	9905	0380	0875	1390	1925	2
6120	6389	6679	6990	7322	7675	8048	8442	8856	9291	9746	0221	0717	1232	1767	1
5957	6227	6518	6829	7161	7514	7888	8282	8697	9132	9587	0063	0558	1074	1609	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	"

Tangent Deg. 82

7 Deg. Sine

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	9. 129	9. 130	9. 131	9. 132	9. 133	9. 134	9. 135	9. 136	9. 137	9. 138	9. 139	9. 139	9. 140	9. 141	9. 142
0	8539	7812	7064	6297	5509	4702	3875	3028	2161	1275	0370	9445	8501	7537	6555
1	8694	7966	7218	6451	5663	4855	4027	3180	2313	1427	0521	9596	8651	7688	6705
2	8849	8121	7373	6604	5816	5008	4180	3332	2465	1579	0672	9747	8802	7838	6855
3	9004	8275	7527	6758	5969	5161	4333	3485	2617	1730	0824	9898	8953	7988	7005
4	9158	8429	7681	6912	6123	5314	4485	3637	2769	1882	0975	0049	9104	8139	7155
5	9313	8584	7835	7065	6276	5467	4638	3790	2921	2034	1127	0200	9254	8289	7305
6	9468	8738	7989	7219	6429	5620	4791	3942	3073	2185	1278	0351	9405	8440	7455
7	9622	8892	8143	7373	6583	5773	4943	4094	3225	2337	1429	0502	9556	8590	7605
8	9777	9047	8297	7526	6736	5926	5096	4247	3377	2489	1581	0653	9707	8741	7756
9	9932	9201	8451	7680	6889	6079	5249	4399	3530	2641	1732	0804	9857	8891	7906
10	0086	9355	8605	7834	7043	6232	5402	4551	3682	2792	1883	0955	0008	9041	8056
11	0241	9510	8759	7987	7196	6385	5554	4704	3834	2944	2035	1106	0159	9192	8206
12	0396	9664	8913	8141	7349	6538	5707	4856	3986	3096	2186	1257	0309	9342	8356
13	0550	9818	9066	8295	7503	6691	5859	5008	4138	3247	2338	1408	0460	9493	8506
14	0705	9973	9220	8448	7656	6844	6012	5161	4290	3399	2489	1559	0611	9643	8656
15	0859	0127	9374	8602	7809	6997	6165	5313	4441	3551	2640	1710	0761	9793	8806
16	1014	0281	9528	8755	7963	7150	6317	5465	4593	3702	2792	1861	0912	9944	8956
17	1169	0436	9682	8909	8116	7303	6470	5618	4745	3854	2943	2012	1063	0094	9106
18	1323	0590	9836	9063	8269	7456	6623	5770	4897	4005	3094	2163	1214	0244	9256
19	1478	0744	9990	9216	8422	7609	6775	5922	5049	4157	3245	2314	1364	0395	9406
20	1633	0898	0144	9370	8576	7762	6928	6074	5201	4309	3397	2465	1515	0545	9556
21	1787	1053	0298	9523	8729	7915	7080	6227	5353	4460	3548	2616	1666	0695	9706
22	1942	1207	0452	9677	8882	8067	7233	6379	5505	4612	3699	2767	1816	0846	9856
23	2096	1361	0606	9831	9035	8220	7386	6531	5657	4764	3851	2918	1967	0996	0006
24	2251	1515	0760	9984	9189	8373	7538	6683	5809	4915	4002	3069	2117	1146	0156
25	2405	1670	0914	0138	9342	8526	7691	6836	5961	5067	4153	3220	2268	1297	0306
26	2560	1824	1068	0291	9495	8679	7843	6988	6113	5218	4305	3371	2419	1447	0456
27	2715	1978	1221	0445	9648	8832	7996	7140	6265	5370	4456	3522	2569	1597	0606
28	2869	2132	1375	0598	9802	8985	8149	7292	6417	5522	4607	3673	2720	1748	0756
29	3024	2287	1529	0752	9955	9138	8301	7445	6569	5673	4758	3824	2871	1898	0906
30	3178	2441	1683	0906	0108	9291	8454	7597	6721	5825	4910	3975	3021	2048	1056
31	3333	2595	1837	1059	0261	9444	8606	7749	6872	5976	5061	4126	3172	2199	1206
32	3487	2749	1991	1213	0414	9596	8759	7901	7024	6128	5212	4277	3322	2349	1356
33	3642	2903	2145	1366	0568	9749	8911	8054	7176	6279	5363	4428	3473	2499	1506
34	3796	3058	2299	1520	0721	9902	9064	8206	7328	6431	5515	4579	3624	2649	1656
35	3951	3212	2452	1673	0874	0055	9216	8358	7480	6583	5666	4730	3774	2800	1806
36	4105	3366	2606	1827	1027	0208	9369	8510	7632	6734	5817	4881	3925	2950	1956
37	4260	3520	2760	1980	1180	0361	9521	8662	7784	6886	5968	5031	4075	3100	2106
38	4414	3674	2914	2134	1334	0514	9674	8815	7936	7037	6119	5182	4226	3250	2256
39	4569	3828	3068	2287	1487	0666	9826	8967	8087	7189	6271	5333	4377	3401	2406
40	4723	3983	3222	2441	1640	0819	9979	9119	8239	7340	6422	5484	4527	3551	2556
41	4878	4137	3375	2594	1793	0972	0131	9271	8391	7492	6573	5635	4678	3701	2706
42	5032	4291	3529	2748	1946	1125	0284	9423	8543	7643	6724	5786	4828	3851	2856
43	5187	4445	3683	2901	2099	1278	0436	9575	8695	7795	6875	5937	4979	4002	3005
44	5341	4599	3837	3055	2252	1430	0589	9727	8847	7946	7027	6088	5129	4152	3155
45	5496	4753	3991	3208	2406	1583	0741	9880	8998	8098	7178	6238	5280	4302	3305
46	5650	4907	4144	3361	2559	1736	0894	0032	9150	8249	7329	6389	5430	4452	3455
47	5805	5061	4298	3515	2712	1889	1046	0184	9302	8401	7480	6540	5581	4602	3605
48	5959	5216	4452	3668	2865	2042	1199	0336	9454	8552	7631	6691	5731	4753	3755
49	6114	5370	4606	3822	3018	2194	1351	0488	9606	8704	7782	6842	5882	4903	3905
50	6268	5524	4759	3975	3171	2347	1504	0640	9757	8855	7934	6993	6032	5053	4055
51	6422	5678	4913	4129	3324	2500	1656	0792	9909	9007	8085	7143	6183	5203	4204
52	6577	5832	5067	4282	3477	2653	1808	0945	0061	9158	8236	7294	6333	5353	4354
53	6731	5986	5221	4436	3630	2805	1961	1097	0213	9310	8387	7445	6484	5504	4504
54	6886	6140	5374	4589	3783	2958	2113	1249	0365	9461	8538	7596	6634	5654	4654
55	7040	6294	5528	4742	3937	3111	2266	1401	0516	9612	8689	7747	6785	5804	4804
56	7194	6448	5682	4896	4090	3264	2418	1553	0668	9764	8840	7897	6935	5954	4954
57	7349	6602	5836	5049	4243	3416	2571	1705	0820	9915	8991	8048	7086	6104	5104
58	7503	6756	5989	5203	4396	3569	2723	1857	0972	0067	9143	8199	7236	6254	5253
59	7658	6910	6143	5356	4549	3722	2875	2009	1123	0218	9294	8350	7387	6404	5403
60	7812	7064	6297	5509	4702	3875	3028	2161	1275	0370	9445	8501	7537	6555	5553
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

7 Deg. Co-Sine

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	″
9. 996	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	
0149	9977	9804	9631	9458	9284	9111	8936	8761	8586	8411	8235	8059	7882	7705	60
0146	9974	9801	9628	9455	9282	9108	8933	8758	8583	8408	8232	8056	7879	7702	59
0143	9971	9798	9626	9452	9279	9105	8930	8756	8580	8405	8229	8053	7876	7699	58
0140	9968	9796	9623	9449	9276	9102	8927	8753	8578	8402	8226	8050	7873	7696	57
0137	9965	9793	9620	9447	9273	9099	8925	8750	8575	8399	8223	8047	7870	7693	56
0134	9962	9790	9617	9444	9270	9096	8922	8747	8572	8396	8220	8044	7867	7690	55
0132	9959	9787	9614	9441	9267	9093	8919	8744	8569	8393	8217	8041	7864	7687	54
0129	9957	9784	9611	9438	9264	9090	8916	8741	8566	8390	8214	8038	7861	7684	53
0126	9954	9781	9608	9435	9261	9087	8913	8738	8563	8387	8211	8035	7859	7681	52
0123	9951	9778	9605	9432	9258	9084	8910	8735	8560	8384	8209	8032	7856	7679	51
0120	9948	9775	9602	9429	9256	9081	8907	8732	8557	8382	8206	8029	7853	7676	50
0117	9945	9773	9600	9426	9253	9079	8904	8729	8554	8379	8203	8026	7850	7673	49
0114	9942	9770	9597	9423	9250	9076	8901	8726	8551	8376	8200	8023	7847	7670	48
0112	9939	9767	9594	9421	9247	9073	8898	8723	8548	8373	8197	8020	7844	7667	47
0109	9936	9764	9591	9418	9244	9070	8895	8721	8545	8370	8194	8018	7841	7664	46
0106	9934	9761	9588	9415	9241	9067	8892	8718	8542	8367	8191	8015	7838	7661	45
0103	9931	9758	9585	9412	9238	9064	8890	8715	8540	8364	8188	8012	7835	7658	44
0100	9928	9755	9582	9409	9235	9061	8887	8712	8537	8361	8185	8009	7832	7655	43
0097	9925	9752	9579	9406	9232	9058	8884	8709	8534	8358	8182	8006	7829	7652	42
0094	9922	9750	9577	9403	9229	9055	8881	8706	8531	8355	8179	8003	7826	7649	41
0091	9919	9747	9574	9400	9227	9052	8878	8703	8528	8352	8176	8000	7823	7646	40
0089	9916	9744	9571	9397	9224	9050	8875	8700	8525	8349	8173	7997	7820	7643	39
0086	9913	9741	9568	9394	9221	9047	8872	8697	8522	8346	8170	7994	7817	7640	38
0083	9911	9738	9565	9392	9218	9044	8869	8694	8519	8343	8167	7991	7814	7637	37
0080	9908	9735	9562	9389	9215	9041	8866	8691	8516	8341	8164	7988	7811	7634	36
0077	9905	9732	9559	9386	9212	9038	8863	8688	8513	8338	8162	7985	7808	7631	35
0074	9902	9729	9556	9383	9209	9035	8860	8686	8510	8335	8159	7982	7805	7628	34
0071	9899	9726	9553	9380	9206	9032	8858	8683	8507	8332	8156	7979	7803	7625	33
0069	9896	9724	9551	9377	9203	9029	8855	8680	8504	8329	8153	7976	7800	7622	32
0066	9893	9721	9548	9374	9200	9026	8852	8677	8502	8326	8150	7973	7797	7619	31
0063	9891	9718	9545	9371	9198	9023	8849	8674	8499	8323	8147	7970	7794	7616	30
0060	9888	9715	9542	9368	9195	9020	8846	8671	8496	8320	8144	7968	7791	7614	29
0057	9885	9712	9539	9366	9192	9018	8843	8668	8493	8317	8141	7965	7788	7611	28
0054	9882	9709	9536	9363	9189	9015	8840	8665	8490	8314	8138	7962	7785	7608	27
0051	9879	9706	9533	9360	9186	9012	8837	8662	8487	8311	8135	7959	7782	7605	26
0048	9876	9703	9530	9357	9183	9009	8834	8659	8484	8308	8132	7956	7779	7602	25
0046	9873	9701	9527	9354	9180	9006	8831	8656	8481	8305	8129	7953	7776	7599	24
0043	9870	9698	9525	9351	9177	9003	8828	8653	8478	8302	8126	7950	7773	7596	23
0040	9867	9695	9522	9348	9174	9000	8826	8651	8475	8299	8123	7947	7770	7593	22
0037	9865	9692	9519	9345	9171	8997	8823	8648	8472	8297	8120	7944	7767	7590	21
0034	9862	9689	9516	9342	9169	8994	8820	8645	8469	8294	8117	7941	7764	7587	20
0031	9859	9686	9513	9340	9166	8991	8817	8642	8466	8291	8115	7938	7761	7584	19
0028	9856	9683	9510	9337	9163	8988	8814	8639	8463	8288	8112	7935	7758	7581	18
0026	9853	9680	9507	9334	9160	8986	8811	8636	8461	8285	8109	7932	7755	7578	17
0023	9850	9677	9504	9331	9157	8983	8808	8633	8458	8282	8106	7929	7752	7575	16
0020	9847	9675	9501	9328	9154	8980	8805	8630	8455	8279	8103	7926	7749	7572	15
0017	9844	9672	9499	9325	9151	8977	8802	8627	8452	8276	8100	7923	7746	7569	14
0014	9842	9669	9496	9322	9148	8974	8799	8624	8449	8273	8097	7920	7743	7566	13
0011	9839	9666	9493	9319	9145	8971	8796	8621	8446	8270	8094	7917	7741	7563	12
0008	9836	9663	9490	9316	9142	8968	8793	8618	8443	8267	8091	7915	7738	7560	11
0005	9833	9660	9487	9313	9140	8965	8791	8616	8440	8264	8088	7912	7735	7557	10
0003	9830	9657	9484	9311	9137	8962	8788	8613	8437	8261	8085	7909	7732	7554	9
0000	9827	9654	9481	9308	9134	8959	8785	8610	8434	8258	8082	7906	7729	7551	8
9997	9824	9652	9478	9305	9131	8957	8782	8607	8431	8255	8079	7903	7726	7548	7
9994	9821	9649	9475	9302	9128	8954	8779	8604	8428	8253	8076	7900	7723	7546	6
9991	9819	9646	9473	9299	9125	8951	8776	8601	8425	8250	8073	7897	7720	7543	5
9988	9816	9643	9470	9296	9122	8948	8773	8598	8423	8247	8070	7894	7717	7540	4
9985	9813	9640	9467	9293	9119	8945	8770	8595	8420	8244	8068	7891	7714	7537	3
9982	9810	9637	9464	9290	9116	8942	8767	8592	8417	8241	8065	7888	7711	7534	2
9980	9807	9634	9461	9287	9113	8939	8764	8589	8414	8238	8062	7885	7708	7531	1
9977	9804	9631	9458	9284	9111	8936	8761	8586	8411	8235	8059	7882	7705	7528	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Co-Sine Deg. 82

Sine Deg. 82

7 Deg. Tangent — 7 Deg. Co-Tangent

″	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9. 133	9. 134	9. 135	9. 136	9. 137	9. 138	9. 139	9. 140	9. 141	9. 142	9. 143	9. 144	9. 145	9. 145	9. 146
0	8391	7835	7260	6665	6051	5417	4764	4092	3400	2689	1959	1210	0442	9655	8849
1	8548	7993	7417	6822	6207	5573	4920	4247	3555	2843	2113	1364	0596	9808	9003
2	8706	8150	7574	6979	6364	5729	5075	4402	3710	2998	2267	1518	0749	9962	9156
3	8863	8307	7731	7135	6520	5885	5231	4557	3865	3153	2422	1672	0903	0115	9309
4	9021	8464	7888	7292	6676	6041	5387	4713	4020	3307	2576	1826	1057	0269	9462
5	9178	8621	8045	7448	6832	6197	5542	4868	4175	3462	2730	1980	1210	0422	9615
6	9336	8779	8202	7605	6989	6353	5698	5023	4330	3617	2885	2134	1364	0575	9768
7	9494	8936	8359	7761	7145	6509	5853	5179	4484	3771	3039	2288	1518	0729	9921
8	9651	9093	8515	7918	7301	6665	6009	5334	4639	3926	3193	2442	1671	0882	0074
9	9809	9250	8672	8075	7457	6821	6164	5489	4794	4081	3348	2596	1825	1035	0227
10	9966	9408	8829	8231	7614	6976	6320	5644	4949	4235	3502	2750	1979	1189	0380
11	0124	9565	8986	8388	7770	7132	6476	5800	5104	4390	3656	2904	2132	1342	0533
12	0281	9722	9143	8544	7926	7288	6631	5955	5259	4544	3811	3058	2286	1495	0686
13	0439	9879	9300	8701	8082	7444	6787	6110	5414	4699	3965	3212	2440	1649	0839
14	0596	0036	9457	8857	8238	7600	6942	6265	5569	4854	4119	3366	2593	1802	0992
15	0754	0193	9613	9014	8395	7756	7098	6420	5724	5008	4273	3520	2747	1955	1145
16	0911	0351	9770	9170	8551	7912	7253	6576	5879	5163	4428	3673	2901	2109	1298
17	1069	0508	9927	9327	8707	8068	7409	6731	6034	5317	4582	3827	3054	2262	1451
18	1226	0665	0084	9483	8863	8223	7564	6886	6188	5472	4736	3981	3208	2415	1604
19	1384	0822	0241	9640	9019	8379	7720	7041	6343	5626	4890	4135	3361	2569	1757
20	1541	0979	0397	9796	9175	8535	7875	7196	6498	5781	5045	4289	3515	2722	1910
21	1699	1136	0554	9953	9332	8691	8031	7352	6653	5935	5199	4443	3669	2875	2063
22	1856	1293	0711	0109	9488	8847	8186	7507	6808	6090	5353	4597	3822	3029	2216
23	2013	1451	0868	0266	9644	9003	8342	7662	6963	6245	5507	4751	3976	3182	2369
24	2171	1608	1025	0422	9800	9158	8497	7817	7118	6399	5661	4905	4129	3335	2522
25	2328	1765	1181	0579	9956	9314	8653	7972	7273	6554	5816	5059	4283	3488	2675
26	2486	1922	1338	0735	0112	9470	8808	8127	7427	6708	5970	5213	4437	3642	2828
27	2643	2079	1495	0891	0268	9626	8964	8283	7582	6863	6124	5367	4590	3795	2981
28	2801	2236	1652	1048	0424	9782	9119	8438	7737	7017	6278	5520	4744	3948	3134
29	2958	2393	1809	1204	0581	9937	9275	8593	7892	7172	6432	5674	4897	4101	3287
30	3115	2550	1965	1361	0737	0093	9430	8748	8047	7326	6587	5828	5051	4255	3440
31	3273	2707	2122	1517	0893	0249	9586	8903	8202	7481	6741	5982	5204	4408	3593
32	3430	2864	2279	1674	1049	0405	9741	9058	8356	7635	6895	6136	5358	4561	3746
33	3588	3021	2436	1830	1205	0560	9897	9213	8511	7790	7049	6290	5511	4714	3898
34	3745	3179	2592	1986	1361	0716	0052	9369	8666	7944	7203	6444	5665	4868	4051
35	3902	3336	2749	2143	1517	0872	0207	9524	8821	8099	7357	6597	5818	5021	4204
36	4060	3493	2906	2299	1673	1028	0363	9679	8975	8253	7512	6751	5972	5174	4357
37	4217	3650	3062	2456	1829	1183	0518	9834	9130	8408	7666	6905	6126	5327	4510
38	4375	3807	3219	2612	1985	1339	0674	9989	9285	8562	7820	7059	6279	5480	4663
39	4532	3964	3376	2768	2141	1495	0829	0144	9440	8716	7974	7213	6433	5634	4816
40	4689	4121	3533	2925	2297	1651	0985	0299	9595	8871	8128	7367	6586	5787	4969
41	4847	4278	3689	3081	2453	1806	1140	0454	9749	9025	8282	7520	6740	5940	5122
42	5004	4435	3846	3238	2610	1962	1295	0609	9904	9180	8436	7674	6893	6093	5275
43	5161	4592	4003	3394	2766	2118	1451	0764	0059	9334	8591	7828	7047	6246	5427
44	5319	4749	4159	3550	2922	2274	1606	0919	0214	9489	8745	7982	7200	6399	5580
45	5476	4906	4316	3707	3078	2429	1762	1075	0368	9643	8899	8136	7353	6553	5733
46	5633	5063	4473	3863	3234	2585	1917	1230	0523	9797	9053	8289	7507	6706	5886
47	5791	5220	4629	4019	3390	2741	2072	1385	0678	9952	9207	8443	7660	6859	6039
48	5948	5377	4786	4176	3546	2896	2228	1540	0833	0106	9361	8597	7814	7012	6192
49	6105	5534	4943	4332	3702	3052	2383	1695	0987	0261	9515	8751	7967	7165	6344
50	6263	5691	5099	4488	3858	3208	2538	1850	1142	0415	9669	8904	8121	7318	6497
51	6420	5848	5256	4645	4014	3363	2694	2005	1297	0570	9823	9058	8274	7472	6650
52	6577	6005	5413	4801	4170	3519	2849	2160	1451	0724	9977	9212	8428	7625	6803
53	6734	6162	5569	4957	4326	3675	3004	2315	1606	0878	0131	9366	8581	7778	6956
54	6892	6319	5726	5113	4482	3830	3160	2470	1761	1033	0286	9519	8735	7931	7109
55	7049	6476	5882	5270	4638	3986	3315	2625	1915	1187	0440	9673	8888	8084	7261
56	7206	6633	6039	5426	4794	4142	3470	2780	2070	1341	0594	9827	9041	8237	7414
57	7364	6789	6196	5582	4949	4297	3626	2935	2225	1496	0748	9981	9195	8390	7567
58	7521	6946	6352	5739	5105	4453	3781	3090	2379	1650	0902	0134	9348	8543	7720
59	7678	7103	6509	5895	5261	4608	3936	3245	2534	1804	1056	0288	9502	8696	7873
60	7835	7260	6665	6051	5417	4764	4092	3400	2689	1959	1210	0442	9655	8849	8025
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	″
10. 866	10. 865	10. 864	10. 863	10. 862	10. 861	10. 860	10. 859	10. 858	10. 857	10. 856	10. 855	10. 854	10. 854	10. 853	
1609	2165	2740	3335	3949	4583	5236	5908	6600	7311	8041	8790	9558	0345	1151	60
1452	2007	2583	3178	3793	4427	5080	5753	6445	7157	7887	8636	9404	0192	0997	59
1294	1850	2426	3021	3636	4271	4925	5598	6290	7002	7733	8482	9251	0038	0844	58
1137	1693	2269	2865	3480	4115	4769	5443	6135	6847	7578	8328	9097	9885	0691	57
0979	1536	2112	2708	3324	3959	4613	5287	5980	6693	7424	8174	8943	9731	0538	56
0822	1379	1955	2552	3168	3803	4458	5132	5825	6538	7270	8020	8790	9578	0385	55
0664	1221	1798	2395	3011	3647	4302	4977	5670	6383	7115	7866	8636	9425	0232	54
0506	1064	1641	2239	2855	3491	4147	4821	5516	6229	6961	7712	8482	9271	0079	53
0349	0907	1485	2082	2699	3335	3991	4666	5361	6074	6807	7558	8329	9118	9926	52
0191	0759	1328	1925	2543	3179	3836	4511	5206	5919	6652	7404	8175	8965	9773	51
0034	0592	1171	1769	2386	3024	3680	4356	5051	5765	6498	7250	8021	8811	9620	50
9876	0435	1014	1612	2230	2868	3524	4200	4896	5610	6344	7096	7868	8658	9467	49
9719	0278	0857	1456	2074	2712	3369	4045	4741	5456	6189	6942	7714	8505	9314	48
9561	0121	0700	1299	1918	2556	3213	3890	4586	5301	6035	6788	7560	8351	9161	47
9404	9964	0543	1143	1762	2400	3058	3735	4431	5146	5881	6634	7407	8198	9008	46
9246	9807	0387	0986	1605	2244	2902	3580	4276	4992	5727	6480	7253	8045	8855	45
9089	9649	0230	0830	1449	2088	2747	3424	4121	4837	5572	6327	7099	7891	8702	44
8931	9492	0073	0673	1293	1932	2591	3269	3966	4683	5418	6173	6946	7738	8549	43
8774	9335	9916	0517	1137	1777	2436	3114	3812	4528	5264	6019	6792	7585	8396	42
8616	9178	9759	0360	0981	1621	2280	2959	3657	4374	5110	5865	6639	7431	8243	41
8459	9021	9603	0204	0825	1465	2125	2804	3502	4219	4955	5711	6485	7278	8090	40
8301	8864	9446	0047	0668	1309	1969	2648	3347	4065	4801	5557	6331	7125	7937	39
8144	8707	9289	9891	0512	1153	1814	2493	3192	3910	4647	5403	6178	6971	7784	38
7987	8549	9132	9734	0356	0997	1658	2338	3037	3755	4493	5249	6024	6818	7631	37
7829	8392	8975	9578	0200	0842	1503	2183	2882	3601	4339	5095	5871	6665	7478	36
7672	8235	8819	9421	0044	0686	1347	2028	2727	3446	4184	4941	5717	6512	7325	35
7514	8078	8662	9265	9888	0530	1192	1873	2573	3292	4030	4787	5563	6358	7172	34
7357	7921	8505	9109	9732	0374	1036	1717	2418	3137	3876	4633	5410	6205	7019	33
7199	7764	8348	8952	9576	0218	0881	1562	2263	2983	3722	4480	5256	6052	6866	32
7042	7607	8191	8796	9419	0063	0725	1407	2108	2828	3568	4326	5103	5899	6713	31
6885	7450	8035	8639	9263	9907	0570	1252	1953	2674	3413	4172	4949	5745	6560	30
6727	7293	7878	8483	9107	9751	0414	1097	1798	2519	3259	4018	4796	5592	6407	29
6570	7136	7721	8326	8951	9595	0259	0942	1644	2365	3105	3864	4642	5439	6254	28
6412	6979	7564	8170	8795	9440	0103	0787	1489	2210	2951	3710	4489	5286	6102	27
6255	6821	7408	8014	8639	9284	9948	0631	1334	2056	2797	3556	4335	5132	5949	26
6098	6664	7251	7857	8483	9128	9793	0476	1179	1901	2643	3403	4182	4979	5796	25
5940	6507	7094	7701	8327	8972	9637	0321	1025	1747	2488	3249	4028	4826	5643	24
5783	6350	6938	7544	8171	8817	9482	0166	0870	1592	2334	3095	3874	4673	5490	23
5625	6193	6781	7388	8015	8661	9326	0011	0715	1438	2180	2941	3721	4520	5337	22
5468	6036	6624	7232	7859	8505	9171	9856	0560	1284	2026	2787	3567	4366	5184	21
5311	5879	6467	7075	7703	8349	9015	9701	0405	1129	1872	2633	3414	4213	5031	20
5153	5722	6311	6919	7547	8194	8860	9546	0251	0975	1718	2480	3260	4060	4878	19
4996	5565	6154	6762	7390	8038	8705	9391	0096	0820	1564	2326	3107	3907	4725	18
4839	5408	5997	6606	7234	7882	8549	9236	9941	0666	1409	2172	2953	3754	4573	17
4681	5251	5841	6450	7078	7726	8394	9081	9786	0511	1255	2018	2800	3601	4420	16
4524	5094	5684	6293	6922	7571	8238	8925	9632	0357	1101	1864	2647	3447	4267	15
4367	4937	5527	6137	6766	7415	8083	8770	9477	0203	0947	1711	2493	3294	4114	14
4209	4780	5371	5981	6610	7259	7928	8615	9322	0048	0793	1557	2340	3141	3961	13
4052	4623	5214	5824	6454	7104	7772	8460	9167	9894	0639	1403	2186	2988	3808	12
3895	4466	5057	5668	6298	6948	7617	8305	9013	9739	0485	1249	2033	2835	3656	11
3737	4309	4901	5512	6142	6792	7462	8150	8858	9585	0331	1096	1879	2682	3503	10
3580	4152	4744	5355	5986	6637	7306	7995	8703	9430	0177	0942	1726	2528	3350	9
3423	3995	4587	5199	5830	6481	7151	7840	8549	9276	0023	0788	1572	2375	3197	8
3266	3838	4431	5043	5674	6325	6996	7685	8394	9122	9869	0634	1419	2222	3044	7
3108	3681	4274	4887	5518	6170	6840	7530	8239	8967	9714	0481	1265	2069	2891	6
2951	3524	4118	4730	5362	6014	6685	7375	8085	8813	9560	0327	1112	1916	2739	5
2794	3367	3961	4574	5206	5858	6530	7220	7930	8659	9406	0173	0959	1763	2586	4
2636	3211	3804	4418	5051	5703	6374	7065	7775	8504	9252	0019	0805	1610	2433	3
2479	3054	3648	4261	4895	5547	6219	6910	7621	8350	9098	9866	0652	1457	2280	2
2322	2897	3491	4105	4739	5392	6064	6755	7466	8196	8944	9712	0498	1304	2127	1
2165	2740	3335	3949	4583	5236	5908	6600	7311	8041	8790	9558	0345	1151	1975	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Co-Tangent Deg. 82 — Tangent Deg. 82

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9. 143	9. 144	9. 145	9. 146	9. 147	9. 148	9. 148	9. 149	9. 150	9. 151	9. 152	9. 153	9. 154	9. 155	9. 155
0	5553	4532	3493	2435	1358	0262	9148	8015	6864	5694	4507	3301	2076	0834	9574
1	5703	4682	3642	2584	1506	0410	9296	8163	7011	5841	4653	3447	2222	0980	9719
2	5853	4831	3791	2733	1655	0559	9444	8310	7159	5988	4800	3593	2369	1126	9865
3	6002	4981	3941	2881	1803	0707	9592	8458	7306	6135	4947	3740	2515	1272	0010
4	6152	5130	4090	3030	1952	0855	9740	8606	7453	6282	5093	3886	2661	1417	0156
5	6302	5280	4239	3179	2101	1003	9888	8753	7601	6429	5240	4033	2807	1563	0301
6	6452	5429	4388	3328	2249	1152	0035	8901	7748	6576	5387	4179	2953	1709	0447
7	6602	5579	4537	3477	2398	1300	0183	9048	7895	6723	5533	4325	3099	1855	0592
8	6751	5728	4686	3626	2546	1448	0331	9196	8042	6870	5680	4472	3245	2000	0738
9	6901	5878	4836	3774	2695	1596	0479	9344	8190	7017	5827	4618	3391	2146	0883
10	7051	6027	4985	3923	2843	1744	0627	9491	8337	7164	5974	4764	3537	2292	1029
11	7201	6177	5134	4072	2992	1893	0775	9639	8484	7311	6120	4911	3683	2438	1174
12	7350	6326	5283	4221	3140	2041	0923	9786	8632	7458	6267	5057	3829	2583	1320
13	7500	6476	5432	4370	3289	2189	1071	9934	8779	7605	6413	5203	3975	2729	1465
14	7650	6625	5581	4519	3437	2337	1219	0082	8926	7752	6560	5350	4121	2875	1611
15	7800	6774	5730	4667	3586	2485	1366	0229	9073	7899	6707	5496	4267	3021	1756
16	7949	6924	5879	4816	3734	2633	1514	0377	9221	8046	6853	5643	4414	3166	1901
17	8099	7073	6028	4965	3883	2782	1662	0524	9368	8193	7000	5789	4560	3312	2047
18	8249	7223	6178	5114	4031	2930	1810	0672	9515	8340	7147	5935	4706	3458	2192
19	8399	7372	6327	5262	4180	3078	1958	0819	9662	8487	7293	6082	4852	3604	2338
20	8548	7521	6476	5411	4328	3226	2106	0967	9809	8634	7440	6228	4998	3749	2483
21	8698	7671	6625	5560	4476	3374	2254	1114	9957	8781	7587	6374	5144	3895	2629
22	8848	7820	6774	5709	4625	3522	2401	1262	0104	8928	7733	6520	5290	4041	2774
23	8997	7970	6923	5857	4773	3671	2549	1409	0251	9075	7880	6667	5436	4186	2919
24	9147	8119	7072	6006	4922	3819	2697	1557	0398	9221	8026	6813	5582	4332	3065
25	9297	8268	7221	6155	5070	3967	2845	1704	0546	9368	8173	6959	5728	4478	3210
26	9446	8418	7370	6304	5219	4115	2993	1852	0693	9515	8320	7106	5874	4624	3356
27	9596	8567	7519	6452	5367	4263	3140	1999	0840	9662	8466	7252	6020	4769	3501
28	9746	8716	7668	6601	5515	4411	3288	2147	0987	9809	8613	7398	6166	4915	3646
29	9895	8866	7817	6750	5664	4559	3436	2294	1134	9956	8759	7544	6312	5061	3792
30	0045	9015	7966	6899	5812	4707	3584	2442	1281	0103	8906	7691	6457	5206	3937
31	0195	9164	8115	7047	5961	4855	3732	2589	1429	0250	9052	7837	6603	5352	4082
32	0344	9314	8264	7196	6109	5004	3879	2737	1576	0397	9199	7983	6749	5498	4228
33	0494	9463	8413	7345	6257	5152	4027	2884	1723	0543	9346	8129	6895	5643	4373
34	0644	9612	8562	7493	6406	5300	4175	3032	1870	0690	9492	8276	7041	5789	4518
35	0793	9762	8711	7642	6554	5448	4323	3179	2017	0837	9639	8422	7187	5934	4664
36	0943	9911	8860	7791	6703	5596	4470	3327	2164	0984	9785	8568	7333	6080	4809
37	1093	0060	9009	7940	6851	5744	4618	3474	2312	1131	9932	8714	7479	6226	4954
38	1242	0210	9158	8088	6999	5892	4766	3622	2459	1278	0078	8861	7625	6371	5100
39	1392	0359	9307	8237	7148	6040	4914	3769	2606	1424	0225	9007	7771	6517	5245
40	1541	0508	9456	8386	7296	6188	5061	3916	2753	1571	0371	9153	7917	6663	5390
41	1691	0658	9605	8534	7444	6336	5209	4064	2900	1718	0518	9299	8063	6808	5536
42	1841	0807	9754	8683	7593	6484	5357	4211	3047	1865	0664	9446	8209	6954	5681
43	1990	0956	9903	8832	7741	6632	5505	4359	3194	2012	0811	9592	8355	7099	5826
44	2140	1105	0052	8980	7889	6780	5652	4506	3341	2158	0957	9738	8500	7245	5972
45	2289	1255	0201	9129	8038	6928	5800	4653	3489	2305	1104	9884	8646	7391	6117
46	2439	1404	0350	9277	8186	7076	5948	4801	3636	2452	1250	0030	8792	7536	6262
47	2589	1553	0499	9426	8334	7224	6095	4948	3783	2599	1397	0176	8938	7682	6407
48	2738	1702	0648	9575	8483	7372	6243	5096	3930	2746	1543	0323	9084	7827	6553
49	2888	1852	0797	9723	8631	7520	6391	5243	4077	2892	1690	0469	9230	7973	6698
50	3037	2001	0946	9872	8779	7668	6539	5390	4224	3039	1836	0615	9376	8118	6843
51	3187	2150	1095	0021	8928	7816	6686	5538	4371	3186	1983	0761	9522	8264	6989
52	3336	2299	1244	0169	9076	7964	6834	5685	4518	3333	2129	0907	9667	8410	7134
53	3486	2449	1393	0318	9224	8112	6982	5833	4665	3479	2276	1053	9813	8555	7279
54	3635	2598	1541	0466	9373	8260	7129	5980	4812	3626	2422	1200	9959	8701	7424
55	3785	2747	1690	0615	9521	8408	7277	6127	4959	3773	2568	1346	0105	8846	7570
56	3934	2896	1839	0764	9669	8556	7425	6275	5106	3920	2715	1492	0251	8992	7715
57	4084	3045	1988	0912	9817	8704	7572	6422	5253	4066	2861	1638	0397	9137	7860
58	4233	3195	2137	1061	9966	8852	7720	6569	5400	4213	3008	1784	0542	9283	8005
59	4383	3344	2286	1209	0114	9000	7868	6717	5547	4360	3154	1930	0688	9428	8151
60	4532	3493	2435	1358	0262	9148	8015	6864	5694	4507	3301	2076	0834	9574	8296
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	″
	7528	7350	7172	6993	6815	6635	6456	6276	6095	5915	5734	5552	5370	5188	5005	60
	7525	7347	7169	6990	6812	6632	6453	6273	6092	5912	5731	5549	5367	5185	5002	59
	7522	7344	7166	6987	6809	6629	6450	6270	6089	5909	5728	5546	5364	5182	4999	58
	7519	7341	7163	6984	6806	6626	6447	6267	6086	5906	5724	5543	5361	5179	4996	57
	7516	7338	7160	6982	6803	6623	6444	6264	6083	5903	5721	5540	5358	5176	4993	56
	7513	7335	7157	6979	6800	6620	6441	6261	6080	5900	5718	5537	5355	5173	4990	55
	7510	7332	7154	6976	6797	6617	6438	6258	6077	5897	5715	5534	5352	5170	4987	54
	7507	7329	7151	6973	6794	6614	6435	6255	6074	5894	5712	5531	5349	5167	4984	53
	7504	7326	7148	6970	6791	6611	6432	6252	6071	5891	5709	5528	5346	5164	4981	52
	7501	7323	7145	6967	6788	6608	6429	6249	6068	5888	5706	5525	5343	5161	4978	51
	7498	7320	7142	6964	6785	6605	6426	6246	6065	5884	5703	5522	5340	5158	4975	50
	7495	7317	7139	6961	6782	6602	6423	6243	6062	5881	5700	5519	5337	5155	4972	49
	7492	7314	7136	6958	6779	6599	6420	6240	6059	5878	5697	5516	5334	5151	4969	48
	7489	7311	7133	6955	6776	6596	6417	6237	6056	5875	5694	5513	5331	5148	4966	47
	7486	7308	7130	6952	6773	6593	6414	6234	6053	5872	5691	5510	5328	5145	4963	46
	7483	7306	7127	6949	6770	6590	6411	6231	6050	5869	5688	5507	5325	5142	4960	45
	7480	7303	7124	6946	6767	6587	6408	6228	6047	5866	5685	5504	5322	5139	4957	44
	7477	7300	7121	6943	6764	6584	6405	6225	6044	5863	5682	5501	5319	5136	4954	43
	7474	7297	7118	6940	6761	6581	6402	6222	6041	5860	5679	5498	5316	5133	4951	42
	7472	7294	7115	6937	6758	6578	6399	6219	6038	5857	5676	5495	5313	5130	4947	41
	7469	7291	7112	6934	6755	6576	6396	6216	6035	5854	5673	5491	5309	5127	4944	40
	7466	7288	7109	6931	6752	6573	6393	6213	6032	5851	5670	5488	5306	5124	4941	39
	7463	7285	7107	6928	6749	6570	6390	6210	6029	5848	5667	5485	5303	5121	4938	38
	7460	7282	7104	6925	6746	6567	6387	6207	6026	5845	5664	5482	5300	5118	4935	37
	7457	7279	7101	6922	6743	6564	6384	6204	6023	5842	5661	5479	5297	5115	4932	36
	7454	7276	7098	6919	6740	6561	6381	6201	6020	5839	5658	5476	5294	5112	4929	35
	7451	7273	7095	6916	6737	6558	6378	6198	6017	5836	5655	5473	5291	5109	4926	34
	7448	7270	7092	6913	6734	6555	6375	6195	6014	5833	5652	5470	5288	5106	4923	33
	7445	7267	7089	6910	6731	6552	6372	6192	6011	5830	5649	5467	5285	5103	4920	32
	7442	7264	7086	6907	6728	6549	6369	6189	6008	5827	5646	5464	5282	5100	4917	31
	7439	7261	7083	6904	6725	6546	6366	6186	6005	5824	5643	5461	5279	5097	4914	30
	7436	7258	7080	6901	6722	6543	6363	6183	6002	5821	5640	5458	5276	5094	4911	29
	7433	7255	7077	6898	6719	6540	6360	6180	5999	5818	5637	5455	5273	5091	4908	28
	7430	7252	7074	6895	6716	6537	6357	6177	5996	5815	5634	5452	5270	5088	4905	27
	7427	7249	7071	6892	6713	6534	6354	6174	5993	5812	5631	5449	5267	5085	4902	26
	7424	7246	7068	6889	6710	6531	6351	6171	5990	5809	5628	5446	5264	5081	4899	25
	7421	7243	7065	6886	6707	6528	6348	6168	5987	5806	5625	5443	5261	5078	4896	24
	7418	7240	7062	6883	6704	6525	6345	6165	5984	5803	5622	5440	5258	5075	4893	23
	7415	7237	7059	6880	6701	6522	6342	6162	5981	5800	5619	5437	5255	5072	4890	22
	7412	7234	7056	6877	6698	6519	6339	6159	5978	5797	5616	5434	5252	5069	4886	21
	7409	7231	7053	6874	6695	6516	6336	6156	5975	5794	5613	5431	5249	5066	4883	20
	7406	7228	7050	6871	6692	6513	6333	6153	5972	5791	5610	5428	5246	5063	4880	19
	7403	7225	7047	6868	6689	6510	6330	6150	5969	5788	5607	5425	5243	5060	4877	18
	7400	7222	7044	6865	6686	6507	6327	6147	5966	5785	5604	5422	5240	5057	4874	17
	7397	7219	7041	6862	6683	6504	6324	6144	5963	5782	5600	5419	5237	5054	4871	16
	7394	7216	7038	6859	6680	6501	6321	6141	5960	5779	5597	5416	5234	5051	4868	15
	7392	7214	7035	6856	6677	6498	6318	6138	5957	5776	5594	5413	5231	5048	4865	14
	7389	7211	7032	6853	6674	6495	6315	6134	5954	5773	5591	5410	5227	5045	4862	13
	7386	7208	7029	6850	6671	6492	6312	6131	5951	5770	5588	5407	5224	5042	4859	12
	7383	7205	7026	6847	6668	6489	6309	6128	5948	5767	5585	5404	5221	5039	4856	11
	7380	7202	7023	6844	6665	6486	6306	6125	5945	5764	5582	5401	5218	5036	4853	10
	7377	7199	7020	6841	6662	6483	6303	6122	5942	5761	5579	5398	5215	5033	4850	9
	7374	7196	7017	6838	6659	6480	6300	6119	5939	5758	5576	5394	5212	5030	4847	8
	7371	7193	7014	6835	6656	6477	6297	6116	5936	5755	5573	5391	5209	5027	4844	7
	7368	7190	7011	6832	6653	6474	6294	6113	5933	5752	5570	5388	5206	5024	4841	6
	7365	7187	7008	6829	6650	6471	6291	6110	5930	5749	5567	5385	5203	5021	4838	5
	7362	7184	7005	6827	6647	6468	6288	6107	5927	5746	5564	5382	5200	5018	4835	4
	7359	7181	7002	6824	6644	6465	6285	6104	5924	5743	5561	5379	5197	5014	4832	3
	7356	7178	6999	6821	6641	6462	6282	6101	5921	5740	5558	5376	5194	5011	4828	2
	7353	7175	6996	6818	6638	6459	6279	6098	5918	5737	5555	5373	5191	5008	4825	1
	7350	7172	6993	6815	6635	6456	6276	6095	5915	5734	5552	5370	5188	5005	4822	0
	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

8 Deg. Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9. 147	9. 148	9. 149	9. 150	9. 151	9. 152	9. 153	9. 154	9. 155	9. 155	9. 156	9. 157	9. 158	9. 159	9. 160
0	8025	7182	6321	5441	4543	3627	2692	1739	0769	9780	8773	7748	6706	5646	4569
1	8178	7335	6473	5593	4695	3778	2843	1890	0919	9930	8923	7898	6855	5795	4717
2	8331	7487	6625	5745	4846	3929	2994	2041	1069	0080	9073	8047	7004	5944	4866
3	8484	7640	6778	5897	4998	4081	3145	2191	1220	0230	9222	8197	7154	6093	5014
4	8636	7792	6930	6049	5149	4232	3296	2342	1370	0380	9372	8346	7303	6242	5163
5	8789	7945	7082	6201	5301	4383	3447	2493	1520	0530	9522	8496	7452	6390	5311
6	8942	8097	7234	6352	5452	4534	3598	2643	1671	0680	9671	8645	7601	6539	5460
7	9095	8250	7386	6504	5604	4685	3749	2794	1821	0830	9821	8794	7750	6688	5608
8	9247	8402	7538	6656	5755	4837	3900	2944	1971	0980	9971	8944	7899	6837	5757
9	9400	8554	7690	6808	5907	4988	4050	3095	2121	1130	0120	9093	8048	6986	5905
10	9553	8707	7842	6960	6058	5139	4201	3246	2272	1280	0270	9243	8197	7134	6054
11	9705	8859	7995	7111	6210	5290	4352	3396	2422	1430	0420	9392	8346	7283	6202
12	9858	9012	8147	7263	6361	5441	4503	3547	2572	1580	0570	9541	8496	7432	6351
13	0011	9164	8299	7415	6513	5593	4654	3697	2723	1730	0719	9691	8645	7581	6499
14	0164	9316	8451	7567	6664	5744	4805	3848	2873	1880	0869	9840	8794	7730	6648
15	0316	9469	8603	7719	6816	5895	4956	3998	3023	2030	1019	9990	8943	7878	6796
16	0469	9621	8755	7870	6967	6046	5107	4149	3173	2180	1168	0139	9092	8027	6945
17	0622	9774	8907	8022	7119	6197	5257	4300	3324	2330	1318	0288	9241	8176	7093
18	0774	9926	9059	8174	7270	6348	5408	4450	3474	2480	1468	0438	9390	8325	7242
19	0927	0078	9211	8326	7422	6499	5559	4601	3624	2630	1617	0587	9539	8473	7390
20	1080	0231	9363	8477	7573	6651	5710	4751	3774	2780	1767	0736	9688	8622	7539
21	1232	0383	9515	8629	7725	6802	5861	4902	3925	2929	1916	0886	9837	8771	7687
22	1385	0535	9667	8781	7876	6953	6012	5052	4075	3079	2066	1035	9986	8920	7836
23	1538	0688	9819	8933	8027	7104	6162	5203	4225	3229	2216	1184	0135	9068	7984
24	1690	0840	9971	9084	8179	7255	6313	5353	4375	3379	2365	1334	0284	9217	8133
25	1843	0992	0122	9236	8330	7406	6464	5504	4525	3529	2515	1483	0433	9366	8281
26	1996	1145	0276	9388	8482	7557	6615	5654	4676	3679	2665	1632	0582	9515	8429
27	2148	1297	0428	9539	8633	7708	6766	5805	4826	3829	2814	1782	0731	9663	8578
28	2301	1449	0580	9691	8785	7860	6916	5955	4976	3979	2964	1931	0880	9812	8726
29	2454	1602	0732	9843	8936	8011	7067	6106	5126	4129	3113	2080	1029	9961	8875
30	2606	1754	0884	9995	9087	8162	7218	6256	5276	4279	3263	2230	1178	0110	9023
31	2759	1906	1036	0146	9239	8313	7369	6407	5427	4429	3413	2379	1327	0258	9172
32	2911	2059	1188	0298	9390	8464	7520	6557	5577	4578	3562	2528	1476	0407	9320
33	3064	2211	1340	0450	9541	8615	7670	6708	5727	4728	3712	2677	1625	0556	9468
34	3217	2363	1492	0601	9693	8766	7821	6858	5877	4878	3861	2827	1774	0704	9617
35	3369	2516	1644	0753	9844	8917	7972	7009	6027	5028	4011	2976	1923	0853	9765
36	3522	2668	1795	0905	9996	9068	8123	7159	6177	5178	4160	3125	2072	1002	9914
37	3674	2820	1947	1056	0147	9219	8273	7310	6328	5328	4310	3274	2221	1150	0062
38	3827	2972	2099	1208	0298	9370	8424	7460	6478	5478	4460	3424	2370	1299	0210
39	3980	3125	2251	1360	0450	9521	8575	7610	6628	5627	4609	3573	2519	1448	0359
40	4132	3277	2403	1511	0601	9672	8726	7761	6778	5777	4759	3722	2668	1596	0507
41	4285	3429	2555	1663	0752	9823	8876	7911	6928	5927	4908	3871	2817	1745	0655
42	4437	3581	2707	1815	0904	9974	9027	8062	7078	6077	5058	4021	2966	1894	0804
43	4590	3734	2859	1966	1055	0126	9178	8212	7228	6227	5207	4170	3115	2042	0952
44	4742	3886	3011	2118	1206	0277	9329	8363	7379	6377	5357	4319	3264	2191	1100
45	4895	4038	3163	2269	1358	0428	9479	8513	7529	6526	5506	4468	3413	2340	1249
46	5047	4190	3315	2421	1509	0579	9630	8663	7679	6676	5656	4618	3562	2488	1397
47	5200	4343	3467	2573	1660	0730	9781	8814	7829	6826	5805	4767	3711	2637	1545
48	5353	4495	3619	2724	1812	0881	9931	8964	7979	6976	5955	4916	3860	2785	1694
49	5505	4647	3771	2876	1963	1032	0082	9115	8129	7126	6104	5065	4008	2934	1842
50	5658	4799	3923	3028	2114	1183	0233	9265	8279	7275	6254	5214	4157	3083	1990
51	5810	4952	4075	3179	2265	1334	0383	9415	8429	7425	6403	5364	4306	3231	2139
52	5963	5104	4226	3331	2417	1485	0534	9566	8579	7575	6553	5513	4455	3380	2287
53	6115	5256	4378	3482	2568	1635	0685	9716	8729	7725	6702	5662	4604	3528	2435
54	6268	5408	4530	3634	2719	1786	0835	9866	8879	7875	6852	5811	4753	3677	2584
55	6420	5560	4682	3785	2871	1937	0986	0017	9030	8024	7001	5960	4902	3826	2732
56	6573	5712	4834	3937	3022	2088	1137	0167	9180	8174	7151	6110	5051	3974	2880
57	6725	5865	4986	4089	3173	2239	1287	0318	9330	8324	7300	6259	5200	4123	3029
58	6878	6017	5138	4240	3324	2390	1438	0468	9480	8474	7450	6408	5348	4271	3177
59	7030	6169	5290	4392	3476	2541	1589	0618	9630	8623	7599	6557	5497	4420	3325
60	7182	6321	5441	4543	3627	2692	1739	0769	9780	8773	7748	6706	5646	4569	3473
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Tangent Deg. 81

8 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
10. 852	10. 851	10. 850	10. 849	10. 848	10. 847	10. 846	10. 845	10. 844	10. 844	10. 843	10. 842	10. 841	10. 840	10. 839	″
1975	2818	3679	4559	5457	6373	7308	8261	9231	0220	1227	2252	3294	4354	5431	60
1822	2665	3527	4407	5305	6222	7157	8110	9081	0070	1077	2102	3145	4205	5283	59
1669	2513	3375	4255	5154	6071	7006	7959	8931	9920	0927	1953	2996	4056	5134	58
1516	2360	3222	4103	5002	5919	6855	7809	8780	9770	0778	1803	2846	3907	4986	57
1364	2208	3070	3951	4851	5768	6704	7658	8630	9620	0628	1654	2697	3758	4837	56
1211	2055	2918	3799	4699	5617	6553	7507	8480	9470	0478	1504	2548	3610	4689	55
1058	1903	2766	3648	4548	5466	6402	7357	8329	9320	0329	1355	2399	3461	4540	54
0905	1750	2614	3496	4396	5315	6251	7206	8179	9170	0179	1206	2250	3312	4392	53
0753	1598	2462	3344	4245	5163	6100	7056	8029	9020	0029	1056	2101	3163	4243	52
0600	1446	2310	3192	4093	5012	5950	6905	7879	8870	9880	0907	1952	3014	4095	51
0447	1293	2158	3040	3942	4861	5799	6754	7728	8720	9730	0757	1803	2866	3946	50
0295	1141	2005	2889	3790	4710	5648	6604	7578	8570	9580	0608	1654	2717	3798	49
0142	0988	1853	2737	3639	4559	5497	6453	7428	8420	9430	0459	1504	2568	3649	48
9989	0836	1701	2585	3487	4407	5346	6303	7277	8270	9281	0309	1355	2419	3501	47
9836	0684	1549	2433	3336	4256	5195	6152	7127	8120	9131	0160	1206	2270	3352	46
9684	0531	1397	2281	3184	4105	5044	6002	6977	7970	8981	0010	1057	2122	3204	45
9531	0379	1245	2130	3033	3954	4893	5851	6827	7820	8832	9861	0908	1973	3055	44
9378	0226	1093	1978	2881	3803	4743	5700	6676	7670	8682	9712	0759	1824	2907	43
9226	0074	0941	1826	2730	3652	4592	5550	6526	7520	8532	9562	0610	1675	2758	42
9073	9922	0789	1674	2578	3501	4441	5399	6376	7370	8383	9413	0461	1527	2610	41
8920	9769	0637	1523	2427	3349	4290	5249	6226	7220	8233	9264	0312	1378	2461	40
8768	9617	0485	1371	2275	3198	4139	5098	6075	7071	8084	9114	0163	1229	2313	39
8615	9465	0333	1219	2124	3047	3988	4948	5925	6921	7934	8965	0014	1080	2164	38
8462	9312	0181	1067	1973	2896	3838	4797	5775	6771	7784	8816	9865	0932	2016	37
8310	9160	0029	0916	1821	2745	3687	4647	5625	6621	7635	8666	9716	0783	1867	36
8157	9008	9878	0764	1670	2594	3536	4496	5475	6471	7485	8517	9567	0634	1719	35
8004	8855	9724	0612	1518	2443	3385	4346	5324	6321	7335	8368	9418	0485	1571	34
7852	8703	9572	0461	1367	2292	3234	4195	5174	6171	7186	8218	9269	0337	1422	33
7699	8551	9420	0309	1215	2140	3084	4045	5024	6021	7036	8069	9120	0188	1274	32
7546	8398	9268	0157	1064	1989	2933	3894	4874	5871	6887	7920	8971	0039	1125	31
7394	8246	9116	0005	0913	1838	2782	3744	4724	5721	6737	7770	8822	9890	0977	30
7241	8094	8964	9854	0761	1687	2631	3593	4573	5571	6587	7621	8673	9742	0828	29
7089	7941	8812	9702	0610	1536	2480	3443	4423	5422	6438	7472	8524	9593	0680	28
6936	7789	8660	9550	0459	1385	2330	3292	4273	5272	6288	7323	8375	9444	0532	27
6783	7637	8508	9399	0307	1234	2179	3142	4123	5122	6139	7173	8226	9296	0383	26
6631	7484	8356	9247	0156	1083	2028	2991	3973	4972	5989	7024	8077	9147	0235	25
6478	7332	8205	9095	0004	0932	1877	2841	3823	4822	5840	6875	7928	8998	0086	24
6326	7180	8053	8944	9853	0781	1727	2690	3672	4672	5690	6726	7779	8850	9938	23
6173	7028	7901	8792	9702	0630	1576	2540	3522	4522	5540	6576	7630	8701	9790	22
6020	6875	7749	8640	9550	0479	1425	2390	3372	4373	5391	6427	7481	8552	9641	21
5868	6723	7597	8489	9399	0328	1274	2239	3222	4223	5241	6278	7332	8404	9493	20
5715	6571	7445	8337	9248	0177	1124	2089	3072	4073	5092	6129	7183	8255	9345	19
5563	6419	7293	8185	9096	0026	0973	1938	2922	3923	4942	5979	7034	8106	9196	18
5410	6266	7141	8034	8945	9874	0822	1788	2772	3773	4793	5830	6885	7958	9048	17
5258	6114	6989	7882	8794	9723	0671	1637	2621	3623	4643	5681	6736	7809	8900	16
5105	5962	6837	7731	8642	9572	0521	1487	2471	3474	4494	5532	6587	7660	8751	15
4953	5810	6685	7579	8491	9421	0370	1337	2321	3324	4344	5382	6438	7512	8603	14
4800	5657	6533	7427	8340	9270	0219	1186	2171	3174	4195	5233	6289	7363	8455	13
4647	5505	6381	7276	8188	9119	0069	1036	2021	3024	4045	5084	6140	7215	8306	12
4495	5353	6229	7124	8037	8968	9918	0885	1871	2874	3896	4935	5992	7066	8158	11
4342	5201	6077	6972	7886	8817	9767	0735	1721	2725	3746	4786	5843	6917	8010	10
4190	5048	5925	6821	7735	8666	9617	0585	1571	2575	3597	4636	5694	6769	7861	9
4037	4896	5774	6669	7583	8515	9466	0434	1421	2425	3447	4487	5545	6620	7713	8
3885	4744	5622	6518	7432	8365	9315	0284	1271	2275	3298	4338	5396	6472	7565	7
3732	4592	5470	6366	7281	8214	9165	0134	1121	2125	3148	4189	5247	6323	7416	6
3580	4440	5318	6215	7129	8063	9014	9983	0970	1976	2999	4040	5098	6174	7268	5
3427	4288	5166	6063	6978	7912	8863	9833	0820	1826	2849	3890	4949	6026	7120	4
3275	4135	5014	5911	6827	7761	8713	9682	0670	1676	2700	3741	4800	5877	6971	3
3122	3983	4862	5760	6676	7610	8562	9532	0520	1526	2550	3592	4652	5729	6823	2
2970	3831	4710	5608	6524	7459	8411	9382	0370	1377	2401	3443	4503	5580	6675	1
2818	3679	4559	5457	6373	7308	8261	9231	0220	1227	2252	3294	4354	5431	6527	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Tangent Deg. 81

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 156	9. 157	9. 158	9. 159	9. 160	9. 161	9. 162	9. 162	9. 163	9. 164	9. 165	9. 166	9. 167	9. 168	9. 168
0	8296	7000	5686	4354	3005	1639	0254	8853	7434	5998	4544	3074	1586	0081	8559
1	8441	7145	5831	4499	3149	1782	0398	8996	7577	6140	4686	3216	1728	0223	8701
2	8586	7290	5975	4643	3293	1926	0541	9139	7720	6283	4829	3358	1869	0364	8842
3	8731	7434	6120	4787	3437	2070	0685	9282	7862	6425	4971	3500	2011	0505	8983
4	8877	7579	6264	4932	3581	2214	0828	9425	8005	6568	5113	3642	2153	0647	9124
5	9022	7724	6409	5076	3725	2357	0972	9569	8148	6711	5256	3784	2294	0788	9265
6	9167	7869	6554	5220	3869	2501	1115	9712	8291	6853	5398	3926	2436	0930	9406
7	9312	8014	6698	5365	4013	2645	1259	9855	8434	6996	5540	4068	2578	1071	9547
8	9457	8159	6843	5509	4157	2788	1402	9998	8577	7138	5682	4210	2720	1213	9689
9	9602	8304	6987	5653	4301	2932	1545	0141	8720	7281	5825	4351	2861	1354	9830
10	9748	8449	7132	5797	4445	3076	1689	0284	8862	7423	5967	4493	3003	1495	9971
11	9893	8594	7276	5942	4589	3220	1832	0427	9005	7566	6109	4635	3145	1637	0112
12	0038	8738	7421	6086	4733	3363	1976	0570	9148	7708	6251	4777	3286	1778	0253
13	0183	8883	7566	6230	4877	3507	2119	0714	9291	7851	6394	4919	3428	1920	0394
14	0328	9028	7710	6375	5021	3651	2262	0857	9434	7993	6536	5061	3570	2061	0535
15	0473	9173	7855	6519	5165	3794	2406	1000	9576	8136	6678	5203	3711	2202	0676
16	0619	9318	7999	6663	5309	3938	2549	1143	9719	8278	6820	5345	3853	2344	0817
17	0764	9463	8144	6807	5453	4082	2692	1286	9862	8421	6963	5487	3995	2485	0959
18	0909	9607	8288	6952	5597	4225	2836	1429	0005	8563	7105	5629	4136	2626	1100
19	1054	9752	8433	7096	5741	4369	2979	1572	0148	8706	7247	5771	4278	2768	1241
20	1199	9897	8577	7240	5885	4513	3123	1715	0290	8848	7389	5913	4419	2909	1382
21	1344	0042	8722	7384	6029	4656	3266	1858	0433	8991	7531	6055	4561	3050	1523
22	1489	0187	8866	7528	6173	4800	3409	2001	0576	9133	7674	6197	4703	3192	1664
23	1634	0332	9011	7673	6317	4943	3553	2144	0719	9276	7816	6339	4844	3333	1805
24	1779	0476	9155	7817	6461	5087	3696	2287	0861	9418	7958	6481	4986	3474	1946
25	1925	0621	9300	7961	6605	5231	3839	2430	1004	9561	8100	6622	5128	3616	2087
26	2070	0766	9444	8105	6749	5374	3983	2573	1147	9703	8242	6764	5269	3757	2228
27	2215	0911	9589	8250	6892	5518	4126	2716	1290	9846	8385	6906	5411	3898	2369
28	2360	1055	9733	8394	7036	5662	4269	2859	1432	9988	8527	7048	5552	4040	2510
29	2505	1200	9878	8538	7180	5805	4413	3003	1575	0131	8669	7190	5694	4181	2651
30	2650	1345	0022	8682	7324	5949	4556	3146	1718	0273	8811	7332	5836	4322	2792
31	2795	1490	0167	8826	7468	6092	4699	3289	1861	0415	8953	7474	5977	4464	2933
32	2940	1635	0311	8970	7612	6236	4842	3432	2003	0558	9095	7616	6119	4605	3074
33	3085	1779	0456	9115	7756	6379	4986	3575	2146	0700	9237	7757	6260	4746	3215
34	3230	1924	0600	9259	7900	6523	5129	3718	2289	0843	9380	7899	6402	4888	3356
35	3375	2069	0745	9403	8044	6667	5272	3861	2432	0985	9522	8041	6543	5029	3497
36	3520	2214	0889	9547	8187	6810	5416	4004	2574	1128	9664	8183	6685	5170	3638
37	3665	2358	1034	9691	8331	6954	5559	4147	2717	1270	9806	8325	6827	5311	3779
38	3810	2503	1178	9835	8475	7097	5702	4290	2860	1412	9948	8467	6968	5453	3920
39	3955	2648	1322	9980	8619	7241	5845	4432	3002	1555	0090	8608	7110	5594	4061
40	4100	2792	1467	0124	8763	7384	5989	4575	3145	1697	0232	8750	7251	5735	4202
41	4245	2937	1611	0268	8907	7528	6132	4718	3288	1840	0374	8892	7393	5876	4343
42	4390	3082	1756	0412	9050	7672	6275	4861	3430	1982	0517	9034	7534	6018	4484
43	4535	3227	1900	0556	9194	7815	6418	5004	3573	2124	0659	9176	7676	6159	4625
44	4680	3371	2045	0700	9338	7959	6562	5147	3716	2267	0801	9318	7817	6300	4766
45	4825	3516	2189	0844	9482	8102	6705	5290	3858	2409	0943	9459	7959	6441	4907
46	4970	3661	2333	0988	9626	8246	6848	5433	4001	2552	1085	9601	8100	6583	5048
47	5115	3805	2478	1132	9770	8389	6991	5576	4144	2694	1227	9743	8242	6724	5189
48	5260	3950	2622	1277	9913	8533	7135	5719	4286	2836	1369	9885	8383	6865	5330
49	5405	4095	2767	1421	0057	8676	7278	5862	4429	2979	1511	0027	8525	7006	5471
50	5550	4239	2911	1565	0201	8820	7421	6005	4572	3121	1653	0168	8666	7148	5612
51	5695	4384	3055	1709	0345	8963	7564	6148	4714	3263	1795	0310	8808	7289	5753
52	5840	4529	3200	1853	0489	9107	7707	6291	4857	3406	1937	0452	8949	7430	5894
53	5985	4673	3344	1997	0632	9250	7851	6434	4999	3548	2079	0594	9091	7571	6035
54	6130	4818	3488	2141	0776	9394	7994	6577	5142	3690	2221	0735	9232	7712	6175
55	6275	4963	3633	2285	0920	9537	8137	6719	5285	3833	2363	0877	9374	7854	6316
56	6420	5107	3777	2429	1064	9681	8280	6862	5427	3975	2505	1019	9515	7995	6457
57	6565	5252	3921	2573	1207	9824	8423	7005	5570	4117	2647	1161	9657	8136	6598
58	6710	5397	4066	2717	1351	9968	8567	7148	5712	4260	2790	1302	9798	8277	6739
59	6855	5541	4210	2861	1495	0111	8710	7291	5855	4402	2932	1444	9940	8418	6880
60	7000	5686	4354	3005	1639	0254	8853	7434	5998	4544	3074	1586	0081	8559	7021
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	″
0	4822	4639	4455	4271	4087	3902	3717	3531	3345	3159	2972	2785	2597	2409	2221	60
1	4819	4636	4452	4268	4084	3899	3714	3528	3342	3156	2969	2782	2594	2406	2218	59
2	4816	4633	4449	4265	4081	3896	3710	3525	3339	3152	2966	2779	2591	2403	2215	58
3	4813	4630	4446	4262	4077	3893	3707	3522	3336	3149	2963	2775	2588	2400	2212	57
4	4810	4627	4443	4259	4074	3889	3704	3519	3333	3146	2959	2772	2585	2397	2209	56
5	4807	4624	4440	4256	4071	3886	3701	3515	3329	3143	2956	2769	2582	2394	2205	55
6	4804	4621	4437	4253	4068	3883	3698	3512	3326	3140	2953	2766	2579	2391	2202	54
7	4801	4618	4434	4250	4065	3880	3695	3509	3323	3137	2950	2763	2575	2387	2199	53
8	4798	4615	4431	4247	4062	3877	3692	3506	3320	3134	2947	2760	2572	2384	2196	52
9	4795	4611	4428	4244	4059	3874	3689	3503	3317	3131	2944	2757	2569	2381	2193	51
10	4792	4608	4425	4240	4056	3871	3686	3500	3314	3128	2941	2754	2566	2378	2190	50
11	4789	4605	4422	4237	4053	3868	3683	3497	3311	3124	2938	2750	2563	2375	2187	49
12	4786	4602	4418	4234	4050	3865	3680	3494	3308	3121	2935	2747	2560	2372	2183	48
13	4783	4599	4415	4231	4047	3862	3676	3491	3305	3118	2931	2744	2557	2369	2180	47
14	4780	4596	4412	4228	4044	3859	3673	3488	3302	3115	2928	2741	2553	2366	2177	46
15	4777	4593	4409	4225	4041	3856	3670	3485	3298	3112	2925	2738	2550	2362	2174	45
16	4774	4590	4406	4222	4037	3852	3667	3481	3295	3109	2922	2735	2547	2359	2171	44
17	4770	4587	4403	4219	4034	3849	3664	3478	3292	3106	2919	2732	2544	2356	2168	43
18	4767	4584	4400	4216	4031	3846	3661	3475	3289	3103	2916	2729	2541	2353	2165	42
19	4764	4581	4397	4213	4028	3843	3658	3472	3286	3100	2913	2725	2538	2350	2162	41
20	4761	4578	4394	4210	4025	3840	3655	3469	3283	3096	2910	2722	2535	2347	2158	40
21	4758	4575	4391	4207	4022	3837	3652	3466	3280	3093	2906	2719	2532	2344	2155	39
22	4755	4572	4388	4204	4019	3834	3649	3463	3277	3090	2903	2716	2528	2340	2152	38
23	4752	4569	4385	4200	4016	3831	3645	3460	3274	3087	2900	2713	2525	2337	2149	37
24	4749	4566	4382	4197	4013	3828	3642	3457	3270	3084	2897	2710	2522	2334	2146	36
25	4746	4563	4379	4194	4010	3825	3639	3454	3267	3081	2894	2707	2519	2331	2143	35
26	4743	4559	4376	4191	4007	3822	3636	3450	3264	3078	2891	2704	2516	2328	2140	34
27	4740	4556	4372	4188	4004	3819	3633	3447	3261	3075	2888	2700	2513	2325	2136	33
28	4737	4553	4369	4185	4000	3815	3630	3444	3258	3072	2885	2697	2510	2322	2133	32
29	4734	4550	4366	4182	3997	3812	3627	3441	3255	3068	2882	2694	2507	2318	2130	31
30	4731	4547	4363	4179	3994	3809	3624	3438	3252	3065	2878	2691	2503	2315	2127	30
31	4728	4544	4360	4176	3991	3806	3621	3435	3249	3062	2875	2688	2500	2312	2124	29
32	4725	4541	4357	4173	3988	3803	3618	3432	3246	3059	2872	2685	2497	2309	2121	28
33	4722	4538	4354	4170	3985	3800	3615	3429	3243	3056	2869	2682	2494	2306	2117	27
34	4719	4535	4351	4167	3982	3797	3611	3426	3239	3053	2866	2679	2491	2303	2114	26
35	4715	4532	4348	4164	3979	3794	3608	3423	3236	3050	2863	2675	2488	2300	2111	25
36	4712	4529	4345	4161	3976	3791	3605	3419	3233	3047	2860	2672	2485	2297	2108	24
37	4709	4526	4342	4157	3973	3788	3602	3416	3230	3044	2857	2669	2481	2293	2105	23
38	4706	4523	4339	4154	3970	3785	3599	3413	3227	3040	2853	2666	2478	2290	2102	22
39	4703	4520	4336	4151	3967	3781	3596	3410	3224	3037	2850	2663	2475	2287	2099	21
40	4700	4517	4333	4148	3963	3778	3593	3407	3221	3034	2847	2660	2472	2284	2095	20
41	4697	4514	4330	4145	3960	3775	3590	3404	3218	3031	2844	2657	2469	2281	2092	19
42	4694	4510	4326	4142	3957	3772	3587	3400	3215	3028	2841	2654	2466	2278	2089	18
43	4691	4507	4323	4139	3954	3769	3584	3398	3211	3025	2838	2650	2463	2275	2086	17
44	4688	4504	4320	4136	3951	3766	3581	3395	3208	3022	2835	2647	2460	2271	2083	16
45	4685	4501	4317	4133	3948	3763	3577	3392	3205	3019	2832	2644	2456	2268	2080	15
46	4682	4498	4314	4130	3945	3760	3574	3388	3202	3016	2828	2641	2453	2265	2077	14
47	4679	4495	4311	4127	3942	3757	3571	3385	3199	3012	2825	2638	2450	2262	2073	13
48	4676	4492	4308	4124	3939	3754	3568	3382	3196	3009	2822	2635	2447	2259	2070	12
49	4673	4489	4305	4121	3936	3751	3565	3379	3193	3006	2819	2632	2444	2256	2067	11
50	4670	4486	4302	4117	3933	3747	3562	3376	3190	3003	2816	2629	2441	2253	2064	10
51	4667	4483	4299	4114	3930	3744	3559	3373	3187	3000	2813	2625	2438	2249	2061	9
52	4663	4480	4296	4111	3926	3741	3556	3370	3184	2997	2810	2622	2435	2246	2058	8
53	4660	4477	4293	4108	3923	3738	3553	3367	3180	2994	2807	2619	2431	2243	2055	7
54	4657	4474	4290	4105	3920	3735	3550	3364	3177	2991	2804	2616	2428	2240	2051	6
55	4654	4471	4287	4102	3917	3732	3546	3361	3174	2987	2800	2613	2425	2237	2048	5
56	4651	4468	4283	4099	3914	3729	3543	3357	3171	2984	2797	2610	2422	2234	2045	4
57	4648	4464	4280	4096	3911	3726	3540	3354	3168	2981	2794	2607	2419	2231	2042	3
58	4645	4461	4277	4093	3908	3723	3537	3351	3165	2978	2791	2604	2416	2227	2039	2
59	4642	4458	4274	4090	3905	3720	3534	3348	3162	2975	2788	2600	2413	2224	2036	1
60	4639	4455	4271	4087	3902	3717	3531	3345	3159	2972	2785	2597	2409	2221	2033	0
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

8 Deg. Tangent

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 161	9. 162	9. 163	9. 164	9. 164	9. 165	9. 166	9. 167	9. 168	9. 169	9. 170	9. 171	9. 171	9. 172	9. 173
0	3473	2361	1231	0083	8919	7737	6538	5322	4089	2839	1572	0289	8989	7672	6338
1	3622	2509	1378	0231	9066	7884	6684	5468	4235	2985	1718	0434	9133	7816	6483
2	3770	2657	1526	0378	9213	8030	6831	5614	4381	3130	1863	0579	9278	7961	6627
3	3918	2805	1674	0525	9360	8177	6977	5761	4527	3276	2008	0724	9423	8105	6771
4	4066	2953	1821	0673	9507	8324	7124	5907	4673	3422	2154	0869	9568	8250	6915
5	4215	3101	1969	0820	9654	8471	7271	6053	4819	3567	2299	1014	9713	8395	7060
6	4363	3248	2117	0968	9801	8618	7417	6199	4965	3713	2445	1159	9858	8539	7204
7	4511	3396	2264	1115	9948	8764	7564	6346	5111	3859	2590	1305	0002	8684	7348
8	4659	3544	2412	1262	0095	8911	7710	6492	5257	4004	2735	1450	0147	8828	7493
9	4808	3692	2560	1410	0242	9058	7857	6638	5402	4150	2881	1595	0292	8973	7637
10	4956	3840	2707	1557	0390	9205	8003	6784	5548	4296	3026	1740	0437	9117	7781
11	5104	3988	2855	1704	0537	9352	8150	6930	5694	4441	3172	1885	0582	9262	7925
12	5252	4136	3003	1852	0684	9498	8296	7077	5840	4587	3317	2030	0727	9406	8070
13	5400	4284	3150	1999	0831	9645	8443	7223	5986	4733	3462	2175	0871	9551	8214
14	5549	4432	3298	2146	0978	9792	8589	7369	6132	4878	3608	2320	1016	9695	8358
15	5697	4580	3445	2294	1125	9939	8735	7515	6278	5024	3753	2465	1161	9840	8502
16	5845	4728	3593	2441	1272	0085	8882	7661	6424	5170	3898	2610	1306	9984	8647
17	5993	4876	3741	2588	1419	0232	9028	7808	6570	5315	4044	2755	1450	0129	8791
18	6141	5024	3888	2736	1566	0379	9175	7954	6716	5461	4189	2900	1595	0273	8935
19	6290	5171	4036	2883	1713	0526	9321	8100	6862	5606	4334	3045	1740	0418	9079
20	6438	5319	4183	3030	1860	0672	9468	8246	7007	5752	4480	3191	1885	0562	9223
21	6586	5467	4331	3178	2007	0819	9614	8392	7153	5898	4625	3336	2030	0707	9368
22	6734	5615	4479	3325	2154	0966	9761	8538	7299	6043	4770	3481	2174	0851	9512
23	6882	5763	4626	3472	2301	1113	9907	8685	7445	6189	4916	3626	2319	0996	9656
24	7030	5911	4774	3619	2448	1259	0054	8831	7591	6334	5061	3771	2464	1140	9800
25	7179	6059	4921	3767	2595	1406	0200	8977	7737	6480	5206	3916	2609	1285	9944
26	7327	6206	5069	3914	2742	1553	0346	9123	7883	6625	5351	4061	2753	1429	0089
27	7475	6354	5216	4061	2889	1699	0493	9269	8029	6771	5497	4206	2898	1574	0233
28	7623	6502	5364	4209	3036	1846	0639	9415	8174	6917	5642	4351	3043	1718	0377
29	7771	6650	5512	4356	3183	1993	0786	9561	8320	7062	5787	4496	3187	1863	0521
30	7919	6798	5659	4503	3330	2139	0932	9708	8466	7208	5933	4641	3332	2007	0665
31	8067	6946	5807	4650	3477	2286	1078	9854	8612	7353	6078	4786	3477	2151	0809
32	8215	7093	5954	4798	3624	2433	1225	0000	8758	7499	6223	4931	3622	2296	0954
33	8364	7241	6102	4945	3771	2580	1371	0146	8904	7644	6368	5076	3766	2440	1098
34	8512	7389	6249	5092	3918	2726	1518	0292	9049	7790	6514	5221	3911	2585	1242
35	8660	7537	6397	5239	4065	2873	1664	0438	9195	7935	6659	5366	4056	2729	1386
36	8808	7685	6544	5387	4212	3019	1810	0584	9341	8081	6804	5511	4200	2874	1530
37	8956	7833	6692	5534	4359	3166	1957	0730	9487	8227	6949	5656	4345	3018	1674
38	9104	7980	6839	5681	4505	3313	2103	0876	9633	8372	7095	5801	4490	3162	1819
39	9252	8128	6987	5828	4652	3459	2249	1022	9778	8518	7240	5946	4634	3307	1963
40	9400	8276	7134	5975	4799	3606	2396	1168	9924	8663	7385	6090	4779	3451	2107
41	9548	8424	7282	6123	4946	3753	2542	1315	0070	8809	7530	6235	4924	3596	2251
42	9696	8571	7429	6270	5093	3899	2688	1461	0216	8954	7676	6380	5068	3740	2395
43	9844	8719	7577	6417	5240	4046	2835	1607	0362	9100	7821	6525	5213	3884	2539
44	9992	8867	7724	6564	5387	4193	2981	1753	0507	9245	7966	6670	5358	4029	2683
45	0140	9015	7872	6711	5534	4339	3127	1899	0653	9391	8111	6815	5502	4173	2827
46	0289	9163	8019	6859	5681	4486	3274	2045	0799	9536	8256	6960	5647	4318	2971
47	0437	9310	8167	7006	5828	4632	3420	2191	0945	9681	8402	7105	5792	4462	3116
48	0585	9458	8314	7153	5975	4779	3566	2337	1090	9827	8547	7250	5936	4606	3260
49	0733	9606	8462	7300	6121	4926	3713	2483	1236	9972	8692	7395	6081	4751	3404
50	0881	9754	8609	7447	6268	5072	3859	2629	1382	0118	8837	7540	6226	4895	3548
51	1029	9901	8756	7594	6415	5219	4005	2775	1528	0263	8982	7685	6370	5039	3692
52	1177	0049	8904	7742	6562	5365	4152	2921	1673	0409	9128	7830	6515	5184	3836
53	1325	0197	9051	7889	6709	5512	4298	3067	1819	0554	9273	7974	6660	5328	3980
54	1473	0344	9199	8036	6856	5659	4444	3213	1965	0700	9418	8119	6804	5472	4124
55	1621	0492	9346	8183	7003	5805	4591	3359	2110	0845	9563	8264	6949	5617	4268
56	1769	0640	9494	8330	7149	5952	4737	3505	2256	0991	9708	8409	7093	5761	4412
57	1917	0788	9641	8477	7296	6098	4883	3651	2402	1136	9853	8554	7238	5905	4556
58	2065	0935	9788	8624	7443	6245	5029	3797	2548	1281	9998	8699	7383	6050	4700
59	2213	1083	9936	8772	7590	6391	5176	3943	2693	1427	0144	8844	7527	6194	4844
60	2361	1231	0083	8919	7737	6538	5322	4089	2839	1572	0289	8989	7672	6338	4988
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

8 Deg. Co-Tangent

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
10. 838	10. 837	10. 836	10. 835	10. 835	10. 834	10. 833	10. 832	10. 831	10. 830	10. 829	10. 828	10. 828	10. 827	10. 826	″
6527	7639	8769	9917	1081	2263	3462	4678	5911	7161	8428	9711	1011	2328	3662	60
6378	7491	8622	9769	0934	2116	3316	4532	5765	7015	8282	9566	0867	2184	3517	59
6230	7343	8474	9622	0787	1970	3169	4386	5619	6870	8137	9421	0722	2039	3373	58
6082	7195	8326	9475	0640	1823	3023	4239	5473	6724	7992	9276	0577	1895	3229	57
5934	7047	8179	9327	0493	1676	2876	4093	5327	6578	7846	9131	0432	1750	3085	56
5785	6899	8031	9180	0346	1529	2729	3947	5181	6433	7701	8986	0287	1605	2940	55
5637	6752	7883	9032	0199	1382	2583	3801	5035	6287	7555	8841	0142	1461	2796	54
5489	6604	7736	8885	0052	1236	2436	3654	4889	6141	7410	8695	9998	1316	2652	53
5341	6456	7588	8738	9905	1089	2290	3508	4743	5996	7265	8550	9853	1172	2507	52
5192	6308	7440	8590	9758	0942	2143	3362	4598	5850	7119	8405	9708	1027	2363	51
5044	6160	7293	8443	9610	0795	1997	3216	4452	5704	6974	8260	9563	0883	2219	50
4896	6012	7145	8296	9463	0648	1850	3070	4306	5559	6828	8115	9418	0738	2075	49
4748	5864	6997	8148	9316	0502	1704	2923	4160	5413	6683	7970	9273	0594	1930	48
4600	5716	6850	8001	9169	0355	1557	2777	4014	5267	6538	7825	9129	0449	1786	47
4451	5568	6702	7854	9022	0208	1411	2631	3868	5122	6392	7680	8984	0305	1642	46
4303	5420	6555	7706	8875	0061	1265	2485	3722	4976	6247	7535	8839	0160	1498	45
4155	5272	6407	7559	8728	9915	1118	2339	3576	4830	6102	7390	8694	0016	1353	44
4007	5124	6259	7412	8581	9768	0972	2192	3430	4685	5956	7245	8550	9871	1209	43
3859	4976	6112	7264	8434	9621	0825	2046	3284	4539	5811	7100	8405	9727	1065	42
3710	4829	5964	7117	8287	9474	0679	1900	3138	4394	5666	6955	8260	9582	0921	41
3562	4681	5817	6970	8140	9328	0532	1754	2993	4248	5520	6809	8115	9438	0777	40
3414	4533	5669	6822	7993	9181	0386	1608	2847	4102	5375	6664	7970	9293	0632	39
3266	4385	5521	6675	7846	9034	0239	1462	2701	3957	5230	6519	7826	9149	0488	38
3118	4237	5374	6528	7699	8887	0093	1315	2555	3811	5084	6374	7681	9004	0344	37
2970	4089	5226	6381	7552	8741	9946	1169	2409	3666	4939	6229	7536	8860	0200	36
2821	3941	5079	6233	7405	8594	9800	1023	2263	3520	4794	6084	7391	8715	0056	35
2673	3794	4931	6086	7258	8447	9654	0877	2117	3375	4649	5939	7247	8571	9911	34
2525	3646	4784	5939	7111	8301	9507	0731	1971	3229	4503	5794	7102	8426	9767	33
2377	3498	4636	5791	6964	8154	9361	0585	1826	3083	4358	5649	6957	8282	9622	32
2229	3350	4488	5644	6817	8007	9214	0438	1680	2938	4213	5504	6813	8137	9479	31
2081	3202	4341	5497	6670	7861	9068	0292	1534	2792	4067	5359	6668	7993	9335	30
1933	3054	4193	5350	6523	7714	8922	0146	1388	2647	3922	5214	6523	7849	9191	29
1785	2907	4046	5202	6376	7567	8775	0000	1242	2501	3777	5069	6378	7704	9046	28
1636	2759	3898	5055	6229	7420	8629	9854	1096	2356	3632	4924	6234	7560	8902	27
1488	2611	3751	4908	6082	7274	8482	9708	0951	2210	3486	4779	6089	7415	8758	26
1340	2463	3603	4761	5935	7127	8336	9562	0805	2065	3341	4634	5944	7271	8614	25
1192	2315	3456	4613	5788	6981	8190	9416	0659	1919	3196	4489	5800	7126	8470	24
1044	2167	3308	4466	5641	6834	8043	9270	0513	1773	3051	4344	5655	6982	8326	23
0896	2020	3161	4319	5495	6687	7897	9124	0367	1628	2905	4199	5510	6838	8181	22
0748	1872	3013	4172	5348	6541	7751	8978	0222	1482	2760	4054	5366	6693	8037	21
0600	1724	2866	4025	5201	6394	7604	8832	0076	1337	2615	3910	5221	6549	7893	20
0452	1576	2718	3877	5054	6247	7458	8685	9930	1191	2470	3765	5076	6404	7749	19
0304	1429	2571	3730	4907	6101	7312	8539	9784	1046	2324	3620	4932	6260	7605	18
0156	1281	2423	3583	4760	5954	7165	8393	9638	0900	2179	3475	4787	6116	7461	17
0008	1133	2276	3436	4613	5807	7019	8247	9493	0755	2034	3330	4642	5971	7317	16
9860	0985	2128	3289	4466	5661	6873	8101	9347	0609	1889	3185	4498	5827	7173	15
9711	0837	1981	3141	4319	5514	6726	7955	9201	0464	1744	3040	4353	5682	7029	14
9563	0690	1833	2994	4172	5368	6580	7809	9055	0319	1598	2895	4208	5538	6884	13
9415	0542	1686	2847	4025	5221	6434	7663	8910	0173	1453	2750	4064	5394	6740	12
9267	0394	1538	2700	3879	5074	6287	7517	8764	0028	1308	2605	3919	5249	6596	11
9119	0246	1391	2553	3732	4928	6141	7371	8618	9882	1163	2460	3774	5105	6452	10
8971	0099	1244	2406	3585	4781	5995	7225	8472	9737	1018	2315	3630	4961	6308	9
8823	9951	1096	2258	3438	4635	5848	7079	8327	9591	0872	2170	3485	4816	6164	8
8675	9803	0949	2111	3291	4488	5702	6933	8181	9446	0727	2026	3340	4672	6020	7
8527	9656	0801	1964	3144	4341	5556	6787	8035	9300	0582	1881	3196	4528	5876	6
8379	9508	0654	1817	2997	4195	5409	6641	7890	9155	0437	1736	3051	4383	5732	5
8231	9360	0506	1670	2851	4048	5263	6495	7744	9009	0292	1591	2907	4239	5588	4
8083	9212	0359	1523	2704	3902	5117	6349	7598	8864	0147	1446	2762	4095	5444	3
7935	9065	0212	1376	2557	3755	4971	6203	7452	8719	0002	1301	2617	3950	5300	2
7787	8917	0064	1228	2410	3609	4824	6057	7307	8573	9856	1156	2473	3806	5156	1
7639	8769	9917	1081	2263	3462	4678	5911	7161	8428	9711	1011	2328	3662	5012	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Co-Tangent Deg. 81

Tangent Deg. 81

8 Deg. Sine

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 169	9. 170	9. 171	9. 172	9. 173	9. 173	9. 174	9. 175	9. 176	9. 177	9. 178	9. 178	9. 179	9. 180	9. 181
0	7021	5465	3893	2305	0699	9077	7439	5784	4112	2425	0721	9001	7265	5512	3744
1	7162	5606	4034	2445	0839	9217	7578	5923	4251	2563	0859	9139	7402	5650	3881
2	7303	5747	4174	2585	0979	9356	7717	6061	4390	2701	0997	9276	7540	5787	4018
3	7443	5887	4314	2725	1118	9496	7856	6200	4528	2840	1135	9414	7677	5924	4155
4	7584	6028	4455	2865	1258	9635	7995	6339	4667	2978	1273	9552	7815	6062	4292
5	7725	6168	4595	3005	1398	9774	8135	6478	4806	3117	1411	9690	7952	6199	4429
6	7866	6309	4735	3145	1538	9914	8274	6617	4944	3255	1549	9828	8090	6336	4566
7	8007	6450	4876	3285	1677	0053	8413	6756	5083	3393	1688	9966	8228	6473	4703
8	8148	6590	5016	3425	1817	0193	8552	6895	5222	3532	1826	0103	8365	6611	4840
9	8289	6731	5156	3565	1957	0332	8691	7034	5360	3670	1964	0241	8503	6748	4977
10	8429	6871	5296	3705	2097	0472	8831	7173	5499	3808	2102	0379	8640	6885	5114
11	8570	7012	5437	3845	2236	0611	8970	7312	5637	3947	2240	0517	8778	7023	5251
12	8711	7152	5577	3985	2376	0751	9109	7451	5776	4085	2378	0655	8915	7160	5388
13	8852	7293	5717	4125	2516	0890	9248	7590	5915	4223	2516	0793	9053	7297	5525
14	8993	7433	5857	4265	2655	1030	9387	7728	6053	4362	2654	0930	9190	7434	5662
15	9134	7574	5998	4405	2795	1169	9526	7867	6192	4500	2792	1068	9328	7572	5799
16	9274	7715	6138	4545	2935	1308	9665	8006	6330	4639	2930	1206	9465	7709	5936
17	9415	7855	6278	4685	3074	1448	9805	8145	6469	4777	3068	1344	9603	7846	6073
18	9556	7996	6418	4825	3214	1587	9944	8284	6608	4915	3206	1482	9741	7983	6210
19	9697	8136	6559	4965	3354	1727	0083	8423	6746	5053	3344	1619	9878	8121	6347
20	9838	8277	6699	5105	3494	1866	0222	8562	6885	5192	3483	1757	0016	8258	6484
21	9978	8417	6839	5244	3633	2005	0361	8700	7023	5330	3621	1895	0153	8395	6621
22	0119	8558	6979	5384	3773	2145	0500	8839	7162	5468	3759	2033	0291	8532	6758
23	0260	8698	7120	5524	3913	2284	0639	8978	7301	5607	3897	2170	0428	8670	6895
24	0401	8839	7260	5664	4052	2424	0779	9117	7439	5745	4035	2308	0566	8807	7032
25	0541	8979	7400	5804	4192	2563	0918	9256	7578	5883	4173	2446	0703	8944	7169
26	0682	9120	7540	5944	4332	2702	1057	9395	7716	6022	4311	2584	0841	9081	7306
27	0823	9260	7680	6084	4471	2842	1196	9534	7855	6160	4449	2721	0978	9219	7443
28	0964	9401	7821	6224	4611	2981	1335	9672	7993	6298	4587	2859	1115	9356	7580
29	1105	9541	7961	6364	4750	3120	1474	9811	8132	6436	4725	2997	1253	9493	7717
30	1245	9682	8101	6504	4890	3260	1613	9950	8270	6575	4863	3135	1390	9630	7854
31	1386	9822	8241	6644	5030	3399	1752	0089	8409	6713	5001	3272	1528	9767	7991
32	1527	9962	8381	6784	5169	3539	1891	0228	8548	6851	5139	3410	1665	9905	8128
33	1667	0103	8522	6924	5309	3678	2030	0366	8686	6990	5277	3548	1803	0042	8265
34	1808	0243	8662	7063	5449	3817	2169	0505	8825	7128	5415	3685	1940	0179	8402
35	1949	0384	8802	7203	5588	3957	2308	0644	8963	7266	5553	3823	2078	0316	8539
36	2090	0524	8942	7343	5728	4096	2448	0783	9102	7404	5691	3961	2215	0453	8675
37	2230	0665	9082	7483	5867	4235	2587	0922	9240	7542	5829	4099	2353	0590	8812
38	2371	0805	9222	7623	6007	4375	2726	1060	9379	7681	5967	4236	2490	0728	8949
39	2512	0945	9362	7763	6147	4514	2865	1199	9517	7819	6105	4374	2627	0865	9086
40	2652	1086	9503	7903	6286	4653	3004	1338	9656	7957	6243	4512	2765	1002	9223
41	2793	1226	9643	8043	6426	4793	3143	1477	9794	8095	6380	4649	2902	1139	9360
42	2934	1367	9783	8182	6565	4932	3282	1615	9933	8234	6518	4787	3040	1276	9497
43	3075	1507	9923	8322	6705	5071	3421	1754	0071	8372	6656	4925	3177	1413	9634
44	3215	1648	0063	8462	6845	5210	3560	1893	0210	8510	6794	5062	3314	1550	9771
45	3356	1788	0203	8602	6984	5350	3699	2032	0348	8648	6932	5200	3452	1688	9907
46	3497	1928	0343	8742	7124	5489	3838	2170	0487	8786	7070	5338	3589	1825	0044
47	3637	2069	0484	8882	7263	5628	3977	2309	0625	8925	7208	5475	3727	1962	0181
48	3778	2209	0624	9021	7403	5768	4116	2448	0763	9063	7346	5613	3864	2099	0318
49	3919	2349	0764	9161	7542	5907	4255	2587	0902	9201	7484	5751	4001	2236	0455
50	4059	2490	0904	9301	7682	6046	4394	2725	1040	9339	7622	5888	4139	2373	0592
51	4200	2630	1044	9441	7821	6185	4533	2864	1179	9477	7760	6026	4276	2510	0728
52	4341	2771	1184	9581	7961	6325	4672	3003	1317	9616	7898	6164	4413	2647	0865
53	4481	2911	1324	9721	8100	6464	4811	3141	1456	9754	8036	6301	4551	2784	1002
54	4622	3051	1464	9860	8240	6603	4950	3280	1594	9892	8173	6439	4688	2922	1139
55	4762	3192	1604	0000	8380	6742	5089	3419	1733	0030	8311	6576	4826	3059	1276
56	4903	3332	1744	0140	8519	6882	5228	3558	1871	0168	8449	6714	4963	3196	1413
57	5044	3472	1884	0280	8659	7021	5367	3696	2009	0306	8587	6852	5100	3333	1549
58	5184	3613	2024	0420	8798	7160	5506	3835	2148	0444	8725	6989	5238	3470	1686
59	5325	3753	2164	0559	8938	7299	5645	3974	2286	0583	8863	7127	5375	3607	1823
60	5465	3893	2305	0699	9077	7439	5784	4112	2425	0721	9001	7265	5512	3744	1960
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Sine Deg. 81

8 Deg. Co-Sine

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9. 995	9 995	9. 995	9. 994	9. 994	9. 994	9. 994	″
2033	1844	1654	1464	1274	1084	0893	0702	0510	0318	0126	9933	9740	9546	9352	60
2029	1840	1651	1461	1271	1081	0890	0699	0507	0315	0123	9930	9737	9543	9349	59
2026	1837	1648	1458	1268	1078	0887	0695	0504	0312	0119	9927	9733	9540	9346	58
2023	1834	1645	1455	1265	1074	0883	0692	0501	0309	0116	9923	9730	9537	9343	57
2020	1831	1642	1452	1262	1071	0880	0689	0497	0305	0113	9920	9727	9533	9340	56
2017	1828	1638	1449	1258	1068	0877	0686	0494	0302	0110	9917	9724	9530	9336	55
2014	1825	1635	1445	1255	1065	0874	0683	0491	0299	0106	9914	9721	9527	9333	54
2011	1822	1632	1442	1252	1062	0871	0679	0488	0296	0103	9910	9717	9524	9330	53
2007	1818	1629	1439	1249	1058	0868	0676	0485	0292	0100	9907	9714	9521	9327	52
2004	1815	1626	1436	1246	1055	0864	0673	0481	0289	0097	9904	9711	9517	9323	51
2001	1812	1623	1433	1243	1052	0861	0670	0478	0286	0094	9901	9708	9514	9320	50
1998	1809	1619	1430	1239	1049	0858	0667	0475	0283	0090	9898	9704	9511	9317	49
1995	1806	1616	1426	1236	1046	0855	0663	0472	0280	0087	9894	9701	9508	9314	48
1992	1803	1613	1423	1233	1043	0852	0660	0469	0276	0084	9891	9698	9504	9310	47
1989	1799	1610	1420	1230	1039	0848	0657	0465	0273	0081	9888	9695	9501	9307	46
1985	1796	1607	1417	1227	1036	0845	0654	0462	0270	0078	9885	9692	9498	9304	45
1982	1793	1604	1414	1224	1033	0842	0651	0459	0267	0074	9882	9688	9495	9301	44
1979	1790	1600	1411	1220	1030	0839	0647	0456	0264	0071	9878	9685	9491	9297	43
1976	1787	1597	1407	1217	1027	0836	0644	0453	0260	0068	9875	9682	9488	9294	42
1973	1784	1594	1404	1214	1023	0832	0641	0449	0257	0065	9872	9679	9485	9291	41
1970	1781	1591	1401	1211	1020	0829	0638	0446	0254	0062	9869	9675	9482	9288	40
1966	1777	1588	1398	1208	1017	0826	0635	0443	0251	0058	9865	9672	9479	9285	39
1963	1774	1585	1395	1205	1014	0823	0632	0440	0248	0055	9862	9669	9475	9281	38
1960	1771	1582	1392	1201	1011	0820	0628	0437	0244	0052	9859	9666	9472	9278	37
1957	1768	1578	1388	1198	1008	0817	0625	0433	0241	0049	9856	9663	9469	9275	36
1954	1765	1575	1385	1195	1004	0813	0622	0430	0238	0045	9853	9659	9466	9272	35
1951	1762	1572	1382	1192	1001	0810	0619	0427	0235	0042	9849	9656	9462	9268	34
1948	1758	1569	1379	1189	0998	0807	0616	0424	0232	0039	9846	9653	9459	9265	33
1944	1755	1566	1376	1186	0995	0804	0612	0421	0228	0036	9843	9650	9456	9262	32
1941	1752	1563	1373	1182	0992	0801	0609	0417	0225	0033	9840	9646	9453	9259	31
1938	1749	1559	1369	1179	0988	0797	0606	0414	0222	0029	9836	9643	9449	9255	30
1935	1746	1556	1366	1176	0985	0794	0603	0411	0219	0026	9833	9640	9446	9252	29
1932	1743	1553	1363	1173	0982	0791	0600	0408	0216	0023	9830	9637	9443	9249	28
1929	1739	1550	1360	1170	0979	0788	0596	0405	0212	0020	9827	9633	9440	9246	27
1926	1736	1547	1357	1166	0976	0785	0593	0401	0209	0017	9824	9630	9437	9242	26
1922	1733	1544	1354	1163	0973	0781	0590	0398	0206	0013	9820	9627	9433	9239	25
1919	1730	1540	1350	1160	0969	0778	0587	0395	0203	0010	9817	9624	9430	9236	24
1916	1727	1537	1347	1157	0966	0775	0584	0392	0200	0007	9814	9621	9427	9233	23
1913	1724	1534	1344	1154	0963	0772	0580	0389	0196	0004	9811	9617	9424	9230	22
1910	1721	1531	1341	1151	0960	0769	0577	0385	0193	0001	9808	9614	9420	9226	21
1907	1717	1528	1338	1147	0957	0766	0574	0382	0190	9997	9804	9611	9417	9223	20
1903	1714	1525	1335	1144	0953	0762	0571	0379	0187	9994	9801	9608	9414	9220	19
1900	1711	1521	1331	1141	0950	0759	0568	0376	0184	9991	9798	9604	9411	9217	18
1897	1708	1518	1328	1138	0947	0756	0564	0373	0180	9988	9795	9601	9407	9213	17
1894	1705	1515	1325	1135	0944	0753	0561	0369	0177	9984	9791	9598	9404	9210	16
1891	1702	1512	1322	1132	0941	0750	0558	0366	0174	9981	9788	9595	9401	9207	15
1888	1698	1509	1319	1128	0938	0746	0555	0363	0171	9978	9785	9592	9398	9204	14
1885	1695	1506	1316	1125	0934	0743	0552	0369	0167	9975	9782	9588	9395	9200	13
1881	1692	1502	1312	1122	0931	0740	0548	0357	0164	9972	9779	9585	9391	9197	12
1878	1689	1499	1309	1119	0928	0737	0545	0353	0161	9968	9775	9582	9388	9194	11
1875	1686	1496	1306	1116	0925	0734	0542	0350	0158	9965	9772	9579	9385	9191	10
1872	1683	1493	1303	1112	0922	0730	0539	0347	0155	9962	9769	9575	9382	9187	9
1869	1679	1490	1300	1109	0918	0727	0536	0344	0151	9959	9766	9572	9378	9184	8
1866	1676	1487	1297	1106	0915	0724	0533	0341	0148	9956	9762	9569	9375	9181	7
1863	1673	1483	1293	1103	0912	0721	0529	0337	0145	9952	9759	9566	9372	9178	6
1859	1670	1480	1290	1100	0909	0718	0526	0334	0142	9949	9756	9563	9369	9174	5
1856	1667	1477	1287	1097	0906	0715	0523	0331	0139	9946	9753	9559	9365	9171	4
1853	1664	1474	1284	1093	0903	0711	0520	0328	0135	9943	9750	9556	9362	9168	3
1850	1661	1471	1281	1090	0899	0708	0517	0325	0132	9939	9746	9553	9359	9165	2
1847	1657	1468	1278	1087	0896	0705	0513	0321	0129	9936	9743	9550	9356	9161	1
1844	1654	1464	1274	1084	0893	0702	0510	0318	0126	9933	9740	9546	9352	9158	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Sine Deg. 81

8 Deg. Tangent

″	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9.174	9.175	9.176	9.177	9.177	9.178	9.179	9.180	9.181	9.182	9.183	9.183	9.184	9.185	9.186
0	4988	3622	2239	0840	9425	7993	6546	5082	3602	2106	0595	9068	7525	5966	4392
1	5132	3766	2383	0983	9568	8136	6688	5224	3744	2248	0736	9209	7665	6106	4532
2	5276	3909	2526	1126	9711	8279	6830	5366	3886	2390	0878	9350	7806	6247	4672
3	5420	4053	2670	1270	9854	8421	6973	5508	4028	2531	1019	9491	7947	6388	4812
4	5564	4197	2813	1413	9996	8564	7115	5650	4170	2673	1160	9632	8088	6528	4953
5	5708	4341	2956	1556	0139	8706	7258	5792	4311	2814	1302	9773	8229	6669	5093
6	5852	4484	3100	1699	0282	8849	7400	5935	4453	2956	1443	9914	8369	6809	5233
7	5996	4628	3243	1842	0425	8992	7542	6077	4595	3098	1584	0055	8510	6950	5374
8	6140	4772	3387	1986	0568	9134	7685	6219	4737	3239	1726	0196	8651	7090	5514
9	6284	4916	3530	2129	0711	9277	7827	6361	4879	3381	1867	0337	8792	7231	5654
10	6428	5059	3674	2272	0854	9420	7969	6503	5021	3522	2008	0478	8933	7371	5794
11	6572	5203	3817	2415	0997	9562	8112	6645	5162	3664	2150	0619	9073	7512	5935
12	6716	5347	3961	2558	1140	9705	8254	6787	5304	3805	2291	0760	9214	7652	6075
13	6860	5490	4104	2701	1283	9848	8396	6929	5446	3947	2432	0901	9355	7793	6215
14	7004	5634	4247	2845	1425	9990	8539	7071	5588	4089	2573	1042	9496	7933	6355
15	7148	5778	4391	2988	1568	0133	8681	7213	5730	4230	2715	1183	9636	8074	6495
16	7292	5921	4534	3131	1711	0275	8823	7355	5872	4372	2856	1324	9777	8214	6636
17	7436	6065	4678	3274	1854	0418	8966	7498	6013	4513	2997	1465	9918	8355	6776
18	7580	6209	4821	3417	1997	0561	9108	7640	6155	4655	3138	1606	0059	8495	6916
19	7724	6352	4965	3560	2140	0703	9250	7782	6297	4796	3280	1747	0199	8636	7056
20	7868	6496	5108	3703	2283	0846	9393	7924	6439	4938	3421	1888	0340	8776	7197
21	8012	6640	5251	3847	2426	0988	9535	8066	6580	5079	3562	2029	0481	8917	7337
22	8156	6783	5395	3990	2568	1131	9677	8208	6722	5221	3703	2170	0622	9057	7477
23	8300	6927	5538	4133	2711	1273	9820	8350	6864	5362	3845	2311	0762	9198	7617
24	8444	7071	5681	4276	2854	1416	9962	8492	7006	5504	3986	2452	0903	9338	7757
25	8588	7214	5825	4419	2997	1559	0104	8634	7148	5645	4127	2593	1044	9478	7898
26	8732	7358	5968	4562	3140	1701	0247	8776	7289	5787	4268	2734	1184	9619	8038
27	8875	7502	6112	4705	3283	1844	0389	8918	7431	5928	4410	2875	1325	9759	8178
28	9019	7645	6255	4848	3425	1986	0531	9060	7573	6070	4551	3016	1466	9900	8318
29	9163	7789	6398	4991	3568	2129	0673	9202	7715	6211	4692	3157	1607	0040	8458
30	9307	7933	6542	5134	3711	2271	0816	9344	7856	6353	4833	3298	1747	0181	8599
31	9451	8076	6685	5277	3854	2414	0958	9486	7998	6494	4975	3439	1888	0321	8739
32	9595	8220	6828	5421	3997	2556	1100	9628	8140	6636	5116	3580	2029	0462	8879
33	9739	8363	6972	5564	4139	2699	1242	9770	8282	6777	5257	3721	2169	0602	9019
34	9883	8507	7115	5707	4282	2841	1385	9912	8423	6919	5398	3862	2310	0742	9159
35	0027	8651	7258	5850	4425	2984	1527	0054	8565	7060	5539	4003	2451	0883	9299
36	0170	8794	7402	5993	4568	3127	1669	0196	8707	7201	5681	4144	2591	1023	9439
37	0314	8938	7545	6136	4711	3269	1811	0338	8848	7343	5822	4285	2732	1164	9580
38	0458	9081	7688	6279	4853	3412	1954	0480	8990	7484	5963	4426	2873	1304	9720
39	0602	9225	7832	6422	4996	3554	2096	0622	9132	7626	6104	4566	3013	1444	9860
40	0746	9369	7975	6565	5139	3697	2238	0764	9273	7767	6245	4707	3154	1585	0000
41	0890	9512	8118	6708	5282	3839	2380	0906	9415	7909	6386	4848	3295	1725	0140
42	1034	9656	8261	6851	5424	3982	2523	1048	9557	8050	6528	4989	3435	1865	0280
43	1177	9799	8405	6994	5567	4124	2665	1190	9699	8192	6669	5130	3576	2006	0420
44	1321	9943	8548	7137	5710	4266	2807	1332	9840	8333	6810	5271	3716	2146	0560
45	1465	0086	8691	7280	5853	4409	2949	1474	9982	8474	6951	5412	3857	2287	0701
46	1609	0230	8835	7423	5995	4551	3091	1615	0124	8616	7092	5553	3998	2427	0841
47	1753	0373	8978	7566	6138	4694	3234	1757	0265	8757	7233	5694	4138	2567	0981
48	1896	0517	9121	7709	6281	4836	3376	1899	0407	8899	7374	5835	4279	2708	1121
49	2040	0661	9264	7852	6423	4979	3518	2041	0549	9040	7516	5975	4419	2848	1261
50	2184	0804	9408	7995	6566	5121	3660	2183	0690	9181	7657	6116	4560	2988	1401
51	2328	0948	9551	8138	6709	5264	3802	2325	0832	9323	7798	6257	4701	3129	1541
52	2472	1091	9694	8281	6852	5406	3945	2467	0974	9464	7939	6398	4841	3269	1681
53	2615	1235	9837	8424	6994	5549	4087	2609	1115	9605	8080	6539	4982	3409	1821
54	2759	1378	9981	8567	7137	5691	4229	2751	1257	9747	8221	6680	5122	3550	1961
55	2903	1522	0124	8710	7280	5833	4371	2893	1398	9888	8362	6820	5263	3690	2101
56	3047	1665	0267	8853	7422	5976	4513	3035	1540	0030	8503	6961	5404	3830	2241
57	3191	1809	0410	8996	7565	6118	4655	3176	1682	0171	8644	7102	5544	3971	2381
58	3334	1952	0554	9139	7708	6261	4798	3318	1823	0312	8786	7243	5685	4111	2522
59	3478	2096	0697	9282	7851	6403	4940	3460	1965	0454	8927	7384	5825	4251	2662
60	3622	2239	0840	9425	7993	6546	5082	3602	2106	0595	9068	7525	5966	4392	2802
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

8 Deg. Co-Tangent

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	″
10.825	10.824	10.823	10.822	10.822	10.821	10.820	10.819	10.818	10.817	10.816	10.816	10.815	10.814	10.813	
5012	6378	7761	9160	0575	2007	3454	4918	6398	7894	9405	0932	2475	4034	5608	60
4868	6234	7617	9017	0432	1864	3312	4776	6256	7752	9264	0791	2335	3894	5468	59
4724	6091	7474	8874	0289	1721	3170	4634	6114	7610	9122	0650	2194	3753	5328	58
4580	5947	7330	8730	0146	1579	3027	4492	5972	7469	8981	0509	2053	3612	5188	57
4436	5803	7187	8587	0004	1436	2885	4350	5830	7327	8840	0368	1912	3472	5047	56
4292	5659	7044	8444	9861	1294	2742	4208	5689	7186	8698	0227	1771	3331	4907	55
4148	5516	6900	8301	9718	1151	2600	4065	5547	7044	8557	0086	1631	3191	4767	54
4004	5372	6757	8158	9575	1008	2458	3923	5405	6902	8416	9945	1490	3050	4626	53
3860	5228	6613	8014	9432	0866	2315	3781	5263	6761	8274	9804	1349	2910	4486	52
3716	5084	6470	7871	9289	0723	2173	3639	5121	6619	8133	9663	1208	2769	4346	51
3572	4941	6326	7728	9146	0580	2031	3497	4979	6478	7992	9522	1067	2629	4206	50
3428	4797	6183	7585	9003	0438	1888	3355	4838	6336	7850	9381	0927	2488	4065	49
3284	4653	6039	7442	8860	0295	1746	3213	4696	6195	7709	9240	0786	2348	3925	48
3140	4510	5896	7299	8717	0152	1604	3071	4554	6053	7568	9099	0645	2207	3785	47
2996	4366	5753	7155	8575	0010	1461	2929	4412	5911	7427	8958	0504	2067	3645	46
2852	4222	5609	7012	8432	9867	1319	2787	4270	5770	7285	8817	0364	1926	3505	45
2708	4079	5466	6869	8289	9725	1177	2645	4128	5628	7144	8676	0223	1786	3364	44
2564	3935	5322	6726	8146	9582	1034	2502	3987	5487	7003	8535	0082	1645	3224	43
2420	3791	5179	6583	8003	9439	0892	2360	3845	5345	6862	8394	9941	1505	3084	42
2276	3648	5035	6440	7860	9297	0750	2218	3703	5204	6720	8253	9801	1364	2944	41
2132	3504	4892	6297	7717	9154	0607	2076	3561	5062	6579	8112	9660	1224	2803	40
1988	3360	4749	6153	7574	9012	0465	1934	3420	4921	6438	7971	9519	1083	2663	39
1844	3217	4605	6010	7432	8869	0323	1792	3278	4779	6297	7830	9378	0943	2523	38
1700	3073	4462	5867	7289	8727	0180	1650	3136	4638	6155	7689	9238	0802	2383	37
1556	2929	4319	5724	7146	8584	0038	1508	2994	4496	6014	7548	9097	0662	2243	36
1412	2786	4175	5581	7003	8441	9896	1366	2852	4355	5873	7407	8956	0522	2102	35
1268	2642	4032	5438	6860	8299	9753	1224	2711	4213	5732	7266	8816	0381	1962	34
1125	2498	3888	5295	6717	8156	9611	1082	2569	4072	5590	7125	8675	0241	1822	33
0981	2355	3745	5152	6575	8014	9469	0940	2427	3930	5449	6984	8534	0100	1682	32
0837	2211	3602	5009	6432	7871	9327	0798	2285	3789	5308	6843	8393	9960	1542	31
0693	2067	3458	4866	6289	7729	9184	0656	2144	3647	5167	6702	8253	9819	1401	30
0549	1924	3315	4723	6146	7586	9042	0514	2002	3506	5025	6561	8112	9679	1261	29
0405	1780	3172	4579	6003	7444	8900	0372	1860	3364	4884	6420	7971	9538	1121	28
0261	1637	3028	4436	5861	7301	8758	0230	1718	3223	4743	6279	7831	9398	0981	27
0117	1493	2885	4293	5718	7159	8615	0088	1577	3081	4602	6138	7690	9258	0841	26
9973	1349	2742	4150	5575	7016	8473	9946	1435	2940	4461	5997	7549	9117	0701	25
9830	1206	2598	4007	5432	6873	8331	9804	1293	2799	4319	5856	7409	8977	0561	24
9686	1062	2455	3864	5289	6731	8189	9662	1152	2657	4178	5715	7268	8836	0420	23
9542	0919	2312	3721	5147	6588	8046	9520	1010	2516	4037	5574	7127	8696	0280	22
9398	0775	2168	3578	5004	6446	7904	9378	0868	2374	3896	5434	6987	8556	0140	21
9254	0631	2025	3435	4861	6303	7762	9236	0727	2233	3755	5293	6846	8415	0000	20
9110	0488	1882	3292	4718	6161	7620	9094	0585	2091	3614	5152	6705	8275	9860	19
8966	0344	1739	3149	4576	6018	7477	8952	0443	1950	3472	5011	6565	8135	9720	18
8823	0201	1595	3006	4433	5876	7335	8810	0301	1808	3331	4870	6424	7994	9580	17
8679	0057	1452	2863	4290	5734	7193	8668	0160	1667	3190	4729	6284	7854	9440	16
8535	9914	1309	2720	4147	5591	7051	8526	0018	1526	3049	4588	6143	7713	9299	15
8391	9770	1165	2577	4005	5449	6909	8385	9876	1384	2908	4447	6002	7573	9159	14
8247	9627	1022	2434	3862	5306	6766	8243	9735	1243	2767	4306	5862	7433	9019	13
8104	9483	0879	2291	3719	5164	6624	8101	9593	1101	2626	4165	5721	7292	8879	12
7960	9339	0736	2148	3577	5021	6482	7959	9451	0960	2484	4025	5581	7152	8739	11
7816	9196	0592	2005	3434	4879	6340	7817	9310	0819	2343	3884	5440	7012	8599	10
7672	9052	0449	1862	3291	4736	6198	7675	9168	0677	2202	3743	5299	6871	8459	9
7528	8909	0306	1719	3148	4594	6055	7533	9026	0536	2061	3602	5159	6731	8319	8
7385	8765	0163	1576	3006	4451	5913	7391	8885	0395	1920	3461	5018	6591	8179	7
7241	8622	0019	1433	2863	4309	5771	7249	8743	0253	1779	3320	4878	6450	8039	6
7097	8478	9876	1290	2720	4167	5629	7107	8602	0112	1638	3180	4737	6310	7899	5
6953	8335	9733	1147	2578	4024	5487	6965	8460	9970	1497	3039	4596	6170	7759	4
6809	8191	9590	1004	2435	3882	5345	6824	8318	9829	1356	2898	4456	6029	7619	3
6666	8048	9446	0861	2292	3739	5202	6682	8177	9688	1214	2757	4315	5889	7478	2
6522	7904	9303	0718	2149	3597	5060	6540	8035	9546	1073	2616	4175	5749	7338	1
6378	7761	9160	0575	2007	3454	4918	6398	7894	9405	0932	2475	4034	5608	7198	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Co-Tangent Deg. 81

Tangent Deg. 81

8 Deg. Sine

″	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9. 182	9. 183	9. 183	9. 184	9. 185	9. 186	9. 187	9. 187	9. 188	9. 189	9. 190	9. 191	9. 191	9. 192	9. 193
0	1960	0160	8344	6512	4665	2802	0923	9029	7120	5195	3254	1299	9328	7342	5341
1	2097	0296	8480	6648	4801	2937	1059	9164	7254	5329	3389	1433	9462	7475	5474
2	2233	0433	8616	6784	4936	3073	1194	9299	7389	5464	3523	1567	9595	7609	5607
3	2370	0569	8753	6920	5072	3208	1329	9434	7524	5598	3657	1701	9729	7742	5740
4	2507	0706	8889	7056	5208	3344	1464	9569	7658	5732	3791	1835	9863	7876	5873
5	2644	0842	9025	7192	5344	3479	1599	9704	7793	5867	3925	1968	9996	8009	6007
6	2781	0979	9161	7328	5479	3615	1735	9839	7928	6001	4060	2102	0130	8142	6140
7	2917	1115	9298	7464	5615	3750	1870	9974	8063	6136	4194	2236	0264	8276	6273
8	3054	1252	9434	7600	5751	3886	2005	0109	8197	6270	4328	2370	0397	8409	6406
9	3191	1388	9570	7736	5886	4021	2140	0244	8332	6405	4462	2504	0531	8543	6539
10	3328	1525	9706	7872	6022	4157	2275	0379	8467	6539	4596	2638	0665	8676	6672
11	3464	1661	9843	8008	6158	4292	2411	0514	8601	6673	4730	2772	0798	8809	6805
12	3601	1798	9979	8144	6294	4427	2546	0649	8736	6808	4864	2906	0932	8943	6939
13	3738	1934	0115	8280	6429	4563	2681	0783	8871	6942	4999	3040	1066	9076	7072
14	3875	2071	0251	8416	6565	4698	2816	0918	9005	7077	5133	3174	1199	9210	7205
15	4011	2207	0387	8552	6701	4834	2951	1053	9140	7211	5267	3307	1333	9343	7338
16	4148	2344	0524	8688	6836	4969	3086	1188	9275	7345	5401	3441	1466	9476	7471
17	4285	2480	0660	8824	6972	5105	3222	1323	9409	7480	5535	3575	1600	9610	7604
18	4421	2617	0796	8960	7108	5240	3357	1458	9544	7614	5669	3709	1734	9743	7737
19	4558	2753	0932	9096	7243	5375	3492	1593	9678	7749	5803	3843	1867	9876	7870
20	4695	2890	1068	9232	7379	5511	3627	1728	9813	7883	5938	3977	2001	0010	8004
21	4832	3026	1205	9367	7515	5646	3762	1863	9948	8017	6072	4111	2134	0143	8137
22	4968	3162	1341	9503	7650	5782	3897	1998	0082	8152	6206	4245	2268	0276	8270
23	5105	3299	1477	9639	7786	5917	4032	2132	0217	8286	6340	4378	2402	0410	8403
24	5242	3435	1613	9775	7922	6052	4168	2267	0352	8420	6474	4512	2535	0543	8536
25	5378	3572	1749	9911	8057	6188	4303	2402	0486	8555	6608	4646	2669	0677	8669
26	5515	3708	1885	0047	8193	6323	4438	2537	0621	8689	6742	4780	2802	0810	8802
27	5652	3845	2022	0183	8328	6458	4573	2672	0755	8823	6876	4914	2936	0943	8935
28	5788	3981	2158	0319	8464	6594	4708	2807	0890	8958	7010	5048	3070	1077	9068
29	5925	4117	2294	0455	8600	6729	4843	2942	1025	9092	7144	5181	3203	1210	9201
30	6062	4254	2430	0591	8735	6865	4978	3076	1159	9226	7278	5315	3337	1343	9334
31	6198	4390	2566	0726	8871	7000	5113	3211	1294	9361	7413	5449	3470	1476	9467
32	6335	4527	2702	0862	9007	7135	5248	3346	1428	9495	7547	5583	3604	1610	9601
33	6472	4663	2838	0998	9142	7271	5384	3481	1563	9629	7681	5717	3737	1743	9734
34	6608	4799	2975	1134	9278	7406	5519	3616	1697	9764	7815	5850	3871	1876	9867
35	6745	4936	3111	1270	9413	7541	5654	3751	1832	9898	7949	5984	4005	2010	0000
36	6882	5072	3247	1406	9549	7677	5789	3885	1967	0032	8083	6118	4138	2143	0133
37	7018	5209	3383	1542	9685	7812	5924	4020	2101	0167	8217	6252	4272	2276	0266
38	7155	5345	3519	1677	9820	7947	6059	4155	2236	0301	8351	6386	4405	2410	0399
39	7292	5481	3655	1813	9956	8083	6194	4290	2370	0435	8485	6519	4539	2543	0532
40	7428	5618	3791	1949	0091	8218	6329	4425	2505	0570	8619	6653	4672	2676	0665
41	7565	5754	3927	2085	0227	8353	6464	4559	2639	0704	8753	6787	4806	2809	0798
42	7701	5890	4063	2221	0362	8489	6599	4694	2774	0838	8887	6921	4939	2943	0931
43	7838	6027	4199	2357	0498	8624	6734	4829	2908	0972	9021	7055	5073	3076	1064
44	7975	6163	4336	2492	0634	8759	6869	4964	3043	1107	9155	7188	5206	3209	1197
45	8111	6299	4472	2628	0769	8894	7004	5099	3177	1241	9289	7322	5340	3342	1330
46	8248	6436	4608	2764	0905	9030	7139	5233	3312	1375	9423	7456	5473	3476	1463
47	8384	6572	4744	2900	1040	9165	7274	5368	3446	1509	9557	7590	5607	3609	1596
48	8521	6708	4880	3036	1176	9300	7409	5503	3581	1644	9691	7723	5740	3742	1729
49	8658	6845	5016	3171	1311	9436	7544	5638	3715	1778	9825	7857	5874	3875	1862
50	8794	6981	5152	3307	1447	9571	7679	5772	3850	1912	9959	7991	6007	4009	1995
51	8931	7117	5288	3443	1582	9706	7814	5907	3984	2046	0093	8124	6141	4142	2128
52	9067	7254	5424	3579	1718	9841	7949	6042	4119	2181	0227	8258	6274	4275	2261
53	9204	7390	5560	3715	1853	9977	8084	6177	4253	2315	0361	8392	6408	4408	2394
54	9340	7526	5696	3850	1989	0112	8219	6311	4388	2449	0495	8526	6541	4541	2527
55	9477	7662	5832	3986	2124	0247	8354	6446	4522	2583	0629	8659	6675	4675	2660
56	9614	7799	5968	4122	2260	0382	8489	6581	4657	2718	0763	8793	6808	4808	2793
57	9750	7935	6104	4258	2395	0518	8624	6716	4791	2852	0897	8927	6941	4941	2926
58	9887	8071	6240	4393	2531	0653	8759	6850	4926	2986	1031	9060	7075	5074	3059
59	0023	8208	6376	4529	2666	0788	8894	6985	5060	3120	1165	9194	7208	5207	3191
60	0160	8344	6512	4665	2802	0923	9029	7120	5195	3254	1299	9328	7342	5341	3324
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Sine Deg. 81

8 Deg. Co-Sine

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	″
9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	″
9158	8964	8769	8573	8377	8181	7985	7788	7591	7393	7195	6997	6798	0599	6399	60
9155	8960	8765	8570	8374	8178	7982	7785	7587	7390	7192	6993	6795	6595	6396	59
9152	8957	8762	8567	8371	8175	7978	7781	7584	7386	7188	6990	6791	6592	6393	58
9149	8954	8759	8563	8368	8172	7975	7778	7581	7383	7185	6987	6788	6589	6389	57
9145	8951	8756	8560	8364	8168	7972	7775	7578	7380	7182	6983	6785	6585	6386	56
9142	8947	8752	8557	8361	8165	7968	7772	7574	7377	7178	6980	6781	6582	6383	55
9139	8944	8749	8554	8358	8162	7965	7768	7571	7373	7175	6977	6778	6579	6379	54
9136	8941	8746	8550	8355	8158	7962	7765	7568	7370	7172	6973	6775	6575	6376	53
9132	8938	8743	8547	8351	8155	7959	7762	7564	7367	7169	6970	6771	6572	6373	52
9129	8934	8739	8544	8348	8152	7955	7758	7561	7363	7165	6967	6768	6569	6369	51
9126	8931	8736	8541	8345	8149	7952	7755	7558	7360	7162	6964	6765	6565	6366	50
9123	8928	8733	8537	8342	8145	7949	7752	7554	7357	7159	6960	6761	6562	6363	49
9119	8925	8730	8534	8338	8142	7945	7749	7551	7353	7155	6957	6758	6559	6359	48
9116	8921	8726	8531	8335	8139	7942	7745	7548	7350	7152	6954	6755	6555	6356	47
9113	8918	8723	8528	8332	8136	7939	7742	7545	7347	7149	6950	6751	6552	6353	46
9110	8915	8720	8524	8328	8132	7936	7739	7541	7344	7145	6947	6748	6549	6349	45
9106	8912	8717	8521	8325	8129	7932	7735	7538	7340	7142	6944	6745	6546	6346	44
9103	8908	8713	8518	8322	8126	7929	7732	7535	7337	7139	6940	6741	6542	6343	43
9100	8905	8710	8515	8319	8122	7926	7729	7531	7334	7136	6937	6738	6539	6339	42
9097	8902	8707	8511	8315	8119	7923	7726	7528	7330	7132	6934	6735	6536	6336	41
9093	8899	8704	8508	8312	8116	7919	7722	7525	7327	7129	6930	6732	6532	6333	40
9090	8895	8700	8505	8309	8113	7916	7719	7522	7324	7126	6927	6728	6529	6329	39
9087	8892	8697	8501	8306	8109	7913	7716	7518	7320	7122	6924	6725	6526	6326	38
9084	8889	8694	8498	8302	8106	7909	7712	7515	7317	7119	6920	6722	6522	6323	37
9080	8886	8690	8495	8299	8103	7906	7709	7512	7314	7116	6917	6718	6519	6319	36
9077	8882	8687	8492	8296	8099	7903	7706	7508	7311	7112	6914	6715	6516	6316	35
9074	8879	8684	8488	8293	8096	7900	7702	7505	7307	7109	6911	6712	6512	6313	34
9071	8876	8681	8485	8289	8093	7896	7699	7502	7304	7106	6907	6708	6509	6309	33
9067	8873	8677	8482	8286	8090	7893	7696	7498	7301	7102	6904	6705	6506	6306	32
9064	8869	8674	8479	8283	8086	7890	7693	7495	7297	7099	6901	6702	6502	6303	31
9061	8866	8671	8475	8279	8083	7886	7689	7492	7294	7096	6897	6698	6499	6299	30
9058	8863	8668	8472	8276	8080	7883	7686	7489	7291	7093	6894	6695	6496	6296	29
9054	8860	8664	8469	8273	8077	7880	7683	7485	7287	7089	6891	6692	6492	6293	28
9051	8856	8661	8466	8270	8073	7877	7679	7482	7284	7086	6887	6688	6489	6289	27
9048	8853	8658	8462	8266	8070	7873	7676	7479	7281	7083	6884	6685	6486	6286	26
9045	8850	8655	8459	8263	8067	7870	7673	7475	7278	7079	6881	6682	6482	6283	25
9042	8847	8651	8456	8260	8063	7867	7670	7472	7274	7076	6877	6678	6479	6279	24
9038	8843	8648	8453	8257	8060	7863	7666	7469	7271	7073	6874	6675	6476	6276	23
9035	8840	8645	8449	8253	8057	7860	7663	7466	7268	7069	6871	6672	6472	6273	22
9032	8837	8642	8446	8250	8054	7857	7660	7462	7264	7066	6867	6668	6469	6269	21
9029	8834	8638	8443	8247	8050	7854	7656	7459	7261	7063	6864	6665	6466	6266	20
9025	8830	8635	8439	8243	8047	7850	7653	7456	7258	7059	6861	6662	6462	6263	19
9022	8827	8632	8436	8240	8044	7847	7650	7452	7254	7056	6858	6658	6459	6259	18
9019	8824	8629	8433	8237	8041	7844	7647	7449	7251	7053	6854	6655	6456	6256	17
9016	8821	8625	8430	8234	8037	7840	7643	7446	7248	7050	6851	6652	6452	6253	16
9012	8817	8622	8426	8230	8034	7837	7640	7442	7245	7046	6848	6649	6449	6249	15
9009	8814	8619	8423	8227	8031	7834	7637	7439	7241	7043	6844	6645	6446	6246	14
9006	8811	8616	8420	8224	8027	7831	7633	7436	7238	7040	6841	6642	6442	6243	13
9003	8808	8612	8417	8221	8024	7827	7630	7433	7235	7036	6838	6639	6439	6239	12
8999	8804	8609	8413	8217	8021	7824	7627	7429	7231	7033	6834	6635	6436	6236	11
8996	8801	8606	8410	8214	8018	7821	7624	7426	7228	7030	6831	6632	6432	6233	10
8993	8798	8603	8407	8211	8014	7817	7620	7423	7225	7026	6828	6629	6429	6229	9
8990	8795	8599	8404	8208	8011	7814	7617	7419	7221	7023	6824	6625	6426	6226	8
8986	8791	8596	8400	8204	8008	7811	7614	7416	7218	7020	6821	6622	6422	6223	7
8983	8788	8593	8397	8201	8004	7808	7610	7413	7215	7016	6818	6619	6419	6219	6
8980	8785	8590	8394	8198	8001	7804	7607	7410	7212	7013	6814	6615	6416	6216	5
8977	8782	8586	8391	8194	7998	7801	7604	7406	7208	7010	6811	6612	6412	6213	4
8973	8778	8583	8387	8191	7995	7798	7601	7403	7205	7007	6808	6609	6409	6209	3
8970	8775	8580	8384	8188	7991	7794	7597	7400	7202	7003	6804	6605	6406	6206	2
8967	8772	8576	8381	8185	7988	7791	7594	7396	7198	7000	6801	6602	6402	6203	1
8964	8769	8573	8377	8181	7985	7788	7591	7393	7195	6997	6798	6599	6399	6199	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Sine Deg. 81

"	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9. 187	9. 188	9. 188	9. 189	9. 190	9. 191	9. 192	9. 193	9. 193	9. 194	9. 195	9. 196	9. 197	9. 198	9. 198
0	2802	1196	9575	7939	6287	4621	2939	1241	9529	7802	6059	4302	2530	0743	8941
1	2942	1336	9715	8078	6426	4759	3077	1380	9667	7939	6197	4439	2667	0880	9078
2	3082	1476	9854	8218	6565	4898	3216	1518	9805	8077	6334	4577	2804	1017	9215
3	3222	1615	9994	8357	6704	5037	3354	1656	9943	8215	6472	4714	2941	1153	9351
4	3362	1755	0133	8496	6843	5176	3493	1794	0081	8353	6609	4851	3078	1290	9488
5	3502	1895	0273	8635	6982	5314	3631	1933	0219	8490	6747	4988	3215	1427	9624
6	3642	2035	0412	8775	7121	5453	3769	2071	0357	8628	6884	5126	3352	1564	9761
7	3782	2175	0552	8914	7260	5592	3908	2209	0495	8766	7022	5263	3489	1700	9897
8	3922	2314	0691	9053	7399	5731	4046	2347	0633	8904	7159	5400	3626	1837	0033
9	4062	2454	0831	9192	7538	5869	4185	2485	0771	9041	7297	5537	3763	1974	0170
10	4202	2594	0970	9331	7677	6008	4323	2624	0909	9179	7434	5674	3900	2111	0306
11	4342	2733	1110	9471	7816	6147	4462	2762	1047	9317	7572	5812	4037	2247	0443
12	4482	2873	1249	9610	7955	6285	4600	2900	1185	9454	7709	5949	4174	2384	0579
13	4622	3013	1389	9749	8094	6424	4739	3038	1323	9592	7847	6086	4311	2521	0716
14	4762	3153	1528	9888	8233	6563	4877	3176	1461	9730	7984	6223	4448	2657	0852
15	4902	3292	1668	0028	8372	6701	5016	3315	1599	9868	8121	6361	4585	2794	0989
16	5042	3432	1807	0167	8511	6840	5154	3453	1737	0005	8259	6498	4722	2931	1125
17	5182	3572	1947	0306	8650	6979	5293	3591	1874	0143	8396	6635	4859	3068	1262
18	5322	3712	2086	0445	8789	7118	5431	3729	2012	0281	8534	6772	4996	3204	1398
19	5462	3851	2225	0584	8928	7256	5569	3867	2150	0418	8671	6909	5132	3341	1535
20	5602	3991	2365	0724	9067	7395	5708	4006	2288	0556	8809	7046	5269	3478	1671
21	5741	4131	2504	0863	9206	7534	5846	4144	2426	0694	8946	7184	5406	3614	1807
22	5881	4270	2644	1002	9345	7672	5985	4282	2564	0831	9083	7321	5543	3751	1944
23	6021	4410	2783	1141	9484	7811	6123	4420	2702	0969	9221	7458	5680	3888	2080
24	6161	4550	2923	1280	9623	7950	6261	4558	2840	1107	9358	7595	5817	4024	2217
25	6301	4689	3062	1419	9761	8088	6400	4696	2978	1244	9496	7732	5954	4161	2353
26	6441	4829	3201	1559	9900	8227	6538	4835	3116	1382	9633	7869	6091	4298	2490
27	6581	4969	3341	1698	0039	8366	6677	4973	3254	1519	9770	8007	6228	4434	2626
28	6721	5108	3480	1837	0178	8504	6815	5111	3391	1657	9908	8144	6365	4571	2762
29	6861	5248	3620	1976	0317	8643	6953	5249	3529	1795	0045	8281	6502	4708	2899
30	7001	5388	3759	2115	0456	8781	7092	5387	3667	1932	0183	8418	6638	4844	3035
31	7141	5527	3898	2254	0595	8920	7230	5525	3805	2070	0320	8555	6775	4981	3172
32	7281	5667	4038	2393	0734	9059	7369	5663	3943	2208	0457	8692	6912	5117	3308
33	7421	5807	4177	2533	0873	9197	7507	5801	4081	2345	0595	8829	7049	5254	3444
34	7560	5946	4317	2672	1011	9336	7645	5940	4219	2483	0732	8966	7186	5391	3581
35	7700	6086	4456	2811	1150	9475	7784	6078	4357	2620	0869	9104	7323	5527	3717
36	7840	6225	4595	2950	1289	9613	7922	6216	4494	2758	1007	9241	7460	5664	3853
37	7980	6365	4735	3089	1428	9752	8060	6354	4632	2896	1144	9378	7597	5801	3990
38	8120	6505	4874	3228	1567	9890	8199	6492	4770	3033	1282	9515	7733	5937	4126
39	8260	6644	5013	3367	1706	0029	8337	6630	4908	3171	1419	9652	7870	6074	4263
40	8400	6784	5153	3506	1845	0168	8475	6768	5046	3308	1556	9789	8007	6210	4399
41	8540	6924	5292	3645	1983	0306	8614	6906	5184	3446	1694	9926	8144	6347	4535
42	8679	7063	5432	3785	2122	0445	8752	7044	5321	3584	1831	0063	8281	6484	4672
43	8819	7203	5571	3924	2261	0583	8890	7182	5459	3721	1968	0200	8418	6620	4808
44	8959	7342	5710	4063	2400	0722	9029	7320	5597	3859	2106	0337	8554	6757	4944
45	9099	7482	5850	4202	2539	0860	9167	7459	5735	3996	2243	0474	8691	6893	5081
46	9239	7622	5989	4341	2678	0999	9305	7597	5873	4134	2380	0612	8828	7030	5217
47	9379	7761	6128	4480	2816	1138	9444	7735	6011	4271	2517	0749	8965	7166	5353
48	9518	7901	6268	4619	2955	1276	9582	7873	6148	4409	2655	0886	9102	7303	5490
49	9658	8040	6407	4758	3094	1415	9720	8011	6286	4547	2792	1023	9239	7440	5626
50	9798	8180	6546	4897	3233	1553	9859	8149	6424	4684	2929	1160	9375	7576	5762
51	9938	8319	6685	5036	3372	1692	9997	8287	6562	4822	3067	1297	9512	7713	5899
52	0078	8459	6825	5175	3510	1830	0135	8425	6700	4959	3204	1434	9649	7849	6035
53	0218	8599	6964	5314	3649	1969	0273	8563	6837	5097	3341	1571	9786	7986	6171
54	0357	8738	7103	5453	3788	2107	0412	8701	6975	5234	3479	1708	9922	8122	6307
55	0497	8878	7243	5592	3927	2246	0550	8839	7113	5372	3616	1845	0059	8259	6444
56	0637	9017	7382	5731	4066	2384	0688	8977	7251	5509	3753	1982	0196	8395	6580
57	0777	9157	7521	5870	4204	2523	0827	9115	7388	5647	3890	2119	0333	8532	6716
58	0917	9296	7660	6009	4343	2662	0965	9253	7526	5784	4028	2256	0470	8668	6853
59	1056	9436	7800	6148	4482	2800	1103	9391	7664	5922	4165	2393	0606	8805	6989
60	1196	9575	7939	6287	4621	2939	1241	9529	7802	6059	4302	2530	0743	8941	7125
"	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
10. 812	10. 811	10. 811	10. 810	10. 809	10. 808	10. 807	10. 806	10. 806	10. 805	10. 804	10. 803	10. 802	10. 801	10. 801	"
7198	8804	0425	2061	3713	5379	7061	8759	0471	2198	3941	5698	7470	9257	1059	60
7058	8664	0285	1922	3574	5241	6923	8620	0333	2061	3803	5561	7333	9120	0922	59
6918	8524	0146	1782	3435	5102	6784	8482	0195	1923	3666	5423	7196	8983	0785	58
6778	8385	0006	1643	3296	4963	6646	8344	0057	1785	3528	5286	7059	8847	0649	57
6638	8245	9867	1504	3157	4824	6507	8206	9919	1647	3391	5149	6922	8710	0512	56
6498	8105	9727	1365	3018	4686	6369	8067	9781	1510	3253	5012	6785	8573	0376	55
6358	7965	9588	1225	2879	4547	6231	7929	9643	1372	3116	4874	6648	8436	0239	54
6218	7825	9448	1086	2740	4408	6092	7791	9505	1234	2978	4737	6511	8300	0103	53
6078	7686	9309	0947	2601	4269	5954	7653	9367	1096	2841	4600	6374	8163	9967	52
5938	7546	9169	0808	2462	4131	5815	7515	9229	0959	2703	4463	6237	8026	9830	51
5798	7406	9030	0669	2323	3992	5677	7376	9091	0821	2566	4326	6100	7889	9694	50
5658	7267	8890	0529	2184	3853	5538	7238	8953	0683	2428	4188	5963	7753	9557	49
5518	7127	8751	0390	2045	3715	5400	7100	8815	0546	2291	4051	5826	7616	9421	48
5378	6987	8611	0251	1906	3576	5261	6962	8677	0408	2153	3914	5689	7479	9284	47
5238	6847	8472	0112	1767	3437	5123	6824	8539	0270	2016	3777	5552	7343	9148	46
5098	6708	8332	9972	1628	3299	4984	6685	8401	0132	1879	3639	5415	7206	9011	45
4958	6568	8193	9833	1489	3160	4846	6547	8263	9995	1741	3502	5278	7069	8875	44
4818	6428	8053	9694	1350	3021	4707	6409	8126	9857	1604	3365	5141	6932	8738	43
4678	6288	7914	9555	1211	2882	4569	6271	7988	9719	1466	3228	5004	6796	8602	42
4538	6149	7775	9416	1072	2744	4431	6133	7850	9582	1329	3091	4868	6659	8465	41
4398	6009	7635	9276	0933	2605	4292	5994	7712	9444	1191	2954	4731	6522	8329	40
4259	5869	7496	9137	0794	2466	4154	5856	7574	9306	1054	2816	4594	6386	8193	39
4119	5730	7356	8998	0655	2328	4015	5718	7436	9169	0917	2679	4457	6249	8056	38
3979	5590	7217	8859	0516	2189	3877	5580	7298	9031	0779	2542	4320	6112	7920	37
3839	5450	7077	8720	0377	2050	3739	5442	7160	8893	0642	2405	4183	5976	7783	36
3699	5311	6938	8581	0239	1912	3600	5304	7022	8756	0504	2268	4046	5839	7647	35
3559	5171	6799	8441	0100	1773	3462	5165	6884	8618	0367	2131	3909	5702	7510	34
3419	5031	6659	8302	9961	1634	3323	5027	6746	8481	0230	1993	3772	5566	7374	33
3279	4892	6520	8163	9822	1496	3185	4889	6609	8343	0092	1856	3635	5429	7238	32
3139	4752	6380	8024	9683	1357	3047	4751	6471	8205	9955	1719	3498	5292	7101	31
2999	4612	6241	7885	9544	1219	2908	4613	6333	8068	9817	1582	3362	5156	6965	30
2859	4473	6102	7746	9405	1080	2770	4475	6195	7930	9680	1445	3225	5019	6828	29
2719	4333	5962	7607	9266	0941	2631	4337	6057	7792	9543	1308	3088	4883	6692	28
2579	4193	5823	7467	9127	0803	2493	4199	5919	7655	9405	1171	2951	4746	6556	27
2440	4054	5683	7328	8989	0664	2355	4060	5781	7517	9268	1034	2814	4609	6419	26
2300	3914	5544	7189	8850	0525	2216	3922	5643	7380	9131	0896	2677	4473	6283	25
2160	3775	5405	7050	8711	0387	2078	3784	5506	7242	8993	0759	2540	4336	6147	24
2020	3635	5265	6911	8572	0248	1940	3646	5368	7104	8856	0622	2403	4199	6010	23
1880	3495	5126	6772	8433	0110	1801	3508	5230	6967	8718	0485	2267	4063	5874	22
1740	3356	4987	6633	8294	9971	1663	3370	5092	6829	8581	0348	2130	3926	5737	21
1600	3216	4847	6494	8155	9832	1525	3232	4954	6692	8444	0211	1993	3790	5601	20
1460	3076	4708	6355	8017	9694	1386	3094	4816	6554	8306	0074	1856	3653	5465	19
1321	2937	4568	6215	7878	9555	1248	2956	4679	6416	8169	9937	1719	3516	5328	18
1181	2797	4429	6076	7739	9417	1110	2818	4541	6279	8032	9800	1582	3380	5192	17
1041	2658	4290	5937	7600	9278	0971	2680	4403	6141	7894	9663	1446	3243	5056	16
0901	2518	4150	5798	7461	9140	0833	2541	4265	6004	7757	9526	1309	3107	4919	15
0761	2378	4011	5659	7322	9001	0695	2403	4127	5866	7620	9388	1172	2970	4783	14
0621	2239	3872	5520	7184	8862	0556	2265	3989	5729	7483	9251	1035	2834	4647	13
0482	2099	3732	5381	7045	8724	0418	2127	3852	5591	7345	9114	0898	2697	4510	12
0342	1960	3593	5242	6906	8585	0280	1989	3714	5453	7208	8977	0761	2560	4374	11
0202	1820	3454	5103	6767	8447	0141	1851	3576	5316	7071	8840	0625	2424	4238	10
0062	1681	3315	4964	6628	8308	0003	1713	3438	5178	6933	8703	0488	2287	4101	9
9922	1541	3175	4825	6490	8170	9865	1575	3300	5041	6796	8566	0351	2151	3965	8
9782	1401	3036	4686	6351	8031	9727	1437	3163	4903	6659	8429	0214	2014	3829	7
9643	1262	2897	4547	6212	7893	9588	1299	3025	4766	6521	8292	0078	1878	3693	6
9503	1122	2757	4408	6073	7754	9450	1161	2887	4628	6384	8155	9941	1741	3556	5
9363	0983	2618	4269	5934	7616	9312	1023	2749	4491	6247	8018	9804	1605	3420	4
9223	0843	2479	4130	5796	7477	9173	0885	2612	4353	6110	7881	9667	1468	3284	3
9083	0704	2340	3991	5657	7338	9035	0747	2474	4216	5972	7744	9530	1332	3147	2
8944	0564	2200	3852	5518	7200	8897	0609	2336	4078	5835	7607	9394	1195	3011	1
8804	0425	2061	3713	5379	7061	8759	0471	2198	3941	5698	7470	9257	1059	2875	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	"

9 Deg. Sine

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9. 194	9. 195	9. 195	9. 196	9. 197	9. 198	9. 199	9. 199	9. 200	9. 201	9. 202	9. 203	9. 203	9. 204	9. 205
0	3324	1293	9247	7186	5110	3019	0913	8793	6658	4509	2345	0167	7974	5766	3545
1	3457	1426	9379	7318	5242	3151	1045	8924	6789	4640	2475	0297	8104	5896	3674
2	3590	1559	9512	7450	5374	3282	1176	9056	6920	4770	2606	0427	8234	6026	3804
3	3723	1691	9644	7582	5506	3414	1308	9187	7051	4901	2736	0557	8364	6156	3933
4	3856	1824	9777	7715	5638	3546	1439	9318	7182	5032	2867	0687	8494	6285	4063
5	3989	1957	9909	7847	5769	3677	1571	9449	7313	5163	2997	0818	8624	6415	4192
6	4122	2089	0041	7979	5901	3809	1702	9580	7444	5293	3128	0948	8754	6545	4322
7	4255	2222	0174	8111	6033	3941	1834	9712	7575	5424	3258	1078	8884	6675	4451
8	4388	2355	0306	8243	6165	4072	1965	9843	7706	5555	3389	1208	9014	6804	4581
9	4521	2487	0439	8375	6297	4204	2096	9974	7837	5685	3519	1339	9143	6934	4710
10	4654	2620	0571	8507	6429	4336	2228	0105	7968	5816	3650	1469	9273	7064	4840
11	4786	2752	0703	8640	6561	4467	2359	0236	8099	5947	3780	1599	9403	7194	4969
12	4919	2885	0836	8772	6693	4599	2491	0367	8230	6077	3910	1729	9533	7323	5099
13	5052	3018	0968	8904	6825	4731	2622	0499	8361	6208	4041	1859	9663	7453	5228
14	5185	3150	1101	9036	6957	4862	2753	0630	8492	6339	4171	1989	9793	7583	5358
15	5318	3283	1233	9168	7088	4994	2885	0761	8622	6469	4302	2120	9923	7712	5487
16	5451	3416	1365	9300	7220	5126	3016	0892	8753	6600	4432	2250	0053	7842	5617
17	5584	3548	1498	9432	7352	5257	3148	1023	8884	6731	4563	2380	0183	7972	5746
18	5717	3681	1630	9565	7484	5389	3279	1154	9015	6861	4693	2510	0313	8101	5876
19	5849	3813	1763	9697	7616	5521	3410	1285	9146	6992	4823	2640	0443	8231	6005
20	5982	3946	1895	9829	7748	5652	3542	1417	9277	7123	4954	2771	0573	8361	6134
21	6115	4079	2027	9961	7880	5784	3673	1548	9408	7253	5084	2901	0703	8490	6264
22	6248	4211	2160	0093	8012	5915	3804	1679	9539	7384	5215	3031	0833	8620	6393
23	6381	4344	2292	0225	8143	6047	3936	1810	9670	7514	5345	3161	0963	8750	6523
24	6514	4476	2424	0357	8275	6179	4067	1941	9800	7645	5475	3291	1092	8879	6652
25	6647	4609	2557	0489	8407	6310	4199	2072	9931	7776	5606	3421	1222	9009	6782
26	6779	4742	2689	0621	8539	6442	4330	2203	0062	7906	5736	3551	1352	9139	6911
27	6912	4874	2821	0753	8671	6573	4461	2334	0193	8037	5866	3682	1482	9268	7040
28	7045	5007	2954	0886	8803	6705	4593	2465	0324	8168	5997	3812	1612	9398	7170
29	7178	5139	3086	1018	8934	6837	4724	2597	0455	8298	6127	3942	1742	9528	7299
30	7311	5272	3218	1150	9066	6968	4855	2728	0586	8429	6258	4072	1872	9657	7429
31	7443	5404	3351	1282	9198	7100	4987	2859	0716	8559	6388	4202	2002	9787	7558
32	7576	5537	3483	1414	9330	7231	5118	2990	0847	8690	6518	4332	2132	9917	7687
33	7709	5670	3615	1546	9462	7363	5249	3121	0978	8821	6649	4462	2261	0046	7817
34	7842	5802	3747	1678	9594	7494	5381	3252	1109	8951	6779	4592	2391	0176	7946
35	7975	5935	3880	1810	9725	7626	5512	3383	1240	9082	6909	4722	2521	0306	8076
36	8107	6067	4012	1942	9857	7757	5643	3514	1370	9212	7040	4853	2651	0435	8205
37	8240	6200	4144	2074	9989	7889	5774	3645	1501	9343	7170	4983	2781	0565	8334
38	8373	6332	4277	2206	0121	8021	5906	3776	1632	9473	7300	5113	2911	0694	8464
39	8506	6465	4409	2338	0252	8152	6037	3907	1763	9604	7431	5243	3041	0824	8593
40	8639	6597	4541	2470	0384	8284	6168	4038	1894	9735	7561	5373	3170	0954	8722
41	8771	6730	4673	2602	0516	8415	6300	4169	2025	9865	7691	5503	3300	1083	8852
42	8904	6862	4806	2734	0648	8547	6431	4300	2155	9996	7822	5633	3430	1213	8981
43	9037	6995	4938	2866	0780	8678	6562	4431	2286	0126	7952	5763	3560	1342	9111
44	9170	7127	5070	2998	0911	8810	6693	4562	2417	0257	8082	5893	3690	1472	9240
45	9302	7260	5202	3130	1043	8941	6825	4693	2548	0387	8213	6023	3820	1602	9369
46	9435	7392	5335	3262	1175	9073	6956	4825	2678	0518	8343	6153	3949	1731	9499
47	9568	7525	5467	3394	1307	9204	7087	4956	2809	0648	8473	6283	4079	1861	9628
48	9701	7657	5599	3526	1438	9336	7218	5087	2940	0779	8603	6413	4209	1990	9757
49	9833	7790	5731	3658	1570	9467	7350	5218	3071	0909	8734	6543	4339	2120	9887
50	9966	7922	5864	3790	1702	9599	7481	5349	3202	1040	8864	6673	4469	2249	0016
51	0099	8055	5996	3922	1834	9730	7612	5480	3332	1171	8994	6804	4598	2379	0145
52	0232	8187	6128	4054	1965	9862	7743	5611	3463	1301	9125	6934	4728	2509	0275
53	0364	8320	6260	4186	2097	9993	7875	5742	3594	1432	9255	7064	4858	2638	0404
54	0497	8452	6393	4318	2229	0125	8006	5873	3725	1562	9385	7194	4988	2768	0533
55	0630	8585	6525	4450	2360	0256	8137	6004	3855	1693	9515	7324	5118	2897	0662
56	0762	8717	6657	4582	2492	0388	8268	6135	3986	1823	9646	7454	5247	3027	0792
57	0895	8850	6789	4714	2624	0519	8400	6266	4117	1954	9776	7584	5377	3156	0921
58	1028	8982	6921	4846	2756	0651	8531	6396	4248	2084	9906	7714	5507	3286	1050
59	1160	9114	7054	4978	2887	0782	8662	6527	4378	2215	0036	7844	5637	3415	1180
60	1293	9247	7186	5110	3019	0913	8793	6658	4509	2345	0167	7974	5766	3545	1309
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Sine Deg. 80

9 Deg. Co-Sine

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	″
	6199	5999	5798	5597	5396	5194	4992	4789	4587	4383	4180	3975	3771	3566	3361	60
	6196	5996	5795	5594	5393	5191	4989	4786	4583	4380	4176	3972	3768	3563	3358	59
	6193	5992	5792	5591	5389	5187	4985	4783	4580	4376	4173	3969	3764	3559	3354	58
	6189	5989	5788	5587	5386	5184	4982	4779	4576	4373	4169	3965	3761	3556	3351	57
	6186	5986	5785	5584	5382	5181	4978	4776	4573	4370	4166	3962	3757	3553	3347	56
	6183	5982	5782	5581	5379	5177	4975	4773	4570	4366	4163	3958	3754	3549	3344	55
	6179	5979	5778	5577	5376	5174	4972	4769	4566	4363	4159	3955	3751	3546	3341	54
	6176	5976	5775	5574	5372	5171	4968	4766	4563	4359	4156	3952	3747	3542	3337	53
	6173	5972	5772	5570	5369	5167	4965	4762	4559	4356	4152	3948	3744	3539	3334	52
	6169	5969	5768	5567	5366	5164	4962	4759	4556	4353	4149	3945	3740	3536	3330	51
	6166	5966	5765	5564	5362	5160	4958	4756	4553	4349	4146	3941	3737	3532	3327	50
	6163	5962	5762	5560	5359	5157	4955	4752	4549	4346	4142	3938	3734	3529	3323	49
	6159	5959	5758	5557	5356	5154	4951	4749	4546	4343	4139	3935	3730	3525	3320	48
	6156	5956	5755	5554	5352	5150	4948	4745	4542	4339	4135	3931	3727	3522	3317	47
	6153	5952	5751	5550	5349	5147	4945	4742	4539	4336	4132	3928	3723	3518	3313	46
	6149	5949	5748	5547	5345	5144	4941	4739	4536	4332	4129	3924	3720	3515	3310	45
	6146	5946	5745	5544	5342	5140	4938	4735	4532	4329	4125	3921	3716	3512	3306	44
	6143	5942	5741	5540	5339	5137	4935	4732	4529	4326	4122	3918	3713	3508	3303	43
	6139	5939	5738	5537	5335	5134	4931	4729	4526	4322	4118	3914	3710	3505	3299	42
	6136	5935	5735	5534	5332	5130	4928	4725	4522	4319	4115	3911	3706	3501	3296	41
	6133	5932	5731	5530	5329	5127	4924	4722	4519	4315	4112	3907	3703	3498	3293	40
	6129	5929	5728	5527	5325	5123	4921	4718	4515	4312	4108	3904	3699	3495	3289	39
	6126	5925	5725	5524	5322	5120	4918	4715	4512	4309	4105	3901	3696	3491	3286	38
	6123	5922	5721	5520	5319	5117	4914	4712	4509	4305	4101	3897	3693	3488	3282	37
	6119	5919	5718	5517	5315	5113	4911	4708	4505	4302	4098	3894	3689	3484	3279	36
	6116	5915	5715	5513	5312	5110	4908	4705	4502	4298	4095	3890	3686	3481	3275	35
	6113	5912	5711	5510	5309	5107	4904	4702	4498	4295	4091	3887	3682	3477	3272	34
	6109	5909	5708	5507	5305	5103	4901	4698	4495	4292	4088	3884	3679	3474	3269	33
	6106	5905	5705	5503	5302	5100	4897	4695	4492	4288	4084	3880	3676	3471	3265	32
	6103	5902	5701	5500	5298	5096	4894	4691	4488	4285	4081	3877	3672	3467	3262	31
	6099	5899	5698	5497	5295	5093	4891	4688	4485	4281	4078	3873	3669	3464	3258	30
	6096	5895	5695	5493	5292	5090	4887	4685	4482	4278	4074	3870	3665	3460	3255	29
	6093	5892	5691	5490	5288	5086	4884	4681	4478	4275	4071	3867	3662	3457	3252	28
	6089	5889	5688	5487	5285	5083	4881	4678	4475	4271	4067	3863	3658	3453	3248	27
	6086	5885	5684	5483	5282	5080	4877	4674	4471	4268	4064	3860	3655	3450	3245	26
	6082	5882	5681	5480	5278	5076	4874	4671	4468	4264	4061	3856	3652	3447	3241	25
	6079	5879	5678	5477	5275	5073	4870	4668	4465	4261	4057	3853	3648	3443	3238	24
	6076	5875	5674	5473	5272	5069	4867	4664	4461	4258	4054	3849	3645	3440	3234	23
	6072	5872	5671	5470	5268	5066	4864	4661	4458	4254	4050	3846	3641	3436	3231	22
	6069	5869	5668	5466	5265	5063	4860	4658	4454	4251	4047	3843	3638	3433	3228	21
	6066	5865	5664	5463	5261	5059	4857	4654	4451	4247	4044	3839	3635	3430	3224	20
	6062	5862	5661	5460	5258	5056	4854	4651	4448	4244	4040	3836	3631	3426	3221	19
	6059	5859	5658	5456	5255	5053	4850	4647	4444	4241	4037	3832	3628	3423	3217	18
	6056	5855	5654	5453	5251	5049	4847	4644	4441	4237	4033	3829	3624	3419	3214	17
	6052	5852	5651	5450	5248	5046	4843	4641	4437	4234	4030	3826	3621	3416	3210	16
	6049	5849	5648	5446	5245	5043	4840	4637	4434	4230	4027	3822	3618	3412	3207	15
	6046	5845	5644	5443	5241	5039	4837	4634	4431	4227	4023	3819	3614	3409	3204	14
	6042	5842	5641	5440	5238	5036	4833	4630	4427	4224	4020	3815	3611	3406	3200	13
	6039	5839	5638	5436	5235	5032	4830	4627	4424	4220	4016	3812	3607	3402	3197	12
	6036	5835	5634	5433	5231	5029	4827	4624	4421	4217	4013	3809	3604	3399	3193	11
	6032	5832	5631	5429	5228	5026	4823	4620	4417	4214	4010	3805	3600	3395	3190	10
	6029	5828	5627	5426	5224	5022	4820	4617	4414	4210	4006	3802	3597	3392	3186	9
	6026	5825	5624	5423	5221	5019	4816	4614	4410	4207	4003	3798	3594	3388	3183	8
	6022	5822	5621	5419	5218	5016	4813	4610	4407	4203	3999	3795	3590	3385	3180	7
	6019	5818	5617	5416	5214	5012	4810	4607	4404	4200	3996	3792	3587	3382	3176	6
	6016	5815	5614	5413	5211	5009	4806	4603	4400	4197	3993	3788	3583	3378	3173	5
	6012	5812	5611	5409	5208	5005	4803	4600	4397	4193	3989	3785	3580	3375	3169	4
	6009	5808	5607	5406	5204	5002	4800	4597	4393	4190	3986	3781	3577	3371	3166	3
	6006	5805	5604	5403	5201	4999	4796	4593	4390	4186	3982	3778	3573	3368	3162	2
	6002	5802	5601	5399	5197	4995	4793	4590	4387	4183	3979	3774	3570	3365	3159	1
	5999	5798	5597	5396	5194	4992	4789	4587	4383	4180	3975	3771	3566	3361	3156	0
	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Sine Deg. 80

9 Deg. Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9. 199	9. 200	9. 201	9. 202	9. 202	9. 203	9. 204	9. 205	9. 206	9. 207	9. 207	9. 208	9. 209	9. 210	9. 211
0	7125	5294	3449	1588	9714	7825	5922	4004	2072	0126	8165	6191	4203	2200	0184
1	7261	5430	3584	1724	9849	7960	6056	4138	2206	0260	8299	6325	4336	2333	0317
2	7398	5566	3720	1860	9985	8095	6191	4273	2341	0394	8433	6458	4469	2466	0450
3	7534	5702	3856	1995	0120	8230	6326	4408	2475	0528	8567	6592	4603	2600	0583
4	7670	5838	3992	2131	0255	8365	6461	4542	2609	0662	8701	6726	4736	2733	0715
5	7806	5974	4127	2266	0390	8500	6596	4677	2744	0796	8835	6859	4870	2866	0848
6	7943	6110	4263	2402	0526	8635	6730	4811	2878	0930	8969	6993	5003	2999	0981
7	8079	6246	4399	2537	0661	8770	6865	4946	3012	1064	9102	7126	5136	3132	1114
8	8215	6382	4535	2673	0796	8905	7000	5080	3147	1199	9236	7260	5270	3265	1247
9	8351	6518	4670	2808	0931	9040	7135	5215	3281	1333	9370	7394	5403	3399	1380
10	8488	6654	4806	2944	1067	9175	7270	5350	3415	1467	9504	7527	5536	3532	1513
11	8624	6790	4942	3079	1202	9310	7404	5484	3550	1601	9638	7661	5670	3665	1646
12	8760	6926	5078	3215	1337	9445	7539	5619	3684	1735	9772	7794	5803	3798	1779
13	8896	7062	5213	3350	1473	9580	7674	5753	3818	1869	9906	7928	5937	3931	1912
14	9033	7198	5349	3486	1608	9715	7809	5888	3952	2003	0039	8062	6070	4064	2045
15	9169	7334	5485	3621	1743	9850	7943	6022	4087	2137	0173	8195	6203	4197	2177
16	9305	7470	5621	3757	1878	9985	8078	6157	4221	2271	0307	8329	6337	4330	2310
17	9441	7606	5756	3892	2013	0120	8213	6291	4355	2405	0441	8462	6470	4464	2443
18	9577	7742	5892	4028	2149	0255	8348	6426	4490	2539	0575	8596	6603	4597	2576
19	9714	7878	6028	4163	2284	0390	8482	6560	4624	2673	0708	8730	6737	4730	2709
20	9850	8014	6163	4299	2419	0525	8617	6695	4758	2807	0842	8863	6870	4863	2842
21	9986	8150	6299	4434	2554	0660	8752	6829	4892	2941	0976	8997	7003	4996	2975
22	0122	8286	6435	4569	2690	0795	8887	6964	5027	3075	1110	9130	7137	5129	3108
23	0258	8422	6571	4705	2825	0930	9021	7098	5161	3209	1244	9264	7270	5262	3240
24	0395	8558	6706	4840	2960	1065	9156	7233	5295	3343	1377	9397	7403	5395	3373
25	0531	8694	6842	4976	3095	1200	9291	7367	5429	3477	1511	9531	7537	5528	3506
26	0667	8830	6978	5111	3230	1335	9426	7502	5564	3611	1645	9664	7670	5661	3639
27	0803	8965	7113	5247	3366	1470	9560	7636	5698	3745	1779	9798	7803	5794	3772
28	0939	9101	7249	5382	3501	1605	9695	7771	5832	3879	1912	9932	7937	5928	3905
29	1075	9237	7385	5518	3636	1740	9830	7905	5966	4013	2046	0065	8070	6061	4037
30	1211	9373	7520	5653	3771	1875	9964	8040	6101	4147	2180	0199	8203	6194	4170
31	1348	9509	7656	5788	3906	2010	0099	8174	6235	4281	2314	0332	8336	6327	4303
32	1484	9645	7792	5924	4042	2145	0234	8309	6369	4415	2448	0466	8470	6460	4436
33	1620	9781	7927	6059	4177	2280	0369	8443	6503	4549	2581	0599	8603	6593	4569
34	1756	9917	8063	6195	4312	2415	0503	8578	6638	4683	2715	0733	8736	6726	4702
35	1892	0053	8199	6330	4447	2550	0638	8712	6772	4817	2849	0866	8870	6859	4834
36	2028	0189	8334	6465	4582	2685	0773	8846	6906	4951	2982	1000	9003	6992	4967
37	2164	0324	8470	6601	4717	2820	0907	8981	7040	5085	3116	1133	9136	7125	5100
38	2301	0460	8606	6736	4853	2954	1042	9115	7174	5219	3250	1267	9269	7258	5233
39	2437	0596	8741	6872	4988	3089	1177	9250	7309	5353	3384	1400	9403	7391	5366
40	2573	0732	8877	7007	5123	3224	1311	9384	7443	5487	3517	1534	9536	7524	5498
41	2709	0868	9012	7142	5258	3359	1446	9519	7577	5621	3651	1667	9669	7657	5631
42	2845	1004	9148	7278	5393	3494	1581	9653	7711	5755	3785	1801	9802	7790	5764
43	2981	1140	9284	7413	5528	3629	1715	9787	7845	5889	3919	1934	9936	7923	5897
44	3117	1275	9419	7549	5663	3764	1850	9922	7979	6023	4052	2068	0069	8056	6030
45	3253	1411	9555	7684	5799	3899	1985	0056	8114	6157	4186	2201	0202	8189	6162
46	3389	1547	9690	7819	5934	4034	2119	0191	8248	6291	4320	2334	0335	8322	6295
47	3525	1683	9826	7955	6069	4168	2254	0325	8382	6425	4453	2468	0469	8455	6428
48	3662	1819	9962	8090	6204	4303	2389	0459	8516	6559	4587	2601	0602	8588	6561
49	3798	1955	0097	8225	6339	4438	2523	0594	8650	6693	4721	2735	0735	8721	6693
50	3934	2091	0233	8361	6474	4573	2658	0728	8784	6826	4854	2868	0868	8854	6826
51	4070	2226	0368	8496	6609	4708	2792	0863	8919	6960	4988	3002	1001	8987	6959
52	4206	2362	0504	8631	6744	4843	2927	0997	9053	7094	5122	3135	1135	9120	7092
53	4342	2498	0640	8767	6879	4978	3062	1131	9187	7228	5255	3269	1268	9253	7224
54	4478	2634	0775	8902	7014	5113	3196	1266	9321	7362	5389	3402	1401	9386	7357
55	4614	2770	0911	9037	7150	5247	3331	1400	9455	7496	5523	3535	1534	9519	7490
56	4750	2905	1046	9173	7285	5382	3465	1534	9589	7630	5656	3669	1667	9652	7623
57	4886	3041	1182	9308	7420	5517	3600	1669	9723	7764	5790	3802	1801	9785	7755
58	5022	3177	1317	9443	7555	5652	3735	1803	9858	7898	5924	3936	1934	9918	7888
59	5158	3313	1453	9579	7690	5787	3869	1938	9992	8032	6057	4069	2067	0051	8021
60	5294	3449	1588	9714	7825	5922	4004	2072	0126	8165	6191	4203	2200	0184	8153
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Tangent Deg. 80

9 Deg. Co-Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
″	10. 800	10. 799	10. 798	10. 797	10. 797	10. 796	10. 795	10. 794	10. 793	10. 792	10. 792	10. 791	10. 790	10. 789	10. 788	″
0	2875	4706	6551	8412	0286	2175	4078	5996	7928	9874	1835	3809	5797	7800	9816	60
1	2739	4570	6416	8276	0151	2040	3944	5862	7794	9740	1701	3675	5664	7667	9683	59
2	2602	4434	6280	8140	0015	1905	3809	5727	7659	9606	1567	3542	5531	7534	9550	58
3	2466	4298	6144	8005	9880	1770	3674	5592	7525	9472	1433	3408	5397	7400	9417	57
4	2330	4162	6008	7869	9745	1635	3539	5458	7391	9338	1299	3274	5264	7267	9285	56
5	2194	4026	5873	7734	9610	1500	3404	5323	7256	9204	1165	3141	5130	7134	9152	55
6	2057	3890	5737	7598	9474	1365	3270	5189	7122	9070	1031	3007	4997	7001	9019	54
7	1921	3754	5601	7463	9339	1230	3135	5054	6988	8936	0898	2874	4864	6868	8886	53
8	1785	3618	5465	7327	9204	1095	3000	4920	6853	8801	0764	2740	4730	6735	8753	52
9	1649	3482	5330	7192	9069	0960	2865	4785	6719	8667	0630	2606	4597	6601	8620	51
10	1512	3346	5194	7056	8933	0825	2730	4650	6585	8533	0496	2473	4464	6468	8487	50
11	1376	3210	5058	6921	8798	0690	2596	4516	6450	8399	0362	2339	4330	6335	8354	49
12	1240	3074	4922	6785	8663	0555	2461	4381	6316	8265	0228	2206	4197	6202	8221	48
13	1104	2938	4787	6650	8527	0420	2326	4247	6182	8131	0094	2072	4063	6069	8088	47
14	0967	2802	4651	6514	8392	0285	2191	4112	6048	7997	9961	1938	3930	5936	7955	46
15	0831	2666	4515	6379	8257	0150	2057	3978	5913	7863	9827	1805	3797	5803	7823	45
16	0695	2530	4379	6243	8122	0015	1922	3843	5779	7729	9693	1671	3663	5670	7690	44
17	0559	2394	4244	6108	7987	9880	1787	3709	5645	7595	9559	1538	3530	5536	7557	43
18	0423	2258	4108	5972	7851	9745	1652	3574	5510	7461	9425	1404	3397	5403	7424	42
19	0286	2122	3972	5837	7716	9610	1518	3440	5376	7327	9292	1270	3263	5270	7291	41
20	0150	1986	3837	5701	7581	9475	1383	3305	5242	7193	9158	1137	3130	5137	7158	40
21	0014	1850	3701	5566	7446	9340	1248	3171	5108	7059	9024	1003	2997	5004	7025	39
22	9878	1714	3565	5431	7310	9205	1113	3036	4973	6925	8890	0870	2863	4871	6892	38
23	9742	1578	3429	5295	7175	9070	0979	2902	4839	6791	8756	0736	2730	4738	6760	37
24	9605	1442	3294	5160	7040	8935	0844	2767	4705	6657	8623	0603	2597	4605	6627	36
25	9469	1306	3158	5024	6905	8800	0709	2633	4571	6523	8489	0469	2463	4472	6494	35
26	9333	1170	3022	4889	6770	8665	0574	2498	4436	6389	8355	0336	2330	4339	6361	34
27	9197	1035	2887	4753	6634	8530	0440	2364	4302	6255	8221	0202	2197	4206	6228	33
28	9061	0899	2751	4618	6499	8395	0305	2229	4168	6121	8088	0068	2063	4072	6095	32
29	8925	0763	2615	4482	6364	8260	0170	2095	4034	5987	7954	9935	1930	3939	5963	31
30	8789	0627	2480	4347	6229	8125	0036	1960	3899	5853	7820	9801	1797	3806	5830	30
31	8652	0491	2344	4212	6094	7990	9901	1826	3765	5719	7686	9668	1664	3673	5697	29
32	8516	0355	2208	4076	5958	7855	9766	1691	3631	5585	7552	9534	1530	3540	5564	28
33	8380	0219	2073	3941	5823	7720	9631	1557	3497	5451	7419	9401	1397	3407	5431	27
34	8244	0083	1937	3805	5688	7585	9497	1422	3362	5317	7285	9267	1264	3274	5298	26
35	8108	9947	1801	3670	5553	7450	9362	1288	3228	5183	7151	9134	1130	3141	5166	25
36	7972	9811	1666	3535	5418	7315	9227	1154	3094	5049	7018	9000	0997	3008	5033	24
37	7836	9676	1530	3399	5283	7180	9093	1019	2960	4915	6884	8867	0864	2875	4900	23
38	7699	9540	1394	3264	5147	7046	8958	0885	2826	4781	6750	8733	0731	2742	4767	22
39	7563	9404	1259	3128	5012	6911	8823	0750	2691	4647	6616	8600	0597	2609	4634	21
40	7427	9268	1123	2993	4877	6776	8689	0616	2557	4513	6483	8466	0464	2476	4502	20
41	7291	9132	0988	2858	4742	6641	8554	0481	2423	4379	6349	8333	0331	2343	4369	19
42	7155	8996	0852	2722	4607	6506	8419	0347	2289	4245	6215	8199	0198	2210	4236	18
43	7019	8860	0716	2587	4472	6371	8285	0213	2155	4111	6081	8066	0064	2077	4103	17
44	6883	8725	0581	2451	4337	6236	8150	0078	2021	3977	5948	7932	9931	1944	3970	16
45	6747	8589	0445	2316	4201	6101	8015	9944	1886	3843	5814	7799	9798	1811	3838	15
46	6611	8453	0310	2181	4066	5966	7881	9809	1752	3709	5680	7666	9665	1678	3705	14
47	6475	8317	0174	2045	3931	5832	7746	9675	1618	3575	5547	7532	9531	1545	3572	13
48	6338	8181	0038	1910	3796	5697	7611	9541	1484	3441	5413	7399	9398	1412	3439	12
49	6202	8045	9903	1775	3661	5562	7477	9406	1350	3307	5279	7265	9265	1279	3307	11
50	6066	7909	9767	1639	3526	5427	7342	9272	1216	3174	5146	7132	9132	1146	3174	10
51	5930	7774	9632	1504	3391	5292	7208	9137	1081	3040	5012	6998	8999	1013	3041	9
52	5794	7638	9496	1369	3256	5157	7073	9003	0947	2906	4878	6865	8865	0880	2908	8
53	5658	7502	9360	1233	3121	5022	6938	8869	0813	2772	4745	6731	8732	0747	2776	7
54	5522	7366	9225	1098	2986	4887	6804	8734	0679	2638	4611	6598	8599	0614	2643	6
55	5386	7230	9089	0963	2850	4753	6669	8600	0545	2504	4477	6465	8466	0481	2510	5
56	5250	7095	8954	0827	2715	4618	6535	8466	0411	2370	4344	6331	8333	0348	2377	4
57	5114	6959	8818	0692	2580	4483	6400	8331	0277	2236	4210	6198	8199	0215	2245	3
58	4978	6823	8683	0557	2445	4348	6265	8197	0142	2102	4076	6064	8066	0082	2112	2
59	4842	6687	8547	0421	2310	4213	6131	8062	0008	1968	3943	5931	7933	9949	1979	1
60	4706	6551	8412	0286	2175	4078	5996	7928	9874	1835	3809	5797	7800	9816	1847	0
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Tangent Deg. 80

9 Deg. Sine

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 206	9. 206	9. 207	9. 208	9. 209	9. 209	9. 210	9. 211	9. 212	9. 213	9. 213	9. 214	9. 215	9. 216	9. 216
0	1309	9059	6795	4516	2224	9917	7597	5263	2914	0552	8176	5787	3384	0967	8536
1	1438	9188	6923	4645	2352	0045	7725	5390	3042	0679	8303	5914	3510	1093	8662
2	1568	9317	7052	4773	2480	0174	7853	5518	3169	0807	8430	6040	3637	1219	8788
3	1697	9446	7181	4902	2609	0302	7981	5645	3297	0934	8557	6167	3763	1346	8914
4	1826	9575	7310	5031	2737	0430	8108	5772	3424	1061	8684	6294	3890	1472	9040
5	1955	9704	7439	5159	2865	0558	8236	5901	3551	1188	8811	6420	4016	1598	9166
6	2085	9833	7567	5288	2994	0686	8364	6028	3679	1315	8938	6547	4143	1724	9292
7	2214	9962	7696	5416	3122	0814	8492	6156	3806	1442	9065	6674	4269	1851	9419
8	2343	0091	7825	5545	3250	0942	8620	6284	3934	1570	9192	6801	4395	1977	9545
9	2472	0220	7954	5673	3379	1070	8748	6411	4061	1697	9319	6927	4522	2103	9671
10	2602	0349	8083	5802	3507	1198	8875	6539	4188	1824	9446	7054	4648	2229	9797
11	2731	0478	8211	5930	3635	1326	9003	6666	4316	1951	9573	7181	4775	2356	9923
12	2860	0607	8340	6059	3764	1454	9131	6794	4443	2078	9700	7307	4901	2482	0049
13	2989	0736	8469	6187	3892	1582	9259	6922	4570	2205	9827	7434	5028	2608	0175
14	3119	0865	8598	6316	4020	1710	9387	7049	4698	2332	9953	7561	5154	2734	0301
15	3248	0994	8726	6444	4149	1839	9515	7177	4825	2460	0080	7687	5281	2860	0427
16	3377	1123	8855	6573	4277	1967	9642	7304	4952	2587	0207	7814	5407	2987	0553
17	3506	1252	8984	6701	4405	2095	9770	7432	5080	2714	0334	7941	5534	3113	0679
18	3635	1381	9113	6830	4533	2223	9898	7560	5207	2841	0461	8067	5660	3239	0805
19	3765	1510	9241	6959	4662	2351	0026	7687	5334	2968	0588	8194	5786	3365	0930
20	3894	1639	9370	7087	4790	2479	0154	7815	5462	3095	0715	8321	5913	3491	1056
21	4023	1768	9499	7215	4918	2607	0281	7942	5589	3222	0842	8447	6039	3618	1182
22	4152	1897	9628	7344	5046	2735	0409	8070	5716	3349	0969	8574	6166	3744	1308
23	4281	2026	9756	7472	5175	2863	0537	8197	5844	3476	1095	8701	6292	3870	1434
24	4411	2155	9885	7601	5303	2991	0665	8325	5971	3604	1222	8827	6419	3996	1560
25	4540	2284	0014	7729	5431	3119	0793	8452	6098	3731	1349	8954	6545	4122	1686
26	4669	2413	0142	7858	5559	3247	0920	8580	6226	3858	1476	9080	6671	4249	1812
27	4798	2542	0271	7986	5688	3375	1048	8708	6353	3985	1603	9207	6798	4375	1938
28	4927	2671	0400	8115	5816	3503	1176	8835	6480	4112	1730	9334	6924	4501	2064
29	5057	2800	0529	8243	5944	3631	1304	8963	6608	4239	1857	9460	7050	4627	2190
30	5186	2929	0657	8372	6072	3759	1431	9090	6735	4366	1983	9587	7177	4753	2316
31	5315	3057	0786	8500	6201	3887	1559	9218	6862	4493	2110	9714	7303	4879	2442
32	5444	3186	0915	8629	6329	4015	1687	9345	6990	4620	2237	9840	7430	5006	2568
33	5573	3315	1043	8757	6457	4143	1815	9473	7117	4747	2364	9967	7556	5132	2694
34	5702	3444	1172	8886	6585	4271	1942	9600	7244	4874	2491	0093	7682	5258	2820
35	5831	3573	1301	9014	6713	4399	2070	9728	7371	5001	2618	0220	7809	5384	2946
36	5961	3702	1429	9142	6842	4527	2198	9855	7499	5128	2744	0347	7935	5510	3072
37	6090	3831	1558	9271	6970	4655	2326	9983	7626	5255	2871	0473	8061	5636	3197
38	6219	3960	1687	9399	7098	4783	2453	0110	7753	5382	2998	0600	8188	5762	3323
39	6348	4089	1815	9528	7226	4911	2581	0238	7881	5510	3125	0726	8314	5888	3449
40	6477	4218	1944	9656	7354	5039	2709	0365	8008	5637	3252	0853	8441	6015	3575
41	6606	4347	2073	9785	7483	5167	2837	0493	8135	5764	3378	0979	8567	6141	3701
42	6735	4475	2201	9913	7611	5295	2964	0620	8262	5891	3505	1106	8693	6267	3827
43	6865	4604	2330	0041	7739	5422	3092	0748	8390	6018	3632	1233	8820	6393	3953
44	6994	4733	2459	0170	7867	5550	3220	0875	8517	6145	3759	1359	8946	6519	4079
45	7123	4862	2587	0298	7995	5678	3347	1003	8644	6272	3886	1486	9072	6645	4205
46	7252	4991	2716	0427	8123	5806	3475	1130	8771	6399	4012	1612	9199	6771	4330
47	7381	5120	2844	0555	8252	5934	3603	1258	8899	6526	4139	1739	9325	6897	4456
48	7510	5249	2973	0683	8380	6062	3731	1385	9026	6653	4266	1865	9451	7023	4582
49	7639	5377	3102	0812	8508	6190	3858	1513	9153	6780	4393	1992	9578	7150	4708
50	7768	5506	3230	0940	8636	6318	3986	1640	9280	6907	4519	2118	9704	7276	4834
51	7897	5635	3359	1069	8764	6446	4114	1767	9407	7034	4646	2245	9830	7402	4960
52	8026	5764	3488	1197	8892	6574	4241	1895	9535	7161	4773	2372	9956	7528	5086
53	8155	5893	3616	1325	9020	6702	4369	2022	9662	7288	4900	2498	0083	7654	5211
54	8285	6022	3745	1454	9149	6830	4497	2150	9789	7415	5026	2625	0209	7780	5337
55	8414	6151	3873	1582	9277	6957	4624	2277	9916	7542	5153	2751	0335	7906	5463
56	8543	6279	4002	1710	9405	7085	4752	2405	0043	7669	5280	2878	0462	8032	5589
57	8672	6408	4131	1839	9533	7213	4880	2532	0171	7796	5407	3004	0588	8158	5715
58	8801	6537	4259	1967	9661	7341	5007	2659	0298	7923	5533	3131	0714	8284	5841
59	8930	6666	4388	2095	9789	7469	5135	2787	0425	8049	5660	3257	0840	8410	5966
60	9059	6795	4516	2224	9917	7597	5263	2914	0552	8176	5787	3384	0967	8536	6092
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Sine Deg. 80

9 Deg. Co-Sine

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	″
9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	9. 994	
3156	2950	2743	2537	2330	2122	1914	1706	1498	1289	1079	0870	0659	0449	0238	60
3152	2946	2740	2533	2326	2119	1911	1703	1494	1285	1076	0866	0656	0445	0235	59
3149	2943	2736	2530	2323	2115	1907	1699	1491	1282	1072	0863	0652	0442	0231	58
3145	2939	2733	2526	2319	2112	1904	1696	1487	1278	1069	0859	0649	0438	0228	57
3142	2936	2730	2523	2316	2108	1900	1692	1484	1275	1065	0856	0645	0435	0224	56
3138	2932	2726	2519	2312	2105	1897	1689	1480	1271	1062	0852	0642	0431	0221	55
3135	2929	2723	2516	2309	2101	1893	1685	1477	1268	1058	0849	0638	0428	0217	54
3132	2926	2719	2512	2305	2098	1890	1682	1473	1264	1055	0845	0635	0424	0214	53
3128	2922	2716	2509	2302	2094	1887	1678	1470	1261	1051	0842	0631	0421	0210	52
3125	2919	2712	2506	2299	2091	1883	1675	1466	1257	1048	0838	0628	0417	0206	51
3121	2915	2709	2502	2295	2087	1880	1671	1463	1254	1044	0835	0624	0414	0203	50
3118	2912	2705	2499	2292	2084	1876	1668	1459	1250	1041	0831	0621	0410	0199	49
3114	2908	2702	2495	2288	2081	1873	1664	1456	1247	1037	0828	0617	0407	0196	48
3111	2905	2699	2492	2285	2077	1869	1661	1452	1243	1034	0824	0614	0403	0192	47
3108	2902	2695	2488	2281	2074	1866	1657	1449	1240	1030	0821	0610	0400	0189	46
3104	2898	2692	2485	2278	2070	1862	1654	1445	1236	1027	0817	0607	0396	0185	45
3101	2895	2688	2481	2274	2067	1859	1651	1442	1233	1023	0814	0603	0393	0182	44
3097	2891	2685	2478	2271	2063	1855	1647	1438	1229	1020	0810	0600	0389	0178	43
3094	2888	2681	2475	2267	2060	1852	1644	1435	1226	1016	0807	0596	0386	0175	42
3090	2884	2678	2471	2264	2056	1848	1640	1431	1222	1013	0803	0593	0382	0171	41
3087	2881	2674	2468	2260	2053	1845	1637	1428	1219	1009	0800	0589	0379	0168	40
3084	2877	2671	2464	2257	2049	1841	1633	1424	1215	1006	0796	0586	0375	0164	39
3080	2874	2668	2461	2254	2046	1838	1630	1421	1212	1002	0793	0582	0372	0161	38
3077	2871	2664	2457	2250	2042	1835	1626	1417	1208	0999	0789	0579	0368	0157	37
3073	2867	2661	2454	2247	2039	1831	1623	1414	1205	0995	0786	0575	0365	0154	36
3070	2864	2657	2450	2243	2036	1828	1619	1411	1201	0992	0782	0572	0361	0150	35
3066	2860	2654	2447	2240	2032	1824	1616	1407	1198	0988	0779	0568	0358	0147	34
3063	2857	2650	2443	2236	2029	1821	1612	1404	1194	0985	0775	0565	0354	0143	33
3059	2853	2647	2440	2233	2025	1817	1609	1400	1191	0981	0772	0561	0351	0140	32
3056	2850	2643	2437	2229	2022	1814	1605	1397	1187	0978	0768	0558	0347	0136	31
3053	2846	2640	2433	2226	2018	1810	1602	1393	1184	0974	0765	0554	0344	0133	30
3049	2843	2637	2430	2222	2015	1807	1598	1390	1180	0971	0761	0551	0340	0129	29
3046	2840	2633	2426	2219	2011	1803	1595	1386	1177	0967	0758	0547	0337	0126	28
3042	2836	2630	2423	2216	2008	1800	1591	1383	1173	0964	0754	0544	0333	0122	27
3039	2833	2626	2419	2212	2004	1796	1588	1379	1170	0960	0751	0540	0330	0119	26
3035	2829	2623	2416	2209	2001	1793	1584	1376	1167	0957	0747	0537	0326	0115	25
3032	2826	2619	2412	2205	1997	1789	1581	1372	1163	0953	0744	0533	0323	0111	24
3029	2822	2616	2409	2202	1994	1786	1578	1369	1160	0950	0740	0530	0319	0108	23
3025	2819	2612	2406	2198	1991	1782	1574	1365	1156	0946	0737	0526	0315	0104	22
3022	2816	2609	2402	2195	1987	1779	1571	1362	1153	0943	0733	0523	0312	0101	21
3018	2812	2606	2399	2191	1984	1776	1567	1358	1149	0939	0730	0519	0308	0097	20
3015	2809	2602	2395	2188	1980	1772	1564	1355	1146	0936	0726	0516	0305	0094	19
3011	2805	2599	2392	2184	1977	1769	1560	1351	1142	0932	0723	0512	0301	0090	18
3008	2802	2595	2388	2181	1973	1765	1557	1348	1139	0929	0719	0509	0298	0087	17
3005	2798	2592	2385	2177	1970	1762	1553	1344	1135	0925	0716	0505	0294	0083	16
3001	2795	2588	2381	2174	1966	1758	1550	1341	1132	0922	0712	0502	0291	0080	15
2998	2791	2585	2378	2171	1963	1755	1546	1337	1128	0918	0709	0498	0287	0076	14
2994	2788	2581	2374	2167	1959	1751	1543	1334	1125	0915	0705	0495	0284	0073	13
2991	2785	2578	2371	2164	1956	1748	1539	1330	1121	0912	0701	0491	0280	0069	12
2987	2781	2575	2368	2160	1952	1744	1536	1327	1118	0908	0698	0488	0277	0066	11
2984	2778	2571	2364	2157	1949	1741	1532	1323	1114	0905	0694	0484	0273	0062	10
2981	2774	2568	2361	2153	1945	1737	1529	1320	1111	0901	0691	0481	0270	0059	9
2977	2771	2564	2357	2150	1942	1734	1525	1316	1107	0898	0687	0477	0266	0055	8
2974	2767	2561	2354	2146	1939	1730	1522	1313	1104	0894	0684	0474	0263	0052	7
2970	2764	2557	2350	2143	1935	1727	1518	1309	1100	0891	0680	0470	0259	0048	6
2967	2761	2554	2347	2139	1932	1723	1515	1306	1097	0887	0677	0467	0256	0045	5
2963	2757	2550	2343	2136	1928	1720	1511	1303	1093	0884	0673	0463	0252	0041	4
2960	2754	2547	2340	2132	1925	1717	1508	1299	1090	0880	0670	0460	0249	0038	3
2956	2750	2544	2336	2129	1921	1713	1504	1296	1086	0877	0666	0456	0245	0034	2
2953	2747	2540	2333	2126	1918	1710	1501	1292	1083	0873	0663	0452	0242	0030	1
2950	2743	2537	2330	2122	1914	1706	1498	1289	1079	0870	0659	0449	0238	0027	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Sine Deg. 80

9 Deg. Tangent

"	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9. 211	9. 212	9. 213	9. 214	9. 214	9. 215	9. 216	9. 217	9. 218	9. 218	9. 219	9. 220	9. 221	9. 222	9. 222
0	8153	6109	4051	1980	9894	7795	5683	3556	1417	9264	7097	4917	2724	0518	8298
1	8286	6242	4184	2112	0026	7927	5814	3688	1548	9394	7228	5048	2854	0648	8428
2	8419	6374	4316	2244	0158	8058	5945	3819	1679	9525	7358	5178	2984	0777	8557
3	8552	6507	4448	2376	0290	8190	6077	3950	1809	9656	7489	5308	3114	0907	8687
4	8684	6639	4580	2508	0421	8321	6208	4081	1940	9786	7619	5438	3244	1037	8816
5	8817	6772	4713	2640	0553	8453	6339	4212	2071	9917	7749	5568	3374	1167	8946
6	8950	6904	4845	2772	0685	8585	6471	4343	2202	0048	7880	5699	3504	1296	9075
7	9082	7037	4977	2904	0817	8716	6602	4474	2333	0178	8010	5829	3634	1426	9205
8	9215	7169	5109	3036	0949	8848	6733	4605	2464	0309	8141	5959	3764	1556	9335
9	9348	7301	5241	3168	1080	8979	6865	4736	2595	0440	8271	6089	3894	1686	9464
10	9480	7434	5374	3300	1212	9111	6996	4867	2726	0570	8401	6219	4024	1815	9594
11	9613	7566	5506	3432	1344	9242	7127	4999	2856	0701	8532	6350	4154	1945	9723
12	9746	7699	5638	3564	1476	9374	7258	5130	2987	0831	8662	6480	4284	2075	9853
13	9878	7831	5770	3696	1607	9505	7390	5261	3118	0962	8793	6610	4414	2205	9982
14	0011	7964	5902	3828	1739	9637	7521	5392	3249	1093	8923	6740	4544	2334	0112
15	0144	8096	6035	3960	1871	9768	7652	5523	3380	1223	9053	6870	4674	2464	0241
16	0276	8229	6167	4092	2003	9900	7784	5654	3511	1354	9184	7000	4804	2594	0371
17	0409	8361	6299	4224	2134	0031	7915	5785	3641	1485	9314	7131	4934	2724	0500
18	0542	8493	6431	4355	2266	0163	8046	5916	3772	1615	9445	7261	5064	2853	0630
19	0674	8626	6563	4487	2398	0294	8177	6047	3903	1746	9575	7391	5194	2983	0759
20	0807	8758	6696	4619	2529	0426	8309	6178	4034	1876	9705	7521	5324	3113	0889
21	0940	8891	6828	4751	2661	0557	8440	6309	4165	2007	9836	7651	5453	3242	1018
22	1072	9023	6960	4883	2793	0689	8571	6440	4296	2138	9966	7781	5583	3372	1148
23	1205	9155	7092	5015	2925	0820	8703	6571	4426	2268	0096	7912	5713	3502	1277
24	1337	9288	7224	5147	3056	0952	8834	6702	4557	2399	0227	8042	5843	3631	1407
25	1470	9420	7356	5279	3188	1083	8965	6833	4688	2529	0357	8172	5973	3761	1536
26	1603	9553	7489	5411	3320	1215	9096	6964	4819	2660	0488	8302	6103	3891	1666
27	1735	9685	7621	5543	3451	1346	9228	7095	4950	2790	0618	8432	6233	4021	1795
28	1868	9817	7753	5675	3583	1478	9359	7226	5080	2921	0748	8562	6363	4150	1924
29	2000	9950	7885	5807	3715	1609	9490	7357	5211	3052	0879	8692	6493	4280	2054
30	2133	0082	8017	5939	3846	1741	9621	7488	5342	3182	1009	8822	6623	4410	2183
31	2266	0214	8149	6071	3978	1872	9752	7619	5473	3313	1139	8953	6753	4539	2313
32	2398	0347	8281	6202	4110	2004	9884	7750	5603	3443	1270	9083	6882	4669	2442
33	2531	0479	8414	6334	4241	2135	0015	7881	5734	3574	1400	9213	7012	4799	2572
34	2663	0611	8546	6466	4373	2266	0146	8012	5865	3704	1530	9343	7142	4928	2701
35	2796	0744	8678	6598	4505	2398	0277	8143	5996	3835	1661	9473	7272	5058	2831
36	2929	0876	8810	6730	4636	2529	0409	8274	6127	3965	1791	9603	7402	5188	2960
37	3061	1009	8942	6862	4768	2661	0540	8405	6257	4096	1921	9733	7532	5317	3089
38	3194	1141	9074	6994	4900	2792	0671	8536	6388	4226	2051	9863	7662	5447	3219
39	3326	1273	9206	7126	5031	2924	0802	8667	6519	4357	2182	9993	7792	5577	3348
40	3459	1406	9338	7258	5163	3055	0933	8798	6650	4488	2312	0123	7921	5706	3478
41	3591	1538	9470	7389	5295	3186	1065	8929	6780	4618	2442	0253	8051	5836	3607
42	3724	1670	9603	7521	5426	3318	1196	9060	6911	4749	2573	0384	8181	5965	3737
43	3857	1802	9735	7653	5558	3449	1327	9191	7042	4879	2703	0514	8311	6095	3866
44	3989	1935	9867	7785	5690	3581	1458	9322	7172	5010	2833	0644	8441	6225	3995
45	4122	2067	9999	7917	5821	3712	1589	9453	7303	5140	2964	0774	8571	6354	4125
46	4254	2199	0131	8049	5953	3843	1720	9584	7434	5271	3094	0904	8700	6484	4254
47	4387	2332	0263	8181	6085	3975	1852	9715	7565	5401	3224	1034	8830	6614	4384
48	4519	2464	0395	8312	6216	4106	1983	9846	7695	5532	3354	1164	8960	6743	4513
49	4652	2596	0527	8444	6348	4238	2114	9977	7826	5662	3485	1294	9090	6873	4642
50	4784	2729	0659	8576	6479	4369	2245	0108	7957	5793	3615	1424	9220	7002	4772
51	4917	2861	0791	8708	6611	4500	2376	0239	8088	5923	3745	1554	9350	7132	4901
52	5049	2993	0923	8840	6743	4632	2507	0370	8218	6053	3875	1684	9479	7262	5030
53	5182	3125	1055	8972	6874	4763	2639	0500	8349	6184	4006	1814	9609	7391	5160
54	5314	3258	1187	9103	7006	4894	2770	0631	8480	6314	4136	1944	9739	7521	5289
55	5447	3390	1319	9235	7137	5026	2901	0762	8610	6445	4266	2074	9869	7650	5419
56	5579	3522	1452	9367	7269	5157	3032	0893	8741	6575	4396	2204	9999	7780	5548
57	5712	3655	1584	9499	7401	5289	3163	1024	8872	6706	4527	2334	0128	7909	5677
58	5844	3787	1716	9631	7532	5420	3294	1155	9002	6836	4657	2464	0258	8039	5807
59	5977	3919	1848	9762	7664	5551	3425	1286	9133	6967	4787	2594	0388	8169	5936
60	6109	4051	1980	9894	7795	5683	3556	1417	9264	7097	4917	2724	0518	8298	6065
"	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Tangent Deg. 80

9 Deg. Co-Tangent

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	"
10. 788	10. 787	10. 786	10. 785	10. 785	10. 784	10. 783	10. 782	10. 781	10. 781	10. 780	10. 779	10. 778	10. 777	10. 777	
1847	3891	5949	8020	0106	2205	4317	6444	8583	0736	2903	5083	7276	9482	1702	60
1714	3758	5816	7888	9974	2073	4186	6312	8452	0606	2772	4952	7146	9352	1572	59
1581	3626	5684	7756	9842	1942	4055	6181	8321	0475	2642	4822	7016	9223	1443	58
1448	3493	5552	7624	9710	1810	3923	6050	8191	0344	2511	4692	6886	9093	1313	57
1316	3361	5420	7492	9579	1679	3792	5919	8060	0214	2381	4562	6756	8963	1184	56
1183	3228	5287	7360	9447	1547	3661	5788	7929	0083	2251	4432	6626	8833	1054	55
1050	3096	5155	7228	9315	1415	3529	5657	7798	9952	2120	4301	6496	8704	0925	54
0918	2963	5023	7096	9183	1284	3398	5526	7667	9822	1990	4171	6366	8574	0795	53
0785	2831	4891	6964	9051	1152	3267	5395	7536	9691	1859	4041	6236	8444	0665	52
0652	2699	4759	6832	8920	1021	3135	5264	7405	9560	1729	3911	6106	8314	0536	51
0520	2566	4626	6700	8788	0889	3004	5133	7274	9430	1599	3781	5976	8185	0406	50
0387	2434	4494	6568	8656	0758	2873	5001	7144	9299	1468	3650	5846	8055	0277	49
0254	2301	4362	6436	8524	0626	2742	4870	7013	9169	1338	3520	5716	7925	0147	48
0122	2169	4230	6304	8393	0495	2610	4739	6882	9038	1207	3390	5586	7795	0018	47
9989	2036	4098	6172	8261	0363	2479	4608	6751	8907	1077	3260	5456	7666	9888	46
9856	1904	3965	6040	8129	0232	2348	4477	6620	8777	0947	3130	5326	7536	9759	45
9724	1771	3833	5908	7997	0100	2216	4346	6489	8646	0816	3000	5196	7406	9629	44
9591	1639	3701	5776	7866	9969	2085	4215	6359	8515	0686	2869	5066	7276	9500	43
9458	1507	3569	5645	7734	9837	1954	4084	6228	8385	0555	2739	4936	7147	9370	42
9326	1374	3437	5513	7602	9706	1823	3953	6097	8254	0425	2609	4806	7017	9241	41
9193	1242	3304	5381	7471	9574	1691	3822	5966	8124	0295	2479	4676	6887	9111	40
9060	1109	3172	5249	7339	9443	1560	3691	5835	7993	0164	2349	4547	6758	8982	39
8928	0977	3040	5117	7207	9311	1429	3560	5704	7862	0034	2219	4417	6628	8852	38
8795	0845	2908	4985	7075	9180	1297	3429	5574	7732	9904	2088	4287	6498	8723	37
8663	0712	2776	4853	6944	9048	1166	3298	5443	7601	9773	1958	4157	6369	8593	36
8530	0580	2644	4721	6812	8917	1035	3167	5312	7471	9643	1828	4027	6239	8464	35
8397	0447	2511	4589	6680	8785	0904	3036	5181	7340	9512	1698	3897	6109	8334	34
8265	0315	2379	4457	6549	8654	0772	2905	5050	7210	9382	1568	3767	5979	8205	33
8132	0183	2247	4325	6417	8522	0641	2774	4920	7079	9252	1438	3637	5850	8076	32
8000	0050	2115	4193	6285	8391	0510	2643	4789	6948	9121	1308	3507	5720	7946	31
7867	9918	1983	4061	6154	8259	0379	2512	4658	6818	8991	1178	3377	5590	7817	30
7734	9786	1851	3929	6022	8128	0248	2381	4527	6687	8861	1047	3247	5461	7687	29
7602	9653	1719	3798	5890	7996	0116	2250	4397	6557	8730	0917	3118	5331	7558	28
7469	9521	1586	3666	5759	7865	9985	2119	4266	6426	8600	0787	2988	5201	7428	27
7337	9389	1454	3534	5627	7734	9854	1988	4135	6296	8470	0657	2858	5072	7299	26
7204	9256	1322	3402	5495	7602	9723	1857	4004	6165	8339	0527	2728	4942	7169	25
7071	9124	1190	3270	5364	7471	9591	1726	3873	6035	8209	0397	2598	4812	7040	24
6939	8991	1058	3138	5232	7339	9460	1595	3743	5904	8079	0267	2468	4683	6911	23
6806	8859	0926	3006	5100	7208	9329	1464	3612	5774	7949	0137	2338	4553	6781	22
6674	8727	0794	2874	4969	7076	9198	1333	3481	5643	7818	0007	2208	4423	6652	21
6541	8594	0662	2742	4837	6945	9067	1202	3350	5512	7688	9877	2079	4294	6522	20
6409	8462	0530	2611	4705	6814	8935	1071	3220	5382	7558	9747	1949	4164	6393	19
6276	8330	0397	2479	4574	6682	8804	0940	3089	5251	7427	9616	1819	4035	6263	18
6143	8198	0265	2347	4442	6551	8673	0809	2958	5121	7297	9486	1689	3905	6134	17
6011	8065	0133	2215	4310	6419	8542	0678	2828	4990	7167	9356	1559	3775	6005	16
5878	7933	0001	2083	4179	6288	8411	0547	2697	4860	7036	9226	1429	3646	5875	15
5746	7801	9869	1951	4047	6157	8280	0416	2566	4729	6906	9096	1300	3516	5746	14
5613	7668	9737	1819	3915	6025	8148	0285	2435	4599	6776	8966	1170	3386	5616	13
5481	7536	9605	1688	3784	5894	8017	0154	2305	4468	6646	8836	1040	3257	5487	12
5348	7404	9473	1556	3652	5762	7886	0023	2174	4338	6515	8706	0910	3127	5358	11
5216	7271	9341	1424	3521	5631	7755	9892	2043	4207	6385	8576	0780	2998	5228	10
5083	7139	9209	1292	3389	5500	7624	9761	1912	4077	6255	8446	0650	2868	5099	9
4951	7007	9077	1160	3257	5368	7493	9630	1782	3947	6125	8316	0521	2738	4970	8
4818	6875	8945	1028	3126	5237	7361	9500	1651	3816	5994	8186	0391	2609	4840	7
4686	6742	8813	0897	2994	5106	7230	9369	1520	3686	5864	8056	0261	2479	4711	6
4553	6610	8681	0765	2863	4974	7099	9238	1390	3555	5734	7926	0131	2350	4581	5
4421	6478	8548	0633	2731	4843	6968	9107	1259	3425	5604	7796	0001	2220	4452	4
4288	6345	8416	0501	2599	4711	6837	8976	1128	3294	5473	7666	9872	2091	4323	3
4156	6213	8284	0369	2468	4580	6706	8845	0998	3164	5343	7536	9742	1961	4193	2
4023	6081	8152	0238	2336	4449	6575	8714	0867	3033	5213	7406	9612	1831	4064	1
3891	5949	8020	0106	2205	4317	6444	8583	0736	2903	5083	7276	9482	1702	3935	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	"

Tangent Deg. 80

9 Deg. Sine

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 217	9. 218	9. 219	9. 219	9. 220	9. 221	9. 222	9. 222	9. 223	9. 224	9. 225	9. 225	9. 226	9. 227	9. 228
0	6092	3635	1164	8680	6182	3671	1147	8609	6059	3495	0918	8328	5725	3110	0481
1	6218	3760	1289	8805	6307	3796	1271	8733	6183	3619	1042	8452	5848	3232	0604
2	6344	3886	1415	8930	6432	3920	1396	8858	6307	3742	1165	8575	5972	3355	0726
3	6470	4012	1540	9055	6557	4045	1520	8982	6431	3866	1289	8698	6095	3478	0849
4	6596	4137	1665	9180	6682	4170	1645	9106	6555	3990	1412	8822	6218	3601	0972
5	6721	4263	1791	9305	6806	4294	1769	9230	6679	4114	1536	8945	6341	3724	1095
6	6847	4388	1916	9430	6931	4419	1893	9355	6803	4238	1660	9068	6464	3847	1217
7	6973	4514	2041	9556	7056	4544	2018	9479	6927	4362	1783	9192	6587	3970	1340
8	7099	4639	2167	9681	7181	4668	2142	9603	7051	4485	1907	9315	6711	4093	1463
9	7225	4765	2292	9806	7306	4793	2267	9727	7175	4609	2030	9439	6834	4216	1585
10	7350	4891	2417	9931	7431	4918	2391	9852	7299	4733	2154	9562	6957	4339	1708
11	7476	5016	2543	0056	7556	5042	2516	9976	7423	4857	2278	9685	7080	4462	1831
12	7602	5142	2668	0181	7681	5167	2640	0100	7547	4981	2401	9809	7203	4585	1954
13	7728	5267	2793	0306	7806	5292	2765	0224	7671	5104	2525	9932	7326	4708	2076
14	7853	5393	2919	0431	7930	5416	2889	0349	7795	5228	2648	0055	7449	4831	2199
15	7979	5518	3044	0556	8055	5541	3014	0473	7919	5352	2772	0179	7573	4954	2322
16	8105	5644	3169	0681	8180	5666	3138	0597	8043	5476	2895	0302	7696	5076	2444
17	8231	5769	3295	0807	8305	5790	3262	0721	8167	5599	3019	0425	7819	5199	2567
18	8356	5895	3420	0932	8430	5915	3387	0845	8291	5723	3142	0549	7942	5322	2690
19	8482	6020	3545	1057	8555	6040	3511	0970	8415	5847	3266	0672	8065	5445	2812
20	8608	6146	3671	1182	8680	6164	3636	1094	8539	5971	3390	0795	8188	5568	2935
21	8734	6272	3796	1307	8805	6289	3760	1218	8663	6094	3513	0919	8311	5691	3058
22	8859	6397	3921	1432	8929	6414	3884	1342	8787	6218	3637	1042	8434	5814	3180
23	8985	6523	4046	1557	9054	6538	4009	1466	8911	6342	3760	1165	8557	5937	3303
24	9111	6648	4172	1682	9179	6663	4133	1591	9035	6466	3884	1289	8681	6060	3426
25	9237	6774	4297	1807	9304	6787	4258	1715	9159	6589	4007	1412	8804	6182	3548
26	9362	6899	4422	1932	9429	6912	4382	1839	9283	6713	4131	1535	8927	6305	3671
27	9488	7025	4548	2057	9554	7037	4506	1963	9407	6837	4254	1658	9050	6428	3794
28	9614	7150	4673	2182	9678	7161	4631	2087	9530	6961	4378	1782	9173	6551	3916
29	9740	7276	4798	2307	9803	7286	4755	2211	9654	7084	4501	1905	9296	6674	4039
30	9865	7401	4923	2432	9928	7410	4880	2336	9778	7208	4625	2028	9419	6797	4162
31	9991	7526	5049	2557	0053	7535	5004	2460	9902	7332	4748	2152	9542	6920	4284
32	0117	7652	5174	2682	0178	7660	5128	2584	0026	7455	4872	2275	9665	7042	4407
33	0242	7777	5299	2807	0302	7784	5253	2708	0150	7579	4995	2398	9788	7165	4530
34	0368	7903	5424	2933	0427	7909	5377	2832	0274	7703	5119	2521	9911	7288	4652
35	0494	8028	5550	3058	0552	8033	5501	2956	0398	7827	5242	2645	0034	7411	4775
36	0619	8154	5675	3183	0677	8158	5626	3080	0522	7950	5366	2768	0157	7534	4897
37	0745	8279	5800	3308	0802	8283	5750	3205	0646	8074	5489	2891	0280	7657	5020
38	0871	8405	5925	3433	0926	8407	5874	3329	0770	8198	5613	3015	0403	7780	5143
39	0996	8530	6051	3558	1051	8532	5999	3453	0894	8321	5736	3138	0527	7902	5265
40	1122	8656	6176	3683	1176	8656	6123	3577	1018	8445	5860	3261	0650	8025	5388
41	1248	8781	6301	3808	1301	8781	6247	3701	1141	8569	5983	3384	0773	8148	5510
42	1373	8907	6426	3933	1426	8905	6372	3825	1265	8692	6106	3508	0896	8271	5633
43	1499	9032	6551	4058	1550	9030	6496	3949	1389	8816	6230	3631	1019	8394	5756
44	1625	9157	6677	4183	1675	9154	6620	4073	1513	8940	6353	3754	1142	8516	5878
45	1750	9283	6802	4308	1800	9279	6745	4197	1637	9063	6477	3877	1265	8639	6001
46	1876	9408	6927	4433	1925	9403	6869	4322	1761	9187	6600	4000	1388	8762	6123
47	2002	9534	7052	4557	2049	9528	6993	4446	1885	9311	6724	4124	1511	8885	6246
48	2127	9659	7177	4682	2174	9653	7118	4570	2009	9434	6847	4247	1634	9008	6369
49	2253	9785	7303	4807	2299	9777	7242	4694	2132	9558	6971	4370	1757	9130	6491
50	2379	9910	7428	4932	2424	9902	7366	4818	2256	9682	7094	4493	1880	9253	6614
51	2504	0035	7553	5057	2548	0026	7491	4942	2380	9805	7217	4617	2003	9376	6736
52	2630	0161	7678	5182	2673	0151	7615	5066	2504	9929	7341	4740	2126	9499	6859
53	2756	0286	7803	5307	2798	0275	7739	5190	2628	0053	7464	4863	2249	9622	6981
54	2881	0412	7929	5432	2923	0400	7864	5314	2752	0176	7588	4986	2372	9744	7104
55	3007	0537	8054	5557	3047	0524	7988	5438	2876	0300	7711	5109	2495	9867	7227
56	3132	0662	8179	5682	3172	0649	8112	5562	2999	0424	7835	5233	2618	9990	7349
57	3258	0788	8304	5807	3297	0773	8236	5686	3123	0547	7958	5356	2741	0113	7472
58	3384	0913	8429	5932	3421	0898	8361	5810	3247	0671	8081	5479	2864	0235	7594
59	3509	1038	8554	6057	3546	1022	8485	5935	3371	0794	8205	5602	2987	0358	7717
60	3635	1164	8680	6182	3671	1147	8609	6059	3495	0918	8328	5725	3110	0481	7839
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Sine Deg. 80

9 Deg. Co-Sine

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
	9. 994	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	″
0	0027	9815	9603	9391	9178	8965	8752	8538	8324	8109	7894	7679	7463	7247	7030	60
1	0023	9812	9600	9387	9175	8962	8748	8534	8320	8105	7890	7675	7459	7243	7027	59
2	0020	9808	9596	9384	9171	8958	8745	8531	8316	8102	7887	7671	7456	7240	7023	58
3	0016	9805	9593	9380	9168	8955	8741	8527	8313	8098	7883	7668	7452	7236	7019	57
4	0013	9801	9589	9377	9164	8951	8737	8524	8309	8095	7880	7664	7448	7232	7016	56
5	0009	9798	9586	9373	9161	8947	8734	8520	8306	8091	7876	7661	7445	7229	7012	55
6	0006	9794	9582	9370	9157	8944	8730	8516	8302	8087	7872	7657	7441	7225	7009	54
7	0002	9791	9579	9366	9153	8940	8727	8513	8299	8084	7869	7653	7438	7221	7005	53
8	9999	9787	9575	9363	9150	8937	8723	8509	8295	8080	7865	7650	7434	7218	7001	52
9	9995	9784	9572	9359	9146	8933	8720	8506	8291	8077	7862	7646	7430	7214	6998	51
10	9992	9780	9568	9356	9143	8930	8716	8502	8288	8073	7858	7643	7427	7211	6994	50
11	9988	9777	9564	9352	9139	8926	8713	8499	8284	8070	7855	7639	7423	7207	6990	49
12	9985	9773	9561	9348	9136	8923	8709	8495	8281	8066	7851	7635	7420	7203	6987	48
13	9981	9769	9557	9345	9132	8919	8705	8491	8277	8062	7847	7632	7416	7200	6983	47
14	9978	9766	9554	9341	9129	8915	8702	8488	8274	8059	7844	7628	7412	7196	6980	46
15	9974	9762	9550	9338	9125	8912	8698	8484	8270	8055	7840	7625	7409	7193	6976	45
16	9971	9759	9547	9334	9121	8908	8695	8481	8266	8052	7837	7621	7405	7189	6972	44
17	9967	9755	9543	9331	9118	8905	8691	8477	8263	8048	7833	7618	7402	7185	6969	43
18	9963	9752	9540	9327	9114	8901	8688	8474	8259	8045	7829	7614	7398	7182	6965	42
19	9960	9748	9536	9324	9111	8898	8684	8470	8256	8041	7826	7610	7394	7178	6962	41
20	9956	9745	9533	9320	9107	8894	8680	8466	8252	8037	7822	7607	7391	7175	6958	40
21	9953	9741	9529	9317	9104	8891	8677	8463	8249	8034	7819	7603	7387	7171	6954	39
22	9949	9738	9526	9313	9100	8887	8673	8459	8245	8030	7815	7600	7384	7167	6951	38
23	9946	9734	9522	9310	9097	8883	8670	8456	8241	8027	7811	7596	7380	7164	6947	37
24	9942	9731	9518	9306	9093	8880	8666	8452	8238	8023	7808	7592	7376	7160	6944	36
25	9939	9727	9515	9302	9090	8876	8663	8449	8234	8019	7804	7589	7373	7157	6940	35
26	9935	9724	9511	9299	9086	8873	8659	8445	8231	8016	7801	7585	7369	7153	6936	34
27	9932	9720	9508	9295	9082	8869	8656	8441	8227	8012	7797	7582	7366	7149	6933	33
28	9928	9716	9504	9292	9079	8866	8652	8438	8223	8009	7794	7578	7362	7146	6929	32
29	9925	9713	9501	9288	9075	8862	8648	8434	8220	8005	7790	7574	7358	7142	6925	31
30	9921	9709	9497	9285	9072	8858	8645	8431	8216	8002	7786	7571	7355	7139	6922	30
31	9918	9706	9494	9281	9068	8855	8641	8427	8213	7998	7783	7567	7351	7135	6918	29
32	9914	9702	9490	9278	9065	8851	8638	8424	8209	7994	7779	7564	7348	7131	6915	28
33	9911	9699	9487	9274	9061	8848	8634	8420	8206	7991	7776	7560	7344	7128	6911	27
34	9907	9695	9483	9271	9058	8844	8631	8416	8202	7987	7772	7556	7340	7124	6907	26
35	9904	9692	9480	9267	9054	8841	8627	8413	8198	7984	7768	7553	7337	7120	6904	25
36	9900	9688	9476	9263	9050	8837	8623	8409	8195	7980	7765	7549	7333	7117	6900	24
37	9896	9685	9472	9260	9047	8834	8620	8406	8191	7976	7761	7546	7330	7113	6897	23
38	9893	9681	9469	9256	9043	8830	8616	8402	8188	7973	7758	7542	7326	7110	6893	22
39	9889	9678	9465	9253	9040	8826	8613	8399	8184	7969	7754	7538	7322	7106	6889	21
40	9886	9674	9462	9249	9036	8823	8609	8395	8181	7966	7750	7535	7319	7102	6886	20
41	9882	9671	9458	9246	9033	8819	8606	8391	8177	7962	7747	7531	7315	7099	6882	19
42	9879	9667	9455	9242	9029	8816	8602	8388	8173	7959	7743	7528	7312	7095	6878	18
43	9875	9663	9451	9239	9026	8812	8598	8384	8170	7955	7740	7524	7308	7092	6875	17
44	9872	9660	9448	9235	9022	8809	8595	8381	8166	7951	7736	7520	7304	7088	6871	16
45	9868	9656	9444	9232	9018	8805	8591	8377	8163	7948	7732	7517	7301	7084	6868	15
46	9865	9653	9441	9228	9015	8802	8588	8374	8159	7944	7729	7513	7297	7081	6864	14
47	9861	9649	9437	9224	9011	8798	8584	8370	8156	7941	7725	7510	7294	7077	6860	13
48	9858	9646	9434	9221	9008	8794	8581	8366	8152	7937	7722	7506	7290	7074	6857	12
49	9854	9642	9430	9217	9004	8791	8577	8363	8148	7933	7718	7502	7286	7070	6853	11
50	9851	9639	9426	9214	9001	8787	8574	8359	8145	7930	7715	7499	7283	7066	6849	10
51	9847	9635	9423	9210	8997	8784	8570	8356	8141	7926	7711	7495	7279	7063	6846	9
52	9844	9632	9419	9207	8994	8780	8566	8352	8138	7923	7707	7492	7276	7059	6842	8
53	9840	9628	9416	9203	8990	8777	8563	8349	8134	7919	7704	7488	7272	7055	6839	7
54	9837	9625	9412	9200	8987	8773	8559	8345	8130	7915	7700	7484	7268	7052	6835	6
55	9833	9621	9409	9196	8983	8769	8556	8341	8127	7912	7697	7481	7265	7048	6831	5
56	9829	9618	9405	9192	8979	8766	8552	8338	8123	7908	7693	7477	7261	7045	6828	4
57	9826	9614	9402	9189	8976	8762	8549	8334	8120	7905	7689	7474	7258	7041	6824	3
58	9822	9610	9398	9185	8972	8759	8545	8331	8116	7901	7686	7470	7254	7037	6821	2
59	9819	9607	9395	9182	8969	8755	8541	8327	8113	7898	7682	7466	7250	7034	6817	1
60	9815	9603	9391	9178	8965	8752	8538	8324	8109	7894	7679	7463	7247	7030	6813	0
	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Sine Deg. 80

9 Deg. Tangent

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 223	9. 224	9. 225	9. 225	9. 226	9. 227	9. 228	9. 229	9. 229	9. 230	9. 231	9. 232	9. 232	9. 233	9. 234
0	6065	3819	1561	9289	7004	4706	2395	0071	7735	5386	3024	0650	8262	5863	3451
1	6195	3949	1689	9417	7132	4834	2523	0199	7863	5513	3151	0777	8389	5989	3577
2	6324	4078	1818	9546	7261	4962	2651	0327	7990	5641	3278	0904	8516	6116	3703
3	6453	4207	1947	9675	7389	5090	2779	0455	8118	5768	3406	1030	8643	6242	3830
4	6583	4336	2076	9803	7517	5219	2907	0583	8245	5895	3533	1157	8770	6369	3956
5	6712	4465	2205	9932	7646	5347	3035	0710	8373	6023	3660	1284	8896	6496	4082
6	6841	4594	2334	0061	7774	5475	3163	0838	8501	6150	3787	1411	9023	6622	4209
7	6971	4723	2463	0189	7903	5603	3291	0966	8628	6278	3914	1538	9150	6749	4335
8	7100	4852	2592	0318	8031	5732	3419	1094	8756	6405	4041	1665	9277	6875	4461
9	7229	4981	2721	0447	8160	5860	3547	1222	8883	6532	4169	1792	9403	7002	4588
10	7359	5111	2849	0575	8288	5988	3675	1350	9011	6660	4296	1919	9530	7128	4714
11	7488	5240	2978	0704	8417	6116	3803	1477	9139	6787	4423	2046	9657	7255	4840
12	7617	5369	3107	0833	8545	6245	3931	1605	9266	6915	4550	2173	9784	7381	4967
13	7747	5498	3236	0961	8673	6373	4059	1733	9394	7042	4677	2300	9910	7508	5093
14	7876	5627	3365	1090	8802	6501	4187	1861	9521	7169	4804	2427	0037	7634	5219
15	8005	5756	3494	1219	8930	6629	4315	1988	9649	7297	4932	2554	0164	7761	5346
16	8134	5885	3623	1347	9059	6757	4443	2116	9776	7424	5059	2681	0290	7887	5472
17	8264	6014	3751	1476	9187	6886	4571	2244	9904	7551	5186	2808	0417	8014	5598
18	8393	6143	3880	1604	9316	7014	4699	2372	0032	7679	5313	2935	0544	8140	5725
19	8522	6272	4009	1733	9444	7142	4827	2500	0159	7806	5440	3062	0671	8267	5851
20	8652	6401	4138	1862	9572	7270	4955	2627	0287	7933	5567	3189	0797	8393	5977
21	8781	6530	4267	1990	9701	7398	5083	2755	0414	8061	5694	3316	0924	8520	6103
22	8910	6659	4396	2119	9829	7527	5211	2883	0542	8188	5822	3442	1051	8646	6230
23	9039	6788	4524	2248	9958	7655	5339	3011	0669	8315	5949	3569	1177	8773	6356
24	9169	6917	4653	2376	0086	7783	5467	3138	0797	8443	6076	3696	1304	8899	6482
25	9298	7046	4782	2505	0214	7911	5595	3266	0924	8570	6203	3823	1431	9026	6609
26	9427	7176	4911	2633	0343	8039	5723	3394	1052	8697	6330	3950	1557	9152	6735
27	9556	7305	5040	2762	0471	8167	5851	3522	1179	8825	6457	4077	1684	9279	6861
28	9686	7434	5169	2891	0600	8296	5979	3649	1307	8952	6584	4204	1811	9405	6987
29	9815	7563	5297	3019	0728	8424	6107	3777	1434	9079	6711	4331	1938	9532	7114
30	9944	7692	5426	3148	0856	8552	6235	3905	1562	9207	6838	4458	2064	9658	7240
31	0073	7821	5555	3276	0985	8680	6363	4032	1690	9334	6965	4584	2191	9785	7366
32	0203	7950	5684	3405	1113	8808	6491	4160	1817	9461	7093	4711	2318	9911	7492
33	0332	8079	5813	3533	1241	8936	6619	4288	1945	9588	7220	4838	2444	0038	7619
34	0461	8208	5941	3662	1370	9065	6746	4416	2072	9716	7347	4965	2571	0164	7745
35	0590	8337	6070	3791	1498	9193	6874	4543	2200	9843	7474	5092	2698	0291	7871
36	0719	8466	6199	3919	1626	9321	7002	4671	2327	9970	7601	5219	2824	0417	7997
37	0849	8595	6328	4048	1755	9449	7130	4799	2455	0098	7728	5346	2951	0543	8124
38	0978	8724	6456	4176	1883	9577	7258	4926	2582	0225	7855	5473	3077	0670	8250
39	1107	8853	6585	4305	2011	9705	7386	5054	2709	0352	7982	5599	3204	0796	8376
40	1236	8982	6714	4433	2140	9833	7514	5182	2837	0479	8109	5726	3331	0923	8502
41	1365	9111	6843	4562	2268	9961	7642	5310	2964	0607	8236	5853	3457	1049	8628
42	1495	9240	6971	4690	2396	0090	7770	5437	3092	0734	8363	5980	3584	1176	8755
43	1624	9369	7100	4819	2525	0218	7898	5565	3219	0861	8490	6107	3711	1302	8881
44	1753	9498	7229	4948	2653	0346	8026	5693	3347	0988	8617	6234	3837	1428	9007
45	1882	9626	7358	5076	2781	0474	8153	5820	3474	1116	8744	6360	3964	1555	9133
46	2011	9755	7486	5205	2910	0602	8281	5948	3602	1243	8871	6487	4091	1681	9259
47	2141	9884	7615	5333	3038	0730	8409	6076	3729	1370	8998	6614	4217	1808	9386
48	2270	0013	7744	5462	3166	0858	8537	6203	3857	1497	9125	6741	4344	1934	9512
49	2399	0142	7873	5590	3295	0986	8665	6331	3984	1625	9252	6868	4470	2060	9638
50	2528	0271	8001	5719	3423	1114	8793	6459	4112	1752	9380	6995	4597	2187	9764
51	2657	0400	8130	5847	3551	1242	8921	6586	4239	1879	9507	7121	4724	2313	9890
52	2786	0529	8259	5976	3680	1370	9049	6714	4366	2006	9634	7248	4850	2440	0017
53	2915	0658	8388	6104	3808	1499	9176	6842	4494	2134	9761	7375	4977	2566	0143
54	3045	0787	8516	6233	3936	1627	9304	6969	4621	2261	9888	7502	5103	2692	0269
55	3174	0916	8645	6361	4064	1755	9432	7097	4749	2388	0015	7629	5230	2819	0395
56	3303	1045	8774	6490	4193	1883	9560	7224	4876	2515	0142	7755	5357	2945	0521
57	3432	1174	8902	6618	4321	2011	9688	7352	5004	2642	0269	7882	5483	3072	0647
58	3561	1303	9031	6747	4449	2139	9816	7480	5131	2770	0396	8009	5610	3198	0774
59	3690	1432	9160	6875	4577	2267	9944	7607	5258	2897	0523	8136	5736	3324	0900
60	3819	1561	9289	7004	4706	2395	0071	7735	5386	3024	0650	8262	5863	3451	1026
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Tangent Deg. 80

9 Deg. Co-Tangent

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	10. 776	10. 775	10. 774	10. 774	10. 773	10. 772	10. 771	10. 770	10. 770	10. 769	10. 768	10. 767	10. 767	10. 766	10. 765
0	3935	6181	8439	0711	2996	5294	7605	9929	2265	4614	6976	9350	1738	4137	6549
1	3805	6051	8311	0583	2868	5166	7477	9801	2137	4487	6849	9223	1611	4011	6423
2	3676	5922	8182	0454	2739	5038	7349	9673	2010	4359	6722	9096	1484	3884	6297
3	3547	5793	8053	0325	2611	4910	7221	9545	1882	4232	6594	8970	1357	3758	6170
4	3417	5664	7924	0197	2483	4781	7093	9417	1755	4105	6467	8843	1230	3631	6044
5	3288	5535	7795	0068	2354	4653	6965	9290	1627	3977	6340	8716	1104	3504	5918
6	3159	5406	7666	9939	2226	4525	6837	9162	1499	3850	6213	8589	0977	3378	5791
7	3029	5277	7537	9811	2097	4397	6709	9034	1372	3722	6086	8462	0850	3251	5665
8	2900	5148	7408	9682	1969	4268	6581	8906	1244	3595	5959	8335	0723	3125	5539
9	2771	5019	7279	9553	1840	4140	6453	8778	1117	3468	5831	8208	0597	2998	5412
10	2641	4889	7151	9425	1712	4012	6325	8650	0989	3340	5704	8081	0470	2872	5286
11	2512	4760	7022	9296	1583	3884	6197	8523	0861	3213	5577	7954	0343	2745	5160
12	2383	4631	6893	9167	1455	3755	6069	8395	0734	3085	5450	7827	0216	2619	5033
13	2253	4502	6764	9039	1327	3627	5941	8267	0606	2958	5323	7700	0090	2492	4907
14	2124	4373	6635	8910	1198	3499	5813	8139	0479	2831	5196	7573	9963	2366	4781
15	1995	4244	6506	8781	1070	3371	5685	8012	0351	2703	5068	7446	9836	2239	4654
16	1866	4115	6377	8653	0941	3243	5557	7884	0224	2576	4941	7319	9710	2113	4528
17	1736	3986	6249	8524	0813	3114	5429	7756	0096	2449	4814	7192	9583	1986	4402
18	1607	3857	6120	8396	0684	2986	5301	7628	9968	2321	4687	7065	9456	1860	4275
19	1478	3728	5991	8267	0556	2858	5173	7500	9841	2194	4560	6938	9329	1733	4149
20	1348	3599	5862	8138	0428	2730	5045	7373	9713	2067	4433	6811	9203	1607	4023
21	1219	3470	5733	8010	0299	2602	4917	7245	9586	1939	4306	6684	9076	1480	3897
22	1090	3341	5604	7881	0171	2473	4789	7117	9458	1812	4178	6558	8949	1354	3770
23	0961	3212	5476	7752	0042	2345	4661	6989	9331	1685	4051	6431	8823	1227	3644
24	0831	3083	5347	7624	9914	2217	4533	6862	9203	1557	3924	6304	8696	1101	3518
25	0702	2954	5218	7495	9786	2089	4405	6734	9076	1430	3797	6177	8569	0974	3391
26	0573	2824	5089	7367	9657	1961	4277	6606	8948	1303	3670	6050	8443	0848	3265
27	0444	2695	4960	7238	9529	1833	4149	6478	8821	1175	3543	5923	8316	0721	3139
28	0314	2566	4831	7109	9400	1704	4021	6351	8693	1048	3416	5796	8189	0595	3013
29	0185	2437	4703	6981	9272	1576	3893	6223	8566	0921	3289	5669	8062	0468	2886
30	0056	2308	4574	6852	9144	1448	3765	6095	8438	0793	3162	5542	7936	0342	2760
31	9927	2179	4445	6724	9015	1320	3637	5968	8310	0666	3035	5416	7809	0215	2634
32	9797	2050	4316	6595	8887	1192	3509	5840	8183	0539	2907	5289	7682	0089	2508
33	9668	1921	4187	6467	8759	1064	3381	5712	8055	0412	2780	5162	7556	9962	2381
34	9539	1792	4059	6338	8630	0935	3254	5584	7928	0284	2653	5035	7429	9836	2255
35	9410	1663	3930	6209	8502	0807	3126	5457	7800	0157	2526	4908	7302	9709	2129
36	9281	1534	3801	6081	8374	0679	2998	5329	7673	0030	2399	4781	7176	9583	2003
37	9151	1405	3672	5952	8245	0551	2870	5201	7545	9902	2272	4654	7049	9457	1876
38	9022	1276	3544	5824	8117	0423	2742	5074	7418	9775	2145	4527	6923	9330	1750
39	8893	1147	3415	5695	7989	0295	2614	4946	7291	9648	2018	4401	6796	9204	1624
40	8764	1018	3286	5567	7860	0167	2486	4818	7163	9521	1891	4274	6669	9077	1498
41	8635	0889	3157	5438	7732	0039	2358	4690	7036	9393	1764	4147	6543	8951	1372
42	8505	0760	3029	5310	7604	9910	2230	4563	6908	9266	1637	4020	6416	8824	1245
43	8376	0631	2900	5181	7475	9782	2102	4435	6781	9139	1510	3893	6289	8698	1119
44	8247	0502	2771	5052	7347	9654	1974	4307	6653	9012	1383	3766	6163	8572	0993
45	8118	0374	2642	4924	7219	9526	1847	4180	6526	8884	1256	3640	6036	8445	0867
46	7989	0245	2514	4795	7090	9398	1719	4052	6398	8757	1129	3513	5909	8319	0741
47	7859	0116	2385	4667	6962	9270	1591	3924	6271	8630	1002	3386	5783	8192	0614
48	7730	9987	2256	4538	6834	9142	1463	3797	6143	8503	0875	3259	5656	8066	0488
49	7601	9858	2127	4410	6705	9014	1335	3669	6016	8375	0748	3132	5530	7940	0362
50	7472	9729	1999	4281	6577	8886	1207	3541	5888	8248	0620	3005	5403	7813	0236
51	7343	9600	1870	4153	6449	8758	1079	3414	5761	8121	0493	2879	5276	7687	0110
52	7214	9471	1741	4024	6320	8630	0951	3286	5634	7994	0366	2752	5150	7560	9983
53	7085	9342	1612	3896	6192	8501	0824	3158	5506	7866	0239	2625	5023	7434	9857
54	6955	9213	1484	3767	6064	8373	0696	3031	5379	7739	0112	2498	4897	7308	9731
55	6826	9084	1355	3639	5936	8245	0568	2903	5251	7612	9985	2371	4770	7181	9605
56	6697	8955	1226	3510	5807	8117	0440	2776	5124	7485	9858	2245	4643	7055	9479
57	6568	8826	1098	3382	5679	7989	0312	2648	4996	7358	9731	2118	4517	6928	9353
58	6439	8697	0969	3253	5551	7861	0184	2520	4869	7230	9604	1991	4390	6802	9226
59	6310	8568	0840	3125	5423	7733	0056	2393	4742	7103	9477	1864	4264	6676	9100
60	6181	8439	0711	2996	5294	7605	9929	2265	4614	6976	9350	1738	4137	6549	8974
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Tangent Deg. 80

9 Deg. Sine

"	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9. 228	9. 229	9. 230	9. 230	9. 231	9. 232	9. 233	9. 233	9. 234	9. 235	9. 236	9. 236	9. 237	9. 238	9. 238
0	7839	5185	2518	9838	7145	4440	1722	8992	6249	3494	0726	7946	5153	2349	9532
1	7962	5307	2640	9960	7267	4562	1844	9113	6370	3615	0847	8066	5274	2468	9651
2	8084	5430	2762	0082	7389	4683	1965	9234	6491	3735	0967	8186	5394	2588	9771
3	8207	5552	2884	0204	7510	4805	2086	9355	6612	3856	1087	8307	5514	2708	9890
4	8329	5674	3006	0325	7632	4926	2207	9476	6733	3976	1208	8427	5634	2828	0010
5	8452	5796	3128	0447	7754	5048	2329	9597	6853	4097	1328	8547	5754	2948	0130
6	8574	5919	3250	0569	7875	5169	2450	9718	6974	4218	1449	8667	5874	3068	0249
7	8697	6041	3372	0691	7997	5290	2571	9839	7095	4338	1569	8788	5994	3187	0369
8	8819	6163	3495	0813	8119	5412	2692	9960	7216	4459	1690	8908	6114	3307	0488
9	8942	6286	3617	0935	8240	5533	2814	0081	7337	4580	1810	9028	6234	3427	0608
10	9064	6408	3739	1057	8362	5655	2935	0202	7458	4700	1930	9148	6354	3547	0728
11	9187	6530	3861	1179	8484	5776	3056	0324	7578	4821	2051	9268	6474	3666	0847
12	9309	6653	3983	1300	8605	5898	3177	0445	7699	4941	2171	9388	6594	3786	0967
13	9432	6775	4105	1422	8727	6019	3299	0566	7820	5062	2291	9509	6713	3906	1086
14	9554	6897	4227	1544	8849	6141	3420	0687	7941	5183	2412	9629	6833	4026	1206
15	9677	7019	4349	1666	8970	6262	3541	0808	8062	5303	2532	9749	6953	4146	1325
16	9799	7142	4471	1788	9092	6383	3662	0929	8182	5424	2653	9869	7073	4265	1445
17	9922	7264	4593	1910	9214	6505	3783	1050	8303	5544	2773	9989	7193	4385	1565
18	0044	7386	4715	2032	9335	6626	3905	1171	8424	5665	2893	0110	7313	4505	1684
19	0167	7508	4837	2153	9457	6748	4026	1292	8545	5785	3014	0230	7433	4625	1804
20	0289	7631	4959	2275	9578	6869	4147	1413	8666	5906	3134	0350	7553	4744	1923
21	0412	7753	5081	2397	9700	6990	4268	1534	8786	6027	3254	0470	7673	4864	2043
22	0534	7875	5203	2519	9822	7112	4389	1654	8907	6147	3375	0590	7793	4984	2162
23	0657	7997	5325	2641	9943	7233	4511	1775	9028	6268	3495	0710	7913	5104	2282
24	0779	8120	5447	2762	0065	7355	4632	1896	9149	6388	3616	0830	8033	5223	2401
25	0902	8242	5569	2884	0186	7476	4753	2017	9269	6509	3736	0951	8153	5343	2521
26	1024	8364	5691	3006	0308	7597	4874	2138	9390	6629	3856	1071	8273	5463	2640
27	1146	8486	5813	3128	0430	7719	4995	2259	9511	6750	3977	1191	8393	5583	2760
28	1269	8609	5935	3250	0551	7840	5116	2380	9632	6870	4097	1311	8513	5702	2879
29	1391	8731	6057	3371	0673	7962	5238	2501	9752	6991	4217	1431	8633	5822	2999
30	1514	8853	6179	3493	0794	8083	5359	2622	9873	7112	4338	1551	8753	5942	3118
31	1636	8975	6301	3615	0916	8204	5480	2743	9994	7232	4458	1671	8873	6061	3238
32	1759	9097	6423	3737	1038	8326	5601	2864	0115	7353	4578	1792	8992	6181	3357
33	1881	9220	6545	3859	1159	8447	5722	2985	0235	7473	4699	1912	9112	6301	3477
34	2003	9342	6667	3980	1281	8568	5843	3106	0356	7594	4819	2032	9232	6421	3596
35	2126	9464	6789	4102	1402	8690	5965	3227	0477	7714	4939	2152	9352	6540	3716
36	2248	9586	6911	4224	1524	8811	6086	3348	0598	7835	5060	2272	9472	6660	3835
37	2371	9708	7033	4346	1645	8932	6207	3469	0718	7955	5180	2392	9592	6780	3955
38	2493	9831	7155	4467	1767	9054	6328	3590	0839	8076	5300	2512	9712	6899	4074
39	2615	9953	7277	4589	1888	9175	6449	3711	0960	8196	5420	2632	9832	7019	4194
40	2738	0075	7399	4711	2010	9296	6570	3832	1080	8317	5541	2752	9952	7139	4313
41	2860	0197	7521	4833	2132	9418	6691	3952	1201	8437	5661	2872	0072	7258	4433
42	2983	0319	7643	4954	2253	9539	6813	4073	1322	8558	5781	2993	0191	7378	4552
43	3105	0441	7765	5076	2375	9660	6934	4194	1443	8678	5902	3113	0311	7498	4672
44	3227	0564	7887	5198	2496	9782	7055	4315	1563	8799	6022	3233	0431	7617	4791
45	3350	0686	8009	5320	2618	9903	7176	4436	1684	8919	6142	3353	0551	7737	4911
46	3472	0808	8131	5441	2739	0024	7297	4557	1805	9040	6262	3473	0671	7857	5030
47	3594	0930	8253	5563	2861	0146	7418	4678	1925	9160	6383	3593	0791	7976	5150
48	3717	1052	8375	5685	2982	0267	7539	4799	2046	9281	6503	3713	0911	8096	5269
49	3839	1174	8497	5807	3104	0388	7660	4920	2167	9401	6623	3833	1030	8216	5389
50	3962	1297	8619	5928	3225	0510	7781	5041	2287	9522	6744	3953	1150	8335	5508
51	4084	1419	8741	6050	3347	0631	7902	5161	2408	9642	6864	4073	1270	8455	5627
52	4206	1541	8863	6172	3468	0752	8024	5282	2529	9763	6984	4193	1390	8575	5747
53	4329	1663	8985	6294	3590	0873	8145	5403	2649	9883	7104	4313	1510	8694	5866
54	4451	1785	9106	6415	3711	0995	8266	5524	2770	0003	7225	4433	1630	8814	5986
55	4573	1907	9228	6537	3833	1116	8387	5645	2891	0124	7345	4553	1750	8933	6105
56	4696	2029	9350	6659	3954	1237	8508	5766	3011	0244	7465	4673	1869	9053	6225
57	4818	2151	9472	6780	4076	1359	8629	5887	3132	0365	7585	4793	1989	9173	6344
58	4940	2274	9594	6902	4197	1480	8750	6008	3253	0485	7706	4913	2109	9292	6463
59	5063	2396	9716	7024	4319	1601	8871	6128	3373	0606	7826	5033	2229	9412	6583
60	5185	2518	9838	7145	4440	1722	8992	6249	3494	0726	7946	5153	2349	9532	6702
"	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Sine Deg. 80

9 Deg. Co-Sine

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	"
9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	
6813	6596	6378	6160	5942	5723	5504	5285	5065	4844	4624	4403	4181	3959	3737	60
6810	6592	6375	6157	5938	5720	5500	5281	5061	4841	4620	4399	4177	3956	3733	59
6806	6589	6371	6153	5935	5716	5497	5277	5057	4837	4616	4395	4174	3952	3730	58
6802	6585	6368	6149	5931	5712	5493	5274	5054	4833	4613	4392	4170	3948	3726	57
6799	6582	6364	6146	5927	5709	5489	5270	5050	4830	4609	4388	4166	3945	3722	56
6795	6578	6360	6142	5924	5705	5486	5266	5046	4826	4605	4384	4163	3941	3719	55
6792	6574	6357	6139	5920	5701	5482	5263	5043	4822	4602	4380	4159	3937	3715	54
6788	6571	6353	6135	5916	5698	5478	5259	5039	4819	4598	4377	4155	3933	3711	53
6784	6567	6349	6131	5913	5694	5475	5255	5035	4815	4594	4373	4152	3930	3708	52
6781	6563	6346	6128	5909	5690	5471	5252	5032	4811	4591	4369	4148	3926	3704	51
6777	6560	6342	6124	5906	5687	5467	5248	5028	4808	4587	4366	4144	3922	3700	50
6774	6556	6338	6120	5902	5683	5464	5244	5024	4804	4583	4362	4141	3919	3696	49
6770	6553	6335	6117	5898	5679	5460	5241	5021	4800	4579	4358	4137	3915	3693	48
6766	6549	6331	6113	5895	5676	5457	5237	5017	4797	4576	4355	4133	3911	3689	47
6763	6545	6328	6109	5891	5672	5453	5233	5013	4793	4572	4351	4129	3908	3685	46
6759	6542	6324	6106	5887	5668	5449	5230	5010	4789	4568	4347	4126	3904	3682	45
6755	6538	6320	6102	5884	5665	5446	5226	5006	4785	4565	4344	4122	3900	3678	44
6752	6534	6317	6099	5880	5661	5442	5222	5002	4782	4561	4340	4118	3896	3674	43
6748	6531	6313	6095	5876	5658	5438	5219	4999	4778	4557	4336	4115	3893	3670	42
6745	6527	6309	6091	5873	5654	5435	5215	4995	4774	4554	4333	4110	3889	3667	41
6741	6524	6306	6088	5869	5650	5431	5211	4991	4771	4550	4329	4107	3885	3663	40
6737	6520	6302	6084	5865	5647	5427	5208	4988	4767	4546	4325	4104	3882	3659	39
6734	6516	6299	6080	5862	5643	5424	5204	4984	4763	4543	4321	4100	3878	3656	38
6730	6513	6295	6077	5858	5639	5420	5200	4980	4760	4539	4318	4096	3874	3652	37
6726	6509	6291	6073	5855	5636	5416	5197	4977	4756	4535	4314	4092	3871	3648	36
6723	6505	6288	6069	5851	5632	5413	5193	4973	4752	4532	4310	4089	3867	3644	35
6719	6502	6284	6066	5847	5628	5409	5189	4969	4749	4528	4307	4085	3863	3641	34
6716	6498	6280	6062	5844	5625	5405	5186	4966	4745	4524	4303	4081	3859	3637	33
6712	6495	6277	6059	5840	5621	5402	5182	4962	4741	4521	4299	4078	3856	3633	32
6708	6491	6273	6055	5836	5617	5398	5178	4958	4738	4517	4296	4074	3852	3630	31
6705	6487	6269	6051	5833	5614	5394	5175	4955	4734	4513	4292	4070	3848	3626	30
6701	6484	6266	6048	5829	5610	5391	5171	4951	4730	4509	4288	4067	3845	3622	29
6697	6480	6262	6044	5825	5606	5387	5167	4947	4727	4506	4285	4063	3841	3619	28
6694	6476	6259	6040	5822	5603	5383	5164	4943	4723	4502	4281	4059	3837	3615	27
6690	6473	6255	6037	5818	5599	5380	5160	4940	4719	4498	4277	4056	3833	3611	26
6687	6469	6251	6033	5814	5595	5376	5156	4936	4716	4495	4273	4052	3830	3607	25
6683	6466	6248	6029	5811	5592	5372	5153	4932	4712	4491	4270	4048	3826	3604	24
6679	6462	6244	6026	5807	5588	5369	5149	4929	4708	4487	4266	4044	3822	3600	23
6676	6458	6240	6022	5803	5584	5365	5145	4925	4705	4484	4262	4041	3819	3596	22
6672	6455	6237	6018	5800	5581	5361	5142	4921	4701	4480	4259	4037	3815	3593	21
6669	6451	6233	6015	5796	5577	5358	5138	4918	4697	4476	4255	4033	3811	3589	20
6665	6447	6229	6011	5793	5573	5354	5134	4914	4694	4473	4251	4030	3808	3585	19
6661	6444	6226	6008	5789	5570	5350	5131	4910	4690	4469	4248	4026	3804	3581	18
6658	6440	6222	6004	5785	5566	5347	5127	4907	4686	4465	4244	4022	3800	3578	17
6654	6436	6219	6000	5782	5563	5343	5123	4903	4683	4462	4240	4019	3796	3574	16
6650	6433	6215	5997	5778	5559	5339	5120	4899	4679	4458	4237	4015	3793	3570	15
6647	6429	6211	5993	5774	5555	5336	5116	4896	4675	4454	4233	4011	3789	3567	14
6643	6426	6208	5989	5771	5552	5332	5112	4892	4671	4451	4229	4007	3785	3563	13
6640	6422	6204	5986	5767	5548	5328	5109	4888	4668	4447	4225	4004	3782	3559	12
6636	6418	6200	5982	5763	5544	5325	5105	4885	4664	4443	4222	4000	3778	3555	11
6632	6415	6197	5978	5760	5541	5321	5101	4881	4660	4439	4218	3996	3774	3552	10
6629	6411	6193	5975	5756	5537	5317	5098	4877	4657	4436	4214	3993	3771	3548	9
6625	6407	6189	5971	5752	5533	5314	5094	4874	4653	4432	4211	3989	3767	3544	8
6621	6404	6186	5967	5749	5530	5310	5090	4870	4649	4428	4207	3985	3763	3541	7
6618	6400	6182	5964	5745	5526	5306	5087	4866	4646	4425	4203	3982	3759	3537	6
6614	6397	6179	5960	5741	5522	5303	5083	4863	4642	4421	4200	3978	3756	3533	5
6611	6393	6175	5957	5738	5519	5299	5079	4859	4638	4417	4196	3974	3752	3529	4
6607	6389	6171	5953	5734	5515	5296	5076	4855	4635	4414	4192	3970	3748	3526	3
6603	6386	6168	5949	5731	5511	5292	5072	4852	4631	4410	4189	3967	3745	3522	2
6600	6382	6164	5946	5727	5508	5288	5068	4848	4627	4406	4185	3963	3741	3518	1
6596	6378	6160	5942	5723	5504	5285	5065	4844	4624	4403	4181	3959	3737	3515	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	"

Sine Deg. 80

9 Deg. Tangent

"	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9. 235	9. 235	9. 236	9. 237	9. 238	9. 238	9. 239	9. 240	9. 241	9. 241	9. 242	9. 243	9. 244	9. 244	9. 245
0	1026	8589	6139	3678	1203	8717	6218	3708	1185	8650	6103	3543	0972	8389	5794
1	1152	8715	6265	3803	1329	8842	6343	3832	1309	8774	6227	3667	1096	8513	5918
2	1278	8841	6391	3929	1454	8967	6468	3957	1434	8898	6351	3791	1220	8636	6041
3	1404	8967	6517	4054	1579	9092	6593	4082	1558	9023	6475	3915	1343	8760	6164
4	1531	9093	6642	4180	1705	9217	6718	4206	1683	9147	6599	4039	1467	8883	6288
5	1657	9219	6768	4305	1830	9343	6843	4331	1807	9271	6723	4163	1591	9007	6411
6	1783	9344	6894	4431	1955	9468	6968	4456	1932	9395	6847	4287	1715	9130	6534
7	1909	9470	7019	4556	2081	9593	7093	4581	2056	9520	6971	4411	1838	9254	6658
8	2035	9596	7145	4682	2206	9718	7218	4705	2181	9644	7095	4535	1962	9377	6781
9	2161	9722	7271	4807	2331	9843	7343	4830	2305	9768	7219	4659	2086	9501	6904
10	2287	9848	7397	4933	2457	9968	7467	4955	2430	9893	7343	4782	2209	9624	7027
11	2413	9974	7522	5058	2582	0093	7592	5079	2554	0017	7468	4906	2333	9748	7151
12	2540	0100	7648	5184	2707	0218	7717	5204	2679	0141	7592	5030	2457	9871	7274
13	2666	0226	7774	5309	2832	0343	7842	5329	2803	0265	7716	5154	2580	9995	7397
14	2792	0352	7899	5435	2958	0468	7967	5453	2928	0390	7840	5278	2704	0118	7521
15	2918	0478	8025	5560	3083	0593	8092	5578	3052	0514	7964	5402	2828	0242	7644
16	3044	0604	8151	5686	3208	0719	8217	5703	3176	0638	8088	5526	2951	0365	7767
17	3170	0729	8276	5811	3334	0844	8342	5827	3301	0762	8212	5649	3075	0489	7890
18	3296	0855	8402	5937	3459	0969	8466	5952	3425	0887	8336	5773	3199	0612	8014
19	3422	0981	8528	6062	3584	1094	8591	6077	3550	1011	8460	5897	3322	0736	8137
20	3548	1107	8653	6188	3709	1219	8716	6201	3674	1135	8584	6021	3446	0859	8260
21	3674	1233	8779	6313	3835	1344	8841	6326	3799	1259	8708	6145	3570	0982	8383
22	3800	1359	8905	6438	3960	1469	8966	6451	3923	1384	8832	6269	3693	1106	8507
23	3927	1485	9030	6564	4085	1594	9091	6575	4048	1508	8956	6393	3817	1229	8630
24	4053	1611	9156	6689	4210	1719	9216	6700	4172	1632	9080	6516	3941	1353	8753
25	4179	1736	9282	6815	4336	1844	9340	6824	4297	1756	9204	6640	4064	1476	8876
26	4305	1862	9407	6940	4461	1969	9465	6949	4421	1881	9328	6764	4188	1600	9000
27	4431	1988	9533	7066	4586	2094	9590	7074	4545	2005	9452	6888	4311	1723	9123
28	4557	2114	9659	7191	4711	2219	9715	7198	4670	2129	9576	7012	4435	1847	9246
29	4683	2240	9784	7317	4837	2344	9840	7323	4794	2253	9700	7136	4559	1970	9369
30	4809	2366	9910	7442	4962	2469	9964	7448	4919	2378	9824	7259	4682	2093	9493
31	4935	2492	0036	7567	5087	2594	0089	7572	5043	2502	9948	7383	4806	2217	9616
32	5061	2617	0161	7693	5212	2719	0214	7697	5167	2626	0072	7507	4930	2340	9739
33	5187	2743	0287	7818	5337	2844	0339	7821	5292	2750	0196	7631	5053	2464	9862
34	5313	2869	0413	7944	5463	2969	0464	7946	5416	2874	0320	7755	5177	2587	9985
35	5439	2995	0538	8069	5588	3094	0589	8071	5541	2999	0444	7878	5300	2710	0109
36	5565	3121	0664	8195	5713	3219	0713	8195	5665	3123	0568	8002	5424	2834	0232
37	5691	3246	0789	8320	5838	3344	0838	8320	5789	3247	0692	8126	5548	2957	0355
38	5817	3372	0915	8445	5963	3469	0963	8444	5914	3371	0816	8250	5671	3081	0478
39	5943	3498	1041	8571	6089	3594	1088	8569	6038	3495	0940	8374	5795	3204	0601
40	6069	3624	1166	8696	6214	3719	1213	8694	6163	3620	1064	8497	5918	3327	0725
41	6195	3750	1292	8822	6339	3844	1337	8818	6287	3744	1188	8621	6042	3451	0848
42	6321	3876	1417	8947	6464	3969	1462	8943	6411	3868	1312	8745	6165	3574	0971
43	6447	4001	1543	9072	6589	4094	1587	9067	6536	3992	1436	8869	6289	3698	1094
44	6573	4127	1669	9198	6715	4219	1712	9192	6660	4116	1560	8992	6413	3821	1217
45	6699	4253	1794	9323	6840	4344	1836	9317	6784	4240	1684	9116	6536	3944	1341
46	6825	4379	1920	9448	6965	4469	1961	9441	6909	4365	1808	9240	6660	4068	1464
47	6951	4504	2045	9574	7090	4594	2086	9566	7033	4489	1932	9364	6783	4191	1587
48	7077	4630	2171	9699	7215	4719	2211	9690	7158	4613	2056	9488	6907	4314	1710
49	7203	4756	2296	9825	7340	4844	2335	9815	7282	4737	2180	9611	7030	4438	1833
50	7329	4882	2422	9950	7466	4969	2460	9939	7406	4861	2304	9735	7154	4561	1956
51	7455	5008	2548	0075	7591	5094	2585	0064	7531	4985	2428	9859	7278	4684	2079
52	7581	5133	2673	0201	7716	5219	2710	0188	7655	5109	2552	9983	7401	4808	2203
53	7707	5259	2799	0326	7841	5344	2834	0313	7779	5234	2676	0106	7525	4931	2326
54	7833	5385	2924	0451	7966	5469	2959	0437	7904	5358	2800	0230	7648	5054	2449
55	7959	5511	3050	0577	8091	5594	3084	0562	8028	5482	2924	0354	7772	5178	2572
56	8085	5636	3175	0702	8216	5719	3209	0687	8152	5606	3048	0477	7895	5301	2695
57	8211	5762	3301	0827	8342	5844	3333	0811	8277	5730	3172	0601	8019	5424	2818
58	8337	5888	3426	0953	8467	5969	3458	0936	8401	5854	3296	0725	8142	5548	2941
59	8463	6014	3552	1078	8592	6093	3583	1060	8525	5978	3420	0849	8266	5671	3065
60	8589	6139	3678	1203	8717	6218	3708	1185	8650	6103	3543	0972	8389	5794	3188
"	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Tangent Deg. 80

9 Deg. Co-Tangent

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	"
10. 764	10. 764	10. 763	10. 762	10. 761	10. 761	10. 760	10. 759	10. 758	10. 758	10. 757	10. 756	10. 755	10. 755	10. 754	
8974	1411	3861	6322	8797	1283	3782	6292	8815	1350	3897	6457	9028	1611	4206	60
8848	1285	3735	6197	8671	1158	3657	6168	8691	1226	3773	6333	8904	1487	4082	59
8722	1159	3609	6071	8546	1033	3532	6043	8566	1102	3649	6209	8780	1364	3959	58
8596	1033	3483	5946	8421	0908	3407	5918	8442	0977	3525	6085	8657	1240	3836	57
8469	0907	3358	5820	8295	0783	3282	5794	8317	0853	3401	5961	8533	1117	3712	56
8343	0781	3232	5695	8170	0657	3157	5669	8193	0729	3277	5837	8409	0993	3589	55
8217	0656	3106	5569	8045	0532	3032	5544	8068	0605	3153	5713	8285	0870	3466	54
8091	0530	2981	5444	7919	0407	2907	5419	7944	0480	3029	5589	8162	0746	3342	53
7965	0404	2855	5318	7794	0282	2782	5295	7819	0356	2905	5465	8038	0623	3219	52
7839	0278	2729	5193	7669	0157	2657	5170	7695	0232	2781	5341	7914	0499	3096	51
7713	0152	2603	5067	7543	0032	2533	5045	7570	0107	2657	5218	7791	0376	2973	50
7587	0026	2478	4942	7418	9907	2408	4921	7446	9983	2532	5094	7667	0252	2849	49
7460	9900	2352	4816	7293	9782	2283	4796	7321	9859	2408	4970	7543	0129	2726	48
7334	9774	2226	4691	7168	9657	2158	4671	7197	9735	2284	4846	7420	0005	2603	47
7208	9648	2101	4565	7042	9532	2033	4547	7072	9610	2160	4722	7296	9882	2479	46
7082	9522	1975	4440	6917	9407	1908	4422	6948	9486	2036	4598	7172	9758	2356	45
6956	9396	1849	4314	6792	9281	1783	4297	6824	9362	1912	4474	7049	9635	2233	44
6830	9271	1724	4189	6666	9156	1658	4173	6699	9238	1788	4351	6925	9511	2110	43
6704	9145	1598	4063	6541	9031	1534	4048	6575	9113	1664	4227	6801	9388	1986	42
6578	9019	1472	3938	6416	8906	1409	3923	6450	8989	1540	4103	6678	9264	1863	41
6452	8893	1347	3812	6291	8781	1284	3799	6326	8865	1416	3979	6554	9141	1740	40
6326	8767	1221	3687	6165	8656	1159	3674	6201	8741	1292	3855	6430	9018	1617	39
6200	8641	1095	3562	6040	8531	1034	3549	6077	8616	1168	3731	6307	8894	1493	38
6073	8515	0970	3436	5915	8406	0909	3425	5952	8492	1044	3607	6183	8771	1370	37
5947	8389	0844	3311	5790	8281	0784	3300	5828	8368	0920	3484	6059	8647	1247	36
5821	8264	0718	3185	5664	8156	0660	3176	5703	8244	0796	3360	5936	8524	1124	35
5695	8138	0593	3060	5539	8031	0535	3051	5579	8119	0672	3236	5812	8400	1000	34
5569	8012	0467	2934	5414	7906	0410	2926	5455	7995	0548	3112	5689	8277	0877	33
5443	7886	0341	2809	5289	7781	0285	2802	5330	7871	0424	2988	5565	8153	0754	32
5317	7760	0216	2683	5163	7656	0160	2677	5206	7747	0300	2864	5441	8030	0631	31
5191	7634	0090	2558	5038	7531	0036	2552	5081	7622	0176	2741	5318	7907	0507	30
5065	7508	9964	2433	4913	7406	9911	2428	4957	7498	0052	2617	5194	7783	0384	29
4939	7383	9839	2307	4788	7281	9786	2303	4833	7374	9928	2493	5070	7660	0261	28
4813	7257	9713	2182	4663	7156	9661	2179	4708	7250	9804	2369	4947	7536	0138	27
4687	7131	9587	2056	4537	7031	9536	2054	4584	7126	9680	2245	4823	7413	0015	26
4561	7005	9462	1931	4412	6906	9411	1929	4459	7001	9556	2122	4700	7290	9891	25
4435	6879	9336	1805	4287	6781	9287	1805	4335	6877	9432	1998	4576	7166	9768	24
4309	6754	9211	1680	4162	6656	9162	1680	4211	6753	9308	1874	4452	7043	9645	23
4183	6628	9085	1555	4037	6531	9037	1556	4086	6629	9184	1750	4329	6919	9522	22
4057	6502	8959	1429	3911	6406	8912	1431	3962	6505	9060	1626	4205	6796	9399	21
3931	6376	8834	1304	3786	6281	8787	1306	3837	6380	8936	1503	4082	6673	9275	20
3805	6250	8708	1178	3661	6156	8663	1182	3713	6256	8812	1379	3958	6549	9152	19
3679	6124	8583	1053	3536	6031	8538	1057	3589	6132	8688	1255	3835	6426	9029	18
3553	5999	8457	0928	3411	5906	8413	0933	3464	6008	8564	1131	3711	6302	8906	17
3427	5873	8331	0802	3285	5781	8288	0808	3340	5884	8440	1008	3587	6179	8783	16
3301	5747	8206	0677	3160	5656	8164	0683	3216	5760	8316	0884	3464	6056	8659	15
3175	5621	8080	0552	3035	5531	8039	0559	3091	5635	8192	0760	3340	5932	8536	14
3049	5496	7955	0426	2910	5406	7914	0434	2967	5511	8068	0636	3217	5809	8413	13
2923	5370	7829	0301	2785	5281	7789	0310	2842	5387	7944	0512	3093	5686	8290	12
2797	5244	7704	0175	2660	5156	7665	0185	2718	5263	7820	0389	2970	5562	8167	11
2671	5118	7578	0050	2534	5031	7540	0061	2594	5139	7696	0265	2846	5439	8044	10
2545	4992	7452	9925	2409	4906	7415	9936	2469	5015	7572	0141	2722	5316	7921	9
2419	4867	7327	9799	2284	4781	7290	9812	2345	4891	7448	0017	2599	5192	7797	8
2293	4741	7201	9674	2159	4656	7166	9687	2221	4766	7324	9894	2475	5069	7674	7
2167	4615	7076	9549	2034	4531	7041	9563	2096	4642	7200	9770	2352	4946	7551	6
2041	4489	6950	9423	1909	4406	6916	9438	1972	4518	7076	9646	2228	4822	7428	5
1915	4364	6825	9298	1784	4281	6791	9313	1848	4394	6952	9523	2105	4699	7305	4
1789	4238	6699	9173	1658	4156	6667	9189	1723	4270	6828	9399	1981	4576	7182	3
1663	4112	6574	9047	1533	4031	6542	9064	1599	4146	6704	9275	1858	4452	7059	2
1537	3986	6448	8922	1408	3907	6417	8940	1475	4022	6580	9151	1734	4329	6935	1
1411	3861	6322	8797	1283	3782	6292	8815	1350	3897	6457	9028	1611	4206	6812	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	"

Tangent Deg. 80

10 Deg. Sine

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9. 239	9. 240	9. 241	9. 241	9. 242	9. 243	9. 243	9. 244	9. 245	9. 246	9. 246	9. 247	9. 248	9. 248	9. 249
0	6702	3861	1007	8141	5264	2374	9472	6558	3632	0695	7746	4784	1811	8827	5830
1	6822	3980	1126	8260	5382	2492	9590	6676	3750	0813	7863	4902	1928	8944	5947
2	6941	4099	1245	8379	5501	2611	9708	6794	3868	0930	7980	5019	2045	9060	6064
3	7061	4218	1364	8498	5619	2729	9827	6912	3986	1048	8098	5136	2162	9177	6180
4	7180	4338	1483	8617	5738	2847	9945	7030	4104	1165	8215	5253	2279	9294	6297
5	7299	4457	1602	8735	5857	2966	0063	7148	4221	1283	8333	5370	2396	9411	6413
6	7419	4576	1721	8854	5975	3084	0181	7266	4339	1401	8450	5488	2513	9528	6530
7	7538	4695	1840	8973	6094	3203	0299	7384	4457	1518	8567	5605	2630	9644	6647
8	7657	4814	1959	9092	6212	3321	0417	7502	4575	1636	8685	5722	2747	9761	6763
9	7777	4934	2078	9211	6331	3439	0536	7620	4693	1753	8802	5839	2864	9878	6880
10	7896	5053	2197	9329	6449	3558	0654	7738	4810	1871	8919	5956	2981	9995	6997
11	8016	5172	2316	9448	6568	3676	0772	7856	4928	1988	9037	6074	3098	0112	7113
12	8135	5291	2435	9567	6687	3794	0890	7974	5046	2106	9154	6191	3215	0228	7230
13	8254	5410	2554	9686	6805	3913	1008	8092	5164	2224	9272	6308	3332	0345	7346
14	8374	5529	2673	9804	6924	4031	1126	8210	5281	2341	9389	6425	3449	0462	7463
15	8493	5649	2792	9923	7042	4149	1245	8328	5399	2459	9506	6542	3566	0579	7579
16	8612	5768	2911	0042	7161	4268	1363	8446	5517	2576	9624	6659	3683	0696	7696
17	8732	5887	3030	0161	7279	4386	1481	8564	5635	2694	9741	6777	3800	0812	7813
18	8851	6006	3149	0279	7398	4504	1599	8682	5752	2811	9858	6894	3917	0929	7929
19	8970	6125	3268	0398	7516	4623	1717	8800	5870	2929	9976	7011	4034	1046	8046
20	9090	6244	3387	0517	7635	4741	1835	8918	5988	3046	0093	7128	4151	1163	8162
21	9209	6363	3506	0636	7754	4859	1953	9036	6106	3164	0210	7245	4268	1279	8279
22	9328	6483	3624	0754	7872	4978	2072	9153	6223	3282	0328	7362	4385	1396	8395
23	9448	6602	3743	0873	7991	5096	2190	9271	6341	3399	0445	7479	4502	1513	8512
24	9567	6721	3862	0992	8109	5214	2308	9389	6459	3517	0562	7597	4619	1630	8629
25	9686	6840	3981	1110	8228	5333	2426	9507	6577	3634	0680	7714	4736	1746	8745
26	9806	6959	4100	1229	8346	5451	2544	9625	6694	3752	0797	7831	4853	1863	8862
27	9925	7078	4219	1348	8465	5569	2662	9743	6812	3869	0914	7948	4970	1980	8978
28	0044	7197	4338	1467	8583	5688	2780	9861	6930	3987	1032	8065	5087	2097	9095
29	0164	7316	4457	1585	8702	5806	2898	9979	7047	4104	1149	8182	5204	2213	9211
30	0283	7436	4576	1704	8820	5924	3017	0097	7165	4222	1266	8299	5321	2330	9328
31	0402	7555	4695	1823	8939	6043	3135	0215	7283	4339	1384	8416	5437	2447	9444
32	0522	7674	4814	1941	9057	6161	3253	0333	7401	4457	1501	8534	5554	2563	9561
33	0641	7793	4933	2060	9176	6279	3371	0451	7518	4574	1618	8651	5671	2680	9677
34	0760	7912	5051	2179	9294	6398	3489	0568	7636	4692	1736	8768	5788	2797	9794
35	0880	8031	5170	2297	9413	6516	3607	0686	7754	4809	1853	8885	5905	2914	9910
36	0999	8150	5289	2416	9531	6634	3725	0804	7871	4927	1970	9002	6022	3030	0027
37	1118	8269	5408	2535	9650	6752	3843	0922	7989	5044	2088	9119	6139	3147	0143
38	1237	8388	5527	2654	9768	6871	3961	1040	8107	5162	2205	9236	6256	3264	0260
39	1357	8507	5646	2772	9887	6989	4079	1158	8224	5279	2322	9353	6373	3380	0377
40	1476	8626	5765	2891	0005	7107	4197	1276	8342	5397	2439	9470	6490	3497	0493
41	1595	8745	5884	3010	0124	7225	4315	1394	8460	5514	2557	9587	6606	3614	0610
42	1715	8865	6002	3128	0242	7344	4434	1511	8577	5632	2674	9705	6723	3731	0726
43	1834	8984	6121	3247	0360	7462	4552	1629	8695	5749	2791	9822	6840	3847	0843
44	1953	9103	6240	3366	0479	7580	4670	1747	8813	5867	2908	9939	6957	3964	0959
45	2072	9222	6359	3484	0597	7699	4788	1865	8930	5984	3026	0056	7074	4081	1075
46	2192	9341	6478	3603	0716	7817	4906	1983	9048	6101	3143	0173	7191	4197	1192
47	2311	9460	6597	3721	0834	7935	5024	2101	9166	6219	3260	0290	7308	4314	1308
48	2430	9579	6716	3840	0953	8053	5142	2219	9283	6336	3378	0407	7425	4431	1425
49	2549	9698	6834	3959	1071	8172	5260	2336	9401	6454	3495	0524	7541	4547	1541
50	2669	9817	6953	4077	1190	8290	5378	2454	9519	6571	3612	0641	7658	4664	1658
51	2788	9936	7072	4196	1308	8408	5496	2572	9636	6689	3729	0758	7775	4781	1774
52	2907	0055	7191	4315	1426	8526	5614	2690	9754	6806	3847	0875	7892	4897	1891
53	3026	0174	7310	4433	1545	8644	5732	2808	9872	6924	3964	0992	8009	5014	2007
54	3146	0293	7429	4552	1663	8763	5850	2926	9989	7041	4081	1109	8126	5131	2124
55	3265	0412	7547	4671	1782	8881	5968	3043	0107	7158	4198	1226	8243	5247	2240
56	3384	0531	7666	4789	1900	8999	6086	3161	0224	7276	4315	1343	8359	5364	2357
57	3503	0650	7785	4908	2019	9117	6204	3279	0342	7393	4433	1460	8476	5480	2473
58	3622	0769	7904	5026	2137	9236	6322	3397	0460	7511	4550	1577	8593	5597	2590
59	3742	0888	8023	5145	2255	9354	6440	3515	0577	7628	4667	1694	8710	5714	2706
60	3861	1007	8141	5264	2374	9472	6558	3632	0695	7746	4784	1811	8827	5830	2822
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Sine Deg. 79

10 Deg. Co-Sine

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	9. 993	″
0	3515	3292	3068	2845	2621	2396	2171	1946	1720	1494	1268	1041	0814	0587	0359	60
1	3511	3288	3065	2841	2617	2392	2167	1942	1717	1491	1264	1038	0810	0583	0355	59
2	3507	3284	3061	2837	2613	2389	2164	1938	1713	1487	1261	1034	0807	0579	0351	58
3	3503	3280	3057	2833	2609	2385	2160	1935	1709	1483	1257	1030	0803	0575	0347	57
4	3500	3277	3053	2830	2606	2381	2156	1931	1705	1479	1253	1026	0799	0572	0344	56
5	3496	3273	3050	2826	2602	2377	2152	1927	1702	1476	1249	1022	0795	0568	0340	55
6	3492	3269	3046	2822	2598	2374	2149	1923	1698	1472	1245	1019	0791	0564	0336	54
7	3489	3266	3042	2818	2594	2370	2145	1920	1694	1468	1242	1015	0788	0560	0332	53
8	3485	3262	3039	2815	2591	2366	2141	1916	1690	1464	1238	1011	0784	0556	0328	52
9	3481	3258	3035	2811	2587	2362	2137	1912	1687	1461	1234	1007	0780	0553	0325	51
10	3477	3254	3031	2807	2583	2359	2134	1908	1683	1457	1230	1004	0776	0549	0321	50
11	3474	3251	3027	2804	2579	2355	2130	1905	1679	1453	1227	1000	0773	0545	0317	49
12	3470	3247	3024	2800	2576	2351	2126	1901	1675	1449	1223	0996	0769	0541	0313	48
13	3466	3243	3020	2796	2572	2347	2122	1897	1671	1445	1219	0992	0765	0537	0309	47
14	3463	3240	3016	2792	2568	2344	2119	1893	1668	1442	1215	0988	0761	0534	0306	46
15	3459	3236	3012	2789	2564	2340	2115	1890	1664	1438	1211	0985	0757	0530	0302	45
16	3455	3232	3009	2785	2561	2336	2111	1886	1660	1434	1208	0981	0754	0526	0298	44
17	3451	3228	3005	2781	2557	2332	2107	1882	1656	1430	1204	0977	0750	0522	0294	43
18	3448	3225	3001	2777	2553	2329	2104	1878	1653	1427	1200	0973	0746	0518	0290	42
19	3444	3221	2998	2774	2549	2325	2100	1875	1649	1423	1196	0969	0742	0515	0287	41
20	3440	3217	2994	2770	2546	2321	2096	1871	1645	1419	1193	0966	0738	0511	0283	40
21	3437	3214	2990	2766	2542	2317	2092	1867	1641	1415	1189	0962	0735	0507	0279	39
22	3433	3210	2986	2762	2538	2314	2089	1863	1638	1411	1185	0958	0731	0503	0275	38
23	3429	3206	2983	2759	2535	2310	2085	1860	1634	1408	1181	0954	0727	0499	0271	37
24	3425	3202	2979	2755	2531	2306	2081	1856	1630	1404	1177	0951	0723	0496	0268	36
25	3422	3199	2975	2751	2527	2302	2077	1852	1626	1400	1174	0947	0719	0492	0264	35
26	3418	3195	2971	2748	2523	2299	2074	1848	1623	1396	1170	0943	0716	0488	0260	34
27	3414	3191	2968	2744	2520	2295	2070	1845	1619	1393	1166	0939	0712	0484	0256	33
28	3411	3187	2964	2740	2516	2291	2066	1841	1615	1389	1162	0935	0708	0480	0252	32
29	3407	3184	2960	2736	2512	2287	2062	1837	1611	1385	1159	0932	0704	0477	0249	31
30	3403	3180	2957	2733	2508	2284	2059	1833	1607	1381	1155	0928	0701	0473	0245	30
31	3399	3176	2953	2729	2505	2280	2055	1830	1604	1378	1151	0924	0697	0469	0241	29
32	3396	3173	2949	2725	2501	2276	2051	1826	1600	1374	1147	0920	0693	0465	0237	28
33	3392	3169	2945	2721	2497	2272	2047	1822	1596	1370	1143	0916	0689	0461	0233	27
34	3388	3165	2942	2718	2493	2269	2044	1818	1592	1366	1140	0913	0685	0458	0230	26
35	3385	3161	2938	2714	2490	2265	2040	1814	1589	1362	1136	0909	0682	0454	0226	25
36	3381	3158	2934	2710	2486	2261	2036	1811	1585	1359	1132	0905	0678	0450	0222	24
37	3377	3154	2930	2706	2482	2257	2032	1807	1581	1355	1128	0901	0674	0446	0218	23
38	3373	3150	2927	2703	2478	2254	2029	1803	1577	1351	1125	0898	0670	0442	0214	22
39	3370	3147	2923	2699	2475	2250	2025	1799	1574	1347	1121	0894	0666	0439	0211	21
40	3366	3143	2919	2695	2471	2246	2021	1796	1570	1344	1117	0890	0663	0435	0207	20
41	3362	3139	2915	2692	2467	2242	2017	1792	1566	1340	1113	0886	0659	0431	0203	19
42	3359	3135	2912	2688	2463	2239	2014	1788	1562	1336	1109	0882	0655	0427	0199	18
43	3355	3132	2908	2684	2460	2235	2010	1784	1559	1332	1106	0879	0651	0423	0195	17
44	3351	3128	2904	2680	2456	2231	2006	1781	1555	1328	1102	0875	0647	0420	0192	16
45	3347	3124	2901	2677	2452	2227	2002	1777	1551	1325	1098	0871	0644	0416	0188	15
46	3344	3120	2897	2673	2448	2224	1999	1773	1547	1321	1094	0867	0640	0412	0184	14
47	3340	3117	2893	2669	2445	2220	1995	1769	1543	1317	1091	0863	0636	0408	0180	13
48	3336	3113	2889	2665	2441	2216	1991	1766	1540	1313	1087	0860	0632	0404	0176	12
49	3333	3109	2886	2662	2437	2212	1987	1762	1536	1310	1083	0856	0628	0401	0172	11
50	3329	3106	2882	2658	2434	2209	1984	1758	1532	1306	1079	0852	0625	0397	0169	10
51	3325	3102	2878	2654	2430	2205	1980	1754	1528	1302	1075	0848	0621	0393	0165	9
52	3321	3098	2874	2650	2426	2201	1976	1751	1525	1298	1072	0845	0617	0389	0161	8
53	3318	3094	2871	2647	2422	2197	1972	1747	1521	1295	1068	0841	0613	0385	0157	7
54	3314	3091	2867	2643	2419	2194	1969	1743	1517	1291	1064	0837	0609	0382	0153	6
55	3310	3087	2863	2639	2415	2190	1965	1739	1513	1287	1060	0833	0606	0378	0150	5
56	3307	3083	2860	2635	2411	2186	1961	1735	1510	1283	1056	0829	0602	0374	0146	4
57	3303	3079	2856	2632	2407	2182	1957	1732	1506	1279	1053	0826	0598	0370	0142	3
58	3299	3076	2852	2628	2404	2179	1954	1728	1502	1276	1049	0822	0594	0366	0138	2
59	3295	3072	2848	2624	2400	2175	1950	1724	1498	1272	1045	0818	0591	0363	0134	1
60	3292	3068	2845	2621	2396	2171	1946	1720	1494	1268	1041	0814	0587	0359	0131	0
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Sine Deg. 79

10 Deg. Tangent — 10 Deg. Co-Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9. 246	9. 247	9. 247	9. 248	9. 249	9. 249	9. 250	9. 251	9. 252	9. 252	9. 253	9. 254	9. 255	9. 255	9. 256
0	3188	0569	7939	5297	2643	9978	7301	4612	1912	9200	6477	3743	0997	8240	5472
1	3311	0692	8062	5419	2765	0100	7423	4734	2034	9322	6599	3864	1118	8361	5592
2	3434	0815	8184	5542	2888	0222	7545	4856	2155	9443	6720	3985	1239	8481	5712
3	3557	0938	8307	5664	3010	0344	7667	4977	2277	9565	6841	4106	1360	8602	5833
4	3680	1061	8430	5787	3132	0466	7788	5099	2398	9686	6962	4227	1480	8722	5953
5	3803	1184	8552	5909	3255	0588	7910	5221	2520	9807	7083	4348	1601	8843	6074
6	3926	1307	8675	6032	3377	0711	8032	5343	2641	9929	7205	4469	1722	8964	6194
7	4049	1430	8798	6154	3499	0833	8154	5464	2763	0050	7326	4590	1843	9084	6314
8	4173	1552	8921	6277	3622	0955	8276	5586	2885	0171	7447	4711	1964	9205	6435
9	4296	1675	9043	6399	3744	1077	8398	5708	3006	0293	7568	4832	2084	9325	6555
10	4419	1798	9166	6522	3866	1199	8520	5830	3128	0414	7689	4953	2205	9446	6676
11	4542	1921	9289	6644	3989	1321	8642	5951	3249	0535	7810	5074	2326	9567	6796
12	4665	2044	9411	6767	4111	1443	8764	6073	3371	0657	7931	5195	2447	9687	6916
13	4788	2167	9534	6889	4233	1565	8886	6195	3492	0778	8053	5316	2567	9808	7037
14	4911	2290	9657	7012	4356	1687	9008	6316	3614	0899	8174	5437	2688	9928	7157
15	5034	2413	9779	7134	4478	1810	9130	6438	3735	1021	8295	5558	2809	0049	7278
16	5157	2536	9902	7257	4600	1932	9252	6560	3857	1142	8416	5679	2930	0170	7398
17	5280	2658	0025	7379	4722	2054	9373	6682	3978	1263	8537	5799	3050	0290	7518
18	5403	2781	0147	7502	4845	2176	9495	6803	4100	1385	8658	5920	3171	0411	7639
19	5526	2904	0270	7624	4967	2298	9617	6925	4221	1506	8779	6041	3292	0531	7759
20	5650	3027	0393	7747	5089	2420	9739	7047	4343	1627	8901	6162	3413	0652	7880
21	5773	3150	0515	7869	5212	2542	9861	7168	4464	1749	9022	6283	3533	0772	8000
22	5896	3273	0638	7992	5334	2664	9983	7290	4586	1870	9143	6404	3654	0893	8120
23	6019	3396	0761	8114	5456	2786	0105	7412	4707	1991	9264	6525	3775	1013	8241
24	6142	3518	0883	8237	5578	2908	0227	7533	4829	2113	9385	6646	3896	1134	8361
25	6265	3641	1006	8359	5701	3030	0349	7655	4950	2234	9506	6767	4016	1255	8481
26	6388	3764	1129	8482	5823	3152	0470	7777	5072	2355	9627	6888	4137	1375	8602
27	6511	3887	1251	8604	5945	3274	0592	7899	5193	2477	9748	7009	4258	1496	8722
28	6634	4010	1374	8727	6067	3397	0714	8020	5315	2598	9869	7130	4379	1616	8842
29	6757	4133	1497	8849	6190	3519	0836	8142	5436	2719	9991	7251	4499	1737	8963
30	6880	4255	1619	8971	6312	3641	0958	8264	5558	2840	0112	7371	4620	1857	9083
31	7003	4378	1742	9094	6434	3763	1080	8385	5679	2962	0233	7492	4741	1978	9203
32	7126	4501	1865	9216	6556	3885	1202	8507	5801	3083	0354	7613	4861	2098	9324
33	7249	4624	1987	9339	6679	4007	1323	8629	5922	3204	0475	7734	4982	2219	9444
34	7372	4747	2110	9461	6801	4129	1445	8750	6044	3325	0596	7855	5103	2339	9564
35	7495	4870	2232	9584	6923	4251	1567	8872	6165	3447	0717	7976	5224	2460	9685
36	7618	4992	2355	9706	7045	4373	1689	8993	6286	3568	0838	8097	5344	2580	9805
37	7741	5115	2478	9828	7167	4495	1811	9115	6408	3689	0959	8218	5465	2701	9925
38	7864	5238	2600	9951	7290	4617	1933	9237	6529	3811	1080	8339	5586	2821	0046
39	7987	5361	2723	0073	7412	4739	2054	9358	6651	3932	1201	8459	5706	2942	0166
40	8110	5484	2845	0196	7534	4861	2176	9480	6772	4053	1322	8580	5827	3062	0286
41	8233	5606	2968	0318	7656	4983	2298	9602	6894	4174	1443	8701	5948	3183	0407
42	8356	5729	3091	0440	7779	5105	2420	9723	7015	4296	1565	8822	6068	3303	0527
43	8479	5852	3213	0563	7901	5227	2542	9845	7137	4417	1686	8943	6189	3424	0647
44	8602	5975	3336	0685	8023	5349	2664	9967	7258	4538	1807	9064	6310	3544	0767
45	8725	6098	3458	0808	8145	5471	2785	0088	7379	4659	1928	9185	6430	3665	0888
46	8848	6220	3581	0930	8267	5593	2907	0210	7501	4781	2049	9306	6551	3785	1008
47	8971	6343	3704	1052	8390	5715	3029	0331	7622	4902	2170	9426	6672	3906	1128
48	9094	6466	3826	1175	8512	5837	3151	0453	7744	5023	2291	9547	6792	4026	1249
49	9217	6589	3949	1297	8634	5959	3273	0575	7865	5144	2412	9668	6913	4147	1369
50	9340	6711	4071	1420	8756	6081	3394	0696	7987	5265	2533	9789	7034	4267	1489
51	9463	6834	4194	1542	8878	6203	3516	0818	8108	5387	2654	9910	7154	4388	1609
52	9586	6957	4316	1664	9000	6325	3638	0939	8229	5508	2775	0031	7275	4508	1730
53	9709	7080	4439	1787	9123	6447	3760	1061	8351	5629	2896	0151	7396	4628	1850
54	9832	7202	4562	1909	9245	6569	3882	1183	8472	5750	3017	0272	7516	4749	1970
55	9954	7325	4684	2031	9367	6691	4003	1304	8594	5871	3138	0393	7637	4869	2091
56	0077	7448	4807	2154	9489	6813	4125	1426	8715	5993	3259	0514	7757	4990	2211
57	0200	7571	4929	2276	9611	6935	4247	1547	8836	6114	3380	0635	7878	5110	2331
58	0323	7693	5052	2398	9733	7057	4369	1669	8958	6235	3501	0756	7999	5231	2451
59	0446	7816	5174	2521	9856	7179	4490	1790	9079	6356	3622	0876	8119	5351	2572
60	0569	7939	5297	2643	9978	7301	4612	1912	9200	6477	3743	0997	8240	5472	2692
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
	10. 753	10. 752	10. 752	10. 751	10. 750	10. 750	10. 749	10. 748	10. 747	10. 747	10. 746	10. 745	10. 744	10. 744	10. 743	″
0	6812	9431	2061	4703	7357	0022	2699	5388	8088	0800	3523	6257	9003	1760	4528	60
1	6689	9308	1938	4581	7235	9900	2577	5266	7966	0678	3401	6136	8882	1639	4408	59
2	6566	9185	1816	4458	7112	9778	2455	5144	7845	0557	3280	6015	8761	1519	4288	58
3	6443	9062	1693	4336	6990	9656	2333	5023	7723	0435	3159	5894	8640	1398	4167	57
4	6320	8939	1570	4213	6868	9534	2212	4901	7602	0314	3038	5773	8520	1278	4047	56
5	6197	8816	1448	4091	6745	9412	2090	4779	7480	0193	2917	5652	8399	1157	3926	55
6	6074	8693	1325	3968	6623	9289	1968	4657	7359	0071	2795	5531	8278	1036	3806	54
7	5951	8570	1202	3846	6501	9167	1846	4536	7237	9950	2674	5410	8157	0916	3686	53
8	5827	8448	1079	3723	6378	9045	1724	4414	7115	9829	2553	5289	8036	0795	3565	52
9	5704	8325	0957	3601	6256	8923	1602	4292	6994	9707	2432	5168	7916	0675	3445	51
10	5581	8202	0834	3478	6134	8801	1480	4170	6872	9586	2311	5047	7795	0554	3324	50
11	5458	8079	0711	3356	6011	8679	1358	4049	6751	9465	2190	4926	7674	0433	3204	49
12	5335	7956	0589	3233	5889	8557	1236	3927	6629	9343	2069	4805	7553	0313	3084	48
13	5212	7833	0466	3111	5767	8435	1114	3805	6508	9222	1947	4684	7433	0192	2963	47
14	5089	7710	0343	2988	5644	8313	0992	3684	6386	9101	1826	4563	7312	0072	2843	46
15	4966	7587	0221	2866	5522	8190	0870	3562	6265	8979	1705	4442	7191	9951	2722	45
16	4843	7464	0098	2743	5400	8068	0748	3440	6143	8858	1584	4321	7070	9830	2602	44
17	4720	7342	9975	2621	5278	7946	0627	3318	6022	8737	1463	4201	6950	9710	2482	43
18	4597	7219	9853	2498	5155	7824	0505	3197	5900	8615	1342	4080	6829	9589	2361	42
19	4474	7096	9730	2376	5033	7702	0383	3075	5779	8494	1221	3959	6708	9469	2241	41
20	4350	6973	9607	2253	4911	7580	0261	2953	5657	8373	1099	3838	6587	9348	2120	40
21	4227	6850	9485	2131	4788	7458	0139	2832	5536	8251	0978	3717	6467	9228	2000	39
22	4104	6727	9362	2008	4666	7336	0017	2710	5414	8130	0857	3596	6346	9107	1880	38
23	3981	6604	9239	1886	4544	7214	9895	2588	5293	8009	0736	3475	6225	8987	1759	37
24	3858	6482	9117	1763	4422	7092	9773	2467	5171	7887	0615	3354	6104	8866	1639	36
25	3735	6359	8994	1641	4299	6970	9651	2345	5050	7766	0494	3233	5984	8745	1519	35
26	3612	6236	8871	1518	4177	6848	9530	2223	4928	7645	0373	3112	5863	8625	1398	34
27	3489	6113	8749	1396	4055	6726	9408	2101	4807	7523	0252	2991	5742	8504	1278	33
28	3366	5990	8626	1273	3933	6603	9286	1980	4685	7402	0131	2870	5621	8384	1158	32
29	3243	5867	8503	1151	3810	6481	9164	1858	4564	7281	0009	2749	5501	8263	1037	31
30	3120	5745	8381	1029	3688	6359	9042	1736	4442	7160	9888	2629	5380	8143	0917	30
31	2997	5622	8258	0906	3566	6237	8920	1615	4321	7038	9767	2508	5259	8022	0797	29
32	2874	5499	8135	0784	3444	6115	8798	1493	4199	6917	9646	2387	5139	7902	0676	28
33	2751	5376	8013	0661	3321	5993	8677	1371	4078	6796	9525	2266	5018	7781	0556	27
34	2628	5253	7890	0539	3199	5871	8555	1250	3956	6675	9404	2145	4897	7661	0436	26
35	2505	5130	7768	0416	3077	5749	8433	1128	3835	6553	9283	2024	4776	7540	0315	25
36	2382	5008	7645	0294	2955	5627	8311	1007	3714	6432	9162	1903	4656	7420	0195	24
37	2259	4885	7522	0172	2833	5505	8189	0885	3592	6311	9041	1782	4535	7299	0075	23
38	2136	4762	7400	0049	2710	5383	8067	0763	3471	6189	8920	1661	4414	7179	9954	22
39	2013	4639	7277	9927	2588	5261	7946	0642	3349	6068	8799	1541	4294	7058	9834	21
40	1890	4516	7155	9804	2466	5139	7824	0520	3228	5947	8678	1420	4173	6938	9714	20
41	1767	4394	7032	9682	2344	5017	7702	0398	3106	5826	8557	1299	4052	6817	9593	19
42	1644	4271	6909	9560	2221	4895	7580	0277	2985	5704	8435	1178	3932	6697	9473	18
43	1521	4148	6787	9437	2099	4773	7458	0155	2863	5583	8314	1057	3811	6576	9353	17
44	1398	4025	6664	9315	1977	4651	7336	0033	2742	5462	8193	0936	3690	6456	9233	16
45	1275	3902	6542	9192	1855	4529	7215	9912	2621	5341	8072	0815	3570	6335	9112	15
46	1152	3780	6419	9070	1733	4407	7093	9790	2499	5219	7951	0694	3449	6215	8992	14
47	1029	3657	6296	8948	1610	4285	6971	9669	2378	5098	7830	0574	3328	6094	8872	13
48	0906	3534	6174	8825	1488	4163	6849	9547	2256	4977	7709	0453	3208	5974	8751	12
49	0783	3411	6051	8703	1366	4041	6727	9425	2135	4856	7588	0332	3087	5853	8631	11
50	0660	3289	5929	8580	1244	3919	6606	9304	2013	4735	7467	0211	2966	5733	8511	10
51	0537	3166	5806	8458	1122	3797	6484	9182	1892	4613	7346	0090	2846	5612	8391	9
52	0414	3043	5684	8336	1000	3675	6362	9061	1771	4492	7225	9969	2725	5492	8270	8
53	0291	2920	5561	8213	0877	3553	6240	8939	1649	4371	7104	9849	2604	5372	8150	7
54	0168	2798	5438	8091	0755	3431	6118	8817	1528	4250	6983	9728	2484	5251	8030	6
55	0046	2675	5316	7969	0633	3309	5997	8696	1406	4129	6862	9607	2363	5131	7909	5
56	9923	2552	5193	7846	0511	3187	5875	8574	1285	4007	6741	9486	2243	5010	7789	4
57	9800	2429	5071	7724	0389	3065	5753	8453	1164	3886	6620	9365	2122	4890	7669	3
58	9677	2307	4948	7602	0267	2943	5631	8331	1042	3765	6499	9244	2001	4769	7549	2
59	9554	2184	4826	7479	0144	2821	5510	8210	0921	3644	6378	9124	1881	4649	7428	1
60	9431	2061	4703	7357	0022	2699	5388	8088	0800	3523	6257	9003	1760	4528	7308	0
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Co-Tangent Deg. 79 — Tangent Deg. 79

10 Deg. Sine

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 250	9. 250	9. 251	9. 252	9. 253	9. 253	9. 254	9. 255	9. 255	9. 256	9. 257	9. 257	9. 258	9. 259	9. 259
0	2822	9803	6772	3729	0675	7609	4532	1444	8344	5233	2110	8977	5832	2676	9509
1	2939	9919	6888	3845	0790	7725	4647	1559	8459	5347	2225	9091	5946	2790	9622
2	3055	0035	7004	3961	0906	7840	4763	1674	8574	5462	2339	9205	6060	2904	9736
3	3172	0152	7120	4077	1022	7956	4878	1789	8689	5577	2454	9320	6174	3018	9850
4	3288	0268	7236	4192	1137	8071	4993	1904	8803	5692	2568	9434	6288	3132	9964
5	3405	0384	7352	4308	1253	8186	5108	2019	8918	5806	2683	9548	6403	3246	0078
6	3521	0500	7468	4424	1369	8302	5224	2134	9033	5921	2797	9663	6517	3360	0191
7	3637	0616	7584	4540	1484	8417	5339	2249	9148	6036	2912	9777	6631	3474	0305
8	3754	0733	7700	4656	1600	8533	5454	2364	9263	6150	3026	9891	6745	3588	0419
9	3870	0849	7816	4772	1716	8648	5570	2479	9378	6265	3141	0006	6859	3701	0533
10	3987	0965	7932	4887	1831	8764	5685	2594	9493	6380	3255	0120	6973	3815	0646
11	4103	1081	8048	5003	1947	8879	5800	2709	9608	6494	3370	0234	7087	3929	0760
12	4219	1197	8164	5119	2063	8995	5915	2825	9722	6609	3484	0349	7202	4043	0874
13	4336	1314	8280	5235	2178	9110	6031	2940	9837	6724	3599	0463	7316	4157	0988
14	4452	1430	8396	5351	2294	9225	6146	3055	9952	6838	3713	0577	7430	4271	1101
15	4569	1546	8512	5466	2409	9341	6261	3170	0067	6953	3828	0692	7544	4385	1215
16	4685	1662	8628	5582	2525	9456	6376	3285	0182	7068	3942	0806	7658	4499	1329
17	4801	1778	8744	5698	2641	9572	6491	3400	0297	7182	4057	0920	7772	4613	1443
18	4918	1895	8860	5814	2756	9687	6607	3515	0412	7297	4171	1034	7886	4727	1556
19	5034	2011	8976	5930	2872	9803	6722	3630	0527	7412	4286	1149	8000	4841	1670
20	5150	2127	9092	6045	2987	9918	6837	3745	0641	7526	4400	1263	8114	4955	1784
21	5267	2243	9208	6161	3103	0033	6952	3860	0756	7641	4515	1377	8228	5069	1898
22	5383	2359	9324	6277	3219	0149	7068	3975	0871	7756	4629	1492	8343	5182	2011
23	5500	2476	9440	6393	3334	0264	7183	4090	0986	7870	4744	1606	8457	5296	2125
24	5616	2592	9556	6509	3450	0380	7298	4205	1101	7985	4858	1720	8571	5410	2239
25	5732	2708	9672	6624	3565	0495	7413	4320	1216	8100	4973	1834	8685	5524	2352
26	5849	2824	9788	6740	3681	0610	7528	4435	1330	8214	5087	1949	8799	5638	2466
27	5965	2940	9904	6856	3797	0726	7644	4550	1445	8329	5202	2063	8913	5752	2580
28	6081	3056	0020	6972	3912	0841	7759	4665	1560	8444	5316	2177	9027	5866	2694
29	6198	3173	0136	7088	4028	0957	7874	4780	1675	8558	5430	2291	9141	5980	2807
30	6314	3289	0252	7203	4143	1072	7989	4895	1790	8673	5545	2406	9255	6094	2921
31	6430	3405	0368	7319	4259	1187	8104	5010	1904	8788	5659	2520	9369	6208	3035
32	6547	3521	0484	7435	4375	1303	8220	5125	2019	8902	5774	2634	9483	6321	3148
33	6663	3637	0600	7551	4490	1418	8335	5240	2134	9017	5888	2748	9597	6435	3262
34	6779	3753	0716	7666	4606	1534	8450	5355	2249	9131	6003	2863	9711	6549	3376
35	6896	3869	0831	7782	4721	1649	8565	5470	2364	9246	6117	2977	9826	6663	3489
36	7012	3985	0947	7898	4837	1764	8680	5585	2478	9361	6231	3091	9940	6777	3603
37	7128	4102	1063	8014	4952	1880	8796	5700	2593	9475	6346	3205	0054	6891	3717
38	7245	4218	1179	8129	5068	1995	8911	5815	2708	9590	6460	3320	0168	7005	3830
39	7361	4334	1295	8245	5183	2110	9026	5930	2823	9704	6575	3434	0282	7118	3944
40	7477	4450	1411	8361	5299	2226	9141	6045	2938	9819	6689	3548	0396	7232	4058
41	7594	4566	1527	8476	5414	2341	9256	6160	3052	9934	6804	3662	0510	7346	4171
42	7710	4682	1643	8592	5530	2456	9371	6275	3167	0048	6918	3776	0624	7460	4285
43	7826	4798	1759	8708	5646	2572	9486	6390	3282	0163	7032	3891	0738	7574	4399
44	7942	4914	1875	8824	5761	2687	9602	6505	3397	0277	7147	4005	0852	7688	4512
45	8059	5031	1991	8939	5877	2802	9717	6620	3512	0392	7261	4119	0966	7802	4626
46	8175	5147	2107	9055	5992	2918	9832	6735	3626	0507	7376	4233	1080	7915	4740
47	8291	5263	2223	9171	6108	3033	9947	6850	3741	0621	7490	4347	1194	8029	4853
48	8408	5379	2338	9287	6223	3148	0062	6965	3856	0736	7604	4462	1308	8143	4967
49	8524	5495	2454	9402	6339	3264	0177	7080	3971	0850	7719	4576	1422	8257	5081
50	8640	5611	2570	9518	6454	3379	0292	7195	4085	0965	7833	4690	1536	8371	5194
51	8756	5727	2686	9634	6570	3494	0408	7309	4200	1079	7947	4804	1650	8484	5308
52	8873	5843	2802	9749	6685	3610	0523	7424	4315	1194	8062	4918	1764	8598	5422
53	8989	5959	2918	9865	6801	3725	0638	7539	4430	1308	8176	5033	1878	8712	5535
54	9105	6075	3034	9981	6916	3840	0753	7654	4544	1423	8291	5147	1992	8826	5649
55	9222	6191	3150	0096	7032	3956	0868	7769	4659	1538	8405	5261	2106	8940	5762
56	9338	6307	3265	0212	7147	4071	0983	7884	4774	1652	8519	5375	2220	9053	5876
57	9454	6423	3381	0328	7263	4186	1098	7999	4889	1767	8634	5489	2334	9167	5990
58	9570	6540	3497	0443	7378	4301	1213	8114	5003	1881	8748	5604	2448	9281	6103
59	9687	6656	3613	0559	7494	4417	1328	8229	5118	1996	8862	5718	2562	9395	6217
60	9803	6772	3729	0675	7609	4532	1444	8344	5233	2110	8977	5832	2676	9509	6330
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Sine Deg. 79

10 Deg. Co-Sine

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
9. 993	9. 992	9. 992	9. 992	9. 992	9. 992	9. 992	9. 992	9. 992	9. 992	9. 992	9. 992	9. 992	9. 992	9. 992	″
0131	9902	9673	9444	9214	8984	8753	8522	8291	8059	7827	7595	7362	7129	6895	60
0127	9898	9669	9440	9210	8980	8749	8518	8287	8055	7823	7591	7358	7125	6891	59
0123	9894	9665	9436	9206	8976	8745	8514	8283	8052	7819	7587	7354	7121	6887	58
0119	9891	9661	9432	9202	8972	8742	8511	8279	8048	7816	7583	7350	7117	6883	57
0115	9887	9658	9428	9198	8968	8738	8507	8275	8044	7812	7579	7346	7113	6880	56
0112	9883	9654	9424	9195	8964	8734	8503	8272	8040	7808	7575	7343	7109	6876	55
0108	9879	9650	9421	9191	8961	8730	8499	8268	8036	7804	7571	7339	7105	6872	54
0104	9875	9646	9417	9187	8957	8726	8495	8264	8032	7800	7568	7335	7102	6868	53
0100	9871	9642	9413	9183	8953	8722	8491	8260	8028	7796	7564	7331	7098	6864	52
0096	9868	9639	9409	9179	8949	8718	8488	8256	8024	7792	7560	7327	7094	6860	51
0093	9864	9635	9405	9175	8945	8715	8484	8252	8021	7788	7556	7323	7090	6856	50
0089	9860	9631	9401	9172	8941	8711	8480	8248	8017	7785	7552	7319	7086	6852	49
0085	9856	9627	9398	9168	8938	8707	8476	8245	8013	7781	7548	7315	7082	6848	48
0081	9852	9623	9394	9164	8934	8703	8472	8241	8009	7777	7544	7311	7078	6845	47
0077	9849	9619	9390	9160	8930	8699	8468	8237	8005	7773	7540	7308	7074	6841	46
0073	9845	9616	9386	9156	8926	8695	8464	8233	8001	7769	7537	7304	7070	6837	45
0070	9841	9612	9382	9152	8922	8692	8461	8229	7997	7765	7533	7300	7067	6833	44
0066	9837	9608	9378	9149	8918	8688	8457	8225	7994	7761	7529	7296	7063	6829	43
0062	9833	9604	9375	9145	8915	8684	8453	8221	7990	7757	7525	7292	7059	6825	42
0058	9829	9600	9371	9141	8911	8680	8449	8218	7986	7754	7521	7288	7055	6821	41
0054	9826	9597	9367	9137	8907	8676	8445	8214	7982	7750	7517	7284	7051	6817	40
0051	9822	9593	9363	9133	8903	8672	8441	8210	7978	7746	7513	7280	7047	6813	39
0047	9818	9589	9359	9129	8899	8668	8437	8206	7974	7742	7509	7276	7043	6809	38
0043	9814	9585	9356	9126	8895	8665	8434	8202	7970	7738	7506	7273	7039	6806	37
0039	9810	9581	9352	9122	8891	8661	8430	8198	7966	7734	7502	7269	7035	6802	36
0035	9807	9577	9348	9118	8888	8657	8426	8194	7963	7730	7498	7265	7031	6798	35
0032	9803	9574	9344	9114	8884	8653	8422	8191	7959	7727	7494	7261	7028	6794	34
0028	9799	9570	9340	9110	8880	8649	8418	8187	7955	7723	7490	7257	7024	6790	33
0024	9795	9566	9336	9106	8876	8645	8414	8183	7951	7719	7486	7253	7020	6786	32
0020	9791	9562	9333	9103	8872	8642	8410	8179	7947	7715	7482	7249	7016	6782	31
0016	9788	9558	9329	9099	8868	8638	8407	8175	7943	7711	7478	7245	7012	6778	30
0013	9784	9554	9325	9095	8865	8634	8403	8171	7939	7707	7475	7242	7008	6774	29
0009	9780	9551	9321	9091	8861	8630	8399	8167	7936	7703	7471	7238	7004	6770	28
0005	9776	9547	9317	9087	8857	8626	8395	8164	7932	7699	7467	7234	7000	6767	27
0001	9772	9543	9313	9083	8853	8622	8391	8160	7928	7696	7463	7230	6996	6763	26
9997	9768	9539	9310	9080	8849	8618	8387	8156	7924	7692	7459	7226	6993	6759	25
9993	9765	9535	9306	9076	8845	8615	8383	8152	7920	7688	7455	7222	6989	6755	24
9990	9761	9532	9302	9072	8842	8611	8380	8148	7916	7684	7451	7218	6985	6751	23
9986	9757	9528	9298	9068	8838	8607	8376	8144	7912	7680	7447	7214	6981	6747	22
9982	9753	9524	9294	9064	8834	8603	8372	8140	7908	7676	7443	7210	6977	6743	21
9978	9749	9520	9290	9060	8830	8599	8368	8136	7905	7672	7440	7207	6973	6739	20
9974	9746	9516	9287	9057	8826	8595	8364	8133	7901	7668	7436	7203	6969	6735	19
9971	9742	9512	9283	9053	8822	8592	8360	8129	7897	7665	7432	7199	6965	6731	18
9967	9738	9509	9279	9049	8818	8588	8356	8125	7893	7661	7428	7195	6961	6728	17
9963	9734	9505	9275	9045	8815	8584	8353	8121	7889	7657	7424	7191	6958	6724	16
9959	9730	9501	9271	9041	8811	8580	8349	8117	7885	7653	7420	7187	6954	6720	15
9955	9726	9497	9267	9037	8807	8576	8345	8113	7881	7649	7416	7183	6950	6716	14
9952	9723	9493	9264	9034	8803	8572	8341	8109	7877	7645	7412	7179	6946	6712	13
9948	9719	9489	9260	9030	8799	8568	8337	8106	7874	7641	7409	7175	6942	6708	12
9944	9715	9486	9256	9026	8795	8565	8333	8102	7870	7637	7405	7172	6938	6704	11
9940	9711	9482	9252	9022	8792	8561	8329	8098	7866	7634	7401	7168	6934	6700	10
9936	9707	9478	9248	9018	8788	8557	8326	8094	7862	7630	7397	7164	6930	6696	9
9932	9704	9474	9244	9014	8784	8553	8322	8090	7858	7626	7393	7160	6926	6692	8
9929	9700	9470	9241	9011	8780	8549	8318	8086	7854	7622	7389	7156	6922	6689	7
9925	9696	9467	9237	9007	8776	8545	8314	8082	7850	7618	7385	7152	6919	6685	6
9921	9692	9463	9233	9003	8772	8541	8310	8079	7847	7614	7381	7148	6915	6681	5
9917	9688	9459	9229	8999	8768	8538	8306	8075	7843	7610	7377	7144	6911	6677	4
9913	9684	9455	9225	8995	8765	8534	8302	8071	7839	7606	7374	7140	6907	6673	3
9910	9681	9451	9221	8991	8761	8530	8299	8067	7835	7603	7370	7137	6903	6669	2
9906	9677	9447	9218	8987	8757	8526	8295	8063	7831	7599	7366	7133	6899	6665	1
9902	9673	9444	9214	8984	8753	8522	8291	8059	7827	7595	7362	7129	6895	6661	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Sine Deg. 79

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9.257	9.257	9.258	9.259	9.260	9.260	9.261	9.262	9.263	9.263	9.264	9.265	9.265	9.266	9.267
0	2692	9901	7099	4285	1461	8625	5779	2921	0053	7173	4283	1382	8470	5547	2613
1	2812	0021	7219	4405	1580	8745	5898	3040	0172	7292	4402	1500	8588	5665	2731
2	2932	0141	7338	4525	1700	8864	6017	3159	0290	7411	4520	1618	8706	5783	2849
3	3053	0261	7458	4644	1819	8983	6136	3278	0409	7529	4638	1737	8824	5901	2967
4	3173	0381	7578	4764	1939	9103	6255	3397	0528	7648	4757	1855	8942	6019	3084
5	3293	0501	7698	4884	2058	9222	6375	3516	0647	7766	4875	1973	9060	6136	3202
6	3413	0621	7818	5003	2178	9341	6494	3635	0765	7885	4993	2091	9178	6254	3320
7	3533	0741	7938	5123	2297	9461	6613	3754	0884	8003	5112	2209	9296	6372	3437
8	3654	0861	8058	5243	2417	9580	6732	3873	1003	8122	5230	2328	9414	6490	3555
9	3774	0981	8177	5362	2536	9699	6851	3992	1122	8241	5349	2446	9532	6608	3673
10	3894	1101	8297	5482	2656	9818	6970	4111	1240	8359	5467	2564	9650	6726	3790
11	4014	1221	8417	5602	2775	9938	7089	4230	1359	8478	5585	2682	9768	6843	3908
12	4134	1341	8537	5721	2895	0057	7208	4349	1478	8596	5704	2800	9886	6961	4025
13	4255	1461	8657	5841	3014	0176	7327	4467	1597	8715	5822	2919	0004	7079	4143
14	4375	1581	8777	5961	3134	0296	7447	4586	1715	8833	5940	3037	0122	7197	4261
15	4495	1701	8896	6080	3253	0415	7566	4705	1834	8952	6059	3155	0240	7315	4378
16	4615	1821	9016	6200	3373	0534	7685	4824	1953	9070	6177	3273	0358	7433	4496
17	4735	1941	9136	6320	3492	0653	7804	4943	2071	9189	6296	3391	0476	7550	4614
18	4856	2061	9256	6439	3611	0773	7923	5062	2190	9307	6414	3509	0594	7668	4731
19	4976	2181	9376	6559	3731	0892	8042	5181	2309	9426	6532	3628	0712	7786	4849
20	5096	2301	9495	6678	3850	1011	8161	5300	2428	9545	6651	3746	0830	7904	4967
21	5216	2421	9615	6798	3970	1130	8280	5419	2546	9663	6769	3864	0948	8022	5084
22	5336	2541	9735	6918	4089	1250	8399	5538	2665	9782	6887	3982	1066	8139	5202
23	5457	2661	9855	7037	4209	1369	8518	5656	2784	9900	7006	4100	1184	8257	5319
24	5577	2781	9975	7157	4328	1488	8637	5775	2902	0019	7124	4218	1302	8375	5437
25	5697	2901	0094	7277	4448	1607	8756	5894	3021	0137	7242	4337	1420	8493	5555
26	5817	3021	0214	7396	4567	1727	8875	6013	3140	0256	7361	4455	1538	8611	5672
27	5937	3141	0334	7516	4686	1846	8994	6132	3258	0374	7479	4573	1656	8728	5790
28	6057	3261	0454	7635	4806	1965	9113	6251	3377	0493	7597	4691	1774	8846	5907
29	6178	3381	0574	7755	4925	2084	9233	6370	3496	0611	7716	4809	1892	8964	6025
30	6298	3501	0693	7875	5045	2204	9352	6489	3615	0730	7834	4927	2010	9082	6143
31	6418	3621	0813	7994	5164	2323	9471	6607	3733	0848	7952	5045	2128	9199	6260
32	6538	3741	0933	8114	5283	2442	9590	6726	3852	0967	8070	5164	2246	9317	6378
33	6658	3861	1053	8233	5403	2561	9709	6845	3971	1085	8189	5282	2364	9435	6495
34	6778	3981	1173	8353	5522	2680	9828	6964	4089	1204	8307	5400	2482	9553	6613
35	6898	4101	1292	8472	5642	2800	9947	7083	4208	1322	8425	5518	2600	9670	6731
36	7019	4221	1412	8592	5761	2919	0066	7202	4327	1441	8544	5636	2717	9788	6848
37	7139	4341	1532	8712	5880	3038	0185	7320	4445	1559	8662	5754	2835	9906	6966
38	7259	4461	1652	8831	6000	3157	0304	7439	4564	1678	8780	5872	2953	0024	7083
39	7379	4581	1771	8951	6119	3276	0423	7558	4682	1796	8899	5990	3071	0141	7201
40	7499	4701	1891	9070	6239	3396	0542	7677	4801	1914	9017	6108	3189	0259	7318
41	7619	4821	2011	9190	6358	3515	0661	7796	4920	2033	9135	6227	3307	0377	7436
42	7739	4941	2131	9309	6477	3634	0780	7915	5038	2151	9253	6345	3425	0495	7554
43	7859	5060	2250	9429	6597	3753	0899	8033	5157	2270	9372	6463	3543	0612	7671
44	7980	5180	2370	9549	6716	3872	1018	8152	5276	2388	9490	6581	3661	0730	7789
45	8100	5300	2490	9668	6835	3992	1137	8271	5394	2507	9608	6699	3779	0848	7906
46	8220	5420	2609	9788	6955	4111	1256	8390	5513	2625	9726	6817	3897	0966	8024
47	8340	5540	2729	9907	7074	4230	1375	8509	5632	2744	9845	6935	4015	1083	8141
48	8460	5660	2849	0027	7193	4349	1494	8627	5750	2862	9963	7053	4132	1201	8259
49	8580	5780	2969	0146	7313	4468	1613	8746	5869	2980	0081	7171	4250	1319	8376
50	8700	5900	3088	0266	7432	4587	1732	8865	5987	3099	0200	7289	4368	1437	8494
51	8820	6020	3208	0385	7552	4707	1851	8984	6106	3217	0318	7407	4486	1554	8612
52	8940	6140	3328	0505	7671	4826	1970	9103	6225	3336	0436	7525	4604	1672	8729
53	9060	6260	3448	0624	7790	4945	2089	9221	6343	3454	0554	7644	4722	1790	8847
54	9180	6379	3567	0744	7910	5064	2208	9340	6462	3573	0673	7762	4840	1907	8964
55	9301	6499	3687	0863	8029	5183	2327	9459	6580	3691	0791	7880	4958	2025	9082
56	9421	6619	3807	0983	8148	5302	2446	9578	6699	3809	0909	7998	5076	2143	9199
57	9541	6739	3926	1102	8268	5422	2565	9697	6818	3928	1027	8116	5193	2260	9317
58	9661	6859	4046	1222	8387	5541	2683	9815	6936	4046	1145	8234	5311	2378	9434
59	9781	6979	4166	1341	8506	5660	2802	9934	7055	4165	1264	8352	5429	2496	9552
60	9901	7099	4285	1461	8625	5779	2921	0053	7173	4283	1382	8470	5547	2613	9669
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
	10.742	10.742	10.741	10.740	10.739	10.739	10.738	10.737	10.736	10.736	10.735	10.734	10.734	10.733	10.732	″
0	7308	0099	2901	5715	8539	1375	4221	7079	9947	2827	5717	8618	1530	4453	7387	60
1	7188	9979	2781	5595	8420	1255	4102	6960	9828	2708	5598	8500	1412	4335	7269	59
2	7068	9859	2662	5475	8300	1136	3983	6841	9710	2589	5480	8382	1294	4217	7151	58
3	6947	9739	2542	5356	8181	1017	3864	6722	9591	2471	5362	8263	1176	4099	7033	57
4	6827	9619	2422	5236	8061	0897	3745	6603	9472	2352	5243	8145	1058	3981	6916	56
5	6707	9499	2302	5116	7942	0778	3625	6484	9353	2234	5125	8027	0940	3864	6798	55
6	6587	9379	2182	4997	7822	0659	3506	6365	9235	2115	5007	7909	0822	3746	6680	54
7	6467	9259	2062	4877	7703	0539	3387	6246	9116	1997	4888	7791	0704	3628	6563	53
8	6346	9139	1942	4757	7583	0420	3268	6127	8997	1878	4770	7672	0586	3510	6445	52
9	6226	9019	1823	4638	7464	0301	3149	6008	8878	1759	4651	7554	0468	3392	6327	51
10	6106	8899	1703	4518	7344	0182	3030	5889	8760	1641	4533	7436	0350	3274	6210	50
11	5986	8779	1583	4398	7225	0062	2911	5770	8641	1522	4415	7318	0232	3157	6092	49
12	5866	8659	1463	4279	7105	9943	2792	5651	8522	1404	4296	7200	0114	3039	5975	48
13	5745	8539	1343	4159	6986	9824	2673	5533	8403	1285	4178	7081	9996	2921	5857	47
14	5625	8419	1223	4039	6866	9704	2553	5414	8285	1167	4060	6963	9878	2803	5739	46
15	5505	8299	1104	3920	6747	9585	2434	5295	8166	1048	3941	6845	9760	2685	5622	45
16	5385	8179	0984	3800	6627	9466	2315	5176	8047	0930	3823	6727	9642	2567	5504	44
17	5265	8059	0864	3680	6508	9347	2196	5057	7929	0811	3704	6609	9524	2450	5386	43
18	5144	7939	0744	3561	6389	9227	2077	4938	7810	0693	3586	6491	9406	2332	5269	42
19	5024	7819	0624	3441	6269	9108	1958	4819	7691	0574	3468	6372	9288	2214	5151	41
20	4904	7699	0505	3322	6150	8989	1839	4700	7572	0455	3349	6254	9170	2096	5033	40
21	4784	7579	0385	3202	6030	8870	1720	4581	7454	0337	3231	6136	9052	1978	4916	39
22	4664	7459	0265	3082	5911	8750	1601	4462	7335	0218	3113	6018	8934	1861	4798	38
23	4543	7339	0145	2963	5791	8631	1482	4344	7216	0100	2994	5900	8816	1743	4681	37
24	4423	7219	0025	2843	5672	8512	1363	4225	7098	9981	2876	5782	8698	1625	4563	36
25	4303	7099	9906	2723	5552	8393	1244	4106	6979	9863	2758	5663	8580	1507	4445	35
26	4183	6979	9786	2604	5433	8273	1125	3987	6860	9744	2639	5545	8462	1389	4328	34
27	4063	6859	9666	2484	5314	8154	1006	3868	6742	9626	2521	5427	8344	1272	4210	33
28	3943	6739	9546	2365	5194	8035	0887	3749	6623	9507	2403	5309	8226	1154	4093	32
29	3822	6619	9426	2245	5075	7916	0767	3630	6504	9389	2284	5191	8108	1036	3975	31
30	3702	6499	9307	2125	4955	7796	0648	3511	6385	9270	2166	5073	7990	0918	3857	30
31	3582	6379	9187	2006	4836	7677	0529	3393	6267	9152	2048	4955	7872	0801	3740	29
32	3462	6259	9067	1886	4717	7558	0410	3274	6148	9033	1930	4836	7754	0683	3622	28
33	3342	6139	8947	1767	4597	7439	0291	3155	6029	8915	1811	4718	7636	0565	3505	27
34	3222	6019	8827	1647	4478	7320	0172	3036	5911	8796	1693	4600	7518	0447	3387	26
35	3102	5899	8708	1528	4358	7200	0053	2917	5792	8678	1575	4482	7400	0330	3269	25
36	2981	5779	8588	1408	4239	7081	9934	2798	5673	8559	1456	4364	7283	0212	3152	24
37	2861	5659	8468	1288	4120	6962	9815	2680	5555	8441	1338	4246	7165	0094	3034	23
38	2741	5539	8348	1169	4000	6843	9696	2561	5436	8322	1220	4128	7047	9976	2917	22
39	2621	5419	8229	1049	3881	6724	9577	2442	5318	8204	1101	4010	6929	9859	2799	21
40	2501	5299	8109	0930	3761	6604	9458	2323	5199	8086	0983	3892	6811	9741	2682	20
41	2381	5179	7989	0810	3642	6485	9339	2204	5080	7967	0865	3773	6693	9623	2564	19
42	2261	5059	7869	0691	3523	6366	9220	2085	4962	7849	0747	3655	6575	9505	2446	18
43	2141	4940	7750	0571	3403	6247	9101	1967	4843	7730	0628	3537	6457	9388	2329	17
44	2020	4820	7630	0451	3284	6128	8982	1848	4724	7612	0510	3419	6339	9270	2211	16
45	1900	4700	7510	0332	3165	6008	8863	1729	4606	7493	0392	3301	6221	9152	2094	15
46	1780	4580	7391	0212	3045	5889	8744	1610	4487	7375	0274	3183	6103	9034	1976	14
47	1660	4460	7271	0093	2926	5770	8625	1491	4368	7256	0155	3065	5985	8917	1859	13
48	1540	4340	7151	9973	2807	5651	8506	1373	4250	7138	0037	2947	5868	8799	1741	12
49	1420	4220	7031	9854	2687	5532	8387	1254	4131	7020	9919	2829	5750	8681	1624	11
50	1300	4100	6912	9734	2568	5413	8268	1135	4013	6901	9800	2711	5632	8563	1506	10
51	1180	3980	6792	9615	2448	5293	8149	1016	3894	6783	9682	2593	5514	8446	1388	9
52	1060	3860	6672	9495	2329	5174	8030	0897	3775	6664	9564	2475	5396	8328	1271	8
53	0940	3740	6552	9376	2210	5055	7911	0779	3657	6546	9446	2356	5278	8210	1153	7
54	0820	3621	6433	9256	2090	4936	7792	0660	3538	6427	9327	2238	5160	8093	1036	6
55	0699	3501	6313	9137	1971	4817	7673	0541	3420	6309	9209	2120	5042	7975	0918	5
56	0579	3381	6193	9017	1852	4698	7554	0422	3301	6191	9091	2002	4924	7857	0801	4
57	0459	3261	6074	8898	1732	4578	7435	0303	3182	6072	8973	1884	4807	7740	0683	3
58	0339	3141	5954	8778	1613	4459	7317	0185	3064	5954	8855	1766	4689	7622	0566	2
59	0219	3021	5834	8659	1494	4340	7198	0066	2945	5835	8736	1648	4571	7504	0448	1
60	0099	2901	5715	8539	1375	4221	7079	9947	2827	5717	8618	1530	4453	7387	0331	0
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

10 Deg. Sine — 10 Deg. Co-Sine

"	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	"
	9. 260	9. 261	9. 261	9. 262	9. 263	9. 264	9. 264	9. 265	9. 266	9. 266	9. 267	9. 268	9. 268	9. 269	9. 270	9. 992	9. 992	9. 992	9. 992	9. 992	9. 992	9. 992	9. 992	9. 992	9. 992	9. 992	9. 992	9. 992	9. 992	9. 992	
0	6330	3141	9941	6729	3507	0274	7030	3775	0509	7232	3945	0647	7338	4019	0689	6661	6427	6192	5957	5722	5486	5250	5013	4776	4539	4301	4063	3824	3585	3346	60
1	6444	3255	0054	6843	3620	0387	7142	3887	0621	7344	4057	0759	7450	4130	0800	6657	6423	6188	5953	5718	5482	5246	5009	4772	4535	4297	4059	3820	3581	3342	59
2	6558	3368	0167	6956	3733	0499	7255	3999	0733	7456	4169	0870	7561	4241	0911	6653	6419	6184	5949	5714	5478	5242	5005	4768	4531	4293	4055	3816	3577	3338	58
3	6671	3481	0280	7069	3846	0612	7367	4112	0845	7568	4280	0982	7672	4353	1022	6650	6415	6180	5945	5710	5474	5238	5001	4764	4527	4289	4051	3812	3573	3334	57
4	6785	3595	0394	7182	3959	0725	7480	4224	0958	7680	4392	1093	7784	4464	1133	6646	6411	6177	5941	5706	5470	5234	4997	4760	4523	4285	4047	3808	3569	3330	56
5	6898	3708	0507	7295	4071	0837	7592	4336	1070	7792	4504	1205	7895	4575	1244	6642	6407	6173	5937	5702	5466	5230	4993	4756	4519	4281	4043	3804	3565	3326	55
6	7012	3822	0620	7408	4184	0950	7705	4449	1182	7904	4616	1317	8007	4686	1355	6638	6403	6169	5934	5698	5462	5226	4989	4752	4515	4277	4039	3800	3561	3322	54
7	7126	3935	0733	7521	4297	1063	7817	4561	1294	8016	4728	1428	8118	4797	1466	6634	6400	6165	5930	5694	5458	5222	4985	4748	4511	4273	4035	3796	3557	3318	53
8	7239	4048	0847	7634	4410	1175	7930	4673	1406	8128	4839	1540	8230	4909	1577	6630	6396	6161	5926	5690	5454	5218	4981	4744	4507	4269	4031	3792	3553	3314	52
9	7353	4162	0960	7747	4523	1288	8042	4786	1518	8240	4951	1651	8341	5020	1688	6626	6392	6157	5922	5686	5450	5214	4977	4740	4503	4265	4027	3788	3549	3310	51
10	7466	4275	1073	7860	4636	1401	8155	4898	1630	8352	5063	1763	8452	5131	1799	6622	6388	6153	5918	5682	5446	5210	4973	4736	4499	4261	4023	3784	3545	3306	50
11	7580	4389	1186	7973	4749	1513	8267	5010	1742	8464	5175	1875	8564	5242	1910	6618	6384	6149	5914	5678	5442	5206	4970	4732	4495	4257	4019	3780	3541	3302	49
12	7693	4502	1299	8086	4861	1626	8380	5123	1855	8576	5286	1986	8675	5354	2021	6614	6380	6145	5910	5674	5439	5202	4966	4728	4491	4253	4015	3776	3537	3298	48
13	7807	4615	1413	8199	4974	1739	8492	5235	1967	8688	5398	2098	8787	5465	2132	6610	6376	6141	5906	5671	5435	5198	4962	4725	4487	4249	4011	3772	3533	3294	47
14	7921	4729	1526	8312	5087	1851	8605	5347	2079	8800	5510	2209	8898	5576	2243	6607	6372	6137	5902	5667	5431	5194	4958	4721	4483	4245	4007	3768	3529	3290	46
15	8034	4842	1639	8425	5200	1964	8717	5459	2191	8912	5622	2321	9009	5687	2355	6603	6368	6133	5898	5663	5427	5190	4954	4717	4479	4241	4003	3764	3525	3286	45
16	8148	4955	1752	8538	5313	2077	8830	5572	2303	9024	5733	2432	9121	5798	2466	6599	6364	6130	5894	5659	5423	5186	4950	4713	4475	4237	3999	3760	3521	3282	44
17	8261	5069	1865	8651	5426	2189	8942	5684	2415	9135	5845	2544	9232	5910	2577	6595	6360	6126	5890	5655	5419	5183	4946	4709	4471	4233	3995	3757	3518	3278	43
18	8375	5182	1979	8764	5538	2302	9054	5796	2527	9247	5957	2655	9343	6021	2688	6591	6357	6122	5886	5651	5415	5179	4942	4705	4467	4229	3991	3753	3514	3274	42
19	8488	5296	2092	8877	5651	2414	9167	5908	2639	9359	6068	2767	9455	6132	2799	6587	6353	6118	5883	5647	5411	5175	4938	4701	4463	4225	3987	3749	3510	3270	41
20	8602	5409	2205	8990	5764	2527	9279	6021	2751	9471	6180	2879	9566	6243	2910	6583	6349	6114	5879	5643	5407	5171	4934	4697	4459	4221	3983	3745	3506	3266	40
21	8715	5522	2318	9103	5877	2640	9392	6133	2863	9583	6292	2990	9678	6354	3021	6579	6345	6110	5875	5639	5403	5167	4930	4693	4455	4218	3979	3741	3502	3262	39
22	8829	5636	2431	9216	5990	2752	9504	6245	2976	9695	6404	3102	9789	6466	3132	6575	6341	6106	5871	5635	5399	5163	4926	4689	4451	4214	3975	3737	3498	3258	38
23	8943	5749	2544	9329	6102	2865	9617	6358	3088	9807	6515	3213	9900	6577	3243	6571	6337	6102	5867	5631	5395	5159	4922	4685	4447	4210	3971	3733	3494	3254	37
24	9056	5862	2658	9442	6215	2978	9729	6470	3200	9919	6627	3325	0012	6688	3354	6568	6333	6098	5863	5627	5391	5155	4918	4681	4444	4206	3967	3729	3490	3250	36
25	9170	5976	2771	9555	6328	3090	9842	6582	3312	0031	6739	3436	0123	6799	3465	6564	6329	6094	5859	5623	5387	5151	4914	4677	4440	4202	3963	3725	3486	3246	35
26	9283	6089	2884	9668	6441	3203	9954	6694	3424	0143	6851	3548	0234	6910	3576	6560	6325	6090	5855	5619	5383	5147	4910	4673	4436	4198	3959	3721	3482	3242	34
27	9397	6202	2997	9781	6554	3315	0066	6807	3536	0254	6962	3659	0346	7022	3687	6556	6321	6086	5851	5616	5380	5143	4906	4669	4432	4194	3955	3717	3478	3238	33
28	9510	6316	3110	9894	6666	3428	0179	6919	3648	0366	7074	3771	0457	7133	3798	6552	6317	6083	5847	5612	5376	5139	4902	4665	4428	4190	3951	3713	3474	3234	32
29	9624	6429	3223	0007	6779	3541	0291	7031	3760	0478	7186	3882	0568	7244	3909	6548	6313	6079	5843	5608	5372	5135	4898	4661	4424	4186	3947	3709	3470	3230	31
30	9737	6542	3336	0120	6892	3653	0404	7143	3872	0590	7297	3994	0680	7355	4020	6544	6310	6075	5839	5604	5368	5131	4894	4657	4420	4182	3943	3705	3466	3226	30
31	9851	6656	3450	0233	7005	3766	0516	7256	3984	0702	7409	4105	0791	7466	4131	6540	6306	6071	5835	5600	5364	5127	4891	4653	4416	4178	3939	3701	3462	3222	29
32	9964	6769	3563	0346	7117	3878	0629	7368	4096	0814	7521	4217	0902	7577	4242	6536	6302	6067	5832	5596	5360	5123	4887	4649	4412	4174	3936	3697	3458	3218	28
33	0078	6882	3676	0459	7230	3991	0741	7480	4208	0926	7632	4328	1014	7689	4353	6532	6298	6063	5828	5592	5356	5119	4883	4645	4408	4170	3932	3693	3454	3214	27
34	0191	6996	3789	0571	7343	4104	0853	7592	4320	1038	7744	4440	1125	7800	4464	6528	6294	6059	5824	5588	5352	5116	4879	4641	4404	4166	3928	3689	3450	3210	26
35	0305	7109	3902	0684	7456	4216	0966	7704	4432	1149	7856	4551	1236	7911	4575	6525	6290	6055	5820	5584	5348	5112	4875	4638	4400	4162	3924	3685	3446	3206	25
36	0418	7222	4015	0797	7569	4329	1078	7817	4544	1261	7968	4663	1348	8022	4686	6521	6286	6051	5816	5580	5344	5108	4871	4634	4396	4158	3920	3681	3442	3202	24
37	0532	7336	4128	0910	7681	4441	1191	7929	4656	1373	8079	4774	1459	8133	4797	6517	6282	6047	5812	5576	5340	5104	4867	4630	4392	4154	3916	3677	3438	3198	23
38	0645	7449	4242	1023	7794	4554	1303	8041	4768	1485	8191	4886	1570	8244	4908	6513	6278	6043	5808	5572	5336	5100	4863	4626	4388	4150	3912	3673	3434	3194	22
39	0759	7562	4355	1136	7907	4666	1415	8153	4880	1597	8303	4997	1682	8355	5018	6509	6274	6039	5804	5568	5332	5096	4859	4622	4384	4146	3908	3669	3430	3190	21
40	0872	7675	4468	1249	8020	4779	1528	8265	4992	1709	8414	5109	1793	8467	5129	6505	6270	6035	5800	5564	5328	5092	4855	4618	4380	4142	3904	3665	3426	3186	20
41	0986	7789	4581	1362	8132	4892	1640	8378	5105	1821	8526	5220	1904	8578	5240	6501	6267	6032	5796	5560	5324	5088	4851	4614	4376	4138	3900	3661	3422	3182	19
42	1099	7902	4694	1475	8245	5004	1752	8490	5217	1932	8638	5332	2016	8689	5351	6497	6263	6028	5792	5557	5320	5084	4847	4610	4372	4134	3896	3657	3418	3178	18
43	1213	8015	4807	1588	8358	5117	1865	8602	5329	2044	8749	5443	2127	8800	5462	6493	6259	6024	5788	5553	5317	5080	4843	4606	4368	4130	3892	3653	3414	3174	17
44	1326	8129	4920	1701	8471	5229	1977	8714	5441	2156	8861	5555	2238	8911	5573	6489	6255	6020	5784	5549	5313	5076	4839	4602	4364	4126	3888	3649	3410	3170	16
45	1439	8242	5033	1814	8583	5342	2090	8826	5553	2268	8973	5666	2350	9022	5684	6486	6251	6016	5781	5545	5309	5072	4835	4598	4360	4122	3884	3645	3406	3166	15
46	1553	8355	5146	1927	8696	5454	2202	8939	5665	2380	9084	5778	2461	9133	5795	6482	6247	6012	5777	5541	5305	5068	4831	4594	4356	4118	3880	3641	3402	3162	14
47	1666	8468	5260	2040	8809	5567	2314	9051	5777	2492	9196	5889	2572	9244	5906	6478	6243	6008	5773	5537	5301	5064	4827	4590	4352	4114	3876	3637	3398	3158	13
48	1780	8582	5373	2152	8921	5680	2427	9163	5889	2603	9307	6001	2684	9356	6017	6474	6239	6004	5769	5533	5297	5060	4823	4586	4348	4110	3872	3633	3394	3154	12
49	1893	8695	5486	2265	9034	5792	2539	9275	6001	2715	9419	6112	2795	9467	6128	6470	6235	6000	5765	5529	5293	5056	4819	4582	4344	4106	3868	3629	3390	3150	11
50	2007	8808	5599	2378	9147	5905	2651	9387	6113	2827	9531	6224	2906	9578	6239	6466	6231	5996	5761	5525	5289	5052	4815	4578	4340	4102	3864	3625	3386	3146	10
51	2120	8922	5712	2491	9260	6017	2764	9500	6225	2939	9642	6335	3017	9689	6350	6462	6227	5992	5757	5521	5285	5048	4812	4574	4336	4098	3860	3621	3382	3142	9
52	2234	9035	5825	2604	9372	6130	2876	9612	6337	3051	9754	6447	3129	9800	6461	6458	6224	5988	5753	5517	5281	5044	4808	4570	4333	4094	3856	3617	3378	3138	8
53	2347	9148	5938	2717	9485	6242	2988	9724	6449	3162	9866	6558	3240	9911	6572	6454	6220	5985	5749	5513	5277	5041	4804	4566	4329	4090	3852	3613	3374	3134	7
54	2461	9261	6051	2830	9598	6355	3101	9836	6561	3274	9977	6670	3351	0022	6683	6450	6216	5981	5745	5509	5273	5037	4800	4562	4325	4087	3848	3609	3370	3130	6
55	2574	9375	6164	2943	9710	6467	3213	9948	6673	3386	0089	6781	3462	0133	6794	6446	6212	5977	5741	5505	5269	5033	4796	4558	4321	4083	3844	3605	3366	3126	5
56	2687	9488	6277	3056	9823	6580	3325	0060	6785	3498	0201	6892	3574	0244	6904	6443	6208	5973	5737	5502	5265	5029	4792	4554	4317	4079	3840	3601	3362	3122	4
57	2801	9601	6390	3169	9936	6692	3438	0173	6897	3610	0312	7004	3685	0355	7015	6439	6204	5969	5733	5498	5261	5025	4788	4550	4313	4075	3836	3597	3358	3118	3
58	2914	9714	6503	3281	0049	6805	3550	0285	7008	3721	0424	7115	3796	0467	7126	6435	6200	5965	5729	5494	5257	5021	4784	4546	4309	4071	3832	3593	3354	3114	2
59	3028	9828	6616	3394	0161	6917	3663	0397	7120	3833	0535	7227	3908	0578	7237	6431	6196	5961	5726	5490	5253	5017	4780	4543	4305	4067	3828	3589	3350	3110	1
60	3141	9941	6729	3507	0274	7030	3775	0509	7232	3945	0647	7338	4019	0689	7348	6427	6192	5957	5722	5486	5250	5013	4776	4539	4301	4063	3824	3585	3346	3106	0
"	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	"

Co-Sine 79 Deg. — Sine 79 Deg.

10 Deg. Tangent

″	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9. 267	9. 268	9. 269	9. 270	9. 270	9. 271	9. 272	9. 272	9. 273	9. 274	9. 274	9. 275	9. 276	9. 277	9. 277
0	9669	6714	3749	0772	7786	4788	1780	8762	5733	2694	9644	6584	3514	0434	7343
1	9787	6832	3866	0889	7902	4905	1897	8878	5849	2810	9760	6700	3629	0549	7458
2	9904	6949	3983	1006	8019	5021	2013	8994	5965	2926	9876	6815	3745	0664	7573
3	0022	7066	4100	1123	8136	5138	2130	9111	6081	3042	9992	6931	3860	0779	7688
4	0139	7184	4217	1240	8253	5255	2246	9227	6197	3158	0107	7047	3976	0894	7803
5	0257	7301	4334	1357	8369	5371	2362	9343	6314	3273	0223	7162	4091	1010	7918
6	0374	7418	4451	1474	8486	5488	2479	9459	6430	3389	0339	7278	4206	1125	8033
7	0492	7535	4569	1591	8603	5604	2595	9576	6546	3505	0454	7393	4322	1240	8148
8	0609	7653	4686	1708	8720	5721	2712	9692	6662	3621	0570	7509	4437	1355	8263
9	0727	7770	4803	1825	8837	5838	2828	9808	6778	3737	0686	7624	4553	1471	8378
10	0844	7887	4920	1942	8953	5954	2945	9924	6894	3853	0802	7740	4668	1586	8493
11	0962	8005	5037	2059	9070	6071	3061	0041	7010	3969	0917	7856	4783	1701	8608
12	1079	8122	5154	2176	9187	6187	3177	0157	7126	4085	1033	7971	4899	1816	8723
13	1197	8239	5271	2293	9304	6304	3294	0273	7242	4201	1149	8087	5014	1931	8838
14	1314	8357	5388	2410	9420	6421	3410	0389	7358	4317	1265	8202	5130	2047	8953
15	1431	8474	5506	2527	9537	6537	3527	0506	7474	4432	1380	8318	5245	2162	9068
16	1549	8591	5623	2644	9654	6654	3643	0622	7590	4548	1496	8433	5360	2277	9183
17	1666	8708	5740	2760	9771	6770	3759	0738	7706	4664	1612	8549	5476	2392	9298
18	1784	8826	5857	2877	9887	6887	3876	0854	7822	4780	1727	8664	5591	2507	9413
19	1901	8943	5974	2994	0004	7003	3992	0971	7938	4896	1843	8780	5706	2623	9529
20	2019	9060	6091	3111	0121	7120	4109	1087	8055	5012	1959	8895	5822	2738	9644
21	2136	9177	6208	3228	0238	7237	4225	1203	8171	5128	2074	9011	5937	2853	9759
22	2254	9295	6325	3345	0354	7353	4341	1319	8287	5244	2190	9126	6052	2968	9874
23	2371	9412	6442	3462	0471	7470	4458	1435	8403	5359	2306	9242	6168	3083	9989
24	2488	9529	6559	3579	0588	7586	4574	1552	8519	5475	2422	9357	6283	3198	0104
25	2606	9647	6676	3696	0705	7703	4691	1668	8635	5591	2537	9473	6398	3314	0219
26	2723	9764	6794	3813	0821	7819	4807	1784	8751	5707	2653	9588	6514	3429	0334
27	2841	9881	6911	3930	0938	7936	4923	1900	8867	5823	2769	9704	6629	3544	0449
28	2958	9998	7028	4046	1055	8052	5040	2016	8983	5939	2884	9819	6744	3659	0564
29	3076	0116	7145	4163	1171	8169	5156	2133	9099	6055	3000	9935	6860	3774	0679
30	3193	0233	7262	4280	1288	8286	5272	2249	9215	6170	3116	0050	6975	3889	0793
31	3310	0350	7379	4397	1405	8402	5389	2365	9331	6286	3231	0166	7090	4005	0908
32	3428	0467	7496	4514	1522	8519	5505	2481	9447	6402	3347	0281	7206	4120	1023
33	3545	0584	7613	4631	1638	8635	5621	2597	9563	6518	3463	0397	7321	4235	1138
34	3663	0702	7730	4748	1755	8752	5738	2714	9679	6634	3578	0512	7436	4350	1253
35	3780	0819	7847	4865	1872	8868	5854	2830	9795	6750	3694	0628	7552	4465	1368
36	3898	0936	7964	4982	1988	8985	5971	2946	9911	6865	3810	0743	7667	4580	1483
37	4015	1053	8081	5098	2105	9101	6087	3062	0027	6981	3925	0859	7782	4695	1598
38	4132	1171	8198	5215	2222	9218	6203	3178	0143	7097	4041	0974	7898	4811	1713
39	4250	1288	8315	5332	2338	9334	6320	3294	0259	7213	4156	1090	8013	4926	1828
40	4367	1405	8432	5449	2455	9451	6486	3411	0375	7329	4272	1205	8128	5041	1943
41	4484	1522	8549	5566	2572	9567	6552	3527	0491	7444	4388	1321	8243	5156	2058
42	4602	1639	8666	5683	2688	9684	6669	3643	0607	7560	4503	1436	8359	5271	2173
43	4719	1757	8783	5800	2805	9800	6785	3759	0723	7676	4619	1552	8474	5386	2288
44	4837	1874	8900	5916	2922	9917	6901	3875	0839	7792	4735	1667	8589	5501	2403
45	4954	1991	9017	6033	3038	0033	7017	3991	0955	7908	4850	1783	8705	5616	2518
46	5071	2108	9134	6150	3155	0150	7134	4107	1071	8023	4966	1898	8820	5731	2633
47	5189	2225	9251	6267	3272	0266	7250	4224	1187	8139	5082	2013	8935	5847	2748
48	5306	2343	9368	6384	3388	0383	7366	4340	1303	8255	5197	2129	9050	5962	2863
49	5423	2460	9485	6501	3505	0499	7483	4456	1419	8371	5313	2244	9166	6077	2978
50	5541	2577	9602	6617	3622	0616	7599	4572	1534	8487	5428	2360	9281	6192	3093
51	5658	2694	9719	6734	3738	0732	7715	4688	1650	8602	5544	2475	9396	6307	3208
52	5776	2811	9836	6851	3855	0849	7832	4804	1766	8718	5660	2591	9512	6422	3322
53	5893	2928	9953	6968	3972	0965	7948	4920	1882	8834	5775	2706	9627	6537	3437
54	6010	3046	0070	7085	4088	1082	8064	5036	1998	8950	5891	2822	9742	6652	3552
55	6128	3163	0187	7202	4205	1198	8181	5153	2114	9065	6006	2937	9857	6767	3667
56	6245	3280	0304	7318	4322	1314	8297	5269	2230	9181	6122	3052	9973	6882	3782
57	6362	3397	0421	7435	4438	1431	8413	5385	2346	9297	6238	3168	0088	6997	3897
58	6480	3514	0538	7552	4555	1547	8529	5501	2462	9413	6353	3283	0203	7113	4012
59	6597	3631	0655	7669	4672	1664	8646	5617	2578	9529	6469	3399	0318	7228	4127
60	6714	3749	0772	7786	4788	1780	8762	5733	2694	9644	6584	3514	0434	7343	4242
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Tangent Deg. 79

10 Deg. Co-Tangent

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	″
10. 732	10. 731	10. 730	10. 729	10. 729	10. 728	10. 727	10. 727	10. 726	10. 725	10. 725	10. 724	10. 723	10. 722	10. 722	
0331	3286	6251	9228	2214	5212	8220	1238	4267	7306	0356	3416	6486	9566	2657	60
0213	3168	6134	9111	2098	5095	8103	1122	4151	7190	0240	3300	6371	9451	2542	59
0096	3051	6017	8994	1981	4979	7987	1006	4035	7074	0124	3185	6255	9336	2427	58
9978	2934	5900	8877	1864	4862	7870	0889	3919	6958	0008	3069	6140	9221	2312	57
9861	2816	5783	8760	1747	4745	7754	0773	3803	6842	9893	2953	6024	9106	2197	56
9743	2699	5666	8643	1631	4629	7638	0657	3686	6727	9777	2838	5909	8990	2082	55
9626	2582	5549	8526	1514	4512	7521	0541	3570	6611	9661	2722	5794	8875	1967	54
9508	2465	5431	8409	1397	4396	7405	0424	3454	6495	9546	2607	5678	8760	1852	53
9391	2347	5314	8292	1280	4279	7288	0308	3338	6379	9430	2491	5563	8645	1737	52
9273	2230	5197	8175	1163	4162	7172	0192	3222	6263	9314	2376	5447	8529	1622	51
9156	2113	5080	8058	1047	4046	7055	0076	3106	6147	9198	2260	5332	8414	1507	50
9038	1995	4963	7941	0930	3929	6939	9959	2990	6031	9083	2144	5217	8299	1392	49
8921	1878	4846	7824	0813	3813	6823	9843	2874	5915	8967	2029	5101	8184	1277	48
8803	1761	4729	7707	0696	3696	6706	9727	2758	5799	8851	1913	4986	8069	1162	47
8686	1643	4612	7590	0580	3579	6590	9611	2642	5683	8735	1798	4870	7953	1047	46
8569	1526	4494	7473	0463	3463	6473	9494	2526	5568	8620	1682	4755	7838	0932	45
8451	1409	4377	7356	0346	3346	6357	9378	2410	5452	8504	1567	4640	7723	0817	44
8334	1292	4260	7240	0229	3230	6241	9262	2294	5336	8388	1451	4524	7608	0702	43
8216	1174	4143	7123	0113	3113	6124	9146	2178	5220	8273	1336	4409	7493	0587	42
8099	1057	4026	7006	9996	2997	6008	9029	2062	5104	8157	1220	4294	7377	0471	41
7981	0940	3909	6889	9879	2880	5891	8913	1945	4988	8041	1105	4178	7262	0356	40
7864	0823	3792	6772	9762	2763	5775	8797	1829	4872	7926	0989	4063	7147	0241	39
7746	0705	3675	6655	9646	2647	5659	8681	1713	4756	7810	0874	3948	7032	0126	38
7629	0588	3558	6538	9529	2530	5542	8565	1597	4641	7694	0758	3832	6917	0011	37
7512	0471	3441	6421	9412	2414	5426	8448	1481	4525	7578	0643	3717	6802	9896	36
7394	0353	3324	6304	9295	2297	5309	8332	1365	4409	7463	0527	3602	6686	9781	35
7277	0236	3206	6187	9179	2181	5193	8216	1249	4293	7347	0412	3486	6571	9666	34
7159	0119	3089	6070	9062	2064	5077	8100	1133	4177	7231	0296	3371	6456	9551	33
7042	0002	2972	5954	8945	1948	4960	7984	1017	4061	7116	0181	3256	6341	9436	32
6924	9884	2855	5837	8829	1831	4844	7867	0901	3945	7000	0065	3140	6226	9321	31
6807	9767	2738	5720	8712	1714	4728	7751	0785	3830	6884	9950	3025	6111	9207	30
6690	9650	2621	5603	8595	1598	4611	7635	0669	3714	6769	9834	2910	5995	9092	29
6572	9533	2504	5486	8478	1481	4495	7519	0553	3598	6653	9719	2794	5880	8977	28
6455	9416	2387	5369	8362	1365	4379	7403	0437	3482	6537	9603	2679	5765	8862	27
6337	9298	2270	5252	8245	1248	4262	7286	0321	3366	6422	9488	2564	5650	8747	26
6220	9181	2153	5135	8128	1132	4146	7170	0205	3250	6306	9372	2448	5535	8632	25
6102	9064	2036	5018	8012	1015	4029	7054	0089	3135	6190	9257	2333	5420	8517	24
5985	8947	1919	4902	7895	0899	3913	6938	9973	3019	6075	9141	2218	5305	8402	23
5868	8829	1802	4785	7778	0782	3797	6822	9857	2903	5959	9026	2102	5189	8287	22
5750	8712	1685	4668	7662	0666	3680	6706	9741	2787	5844	8910	1987	5074	8172	21
5633	8595	1568	4551	7545	0549	3564	6589	9625	2671	5728	8795	1872	4959	8057	20
5516	8478	1451	4434	7428	0433	3448	6473	9509	2556	5612	8679	1757	4844	7942	19
5398	8361	1334	4317	7312	0316	3331	6357	9393	2440	5497	8564	1641	4729	7827	18
5281	8243	1217	4200	7195	0200	3215	6241	9277	2324	5381	8448	1526	4614	7712	17
5163	8126	1100	4084	7078	0083	3099	6125	9161	2208	5265	8333	1411	4499	7597	16
5046	8009	0983	3967	6962	9967	2983	6009	9045	2092	5150	8217	1295	4384	7482	15
4929	7892	0866	3850	6845	9850	2866	5893	8929	1977	5034	8102	1180	4269	7367	14
4811	7775	0749	3733	6728	9734	2750	5776	8813	1861	4918	7987	1065	4153	7252	13
4694	7657	0632	3616	6612	9617	2634	5660	8697	1745	4803	7871	0950	4038	7137	12
4577	7540	0515	3499	6495	9501	2517	5544	8581	1629	4687	7756	0834	3923	7022	11
4459	7423	0398	3383	6378	9384	2401	5428	8466	1513	4572	7640	0719	3808	6907	10
4342	7306	0281	3266	6262	9268	2285	5312	8350	1398	4456	7525	0604	3693	6792	9
4224	7189	0164	3149	6145	9151	2168	5196	8234	1282	4340	7409	0488	3578	6678	8
4107	7072	0047	3032	6028	9035	2052	5080	8118	1166	4225	7294	0373	3463	6563	7
3990	6954	9930	2915	5912	8918	1936	4964	8002	1050	4109	7178	0258	3348	6448	6
3872	6837	9813	2798	5795	8802	1819	4847	7886	0935	3994	7063	0143	3233	6333	5
3755	6720	9696	2682	5678	8686	1703	4731	7770	0819	3878	6948	0027	3118	6218	4
3638	6603	9579	2565	5562	8569	1587	4615	7654	0703	3762	6832	9912	3003	6103	3
3520	6486	9462	2448	5445	8453	1471	4499	7538	0587	3647	6717	9797	2887	5988	2
3403	6369	9345	2331	5328	8336	1354	4383	7422	0471	3531	6601	9682	2772	5873	1
3286	6251	9228	2214	5212	8220	1238	4267	7306	0356	3416	6486	9566	2657	5758	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Tangent Deg. 79

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
″	9. 270	9. 271	9. 272	9. 272	9. 273	9. 274	9. 274	9. 275	9. 276	9. 276	9. 277	9. 277	9. 278	9. 279	9. 279	9. 992	9. 992	9. 992	9. 992	9. 992	9. 992	9. 992	9. 992	9. 992	9. 992	9. 992	9. 992	9. 992	9. 991	9. 991	″
0	7348	3997	0635	7263	3880	0487	7083	3669	0245	6811	3366	9911	6445	2970	9484	3106	2866	2626	2385	2144	1902	1660	1418	1175	0932	0689	0445	0201	9956	9711	60
1	7459	4108	0746	7373	3990	0597	7193	3779	0355	6920	3475	6020	6554	3079	9593	3102	2862	2622	2381	2140	1898	1656	1414	1171	0928	0685	0441	0197	9952	9707	59
2	7570	4218	0856	7484	4100	0707	7303	3889	0464	7029	3584	0129	6663	3187	9701	3098	2858	2618	2377	2136	1894	1652	1410	1167	0924	0681	0437	0193	9948	9703	58
3	7681	4329	0967	7594	4211	0817	7413	3998	0574	7139	3693	0238	6772	3296	9810	3094	2854	2614	2373	2132	1890	1648	1406	1163	0920	0677	0433	0189	9944	9699	57
4	7792	4440	1077	7704	4321	0927	7523	4108	0683	7248	3802	0347	6881	3404	9918	3090	2850	2610	2369	2128	1886	1644	1402	1159	0916	0673	0429	0184	9940	9695	56
5	7903	4550	1188	7815	4431	1037	7633	4218	0793	7357	3912	0456	6989	3513	0027	3086	2846	2606	2365	2124	1882	1640	1398	1155	0912	0669	0425	0180	9936	9691	55
6	8013	4661	1298	7925	4541	1147	7742	4328	0902	7467	4021	0565	7098	3622	0135	3082	2842	2602	2361	2120	1878	1636	1394	1151	0908	0664	0421	0176	9932	9687	54
7	8124	4772	1409	8035	4651	1257	7852	4437	1012	7576	4130	0674	7207	3730	0244	3078	2838	2598	2357	2116	1874	1632	1390	1147	0904	0660	0416	0172	9928	9683	53
8	8235	4883	1519	8146	4762	1367	7962	4547	1121	7685	4239	0783	7316	3839	0352	3074	2834	2594	2353	2112	1870	1628	1386	1143	0900	0656	0412	0168	9923	9678	52
9	8346	4993	1630	8256	4872	1477	8072	4656	1231	7795	4348	0892	7425	3948	0461	3070	2830	2590	2349	2108	1866	1624	1382	1139	0896	0652	0408	0164	9919	9674	51
10	8457	5104	1740	8366	4982	1587	8182	4766	1340	7904	4457	1001	7533	4056	0569	3066	2826	2586	2345	2104	1862	1620	1378	1135	0892	0648	0404	0160	9915	9670	50
11	8568	5215	1851	8477	5092	1697	8292	4876	1450	8013	4566	1109	7642	4165	0677	3062	2822	2582	2341	2100	1858	1616	1374	1131	0888	0644	0400	0156	9911	9666	49
12	8679	5325	1961	8587	5202	1807	8401	4985	1559	8122	4676	1218	7751	4274	0786	3058	2818	2578	2337	2096	1854	1612	1370	1127	0884	0640	0396	0152	9907	9662	48
13	8790	5436	2072	8697	5312	1917	8511	5095	1669	8232	4785	1327	7860	4382	0894	3054	2814	2574	2333	2092	1850	1608	1366	1123	0880	0636	0392	0148	9903	9658	47
14	8900	5547	2182	8808	5423	2027	8621	5205	1778	8341	4894	1436	7969	4491	1003	3050	2810	2570	2329	2088	1846	1604	1361	1119	0876	0632	0388	0144	9899	9654	46
15	9011	5657	2293	8918	5533	2137	8731	5314	1888	8450	5003	1545	8077	4599	1111	3046	2806	2566	2325	2084	1842	1600	1357	1115	0871	0628	0384	0140	9895	9650	45
16	9122	5768	2403	9028	5643	2247	8841	5424	1997	8560	5112	1654	8186	4708	1220	3042	2802	2562	2321	2080	1838	1596	1353	1111	0867	0624	0380	0136	9891	9646	44
17	9233	5879	2514	9139	5753	2357	8950	5534	2106	8669	5221	1763	8295	4817	1328	3038	2798	2558	2317	2075	1834	1592	1349	1107	0863	0620	0376	0131	9887	9642	43
18	9344	5989	2624	9249	5863	2467	9060	5643	2216	8778	5330	1872	8404	4925	1437	3034	2794	2554	2313	2071	1830	1588	1345	1102	0859	0616	0372	0127	9883	9638	42
19	9455	6100	2735	9359	5973	2577	9170	5753	2325	8888	5439	1981	8513	5034	1545	3030	2790	2550	2309	2067	1826	1584	1341	1098	0855	0612	0368	0123	9879	9633	41
20	9565	6211	2845	9470	6084	2687	9280	5863	2435	8997	5549	2090	8621	5142	1653	3026	2786	2546	2305	2063	1822	1580	1337	1094	0851	0608	0364	0119	9875	9629	40
21	9676	6321	2956	9580	6194	2797	9390	5972	2544	9106	5658	2199	8730	5251	1762	3022	2782	2542	2301	2059	1818	1576	1333	1090	0847	0604	0360	0115	9870	9625	39
22	9787	6432	3066	9690	6304	2907	9499	6082	2654	9215	5767	2308	8839	5360	1870	3018	2778	2538	2297	2055	1814	1572	1329	1086	0843	0599	0355	0111	9866	9621	38
23	9898	6543	3177	9801	6414	3017	9609	6191	2763	9325	5876	2417	8948	5468	1979	3014	2774	2534	2293	2051	1810	1568	1325	1082	0839	0595	0351	0107	9862	9617	37
24	0009	6653	3287	9911	6524	3127	9719	6301	2873	9434	5985	2526	9056	5577	2087	3010	2770	2530	2289	2047	1806	1564	1321	1078	0835	0591	0347	0103	9858	9613	36
25	0120	6764	3398	0021	6634	3237	9829	6411	2982	9543	6094	2635	9165	5685	2196	3006	2766	2526	2285	2043	1802	1559	1317	1074	0831	0587	0343	0099	9854	9609	35
26	0230	6875	3508	0132	6744	3347	9939	6520	3091	9652	6203	2744	9274	5794	2304	3002	2762	2522	2281	2039	1798	1555	1313	1070	0827	0583	0339	0095	9850	9605	34
27	0341	6985	3619	0242	6854	3457	0048	6630	3201	9762	6312	2853	9383	5903	2412	2998	2758	2518	2277	2035	1794	1551	1309	1066	0823	0579	0335	0091	9846	9601	33
28	0452	7096	3729	0352	6965	3567	0158	6739	3310	9871	6421	2961	9491	6011	2521	2994	2754	2514	2273	2031	1789	1547	1305	1062	0819	0575	0331	0087	9842	9597	32
29	0563	7207	3840	0462	7075	3677	0268	6849	3420	9980	6530	3070	9600	6120	2629	2990	2750	2510	2269	2027	1785	1543	1301	1058	0815	0571	0327	0083	9838	9593	31
30	0674	7317	3950	0573	7185	3786	0378	6959	3529	0089	6640	3179	9709	6228	2738	2986	2746	2506	2265	2023	1781	1539	1297	1054	0811	0567	0323	0078	9834	9588	30
31	0785	7428	4061	0683	7295	3896	0487	7068	3639	0199	6749	3288	9818	6337	2846	2982	2742	2502	2261	2019	1777	1535	1293	1050	0807	0563	0319	0074	9830	9584	29
32	0895	7539	4171	0793	7405	4006	0597	7178	3748	0308	6858	3397	9926	6445	2954	2978	2738	2497	2256	2015	1773	1531	1289	1046	0802	0559	0315	0070	9826	9580	28
33	1006	7649	4282	0904	7515	4116	0707	7287	3857	0417	6967	3506	0035	6554	3063	2974	2734	2493	2252	2011	1769	1527	1285	1042	0798	0555	0311	0066	9821	9576	27
34	1117	7760	4392	1014	7625	4226	0817	7397	3967	0526	7076	3615	0144	6663	3171	2970	2730	2489	2248	2007	1765	1523	1281	1038	0794	0551	0307	0062	9817	9572	26
35	1228	7870	4503	1124	7735	4336	0927	7507	4076	0636	7185	3724	0253	6771	3280	2966	2726	2485	2244	2003	1761	1519	1277	1034	0790	0547	0303	0058	9813	9568	25
36	1339	7981	4613	1234	7845	4446	1036	7616	4186	0745	7294	3833	0361	6880	3388	2962	2722	2481	2240	1999	1757	1515	1272	1030	0786	0543	0298	0054	9809	9564	24
37	1449	8092	4723	1345	7956	4556	1146	7726	4295	0854	7403	3942	0470	6988	3496	2958	2718	2477	2236	1995	1753	1511	1268	1026	0782	0538	0294	0050	9805	9560	23
38	1560	8202	4834	1455	8066	4666	1256	7835	4405	0963	7512	4051	0579	7097	3605	2954	2714	2473	2232	1991	1749	1507	1264	1021	0778	0534	0290	0046	9801	9556	22
39	1671	8313	4944	1565	8176	4776	1366	7945	4514	1073	7621	4159	0687	7205	3713	2950	2710	2469	2228	1987	1745	1503	1260	1017	0774	0530	0286	0042	9797	9552	21
40	1782	8423	5055	1675	8286	4886	1475	8054	4623	1182	7730	4268	0796	7314	3821	2946	2706	2465	2224	1983	1741	1499	1256	1013	0770	0526	0282	0038	9793	9548	20
41	1893	8534	5165	1786	8396	4996	1585	8164	4733	1291	7839	4377	0905	7422	3930	2942	2702	2461	2220	1979	1737	1495	1252	1009	0766	0522	0278	0034	9789	9544	19
42	2003	8645	5276	1896	8506	5106	1695	8274	4842	1400	7948	4486	1014	7531	4038	2938	2698	2457	2216	1975	1733	1491	1248	1005	0762	0518	0274	0030	9785	9539	18
43	2114	8755	5386	2006	8616	5215	1804	8383	4951	1510	8057	4595	1122	7640	4147	2934	2694	2453	2212	1971	1729	1487	1244	1001	0758	0514	0270	0025	9781	9535	17
44	2225	8866	5496	2117	8726	5325	1914	8493	5061	1619	8166	4704	1231	7748	4255	2930	2690	2449	2208	1967	1725	1483	1240	0997	0754	0510	0266	0021	9777	9531	16
45	2336	8976	5607	2227	8836	5435	2024	8602	5170	1728	8275	4813	1340	7857	4363	2926	2686	2445	2204	1963	1721	1479	1236	0993	0750	0506	0262	0017	9772	9527	15
46	2446	9087	5717	2337	8946	5545	2134	8712	5280	1837	8384	4922	1448	7965	4472	2922	2682	2441	2200	1959	1717	1475	1232	0989	0746	0502	0258	0013	9768	9523	14
47	2557	9198	5828	2447	9056	5655	2243	8821	5389	1946	8493	5030	1557	8074	4580	2918	2678	2437	2196	1955	1713	1471	1228	0985	0742	0498	0254	0009	9764	9519	13
48	2668	9308	5938	2557	9166	5765	2353	8931	5498	2056	8603	5139	1666	8182	4688	2914	2674	2433	2192	1951	1709	1467	1224	0981	0738	0494	0250	0005	9760	9515	12
49	2779	9419	6049	2668	9276	5875	2463	9040	5608	2165	8712	5248	1774	8291	4797	2910	2670	2429	2188	1947	1705	1463	1220	0977	0733	0490	0246	0001	9756	9511	11
50	2889	9529	6159	2778	9387	5985	2573	9150	5717	2274	8821	5357	1883	8399	4905	2906	2666	2425	2184	1943	1701	1458	1216	0973	0729	0486	0241	9997	9752	9507	10
51	3000	9640	6269	2888	9497	6095	2682	9259	5826	2383	8930	5466	1992	8508	5013	2902	2662	2421	2180	1939	1697	1454	1212	0969	0725	0482	0237	9993	9748	9503	9
52	3111	9751	6380	2998	9607	6204	2792	9369	5936	2492	9039	5575	2101	8616	5122	2898	2658	2417	2176	1935	1693	1450	1208	0965	0721	0478	0233	9989	9744	9499	8
53	3222	9861	6490	3109	9717	6314	2902	9479	6045	2602	9148	5684	2209	8725	5230	2894	2654	2413	2172	1931	1689	1446	1204	0961	0717	0473	0229	9985	9740	9494	7
54	3332	9972	6601	3219	9827	6424	3011	9588	6155	2711	9257	5792	2318	8833	5338	2890	2650	2409	2168	1927	1685	1442	1200	0957	0713	0469	0225	9981	9736	9490	6
55	3443	0082	6711	3329	9937	6534	3121	9698	6264	2820	9366	5901	2427	8942	5447	2886	2646	2405	2164	1922	1681	1438	1196	0953	0709	0465	0221	9977	9732	9486	5
56	3554	0193	6821	3439	0047	6644	3231	9807	6373	2929	9475	6010	2535	9050	5555	2882	2642	2401	2160	1918	1677	1434	1192	0948	0705	0461	0217	9972	9727	9482	4
57	3665	0303	6932	3549	0157	6754	3340	9917	6483	3038	9584	6119	2644	9159	5663	2878	2638	2397	2156	1914	1672	1430	1188	0944	0701	0457	0213	9968	9723	9478	3
58	3775	0414	7042	3660	0267	6864	3450	0026	6592	3147	9693	6228	2753	9267	5772	2874	2634	2393	2152	1910	1668	1426	1183	0940	0697	0453	0209	9964	9719	9474	2
59	3886	0525	7152	3770	0377	6974	3560	0136	6701	3257	9802	6337	2861	9376	5880	2870	2630	2389	2148	1906	1664	1422	1179	0936	0693	0449	0205	9960	9715	9470	1
60	3997	0635	7263	3880	0487	7083	3669	0245	6811	3366	9911	6445	2970	9484	5988	2866	2626	2385	2144	1902	1660	1418	1175	0932	0689	0445	0201	9956	9711	9466	0
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

10 Deg. Tangent

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	9. 278	9. 279	9. 279	9. 280	9. 281	9. 281	9. 282	9. 283	9. 283	9. 284	9. 285	9. 285	9. 286	9. 287	9. 287
0	4242	1131	8009	4878	1736	8585	5423	2251	9070	5878	2677	9466	6245	3014	9773
1	4357	1245	8124	4992	1850	8699	5537	2365	9183	5992	2790	9579	6358	3126	9886
2	4472	1360	8238	5107	1965	8813	5651	2479	9297	6105	2903	9692	6470	3239	9998
3	4586	1475	8353	5221	2079	8927	5765	2593	9410	6219	3017	9805	6583	3352	0111
4	4701	1589	8467	5335	2193	9041	5879	2706	9524	6332	3130	9918	6696	3465	0223
5	4816	1704	8582	5450	2307	9155	5992	2820	9638	6445	3243	0031	6809	3577	0336
6	4931	1819	8697	5564	2421	9269	6106	2934	9751	6559	3356	0144	6922	3690	0448
7	5046	1934	8811	5678	2536	9383	6220	3047	9865	6672	3469	0257	7035	3803	0561
8	5161	2048	8926	5793	2650	9497	6334	3161	9978	6785	3583	0370	7148	3916	0674
9	5276	2163	9040	5907	2764	9611	6448	3275	0092	6899	3696	0483	7261	4028	0786
10	5391	2278	9155	6022	2878	9725	6562	3388	0205	7012	3809	0596	7373	4141	0899
11	5505	2392	9269	6136	2992	9839	6676	3502	0319	7126	3922	0709	7486	4254	1011
12	5620	2507	9384	6250	3107	9953	6789	3616	0432	7239	4036	0822	7599	4366	1124
13	5735	2622	9498	6365	3221	0067	6903	3730	0546	7352	4149	0935	7712	4479	1236
14	5850	2736	9613	6479	3335	0181	7017	3843	0659	7466	4262	1048	7825	4592	1349
15	5965	2851	9727	6593	3449	0295	7131	3957	0773	7579	4375	1161	7938	4704	1461
16	6080	2966	9842	6708	3563	0409	7245	4071	0886	7692	4488	1274	8051	4817	1574
17	6195	3081	9956	6822	3678	0523	7359	4184	1000	7806	4601	1387	8164	4930	1686
18	6309	3195	0071	6936	3792	0637	7473	4298	1113	7919	4715	1500	8276	5043	1799
19	6424	3310	0185	7051	3906	0751	7586	4412	1227	8032	4828	1613	8389	5155	1912
20	6539	3425	0300	7165	4020	0865	7700	4525	1340	8146	4941	1726	8502	5268	2024
21	6654	3539	0414	7279	4134	0979	7814	4639	1454	8259	5054	1839	8615	5381	2137
22	6769	3654	0529	7394	4248	1093	7928	4753	1567	8372	5167	1952	8728	5493	2249
23	6884	3769	0643	7508	4363	1207	8042	4866	1681	8486	5280	2065	8841	5606	2362
24	6998	3883	0758	7622	4477	1321	8156	4980	1794	8599	5394	2178	8953	5719	2474
25	7113	3998	0872	7737	4591	1435	8269	5094	1908	8712	5507	2291	9066	5831	2587
26	7228	4113	0987	7851	4705	1549	8383	5207	2021	8826	5620	2404	9179	5944	2699
27	7343	4227	1101	7965	4819	1663	8497	5321	2135	8939	5733	2517	9292	6057	2812
28	7458	4342	1216	8080	4933	1777	8611	5435	2248	9052	5846	2630	9405	6169	2924
29	7573	4456	1330	8194	5048	1891	8725	5548	2362	9166	5959	2743	9518	6282	3037
30	7687	4571	1445	8308	5162	2005	8838	5662	2475	9279	6073	2856	9630	6395	3149
31	7802	4686	1559	8423	5276	2119	8952	5776	2589	9392	6186	2969	9743	6507	3262
32	7917	4800	1674	8537	5390	2233	9066	5889	2702	9506	6299	3082	9856	6620	3374
33	8032	4915	1788	8651	5504	2347	9180	6003	2816	9619	6412	3195	9969	6733	3487
34	8147	5030	1903	8765	5618	2461	9294	6116	2929	9732	6525	3308	0082	6845	3599
35	8261	5144	2017	8880	5732	2575	9407	6230	3043	9845	6638	3421	0194	6958	3712
36	8376	5259	2132	8994	5846	2689	9521	6344	3156	9959	6751	3534	0307	7071	3824
37	8491	5374	2246	9108	5961	2803	9635	6457	3270	0072	6865	3647	0420	7183	3936
38	8606	5488	2360	9223	6075	2917	9749	6571	3383	0185	6978	3760	0533	7296	4049
39	8721	5603	2475	9337	6189	3031	9863	6685	3496	0299	7091	3873	0646	7408	4161
40	8835	5717	2589	9451	6303	3145	9976	6798	3610	0412	7204	3986	0758	7521	4274
41	8950	5832	2704	9565	6417	3259	0090	6912	3723	0525	7317	4099	0871	7634	4386
42	9065	5947	2818	9680	6531	3373	0204	7025	3837	0638	7430	4212	0984	7746	4499
43	9180	6061	2933	9794	6645	3486	0318	7139	3950	0752	7543	4325	1097	7859	4611
44	9295	6176	3047	9908	6759	3600	0431	7253	4064	0865	7656	4438	1210	7972	4724
45	9409	6290	3162	0023	6873	3714	0545	7366	4177	0978	7769	4551	1322	8084	4836
46	9524	6405	3276	0137	6988	3828	0659	7480	4291	1092	7883	4664	1435	8197	4949
47	9639	6520	3390	0251	7102	3942	0773	7593	4404	1205	7996	4777	1548	8309	5061
48	9754	6634	3505	0365	7216	4056	0887	7707	4517	1318	8109	4890	1661	8422	5174
49	9868	6749	3619	0480	7330	4170	1000	7821	4631	1431	8222	5003	1773	8535	5286
50	9983	6863	3734	0594	7444	4284	1114	7934	4744	1545	8335	5115	1886	8647	5398
51	0098	6978	3848	0708	7558	4398	1228	8048	4858	1658	8448	5228	1999	8760	5511
52	0213	7093	3963	0822	7672	4512	1342	8161	4971	1771	8561	5341	2112	8872	5623
53	0327	7207	4077	0937	7786	4626	1455	8275	5085	1884	8674	5454	2225	8985	5736
54	0442	7322	4191	1051	7900	4740	1569	8388	5198	1998	8787	5567	2337	9098	5848
55	0557	7436	4306	1165	8014	4854	1683	8502	5311	2111	8900	5680	2450	9210	5961
56	0672	7551	4420	1279	8128	4967	1796	8616	5425	2224	9013	5793	2563	9323	6073
57	0786	7666	4535	1394	8242	5081	1910	8729	5538	2337	9127	5906	2676	9435	6185
58	0901	7780	4649	1508	8356	5195	2024	8843	5652	2451	9240	6019	2788	9548	6298
59	1016	7895	4763	1622	8471	5309	2138	8956	5765	2564	9353	6132	2901	9661	6410
60	1131	8009	4878	1736	8585	5423	2251	9070	5878	2677	9466	6245	3014	9773	6523
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Tangent Deg. 79

10 Deg. Co-Tangent

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
	10. 721	10. 720	10. 720	10. 719	10. 718	10. 718	10. 717	10. 716	10. 716	10. 715	10. 714	10. 714	10. 713	10. 712	10. 712	″
	5758	8869	1991	5122	8264	1415	4577	7749	0930	4122	7323	0534	3755	6986	0227	60
	5643	8755	1876	5008	8150	1301	4463	7635	0817	4008	7210	0421	3642	6874	0114	59
	5528	8640	1762	4893	8035	1187	4349	7521	0703	3895	7097	0308	3530	6761	0002	58
	5414	8525	1647	4778	7921	1073	4235	7407	0590	3781	6983	0195	3417	6648	9889	57
	5299	8411	1533	4665	7807	0959	4121	7294	0476	3668	6870	0082	3304	6535	9777	56
	5184	8296	1418	4550	7693	0845	4008	7180	0362	3555	6757	9969	3191	6423	9664	55
	5069	8181	1303	4436	7579	0731	3894	7066	0249	3441	6644	9856	3078	6310	9552	54
	4954	8066	1189	4322	7464	0617	3780	6953	0135	3328	6531	9743	2965	6197	9439	53
	4839	7952	1074	4207	7350	0503	3666	6839	0022	3215	6417	9630	2852	6084	9326	52
	4724	7837	0960	4093	7236	0389	3552	6725	9908	3101	6304	9517	2739	5972	9214	51
	4609	7722	0845	3978	7122	0275	3438	6612	9795	2988	6191	9404	2627	5859	9101	50
	4495	7608	0731	3864	7008	0161	3324	6498	9681	2874	6078	9291	2514	5746	8989	49
	4380	7493	0616	3750	6893	0047	3211	6384	9568	2761	5964	9178	2401	5634	8876	48
	4265	7378	0502	3635	6779	9933	3097	6270	9454	2648	5851	9065	2288	5521	8764	47
	4150	7264	0387	3521	6665	9819	2983	6157	9341	2534	5738	8952	2175	5408	8651	46
	4035	7149	0273	3407	6551	9705	2869	6043	9227	2421	5625	8839	2062	5296	8539	45
	3920	7034	0158	3292	6437	9591	2755	5929	9114	2308	5512	8726	1949	5183	8426	44
	3805	6919	0044	3178	6322	9477	2641	5816	9000	2194	5399	8613	1836	5070	8314	43
	3691	6805	9929	3064	6208	9363	2527	5702	8887	2081	5285	8500	1724	4957	8201	42
	3576	6690	9815	2949	6094	9249	2414	5588	8773	1968	5172	8387	1611	4845	8088	41
	3461	6575	9700	2835	5980	9135	2300	5475	8660	1854	5059	8274	1498	4732	7976	40
	3346	6461	9586	2721	5866	9021	2186	5361	8546	1741	4946	8161	1385	4619	7863	39
	3231	6346	9471	2606	5752	8907	2072	5247	8433	1628	4833	8048	1272	4507	7751	38
	3116	6231	9357	2492	5637	8793	1958	5134	8319	1514	4720	7935	1159	4394	7638	37
	3002	6117	9242	2378	5523	8679	1844	5020	8206	1401	4606	7822	1047	4281	7526	36
	2887	6002	9128	2263	5409	8565	1731	4906	8092	1288	4493	7709	0934	4169	7413	35
	2772	5887	9013	2149	5295	8451	1617	4793	7979	1174	4380	7596	0821	4056	7301	34
	2657	5773	8899	2035	5181	8337	1503	4679	7865	1061	4267	7483	0708	3943	7188	33
	2542	5658	8784	1920	5067	8223	1389	4565	7752	0948	4154	7370	0595	3831	7076	32
	2427	5544	8670	1806	4952	8109	1275	4452	7638	0834	4041	7257	0482	3718	6963	31
	2313	5429	8555	1692	4838	7995	1162	4338	7525	0721	3927	7144	0370	3605	6851	30
	2198	5314	8441	1577	4724	7881	1048	4224	7411	0608	3814	7031	0257	3493	6738	29
	2083	5200	8326	1463	4610	7767	0934	4111	7298	0494	3701	6918	0144	3380	6626	28
	1968	5085	8212	1349	4496	7653	0820	3997	7184	0381	3588	6805	0031	3267	6513	27
	1853	4970	8097	1235	4382	7539	0706	3884	7071	0268	3475	6692	9918	3155	6401	26
	1739	4856	7983	1120	4268	7425	0593	3770	6957	0155	3362	6579	9806	3042	6288	25
	1624	4741	7868	1006	4154	7311	0479	3656	6844	0041	3249	6466	9693	2929	6176	24
	1509	4626	7754	0892	4039	7197	0365	3543	6730	9928	3135	6353	9580	2817	6064	23
	1394	4512	7640	0777	3925	7083	0251	3429	6617	9815	3022	6240	9467	2704	5951	22
	1279	4397	7525	0663	3811	6969	0137	3315	6504	9701	2909	6127	9354	2592	5839	21
	1165	4283	7411	0549	3697	6855	0024	3202	6390	9588	2796	6014	9242	2479	5726	20
	1050	4168	7296	0435	3583	6741	9910	3088	6277	9475	2683	5901	9129	2366	5614	19
	0935	4053	7182	0320	3469	6627	9796	2975	6163	9362	2570	5788	9016	2254	5501	18
	0820	3939	7067	0206	3355	6514	9682	2861	6050	9248	2457	5675	8903	2141	5389	17
	0705	3824	6953	0092	3241	6400	9569	2747	5936	9135	2344	5562	8790	2028	5276	16
	0591	3710	6838	9977	3127	6286	9455	2634	5823	9022	2231	5449	8678	1916	5164	15
	0476	3595	6724	9863	3012	6172	9341	2520	5709	8908	2117	5336	8565	1803	5051	14
	0361	3480	6610	9749	2898	6058	9227	2407	5596	8795	2004	5223	8452	1691	4939	13
	0246	3366	6495	9635	2784	5944	9113	2293	5483	8682	1891	5110	8339	1578	4826	12
	0132	3251	6381	9520	2670	5830	9000	2179	5369	8569	1778	4997	8227	1465	4714	11
	0017	3137	6266	9406	2556	5716	8886	2066	5256	8455	1665	4885	8114	1353	4602	10
	9902	3022	6152	9292	2442	5602	8772	1952	5142	8342	1552	4772	8001	1240	4489	9
	9787	2907	6037	9178	2328	5488	8658	1839	5029	8229	1439	4659	7888	1128	4377	8
	9673	2793	5923	9063	2214	5374	8545	1725	4915	8116	1326	4546	7775	1015	4264	7
	9558	2678	5809	8949	2100	5260	8431	1612	4802	8002	1213	4433	7663	0902	4152	6
	9443	2564	5694	8835	1986	5146	8317	1498	4689	7889	1100	4320	7550	0790	4039	5
	9328	2449	5580	8721	1872	5033	8204	1384	4575	7776	0987	4207	7437	0677	3927	4
	9214	2334	5465	8606	1758	4919	8090	1271	4462	7663	0873	4094	7324	0565	3815	3
	9099	2220	5351	8492	1644	4805	7976	1157	4348	7549	0760	3981	7212	0452	3702	2
	8984	2105	5237	8378	1529	4691	7862	1044	4235	7436	0647	3868	7099	0339	3590	1
	8869	1991	5122	8264	1415	4577	7749	0930	4122	7323	0534	3755	6986	0227	3477	0
	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Tangent Deg. 79

11 Deg. Sine

"	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
	9.280	9.281	9.281	9.282	9.283	9.283	9.284	9.285	9.285	9.286	9.287	9.287	9.288	9.288	9.289
0	5988	2483	8967	5441	1905	8359	4803	1237	7661	4076	0480	6875	3260	9636	6001
1	6097	2591	9075	5549	2012	8466	4910	1344	7768	4183	0587	6982	3367	9742	6107
2	6205	2699	9183	5656	2120	8574	5018	1451	7875	4290	0694	7088	3473	9848	6213
3	6313	2807	9291	5764	2228	8681	5125	1559	7982	4396	0800	7195	3579	9954	6319
4	6422	2915	9399	5872	2335	8789	5232	1666	8089	4503	0907	7301	3686	0060	6425
5	6530	3023	9507	5980	2443	8896	5339	1773	8196	4610	1014	7408	3792	0167	6531
6	6638	3131	9615	6088	2551	9004	5447	1880	8303	4717	1120	7514	3898	0273	6637
7	6747	3240	9722	6195	2658	9111	5554	1987	8410	4824	1227	7621	4005	0379	6743
8	6855	3348	9830	6303	2766	9219	5661	2094	8517	4930	1334	7727	4111	0485	6849
9	6963	3456	9938	6411	2873	9326	5769	2201	8624	5037	1440	7834	4217	0591	6955
10	7072	3564	0046	6519	2981	9433	5876	2308	8731	5144	1547	7940	4324	0697	7061
11	7180	3672	0154	6627	3089	9541	5983	2416	8838	5251	1654	8047	4430	0803	7167
12	7288	3780	0262	6734	3196	9648	6091	2523	8945	5358	1760	8153	4536	0910	7273
13	7396	3888	0370	6842	3304	9756	6198	2630	9052	5464	1867	8260	4643	1016	7379
14	7505	3996	0478	6950	3412	9863	6305	2737	9159	5571	1973	8366	4749	1122	7485
15	7613	4105	0586	7058	3519	9971	6412	2844	9266	5678	2080	8473	4855	1228	7591
16	7721	4213	0694	7165	3627	0078	6520	2951	9373	5785	2187	8579	4961	1334	7697
17	7829	4321	0802	7273	3734	0186	6627	3058	9480	5892	2293	8685	5068	1440	7803
18	7938	4429	0910	7381	3842	0293	6734	3165	9587	5998	2400	8792	5174	1546	7909
19	8046	4537	1018	7489	3950	0400	6841	3273	9694	6105	2507	8898	5280	1653	8015
20	8154	4645	1126	7596	4057	0508	6949	3380	9801	6212	2613	9005	5387	1759	8121
21	8263	4753	1234	7704	4165	0615	7056	3487	9908	6319	2720	9111	5493	1865	8227
22	8371	4861	1342	7812	4272	0723	7163	3594	0015	6425	2826	9218	5599	1971	8333
23	8479	4969	1450	7920	4380	0830	7271	3701	0121	6532	2933	9324	5705	2077	8439
24	8587	5077	1557	8027	4488	0938	7378	3808	0228	6639	3040	9431	5812	2183	8545
25	8696	5185	1665	8135	4595	1045	7485	3915	0335	6746	3146	9537	5918	2289	8651
26	8804	5294	1773	8243	4703	1152	7592	4022	0442	6852	3253	9643	6024	2395	8757
27	8912	5402	1881	8351	4810	1260	7700	4129	0549	6959	3359	9750	6130	2501	8863
28	9020	5510	1989	8458	4918	1367	7807	4236	0656	7066	3466	9856	6237	2608	8969
29	9129	5618	2097	8566	5025	1475	7914	4343	0763	7173	3573	9963	6343	2714	9075
30	9237	5726	2205	8674	5133	1582	8021	4450	0870	7279	3679	0069	6449	2820	9181
31	9345	5834	2313	8782	5241	1689	8128	4558	0977	7386	3786	0175	6556	2926	9286
32	9453	5942	2421	8889	5348	1797	8236	4665	1084	7493	3892	0282	6662	3032	9392
33	9561	6050	2529	8997	5456	1904	8343	4772	1191	7600	3999	0388	6768	3138	9498
34	9670	6158	2637	9105	5563	2012	8450	4879	1297	7706	4105	0495	6874	3244	9604
35	9778	6266	2744	9213	5671	2119	8557	4986	1404	7813	4212	0601	6981	3350	9710
36	9886	6374	2852	9320	5778	2226	8665	5093	1511	7920	4319	0708	7087	3456	9816
37	9994	6482	2960	9428	5886	2334	8772	5200	1618	8027	4425	0814	7193	3562	9922
38	0103	6590	3068	9536	5993	2441	8879	5307	1725	8133	4532	0920	7299	3668	0028
39	0211	6698	3176	9643	6101	2549	8986	5414	1832	8240	4638	1027	7405	3774	0134
40	0319	6806	3284	9751	6209	2656	9093	5521	1939	8347	4745	1133	7512	3881	0240
41	0427	6914	3392	9859	6316	2763	9201	5628	2046	8453	4851	1240	7618	3987	0346
42	0535	7022	3500	9967	6424	2871	9308	5735	2153	8560	4958	1346	7724	4093	0451
43	0644	7131	3607	0074	6531	2978	9415	5842	2259	8667	5064	1452	7830	4199	0557
44	0752	7239	3715	0182	6639	3085	9522	5949	2366	8774	5171	1559	7937	4305	0663
45	0860	7347	3823	0290	6746	3193	9629	6056	2473	8880	5278	1665	8043	4411	0769
46	0968	7455	3931	0397	6854	3300	9737	6163	2580	8987	5384	1771	8149	4517	0875
47	1076	7563	4039	0505	6961	3408	9844	6270	2687	9094	5491	1878	8255	4623	0981
48	1185	7671	4147	0613	7069	3515	9951	6377	2794	9200	5597	1984	8361	4729	1087
49	1293	7779	4255	0720	7176	3622	0058	6484	2901	9307	5704	2091	8468	4835	1193
50	1401	7887	4362	0828	7284	3730	0165	6591	3007	9414	5810	2197	8574	4941	1299
51	1509	7995	4470	0936	7391	3837	0273	6698	3114	9520	5917	2303	8680	5047	1404
52	1617	8103	4578	1043	7499	3944	0380	6805	3221	9627	6023	2410	8786	5153	1510
53	1725	8211	4686	1151	7606	4052	0487	6912	3328	9734	6130	2516	8892	5259	1616
54	1834	8319	4794	1259	7714	4159	0594	7019	3435	9840	6236	2622	8999	5365	1722
55	1942	8427	4902	1366	7821	4266	0701	7126	3542	9947	6343	2729	9105	5471	1828
56	2050	8535	5009	1474	7929	4374	0808	7233	3649	0054	6449	2835	9211	5577	1934
57	2158	8643	5117	1582	8036	4481	0916	7340	3755	0160	6556	2941	9317	5683	2040
58	2266	8751	5225	1689	8144	4588	1023	7447	3862	0267	6662	3048	9423	5789	2146
59	2374	8859	5333	1797	8251	4696	1130	7554	3969	0374	6769	3154	9530	5895	2251
60	2483	8967	5441	1905	8359	4803	1237	7661	4076	0480	6875	3260	9636	6001	2357
"	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Sine Deg. 78

11 Deg. Co-Sine

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	"
9.991	9.991	9.991	9.991	9.991	9.991	9.991	9.991	9.991	9.991	9.991	9.991	9.991	9.991	9.991	
9466	9220	8974	8727	8480	8233	7986	7737	7489	7240	6991	6741	6492	6241	5990	60
9462	9216	8970	8723	8476	8229	7981	7733	7485	7236	6987	6737	6487	6237	5986	59
9458	9212	8966	8719	8472	8225	7977	7729	7481	7232	6983	6733	6483	6233	5982	58
9453	9208	8962	8715	8468	8221	7973	7725	7477	7228	6979	6729	6479	6229	5978	57
9449	9204	8957	8711	8464	8217	7969	7721	7472	7224	6974	6725	6475	6225	5974	56
9445	9200	8953	8707	8460	8213	7965	7717	7468	7219	6970	6721	6471	6220	5970	55
9441	9195	8949	8703	8456	8208	7961	7713	7464	7215	6966	6717	6467	6216	5965	54
9437	9191	8945	8699	8452	8204	7957	7709	7460	7211	6962	6712	6462	6212	5961	53
9433	9187	8941	8694	8448	8200	7952	7704	7456	7207	6958	6708	6458	6208	5957	52
9429	9183	8937	8690	8443	8196	7948	7700	7452	7203	6954	6704	6454	6204	5953	51
9425	9179	8933	8686	8439	8192	7944	7696	7448	7199	6949	6700	6450	6199	5949	50
9421	9175	8929	8682	8435	8188	7940	7692	7443	7195	6945	6696	6446	6195	5944	49
9417	9171	8925	8678	8431	8184	7936	7688	7439	7190	6941	6692	6442	6191	5940	48
9413	9167	8920	8674	8427	8180	7932	7684	7435	7186	6937	6687	6437	6187	5936	47
9408	9163	8916	8670	8423	8175	7928	7680	7431	7182	6933	6683	6433	6183	5932	46
9404	9159	8912	8666	8419	8171	7924	7675	7427	7178	6929	6679	6429	6179	5928	45
9400	9154	8908	8662	8415	8167	7919	7671	7423	7174	6925	6675	6425	6174	5924	44
9396	9150	8904	8657	8410	8163	7915	7667	7419	7170	6920	6671	6421	6170	5919	43
9392	9146	8900	8653	8406	8159	7911	7663	7414	7166	6916	6667	6416	6166	5915	42
9388	9142	8896	8649	8402	8155	7907	7659	7410	7161	6912	6662	6412	6162	5911	41
9384	9138	8892	8645	8398	8151	7903	7655	7406	7157	6908	6658	6408	6158	5907	40
9380	9134	8888	8641	8394	8147	7899	7651	7402	7153	6904	6654	6404	6153	5903	39
9376	9130	8884	8637	8390	8142	7895	7646	7398	7149	6900	6650	6400	6149	5898	38
9372	9126	8879	8633	8386	8138	7890	7642	7394	7145	6895	6646	6396	6145	5894	37
9368	9122	8875	8629	8382	8134	7886	7638	7390	7141	6891	6642	6391	6141	5890	36
9363	9118	8871	8625	8377	8130	7882	7634	7385	7136	6887	6637	6387	6137	5886	35
9359	9113	8867	8620	8373	8126	7878	7630	7381	7132	6883	6633	6383	6133	5882	34
9355	9109	8863	8616	8369	8122	7874	7626	7377	7128	6879	6629	6379	6128	5878	33
9351	9105	8859	8612	8365	8118	7870	7622	7373	7124	6875	6625	6375	6124	5873	32
9347	9101	8855	8608	8361	8114	7866	7617	7369	7120	6870	6621	6371	6120	5869	31
9343	9097	8851	8604	8357	8109	7862	7613	7365	7116	6866	6617	6366	6116	5865	30
9339	9093	8847	8600	8353	8105	7857	7609	7361	7112	6862	6612	6362	6112	5861	29
9335	9089	8842	8596	8349	8101	7853	7605	7356	7107	6858	6608	6358	6108	5857	28
9331	9085	8838	8592	8345	8097	7849	7601	7352	7103	6854	6604	6354	6103	5852	27
9327	9081	8834	8587	8340	8093	7845	7697	7348	7099	6850	6600	6350	6099	5848	26
9322	9076	8830	8583	8336	8089	7841	7593	7344	7095	6846	6596	6346	6095	5844	25
9318	9072	8826	8579	8332	8085	7837	7588	7340	7091	6841	6592	6341	6091	5840	24
9314	9068	8822	8575	8328	8081	7833	7584	7336	7087	6837	6587	6337	6087	5836	23
9310	9064	8818	8571	8324	8076	7828	7580	7332	7082	6833	6583	6333	6082	5832	22
9306	9060	8814	8567	8320	8072	7824	7576	7327	7078	6829	6579	6329	6078	5827	21
9302	9056	8810	8563	8316	8068	7820	7572	7323	7074	6825	6575	6325	6074	5823	20
9298	9052	8805	8559	8312	8064	7816	7568	7319	7070	6821	6571	6321	6070	5819	19
9294	9048	8801	8555	8307	8060	7812	7564	7315	7066	6816	6567	6316	6066	5815	18
9290	9044	8797	8550	8303	8056	7808	7559	7311	7062	6812	6562	6312	6062	5811	17
9286	9040	8793	8546	8299	8052	7804	7555	7307	7058	6808	6558	6308	6057	5806	16
9281	9035	8789	8542	8295	8047	7800	7551	7302	7053	6804	6554	6304	6053	5802	15
9277	9031	8785	8538	8291	8043	7795	7547	7298	7049	6800	6550	6300	6049	5798	14
9273	9027	8781	8534	8287	8039	7791	7543	7294	7045	6796	6546	6295	6045	5794	13
9269	9023	8777	8530	8283	8035	7787	7539	7290	7041	6791	6542	6291	6041	5790	12
9265	9019	8773	8526	8279	8031	7783	7535	7286	7037	6787	6537	6287	6036	5785	11
9261	9015	8768	8522	8274	8027	7779	7530	7282	7033	6783	6533	6283	6032	5781	10
9257	9011	8764	8518	8270	8023	7775	7526	7278	7028	6779	6529	6279	6028	5777	9
9253	9007	8760	8513	8266	8019	7771	7522	7273	7024	6775	6525	6275	6024	5773	8
9249	9003	8756	8509	8262	8014	7766	7518	7269	7020	6771	6521	6270	6020	5769	7
9245	8999	8752	8505	8258	8010	7762	7514	7265	7016	6766	6517	6266	6016	5765	6
9241	8994	8748	8501	8254	8006	7758	7510	7261	7012	6762	6512	6262	6011	5760	5
9236	8990	8744	8497	8250	8002	7754	7506	7257	7008	6758	6508	6258	6007	5756	4
9232	8986	8740	8493	8246	7998	7750	7501	7253	7004	6754	6504	6254	6003	5752	3
9228	8982	8736	8489	8241	7994	7746	7497	7249	6999	6750	6500	6250	5999	5748	2
9224	8978	8731	8485	8237	7990	7742	7493	7244	6995	6746	6496	6245	5995	5744	1
9220	8974	8727	8480	8233	7986	7737	7489	7240	6991	6741	6492	6241	5990	5739	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	"

Sine Deg. 78

11 Deg. Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9. 288	9. 289	9. 289	9. 290	9. 291	9. 292	9. 292	9. 293	9. 294	9. 294	9. 295	9. 296	9. 296	9. 297	9. 298
0	6523	3263	9993	6713	3424	0126	6817	3500	0172	6836	3489	0134	6769	3395	0011
1	6635	3375	0105	6825	3536	0237	6929	3611	0283	6947	3600	0244	6879	3505	0121
2	6748	3487	0217	6937	3648	0349	7040	3722	0395	7058	3711	0355	6990	3615	0231
3	6860	3599	0329	7049	3760	0460	7152	3833	0506	7169	3822	0466	7100	3726	0341
4	6972	3712	0441	7161	3871	0572	7263	3945	0617	7279	3933	0576	7211	3836	0452
5	7085	3824	0553	7273	3983	0684	7375	4056	0728	7390	4043	0687	7321	3946	0562
6	7197	3936	0665	7385	4095	0795	7486	4167	0839	7501	4154	0798	7432	4057	0672
7	7310	4048	0777	7497	4207	0907	7597	4279	0950	7612	4265	0908	7542	4167	0782
8	7422	4160	0889	7609	4318	1018	7709	4390	1061	7723	4376	1019	7653	4277	0892
9	7534	4273	1001	7721	4430	1130	7820	4501	1172	7834	4487	1130	7763	4388	1002
10	7647	4385	1114	7832	4542	1242	7932	4612	1284	7945	4597	1240	7874	4498	1113
11	7759	4497	1226	7944	4654	1353	8043	4724	1395	8056	4708	1351	7984	4608	1223
12	7871	4609	1338	8056	4765	1465	8155	4835	1506	8167	4819	1462	8095	4719	1333
13	7984	4722	1450	8168	4877	1576	8266	4946	1617	8278	4930	1572	8205	4829	1443
14	8096	4834	1562	8280	4989	1688	8377	5057	1728	8389	5041	1683	8316	4939	1553
15	8209	4946	1674	8392	5100	1799	8489	5169	1839	8500	5151	1793	8426	5049	1663
16	8321	5058	1786	8504	5212	1911	8600	5280	1950	8611	5262	1904	8537	5160	1774
17	8433	5170	1898	8616	5324	2023	8712	5391	2061	8722	5373	2015	8647	5270	1884
18	8546	5283	2010	8728	5436	2134	8823	5502	2172	8833	5484	2125	8758	5380	1994
19	8658	5395	2122	8839	5547	2246	8934	5614	2283	8944	5595	2236	8868	5491	2104
20	8770	5507	2234	8951	5659	2357	9046	5725	2394	9055	5705	2347	8978	5601	2214
21	8883	5619	2346	9063	5771	2469	9157	5836	2506	9166	5816	2457	9089	5711	2324
22	8995	5731	2458	9175	5883	2580	9269	5947	2617	9276	5927	2568	9199	5822	2434
23	9107	5844	2570	9287	5994	2692	9380	6059	2728	9387	6038	2678	9310	5932	2545
24	9220	5956	2682	9399	6106	2803	9491	6170	2839	9498	6148	2789	9420	6042	2655
25	9332	6068	2794	9511	6218	2915	9603	6281	2950	9609	6259	2900	9531	6152	2765
26	9444	6180	2906	9623	6329	3027	9714	6392	3061	9720	6370	3010	9641	6263	2875
27	9557	6292	3018	9734	6441	3138	9826	6504	3172	9831	6481	3121	9752	6373	2985
28	9669	6405	3130	9846	6553	3250	9937	6615	3283	9942	6591	3231	9862	6483	3095
29	9782	6517	3242	9958	6664	3361	0048	6726	3394	0053	6702	3342	9972	6594	3205
30	9894	6629	3354	0070	6776	3473	0160	6837	3505	0164	6813	3453	0083	6704	3316
31	0006	6741	3466	0182	6888	3584	0271	6948	3616	0275	6924	3563	0193	6814	3426
32	0118	6853	3578	0294	6999	3696	0382	7060	3727	0385	7034	3674	0304	6924	3536
33	0231	6965	3690	0406	7111	3807	0494	7171	3838	0496	7145	3784	0414	7035	3646
34	0343	7078	3802	0517	7223	3919	0605	7282	3949	0607	7256	3895	0525	7145	3756
35	0455	7190	3914	0629	7335	4030	0717	7393	4060	0718	7366	4005	0635	7255	3866
36	0568	7302	4026	0741	7446	4142	0828	7504	4171	0829	7477	4116	0745	7365	3976
37	0680	7414	4138	0853	7558	4253	0939	7616	4282	0940	7588	4227	0856	7476	4086
38	0792	7526	4250	0965	7670	4365	1051	7727	4394	1051	7699	4337	0966	7586	4196
39	0905	7638	4362	1077	7781	4476	1162	7838	4505	1162	7809	4448	1077	7696	4306
40	1017	7750	4474	1188	7893	4588	1273	7949	4616	1273	7920	4558	1187	7806	4417
41	1129	7863	4586	1300	8005	4699	1385	8060	4727	1383	8031	4669	1297	7917	4527
42	1242	7975	4698	1412	8116	4811	1496	8172	4838	1494	8142	4779	1408	8027	4637
43	1354	8087	4810	1524	8228	4922	1607	8283	4949	1605	8252	4890	1518	8137	4747
44	1466	8199	4922	1636	8340	5034	1719	8394	5060	1716	8363	5000	1629	8247	4857
45	1579	8311	5034	1747	8451	5145	1830	8505	5171	1827	8474	5111	1739	8358	4967
46	1691	8423	5146	1859	8563	5257	1941	8616	5282	1938	8584	5222	1849	8468	5077
47	1803	8535	5258	1971	8674	5368	2053	8727	5393	2049	8695	5332	1960	8578	5187
48	1915	8648	5370	2083	8786	5480	2164	8839	5504	2159	8806	5443	2070	8688	5297
49	2028	8760	5482	2195	8898	5591	2275	8950	5615	2270	8916	5553	2181	8799	5407
50	2140	8872	5594	2306	9009	5703	2387	9061	5726	2381	9027	5664	2291	8909	5517
51	2252	8984	5706	2418	9121	5814	2498	9172	5837	2492	9138	5774	2401	9019	5627
52	2364	9096	5818	2530	9233	5926	2609	9283	5948	2603	9248	5885	2512	9129	5737
53	2477	9208	5930	2642	9344	6037	2721	9394	6059	2714	9359	5995	2622	9239	5848
54	2589	9320	6042	2754	9456	6149	2832	9506	6170	2824	9470	6106	2732	9350	5958
55	2701	9432	6154	2865	9568	6260	2943	9617	6281	2935	9580	6216	2843	9460	6068
56	2814	9544	6266	2977	9679	6372	3054	9728	6392	3046	9691	6327	2953	9570	6178
57	2926	9656	6378	3089	9791	6483	3166	9839	6503	3157	9802	6437	3063	9680	6288
58	3038	9769	6489	3201	9902	6594	3277	9950	6614	3268	9913	6548	3174	9790	6398
59	3150	9881	6601	3312	0014	6706	3388	0061	6725	3379	0023	6658	3284	9901	6508
60	3263	9993	6713	3424	0126	6817	3500	0172	6836	3489	0134	6769	3395	0011	6618
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Tangent Deg. 78

11 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
10. 711	10. 710	10. 710	10. 709	10. 708	10. 707	10. 707	10. 706	10 705	10. 705	10. 704	10. 703	10. 703	10. 702	10. 701	″
3477	6737	0007	3287	6576	9874	3183	6500	9828	3164	6511	9866	3231	6605	9989	60
3365	6625	9895	3175	6464	9763	3071	6389	9717	3053	6400	9756	3121	6495	9879	59
3252	6513	9783	3063	6352	9651	2960	6278	9605	2942	6289	9645	3010	6385	9769	58
3140	6401	9671	2951	6240	9540	2848	6167	9494	2831	6178	9534	2900	6274	9659	57
3028	6288	9559	2839	6129	9428	2737	6055	9383	2721	6067	9424	2789	6164	9548	56
2915	6176	9447	2727	6017	9316	2625	5944	9272	2610	5957	9313	2679	6054	9438	55
2803	6064	9335	2615	5905	9205	2514	5833	9161	2499	5846	9202	2568	5943	9328	54
2690	5952	9223	2503	5793	9093	2403	5721	9050	2388	5735	9092	2458	5833	9218	53
2578	5840	9111	2391	5682	8982	2291	5610	8939	2277	5624	8981	2347	5723	9108	52
2466	5727	8999	2279	5570	8870	2180	5499	8828	2166	5513	8870	2237	5612	8998	51
2353	5615	8886	2168	5458	8758	2068	5388	8716	2055	5403	8760	2126	5502	8887	50
2241	5503	8774	2056	5346	8647	1957	5276	8605	1944	5292	8649	2016	5392	8777	49
2129	5391	8662	1944	5235	8535	1845	5165	8494	1833	5181	8538	1905	5281	8667	48
2016	5278	8550	1832	5123	8424	1734	5054	8383	1722	5070	8428	1795	5171	8557	47
1904	5166	8438	1720	5011	8312	1623	4943	8272	1611	4959	8317	1684	5061	8447	46
1791	5054	8326	1608	4900	8201	1511	4831	8161	1500	4849	8207	1574	4951	8337	45
1679	4942	8214	1496	4788	8089	1400	4720	8050	1389	4738	8096	1463	4840	8226	44
1567	4830	8102	1384	4676	7977	1288	4609	7939	1278	4627	7985	1353	4730	8116	43
1454	4717	7990	1272	4564	7866	1177	4498	7828	1167	4516	7875	1242	4620	8006	42
1342	4605	7878	1161	4453	7754	1066	4386	7717	1056	4405	7764	1132	4509	7896	41
1230	4493	7766	1049	4341	7643	0954	4275	7606	0945	4295	7653	1022	4399	7786	40
1117	4381	7654	0937	4229	7531	0843	4164	7494	0834	4184	7543	0911	4289	7676	39
1005	4269	7542	0825	4117	7420	0731	4053	7383	0724	4073	7432	0801	4178	7566	38
0893	4156	7430	0713	4006	7308	0620	3941	7272	0613	3962	7322	0690	4068	7455	37
0780	4044	7318	0601	3894	7197	0509	3830	7161	0502	3852	7211	0580	3958	7345	36
0668	3932	7206	0489	3782	7085	0397	3719	7050	0391	3741	7100	0469	3848	7235	35
0556	3820	7094	0377	3671	6973	0286	3608	6939	0280	3630	6990	0359	3737	7125	34
0443	3708	6982	0266	3559	6862	0174	3496	6828	0169	3519	6879	0248	3627	7015	33
0331	3595	6870	0154	3447	6750	0063	3385	6717	0058	3409	6769	0138	3517	6905	32
0218	3483	6758	0042	3336	6639	9952	3274	6606	9947	3298	6658	0028	3406	6795	31
0106	3371	6646	9930	3224	6527	9840	3163	6495	9836	3187	6547	9917	3296	6684	30
9994	3259	6534	9818	3112	6416	9729	3052	6384	9725	3076	6437	9807	3186	6574	29
9882	3147	6422	9706	3001	6304	9618	2940	6273	9615	2966	6326	9696	3076	6464	28
9769	3035	6310	9594	2889	6193	9506	2829	6162	9504	2855	6216	9586	2965	6354	27
9657	2922	6198	9483	2777	6081	9395	2718	6051	9393	2744	6105	9475	2855	6244	26
9545	2810	6086	9371	2665	5970	9283	2607	5940	9282	2634	5995	9365	2745	6134	25
9432	2698	5974	9259	2554	5858	9172	2496	5829	9171	2523	5884	9255	2635	6024	24
9320	2586	5862	9147	2442	5747	9061	2384	5718	9060	2412	5773	9144	2524	5914	23
9208	2474	5750	9035	2330	5635	8949	2273	5606	8949	2301	5663	9034	2414	5804	22
9095	2362	5638	8923	2219	5524	8838	2162	5495	8838	2191	5552	8923	2304	5694	21
8983	2250	5526	8812	2107	5412	8727	2051	5384	8727	2080	5442	8813	2194	5583	20
8871	2137	5414	8700	1995	5301	8615	1940	5273	8617	1969	5331	8703	2083	5473	19
8758	2025	5302	8588	1884	5189	8504	1828	5162	8506	1858	5221	8592	1973	5363	18
8646	1913	5190	8476	1772	5078	8393	1717	5051	8395	1748	5110	8482	1863	5253	17
8534	1801	5078	8364	1660	4966	8281	1606	4940	8284	1637	5000	8371	1753	5143	16
8421	1689	4966	8253	1549	4855	8170	1495	4829	8173	1526	4889	8261	1642	5033	15
8309	1577	4854	8141	1437	4743	8059	1384	4718	8062	1416	4778	8151	1532	4923	14
8197	1465	4742	8029	1326	4632	7947	1273	4607	7951	1305	4668	8040	1422	4813	13
8085	1352	4630	7917	1214	4520	7836	1161	4496	7841	1194	4557	7930	1312	4703	12
7972	1240	4518	7805	1102	4409	7725	1050	4385	7730	1084	4447	7819	1201	4593	11
7860	1128	4406	7694	0991	4297	7613	0939	4274	7619	0973	4336	7709	1091	4483	10
7748	1016	4294	7582	0879	4186	7502	0828	4163	7508	0862	4226	7599	0981	4373	9
7636	0904	4182	7470	0767	4074	7391	0717	4052	7397	0752	4115	7488	0871	4263	8
7523	0792	4070	7358	0656	3963	7279	0606	3941	7286	0641	4005	7378	0761	4152	7
7411	0680	3958	7246	0544	3851	7168	0494	3830	7176	0530	3894	7268	0650	4042	6
7299	0568	3846	7135	0432	3740	7057	0383	3719	7065	0420	3784	7157	0540	3932	5
7186	0456	3734	7023	0321	3628	6946	0272	3608	6954	0309	3673	7047	0430	3822	4
7074	0344	3622	6911	0209	3517	6834	0161	3497	6843	0198	3563	6937	0320	3712	3
6962	0231	3511	6799	0098	3406	6723	0050	3386	6732	0087	3452	6826	0210	3602	2
6850	0119	3399	6688	9986	3294	6612	9939	3275	6621	9977	3342	6716	0099	3492	1
6737	0007	3287	6576	9874	3183	6500	9828	3164	6511	9866	3231	6605	9989	3382	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Tangent Deg. 78

11 Deg. Sine

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 290	9. 290	9. 291	9. 292	9. 292	9. 293	9. 294	9. 294	9. 295	9. 295	9. 296	9. 297	9. 297	9. 298	9. 299
0	2357	8704	5040	1367	7685	3993	0291	6580	2859	9129	5390	1641	7883	4116	0339
1	2463	8809	5146	1473	7790	4098	0396	6685	2964	9234	5494	1745	7987	4220	0443
2	2569	8915	5251	1578	7895	4203	0501	6789	3069	9338	5599	1850	8091	4323	0546
3	2675	9021	5357	1683	8000	4308	0606	6894	3173	9443	5703	1954	8195	4427	0650
4	2781	9126	5462	1789	8106	4413	0711	6999	3278	9547	5807	2058	8299	4531	0754
5	2886	9232	5568	1894	8211	4518	0815	7104	3382	9652	5911	2162	8403	4635	0857
6	2992	9338	5673	1999	8316	4623	0920	7208	3487	9756	6016	2266	8507	4739	0961
7	3098	9443	5779	2105	8421	4728	1025	7313	3591	9860	6120	2370	8611	4842	1065
8	3204	9549	5884	2210	8526	4833	1130	7418	3696	9965	6224	2474	8715	4946	1168
9	3310	9655	5990	2315	8631	4938	1235	7522	3801	0069	6328	2578	8819	5050	1272
10	3416	9760	6095	2421	8737	5043	1340	7627	3905	0174	6433	2682	8923	5154	1375
11	3521	9866	6201	2526	8842	5148	1445	7732	4010	0278	6537	2786	9027	5257	1479
12	3627	9972	6306	2631	8947	5253	1550	7837	4114	0382	6641	2890	9131	5361	1583
13	3733	0077	6412	2737	9052	5358	1654	7941	4219	0487	6745	2995	9234	5465	1686
14	3839	0183	6517	2842	9157	5463	1759	8046	4323	0591	6850	3099	9338	5569	1790
15	3945	0289	6623	2947	9263	5568	1864	8151	4428	0696	6954	3203	9442	5673	1893
16	4051	0394	6728	3053	9368	5673	1969	8255	4532	0800	7058	3307	9546	5776	1997
17	4156	0500	6834	3158	9473	5778	2074	8360	4637	0904	7162	3411	9650	5880	2101
18	4262	0606	6939	3263	9578	5883	2179	8465	4741	1009	7266	3515	9754	5984	2204
19	4368	0711	7045	3369	9683	5988	2284	8569	4846	1113	7371	3619	9858	6088	2308
20	4474	0817	7150	3474	9788	6093	2388	8674	4950	1217	7475	3723	9962	6191	2411
21	4580	0922	7256	3579	9894	6198	2493	8779	5055	1322	7579	3827	0066	6295	2515
22	4685	1028	7361	3685	9999	6303	2598	8884	5160	1426	7683	3931	0170	6399	2619
23	4791	1134	7467	3790	0104	6408	2703	8988	5264	1530	7788	4035	0274	6503	2722
24	4897	1239	7572	3895	0209	6513	2808	9093	5369	1635	7892	4139	0377	6606	2826
25	5003	1345	7678	4001	0314	6618	2913	9198	5473	1739	7996	4243	0481	6710	2929
26	5108	1451	7783	4106	0419	6723	3017	9302	5578	1844	8100	4347	0585	6814	3033
27	5214	1556	7889	4211	0524	6828	3122	9407	5682	1948	8204	4451	0689	6917	3137
28	5320	1662	7994	4317	0630	6933	3227	9512	5787	2052	8309	4555	0793	7021	3240
29	5426	1767	8099	4422	0735	7038	3332	9616	5891	2157	8413	4659	0897	7125	3344
30	5532	1873	8205	4527	0840	7143	3437	9721	5996	2261	8517	4763	1001	7229	3447
31	5637	1979	8310	4632	0945	7248	3542	9826	6100	2365	8621	4867	1105	7332	3551
32	5743	2084	8416	4738	1050	7353	3646	9930	6205	2470	8725	4972	1208	7436	3654
33	5849	2190	8521	4843	1155	7458	3751	0035	6309	2574	8829	5076	1312	7540	3758
34	5955	2295	8627	4948	1260	7563	3856	0139	6414	2678	8934	5180	1416	7643	3861
35	6060	2401	8732	5054	1365	7668	3961	0244	6518	2783	9038	5284	1520	7747	3965
36	6166	2507	8838	5159	1471	7773	4066	0349	6623	2887	9142	5388	1624	7851	4069
37	6272	2612	8943	5264	1576	7878	4170	0453	6727	2991	9246	5492	1728	7955	4172
38	6378	2718	9048	5369	1681	7983	4275	0558	6832	3096	9350	5596	1832	8058	4276
39	6483	2823	9154	5475	1786	8088	4380	0663	6936	3200	9454	5700	1935	8162	4379
40	6589	2929	9259	5580	1891	8193	4485	0767	7041	3304	9559	5804	2039	8266	4483
41	6695	3035	9365	5685	1996	8298	4590	0872	7145	3409	9663	5908	2143	8369	4586
42	6801	3140	9470	5790	2101	8403	4694	0977	7249	3513	9767	6012	2247	8473	4690
43	6906	3246	9576	5896	2206	8507	4799	1081	7354	3617	9871	6116	2351	8577	4793
44	7012	3351	9681	6001	2311	8612	4904	1186	7458	3722	9975	6220	2455	8680	4897
45	7118	3457	9786	6106	2417	8717	5009	1290	7563	3826	0079	6324	2559	8784	5000
46	7224	3562	9892	6211	2522	8822	5113	1395	7667	3930	0184	6428	2662	8888	5104
47	7329	3668	9997	6317	2627	8927	5218	1500	7772	4034	0288	6532	2766	8992	5208
48	7435	3774	0103	6422	2732	9032	5323	1604	7876	4139	0392	6636	2870	9095	5311
49	7541	3879	0208	6527	2837	9137	5428	1709	7981	4243	0496	6740	2974	9199	5415
50	7646	3985	0313	6632	2942	9242	5532	1814	8085	4347	0600	6844	3078	9303	5518
51	7752	4090	0419	6738	3047	9347	5637	1918	8190	4452	0704	6948	3182	9406	5622
52	7858	4196	0524	6843	3152	9452	5742	2023	8294	4556	0808	7052	3285	9510	5725
53	7964	4301	0630	6948	3257	9557	5847	2127	8398	4660	0913	7156	3389	9614	5829
54	8069	4407	0735	7053	3362	9662	5952	2232	8503	4764	1017	7259	3493	9717	5932
55	8175	4512	0840	7159	3467	9767	6056	2337	8607	4869	1121	7363	3597	9821	6036
56	8281	4618	0946	7264	3572	9871	6161	2441	8712	4973	1225	7467	3701	9924	6139
57	8386	4724	1051	7369	3677	9976	6266	2546	8816	5077	1329	7571	3804	0028	6243
58	8492	4829	1156	7474	3783	0081	6370	2650	8921	5182	1433	7675	3908	0132	6346
59	8598	4935	1262	7579	3888	0186	6475	2755	9025	5286	1537	7779	4012	0235	6450
60	8704	5040	1367	7685	3993	0291	6580	2859	9129	5390	1641	7883	4116	0339	6553
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Sine Deg. 78

11 Deg. Co-Sine

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
9. 991	9. 991	9. 991	9. 991	9. 991	9. 991	9. 991	9. 991	9. 991	9. 991	9. 991	9. 991	9. 991	9. 991	9. 991	″
5739	5488	5236	4984	4731	4478	4225	3971	3717	3462	3207	2952	2696	2440	2184	60
5735	5484	5232	4980	4727	4474	4221	3967	3713	3458	3203	2948	2692	2436	2180	59
5731	5480	5228	4975	4723	4470	4216	3963	3708	3454	3199	2944	2688	2432	2175	58
5727	5475	5223	4971	4719	4466	4212	3958	3704	3450	3195	2939	2684	2428	2171	57
5723	5471	5219	4967	4714	4461	4208	3954	3700	3445	3190	2935	2679	2423	2167	56
5718	5467	5215	4963	4710	4457	4204	3950	3696	3441	3186	2931	2675	2419	2163	55
5714	5463	5211	4959	4706	4453	4199	3946	3691	3437	3182	2927	2671	2415	2158	54
5710	5459	5207	4954	4702	4449	4195	3941	3687	3433	3178	2922	2667	2410	2154	53
5706	5454	5202	4950	4697	4444	4191	3937	3683	3428	3173	2918	2662	2406	2150	52
5702	5450	5198	4946	4693	4440	4187	3933	3679	3424	3169	2914	2658	2402	2145	51
5698	5446	5194	4942	4689	4436	4183	3929	3674	3420	3165	2910	2654	2398	2141	50
5693	5442	5190	4938	4685	4432	4178	3924	3670	3416	3161	2905	2649	2393	2137	49
5689	5438	5186	4933	4681	4428	4174	3920	3666	3411	3156	2901	2645	2389	2133	48
5685	5433	5181	4929	4676	4423	4170	3916	3662	3407	3152	2897	2641	2385	2128	47
5681	5429	5177	4925	4672	4419	4166	3912	3658	3403	3148	2892	2637	2381	2124	46
5677	5425	5173	4921	4668	4415	4161	3908	3653	3399	3144	2888	2632	2376	2120	45
5672	5421	5169	4916	4664	4411	4157	3903	3649	3394	3139	2884	2628	2372	2115	44
5668	5417	5165	4912	4660	4406	4153	3899	3645	3390	3135	2880	2624	2368	2111	43
5664	5412	5160	4908	4655	4402	4149	3895	3641	3386	3131	2875	2620	2363	2107	42
5660	5408	5156	4904	4651	4398	4144	3891	3636	3382	3127	2871	2615	2359	2103	41
5656	5404	5152	4900	4647	4394	4140	3886	3632	3377	3122	2867	2611	2355	2098	40
5651	5400	5148	4895	4643	4390	4136	3882	3628	3373	3118	2863	2607	2351	2094	39
5647	5396	5144	4891	4638	4385	4132	3878	3624	3369	3114	2858	2603	2346	2090	38
5643	5391	5139	4887	4634	4381	4128	3874	3619	3365	3110	2854	2598	2342	2085	37
5639	5387	5135	4883	4630	4377	4123	3869	3615	3360	3105	2850	2594	2338	2081	36
5635	5383	5131	4879	4626	4373	4119	3865	3611	3356	3101	2846	2590	2334	2077	35
5630	5379	5127	4874	4622	4368	4115	3861	3607	3352	3097	2841	2586	2329	2073	34
5626	5375	5123	4870	4617	4364	4111	3857	3602	3348	3093	2837	2581	2325	2068	33
5622	5370	5118	4866	4613	4360	4106	3852	3598	3343	3088	2833	2577	2321	2064	32
5618	5366	5114	4862	4609	4356	4102	3848	3594	3339	3084	2829	2573	2316	2060	31
5614	5362	5110	4858	4605	4352	4098	3844	3590	3335	3080	2824	2568	2312	2056	30
5610	5358	5106	4853	4601	4347	4094	3840	3585	3331	3076	2820	2564	2308	2051	29
5605	5354	5102	4849	4596	4343	4089	3836	3581	3326	3071	2816	2560	2304	2047	28
5601	5349	5097	4845	4592	4339	4085	3831	3577	3322	3067	2812	2556	2299	2043	27
5597	5345	5093	4841	4588	4335	4081	3827	3573	3318	3063	2807	2551	2295	2038	26
5593	5341	5089	4836	4584	4330	4077	3823	3568	3314	3059	2803	2547	2291	2034	25
5589	5337	5085	4832	4579	4326	4073	3819	3564	3309	3054	2799	2543	2287	2030	24
5584	5333	5081	4828	4575	4322	4068	3814	3560	3305	3050	2794	2539	2282	2026	23
5580	5328	5076	4824	4571	4318	4064	3810	3556	3301	3046	2790	2534	2278	2021	22
5576	5324	5072	4820	4567	4314	4060	3806	3551	3297	3041	2786	2530	2274	2017	21
5572	5320	5068	4815	4563	4309	4056	3802	3547	3292	3037	2782	2526	2269	2013	20
5568	5316	5064	4811	4558	4305	4051	3797	3543	3288	3033	2777	2521	2265	2008	19
5563	5312	5060	4807	4554	4301	4047	3793	3539	3284	3029	2773	2517	2261	2004	18
5559	5307	5055	4803	4550	4297	4043	3789	3534	3280	3024	2769	2513	2257	2000	17
5555	5303	5051	4799	4546	4292	4039	3785	3530	3275	3020	2765	2509	2252	1996	16
5551	5299	5047	4794	4541	4288	4034	3780	3526	3271	3016	2760	2504	2248	1991	15
5547	5295	5043	4790	4537	4284	4030	3776	3522	3267	3012	2756	2500	2244	1987	14
5542	5291	5038	4786	4533	4280	4026	3772	3518	3263	3007	2752	2496	2239	1983	13
5538	5286	5034	4782	4529	4275	4022	3768	3513	3258	3003	2748	2492	2235	1978	12
5534	5282	5030	4778	4525	4271	4018	3763	3509	3254	2999	2743	2487	2231	1974	11
5530	5278	5026	4773	4520	4267	4013	3759	3505	3250	2995	2739	2483	2227	1970	10
5526	5274	5022	4769	4516	4263	4009	3755	3501	3246	2990	2735	2479	2222	1966	9
5521	5270	5017	4765	4512	4259	4005	3751	3496	3241	2986	2731	2475	2218	1961	8
5517	5265	5013	4761	4508	4254	4001	3747	3492	3237	2982	2726	2470	2214	1957	7
5513	5261	5009	4756	4503	4250	3996	3742	3488	3233	2978	2722	2466	2210	1953	6
5509	5257	5005	4752	4499	4246	3992	3738	3484	3229	2973	2718	2462	2205	1948	5
5505	5253	5001	4748	4495	4242	3988	3734	3479	3224	2969	2713	2457	2201	1944	4
5500	5249	4996	4744	4491	4237	3984	3730	3475	3220	2965	2709	2453	2197	1940	3
5496	5244	4992	4740	4487	4233	3979	3725	3471	3216	2961	2705	2449	2192	1936	2
5492	5240	4988	4735	4482	4229	3975	3721	3467	3212	2956	2701	2445	2188	1931	1
5488	5236	4984	4731	4478	4225	3971	3717	3462	3207	2952	2696	2440	2184	1927	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Sine Deg. 78

11 Deg. Tangent

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 298	9. 299	9. 299	9. 300	9. 301	9. 301	9. 302	9. 303	9. 303	9. 304	9. 305	9. 305	9. 306	9. 307	9. 307
0	6618	3216	9804	6383	2954	9514	6066	2609	9143	5667	2183	8689	5187	1675	8155
1	6728	3325	9914	6493	3063	9624	6175	2718	9251	5776	2291	8798	5295	1784	8263
2	6838	3435	0024	6603	3172	9733	6284	2827	9360	5884	2400	8906	5403	1892	8371
3	6948	3545	0133	6712	3282	9842	6394	2936	9469	5993	2508	9014	5511	2000	8479
4	7058	3655	0243	6822	3391	9952	6503	3045	9578	6102	2617	9123	5620	2108	8587
5	7168	3765	0353	6931	3501	0061	6612	3154	9687	6210	2725	9231	5728	2216	8695
6	7278	3875	0462	7041	3610	0170	6721	3263	9795	6319	2834	9339	5836	2324	8803
7	7388	3985	0572	7150	3719	0279	6830	3372	9904	6428	2942	9448	5944	2432	8911
8	7498	4095	0682	7260	3829	0389	6939	3481	0013	6536	3051	9556	6052	2540	9018
9	7608	4204	0792	7370	3938	0498	7048	3590	0122	6645	3159	9664	6161	2648	9126
10	7718	4314	0901	7479	4048	0607	7157	3699	0231	6754	3268	9773	6269	2756	9234
11	7828	4424	1011	7589	4157	0716	7266	3807	0339	6862	3376	9881	6377	2864	9342
12	7938	4534	1121	7698	4266	0826	7376	3916	0448	6971	3485	9989	6485	2972	9450
13	8048	4644	1230	7808	4376	0935	7485	4025	0557	7080	3593	0098	6593	3080	9558
14	8158	4754	1340	7917	4485	1044	7594	4134	0666	7188	3702	0206	6702	3188	9666
15	8268	4864	1450	8027	4595	1153	7703	4243	0775	7297	3810	0314	6810	3296	9774
16	8378	4973	1559	8136	4704	1262	7812	4352	0883	7406	3919	0423	6918	3404	9882
17	8488	5083	1669	8246	4813	1372	7921	4461	0992	7514	4027	0531	7026	3512	9989
18	8598	5193	1779	8355	4923	1481	8030	4570	1101	7623	4136	0639	7134	3620	0097
19	8708	5303	1889	8465	5032	1590	8139	4679	1210	7731	4244	0748	7243	3728	0205
20	8818	5413	1998	8574	5142	1699	8248	4788	1318	7840	4353	0856	7351	3836	0313
21	8928	5523	2108	8684	5251	1809	8357	4897	1427	7949	4461	0964	7459	3944	0421
22	9038	5632	2218	8794	5360	1918	8466	5006	1536	8057	4569	1073	7567	4052	0529
23	9148	5742	2327	8903	5470	2027	8575	5115	1645	8166	4678	1181	7675	4160	0637
24	9258	5852	2437	9013	5579	2136	8684	5223	1753	8274	4786	1289	7783	4268	0745
25	9368	5962	2547	9122	5688	2245	8793	5332	1862	8383	4895	1398	7892	4376	0852
26	9478	6072	2656	9232	5798	2355	8903	5441	1971	8492	5003	1506	8000	4484	0960
27	9588	6182	2766	9341	5907	2464	9012	5550	2080	8600	5112	1614	8108	4592	1068
28	9698	6291	2876	9451	6016	2573	9121	5659	2189	8709	5220	1723	8216	4700	1176
29	9808	6401	2985	9560	6126	2682	9230	5768	2297	8817	5329	1831	8324	4808	1284
30	9918	6511	3095	9670	6235	2791	9339	5877	2406	8926	5437	1939	8432	4916	1392
31	0028	6621	3205	9779	6344	2901	9448	5986	2515	9035	5546	2047	8540	5024	1500
32	0138	6731	3314	9889	6454	3010	9557	6095	2623	9143	5654	2156	8649	5132	1607
33	0248	6840	3424	9998	6563	3119	9666	6204	2732	9252	5762	2264	8757	5240	1715
34	0358	6950	3534	0108	6673	3228	9775	6312	2841	9360	5871	2372	8865	5348	1823
35	0468	7060	3643	0217	6782	3337	9884	6421	2950	9469	5979	2481	8973	5456	1931
36	0578	7170	3753	0327	6891	3447	9993	6530	3058	9578	6088	2589	9081	5564	2039
37	0688	7280	3862	0436	7001	3556	0102	6639	3167	9686	6196	2697	9189	5672	2147
38	0798	7389	3972	0546	7110	3665	0211	6748	3276	9795	6305	2805	9297	5780	2254
39	0907	7499	4082	0655	7219	3774	0320	6857	3385	9903	6413	2914	9405	5888	2362
40	1017	7609	4191	0764	7328	3883	0429	6966	3493	0012	6521	3022	9514	5996	2470
41	1127	7719	4301	0874	7438	3993	0538	7075	3602	0120	6630	3130	9622	6104	2578
42	1237	7829	4411	0983	7547	4102	0647	7183	3711	0229	6738	3238	9730	6212	2686
43	1347	7938	4520	1093	7656	4211	0756	7292	3819	0338	6847	3347	9838	6320	2794
44	1457	8048	4630	1202	7766	4320	0865	7401	3928	0446	6955	3455	9946	6428	2901
45	1567	8158	4739	1312	7875	4429	0974	7510	4037	0555	7063	3563	0054	6536	3009
46	1677	8268	4849	1421	7984	4538	1083	7619	4146	0663	7172	3672	0162	6644	3117
47	1787	8377	4959	1531	8094	4647	1192	7728	4254	0772	7280	3780	0270	6752	3225
48	1897	8487	5068	1640	8203	4757	1301	7837	4363	0880	7389	3888	0378	6860	3333
49	2007	8597	5178	1750	8312	4866	1410	7945	4472	0989	7497	3996	0487	6968	3440
50	2117	8707	5288	1859	8422	4975	1519	8054	4580	1097	7605	4105	0595	7076	3548
51	2227	8816	5397	1969	8531	5084	1628	8163	4689	1206	7714	4213	0703	7184	3656
52	2336	8926	5507	2078	8640	5193	1737	8272	4798	1314	7822	4321	0811	7292	3764
53	2446	9036	5616	2187	8749	5302	1846	8381	4906	1423	7931	4429	0919	7400	3872
54	2556	9146	5726	2297	8859	5411	1955	8490	5015	1532	8039	4537	1027	7508	3979
55	2666	9255	5835	2406	8968	5521	2064	8598	5124	1640	8147	4646	1135	7616	4087
56	2776	9365	5945	2516	9077	5630	2173	8707	5232	1749	8256	4754	1243	7723	4195
57	2886	9475	6055	2625	9187	5739	2282	8816	5341	1857	8364	4862	1351	7831	4303
58	2996	9585	6164	2735	9296	5848	2391	8925	5450	1966	8473	4970	1459	7939	4410
59	3106	9694	6274	2844	9405	5957	2500	9034	5558	2074	8581	5079	1567	8047	4518
60	3216	9804	6383	2954	9514	6066	2609	9143	5667	2183	8689	5187	1675	8155	4626
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

11 Deg. Co-Tangent

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	″
10. 701	10. 700	10. 700	10. 699	10. 698	10. 698	10. 697	10. 696	10. 696	10. 695	10. 694	10. 694	10. 693	10. 692	10. 692	
3382	6784	0196	3617	7046	0486	3934	7391	0857	4333	7817	1311	4813	8325	1845	60
3272	6675	0086	3507	6937	0376	3825	7282	0749	4224	7709	1202	4705	8216	1737	59
3162	6565	9976	3397	6828	0267	3716	7173	0640	4116	7600	1094	4597	8108	1629	58
3052	6455	9867	3288	6718	0158	3606	7064	0531	4007	7492	0986	4489	8000	1521	57
2942	6345	9757	3178	6609	0048	3497	6955	0422	3898	7383	0877	4380	7892	1413	56
2832	6235	9647	3069	6499	9939	3388	6846	0313	3790	7275	0769	4272	7784	1305	55
2722	6125	9538	2959	6390	9830	3279	6737	0205	3681	7166	0661	4164	7676	1197	54
2612	6015	9428	2850	6281	9721	3170	6628	0096	3572	7058	0552	4056	7568	1089	53
2502	5905	9318	2740	6171	9611	3061	6519	9987	3464	6949	0444	3948	7460	0982	52
2392	5796	9208	2630	6062	9502	2952	6410	9878	3355	6841	0336	3839	7352	0874	51
2282	5686	9099	2521	5952	9393	2843	6301	9769	3246	6732	0227	3731	7244	0766	50
2172	5576	8989	2411	5843	9284	2734	6193	9661	3138	6624	0119	3623	7136	0658	49
2062	5466	8879	2302	5734	9174	2624	6084	9552	3029	6515	0011	3515	7028	0550	48
1952	5356	8770	2192	5624	9065	2515	5975	9443	2920	6407	9902	3407	6920	0442	47
1842	5246	8660	2083	5515	8956	2406	5866	9334	2812	6298	9794	3298	6812	0334	46
1732	5136	8550	1973	5405	8847	2297	5757	9225	2703	6190	9686	3190	6704	0226	45
1622	5027	8441	1864	5296	8738	2188	5648	9117	2594	6081	9577	3082	6596	0118	44
1512	4917	8331	1754	5187	8628	2079	5539	9008	2486	5973	9469	2974	6488	0011	43
1402	4807	8221	1645	5077	8519	1970	5430	8899	2377	5864	9361	2866	6380	9903	42
1292	4697	8111	1535	4968	8410	1861	5321	8790	2269	5756	9252	2757	6272	9795	41
1182	4587	8002	1426	4858	8301	1752	5212	8682	2160	5647	9144	2649	6164	9687	40
1072	4477	7892	1316	4749	8191	1643	5103	8573	2051	5539	9036	2541	6056	9579	39
0962	4368	7782	1206	4640	8082	1534	4994	8464	1943	5431	8927	2433	5948	9471	38
0852	4258	7673	1097	4530	7973	1425	4885	8355	1834	5322	8819	2325	5840	9363	37
0742	4148	7563	0987	4421	7864	1316	4777	8247	1726	5214	8711	2217	5732	9255	36
0632	4038	7453	0878	4312	7755	1207	4668	8138	1617	5105	8602	2108	5624	9148	35
0522	3928	7344	0768	4202	7645	1097	4559	8029	1508	4997	8494	2000	5516	9040	34
0412	3818	7234	0659	4093	7536	0988	4450	7920	1400	4888	8386	1892	5408	8932	33
0302	3709	7124	0549	3984	7427	0879	4341	7811	1291	4780	8277	1784	5300	8824	32
0192	3599	7015	0440	3874	7318	0770	4232	7703	1183	4671	8169	1676	5192	8716	31
0082	3489	6905	0330	3765	7209	0661	4123	7594	1074	4563	8061	1568	5084	8608	30
9972	3379	6795	0221	3656	7099	0552	4014	7485	0965	4454	7953	1460	4976	8500	29
9862	3269	6686	0111	3546	6990	0443	3905	7377	0857	4346	7844	1351	4868	8393	28
9752	3160	6576	0002	3437	6881	0334	3796	7268	0748	4238	7736	1243	4760	8285	27
9642	3050	6466	9892	3327	6772	0225	3688	7159	0640	4129	7628	1135	4652	8177	26
9532	2940	6357	9783	3218	6663	0116	3579	7050	0531	4021	7519	1027	4544	8069	25
9422	2830	6247	9673	3109	6553	0007	3470	6942	0422	3912	7411	0919	4436	7961	24
9312	2720	6138	9564	2999	6444	9898	3361	6833	0314	3804	7303	0811	4328	7853	23
9202	2611	6028	9454	2890	6335	9789	3252	6724	0205	3695	7195	0703	4220	7746	22
9093	2501	5918	9345	2781	6226	9680	3143	6615	0097	3587	7086	0595	4112	7638	21
8983	2391	5809	9236	2672	6117	9571	3034	6507	9988	3479	6978	0486	4004	7530	20
8873	2281	5699	9126	2562	6007	9462	2925	6398	9880	3370	6870	0378	3896	7422	19
8763	2171	5589	9017	2453	5898	9353	2817	6289	9771	3262	6762	0270	3788	7314	18
8653	2062	5480	8907	2344	5789	9244	2708	6181	9662	3153	6653	0162	3680	7206	17
8543	1952	5370	8798	2234	5680	9135	2599	6072	9554	3045	6545	0054	3572	7099	16
8433	1842	5261	8688	2125	5571	9026	2490	5963	9445	2937	6437	9946	3464	6991	15
8323	1732	5151	8579	2016	5462	8917	2381	5854	9337	2828	6328	9838	3356	6883	14
8213	1623	5041	8469	1906	5353	8808	2272	5746	9228	2720	6220	9730	3248	6775	13
8103	1513	4932	8360	1797	5243	8699	2163	5637	9120	2611	6112	9622	3140	6667	12
7993	1403	4822	8250	1688	5134	8590	2055	5528	9011	2503	6004	9513	3032	6560	11
7883	1293	4712	8141	1578	5025	8481	1946	5420	8903	2395	5895	9405	2924	6452	10
7773	1184	4603	8031	1469	4916	8372	1837	5311	8794	2286	5787	9297	2816	6344	9
7664	1074	4493	7922	1360	4807	8263	1728	5202	8686	2178	5679	9189	2708	6236	8
7554	0964	4384	7813	1251	4698	8154	1619	5094	8577	2069	5571	9081	2600	6128	7
7444	0854	4274	7703	1141	4589	8045	1510	4985	8468	1961	5463	8973	2492	6021	6
7334	0745	4165	7594	1032	4479	7936	1402	4876	8360	1853	5354	8865	2384	5913	5
7224	0635	4055	7484	0923	4370	7827	1293	4768	8251	1744	5246	8757	2277	5805	4
7114	0525	3945	7375	0813	4261	7718	1184	4659	8143	1636	5138	8649	2169	5697	3
7004	0415	3836	7265	0704	4152	7609	1075	4550	8034	1527	5030	8541	2061	5590	2
6894	0306	3726	7156	0595	4043	7500	0966	4442	7926	1419	4921	8433	1953	5482	1
6784	0196	3617	7046	0486	3934	7391	0857	4333	7817	1311	4813	8325	1845	5374	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Co-Tangent Deg. 78 Tangent Deg. 78

11 Deg. Sine

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 299	9. 300	9. 300	9. 301	9. 302	9. 302	9. 303	9. 303	9. 304	9. 305	9. 305	9. 306	9. 307	9. 307	9. 308
0	6553	2758	8953	5140	1317	7485	3644	9794	5934	2066	8189	4303	0407	6503	2590
1	6657	2861	9057	5243	1420	7588	3746	9896	6037	2168	8291	4404	0509	6605	2692
2	6760	2965	9160	5346	1523	7690	3849	9999	6139	2270	8393	4506	0611	6706	2793
3	6864	3068	9263	5449	1626	7793	3952	0101	6241	2373	8495	4608	0712	6808	2894
4	6967	3171	9366	5552	1728	7896	4054	0203	6344	2475	8597	4710	0814	6909	2996
5	7071	3274	9469	5655	1831	7999	4157	0306	6446	2577	8699	4812	0916	7011	3097
6	7174	3378	9572	5758	1934	8101	4259	0408	6548	2679	8801	4914	1017	7112	3198
7	7277	3481	9676	5861	2037	8204	4362	0511	6650	2781	8903	5015	1119	7214	3300
8	7381	3584	9779	5964	2140	8307	4464	0613	6753	2883	9005	5117	1221	7315	3401
9	7484	3688	9882	6067	2243	8409	4567	0715	6855	2985	9107	5219	1322	7417	3502
10	7588	3791	9985	6170	2346	8512	4669	0818	6957	3087	9209	5321	1424	7518	3604
11	7691	3894	0088	6273	2448	8615	4772	0920	7059	3189	9310	5423	1526	7620	3705
12	7795	3998	0191	6376	2551	8717	4875	1023	7162	3291	9412	5524	1627	7721	3807
13	7898	4101	0295	6479	2654	8820	4977	1125	7264	3394	9514	5626	1729	7823	3908
14	8002	4204	0398	6582	2757	8923	5080	1227	7366	3496	9616	5728	1831	7924	4009
15	8105	4308	0501	6685	2860	9026	5182	1330	7468	3598	9718	5830	1932	8026	4111
16	8209	4411	0604	6788	2963	9128	5285	1432	7570	3700	9820	5931	2034	8127	4212
17	8312	4514	0707	6891	3065	9231	5387	1535	7673	3802	9922	6033	2135	8229	4313
18	8415	4617	0810	6994	3168	9334	5490	1637	7775	3904	0024	6135	2237	8330	4415
19	8519	4721	0913	7097	3271	9436	5592	1739	7877	4006	0126	6237	2339	8432	4516
20	8622	4824	1017	7200	3374	9539	5695	1842	7979	4108	0228	6339	2440	8533	4617
21	8726	4927	1120	7303	3477	9642	5797	1944	8082	4210	0330	6440	2542	8635	4719
22	8829	5031	1223	7406	3580	9744	5900	2046	8184	4312	0432	6542	2644	8736	4820
23	8933	5134	1326	7509	3682	9847	6002	2149	8286	4414	0534	6644	2745	8838	4921
24	9036	5237	1429	7612	3785	9950	6105	2251	8388	4516	0635	6746	2847	8939	5022
25	9140	5340	1532	7715	3888	0052	6207	2353	8490	4618	0737	6847	2948	9041	5124
26	9243	5444	1635	7818	3991	0155	6310	2456	8593	4720	0839	6949	3050	9142	5225
27	9346	5547	1738	7921	4094	0258	6412	2558	8695	4823	0941	7051	3152	9243	5326
28	9450	5650	1841	8024	4196	0360	6515	2661	8797	4925	1043	7153	3253	9345	5428
29	9553	5754	1945	8127	4299	0463	6617	2763	8899	5027	1145	7254	3355	9446	5529
30	9657	5857	2048	8229	4402	0566	6720	2865	9001	5129	1247	7356	3456	9548	5630
31	9760	5960	2151	8332	4505	0668	6822	2968	9104	5231	1349	7458	3558	9649	5732
32	9863	6063	2254	8435	4608	0771	6925	3070	9206	5333	1451	7560	3660	9751	5833
33	9967	6167	2357	8538	4710	0873	7027	3172	9308	5435	1553	7661	3761	9852	5934
34	0070	6270	2460	8641	4813	0976	7130	3275	9410	5537	1654	7763	3863	9954	6036
35	0174	6373	2563	8744	4916	1079	7232	3377	9512	5639	1756	7865	3964	0055	6137
36	0277	6476	2666	8847	5019	1181	7335	3479	9615	5741	1858	7967	4066	0156	6238
37	0380	6580	2769	8950	5122	1284	7437	3582	9717	5843	1960	8068	4168	0258	6339
38	0484	6683	2872	9053	5224	1387	7540	3684	9819	5945	2062	8170	4269	0359	6441
39	0587	6786	2976	9156	5327	1489	7642	3786	9921	6047	2164	8272	4371	0461	6542
40	0691	6889	3079	9259	5430	1592	7745	3889	0023	6149	2266	8373	4472	0562	6643
41	0794	6992	3182	9362	5533	1695	7847	3991	0125	6251	2368	8475	4574	0664	6744
42	0897	7096	3285	9465	5635	1797	7950	4093	0228	6353	2469	8577	4675	0765	6846
43	1001	7199	3388	9568	5738	1900	8052	4196	0330	6455	2571	8679	4777	0866	6947
44	1104	7302	3491	9671	5841	2002	8155	4298	0432	6557	2673	8780	4879	0968	7048
45	1208	7405	3594	9773	5944	2105	8257	4400	0534	6659	2775	8882	4980	1069	7150
46	1311	7509	3697	9876	6047	2208	8360	4502	0636	6761	2877	8984	5082	1171	7251
47	1414	7612	3800	9979	6149	2310	8462	4605	0738	6863	2979	9085	5183	1272	7352
48	1518	7715	3903	0082	6252	2413	8564	4707	0841	6965	3081	9187	5285	1374	7453
49	1621	7818	4006	0185	6355	2515	8667	4809	0943	7067	3182	9289	5386	1475	7555
50	1724	7921	4109	0288	6458	2618	8769	4912	1045	7169	3284	9391	5488	1576	7656
51	1828	8025	4212	0391	6560	2721	8872	5014	1147	7271	3386	9492	5589	1678	7757
52	1931	8128	4315	0494	6663	2823	8974	5116	1249	7373	3488	9594	5691	1779	7858
53	2034	8231	4418	0597	6766	2926	9077	5219	1351	7475	3590	9696	5793	1881	7960
54	2138	8334	4522	0700	6869	3028	9179	5321	1453	7577	3692	9797	5894	1982	8061
55	2241	8437	4625	0802	6971	3131	9282	5423	1556	7679	3794	9899	5996	2083	8162
56	2344	8541	4728	0905	7074	3234	9384	5525	1658	7781	3895	0001	6097	2185	8263
57	2448	8644	4831	1008	7177	3336	9486	5628	1760	7883	3997	0102	6199	2286	8365
58	2551	8747	4934	1111	7279	3439	9589	5730	1862	7985	4099	0204	6300	2387	8466
59	2655	8850	5037	1214	7382	3541	9691	5832	1964	8087	4201	0306	6402	2489	8567
60	2758	8953	5140	1317	7485	3644	9794	5934	2066	8189	4303	0407	6503	2590	8668
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Sine Deg. 78

11 Deg. Co-Sine

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
	9. 991	9. 991	9. 991	9. 991	9. 991	9. 991	9. 991	9. 991	9. 990	9. 990	9. 990	9. 990	9. 990	9. 990	9. 990	″
	1927	1670	1412	1154	0896	0637	0378	0119	9859	9598	9338	9077	8815	8553	8291	60
	1923	1666	1408	1150	0892	0633	0374	0114	9854	9594	9333	9072	8811	8549	8287	59
	1919	1661	1404	1146	0887	0629	0369	0110	9850	9590	9329	9068	8806	8545	8282	58
	1914	1657	1399	1141	0883	0624	0365	0106	9846	9585	9325	9064	8802	8540	8278	57
	1910	1653	1395	1137	0879	0620	0361	0101	9841	9581	9320	9059	8798	8536	8274	56
	1906	1648	1391	1133	0874	0616	0356	0097	9837	9577	9316	9055	8793	8532	8269	55
	1901	1644	1386	1128	0870	0611	0352	0093	9833	9572	9312	9051	8789	8527	8265	54
	1897	1640	1382	1124	0866	0607	0348	0088	9828	9568	9307	9046	8785	8523	8261	53
	1893	1636	1378	1120	0861	0603	0343	0084	9824	9564	9303	9042	8780	8518	8256	52
	1889	1631	1374	1116	0857	0598	0339	0080	9820	9559	9299	9037	8776	8514	8252	51
	1884	1627	1369	1111	0853	0594	0335	0075	9815	9555	9294	9033	8772	8510	8247	50
	1880	1623	1365	1107	0849	0590	0330	0071	9811	9551	9290	9029	8767	8505	8243	49
	1876	1618	1361	1103	0844	0585	0326	0067	9807	9546	9286	9024	8763	8501	8239	48
	1871	1614	1356	1098	0840	0581	0322	0062	9802	9542	9281	9020	8759	8497	8234	47
	1867	1610	1352	1094	0836	0577	0318	0058	9798	9538	9277	9016	8754	8492	8230	46
	1863	1605	1348	1090	0831	0572	0313	0054	9794	9533	9272	9011	8750	8488	8226	45
	1859	1601	1343	1085	0827	0568	0309	0049	9789	9529	9268	9007	8745	8484	8221	44
	1854	1597	1339	1081	0823	0564	0305	0045	9785	9525	9264	9003	8741	8479	8217	43
	1850	1593	1335	1077	0818	0559	0300	0041	9781	9520	9259	8998	8737	8475	8212	42
	1846	1588	1331	1073	0814	0555	0296	0036	9776	9516	9255	8994	8732	8470	8208	41
	1841	1584	1326	1068	0810	0551	0292	0032	9772	9512	9251	8990	8728	8466	8204	40
	1837	1580	1322	1064	0805	0547	0287	0028	9768	9507	9246	8985	8724	8462	8199	39
	1833	1575	1318	1060	0801	0542	0283	0023	9763	9503	9242	8981	8719	8457	8195	38
	1829	1571	1313	1055	0797	0538	0279	0019	9759	9498	9238	8976	8715	8453	8191	37
	1824	1567	1309	1051	0792	0534	0274	0015	9755	9494	9233	8972	8711	8449	8186	36
	1820	1563	1305	1047	0788	0529	0270	0010	9750	9490	9229	8968	8706	8444	8182	35
	1816	1558	1301	1042	0784	0525	0266	0006	9746	9485	9225	8963	8702	8440	8177	34
	1811	1554	1296	1038	0780	0521	0261	0002	9742	9481	9220	8959	8697	8435	8173	33
	1807	1550	1292	1034	0775	0516	0257	9997	9737	9477	9216	8955	8693	8431	8169	32
	1803	1545	1288	1029	0771	0512	0253	9993	9733	9472	9212	8950	8689	8427	8164	31
	1799	1541	1283	1025	0767	0508	0248	9989	9729	9468	9207	8946	8684	8422	8160	30
	1794	1537	1279	1021	0762	0503	0244	9984	9724	9464	9203	8942	8680	8418	8156	29
	1790	1533	1275	1017	0758	0499	0240	9980	9720	9459	9199	8937	8676	8414	8151	28
	1786	1528	1270	1012	0754	0495	0235	9976	9716	9455	9194	8933	8671	8409	8147	27
	1781	1524	1266	1008	0749	0490	0231	9971	9711	9451	9190	8929	8667	8405	8142	26
	1777	1520	1262	1004	0745	0486	0227	9967	9707	9446	9185	8924	8663	8401	8138	25
	1773	1515	1258	0999	0741	0482	0222	9963	9703	9442	9181	8920	8658	8396	8134	24
	1768	1511	1253	0995	0736	0477	0218	9958	9698	9438	9177	8915	8654	8392	8129	23
	1764	1507	1249	0991	0732	0473	0214	9954	9694	9433	9172	8911	8649	8387	8125	22
	1760	1502	1245	0986	0728	0469	0209	9950	9689	9429	9168	8907	8645	8383	8121	21
	1756	1498	1240	0982	0723	0464	0205	9945	9685	9425	9164	8902	8641	8379	8116	20
	1751	1494	1236	0978	0719	0460	0201	9941	9681	9420	9159	8898	8636	8374	8112	19
	1747	1490	1232	0973	0715	0456	0196	9937	9676	9416	9155	8894	8632	8370	8107	18
	1743	1485	1227	0969	0711	0451	0192	9932	9672	9412	9151	8889	8628	8366	8103	17
	1738	1481	1223	0965	0706	0447	0188	9928	9668	9407	9146	8885	8623	8361	8099	16
	1734	1477	1219	0961	0702	0443	0183	9924	9663	9403	9142	8881	8619	8357	8094	15
	1730	1472	1215	0956	0698	0439	0179	9919	9659	9399	9138	8876	8615	8352	8090	14
	1726	1468	1210	0952	0693	0434	0175	9915	9655	9394	9133	8872	8610	8348	8086	13
	1721	1464	1206	0948	0689	0430	0170	9911	9650	9390	9129	8868	8606	8344	8081	12
	1717	1460	1202	0943	0685	0426	0166	9906	9646	9386	9125	8863	8601	8339	8077	11
	1713	1455	1197	0939	0680	0421	0162	9902	9642	9381	9120	8859	8597	8335	8072	10
	1708	1451	1193	0935	0676	0417	0157	9898	9637	9377	9116	8854	8593	8331	8068	9
	1704	1447	1189	0930	0672	0413	0153	9893	9633	9372	9111	8850	8588	8326	8064	8
	1700	1442	1184	0926	0667	0408	0149	9889	9629	9368	9107	8846	8584	8322	8059	7
	1696	1438	1180	0922	0663	0404	0144	9885	9624	9364	9103	8841	8580	8317	8055	6
	1691	1434	1176	0917	0659	0400	0140	9880	9620	9359	9098	8837	8575	8313	8051	5
	1687	1429	1171	0913	0654	0395	0136	9876	9616	9355	9094	8833	8571	8309	8046	4
	1683	1425	1167	0909	0650	0391	0132	9872	9611	9351	9090	8828	8567	8304	8042	3
	1678	1421	1163	0905	0646	0387	0127	9867	9607	9346	9085	8824	8562	8300	8037	2
	1674	1417	1159	0900	0641	0382	0123	9863	9603	9342	9081	8820	8558	8296	8033	1
	1670	1412	1154	0896	0637	0378	0119	9859	9598	9338	9077	8815	8553	8291	8029	0
	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Sine Deg. 78

11 Deg. Tangent

″	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9. 308	9. 309	9. 309	9. 310	9. 311	9. 311	9. 312	9. 312	9. 313	9. 314	9. 314	9. 315	9. 316	9. 316	9. 317
0	4626	1088	7541	3985	0421	6848	3266	9675	6076	2468	8851	5226	1592	7950	4299
1	4734	1196	7649	4093	0528	6955	3373	9782	6182	2574	8958	5332	1698	8056	4405
2	4842	1303	7756	4200	0635	7062	3480	9889	6289	2681	9064	5438	1804	8162	4510
3	4949	1411	7864	4307	0743	7169	3587	9995	6396	2787	9170	5545	1910	8268	4616
4	5057	1518	7971	4415	0850	7276	3693	0102	6502	2894	9276	5651	2016	8373	4722
5	5165	1626	8078	4522	0957	7383	3800	0209	6609	3000	9383	5757	2122	8479	4828
6	5273	1734	8186	4629	1064	7490	3907	0316	6715	3107	9489	5863	2228	8585	4933
7	5380	1841	8293	4737	1171	7597	4014	0422	6822	3213	9595	5969	2334	8691	5039
8	5488	1949	8401	4844	1278	7704	4121	0529	6929	3319	9702	6075	2440	8797	5145
9	5596	2057	8508	4951	1386	7811	4228	0636	7035	3426	9808	6181	2546	8903	5251
10	5704	2164	8616	5059	1493	7918	4335	0743	7142	3532	9914	6288	2652	9009	5356
11	5811	2272	8723	5166	1600	8025	4442	0849	7248	3639	0021	6394	2758	9115	5462
12	5919	2379	8831	5273	1707	8132	4548	0956	7355	3745	0127	6500	2864	9220	5568
13	6027	2487	8938	5381	1814	8239	4655	1063	7462	3852	0233	6606	2970	9326	5673
14	6135	2595	9046	5488	1921	8346	4762	1169	7568	3958	0339	6712	3076	9432	5779
15	6242	2702	9153	5595	2029	8453	4869	1276	7675	4065	0446	6818	3182	9538	5885
16	6350	2810	9260	5702	2136	8560	4976	1383	7781	4171	0552	6925	3288	9644	5991
17	6458	2917	9368	5810	2243	8667	5083	1490	7888	4277	0658	7031	3394	9750	6096
18	6566	3025	9475	5917	2350	8774	5190	1596	7994	4384	0765	7137	3500	9855	6202
19	6673	3132	9583	6024	2457	8881	5296	1703	8101	4490	0871	7243	3606	9961	6308
20	6781	3240	9690	6132	2564	8988	5403	1810	8207	4597	0977	7349	3712	0067	6413
21	6889	3348	9798	6239	2671	9095	5510	1916	8314	4703	1083	7455	3818	0173	6519
22	6996	3455	9905	6346	2778	9202	5617	2023	8421	4809	1190	7561	3924	0279	6625
23	7104	3563	0012	6453	2886	9309	5724	2130	8527	4916	1296	7667	4030	0385	6731
24	7212	3670	0120	6561	2993	9416	5831	2236	8634	5022	1402	7774	4136	0491	6836
25	7320	3778	0227	6668	3100	9523	5937	2343	8740	5129	1508	7880	4242	0596	6942
26	7427	3885	0335	6775	3207	9630	6044	2450	8847	5235	1615	7986	4348	0702	7048
27	7535	3993	0442	6883	3314	9737	6151	2557	8953	5341	1721	8092	4454	0808	7153
28	7643	4101	0550	6990	3421	9844	6258	2663	9060	5448	1827	8198	4560	0914	7259
29	7750	4208	0657	7097	3528	9951	6365	2770	9166	5554	1933	8304	4666	1020	7365
30	7858	4316	0764	7204	3635	0058	6472	2877	9273	5661	2040	8410	4772	1125	7470
31	7966	4423	0872	7312	3743	0165	6578	2983	9379	5767	2146	8516	4878	1231	7576
32	8074	4531	0979	7419	3850	0272	6685	3090	9486	5873	2252	8622	4984	1337	7682
33	8181	4638	1087	7526	3957	0379	6792	3197	9593	5980	2358	8728	5090	1443	7787
34	8289	4746	1194	7633	4064	0486	6899	3303	9699	6086	2465	8835	5196	1549	7893
35	8397	4853	1301	7741	4171	0593	7006	3410	9806	6193	2571	8941	5302	1655	7999
36	8504	4961	1409	7848	4278	0700	7112	3517	9912	6299	2677	9047	5408	1760	8104
37	8612	5068	1516	7955	4385	0807	7219	3623	0019	6405	2783	9153	5514	1866	8210
38	8720	5176	1624	8062	4492	0914	7326	3730	0125	6512	2890	9259	5620	1972	8316
39	8827	5284	1731	8170	4599	1021	7433	3837	0232	6618	2996	9365	5726	2078	8421
40	8935	5391	1838	8277	4706	1127	7540	3943	0338	6724	3102	9471	5832	2184	8527
41	9043	5499	1946	8384	4814	1234	7646	4050	0445	6831	3208	9577	5938	2289	8633
42	9150	5606	2053	8491	4921	1341	7753	4157	0551	6937	3314	9683	6043	2395	8738
43	9258	5714	2160	8598	5028	1448	7860	4263	0658	7043	3421	9789	6149	2501	8844
44	9366	5821	2268	8706	5135	1555	7967	4370	0764	7150	3527	9895	6255	2607	8950
45	9473	5929	2375	8813	5242	1662	8074	4476	0871	7256	3633	0001	6361	2712	9055
46	9581	6036	2483	8920	5349	1769	8180	4583	0977	7363	3739	0108	6467	2818	9161
47	9689	6144	2590	9027	5456	1876	8287	4690	1084	7469	3846	0214	6573	2924	9267
48	9796	6251	2697	9135	5563	1983	8394	4796	1190	7575	3952	0320	6679	3030	9372
49	9904	6359	2805	9242	5670	2090	8501	4903	1297	7682	4058	0426	6785	3136	9478
50	0012	6466	2912	9349	5777	2197	8608	5010	1403	7788	4164	0532	6891	3241	9583
51	0119	6574	3019	9456	5884	2304	8714	5116	1510	7894	4270	0638	6997	3347	9689
52	0227	6681	3127	9563	5991	2411	8821	5223	1616	8001	4377	0744	7103	3453	9795
53	0335	6789	3234	9671	6098	2518	8928	5330	1723	8107	4483	0850	7209	3559	9900
54	0442	6896	3341	9778	6205	2624	9035	5436	1829	8213	4589	0956	7314	3664	0006
55	0550	7004	3449	9885	6313	2731	9141	5543	1936	8320	4695	1062	7420	3770	0112
56	0657	7111	3556	9992	6420	2838	9248	5649	2042	8426	4801	1168	7526	3876	0217
57	0765	7219	3663	0099	6527	2945	9355	5756	2148	8532	4907	1274	7632	3982	0323
58	0873	7326	3771	0207	6634	3052	9462	5863	2255	8639	5014	1380	7738	4087	0428
59	0980	7434	3878	0314	6741	3159	9568	5969	2361	8745	5120	1486	7844	4193	0534
60	1088	7541	3985	0421	6848	3266	9675	6076	2468	8851	5226	1592	7950	4299	0640
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Tangent Deg. 78

11 Deg. Co-Tangent

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	″
10. 691	10. 690	10. 690	10. 689	10. 688	10. 688	10. 687	10. 687	10. 686	10. 685	10. 685	10. 684	10. 683	10. 683	10. 682	
5374	8912	2459	6015	9579	3152	6734	0325	3924	7532	1149	4774	8408	2050	5701	60
5266	8804	2351	5907	9472	3045	6627	0218	3818	7426	1042	4668	8302	1944	5595	59
5158	8697	2244	5800	9365	2938	6520	0111	3711	7319	0936	4562	8196	1838	5490	58
5051	8589	2136	5693	9257	2831	6413	0005	3604	7213	0830	4455	8090	1732	5384	57
4943	8482	2029	5585	9150	2724	6307	9898	3498	7106	0724	4349	7984	1627	5278	56
4835	8374	1922	5478	9043	2617	6200	9791	3391	7000	0617	4243	7878	1521	5172	55
4727	8266	1814	5371	8936	2510	6093	9684	3285	6893	0511	4137	7772	1415	5067	54
4620	8159	1707	5263	8829	2403	5986	9578	3178	6787	0405	4031	7666	1309	4961	53
4512	8051	1599	5156	8722	2296	5879	9471	3071	6681	0298	3925	7560	1203	4855	52
4404	7943	1492	5049	8614	2189	5772	9364	2965	6574	0192	3819	7454	1097	4749	51
4296	7836	1384	4941	8507	2082	5665	9257	2858	6468	0086	3712	7348	0991	4644	50
4189	7728	1277	4834	8400	1975	5558	9151	2752	6361	9979	3606	7242	0885	4538	49
4081	7621	1169	4727	8293	1868	5452	9044	2645	6255	9873	3500	7136	0780	4432	48
3973	7513	1062	4619	8186	1761	5345	8937	2538	6148	9767	3394	7030	0674	4327	47
3865	7405	0954	4512	8079	1654	5238	8831	2432	6042	9661	3288	6924	0568	4221	46
3758	7298	0847	4405	7971	1547	5131	8724	2325	5935	9554	3182	6818	0462	4115	45
3650	7190	0740	4298	7864	1440	5024	8617	2219	5829	9448	3075	6712	0356	4009	44
3542	7083	0632	4190	7757	1333	4917	8510	2112	5723	9342	2969	6606	0250	3904	43
3434	6975	0525	4083	7650	1226	4810	8404	2006	5616	9235	2863	6500	0145	3798	42
3327	6868	0417	3976	7543	1119	4704	8297	1899	5510	9129	2757	6394	0039	3692	41
3219	6760	0310	3868	7436	1012	4597	8190	1793	5403	9023	2651	6288	9933	3587	40
3111	6652	0202	3761	7329	0905	4490	8084	1686	5297	8917	2545	6182	9827	3481	39
3004	6545	0095	3654	7222	0798	4383	7977	1579	5191	8810	2439	6076	9721	3375	38
2896	6437	9988	3547	7114	0691	4276	7870	1473	5084	8704	2333	5970	9615	3269	37
2788	6330	9880	3439	7007	0584	4169	7764	1366	4978	8598	2226	5864	9509	3164	36
2680	6222	9773	3332	6900	0477	4063	7657	1260	4871	8492	2120	5758	9404	3058	35
2573	6115	9665	3225	6793	0370	3956	7550	1153	4765	8385	2014	5652	9298	2952	34
2465	6007	9558	3117	6686	0263	3849	7443	1047	4659	8279	1908	5546	9192	2847	33
2357	5899	9450	3010	6579	0156	3742	7337	0940	4552	8173	1802	5440	9086	2741	32
2250	5792	9343	2903	6472	0049	3635	7230	0834	4446	8067	1696	5334	8980	2635	31
2142	5684	9236	2796	6365	9942	3528	7123	0727	4339	7960	1590	5228	8875	2530	30
2034	5577	9128	2688	6257	9835	3422	7017	0621	4233	7854	1484	5122	8769	2424	29
1926	5469	9021	2581	6150	9728	3315	6910	0514	4127	7748	1378	5016	8663	2318	28
1819	5362	8913	2474	6043	9621	3208	6803	0407	4020	7642	1272	4910	8557	2213	27
1711	5254	8806	2367	5936	9514	3101	6697	0301	3914	7535	1165	4804	8451	2107	26
1603	5147	8699	2259	5829	9407	2994	6590	0194	3807	7429	1059	4698	8345	2001	25
1496	5039	8591	2152	5722	9300	2888	6483	0088	3701	7323	0953	4592	8240	1896	24
1388	4932	8484	2045	5615	9193	2781	6377	9981	3595	7217	0847	4486	8134	1790	23
1280	4824	8376	1938	5508	9086	2674	6270	9875	3488	7110	0741	4380	8028	1684	22
1173	4716	8269	1830	5401	8979	2567	6163	9768	3382	7004	0635	4274	7922	1579	21
1065	4609	8162	1723	5294	8873	2460	6057	9662	3276	6898	0529	4168	7816	1473	20
0957	4501	8054	1616	5186	8766	2354	5950	9555	3169	6792	0423	4062	7711	1367	19
0850	4394	7947	1509	5079	8659	2247	5843	9449	3063	6686	0317	3957	7605	1262	18
0742	4286	7840	1402	4972	8552	2140	5737	9342	2957	6579	0211	3851	7499	1156	17
0634	4179	7732	1294	4865	8445	2033	5630	9236	2850	6473	0105	3745	7393	1050	16
0527	4071	7625	1187	4758	8338	1926	5524	9129	2744	6367	9999	3639	7288	0945	15
0419	3964	7517	1080	4651	8231	1820	5417	9023	2637	6261	9892	3533	7182	0839	14
0311	3856	7410	0973	4544	8124	1713	5310	8916	2531	6154	9786	3427	7076	0733	13
0204	3749	7303	0865	4437	8017	1606	5204	8810	2425	6048	9680	3321	6970	0628	12
0096	3641	7195	0758	4330	7910	1499	5097	8703	2318	5942	9574	3215	6864	0522	11
9988	3534	7088	0651	4223	7803	1392	4990	8597	2212	5836	9468	3109	6759	0417	10
9881	3426	6981	0544	4116	7696	1286	4884	8490	2106	5730	9362	3003	6653	0311	9
9773	3319	6873	0437	4009	7589	1179	4777	8384	1999	5623	9256	2897	6547	0205	8
9665	3211	6766	0329	3902	7482	1072	4670	8277	1893	5517	9150	2791	6441	0100	7
9558	3104	6659	0222	3795	7376	0965	4564	8171	1787	5411	9044	2686	6336	9994	6
9450	2996	6551	0115	3687	7269	0859	4457	8064	1680	5305	8938	2580	6230	9888	5
9343	2889	6444	0008	3580	7162	0752	4351	7958	1574	5199	8832	2474	6124	9783	4
9235	2781	6337	9901	3473	7055	0645	4244	7852	1468	5093	8726	2368	6018	9677	3
9127	2674	6229	9793	3366	6948	0538	4137	7745	1361	4986	8620	2262	5913	9572	2
9020	2566	6122	9686	3259	6841	0432	4031	7639	1255	4880	8514	2156	5807	9466	1
8912	2459	6015	9579	3152	6734	0325	3924	7532	1149	4774	8408	2050	5701	9360	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Tangent Deg. 78

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	9. 308	9. 309	9. 310	9. 310	9. 311	9. 311	9. 312	9. 313	9. 313	9. 314	9. 314	9. 315	9. 316	9. 316	9. 317
0	8668	4737	0798	6849	2892	8926	4951	0968	6976	2975	8965	4947	0921	6885	2841
1	8769	4838	0899	6950	2993	9026	5052	1068	7076	3075	9065	5047	1020	6985	2941
2	8871	4940	1000	7051	3093	9127	5152	1168	7176	3175	9165	5146	1119	7084	3040
3	8972	5041	1101	7152	3194	9227	5252	1268	7276	3274	9265	5246	1219	7183	3139
4	9073	5142	1201	7252	3295	9328	5353	1369	7376	3374	9364	5346	1318	7283	3238
5	9174	5243	1302	7353	3395	9428	5453	1469	7476	3474	9464	5445	1418	7382	3337
6	9276	5344	1403	7454	3496	9529	5553	1569	7576	3574	9564	5545	1517	7481	3437
7	9377	5445	1504	7555	3596	9629	5654	1669	7676	3674	9664	5645	1617	7581	3536
8	9478	5546	1605	7655	3697	9730	5754	1769	7776	3774	9763	5744	1716	7680	3635
9	9579	5647	1706	7756	3798	9830	5854	1869	7876	3874	9863	5844	1816	7779	3734
10	9680	5748	1807	7857	3898	9931	5955	1970	7976	3974	9963	5943	1915	7879	3833
11	9782	5849	1908	7958	3999	0031	6055	2070	8076	4074	0063	6043	2015	7978	3932
12	9883	5950	2009	8059	4100	0132	6155	2170	8176	4174	0162	6143	2114	8077	4032
13	9984	6051	2110	8159	4200	0232	6256	2270	8276	4273	0262	6242	2214	8176	4131
14	0085	6152	2211	8260	4301	0333	6356	2370	8376	4373	0362	6342	2313	8276	4230
15	0186	6253	2311	8361	4401	0433	6456	2471	8476	4473	0462	6441	2412	8375	4329
16	0288	6354	2412	8462	4502	0534	6556	2571	8576	4573	0561	6541	2512	8474	4428
17	0389	6455	2513	8562	4603	0634	6657	2671	8676	4673	0661	6641	2611	8574	4527
18	0490	6556	2614	8663	4703	0734	6757	2771	8776	4773	0761	6740	2711	8673	4627
19	0591	6657	2715	8764	4804	0835	6857	2871	8876	4873	0860	6840	2810	8772	4726
20	0692	6759	2816	8864	4904	0935	6958	2971	8976	4973	0960	6939	2910	8872	4825
21	0793	6860	2917	8965	5005	1036	7058	3071	9076	5072	1060	7039	3009	8971	4924
22	0895	6961	3018	9066	5105	1136	7158	3172	9176	5172	1160	7138	3109	9070	5023
23	0996	7062	3119	9167	5206	1237	7259	3272	9276	5272	1259	7238	3208	9169	5122
24	1097	7163	3219	9267	5307	1337	7359	3372	9376	5372	1359	7338	3307	9269	5222
25	1198	7264	3320	9368	5407	1438	7459	3472	9476	5472	1459	7437	3407	9368	5321
26	1299	7365	3421	9469	5508	1538	7559	3572	9576	5572	1559	7537	3506	9467	5420
27	1400	7466	3522	9570	5608	1638	7660	3672	9676	5672	1658	7636	3606	9567	5519
28	1502	7567	3623	9670	5709	1739	7760	3772	9776	5771	1758	7736	3705	9666	5618
29	1603	7668	3724	9771	5810	1839	7860	3873	9876	5871	1858	7835	3805	9765	5717
30	1704	7769	3825	9872	5910	1940	7961	3973	9976	5971	1957	7935	3904	9864	5816
31	1805	7870	3925	9972	6011	2040	8061	4073	0076	6071	2057	8034	4003	9964	5915
32	1906	7971	4026	0073	6111	2141	8161	4173	0176	6171	2157	8134	4103	0063	6015
33	2007	8072	4127	0174	6212	2241	8261	4273	0276	6271	2256	8234	4202	0162	6114
34	2109	8173	4228	0275	6312	2341	8362	4373	0376	6370	2356	8333	4302	0261	6213
35	2210	8274	4329	0375	6413	2442	8462	4473	0476	6470	2456	8433	4401	0361	6312
36	2311	8375	4430	0476	6513	2542	8562	4574	0576	6570	2555	8532	4500	0460	6411
37	2412	8476	4531	0577	6614	2643	8662	4674	0676	6670	2655	8632	4600	0559	6510
38	2513	8577	4631	0677	6715	2743	8763	4774	0776	6770	2755	8731	4699	0658	6609
39	2614	8678	4732	0778	6815	2843	8863	4874	0876	6870	2855	8831	4799	0758	6708
40	2715	8779	4833	0879	6916	2944	8963	4974	0976	6969	2954	8930	4898	0857	6807
41	2816	8880	4934	0979	7016	3044	9063	5074	1076	7069	3054	9030	4997	0956	6907
42	2918	8981	5035	1080	7117	3145	9164	5174	1176	7169	3154	9129	5097	1055	7006
43	3019	9082	5136	1181	7217	3245	9264	5274	1276	7269	3253	9229	5196	1155	7105
44	3120	9183	5236	1281	7318	3345	9364	5374	1376	7369	3353	9328	5295	1254	7204
45	3221	9283	5337	1382	7418	3446	9464	5474	1476	7468	3453	9428	5395	1353	7303
46	3322	9384	5438	1483	7519	3546	9565	5575	1576	7568	3552	9527	5494	1452	7402
47	3423	9485	5539	1584	7619	3647	9665	5675	1676	7668	3652	9627	5594	1552	7501
48	3524	9586	5640	1684	7720	3747	9765	5775	1776	7768	3751	9727	5693	1651	7600
49	3625	9687	5740	1785	7820	3847	9865	5875	1876	7868	3851	9826	5792	1750	7699
50	3726	9788	5841	1886	7921	3948	9966	5975	1976	7967	3951	9926	5892	1849	7798
51	3828	9889	5942	1986	8021	4048	0066	6075	2075	8067	4050	0025	5991	1949	7897
52	3929	9990	6043	2087	8122	4148	0166	6175	2175	8167	4150	0125	6090	2048	7997
53	4030	0091	6144	2187	8222	4249	0266	6275	2275	8267	4250	0224	6190	2147	8096
54	4131	0192	6245	2288	8323	4349	0366	6375	2375	8367	4349	0324	6289	2246	8195
55	4232	0293	6345	2389	8423	4449	0467	6475	2475	8466	4449	0423	6389	2345	8294
56	4333	0394	6446	2489	8524	4550	0567	6575	2575	8566	4549	0523	6488	2445	8393
57	4434	0495	6547	2590	8625	4650	0667	6675	2675	8666	4648	0622	6587	2544	8492
58	4535	0596	6648	2691	8725	4751	0767	6775	2775	8766	4748	0722	6687	2643	8591
59	4636	0697	6748	2791	8826	4851	0868	6876	2875	8866	4848	0821	6786	2742	8690
60	4737	0798	6849	2892	8926	4951	0968	6976	2975	8965	4947	0921	6885	2841	8789
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
	9. 990	9. 990	9. 990	9. 990	9. 990	9. 990	9. 990	9. 990	9. 990	9. 990	9. 990	9. 990	9. 990	9. 990	9. 990	″
	8029	7766	7502	7239	6974	6710	6445	6180	5914	5648	5382	5115	4848	4580	4312	60
	8024	7761	7498	7234	6970	6706	6441	6175	5910	5644	5377	5111	4843	4576	4308	59
	8020	7757	7494	7230	6966	6701	6436	6171	5905	5639	5373	5106	4839	4571	4303	58
	8015	7753	7489	7225	6961	6697	6432	6167	5901	5635	5368	5102	4834	4567	4299	57
	8011	7748	7485	7221	6957	6692	6427	6162	5896	5630	5364	5097	4830	4562	4294	56
	8007	7744	7480	7217	6952	6688	6423	6158	5892	5626	5360	5093	4826	4558	4290	55
	8002	7739	7476	7212	6948	6684	6419	6153	5888	5622	5355	5088	4821	4553	4285	54
	7998	7735	7472	7208	6944	6679	6414	6149	5883	5617	5351	5084	4817	4549	4281	53
	7994	7731	7467	7203	6939	6675	6410	6144	5879	5613	5346	5079	4812	4545	4277	52
	7989	7726	7463	7199	6935	6670	6405	6140	5874	5608	5342	5075	4808	4540	4272	51
	7985	7722	7458	7195	6930	6666	6401	6136	5870	5604	5337	5070	4803	4536	4268	50
	7980	7717	7454	7190	6926	6661	6397	6131	5865	5599	5333	5066	4799	4531	4263	49
	7976	7713	7450	7186	6922	6657	6392	6127	5861	5595	5328	5062	4794	4527	4259	48
	7972	7709	7445	7181	6917	6653	6388	6122	5857	5590	5324	5057	4790	4522	4254	47
	7967	7704	7441	7177	6913	6648	6383	6118	5852	5586	5320	5053	4785	4518	4250	46
	7963	7700	7436	7173	6908	6644	6379	6113	5848	5582	5315	5048	4781	4513	4245	45
	7959	7695	7432	7168	6904	6639	6374	6109	5843	5577	5311	5044	4776	4509	4241	44
	7954	7691	7428	7164	6900	6635	6370	6105	5839	5573	5306	5039	4772	4504	4236	43
	7950	7687	7423	7159	6895	6631	6366	6100	5834	5568	5302	5035	4768	4500	4232	42
	7945	7682	7419	7155	6891	6626	6361	6096	5830	5564	5297	5030	4763	4495	4227	41
	7941	7678	7414	7151	6886	6622	6357	6091	5826	5559	5293	5026	4759	4491	4223	40
	7937	7674	7410	7146	6882	6617	6352	6087	5821	5555	5288	5021	4754	4486	4218	39
	7932	7669	7406	7142	6878	6613	6348	6082	5817	5551	5284	5017	4750	4482	4214	38
	7928	7665	7401	7137	6873	6609	6343	6078	5812	5546	5280	5013	4745	4478	4209	37
	7923	7660	7397	7133	6869	6604	6339	6074	5808	5542	5275	5008	4741	4473	4205	36
	7919	7656	7392	7129	6864	6600	6335	6069	5803	5537	5271	5004	4736	4469	4201	35
	7915	7652	7388	7124	6860	6595	6330	6065	5799	5533	5266	4999	4732	4464	4196	34
	7910	7647	7384	7120	6856	6591	6326	6060	5795	5528	5262	4995	4727	4460	4192	33
	7906	7643	7379	7115	6851	6586	6321	6056	5790	5524	5257	4990	4723	4455	4187	32
	7902	7638	7375	7111	6847	6582	6317	6052	5786	5519	5253	4986	4719	4451	4183	31
	7897	7634	7371	7107	6842	6578	6313	6047	5781	5515	5248	4981	4714	4446	4178	30
	7893	7630	7366	7102	6838	6573	6308	6043	5777	5511	5244	4977	4710	4442	4174	29
	7888	7625	7362	7098	6833	6569	6304	6038	5772	5506	5240	4973	4705	4437	4169	28
	7884	7621	7357	7093	6829	6564	6299	6034	5768	5502	5235	4968	4701	4433	4165	27
	7880	7616	7353	7089	6825	6560	6295	6029	5764	5497	5231	4964	4696	4428	4160	26
	7875	7612	7349	7085	6820	6556	6290	6025	5759	5493	5226	4959	4692	4424	4156	25
	7871	7608	7344	7080	6816	6551	6286	6021	5755	5488	5222	4955	4687	4419	4151	24
	7867	7603	7340	7076	6811	6547	6282	6016	5750	5484	5217	4950	4683	4415	4147	23
	7862	7599	7335	7071	6807	6542	6277	6012	5746	5479	5213	4946	4678	4411	4142	22
	7858	7595	7331	7067	6803	6538	6273	6007	5741	5475	5208	4941	4674	4406	4138	21
	7853	7590	7327	7063	6798	6533	6268	6003	5737	5471	5204	4937	4669	4402	4133	20
	7849	7586	7322	7058	6794	6529	6264	5998	5732	5466	5199	4932	4665	4397	4129	19
	7845	7581	7318	7054	6789	6525	6259	5994	5728	5462	5195	4928	4661	4393	4124	18
	7840	7577	7313	7049	6785	6520	6255	5990	5724	5457	5191	4924	4656	4388	4120	17
	7836	7573	7309	7045	6781	6516	6251	5985	5719	5453	5186	4919	4652	4384	4116	16
	7831	7568	7305	7041	6776	6511	6246	5981	5715	5448	5182	4915	4647	4379	4111	15
	7827	7564	7300	7036	6772	6507	6242	5976	5710	5444	5177	4910	4643	4375	4107	14
	7823	7559	7296	7032	6767	6503	6237	5972	5706	5440	5173	4906	4638	4370	4102	13
	7818	7555	7291	7027	6763	6498	6233	5967	5701	5435	5168	4901	4634	4366	4098	12
	7814	7551	7287	7023	6759	6494	6229	5963	5697	5431	5164	4897	4629	4361	4093	11
	7810	7546	7283	7019	6754	6489	6224	5959	5693	5426	5159	4892	4625	4357	4089	10
	7805	7542	7278	7014	6750	6485	6220	5954	5688	5422	5155	4888	4620	4352	4084	9
	7801	7537	7274	7010	6745	6480	6215	5950	5684	5417	5151	4883	4616	4348	4080	8
	7796	7533	7269	7005	6741	6476	6211	5945	5679	5413	5146	4879	4611	4344	4075	7
	7792	7529	7265	7001	6736	6472	6206	5941	5675	5408	5142	4875	4607	4339	4071	6
	7788	7524	7261	6997	6732	6467	6202	5936	5670	5404	5137	4870	4603	4335	4066	5
	7783	7520	7256	6992	6728	6463	6198	5932	5666	5400	5133	4866	4598	4330	4062	4
	7779	7516	7252	6988	6723	6458	6193	5927	5661	5395	5128	4861	4594	4326	4057	3
	7774	7511	7247	6983	6719	6454	6189	5923	5657	5391	5124	4857	4589	4321	4053	2
	7770	7507	7243	6979	6714	6450	6184	5919	5653	5386	5119	4852	4585	4317	4048	1
	7766	7502	7239	6974	6710	6445	6180	5914	5648	5382	5115	4848	4580	4312	4044	0
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	9.318	9.318	9.319	9.319	9.320	9.321	9.321	9.322	9.323	9.323	9.324	9.324	9.325	9.326	9.326
0	0640	6972	3295	9611	5918	2216	8506	4788	1061	7327	3584	9832	6073	2305	8529
1	0745	7077	3401	9716	6023	2321	8611	4893	1166	7431	3688	9936	6177	2409	8633
2	0851	7183	3506	9821	6128	2426	8716	4997	1270	7535	3792	0040	6281	2513	8736
3	0956	7288	3611	9926	6233	2531	8820	5102	1375	7640	3896	0144	6385	2616	8840
4	1062	7394	3717	0031	6338	2636	8925	5206	1479	7744	4000	0249	6488	2720	8944
5	1168	7499	3822	0137	6443	2740	9030	5311	1584	7848	4105	0353	6592	2824	9047
6	1273	7604	3927	0242	6548	2845	9135	5416	1688	7953	4209	0457	6696	2928	9151
7	1379	7710	4033	0347	6653	2950	9239	5520	1793	8057	4313	0561	6800	3032	9255
8	1484	7815	4138	0452	6758	3055	9344	5625	1897	8161	4417	0665	6904	3135	9358
9	1590	7921	4243	0557	6863	3160	9449	5729	2002	8266	4521	0769	7008	3239	9462
10	1696	8026	4349	0662	6968	3265	9554	5834	2106	8370	4626	0873	7112	3343	9566
11	1801	8132	4454	0768	7073	3370	9658	5939	2211	8474	4730	0977	7216	3447	9669
12	1907	8237	4559	0873	7178	3475	9763	6043	2315	8579	4834	1081	7320	3551	9773
13	2012	8343	4664	0978	7283	3580	9868	6148	2420	8683	4938	1185	7424	3654	9877
14	2118	8448	4770	1083	7388	3684	9973	6252	2524	8787	5042	1289	7528	3758	9980
15	2223	8553	4875	1188	7493	3789	0077	6357	2628	8892	5146	1393	7632	3862	0084
16	2329	8659	4980	1293	7598	3894	0182	6462	2733	8996	5251	1497	7735	3966	0188
17	2435	8764	5086	1398	7703	3999	0287	6566	2837	9100	5355	1601	7839	4069	0291
18	2540	8870	5191	1504	7808	4104	0392	6671	2942	9205	5459	1705	7943	4173	0395
19	2646	8975	5296	1609	7913	4209	0496	6775	3046	9309	5563	1809	8047	4277	0498
20	2751	9081	5401	1714	8018	4314	0601	6880	3151	9413	5667	1913	8151	4381	0602
21	2857	9186	5507	1819	8123	4418	0706	6985	3255	9517	5772	2017	8255	4484	0706
22	2962	9291	5612	1924	8228	4523	0810	7089	3360	9622	5876	2121	8359	4588	0809
23	3068	9397	5717	2029	8333	4628	0915	7194	3464	9726	5980	2225	8463	4692	0913
24	3173	9502	5823	2134	8438	4733	1020	7298	3568	9830	6084	2329	8567	4796	1017
25	3279	9608	5928	2240	8543	4838	1125	7403	3673	9935	6188	2433	8671	4899	1120
26	3385	9713	6033	2345	8648	4943	1229	7507	3777	0039	6292	2537	8774	5003	1224
27	3490	9818	6138	2450	8753	5048	1334	7612	3882	0143	6396	2641	8878	5107	1327
28	3596	9924	6244	2555	8858	5152	1439	7717	3986	0248	6501	2745	8982	5211	1431
29	3701	0029	6349	2660	8963	5257	1543	7821	4091	0352	6605	2849	9086	5314	1535
30	3807	0135	6454	2765	9068	5362	1648	7926	4195	0456	6709	2953	9190	5418	1638
31	3912	0240	6559	2870	9173	5467	1753	8030	4299	0560	6813	3058	9294	5522	1742
32	4018	0345	6665	2975	9278	5572	1857	8135	4404	0665	6917	3162	9398	5626	1845
33	4123	0451	6770	3080	9383	5677	1962	8239	4508	0769	7021	3266	9501	5729	1949
34	4229	0556	6875	3186	9488	5781	2067	8344	4613	0873	7125	3370	9605	5833	2053
35	4334	0662	6980	3291	9593	5886	2172	8448	4717	0977	7230	3474	9709	5937	2156
36	4440	0767	7086	3396	9698	5991	2276	8553	4821	1082	7334	3578	9813	6040	2260
37	4545	0872	7191	3501	9803	6096	2381	8658	4926	1186	7438	3681	9917	6144	2363
38	4651	0978	7296	3606	9908	6201	2486	8762	5030	1290	7542	3785	0021	6248	2467
39	4756	1083	7401	3711	0012	6306	2590	8867	5135	1395	7646	3889	0125	6352	2570
40	4862	1188	7507	3816	0117	6410	2695	8971	5239	1499	7750	3993	0228	6455	2674
41	4967	1294	7612	3921	0222	6515	2800	9076	5343	1603	7854	4097	0332	6559	2778
42	5073	1399	7717	4026	0327	6620	2904	9180	5448	1707	7958	4201	0436	6663	2881
43	5178	1505	7822	4131	0432	6725	3009	9285	5552	1812	8063	4305	0540	6766	2985
44	5284	1610	7927	4237	0537	6830	3114	9389	5657	1916	8167	4409	0644	6870	3088
45	5389	1715	8033	4342	0642	6934	3218	9494	5761	2020	8271	4513	0748	6974	3192
46	5495	1821	8138	4447	0747	7039	3323	9598	5865	2124	8375	4617	0852	7078	3295
47	5600	1926	8243	4552	0852	7144	3428	9703	5970	2229	8479	4721	0955	7181	3399
48	5706	2031	8348	4657	0957	7249	3532	9807	6074	2333	8583	4825	1059	7285	3503
49	5811	2137	8454	4762	1062	7354	3637	9912	6179	2437	8687	4929	1163	7389	3606
50	5917	2242	8559	4867	1167	7458	3742	0016	6283	2541	8791	5033	1267	7492	3710
51	6022	2347	8664	4972	1272	7563	3846	0121	6387	2646	8895	5137	1371	7596	3813
52	6128	2453	8769	5077	1377	7668	3951	0225	6492	2750	9000	5241	1475	7700	3917
53	6233	2558	8874	5182	1482	7773	4055	0330	6596	2854	9104	5345	1578	7803	4020
54	6339	2663	8980	5287	1587	7877	4160	0434	6700	2958	9208	5449	1682	7907	4124
55	6444	2769	9085	5392	1691	7982	4265	0539	6805	3062	9312	5553	1786	8011	4227
56	6550	2874	9190	5497	1796	8087	4369	0643	6909	3167	9416	5657	1890	8114	4331
57	6655	2979	9295	5602	1901	8192	4474	0748	7014	3271	9520	5761	1994	8218	4435
58	6761	3085	9400	5707	2006	8297	4579	0852	7118	3375	9624	5865	2097	8322	4538
59	6866	3190	9505	5812	2111	8401	4683	0957	7222	3479	9728	5969	2201	8425	4642
60	6972	3295	9611	5918	2216	8506	4788	1061	7327	3584	9832	6073	2305	8529	4745
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
″	10.681	10.681	10.680	10.680	10.679	10.678	10.678	10.677	10.676	10.676	10.675	10.675	10.674	10.673	10.673	″
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1	9255	2923	6599	0284	3977	7679	1389	5107	8834	2569	6312	0064	3823	7591	1367	59
2	9149	2817	6494	0179	3872	7574	1284	5003	8730	2465	6208	9960	3719	7487	1264	58
3	9044	2712	6389	0074	3767	7469	1180	4898	8625	2360	6104	9856	3615	7384	1160	57
4	8938	2606	6283	9969	3662	7364	1075	4794	8521	2256	6000	9751	3512	7280	1056	56
5	8832	2501	6178	9863	3557	7260	0970	4689	8416	2152	5895	9647	3408	7176	0953	55
6	8727	2396	6073	9758	3452	7155	0865	4584	8312	2047	5791	9543	3304	7072	0849	54
7	8621	2290	5967	9653	3347	7050	0761	4480	8207	1943	5687	9439	3200	6968	0745	53
8	8516	2185	5862	9548	3242	6945	0656	4375	8103	1839	5583	9335	3096	6865	0642	52
9	8410	2079	5757	9443	3137	6840	0551	4271	7998	1734	5479	9231	2992	6761	0538	51
10	8304	1974	5651	9338	3032	6735	0446	4166	7894	1630	5374	9127	2888	6657	0434	50
11	8199	1868	5546	9232	2927	6630	0342	4061	7789	1526	5270	9023	2784	6553	0331	49
12	8093	1763	5441	9127	2822	6525	0237	3957	7685	1421	5166	8919	2680	6449	0227	48
13	7988	1657	5336	9022	2717	6420	0132	3852	7580	1317	5062	8815	2576	6346	0123	47
14	7882	1552	5230	8917	2612	6316	0027	3748	7476	1213	4958	8711	2472	6242	0020	46
15	7777	1447	5125	8812	2507	6211	9923	3643	7372	1108	4854	8607	2368	6138	9916	45
16	7671	1341	5020	8707	2402	6106	9818	3538	7267	1004	4749	8503	2265	6034	9812	44
17	7565	1236	4914	8602	2297	6001	9713	3434	7163	0900	4645	8399	2161	5931	9709	43
18	7460	1130	4809	8496	2192	5896	9608	3329	7058	0795	4541	8295	2057	5827	9605	42
19	7354	1025	4704	8391	2087	5791	9504	3225	6954	0691	4437	8191	1953	5723	9502	41
20	7249	0919	4599	8286	1982	5686	9399	3120	6849	0587	4333	8087	1849	5619	9398	40
21	7143	0814	4493	8181	1877	5582	9294	3015	6745	0483	4228	7983	1745	5516	9294	39
22	7038	0709	4388	8076	1772	5477	9190	2911	6640	0378	4124	7879	1641	5412	9191	38
23	6932	0603	4283	7971	1667	5372	9085	2806	6536	0274	4020	7775	1537	5308	9087	37
24	6827	0498	4177	7866	1562	5267	8980	2702	6432	0170	3916	7671	1433	5204	8983	36
25	6721	0392	4072	7760	1457	5162	8875	2597	6327	0065	3812	7567	1329	5101	8880	35
26	6615	0287	3967	7655	1352	5057	8771	2493	6223	9961	3708	7463	1226	4997	8776	34
27	6510	0182	3862	7550	1247	4952	8666	2388	6118	9857	3604	7359	1122	4893	8673	33
28	6404	0076	3756	7445	1142	4848	8561	2283	6014	9752	3499	7255	1018	4789	8569	32
29	6299	9971	3651	7340	1037	4743	8457	2179	5909	9648	3395	7151	0914	4686	8465	31
30	6193	9865	3546	7235	0932	4638	8352	2074	5805	9544	3291	7047	0810	4582	8362	30
31	6088	9760	3441	7130	0827	4533	8247	1970	5701	9440	3187	6942	0706	4478	8258	29
32	5982	9655	3335	7025	0722	4428	8143	1865	5596	9335	3083	6838	0602	4374	8155	28
33	5877	9549	3230	6920	0617	4323	8038	1761	5492	9231	2979	6734	0499	4271	8051	27
34	5771	9444	3125	6814	0512	4219	7933	1656	5387	9127	2875	6630	0395	4167	7947	26
35	5666	9338	3020	6709	0407	4114	7828	1552	5283	9023	2770	6526	0291	4063	7844	25
36	5560	9233	2914	6604	0302	4009	7724	1447	5179	8918	2666	6422	0187	3960	7740	24
37	5455	9128	2809	6499	0197	3904	7619	1342	5074	8814	2562	6319	0083	3856	7637	23
38	5349	9022	2704	6394	0092	3799	7514	1238	4970	8710	2458	6215	9979	3752	7533	22
39	5244	8917	2599	6289	9988	3694	7410	1133	4865	8605	2354	6111	9875	3648	7430	21
40	5138	8812	2493	6184	9883	3590	7305	1029	4761	8501	2250	6007	9772	3545	7326	20
41	5033	8706	2388	6079	9778	3485	7200	0924	4657	8397	2146	5903	9668	3441	7222	19
42	4927	8601	2283	5974	9673	3380	7096	0820	4552	8293	2042	5799	9564	3337	7119	18
43	4822	8495	2178	5869	9568	3275	6991	0715	4448	8188	1937	5695	9460	3234	7015	17
44	4716	8390	2073	5763	9463	3170	6886	0611	4343	8084	1833	5591	9356	3130	6912	16
45	4611	8285	1967	5658	9358	3066	6782	0506	4239	7980	1729	5487	9252	3026	6808	15
46	4505	8179	1862	5553	9253	2961	6677	0402	4135	7876	1625	5383	9148	2922	6705	14
47	4400	8074	1757	5448	9148	2856	6572	0297	4030	7771	1521	5279	9045	2819	6601	13
48	4294	7969	1652	5343	9043	2751	6468	0193	3926	7667	1417	5175	8941	2715	6497	12
49	4189	7863	1546	5238	8938	2646	6363	0088	3821	7563	1313	5071	8837	2611	6394	11
50	4083	7758	1441	5133	8833	2542	6258	9984	3717	7459	1209	4967	8733	2508	6290	10
51	3978	7653	1336	5028	8728	2437	6154	9879	3613	7354	1105	4863	8629	2404	6187	9
52	3872	7547	1231	4923	8623	2332	6049	9775	3508	7250	1000	4759	8525	2300	6083	8
53	3767	7442	1126	4818	8518	2227	5945	9670	3404	7146	0896	4655	8422	2197	5980	7
54	3661	7337	1020	4713	8413	2123	5840	9566	3300	7042	0792	4551	8318	2093	5876	6
55	3556	7231	0915	4608	8309	2018	5735	9461	3195	6938	0688	4447	8214	1989	5773	5
56	3450	7126	0810	4503	8204	1913	5631	9357	3091	6833	0584	4343	8110	1886	5669	4
57	3345	7021	0705	4398	8099	1808	5526	9252	2986	6729	0480	4239	8006	1782	5565	3
58	3239	6915	0600	4293	7994	1703	5421	9148	2882	6625	0376	4135	7903	1678	5462	2
59	3134	6810	0495	4188	7889	1599	5317	9043	2778	6521	0272	4031	7799	1575	5358	1
60	3028	6705	0389	4082	7784	1494	5212	8939	2673	6416	0168	3927	7695	1471	5255	0
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.317	9.318	9.319	9.319	9.320	9.320	9.321	9.322	9.322	9.323	9.323	9.324	9.324	9.325	9.326
0	8789	4728	0659	6581	2495	8400	4297	0186	6066	1938	7802	3657	9505	5344	1174
1	8888	4827	0758	6680	2593	8499	4396	0284	6164	2036	7900	3755	9602	5441	1271
2	8987	4926	0857	6778	2692	8597	4494	0382	6262	2134	7997	3852	9699	5538	1368
3	9086	5025	0955	6877	2790	8695	4592	0480	6360	2232	8095	3950	9797	5635	1466
4	9185	5124	1054	6976	2889	8794	4690	0578	6458	2329	8193	4047	9894	5732	1563
5	9284	5223	1153	7074	2987	8892	4788	0676	6556	2427	8290	4145	9991	5830	1660
6	9383	5322	1252	7173	3086	8990	4887	0774	6654	2525	8388	4243	0089	5927	1757
7	9482	5421	1350	7272	3184	9089	4985	0873	6752	2623	8486	4340	0186	6024	1854
8	9581	5520	1449	7370	3283	9187	5083	0971	6850	2721	8583	4438	0284	6121	1951
9	9681	5618	1548	7469	3381	9285	5181	1069	6948	2818	8681	4535	0381	6219	2048
10	9780	5717	1647	7567	3480	9384	5279	1167	7046	2916	8778	4633	0478	6316	2145
11	9879	5816	1745	7666	3578	9482	5378	1265	7143	3014	8876	4730	0576	6413	2242
12	9978	5915	1844	7765	3677	9580	5476	1363	7241	3112	8974	4828	0673	6510	2339
13	0077	6014	1943	7863	3775	9679	5574	1461	7339	3209	9071	4925	0770	6608	2437
14	0176	6113	2042	7962	3874	9777	5672	1559	7437	3307	9169	5023	0868	6705	2534
15	0275	6212	2140	8060	3972	9875	5770	1657	7535	3405	9267	5120	0965	6802	2631
16	0374	6311	2239	8159	4071	9974	5869	1755	7633	3503	9364	5217	1062	6899	2728
17	0473	6409	2338	8258	4169	0072	5967	1853	7731	3601	9462	5315	1160	6996	2825
18	0572	6508	2437	8356	4267	0170	6065	1951	7829	3698	9560	5412	1257	7094	2922
19	0671	6607	2535	8455	4366	0269	6163	2049	7927	3796	9657	5510	1354	7191	3019
20	0770	6706	2634	8553	4464	0367	6261	2147	8025	3894	9755	5607	1452	7288	3116
21	0869	6805	2733	8652	4563	0465	6359	2245	8122	3992	9852	5705	1549	7385	3213
22	0968	6904	2831	8751	4661	0564	6458	2343	8220	4089	9950	5802	1646	7482	3310
23	1067	7003	2930	8849	4760	0662	6556	2441	8318	4187	0048	5900	1744	7580	3407
24	1166	7102	3029	8948	4858	0760	6654	2539	8416	4285	0145	5997	1841	7677	3504
25	1265	7200	3128	9046	4957	0858	6752	2637	8514	4383	0243	6095	1938	7774	3601
26	1364	7299	3226	9145	5055	0957	6850	2735	8612	4480	0340	6192	2036	7871	3698
27	1463	7398	3325	9243	5153	1055	6948	2833	8710	4578	0438	6290	2133	7968	3795
28	1562	7497	3424	9342	5252	1153	7046	2931	8808	4676	0536	6387	2230	8066	3892
29	1661	7596	3522	9441	5350	1252	7145	3029	8906	4773	0633	6485	2328	8163	3990
30	1760	7695	3621	9539	5449	1350	7243	3127	9003	4871	0731	6582	2425	8260	4087
31	1859	7794	3720	9638	5547	1448	7341	3225	9101	4969	0828	6679	2522	8357	4184
32	1958	7892	3819	9736	5646	1546	7439	3323	9199	5067	0926	6777	2620	8454	4281
33	2057	7991	3917	9835	5744	1645	7537	3421	9297	5164	1024	6874	2717	8551	4378
34	2156	8090	4016	9933	5842	1743	7635	3519	9395	5262	1121	6972	2814	8649	4475
35	2255	8189	4115	0032	5941	1841	7733	3617	9493	5360	1219	7069	2912	8746	4572
36	2354	8288	4213	0130	6039	1940	7832	3715	9591	5458	1316	7167	3009	8843	4669
37	2453	8387	4312	0229	6138	2038	7930	3813	9688	5555	1414	7264	3106	8940	4766
38	2552	8485	4411	0328	6236	2136	8028	3911	9786	5653	1511	7362	3204	9037	4863
39	2651	8584	4509	0426	6334	2234	8126	4009	9884	5751	1609	7459	3301	9134	4960
40	2749	8683	4608	0525	6433	2333	8224	4107	9982	5848	1707	7556	3398	9232	5057
41	2848	8782	4707	0623	6531	2431	8322	4205	0080	5946	1804	7654	3495	9329	5154
42	2947	8881	4805	0722	6630	2529	8420	4303	0178	6044	1902	7751	3593	9426	5251
43	3046	8979	4904	0820	6728	2627	8518	4401	0275	6141	1999	7849	3690	9523	5348
44	3145	9078	5003	0919	6826	2726	8617	4499	0373	6239	2097	7946	3787	9620	5445
45	3244	9177	5101	1017	6925	2824	8715	4597	0471	6337	2194	8044	3885	9717	5542
46	3343	9276	5200	1116	7023	2922	8813	4695	0569	6435	2292	8141	3982	9814	5639
47	3442	9375	5299	1214	7122	3020	8911	4793	0667	6532	2389	8238	4079	9912	5736
48	3541	9473	5397	1313	7220	3119	9009	4891	0765	6630	2487	8336	4176	0009	5833
49	3640	9572	5496	1411	7318	3217	9107	4989	0862	6728	2585	8433	4274	0106	5930
50	3739	9671	5595	1510	7417	3315	9205	5087	0960	6825	2682	8531	4371	0203	6027
51	3838	9770	5693	1608	7515	3413	9303	5185	1058	6923	2780	8628	4468	0300	6124
52	3937	9869	5792	1707	7613	3512	9401	5283	1156	7021	2877	8725	4565	0397	6221
53	4036	9967	5891	1805	7712	3610	9499	5381	1254	7118	2975	8823	4663	0494	6318
54	4135	0066	5989	1904	7810	3708	9598	5479	1351	7216	3072	8920	4760	0592	6415
55	4234	0165	6088	2002	7909	3806	9696	5577	1449	7314	3170	9018	4857	0689	6512
56	4333	0264	6187	2101	8007	3905	9794	5675	1547	7411	3267	9115	4955	0786	6609
57	4432	0363	6285	2200	8105	4003	9892	5773	1645	7509	3365	9212	5052	0883	6706
58	4530	0461	6384	2298	8204	4101	9990	5870	1743	7607	3462	9310	5149	0980	6803
59	4629	0560	6483	2396	8302	4199	0088	5968	1841	7704	3560	9407	5246	1077	6900
60	4728	0659	6581	2495	8400	4297	0186	6066	1938	7802	3657	9505	5344	1174	6997
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
	9.990	9.990	9.990	9.990	9.990	9.990	9.990	9.990	9.990	9.990	9.990	9.990	9.990	9.990	9.990	″
0	4044	3775	3506	3237	2967	2697	2426	2155	1883	1612	1339	1067	0794	0521	0247	60
1	4039	3771	3502	3232	2962	2692	2421	2150	1879	1607	1335	1062	0789	0516	0242	59
2	4035	3766	3497	3228	2958	2687	2417	2146	1874	1603	1330	1058	0785	0512	0238	58
3	4031	3762	3493	3223	2953	2683	2412	2141	1870	1598	1326	1053	0780	0507	0233	57
4	4026	3757	3488	3219	2949	2678	2408	2137	1865	1594	1321	1049	0776	0502	0229	56
5	4022	3753	3484	3214	2944	2674	2403	2132	1861	1589	1317	1044	0771	0498	0224	55
6	4017	3748	3479	3210	2940	2669	2399	2128	1856	1584	1312	1040	0767	0493	0220	54
7	4013	3744	3475	3205	2935	2665	2394	2123	1852	1580	1308	1035	0762	0489	0215	53
8	4008	3739	3470	3201	2931	2660	2390	2119	1847	1575	1303	1031	0758	0484	0210	52
9	4004	3735	3466	3196	2926	2656	2385	2114	1843	1571	1299	1026	0753	0480	0206	51
10	3999	3730	3461	3192	2922	2651	2381	2110	1838	1566	1294	1021	0748	0475	0201	50
11	3995	3726	3457	3187	2917	2647	2376	2105	1834	1562	1290	1017	0744	0470	0197	49
12	3990	3721	3452	3183	2913	2642	2372	2101	1829	1557	1285	1012	0739	0466	0192	48
13	3986	3717	3448	3178	2908	2638	2367	2096	1825	1553	1280	1008	0735	0461	0188	47
14	3981	3712	3443	3174	2904	2633	2363	2092	1820	1548	1276	1003	0730	0457	0183	46
15	3977	3708	3439	3169	2899	2629	2358	2087	1816	1544	1271	0999	0726	0452	0178	45
16	3972	3704	3434	3165	2895	2624	2354	2083	1811	1539	1267	0994	0721	0448	0174	44
17	3968	3699	3430	3160	2890	2620	2349	2078	1806	1535	1262	0990	0717	0443	0169	43
18	3963	3695	3425	3156	2886	2615	2345	2073	1802	1530	1258	0985	0712	0439	0165	42
19	3959	3690	3421	3151	2881	2611	2340	2069	1797	1526	1253	0981	0707	0434	0160	41
20	3954	3686	3416	3147	2877	2606	2336	2064	1793	1521	1249	0976	0703	0429	0156	40
21	3950	3681	3412	3142	2872	2602	2331	2060	1788	1516	1244	0971	0698	0425	0151	39
22	3945	3677	3407	3138	2868	2597	2327	2055	1784	1512	1240	0967	0694	0420	0146	38
23	3941	3672	3403	3133	2863	2593	2322	2051	1779	1507	1235	0962	0689	0416	0142	37
24	3936	3668	3398	3129	2859	2588	2318	2046	1775	1503	1230	0958	0685	0411	0137	36
25	3932	3663	3394	3124	2854	2584	2313	2042	1770	1498	1226	0953	0680	0407	0133	35
26	3928	3659	3389	3120	2850	2579	2308	2037	1766	1494	1221	0949	0676	0402	0128	34
27	3923	3654	3385	3115	2845	2575	2304	2033	1761	1489	1217	0944	0671	0398	0124	33
28	3919	3650	3380	3111	2841	2570	2299	2028	1757	1485	1212	0940	0666	0393	0119	32
29	3914	3645	3376	3106	2836	2566	2295	2024	1752	1480	1208	0935	0662	0388	0114	31
30	3910	3641	3371	3102	2832	2561	2290	2019	1748	1476	1203	0930	0657	0384	0110	30
31	3905	3636	3367	3097	2827	2557	2286	2015	1743	1471	1199	0926	0653	0379	0105	29
32	3901	3632	3362	3093	2823	2552	2281	2010	1739	1467	1194	0921	0648	0375	0101	28
33	3896	3627	3358	3088	2818	2548	2277	2006	1734	1462	1190	0917	0644	0370	0096	27
34	3892	3623	3353	3084	2814	2543	2272	2001	1729	1457	1185	0912	0639	0366	0092	26
35	3887	3618	3349	3079	2809	2539	2268	1997	1725	1453	1181	0908	0635	0361	0087	25
36	3883	3614	3344	3075	2805	2534	2263	1992	1720	1448	1176	0903	0630	0356	0083	24
37	3878	3609	3340	3070	2800	2530	2259	1988	1716	1444	1171	0899	0625	0352	0078	23
38	3874	3605	3335	3066	2796	2525	2254	1983	1711	1439	1167	0894	0621	0347	0073	22
39	3869	3600	3331	3061	2791	2521	2250	1978	1707	1435	1162	0890	0616	0343	0069	21
40	3865	3596	3327	3057	2787	2516	2245	1974	1702	1430	1158	0885	0612	0338	0064	20
41	3860	3591	3322	3052	2782	2512	2241	1969	1698	1426	1153	0880	0607	0334	0060	19
42	3856	3587	3318	3048	2778	2507	2236	1965	1693	1421	1149	0876	0603	0329	0055	18
43	3851	3582	3313	3043	2773	2503	2232	1960	1689	1417	1144	0871	0598	0325	0051	17
44	3847	3578	3309	3039	2769	2498	2227	1956	1684	1412	1140	0867	0594	0320	0046	16
45	3842	3573	3304	3034	2764	2494	2223	1951	1680	1408	1135	0862	0589	0315	0041	15
46	3838	3569	3300	3030	2760	2489	2218	1947	1675	1403	1131	0858	0584	0311	0037	14
47	3833	3564	3295	3025	2755	2485	2214	1942	1671	1398	1126	0853	0580	0306	0032	13
48	3829	3560	3291	3021	2751	2480	2209	1938	1666	1394	1121	0849	0575	0302	0028	12
49	3825	3555	3286	3016	2746	2476	2205	1933	1662	1389	1117	0844	0571	0297	0023	11
50	3820	3551	3282	3012	2742	2471	2200	1929	1657	1385	1112	0839	0566	0293	0019	10
51	3816	3547	3277	3007	2737	2466	2196	1924	1652	1380	1108	0835	0562	0288	0014	9
52	3811	3542	3273	3003	2733	2462	2191	1920	1648	1376	1103	0830	0557	0283	0009	8
53	3807	3538	3268	2998	2728	2457	2186	1915	1643	1371	1099	0826	0553	0279	0005	7
54	3802	3533	3264	2994	2724	2453	2182	1911	1639	1367	1094	0821	0548	0274	0000	6
55	3798	3529	3259	2989	2719	2448	2177	1906	1634	1362	1090	0817	0543	0270	9996	5
56	3793	3524	3255	2985	2715	2444	2173	1902	1630	1358	1085	0812	0539	0265	9991	4
57	3789	3520	3250	2980	2710	2439	2168	1897	1625	1353	1081	0808	0534	0261	9987	3
58	3784	3515	3246	2976	2706	2435	2164	1892	1621	1349	1076	0803	0530	0256	9982	2
59	3780	3511	3241	2971	2701	2430	2159	1888	1616	1344	1071	0799	0525	0251	9977	1
60	3775	3506	3237	2967	2697	2426	2155	1883	1612	1339	1067	0794	0521	0247	9973	0
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

12 Deg. Tangent

"	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
	9. 327	9. 328	9. 328	9. 329	9. 329	9. 330	9. 331	9. 331	9. 332	9. 333	9. 333	9. 334	9. 334	9. 335	9. 336
0	4745	0953	7153	3345	9528	5704	1872	8031	4183	0327	6463	2591	8711	4823	0927
1	4849	1056	7256	3448	9631	5807	1974	8134	4285	0429	6565	2693	8813	4925	1029
2	4952	1160	7359	3551	9734	5910	2077	8236	4388	0531	6667	2795	8914	5026	1131
3	5056	1263	7463	3654	9837	6012	2180	8339	4490	0634	6769	2897	9016	5128	1232
4	5159	1367	7566	3757	9940	6115	2282	8442	4593	0736	6871	2999	9118	5230	1334
5	5263	1470	7669	3860	0043	6218	2385	8544	4695	0838	6974	3101	9220	5332	1436
6	5366	1573	7772	3963	0146	6321	2488	8647	4798	0941	7076	3203	9322	5434	1537
7	5470	1677	7876	4066	0249	6424	2591	8749	4900	1043	7178	3305	9424	5535	1639
8	5573	1780	7979	4170	0352	6527	2693	8852	5003	1145	7280	3407	9526	5637	1741
9	5677	1884	8082	4273	0455	6630	2796	8954	5105	1248	7382	3509	9628	5739	1842
10	5780	1987	8185	4376	0558	6732	2899	9057	5207	1350	7484	3611	9730	5841	1944
11	5884	2090	8289	4479	0661	6835	3001	9160	5310	1452	7587	3713	9832	5943	2046
12	5987	2194	8392	4582	0764	6938	3104	9262	5412	1554	7689	3815	9934	6044	2147
13	6091	2297	8495	4685	0867	7041	3207	9365	5515	1657	7791	3917	0036	6146	2249
14	6194	2400	8598	4788	0970	7144	3309	9467	5617	1759	7893	4019	0138	6248	2351
15	6298	2504	8702	4891	1073	7247	3412	9570	5720	1861	7995	4121	0239	6350	2452
16	6401	2607	8805	4994	1176	7349	3515	9672	5822	1964	8097	4223	0341	6452	2554
17	6505	2710	8908	5097	1279	7452	3618	9775	5924	2066	8200	4325	0443	6553	2656
18	6608	2814	9011	5201	1382	7555	3720	9878	6027	2168	8302	4427	0545	6655	2757
19	6712	2917	9114	5304	1485	7658	3823	9980	6129	2271	8404	4529	0647	6757	2859
20	6815	3021	9218	5407	1588	7761	3926	0083	6232	2373	8506	4631	0749	6859	2960
21	6919	3124	9321	5510	1691	7863	4028	0185	6334	2475	8608	4733	0851	6960	3062
22	7022	3227	9424	5613	1794	7966	4131	0288	6437	2577	8710	4835	0953	7062	3164
23	7126	3331	9527	5716	1897	8069	4234	0390	6539	2680	8813	4937	1055	7164	3265
24	7229	3434	9630	5819	1999	8172	4336	0493	6641	2782	8915	5040	1156	7266	3367
25	7333	3537	9734	5922	2102	8275	4439	0595	6744	2884	9017	5142	1258	7367	3469
26	7436	3641	9837	6025	2205	8378	4542	0698	6846	2987	9119	5244	1360	7469	3570
27	7540	3744	9940	6128	2308	8480	4644	0800	6949	3089	9221	5346	1462	7571	3672
28	7643	3847	0043	6231	2411	8583	4747	0903	7051	3191	9323	5448	1564	7673	3773
29	7747	3951	0147	6334	2514	8686	4850	1006	7153	3293	9425	5550	1666	7774	3875
30	7850	4054	0250	6437	2617	8789	4952	1108	7256	3396	9528	5652	1768	7876	3977
31	7954	4157	0353	6540	2720	8891	5055	1211	7358	3498	9630	5754	1870	7978	4078
32	8057	4261	0456	6644	2823	8994	5158	1313	7461	3600	9732	5856	1971	8080	4180
33	8161	4364	0559	6747	2926	9097	5260	1416	7563	3702	9834	5958	2073	8181	4281
34	8264	4467	0662	6850	3029	9200	5363	1518	7665	3805	9936	6060	2175	8283	4383
35	8367	4571	0766	6953	3132	9303	5466	1621	7768	3907	0038	6162	2277	8385	4485
36	8471	4674	0869	7056	3235	9405	5568	1723	7870	4009	0140	6264	2379	8486	4586
37	8574	4777	0972	7159	3337	9508	5671	1826	7972	4111	0242	6366	2481	8588	4688
38	8678	4881	1075	7262	3440	9611	5774	1928	8075	4214	0345	6467	2583	8690	4789
39	8781	4984	1178	7365	3543	9714	5876	2031	8177	4316	0447	6569	2684	8792	4891
40	8885	5087	1282	7468	3646	9817	5979	2133	8280	4418	0549	6671	2786	8893	4993
41	8988	5190	1385	7571	3749	9919	6081	2236	8382	4520	0651	6773	2888	8995	5094
42	9092	5294	1488	7674	3852	0022	6184	2338	8484	4623	0753	6875	2990	9097	5196
43	9195	5397	1591	7777	3955	0125	6287	2441	8587	4725	0855	6977	3092	9199	5297
44	9298	5500	1694	7880	4058	0228	6389	2543	8689	4827	0957	7079	3194	9300	5399
45	9402	5604	1797	7983	4161	0330	6492	2646	8791	4929	1059	7181	3296	9402	5501
46	9505	5707	1901	8086	4264	0433	6595	2748	8894	5032	1161	7283	3397	9504	5602
47	9609	5810	2004	8189	4366	0536	6697	2851	8996	5134	1263	7385	3499	9605	5704
48	9712	5914	2107	8292	4469	0639	6800	2953	9099	5236	1366	7487	3601	9707	5805
49	9816	6017	2210	8395	4572	0741	6903	3056	9201	5338	1468	7589	3703	9809	5907
50	9919	6120	2313	8498	4675	0844	7005	3158	9303	5440	1570	7691	3805	9910	6008
51	0022	6223	2416	8601	4778	0947	7108	3261	9406	5543	1672	7793	3907	0012	6110
52	0126	6327	2519	8704	4881	1050	7210	3363	9508	5645	1774	7895	4008	0114	6212
53	0229	6430	2623	8807	4984	1152	7313	3466	9610	5747	1876	7997	4110	0216	6313
54	0333	6533	2726	8910	5087	1255	7416	3568	9713	5849	1978	8099	4212	0317	6415
55	0436	6636	2829	9013	5190	1358	7518	3671	9815	5952	2080	8201	4314	0419	6516
56	0539	6740	2932	9116	5292	1461	7621	3773	9917	6054	2182	8303	4416	0521	6618
57	0643	6843	3035	9219	5395	1563	7723	3875	0020	6156	2284	8405	4517	0622	6719
58	0746	6946	3138	9322	5498	1666	7826	3978	0122	6258	2386	8507	4619	0724	6821
59	0850	7050	3241	9425	5601	1769	7929	4080	0224	6360	2488	8609	4721	0826	6922
60	0953	7153	3345	9528	5704	1872	8031	4183	0327	6463	2591	8711	4823	0927	7024
"	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

12 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	"
10. 672	10. 671	10. 671	10. 670	10. 670	10. 669	10. 668	10. 668	10. 667	10. 666	10. 666	10. 665	10. 665	10. 664	10. 663	"
5255	9047	2847	6655	0472	4296	8128	1969	5817	9673	3537	7409	1289	5177	9073	60
5151	8944	2744	6552	0369	4193	8026	1866	5715	9571	3435	7307	1187	5075	8971	59
5048	8840	2641	6449	0266	4090	7923	1764	5612	9469	3333	7205	1086	4974	8869	58
4944	8737	2537	6346	0163	3988	7820	1661	5510	9366	3231	7103	0984	4872	8768	57
4841	8633	2434	6243	0060	3885	7718	1558	5407	9264	3129	7001	0882	4770	8666	56
4737	8530	2331	6140	9957	3782	7615	1456	5305	9162	3026	6899	0780	4668	8564	55
4634	8427	2228	6037	9854	3679	7512	1353	5202	9059	2924	6797	0678	4566	8463	54
4530	8323	2124	5934	9751	3576	7409	1251	5100	8957	2822	6695	0576	4465	8361	53
4427	8220	2021	5830	9648	3473	7307	1148	4997	8855	2720	6593	0474	4363	8259	52
4323	8116	1918	5727	9545	3370	7204	1046	4895	8752	2618	6491	0372	4261	8158	51
4220	8013	1815	5624	9442	3268	7101	0943	4793	8650	2516	6389	0270	4159	8056	50
4116	7910	1711	5521	9339	3165	6999	0840	4690	8548	2413	6287	0168	4057	7954	49
4013	7806	1608	5418	9236	3062	6896	0738	4588	8446	2311	6185	0066	3956	7853	48
3909	7703	1505	5315	9133	2959	6793	0635	4485	8343	2209	6083	9964	3854	7751	47
3806	7600	1402	5212	9030	2856	6691	0533	4383	8241	2107	5981	9862	3752	7649	46
3702	7496	1298	5109	8927	2753	6588	0430	4280	8139	2005	5879	9761	3650	7548	45
3599	7393	1195	5006	8824	2651	6485	0328	4178	8036	1903	5777	9659	3548	7446	44
3495	7290	1092	4903	8721	2548	6382	0225	4076	7934	1800	5675	9557	3447	7344	43
3392	7186	0989	4799	8618	2445	6280	0122	3973	7832	1698	5573	9455	3345	7243	42
3288	7083	0886	4696	8515	2342	6177	0020	3871	7729	1596	5471	9353	3243	7141	41
3185	6979	0782	4593	8412	2239	6074	9917	3768	7627	1494	5369	9251	3141	7040	40
3081	6876	0679	4490	8309	2137	5972	9815	3666	7525	1392	5267	9149	3040	6938	39
2978	6773	0576	4387	8206	2034	5869	9712	3563	7423	1290	5165	9047	2938	6836	38
2874	6669	0473	4284	8103	1931	5766	9610	3461	7320	1187	5063	8945	2836	6735	37
2771	6566	0370	4181	8001	1828	5664	9507	3359	7218	1085	4960	8844	2734	6633	36
2667	6463	0266	4078	7898	1725	5561	9405	3256	7116	0983	4858	8742	2633	6531	35
2564	6359	0163	3975	7795	1622	5458	9302	3154	7013	0881	4756	8640	2531	6430	34
2460	6256	0060	3872	7692	1520	5356	9200	3051	6911	0779	4654	8538	2429	6328	33
2357	6153	9957	3769	7589	1417	5253	9097	2949	6809	0677	4552	8436	2327	6227	32
2253	6049	9853	3666	7486	1314	5150	8994	2847	6707	0575	4450	8334	2226	6125	31
2150	5946	9750	3563	7383	1211	5048	8892	2744	6604	0472	4348	8232	2124	6023	30
2046	5843	9647	3460	7280	1109	4945	8789	2642	6502	0370	4246	8130	2022	5922	29
1943	5739	9544	3356	7177	1006	4842	8687	2539	6400	0268	4144	8029	1920	5820	28
1839	5636	9441	3253	7074	0903	4740	8584	2437	6298	0166	4042	7927	1819	5719	27
1736	5533	9338	3150	6971	0800	4637	8482	2335	6195	0064	3941	7825	1717	5617	26
1633	5429	9234	3047	6868	0697	4534	8379	2232	6093	9962	3838	7723	1615	5515	25
1529	5326	9131	2944	6765	0595	4432	8277	2130	5991	9860	3736	7621	1514	5414	24
1426	5223	9028	2841	6663	0492	4329	8174	2028	5889	9758	3634	7519	1412	5312	23
1322	5119	8925	2738	6560	0389	4226	8072	1925	5786	9655	3533	7417	1310	5211	22
1219	5016	8822	2635	6457	0286	4124	7969	1823	5684	9553	3431	7316	1208	5109	21
1115	4913	8718	2532	6354	0183	4021	7867	1720	5582	9451	3329	7214	1107	5007	20
1012	4810	8615	2429	6251	0081	3919	7764	1618	5480	9349	3227	7112	1005	4906	19
0908	4706	8512	2326	6148	9978	3816	7662	1516	5377	9247	3125	7010	0903	4804	18
0805	4603	8409	2223	6045	9875	3713	7559	1413	5275	9145	3023	6908	0801	4703	17
0702	4500	8306	2120	5942	9772	3611	7457	1311	5173	9043	2921	6806	0700	4601	16
0598	4396	8203	2017	5839	9670	3508	7354	1209	5071	8941	2819	6704	0598	4499	15
0495	4293	8099	1914	5736	9567	3405	7252	1106	4968	8839	2717	6603	0496	4398	14
0391	4190	7996	1811	5634	9464	3303	7149	1004	4866	8737	2615	6501	0395	4296	13
0288	4086	7893	1708	5531	9361	3200	7047	0901	4764	8634	2513	6399	0293	4195	12
0184	3983	7790	1605	5428	9259	3097	6944	0799	4662	8532	2411	6297	0191	4093	11
0081	3880	7687	1502	5325	9156	2995	6842	0697	4560	8430	2309	6195	0090	3992	10
9978	3777	7584	1399	5222	9053	2892	6739	0594	4457	8328	2207	6093	9988	3890	9
9874	3673	7481	1296	5119	8950	2790	6637	0492	4355	8226	2105	5992	9886	3788	8
9771	3570	7377	1193	5016	8848	2687	6534	0390	4253	8124	2003	5890	9784	3687	7
9667	3467	7274	1090	4913	8745	2584	6432	0287	4151	8022	1901	5788	9683	3585	6
9564	3364	7171	0987	4810	8642	2482	6329	0185	4048	7920	1799	5686	9581	3484	5
9461	3260	7068	0884	4708	8539	2379	6227	0083	3946	7818	1697	5584	9479	3382	4
9357	3157	6965	0781	4605	8437	2277	6125	9980	3844	7716	1595	5483	9378	3281	3
9254	3054	6862	0678	4502	8334	2174	6022	9878	3742	7614	1493	5381	9276	3179	2
9150	2950	6759	0575	4399	8231	2071	5920	9776	3640	7512	1391	5279	9174	3078	1
9047	2847	6655	0472	4296	8128	1969	5817	9673	3537	7409	1289	5177	9073	2976	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	"

Co-Tangent Deg. 77

Tangent Deg. 77

12 Deg. Sine

″	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9.326	9.327	9.327	9.328	9.329	9.329	9.330	9.330	9.331	9.331	9.332	9.333	9.333	9.334	9.334
0	6997	2811	8617	4416	0206	5988	1761	7527	3285	9035	4777	0511	6237	1955	7665
1	7094	2908	8714	4512	0302	6084	1858	7623	3381	9131	4873	0606	6332	2050	7760
2	7191	3005	8811	4609	0398	6180	1954	7719	3477	9227	4968	0702	6428	2145	7855
3	7288	3102	8908	4705	0495	6276	2050	7815	3573	9322	5064	0797	6523	2241	7950
4	7385	3199	9004	4802	0591	6373	2146	7911	3669	9418	5159	0893	6618	2336	8046
5	7482	3295	9101	4898	0688	6469	2242	8007	3765	9514	5255	0988	6714	2431	8141
6	7579	3392	9198	4995	0784	6565	2338	8103	3860	9610	5351	1084	6809	2526	8236
7	7676	3489	9294	5091	0881	6662	2435	8199	3956	9705	5446	1179	6904	2622	8331
8	7773	3586	9391	5188	0977	6758	2531	8295	4052	9801	5542	1275	7000	2717	8426
9	7869	3683	9488	5285	1073	6854	2627	8391	4148	9897	5637	1370	7095	2812	8521
10	7966	3779	9584	5381	1170	6950	2723	8487	4244	9993	5733	1466	7190	2907	8616
11	8063	3876	9681	5478	1266	7047	2819	8583	4340	0088	5829	1561	7286	3002	8711
12	8160	3973	9778	5574	1363	7143	2915	8679	4436	0184	5924	1657	7381	3098	8806
13	8257	4070	9874	5671	1459	7239	3011	8775	4532	0280	6020	1752	7476	3193	8901
14	8354	4167	9971	5767	1555	7335	3107	8871	4627	0375	6116	1848	7572	3288	8996
15	8451	4264	0068	5864	1652	7432	3204	8967	4723	0471	6211	1943	7667	3383	9091
16	8548	4360	0164	5960	1748	7528	3300	9063	4819	0567	6307	2039	7762	3478	9187
17	8645	4457	0261	6057	1845	7624	3396	9159	4915	0663	6402	2134	7858	3574	9282
18	8742	4554	0358	6153	1941	7721	3492	9255	5011	0758	6498	2229	7953	3669	9377
19	8839	4651	0454	6250	2037	7817	3588	9351	5107	0854	6593	2325	8048	3764	9472
20	8936	4748	0551	6346	2134	7913	3684	9447	5203	0950	6689	2420	8144	3859	9567
21	9033	4844	0648	6443	2230	8009	3780	9543	5298	1046	6785	2516	8239	3954	9662
22	9130	4941	0744	6539	2327	8106	3876	9639	5394	1141	6880	2611	8334	4050	9757
23	9227	5038	0841	6636	2423	8202	3973	9735	5490	1237	6976	2707	8430	4145	9852
24	9324	5135	0938	6733	2519	8298	4069	9831	5586	1333	7071	2802	8525	4240	9947
25	9420	5231	1034	6829	2616	8394	4165	9927	5682	1428	7167	2898	8620	4335	0042
26	9517	5328	1131	6926	2712	8491	4261	0023	5778	1524	7263	2993	8716	4430	0137
27	9614	5425	1228	7022	2808	8587	4357	0119	5874	1620	7358	3088	8811	4526	0232
28	9711	5522	1324	7119	2905	8683	4453	0215	5969	1716	7454	3184	8906	4621	0327
29	9808	5619	1421	7215	3001	8779	4549	0311	6065	1811	7549	3279	9002	4716	0422
30	9905	5715	1518	7312	3098	8875	4645	0407	6161	1907	7645	3375	9097	4811	0517
31	0002	5812	1614	7408	3194	8972	4741	0503	6257	2003	7740	3470	9192	4906	0612
32	0099	5909	1711	7505	3290	9068	4838	0599	6353	2098	7836	3566	9287	5001	0707
33	0196	6006	1807	7601	3387	9164	4934	0695	6449	2194	7932	3661	9383	5097	0802
34	0293	6102	1904	7698	3483	9260	5030	0791	6544	2290	8027	3757	9478	5192	0897
35	0390	6199	2001	7794	3579	9357	5126	0887	6640	2385	8123	3852	9573	5287	0992
36	0486	6296	2097	7891	3676	9453	5222	0983	6736	2481	8218	3947	9669	5382	1088
37	0583	6393	2194	7987	3772	9549	5318	1079	6832	2577	8314	4043	9764	5477	1183
38	0680	6489	2291	8084	3868	9645	5414	1175	6928	2672	8409	4138	9859	5572	1278
39	0777	6586	2387	8180	3965	9741	5510	1271	7023	2768	8505	4234	9954	5667	1373
40	0874	6683	2484	8276	4061	9838	5606	1367	7119	2864	8600	4329	0050	5763	1468
41	0971	6780	2580	8373	4157	9934	5702	1463	7215	2959	8696	4424	0145	5858	1563
42	1068	6876	2677	8469	4254	0030	5798	1559	7311	3055	8791	4520	0240	5953	1658
43	1165	6973	2774	8566	4350	0126	5894	1655	7407	3151	8887	4615	0336	6048	1753
44	1261	7070	2870	8662	4446	0222	5990	1750	7502	3246	8983	4711	0431	6143	1848
45	1358	7167	2967	8759	4543	0319	6087	1846	7598	3342	9078	4806	0526	6238	1943
46	1455	7263	3063	8855	4639	0415	6183	1942	7694	3438	9174	4901	0621	6333	2038
47	1552	7360	3160	8952	4735	0511	6279	2038	7790	3533	9269	4997	0717	6429	2133
48	1649	7457	3257	9048	4832	0607	6375	2134	7886	3629	9365	5092	0812	6524	2228
49	1746	7554	3353	9145	4928	0703	6471	2230	7981	3725	9460	5188	0907	6619	2323
50	1843	7650	3450	9241	5024	0800	6567	2326	8077	3820	9556	5283	1002	6714	2418
51	1940	7747	3546	9338	5121	0896	6663	2422	8173	3916	9651	5378	1098	6809	2513
52	2036	7844	3643	9434	5217	0992	6759	2518	8269	4012	9747	5474	1193	6904	2608
53	2133	7940	3740	9530	5313	1088	6855	2614	8365	4107	9842	5569	1288	6999	2703
54	2230	8037	3836	9627	5410	1184	6951	2710	8460	4203	9938	5665	1383	7094	2798
55	2327	8134	3933	9723	5506	1281	7047	2806	8556	4299	0033	5760	1479	7190	2893
56	2424	8231	4029	9820	5602	1377	7143	2902	8652	4394	0129	5855	1574	7285	2988
57	2521	8327	4126	9916	5699	1473	7239	2997	8748	4490	0224	5951	1669	7380	3083
58	2618	8424	4222	0013	5795	1569	7335	3093	8843	4586	0320	6046	1764	7475	3178
59	2714	8521	4319	0109	5891	1665	7431	3189	8939	4681	0415	6141	1860	7570	3273
60	2811	8617	4416	0206	5988	1761	7527	3285	9035	4777	0511	6237	1955	7665	3368
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Sine Deg. 77

12 Deg. Co-Sine

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	″
9.989	9.989	9.989	9.989	9.989	9.989	9.989	9.989	9.989	9.989	9.989	9.989	9.989	9.989	9.989	
9973	9698	9423	9148	8873	8597	8320	8043	7766	7489	7211	6932	6654	6374	6095	60
9968	9694	9419	9144	8868	8592	8316	8039	7762	7484	7206	6928	6649	6370	6090	59
9964	9689	9414	9139	8863	8587	8311	8034	7757	7479	7201	6923	6644	6365	6086	58
9959	9685	9410	9134	8859	8583	8306	8030	7752	7475	7197	6918	6640	6361	6081	57
9955	9680	9405	9130	8854	8578	8302	8025	7748	7470	7192	6914	6635	6356	6076	56
9950	9675	9401	9125	8850	8574	8297	8020	7743	7465	7187	6909	6630	6351	6072	55
9945	9671	9396	9121	8845	8569	8292	8016	7738	7461	7183	6904	6626	6347	6067	54
9941	9666	9391	9116	8840	8564	8288	8011	7734	7456	7178	6900	6621	6342	6062	53
9936	9662	9387	9111	8836	8560	8283	8006	7729	7452	7174	6895	6616	6337	6058	52
9932	9657	9382	9107	8831	8555	8279	8002	7725	7447	7169	6891	6612	6333	6053	51
9927	9653	9378	9102	8827	8551	8274	7997	7720	7442	7164	6886	6607	6328	6048	50
9923	9648	9373	9098	8822	8546	8269	7993	7715	7438	7160	6881	6602	6323	6044	49
9918	9643	9368	9093	8817	8541	8265	7988	7711	7433	7155	6877	6598	6319	6039	48
9913	9639	9364	9089	8813	8537	8260	7983	7706	7428	7150	6872	6593	6314	6034	47
9909	9634	9359	9084	8808	8532	8256	7979	7701	7424	7146	6867	6589	6309	6030	46
9904	9630	9355	9079	8804	8527	8251	7974	7697	7419	7141	6863	6584	6305	6025	45
9900	9625	9350	9075	8799	8523	8246	7969	7692	7415	7136	6858	6579	6300	6020	44
9895	9621	9346	9070	8794	8518	8242	7965	7688	7410	7132	6853	6575	6295	6016	43
9891	9616	9341	9066	8790	8514	8237	7960	7683	7405	7127	6849	6570	6291	6011	42
9886	9611	9336	9061	8785	8509	8233	7956	7678	7401	7123	6844	6565	6286	6006	41
9881	9607	9332	9056	8781	8504	8228	7951	7674	7396	7118	6839	6561	6281	6002	40
9877	9602	9327	9052	8776	8500	8223	7946	7669	7391	7113	6835	6556	6277	5997	39
9872	9598	9323	9047	8771	8495	8219	7942	7664	7387	7109	6830	6551	6272	5992	38
9868	9593	9318	9043	8767	8491	8214	7937	7660	7382	7104	6826	6547	6267	5988	37
9863	9588	9313	9038	8762	8486	8209	7933	7655	7377	7099	6821	6542	6263	5983	36
9859	9584	9309	9033	8758	8481	8205	7928	7651	7373	7095	6816	6537	6258	5978	35
9854	9579	9304	9029	8753	8477	8200	7923	7646	7368	7090	6812	6533	6253	5974	34
9849	9575	9300	9024	8748	8472	8196	7919	7641	7364	7085	6807	6528	6249	5969	33
9845	9570	9295	9020	8744	8468	8191	7914	7637	7359	7081	6802	6523	6244	5964	32
9840	9566	9290	9015	8739	8463	8186	7909	7632	7354	7076	6798	6519	6239	5960	31
9836	9561	9286	9010	8735	8458	8182	7905	7627	7350	7072	6793	6514	6235	5955	30
9831	9556	9281	9006	8730	8454	8177	7900	7623	7345	7067	6788	6509	6230	5950	29
9826	9552	9277	9001	8725	8449	8173	7896	7618	7340	7062	6784	6505	6225	5946	28
9822	9547	9272	8997	8721	8445	8168	7891	7614	7336	7058	6779	6500	6221	5941	27
9817	9543	9268	8992	8716	8440	8163	7886	7609	7331	7053	6774	6495	6216	5936	26
9813	9538	9263	8987	8712	8435	8159	7882	7604	7327	7048	6770	6491	6212	5932	25
9808	9533	9258	8983	8707	8431	8154	7877	7600	7322	7044	6765	6486	6207	5927	24
9804	9529	9254	8978	8702	8426	8150	7872	7595	7317	7039	6760	6482	6202	5922	23
9799	9524	9249	8974	8698	8422	8145	7868	7590	7313	7034	6756	6477	6198	5918	22
9794	9520	9245	8969	8693	8417	8140	7863	7586	7308	7030	6751	6472	6193	5912	21
9790	9515	9240	8965	8689	8412	8136	7859	7581	7303	7025	6747	6468	6188	5908	20
9785	9511	9235	8960	8684	8408	8131	7854	7577	7299	7021	6742	6463	6184	5904	19
9781	9506	9231	8955	8679	8403	8126	7849	7572	7294	7016	6737	6458	6179	5899	18
9776	9501	9226	8951	8675	8399	8122	7845	7567	7289	7011	6733	6454	6174	5894	17
9772	9497	9222	8946	8670	8394	8117	7840	7563	7285	7007	6728	6449	6170	5890	16
9767	9492	9217	8942	8666	8389	8113	7836	7558	7280	7002	6723	6444	6165	5885	15
9762	9488	9212	8937	8661	8385	8108	7831	7553	7276	6997	6719	6440	6160	5880	14
9758	9483	9208	8932	8656	8380	8103	7826	7549	7271	6993	6714	6435	6156	5876	13
9753	9478	9203	8928	8652	8375	8099	7822	7544	7266	6988	6709	6430	6151	5871	12
9749	9474	9199	8923	8647	8371	8094	7817	7540	7262	6983	6705	6426	6146	5866	11
9744	9469	9194	8919	8643	8366	8090	7812	7535	7257	6979	6700	6421	6142	5862	10
9740	9465	9190	8914	8638	8362	8085	7808	7530	7252	6974	6695	6416	6137	5857	9
9735	9460	9185	8909	8633	8357	8080	7803	7526	7248	6969	6691	6412	6132	5852	8
9730	9456	9180	8905	8629	8352	8076	7799	7521	7243	6965	6686	6407	6128	5848	7
9726	9451	9176	8900	8624	8348	8071	7794	7516	7238	6960	6681	6402	6123	5843	6
9721	9446	9171	8896	8620	8343	8066	7789	7512	7234	6956	6677	6398	6118	5838	5
9717	9442	9167	8891	8615	8339	8062	7785	7507	7229	6951	6672	6393	6114	5834	4
9712	9437	9162	8886	8610	8334	8057	7780	7502	7225	6946	6668	6388	6109	5829	3
9707	9433	9157	8882	8606	8329	8053	7775	7498	7220	6942	6663	6384	6104	5824	2
9703	9428	9153	8877	8601	8325	8048	7771	7493	7215	6937	6658	6379	6100	5820	1
9698	9423	9148	8873	8597	8320	8043	7766	7489	7211	6932	6654	6374	6095	5815	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Sine Deg. 77

"	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9. 336	9. 337	9. 337	9. 338	9. 339	9. 339	9. 340	9. 340	9. 341	9. 342	9. 342	9. 343	9. 343	9. 344	9. 345
0	7024	3113	9194	5267	1333	7391	3441	9484	5519	1546	7566	3578	9583	5580	1570
1	7126	3214	9295	5368	1434	7492	3542	9585	5619	1647	7666	3679	9683	5680	1670
2	7227	3316	9397	5470	1535	7593	3643	9685	5720	1747	7767	3779	9783	5780	1770
3	7329	3417	9498	5571	1636	7694	3744	9786	5821	1848	7867	3879	9883	5880	1869
4	7430	3518	9599	5672	1737	7795	3844	9886	5921	1948	7967	3979	9983	5980	1969
5	7532	3620	9700	5773	1838	7895	3945	9987	6022	2048	8068	4079	0083	6080	2069
6	7633	3721	9802	5874	1939	7996	4046	0088	6122	2149	8168	4179	0183	6180	2169
7	7735	3823	9903	5975	2040	8097	4147	0188	6223	2249	8268	4279	0283	6280	2268
8	7836	3924	0004	6077	2141	8198	4247	0289	6323	2349	8368	4380	0383	6379	2368
9	7938	4026	0105	6178	2242	8299	4348	0390	6424	2450	8469	4480	0483	6479	2468
10	8039	4127	0207	6279	2343	8400	4449	0490	6524	2550	8569	4580	0583	6579	2568
11	8141	4228	0308	6380	2444	8501	4550	0591	6625	2651	8669	4680	0683	6679	2667
12	8242	4330	0409	6481	2545	8602	4650	0692	6725	2751	8769	4780	0783	6779	2767
13	8344	4431	0511	6582	2646	8703	4751	0792	6826	2851	8870	4880	0883	6879	2867
14	8445	4532	0612	6683	2747	8803	4852	0893	6926	2952	8970	4980	0983	6979	2967
15	8547	4634	0713	6784	2848	8904	4953	0993	7027	3052	9070	5080	1083	7079	3066
16	8648	4735	0814	6886	2949	9005	5053	1094	7127	3152	9170	5180	1183	7178	3166
17	8750	4837	0916	6987	3050	9106	5154	1195	7227	3253	9270	5281	1283	7278	3266
18	8851	4938	1017	7088	3151	9207	5255	1295	7328	3353	9371	5381	1383	7378	3366
19	8953	5039	1118	7189	3252	9308	5356	1396	7428	3453	9471	5481	1483	7478	3465
20	9054	5141	1219	7290	3353	9409	5456	1496	7529	3554	9571	5581	1583	7578	3565
21	9156	5242	1321	7391	3454	9509	5557	1597	7629	3654	9671	5681	1683	7678	3665
22	9257	5343	1422	7492	3555	9610	5658	1698	7730	3755	9772	5781	1783	7778	3764
23	9359	5445	1523	7593	3656	9711	5759	1798	7830	3855	9872	5881	1883	7877	3864
24	9460	5546	1624	7695	3757	9812	5859	1899	7931	3955	9972	5981	1983	7977	3964
25	9562	5648	1725	7796	3858	9913	5960	1999	8031	4056	0072	6081	2083	8077	4064
26	9663	5749	1827	7897	3959	0014	6061	2100	8132	4156	0172	6181	2183	8177	4163
27	9765	5850	1928	7998	4060	0115	6161	2201	8232	4256	0273	6282	2283	8277	4263
28	9866	5952	2029	8099	4161	0215	6262	2301	8333	4357	0373	6382	2383	8377	4363
29	9968	6053	2130	8200	4262	0316	6363	2402	8433	4457	0473	6482	2483	8476	4462
30	0069	6154	2232	8301	4363	0417	6464	2502	8534	4557	0573	6582	2583	8576	4562
31	0171	6256	2333	8402	4464	0518	6564	2603	8634	4658	0673	6682	2683	8676	4662
32	0272	6357	2434	8503	4565	0619	6665	2704	8735	4758	0774	6782	2783	8776	4762
33	0374	6458	2535	8604	4666	0720	6766	2804	8835	4858	0874	6882	2883	8876	4861
34	0475	6560	2636	8705	4767	0820	6866	2905	8935	4959	0974	6982	2983	8976	4961
35	0577	6661	2738	8807	4868	0921	6967	3005	9036	5059	1074	7082	3083	9075	5061
36	0678	6762	2839	8908	4969	1022	7068	3106	9136	5159	1174	7182	3182	9175	5160
37	0780	6864	2940	9009	5070	1123	7168	3206	9237	5260	1275	7282	3282	9275	5260
38	0881	6965	3041	9110	5171	1224	7269	3307	9337	5360	1375	7382	3382	9375	5360
39	0983	7066	3143	9211	5272	1325	7370	3408	9438	5460	1475	7482	3482	9475	5459
40	1084	7168	3244	9312	5372	1425	7471	3508	9538	5560	1575	7582	3582	9574	5559
41	1186	7269	3345	9413	5473	1526	7571	3609	9639	5661	1675	7683	3682	9674	5659
42	1287	7370	3446	9514	5574	1627	7672	3709	9739	5761	1776	7783	3782	9774	5758
43	1388	7472	3547	9615	5675	1728	7773	3810	9839	5861	1876	7883	3882	9874	5858
44	1490	7573	3649	9716	5776	1829	7873	3910	9940	5962	1976	7983	3982	9974	5958
45	1591	7674	3750	9817	5877	1929	7974	4011	0040	6062	2076	8083	4082	0073	6058
46	1693	7776	3851	9918	5978	2030	8075	4111	0141	6162	2176	8183	4182	0173	6157
47	1794	7877	3952	0019	6079	2131	8175	4212	0241	6263	2276	8283	4282	0273	6257
48	1896	7978	4053	0120	6180	2232	8276	4313	0341	6363	2377	8383	4382	0373	6357
49	1997	8080	4154	0222	6281	2333	8377	4413	0442	6463	2477	8483	4482	0473	6456
50	2099	8181	4256	0323	6382	2433	8477	4514	0542	6563	2577	8583	4581	0572	6556
51	2200	8282	4357	0424	6483	2534	8578	4614	0643	6664	2677	8683	4681	0672	6656
52	2301	8384	4458	0525	6584	2635	8679	4715	0743	6764	2777	8783	4781	0772	6755
53	2403	8485	4559	0626	6685	2736	8779	4815	0844	6864	2877	8883	4881	0872	6855
54	2504	8586	4660	0727	6786	2837	8880	4916	0944	6965	2978	8983	4981	0972	6954
55	2606	8687	4762	0828	6886	2937	8981	5016	1044	7065	3078	9083	5081	1071	7054
56	2707	8789	4863	0929	6987	3038	9081	5117	1145	7165	3178	9183	5181	1171	7154
57	2809	8890	4964	1030	7088	3139	9182	5217	1245	7265	3278	9283	5281	1271	7253
58	2910	8991	5065	1131	7189	3240	9283	5318	1346	7366	3378	9383	5381	1371	7353
59	3011	9093	5166	1232	7290	3340	9383	5418	1446	7466	3478	9483	5481	1470	7453
60	3113	9194	5267	1333	7391	3441	9484	5519	1546	7566	3578	9583	5580	1570	7552
"	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	"
10. 663	10. 662	10. 662	10. 661	10. 660	10. 660	10. 659	10. 659	10. 658	10. 657	10. 657	10. 656	10. 656	10. 655	10. 654	
2976	6887	0806	4733	8667	2609	6559	0516	4481	8454	2434	6422	0417	4420	8430	60
2874	6786	0705	4632	8566	2508	6458	0415	4381	8353	2334	6321	0317	4320	8330	59
2773	6684	0603	4530	8465	2407	6357	0315	4280	8253	2233	6221	0217	4220	8230	58
2671	6583	0502	4429	8364	2306	6256	0214	4179	8152	2133	6121	0117	4120	8131	57
2570	6482	0401	4328	8263	2205	6156	0114	4079	8052	2033	6021	0017	4020	8031	56
2468	6380	0300	4227	8162	2105	6055	0013	3978	7952	1932	5921	9917	3920	7931	55
2367	6279	0198	4126	8061	2004	5954	9912	3878	7851	1832	5821	9817	3820	7831	54
2265	6177	0097	4025	7960	1903	5853	9812	3777	7751	1732	5721	9717	3720	7732	53
2164	6076	9996	3923	7859	1802	5753	9711	3677	7651	1632	5620	9617	3621	7632	52
2062	5974	9895	3822	7758	1701	5652	9610	3576	7550	1531	5520	9517	3521	7332	51
1961	5873	9793	3721	7657	1600	5551	9510	3476	7450	1431	5420	9417	3421	7432	50
1859	5772	9692	3620	7556	1499	5450	9409	3375	7349	1331	5320	9317	3321	7333	49
1758	5670	9591	3519	7455	1398	5350	9308	3275	7249	1231	5220	9217	3221	7233	48
1656	5569	9489	3418	7354	1297	5249	9208	3174	7149	1130	5120	9117	3121	7133	47
1555	5468	9388	3317	7253	1197	5148	9107	3074	7048	1030	5020	9017	3021	7033	46
1453	5366	9287	3216	7152	1096	5047	9007	2973	6948	0930	4920	8917	2921	6934	45
1352	5265	9186	3114	7051	0995	4947	8906	2873	6848	0830	4820	8817	2822	6834	44
1250	5163	9084	3013	6950	0894	4846	8805	2773	6747	0730	4719	8717	2722	6734	43
1149	5062	8983	2912	6849	0793	4745	8705	2672	6647	0629	4619	8617	2622	6634	42
1047	4961	8882	2811	6748	0692	4644	8604	2572	6547	0529	4519	8517	2522	6535	41
0946	4859	8781	2710	6647	0591	4544	8504	2471	6446	0429	4419	8417	2422	6435	40
0844	4758	8679	2609	6546	0491	4443	8403	2371	6346	0329	4319	8317	2322	6335	39
0743	4657	8578	2508	6445	0390	4342	8302	2270	6245	0228	4219	8217	2222	6236	38
0641	4555	8477	2407	6344	0289	4241	8202	2170	6145	0128	4119	8117	2123	6136	37
0540	4454	8376	2305	6243	0188	4141	8101	2069	6045	0028	4019	8017	2023	6036	36
0438	4352	8275	2204	6142	0087	4040	8001	1969	5944	9928	3919	7917	1923	5936	35
0337	4251	8173	2103	6041	9986	3939	7900	1868	5844	9828	3819	7817	1823	5837	34
0235	4150	8072	2002	5940	9885	3839	7799	1768	5744	9727	3718	7717	1723	5737	33
0134	4048	7971	1901	5839	9785	3738	7699	1667	5643	9627	3618	7617	1623	5637	32
0032	3947	7870	1800	5738	9684	3637	7598	1567	5543	9527	3518	7517	1524	5538	31
9931	3846	7768	1699	5637	9583	3536	7498	1466	5443	9427	3418	7417	1424	5438	30
9829	3744	7667	1598	5536	9482	3436	7397	1366	5342	9327	3318	7317	1324	5338	29
9728	3643	7566	1497	5435	9381	3335	7296	1265	5242	9226	3218	7217	1224	5238	28
9626	3542	7465	1396	5334	9280	3234	7196	1165	5142	9126	3118	7117	1124	5139	27
9525	3440	7364	1295	5233	9180	3134	7095	1065	5041	9026	3018	7017	1024	5039	26
9423	3339	7262	1193	5132	9079	3033	6995	0964	4941	8926	2918	6917	0925	4939	25
9322	3238	7161	1092	5031	8978	2932	6894	0864	4841	8826	2818	6818	0825	4840	24
9220	3136	7060	0991	4930	8877	2832	6794	0763	4740	8725	2718	6718	0725	4740	23
9119	3035	6959	0890	4829	8776	2731	6693	0663	4640	8625	2618	6618	0625	4640	22
9017	2934	6857	0789	4728	8675	2630	6592	0562	4540	8525	2518	6518	0525	4541	21
8916	2832	6756	0688	4628	8575	2529	6492	0461	4440	8425	2418	6418	0426	4441	20
8814	2731	6655	0587	4527	8474	2429	6391	0361	4339	8325	2317	6318	0326	4341	19
8713	2630	6554	0486	4426	8373	2328	6291	0261	4239	8224	2217	6218	0226	4242	18
8612	2528	6453	0385	4325	8272	2227	6190	0161	4139	8124	2117	6118	0126	4142	17
8510	2427	6351	0284	4224	8171	2127	6090	0060	4038	8024	2017	6018	0026	4042	16
8409	2326	6250	0183	4123	8071	2026	5989	9960	3938	7924	1917	5918	9927	3942	15
8307	2224	6149	0082	4022	7970	1925	5889	9859	3838	7824	1817	5818	9827	3843	14
8206	2123	6048	9981	3921	7869	1825	5788	9759	3737	7724	1717	5718	9727	3743	13
8104	2022	5947	9880	3820	7768	1724	5687	9659	3637	7623	1617	5618	9627	3643	12
8003	1920	5846	9778	3719	7667	1623	5587	9558	3537	7523	1517	5518	9527	3544	11
7901	1819	5744	9677	3618	7567	1523	5486	9458	3437	7423	1417	5419	9428	3444	10
7800	1718	5643	9576	3517	7466	1422	5386	9357	3336	7323	1317	5319	9328	3344	9
7699	1616	5542	9475	3416	7365	1321	5285	9257	3236	7223	1217	5219	9228	3245	8
7597	1515	5441	9374	3315	7264	1221	5185	9156	3136	7123	1117	5119	9128	3145	7
7496	1414	5340	9273	3214	7163	1120	5084	9056	3035	7022	1017	5019	9028	3046	6
7394	1313	5238	9172	3114	7063	1019	4984	8956	2935	6922	0917	4919	8929	2946	5
7293	1211	5137	9071	3013	6962	0919	4883	8855	2835	6822	0817	4819	8829	2846	4
7191	1110	5036	8970	2912	6861	0818	4783	8755	2735	6722	0717	4719	8729	2747	3
7090	1009	4935	8869	2811	6760	0717	4682	8654	2634	6622	0617	4619	8629	2647	2
6989	0907	4834	8768	2710	6660	0617	4582	8554	2534	6522	0517	4519	8530	2547	1
6887	0806	4733	8667	2609	6559	0516	4481	8454	2434	6422	0417	4420	8430	2448	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	"

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 335	9. 335	9. 336	9. 337	9. 337	9. 338	9. 338	9. 339	9. 339	9. 340	9. 340	9. 341	9. 342	9. 342	9. 343
0	3368	9062	4749	0428	6099	1762	7418	3065	8706	4338	9963	5580	1190	6792	2386
1	3462	9157	4843	0522	6193	1856	7512	3160	8800	4432	0057	5674	1283	6885	2479
2	3557	9252	4938	0617	6288	1951	7606	3254	8894	4526	0150	5767	1377	6978	2572
3	3652	9347	5033	0711	6382	2045	7700	3348	8987	4620	0244	5861	1470	7072	2666
4	3747	9441	5128	0806	6476	2139	7794	3442	9081	4713	0338	5954	1563	7165	2759
5	3842	9536	5222	0900	6571	2234	7889	3536	9175	4807	0431	6048	1657	7258	2852
6	3937	9631	5317	0995	6665	2328	7983	3630	9269	4901	0525	6141	1750	7351	2945
7	4032	9726	5412	1090	6760	2422	8077	3724	9363	4995	0619	6235	1844	7445	3038
8	4127	9821	5506	1184	6854	2517	8171	3818	9457	5089	0712	6329	1937	7538	3131
9	4222	9916	5601	1279	6949	2611	8265	3912	9551	5182	0806	6422	2030	7631	3225
10	4317	0010	5696	1373	7043	2705	8359	4006	9645	5276	0900	6516	2124	7725	3318
11	4412	0105	5790	1468	7138	2799	8454	4100	9739	5370	0993	6609	2217	7818	3411
12	4507	0200	5885	1562	7232	2894	8548	4194	9833	5464	1087	6703	2311	7911	3504
13	4602	0295	5980	1657	7326	2988	8642	4288	9927	5558	1181	6796	2404	8004	3597
14	4697	0390	6074	1752	7421	3082	8736	4382	0021	5651	1274	6890	2498	8098	3690
15	4792	0484	6169	1846	7515	3177	8830	4476	0115	5745	1368	6983	2591	8191	3783
16	4887	0579	6264	1941	7610	3271	8924	4570	0208	5839	1462	7077	2684	8284	3877
17	4982	0674	6359	2035	7704	3365	9019	4664	0302	5933	1555	7170	2778	8378	3970
18	5077	0769	6453	2130	7799	3460	9113	4758	0396	6026	1649	7264	2871	8471	4063
19	5172	0864	6548	2224	7893	3554	9207	4852	0490	6120	1743	7357	2964	8564	4156
20	5267	0958	6643	2319	7987	3648	9301	4946	0584	6214	1836	7451	3058	8657	4249
21	5361	1053	6737	2413	8082	3742	9395	5040	0678	6308	1930	7544	3151	8751	4342
22	5456	1148	6832	2508	8176	3837	9489	5134	0772	6401	2023	7638	3245	8844	4435
23	5551	1243	6927	2602	8271	3931	9584	5228	0866	6495	2117	7731	3338	8937	4529
24	5646	1338	7021	2697	8365	4025	9678	5322	0960	6589	2211	7825	3431	9030	4622
25	5741	1432	7116	2791	8459	4119	9772	5416	1053	6683	2304	7918	3525	9124	4715
26	5836	1527	7211	2886	8554	4214	9866	5511	1147	6777	2398	8012	3618	9217	4808
27	5931	1622	7305	2981	8648	4308	9960	5605	1241	6870	2492	8105	3712	9310	4901
28	6026	1717	7400	3075	8743	4402	0054	5699	1335	6964	2585	8199	3805	9403	4994
29	6121	1812	7494	3170	8837	4497	0148	5793	1429	7058	2679	8292	3898	9497	5087
30	6216	1906	7589	3264	8931	4591	0243	5887	1523	7152	2773	8386	3992	9590	5180
31	6311	2001	7684	3359	9026	4685	0337	5981	1617	7245	2866	8479	4085	9683	5274
32	6406	2096	7778	3453	9120	4779	0431	6075	1711	7339	2960	8573	4178	9776	5367
33	6500	2191	7873	3548	9214	4874	0525	6169	1804	7433	3053	8666	4272	9870	5460
34	6595	2285	7968	3642	9309	4968	0619	6263	1898	7526	3147	8760	4365	9963	5553
35	6690	2380	8062	3737	9403	5062	0713	6357	1992	7620	3241	8853	4458	0056	5646
36	6785	2475	8157	3831	9498	5156	0807	6451	2086	7714	3334	8947	4552	0149	5739
37	6880	2570	8252	3926	9592	5251	0901	6545	2180	7808	3428	9040	4645	0242	5832
38	6975	2664	8346	4020	9686	5345	0996	6638	2274	7901	3521	9134	4739	0336	5925
39	7070	2759	8441	4115	9781	5439	1090	6732	2368	7995	3615	9227	4832	0429	6018
40	7165	2854	8535	4209	9875	5533	1184	6826	2462	8089	3709	9321	4925	0522	6111
41	7260	2949	8630	4304	9969	5628	1278	6920	2555	8183	3802	9414	5019	0615	6205
42	7354	3044	8725	4398	0064	5722	1372	7014	2649	8276	3896	9508	5112	0709	6298
43	7449	3138	8819	4493	0158	5816	1466	7108	2743	8370	3989	9601	5205	0802	6391
44	7544	3233	8914	4587	0253	5910	1560	7202	2837	8464	4083	9695	5299	0895	6484
45	7639	3328	9009	4682	0347	6004	1654	7296	2931	8557	4177	9788	5392	0988	6577
46	7734	3423	9103	4776	0441	6099	1748	7390	3025	8651	4270	9882	5485	1081	6670
47	7829	3517	9198	4871	0536	6193	1842	7484	3118	8745	4364	9975	5579	1175	6763
48	7924	3612	9292	4965	0630	6287	1937	7578	3212	8839	4457	0068	5672	1268	6856
49	8019	3707	9387	5060	0724	6381	2031	7672	3306	8932	4551	0162	5765	1361	6949
50	8113	3801	9482	5154	0819	6476	2125	7766	3400	9026	4644	0255	5859	1454	7042
51	8208	3896	9576	5249	0913	6570	2219	7860	3494	9120	4738	0349	5952	1547	7135
52	8303	3991	9671	5343	1007	6664	2313	7954	3588	9213	4832	0442	6045	1641	7228
53	8398	4086	9765	5437	1102	6758	2407	8048	3681	9307	4925	0536	6139	1734	7321
54	8493	4180	9860	5532	1196	6852	2501	8142	3775	9401	5019	0629	6232	1827	7415
55	8588	4275	9955	5626	1290	6947	2595	8236	3869	9495	5112	0723	6325	1920	7508
56	8683	4370	0049	5721	1385	7041	2689	8330	3963	9588	5206	0816	6418	2013	7601
57	8777	4465	0144	5815	1479	7135	2783	8424	4057	9682	5299	0909	6512	2107	7694
58	8872	4559	0238	5910	1573	7229	2877	8518	4151	9776	5393	1003	6605	2200	7787
59	8967	4654	0333	6004	1668	7323	2971	8612	4244	9869	5487	1096	6698	2293	7880
60	9062	4749	0428	6099	1762	7418	3065	8706	4338	9963	5580	1190	6792	2386	7973
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
	9. 989	9. 989	9. 989	9. 989	9. 989	9. 989	9. 989	9. 989	9. 989	9. 989	9. 989	9. 989	9. 989	9. 989	9. 989	″
0	5815	5535	5254	4973	4692	4410	4128	3845	3562	3279	2995	2711	2427	2142	1856	60
1	5810	5530	5250	4969	4687	4405	4123	3840	3558	3274	2990	2706	2422	2137	1852	59
2	5806	5526	5245	4964	4682	4401	4118	3836	3553	3269	2986	2702	2417	2132	1847	58
3	5801	5521	5240	4959	4678	4396	4114	3831	3548	3265	2981	2697	2412	2127	1842	57
4	5796	5516	5235	4954	4673	4391	4109	3826	3543	3260	2976	2692	2408	2123	1837	56
5	5792	5511	5231	4950	4668	4386	4104	3822	3539	3255	2971	2687	2403	2118	1833	55
6	5787	5507	5226	4945	4664	4382	4100	3817	3534	3251	2967	2683	2398	2113	1828	54
7	5782	5502	5221	4940	4659	4377	4095	3812	3529	3246	2962	2678	2393	2108	1823	53
8	5778	5497	5217	4936	4654	4372	4090	3807	3524	3241	2957	2673	2389	2104	1818	52
9	5773	5493	5212	4931	4650	4368	4085	3803	3520	3236	2953	2668	2384	2099	1814	51
10	5768	5488	5207	4926	4645	4363	4081	3798	3515	3232	2948	2664	2379	2094	1809	50
11	5764	5483	5203	4922	4640	4358	4076	3793	3510	3227	2943	2659	2374	2089	1804	49
12	5759	5479	5198	4917	4635	4354	4071	3789	3506	3222	2938	2654	2370	2085	1799	48
13	5754	5474	5193	4912	4631	4349	4067	3784	3501	3217	2934	2649	2365	2080	1794	47
14	5750	5469	5189	4908	4626	4344	4062	3779	3496	3213	2929	2645	2360	2075	1790	46
15	5745	5465	5184	4903	4621	4339	4057	3774	3491	3208	2924	2640	2355	2070	1785	45
16	5740	5460	5179	4898	4617	4335	4052	3770	3487	3203	2919	2635	2351	2066	1780	44
17	5736	5455	5175	4893	4612	4330	4048	3765	3482	3199	2915	2630	2346	2061	1775	43
18	5731	5451	5170	4889	4607	4325	4043	3760	3477	3194	2910	2626	2341	2056	1771	42
19	5726	5446	5165	4884	4603	4321	4038	3756	3473	3189	2905	2621	2336	2051	1766	41
20	5722	5441	5161	4879	4598	4316	4034	3751	3468	3184	2900	2616	2332	2047	1761	40
21	5717	5437	5156	4875	4593	4311	4029	3746	3463	3180	2896	2611	2327	2042	1756	39
22	5712	5432	5151	4870	4588	4307	4024	3741	3458	3175	2891	2607	2322	2037	1752	38
23	5708	5427	5147	4865	4584	4302	4019	3737	3454	3170	2886	2602	2317	2032	1747	37
24	5703	5423	5142	4861	4579	4297	4015	3732	3449	3165	2882	2597	2313	2028	1742	36
25	5698	5418	5137	4856	4574	4292	4010	3727	3444	3161	2877	2593	2308	2023	1737	35
26	5694	5413	5132	4851	4570	4288	4005	3723	3439	3156	2872	2588	2303	2018	1733	34
27	5689	5409	5128	4847	4565	4283	4001	3718	3435	3151	2867	2583	2298	2013	1728	33
28	5684	5404	5123	4842	4560	4278	3996	3713	3430	3147	2863	2578	2294	2009	1723	32
29	5680	5399	5118	4837	4556	4274	3991	3708	3425	3142	2858	2574	2289	2004	1718	31
30	5675	5395	5114	4833	4551	4269	3987	3704	3421	3137	2853	2569	2284	1999	1714	30
31	5670	5390	5109	4828	4546	4264	3982	3699	3416	3132	2848	2564	2279	1994	1709	29
32	5666	5385	5104	4823	4542	4260	3977	3694	3411	3128	2844	2559	2275	1990	1704	28
33	5661	5381	5100	4818	4537	4255	3972	3690	3406	3123	2839	2555	2270	1985	1699	27
34	5656	5376	5095	4814	4532	4250	3968	3685	3402	3118	2834	2550	2265	1980	1695	26
35	5652	5371	5090	4809	4527	4245	3963	3680	3397	3113	2829	2545	2260	1975	1690	25
36	5647	5367	5086	4804	4523	4241	3958	3675	3392	3109	2825	2540	2256	1971	1685	24
37	5642	5362	5081	4800	4518	4236	3954	3671	3388	3104	2820	2536	2251	1966	1680	23
38	5638	5357	5076	4795	4513	4231	3949	3666	3383	3099	2815	2531	2246	1961	1675	22
39	5633	5352	5072	4790	4509	4227	3944	3661	3378	3094	2811	2526	2241	1956	1671	21
40	5628	5348	5067	4786	4504	4222	3939	3657	3373	3090	2806	2521	2237	1951	1666	20
41	5624	5343	5062	4781	4499	4217	3935	3652	3369	3085	2801	2517	2232	1947	1661	19
42	5619	5338	5058	4776	4495	4212	3930	3647	3364	3080	2796	2512	2227	1942	1656	18
43	5614	5334	5053	4772	4490	4208	3925	3642	3359	3076	2792	2507	2222	1937	1652	17
44	5610	5329	5048	4767	4485	4203	3921	3638	3354	3071	2787	2502	2218	1932	1647	16
45	5605	5324	5043	4762	4480	4198	3916	3633	3350	3066	2782	2498	2213	1928	1642	15
46	5600	5320	5039	4757	4476	4194	3911	3628	3345	3061	2777	2493	2208	1923	1637	14
47	5596	5315	5034	4753	4471	4189	3906	3624	3340	3057	2773	2488	2203	1918	1633	13
48	5591	5310	5029	4748	4466	4184	3902	3619	3336	3052	2768	2483	2199	1913	1628	12
49	5586	5306	5025	4743	4462	4180	3897	3614	3331	3047	2763	2479	2194	1909	1623	11
50	5582	5301	5020	4739	4457	4175	3892	3609	3326	3042	2758	2474	2189	1904	1618	10
51	5577	5296	5015	4734	4452	4170	3888	3605	3321	3038	2754	2469	2184	1899	1614	9
52	5572	5292	5011	4729	4448	4165	3883	3600	3317	3033	2749	2464	2180	1894	1609	8
53	5568	5287	5006	4725	4443	4161	3878	3595	3312	3028	2744	2460	2175	1890	1604	7
54	5563	5282	5001	4720	4438	4156	3873	3591	3307	3024	2739	2455	2170	1885	1599	6
55	5558	5278	4997	4715	4433	4151	3869	3586	3303	3019	2735	2450	2165	1880	1595	5
56	5554	5273	4992	4711	4429	4147	3864	3581	3298	3014	2730	2446	2161	1875	1590	4
57	5549	5268	4987	4706	4424	4142	3859	3576	3293	3009	2725	2441	2156	1871	1585	3
58	5544	5264	4983	4701	4419	4137	3855	3572	3288	3005	2721	2436	2151	1866	1580	2
59	5540	5259	4978	4696	4415	4132	3850	3567	3284	3000	2716	2431	2146	1861	1575	1
60	5535	5254	4973	4692	4410	4128	3845	3562	3279	2995	2711	2427	2142	1856	1571	0
	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

12 Deg. Tangent

″	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9. 345	9. 346	9. 346	9. 347	9. 348	9. 348	9. 349	9. 349	9. 350	9. 351	9. 351	9. 352	9. 352	9. 353	9. 354
0	7552	3527	9494	5454	1407	7352	3290	9220	5143	1059	6968	2869	8763	4650	0530
1	7652	3627	9594	5554	1506	7451	3389	9319	5242	1158	7066	2967	8861	4748	0628
2	7752	3726	9693	5653	1605	7550	3488	9418	5341	1256	7165	3066	8960	4846	0726
3	7851	3826	9793	5752	1704	7649	3587	9517	5439	1355	7263	3164	9058	4944	0823
4	7951	3925	9892	5851	1803	7748	3685	9615	5538	1453	7361	3262	9156	5042	0921
5	8051	4025	9991	5951	1903	7847	3784	9714	5637	1552	7460	3361	9254	5140	1019
6	8150	4124	0091	6050	2002	7946	3883	9813	5735	1650	7558	3459	9352	5238	1117
7	8250	4224	0190	6149	2101	8045	3982	9912	5834	1749	7657	3557	9450	5336	1215
8	8349	4323	0290	6248	2200	8144	4081	0010	5933	1847	7755	3655	9549	5434	1313
9	8449	4423	0389	6348	2299	8243	4180	0109	6031	1946	7853	3754	9647	5532	1411
10	8549	4522	0488	6447	2398	8342	4279	0208	6130	2045	7952	3852	9745	5630	1509
11	8648	4622	0588	6546	2497	8441	4378	0307	6229	2143	8050	3950	9843	5729	1607
12	8748	4721	0687	6645	2597	8540	4477	0406	6327	2242	8149	4049	9941	5827	1705
13	8848	4821	0786	6745	2696	8639	4575	0504	6426	2340	8247	4147	0039	5925	1803
14	8947	4920	0886	6844	2795	8738	4674	0603	6524	2439	8345	4245	0137	6023	1901
15	9047	5020	0985	6943	2894	8837	4773	0702	6623	2537	8444	4343	0236	6121	1998
16	9146	5119	1085	7042	2993	8936	4872	0801	6722	2636	8542	4442	0334	6219	2096
17	9246	5219	1184	7142	3092	9035	4971	0899	6820	2734	8641	4540	0432	6317	2194
18	9346	5318	1283	7241	3191	9134	5070	0998	6919	2833	8739	4638	0530	6415	2292
19	9445	5418	1383	7340	3290	9233	5169	1097	7018	2931	8837	4736	0628	6513	2390
20	9545	5517	1482	7439	3389	9332	5267	1195	7116	3030	8936	4835	0726	6611	2488
21	9644	5617	1581	7539	3489	9431	5366	1294	7215	3128	9034	4933	0824	6709	2586
22	9744	5716	1681	7638	3588	9530	5465	1393	7313	3227	9132	5031	0923	6807	2684
23	9844	5816	1780	7737	3687	9629	5564	1492	7412	3325	9231	5129	1021	6905	2782
24	9943	5915	1879	7836	3786	9728	5663	1590	7511	3424	9329	5228	1119	7003	2880
25	0043	6014	1979	7936	3885	9827	5762	1689	7609	3522	9428	5326	1217	7101	2977
26	0142	6114	2078	8035	3984	9926	5861	1788	7708	3621	9526	5424	1315	7199	3075
27	0242	6213	2177	8134	4083	0025	5959	1887	7806	3719	9624	5522	1413	7297	3173
28	0342	6313	2277	8233	4182	0124	6058	1985	7905	3817	9723	5621	1511	7395	3271
29	0441	6412	2376	8332	4281	0223	6157	2084	8004	3916	9821	5719	1609	7493	3369
30	0541	6512	2475	8432	4380	0322	6256	2183	8102	4014	9919	5817	1708	7591	3467
31	0640	6611	2575	8531	4479	0421	6355	2281	8201	4113	0018	5915	1806	7689	3565
32	0740	6711	2674	8630	4579	0520	6454	2380	8299	4211	0116	6014	1904	7787	3663
33	0839	6810	2773	8729	4678	0619	6553	2479	8398	4310	0214	6112	2002	7885	3760
34	0939	6910	2873	8828	4777	0718	6651	2578	8497	4408	0313	6210	2100	7983	3858
35	1039	7009	2972	8928	4876	0817	6750	2676	8595	4507	0411	6308	2198	8081	3956
36	1138	7108	3071	9027	4975	0916	6849	2775	8694	4605	0509	6406	2296	8179	4054
37	1238	7208	3171	9126	5074	1015	6948	2874	8792	4704	0608	6505	2394	8277	4152
38	1337	7307	3270	9225	5173	1114	7047	2972	8891	4802	0706	6603	2492	8375	4250
39	1437	7407	3369	9324	5272	1212	7145	3071	8990	4901	0804	6701	2590	8473	4348
40	1536	7506	3469	9424	5371	1311	7244	3170	9088	4999	0903	6799	2689	8571	4445
41	1636	7606	3568	9523	5470	1410	7343	3269	9187	5098	1001	6898	2787	8669	4543
42	1735	7705	3667	9622	5569	1509	7442	3367	9285	5196	1099	6996	2885	8767	4641
43	1835	7804	3767	9721	5668	1608	7541	3466	9384	5294	1198	7094	2983	8865	4739
44	1935	7904	3866	9820	5767	1707	7640	3565	9482	5393	1296	7192	3081	8962	4837
45	2034	8003	3965	9919	5866	1806	7738	3663	9581	5491	1394	7290	3179	9060	4935
46	2134	8103	4064	0019	5966	1905	7837	3762	9680	5590	1493	7389	3277	9158	5033
47	2233	8202	4164	0118	6065	2004	7936	3861	9778	5688	1591	7487	3375	9256	5130
48	2333	8302	4263	0217	6164	2103	8035	3959	9877	5787	1689	7585	3473	9354	5228
49	2432	8401	4362	0316	6263	2202	8134	4058	9975	5885	1788	7683	3571	9452	5326
50	2532	8500	4462	0415	6362	2301	8232	4157	0074	5984	1886	7781	3669	9550	5424
51	2631	8600	4561	0515	6461	2400	8331	4255	0172	6082	1984	7880	3767	9648	5522
52	2731	8699	4660	0614	6560	2499	8430	4354	0271	6180	2083	7978	3866	9746	5620
53	2830	8799	4759	0713	6659	2597	8529	4453	0369	6279	2181	8076	3964	9844	5717
54	2930	8898	4859	0812	6758	2696	8628	4551	0468	6377	2279	8174	4062	9942	5815
55	3030	8997	4958	0911	6857	2795	8726	4650	0567	6476	2378	8272	4160	0040	5913
56	3129	9097	5057	1010	6956	2894	8825	4749	0665	6574	2476	8370	4258	0138	6011
57	3229	9196	5157	1109	7055	2993	8924	4847	0764	6673	2574	8469	4356	0236	6109
58	3328	9296	5256	1209	7154	3092	9023	4946	0862	6771	2673	8567	4454	0334	6207
59	3428	9395	5355	1308	7253	3191	9122	5045	0961	6869	2771	8665	4552	0432	6304
60	3527	9494	5454	1407	7352	3290	9220	5143	1059	6968	2869	8763	4650	0530	6402
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Tangent Deg. 77

12 Deg. Co-Tangent

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	″
10. 654	10. 653	10. 653	10. 652	10. 651	10. 651	10. 650	10. 650	10. 649	10. 648	10. 648	10. 647	10. 647	10. 646	10. 645	″
2448	6473	0506	4546	8593	2648	6710	0780	4857	8941	3032	7131	1237	5350	9470	60
2348	6373	0406	4446	8494	2549	6611	0681	4758	8842	2934	7033	1139	5252	9372	59
2248	6274	0307	4347	8395	2450	6512	0582	4659	8744	2835	6934	1040	5154	9274	58
2149	6174	0207	4248	8296	2351	6413	0483	4561	8645	2737	6836	0942	5056	9177	57
2049	6075	0108	4149	8197	2252	6315	0385	4462	8547	2639	6738	0844	4958	9079	56
1949	5975	0009	4049	8097	2153	6216	0286	4363	8448	2540	6639	0746	4860	8981	55
1850	5876	9909	3950	7998	2054	6117	0187	4265	8350	2442	6541	0648	4762	8883	54
1750	5776	9810	3851	7899	1955	6018	0088	4166	8251	2343	6443	0550	4664	8785	53
1651	5677	9710	3752	7800	1856	5919	9990	4067	8153	2245	6345	0451	4566	8687	52
1551	5577	9611	3652	7701	1757	5820	9891	3969	8054	2147	6246	0353	4468	8589	51
1451	5478	9512	3553	7602	1658	5721	9792	3870	7955	2048	6148	0255	4370	8491	50
1352	5378	9412	3454	7503	1559	5622	9693	3771	7857	1950	6050	0157	4271	8393	49
1252	5279	9313	3355	7403	1460	5523	9594	3673	7758	1851	5951	0059	4173	8295	48
1152	5179	9214	3255	7304	1361	5425	9496	3574	7660	1753	5853	9961	4075	8197	47
1053	5080	9114	3156	7205	1262	5326	9397	3476	7561	1655	5755	9863	3977	8099	46
0953	4980	9015	3057	7106	1163	5227	9298	3377	7463	1556	5657	9764	3879	8002	45
0854	4881	8915	2958	7007	1064	5128	9199	3278	7364	1458	5558	9666	3781	7904	44
0754	4781	8816	2858	6908	0965	5029	9101	3180	7266	1359	5460	9568	3683	7806	43
0654	4682	8717	2759	6809	0866	4930	9002	3081	7167	1261	5362	9470	3585	7708	42
0555	4582	8617	2660	6710	0767	4831	8903	2982	7069	1163	5264	9372	3487	7610	41
0455	4483	8518	2561	6611	0668	4733	8805	2884	6970	1064	5165	9274	3389	7512	40
0356	4383	8419	2461	6511	0569	4634	8706	2785	6872	0966	5067	9176	3291	7414	39
0256	4284	8319	2362	6412	0470	4535	8607	2687	6773	0868	4969	9077	3193	7316	38
0156	4184	8220	2263	6313	0371	4436	8508	2588	6675	0769	4871	8979	3095	7218	37
0057	4085	8121	2164	6214	0272	4337	8410	2489	6576	0671	4772	8881	2997	7120	36
9957	3986	8021	2064	6115	0173	4238	8311	2391	6478	0572	4674	8783	2899	7023	35
9858	3886	7922	1965	6016	0074	4139	8212	2292	6379	0474	4576	8685	2801	6925	34
9758	3787	7823	1866	5917	9975	4041	8113	2194	6281	0376	4478	8587	2703	6827	33
9658	3687	7723	1767	5818	9876	3942	8015	2095	6183	0277	4379	8489	2605	6729	32
9559	3588	7624	1668	5719	9777	3843	7916	1996	6084	0179	4281	8391	2507	6631	31
9459	3488	7525	1568	5620	9678	3744	7817	1898	5986	0081	4183	8292	2409	6533	30
9360	3389	7425	1469	5521	9579	3645	7719	1799	5887	9982	4085	8194	2311	6435	29
9260	3289	7326	1370	5421	9480	3546	7620	1701	5789	9884	3986	8096	2213	6337	28
9161	3190	7227	1271	5322	9381	3447	7521	1602	5690	9786	3888	7998	2115	6240	27
9061	3090	7127	1172	5223	9282	3349	7422	1503	5592	9687	3790	7900	2017	6142	26
8961	2991	7028	1072	5124	9183	3250	7324	1405	5493	9589	3692	7802	1919	6044	25
8862	2892	6929	0973	5025	9084	3151	7225	1306	5395	9491	3594	7704	1821	5946	24
8762	2792	6829	0874	4926	8985	3052	7126	1208	5296	9392	3495	7606	1723	5848	23
8663	2693	6730	0775	4827	8886	2953	7028	1109	5198	9294	3397	7508	1625	5750	22
8563	2593	6631	0676	4728	8788	2855	6929	1010	5099	9196	3299	7410	1527	5652	21
8464	2494	6531	0576	4629	8689	2756	6830	0912	5001	9097	3201	7311	1429	5555	20
8364	2394	6432	0477	4530	8590	2657	6731	0813	4902	8999	3102	7213	1331	5457	19
8265	2295	6333	0378	4431	8491	2558	6633	0715	4804	8901	3004	7115	1233	5359	18
8165	2196	6233	0279	4332	8392	2459	6534	0616	4706	8802	2906	7017	1135	5261	17
8065	2096	6134	0180	4233	8293	2360	6435	0518	4607	8704	2808	6919	1038	5163	16
7966	1997	6035	0081	4134	8194	2262	6337	0419	4509	8606	2710	6821	0940	5065	15
7866	1897	5936	9981	4034	8095	2163	6238	0320	4410	8507	2611	6723	0842	4967	14
7767	1798	5836	9882	3935	7996	2064	6139	0222	4312	8409	2513	6625	0744	4870	13
7667	1698	5737	9783	3836	7897	1965	6041	0123	4213	8311	2415	6527	0646	4772	12
7568	1599	5638	9684	3737	7798	1866	5942	0025	4115	8212	2317	6429	0548	4674	11
7468	1500	5538	9585	3638	7699	1768	5843	9926	4016	8114	2219	6331	0450	4576	10
7369	1400	5439	9485	3539	7600	1669	5745	9828	3918	8016	2120	6233	0352	4478	9
7269	1301	5340	9386	3440	7501	1570	5646	9729	3820	7917	2022	6134	0254	4380	8
7170	1201	5241	9287	3341	7403	1471	5547	9631	3721	7819	1924	6036	0156	4283	7
7070	1102	5141	9188	3242	7304	1372	5449	9532	3623	7721	1826	5938	0058	4185	6
6970	1003	5042	9089	3143	7205	1274	5350	9433	3524	7622	1728	5840	9960	4087	5
6871	0903	4943	8990	3044	7106	1175	5251	9335	3426	7524	1630	5742	9862	3989	4
6771	0804	4843	8891	2945	7007	1076	5153	9236	3327	7426	1531	5644	9764	3891	3
6672	0704	4744	8791	2846	6908	0977	5054	9138	3229	7327	1433	5546	9666	3793	2
6572	0605	4645	8692	2747	6809	0878	4955	9039	3131	7229	1335	5448	9568	3696	1
6473	0506	4546	8593	2648	6710	0780	4857	8941	3032	7131	1237	5350	9470	3598	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Tangent Deg. 77

"	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9. 343	9. 344	9. 344	9. 345	9. 346	9. 346	9. 347	9. 347	9. 348	9. 348	9. 349	9. 349	9. 350	9. 350	9. 351
0	7973	3552	9124	4688	0245	5794	1336	6870	2397	7917	3429	8934	4432	9922	5405
1	8066	3645	9217	4781	0337	5887	1428	6963	2489	8009	3521	9026	4523	0013	5496
2	8159	3738	9309	4873	0430	5979	1521	7055	2581	8101	3613	9117	4615	0105	5587
3	8252	3831	9402	4966	0522	6071	1613	7147	2673	8193	3705	9209	4706	0196	5679
4	8345	3924	9495	5059	0615	6164	1705	7239	2766	8285	3796	9301	4798	0288	5770
5	8438	4017	9588	5151	0708	6256	1797	7331	2858	8377	3888	9392	4889	0379	5861
6	8531	4110	9681	5244	0800	6349	1890	7423	2950	8468	3980	9484	4981	0470	5953
7	8624	4203	9773	5337	0893	6441	1982	7516	3042	8560	4072	9576	5072	0562	6044
8	8717	4295	9866	5429	0985	6533	2074	7608	3134	8652	4164	9667	5164	0653	6135
9	8810	4388	9959	5522	1078	6626	2167	7700	3226	8744	4255	9759	5256	0745	6227
10	8903	4481	0052	5615	1170	6718	2259	7792	3318	8836	4347	9851	5347	0836	6318
11	8996	4574	0145	5707	1263	6811	2351	7884	3410	8928	4439	9942	5439	0928	6409
12	9089	4667	0237	5800	1355	6903	2443	7976	3502	9020	4531	0034	5530	1019	6500
13	9182	4760	0330	5893	1448	6995	2536	8068	3594	9112	4623	0126	5622	1110	6592
14	9275	4853	0423	5985	1540	7088	2628	8161	3686	9204	4714	0217	5713	1202	6683
15	9368	4946	0516	6078	1633	7180	2720	8253	3778	9296	4806	0309	5805	1293	6774
16	9461	5039	0608	6171	1725	7273	2813	8345	3870	9388	4898	0401	5896	1385	6866
17	9554	5132	0701	6263	1818	7365	2905	8437	3962	9479	4990	0492	5988	1476	6957
18	9647	5224	0794	6356	1910	7457	2997	8529	4054	9571	5081	0584	6079	1567	7048
19	9740	5317	0887	6449	2003	7550	3089	8621	4146	9663	5173	0676	6171	1659	7139
20	9833	5410	0979	6541	2095	7642	3182	8713	4238	9755	5265	0767	6262	1750	7231
21	9926	5503	1072	6634	2188	7735	3274	8806	4330	9847	5357	0859	6354	1842	7322
22	0019	5596	1165	6726	2280	7827	3366	8898	4422	9939	5448	0951	6445	1933	7413
23	0112	5689	1258	6819	2373	7919	3458	8990	4514	0031	5540	1042	6537	2024	7505
24	0205	5782	1350	6912	2465	8012	3551	9082	4606	0123	5632	1134	6629	2116	7596
25	0298	5875	1443	7004	2558	8104	3643	9174	4698	0215	5724	1226	6720	2207	7687
26	0391	5967	1536	7097	2650	8196	3735	9266	4790	0306	5816	1317	6812	2299	7778
27	0484	6060	1629	7190	2743	8289	3827	9358	4882	0398	5907	1409	6903	2390	7870
28	0577	6153	1721	7282	2835	8381	3920	9451	4974	0490	5999	1500	6995	2481	7961
29	0670	6246	1814	7375	2928	8474	4012	9543	5066	0582	6091	1592	7086	2573	8052
30	0763	6339	1907	7467	3020	8566	4104	9635	5158	0674	6183	1684	7178	2664	8143
31	0856	6432	2000	7560	3113	8658	4196	9727	5250	0766	6274	1775	7269	2756	8235
32	0949	6525	2092	7653	3205	8751	4289	9819	5342	0858	6366	1867	7361	2847	8326
33	1042	6618	2185	7745	3298	8843	4381	9911	5434	0950	6458	1959	7452	2938	8417
34	1135	6710	2278	7838	3390	8935	4473	0003	5526	1041	6549	2050	7544	3030	8508
35	1228	6803	2371	7930	3483	9028	4565	0095	5618	1133	6641	2142	7635	3121	8600
36	1321	6896	2463	8023	3575	9120	4657	0187	5710	1225	6733	2233	7727	3212	8691
37	1414	6989	2556	8116	3668	9212	4750	0280	5802	1317	6825	2325	7818	3304	8782
38	1507	7082	2649	8208	3760	9305	4842	0372	5894	1409	6916	2417	7910	3395	8873
39	1600	7175	2741	8301	3853	9397	4934	0464	5986	1501	7008	2508	8001	3487	8965
40	1693	7267	2834	8393	3945	9489	5026	0556	6078	1593	7100	2600	8093	3578	9056
41	1786	7360	2927	8486	4038	9582	5119	0648	6170	1684	7192	2691	8184	3669	9147
42	1879	7453	3020	8579	4130	9674	5211	0740	6262	1776	7283	2783	8275	3761	9238
43	1972	7546	3112	8671	4223	9767	5303	0832	6354	1868	7375	2875	8367	3852	9330
44	2065	7639	3205	8764	4315	9859	5395	0924	6446	1960	7467	2966	8458	3943	9421
45	2158	7732	3298	8856	4407	9951	5487	1016	6538	2052	7558	3058	8550	4035	9512
46	2251	7824	3390	8949	4500	0044	5580	1108	6630	2144	7650	3149	8641	4126	9603
47	2344	7917	3483	9042	4592	0136	5672	1200	6722	2235	7742	3241	8733	4217	9695
48	2437	8010	3576	9134	4685	0228	5764	1293	6814	2327	7834	3333	8824	4309	9786
49	2530	8103	3669	9227	4777	0321	5856	1385	6906	2419	7925	3424	8916	4400	9877
50	2623	8196	3761	9319	4870	0413	5948	1477	6998	2511	8017	3516	9007	4491	9968
51	2716	8289	3854	9412	4962	0505	6041	1569	7089	2603	8109	3607	9099	4583	0059
52	2809	8381	3947	9504	5055	0597	6133	1661	7181	2695	8200	3699	9190	4674	0151
53	2902	8474	4039	9597	5147	0690	6225	1753	7273	2786	8292	3791	9282	4765	0242
54	2995	8567	4132	9690	5240	0782	6317	1845	7365	2878	8384	3882	9373	4857	0333
55	3087	8660	4225	9782	5332	0874	6409	1937	7457	2970	8476	3974	9465	4948	0424
56	3180	8753	4317	9875	5424	0967	6502	2029	7549	3062	8567	4065	9556	5039	0516
57	3273	8845	4410	9967	5517	1059	6594	2121	7641	3154	8659	4157	9647	5131	0607
58	3366	8938	4503	0060	5609	1151	6686	2213	7733	3246	8751	4248	9739	5222	0698
59	3459	9031	4595	0152	5702	1244	6778	2305	7825	3337	8842	4340	9830	5313	0789
60	3552	9124	4688	0245	5794	1336	6870	2397	7917	3429	8934	4432	9922	5405	0880
"	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
9. 989	9. 989	9. 989	9. 989	9. 989	9. 989	9. 988	9. 988	9. 988	9. 988	9. 988	9. 988	9. 988	9. 988	9. 988	"
1571	1285	0998	0711	0424	0137	9849	9560	9271	8982	8693	8403	8113	7822	7531	60
1566	1280	0993	0707	0419	0132	9844	9555	9267	8977	8688	8398	8108	7817	7526	59
1561	1275	0989	0702	0415	0127	9839	9551	9262	8973	8683	8393	8103	7812	7521	58
1556	1270	0984	0697	0410	0122	9834	9546	9257	8968	8678	8388	8098	7807	7516	57
1552	1266	0979	0692	0405	0117	9829	9541	9252	8963	8673	8384	8093	7802	7511	56
1547	1261	0974	0687	0400	0113	9825	9536	9247	8958	8669	8379	8088	7798	7507	55
1542	1256	0970	0683	0395	0108	9820	9531	9243	8953	8664	8374	8084	7793	7502	54
1537	1251	0965	0678	0391	0103	9815	9527	9238	8949	8659	8369	8079	7788	7497	53
1533	1246	0960	0673	0386	0098	9810	9522	9233	8944	8654	8364	8074	7783	7492	52
1528	1242	0955	0668	0381	0093	9805	9517	9228	8939	8649	8359	8069	7778	7487	51
1523	1237	0950	0664	0376	0089	9801	9512	9223	8934	8644	8355	8064	7773	7482	50
1518	1232	0946	0659	0371	0084	9796	9507	9218	8929	8640	8350	8059	7769	7477	49
1514	1227	0941	0654	0367	0079	9791	9502	9214	8924	8635	8345	8054	7764	7473	48
1509	1223	0936	0649	0362	0074	9786	9498	9209	8920	8630	8340	8050	7759	7468	47
1504	1218	0931	0644	0357	0069	9781	9493	9204	8915	8625	8335	8045	7754	7463	46
1499	1213	0927	0640	0352	0065	9777	9488	9199	8910	8620	8330	8040	7749	7458	45
1494	1208	0922	0635	0348	0060	9772	9483	9194	8905	8616	8325	8035	7744	7453	44
1490	1204	0917	0630	0343	0055	9767	9478	9190	8900	8611	8321	8030	7739	7448	43
1485	1199	0912	0625	0338	0050	9762	9474	9185	8895	8606	8316	8025	7735	7443	42
1480	1194	0907	0620	0333	0045	9757	9469	9180	8891	8601	8311	8021	7730	7439	41
1475	1189	0903	0616	0328	0041	9753	9464	9175	8886	8596	8306	8016	7725	7434	40
1471	1184	0898	0611	0324	0036	9748	9459	9170	8881	8591	8301	8011	7720	7429	39
1466	1180	0893	0606	0319	0031	9743	9454	9165	8876	8587	8296	8006	7715	7424	38
1461	1175	0888	0601	0314	0026	9738	9450	9161	8871	8582	8292	8001	7710	7419	37
1456	1170	0884	0597	0309	0021	9733	9445	9156	8867	8577	8287	7996	7705	7414	36
1452	1165	0879	0592	0304	0017	9728	9440	9151	8862	8572	8282	7991	7701	7409	35
1447	1161	0874	0587	0300	0012	9724	9435	9146	8857	8567	8277	7987	7696	7405	34
1442	1156	0869	0582	0295	0007	9719	9430	9141	8852	8562	8272	7982	7691	7400	33
1437	1151	0864	0577	0290	0002	9714	9426	9137	8847	8558	8267	7977	7686	7395	32
1432	1146	0860	0573	0285	9997	9709	9421	9132	8842	8552	8263	7972	7681	7390	31
1428	1141	0855	0568	0280	9993	9704	9416	9127	8838	8548	8258	7967	7676	7385	30
1423	1137	0850	0563	0276	9988	9700	9411	9122	8833	8543	8253	7962	7672	7380	29
1418	1132	0845	0558	0271	9983	9695	9406	9117	8828	8538	8248	7958	7667	7375	28
1413	1127	0840	0553	0266	9978	9690	9401	9112	8823	8533	8243	7953	7662	7371	27
1409	1122	0836	0549	0261	9973	9685	9397	9108	8818	8529	8238	7948	7657	7366	26
1404	1118	0831	0544	0256	9969	9680	9392	9103	8813	8524	8234	7943	7652	7361	25
1399	1113	0826	0539	0252	9964	9676	9387	9098	8809	8519	8229	7938	7647	7356	24
1394	1108	0821	0534	0247	9959	9671	9382	9093	8804	8514	8224	7933	7642	7351	23
1390	1103	0817	0530	0242	9954	9666	9377	9088	8799	8509	8219	7929	7638	7346	22
1385	1098	0812	0525	0237	9949	9661	9373	9084	8794	8504	8214	7924	7633	7341	21
1380	1094	0807	0520	0232	9945	9656	9368	9079	8789	8500	8209	7919	7628	7337	20
1375	1089	0802	0515	0228	9940	9652	9363	9074	8785	8495	8205	7914	7623	7332	19
1370	1084	0797	0510	0223	9935	9647	9358	9069	8780	8490	8200	7909	7618	7327	18
1366	1079	0793	0506	0218	9930	9642	9353	9064	8775	8485	8195	7904	7613	7322	17
1361	1075	0788	0501	0213	9925	9637	9348	9059	8770	8480	8190	7899	7608	7317	16
1356	1070	0783	0496	0209	9921	9632	9344	9055	8765	8475	8185	7895	7604	7312	15
1351	1065	0778	0491	0204	9916	9628	9339	9050	8760	8471	8180	7890	7599	7307	14
1347	1060	0774	0486	0199	9911	9623	9334	9045	8756	8466	8175	7885	7594	7303	13
1342	1056	0769	0482	0194	9906	9618	9329	9040	8751	8461	8171	7880	7589	7298	12
1337	1051	0764	0477	0189	9901	9613	9324	9035	8746	8456	8166	7875	7584	7293	11
1332	1046	0759	0472	0185	9897	9608	9320	9031	8741	8451	8161	7870	7579	7288	10
1328	1041	0754	0467	0180	9892	9603	9315	9026	8736	8446	8156	7865	7574	7283	9
1323	1036	0750	0462	0175	9887	9599	9310	9021	8731	8442	8151	7861	7570	7278	8
1318	1032	0745	0458	0170	9882	9594	9305	9016	8727	8437	8146	7856	7565	7273	7
1313	1027	0740	0453	0165	9877	9589	9300	9011	8722	8432	8142	7851	7560	7268	6
1308	1022	0735	0448	0161	9873	9584	9296	9006	8717	8427	8137	7846	7555	7264	5
1304	1017	0731	0443	0156	9868	9579	9291	9002	8712	8422	8132	7841	7550	7259	4
1299	1013	0726	0439	0151	9863	9575	9286	8997	8707	8417	8127	7836	7545	7254	3
1294	1008	0721	0434	0146	9858	9570	9281	8992	8702	8413	8122	7832	7541	7249	2
1289	1003	0716	0429	0141	9853	9565	9276	8987	8698	8408	8117	7827	7536	7244	1
1285	0998	0711	0424	0137	9849	9560	9271	8982	8693	8403	8113	7822	7531	7239	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	"

"	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9.354	9.355	9.355	9.356	9.356	9.357	9.358	9.358	9.359	9.359	9.360	9.361	9.361	9.362	9.362
0	6402	2267	8126	3977	9821	5658	1487	7310	3126	8935	4736	0531	6319	2100	7874
1	6500	2365	8223	4074	9918	5755	1584	7407	3223	9031	4833	0628	6415	2196	7970
2	6598	2463	8321	4172	0015	5852	1682	7504	3320	9128	4930	0724	6512	2292	8066
3	6696	2561	8418	4269	0113	5949	1779	7601	3416	9225	5026	0821	6608	2389	8162
4	6793	2658	8516	4367	0210	6046	1876	7698	3513	9322	5123	0917	6705	2485	8259
5	6891	2756	8614	4464	0307	6144	1973	7795	3610	9418	5220	1014	6801	2581	8355
6	6989	2854	8711	4561	0405	6241	2070	7892	3707	9515	5316	1110	6897	2678	8451
7	7087	2951	8809	4659	0502	6338	2167	7989	3804	9612	5413	1207	6994	2774	8547
8	7185	3049	8906	4756	0599	6435	2264	8086	3901	9709	5509	1303	7090	2870	8643
9	7282	3147	9004	4854	0697	6532	2361	8183	3998	9805	5606	1400	7187	2966	8739
10	7380	3244	9101	4951	0794	6630	2458	8280	4094	9902	5703	1496	7283	3063	8836
11	7478	3342	9199	5049	0891	6727	2555	8377	4191	9999	5799	1593	7379	3159	8932
12	7576	3440	9296	5146	0989	6824	2652	8474	4288	0096	5896	1689	7476	3255	9028
13	7674	3537	9394	5244	1086	6921	2750	8571	4385	0192	5993	1786	7572	3352	9124
14	7771	3635	9492	5341	1183	7018	2847	8668	4482	0289	6089	1882	7668	3448	9220
15	7869	3733	9589	5438	1281	7116	2944	8765	4579	0386	6186	1979	7765	3544	9316
16	7967	3830	9687	5536	1378	7213	3041	8862	4676	0482	6282	2075	7861	3640	9412
17	8065	3928	9784	5633	1475	7310	3138	8959	4772	0579	6379	2172	7958	3737	9509
18	8163	4026	9882	5731	1572	7407	3235	9056	4869	0676	6476	2268	8054	3833	9605
19	8260	4123	9979	5828	1670	7504	3332	9153	4966	0773	6572	2365	8150	3929	9701
20	8358	4221	0077	5925	1767	7602	3429	9249	5063	0869	6669	2461	8247	4025	9797
21	8456	4319	0174	6023	1864	7699	3526	9346	5160	0966	6765	2558	8343	4122	9893
22	8554	4416	0272	6120	1962	7796	3623	9443	5257	1063	6862	2654	8439	4218	9989
23	8651	4514	0369	6218	2059	7893	3720	9540	5353	1159	6959	2751	8536	4314	0085
24	8749	4612	0467	6315	2156	7990	3817	9637	5450	1256	7055	2847	8632	4410	0182
25	8847	4709	0564	6413	2254	8087	3914	9734	5547	1353	7152	2944	8729	4507	0278
26	8945	4807	0662	6510	2351	8185	4011	9831	5644	1450	7248	3040	8825	4603	0374
27	9042	4905	0760	6607	2448	8282	4108	9928	5741	1546	7345	3137	8921	4699	0470
28	9140	5002	0857	6705	2545	8379	4206	0025	5837	1643	7441	3233	9018	4795	0566
29	9238	5100	0955	6802	2643	8476	4303	0122	5934	1740	7538	3329	9114	4892	0662
30	9336	5197	1052	6900	2740	8573	4400	0219	6031	1836	7635	3426	9210	4988	0758
31	9433	5295	1150	6997	2837	8670	4497	0316	6128	1933	7731	3522	9307	5084	0854
32	9531	5393	1247	7094	2935	8768	4594	0413	6225	2030	7828	3619	9403	5180	0951
33	9629	5490	1345	7192	3032	8865	4691	0510	6322	2126	7924	3715	9499	5276	1047
34	9727	5588	1442	7289	3129	8962	4788	0607	6418	2223	8021	3812	9596	5373	1143
35	9824	5686	1540	7387	3226	9059	4885	0704	6515	2320	8118	3908	9692	5469	1239
36	9922	5783	1637	7484	3324	9156	4982	0800	6612	2417	8214	4005	9788	5565	1335
37	0020	5881	1735	7581	3421	9253	5079	0897	6709	2513	8311	4101	9885	5661	1431
38	0118	5978	1832	7679	3518	9351	5176	0994	6806	2610	8407	4198	9981	5758	1527
39	0215	6076	1930	7776	3615	9448	5273	1091	6902	2707	8504	4294	0077	5854	1623
40	0313	6174	2027	7873	3713	9545	5370	1188	6999	2803	8600	4390	0174	5950	1719
41	0411	6271	2125	7971	3810	9642	5467	1285	7096	2900	8697	4487	0270	6046	1815
42	0509	6369	2222	8068	3907	9739	5564	1382	7193	2997	8793	4583	0366	6142	1912
43	0606	6467	2320	8166	4004	9836	5661	1479	7290	3093	8890	4680	0463	6239	2008
44	0704	6564	2417	8263	4102	9933	5758	1576	7386	3190	8987	4776	0559	6335	2104
45	0802	6662	2515	8360	4199	0031	5855	1673	7483	3287	9083	4873	0655	6431	2200
46	0900	6759	2612	8458	4296	0128	5952	1769	7580	3383	9180	4969	0752	6527	2296
47	0997	6857	2710	8555	4393	0225	6049	1866	7677	3480	9276	5066	0848	6623	2392
48	1095	6955	2807	8652	4491	0322	6146	1963	7773	3577	9373	5162	0944	6720	2488
49	1193	7052	2905	8750	4588	0419	6243	2060	7870	3673	9469	5258	1041	6816	2584
50	1290	7150	3002	8847	4685	0516	6340	2157	7967	3770	9566	5355	1137	6912	2680
51	1388	7247	3100	8945	4782	0613	6437	2254	8064	3867	9662	5451	1233	7008	2776
52	1486	7345	3197	9042	4880	0710	6534	2351	8161	3963	9759	5548	1330	7104	2872
53	1584	7443	3294	9139	4977	0808	6631	2448	8257	4060	9855	5644	1426	7201	2969
54	1681	7540	3392	9237	5074	0905	6728	2545	8354	4157	9952	5741	1522	7297	3065
55	1779	7638	3489	9334	5171	1002	6825	2642	8451	4253	0049	5837	1618	7393	3161
56	1877	7735	3587	9431	5269	1099	6922	2738	8548	4350	0145	5933	1715	7489	3257
57	1974	7833	3684	9529	5366	1196	7019	2835	8644	4446	0242	6030	1811	7585	3353
58	2072	7931	3782	9626	5463	1293	7116	2932	8741	4543	0338	6126	1907	7682	3449
59	2170	8028	3879	9723	5560	1390	7213	3029	8838	4640	0435	6223	2004	7778	3545
60	2267	8126	3977	9821	5658	1487	7310	3126	8935	4736	0531	6319	2100	7874	3641
"	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	"
10.645	10.644	10.644	10.643	10.643	10.642	10.641	10.641	10.640	10.640	10.639	10.638	10.638	10.637	10.637	
3598	7733	1874	6023	0179	4342	8513	2690	6874	1065	5264	9469	3681	7900	2126	60
3500	7635	1777	5926	0082	4245	8416	2593	6777	0969	5167	9372	3585	7804	2030	59
3402	7537	1679	5828	9985	4148	8318	2496	6680	0872	5070	9276	3488	7708	1934	58
3304	7439	1582	5731	9887	4051	8221	2399	6584	0775	4974	9179	3392	7611	1838	57
3207	7342	1484	5633	9790	3954	8124	2302	6487	0678	4877	9083	3295	7515	1741	56
3109	7244	1386	5536	9693	3856	8027	2205	6390	0582	4780	8986	3199	7419	1645	55
3011	7146	1289	5439	9595	3759	7930	2108	6293	0485	4684	8890	3103	7322	1549	54
2913	7049	1191	5341	9498	3662	7833	2011	6196	0388	4587	8793	3006	7226	1453	53
2815	6951	1094	5244	9401	3565	7736	1914	6099	0291	4491	8697	2910	7130	1357	52
2718	6853	0996	5146	9303	3468	7639	1817	6002	0195	4394	8600	2813	7034	1261	51
2620	6756	0899	5049	9206	3370	7542	1720	5906	0098	4297	8504	2717	6937	1164	50
2522	6658	0801	4951	9109	3273	7445	1623	5809	0001	4201	8407	2621	6841	1068	49
2424	6560	0704	4854	9011	3176	7348	1526	5712	9904	4104	8311	2524	6745	0972	48
2326	6463	0606	4756	8914	3079	7250	1429	5615	9808	4007	8214	2428	6648	0876	47
2229	6365	0508	4659	8817	2982	7153	1332	5518	9711	3911	8118	2332	6552	0780	46
2131	6267	0411	4562	8719	2884	7056	1235	5421	9614	3814	8021	2235	6456	0684	45
2033	6170	0313	4464	8622	2787	6959	1138	5324	9518	3718	7925	2139	6360	0588	44
1935	6072	0216	4367	8525	2690	6862	1041	5228	9421	3621	7828	2042	6263	0491	43
1837	5974	0118	4269	8428	2593	6765	0944	5131	9324	3524	7732	1946	6167	0395	42
1740	5877	0021	4172	8330	2496	6668	0847	5034	9227	3428	7635	1850	6071	0299	41
1642	5779	9923	4075	8233	2398	6571	0751	4937	9131	3331	7539	1753	5975	0203	40
1544	5681	9826	3977	8136	2301	6474	0654	4840	9034	3235	7442	1657	5878	0107	39
1446	5584	9728	3880	8038	2204	6377	0557	4743	8937	3138	7346	1561	5782	0011	38
1349	5486	9631	3782	7941	2107	6280	0460	4647	8841	3041	7249	1464	5686	9915	37
1251	5388	9533	3685	7844	2010	6183	0363	4550	8744	2945	7153	1368	5590	9818	36
1153	5291	9436	3587	7746	1913	6086	0266	4453	8647	2848	7056	1271	5493	9722	35
1055	5193	9338	3490	7649	1815	5989	0169	4356	8550	2752	6960	1175	5397	9626	34
0958	5095	9240	3393	7552	1718	5892	0072	4259	8454	2655	6863	1079	5301	9530	33
0860	4998	9143	3295	7455	1621	5794	9975	4163	8357	2559	6767	0982	5205	9434	32
0762	4900	9045	3198	7357	1524	5697	9878	4066	8260	2462	6671	0886	5108	9338	31
0664	4803	8948	3100	7260	1427	5600	9781	3969	8164	2365	6574	0790	5012	9242	30
0567	4705	8850	3003	7163	1330	5503	9684	3872	8067	2269	6478	0693	4916	9146	29
0469	4607	8753	2906	7065	1232	5406	9587	3775	7970	2172	6381	0597	4820	9049	28
0371	4510	8655	2808	6968	1135	5309	9490	3678	7874	2076	6285	0501	4724	8953	27
0273	4412	8558	2711	6871	1038	5212	9393	3582	7777	1979	6188	0404	4627	8857	26
0176	4314	8460	2613	6774	0941	5115	9296	3485	7680	1882	6092	0308	4531	8761	25
0078	4217	8363	2516	6676	0844	5018	9200	3388	7583	1786	5995	0212	4435	8665	24
9980	4119	8265	2419	6579	0747	4921	9103	3291	7487	1689	5899	0115	4339	8569	23
9882	4022	8168	2321	6482	0649	4824	9006	3194	7390	1593	5802	0019	4242	8473	22
9785	3924	8070	2224	6385	0552	4727	8909	3098	7293	1496	5706	9923	4146	8377	21
9687	3826	7973	2127	6287	0455	4630	8812	3001	7197	1400	5610	9826	4050	8281	20
9589	3729	7875	2029	6190	0358	4533	8715	2904	7100	1303	5513	9730	3954	8185	19
9491	3631	7778	1932	6093	0261	4436	8618	2807	7003	1207	5417	9634	3858	8088	18
9394	3533	7680	1834	5996	0164	4339	8521	2710	6907	1110	5320	9537	3761	7992	17
9296	3436	7583	1737	5898	0067	4242	8424	2614	6810	1013	5224	9441	3665	7896	16
9198	3338	7485	1640	5801	9969	4145	8327	2517	6713	0917	5127	9345	3569	7800	15
9100	3241	7388	1542	5704	9872	4048	8231	2420	6617	0820	5031	9248	3473	7704	14
9003	3143	7290	1445	5607	9775	3951	8134	2323	6520	0724	4934	9152	3377	7608	13
8905	3045	7193	1348	5509	9678	3854	8037	2227	6423	0627	4838	9056	3280	7512	12
8807	2948	7095	1250	5412	9581	3757	7940	2130	6327	0531	4742	8959	3184	7416	11
8710	2850	6998	1153	5315	9484	3660	7843	2033	6230	0434	4645	8863	3088	7320	10
8612	2753	6900	1055	5218	9387	3563	7746	1936	6133	0338	4549	8767	2992	7224	9
8514	2655	6803	0958	5120	9290	3466	7649	1839	6037	0241	4452	8670	2896	7128	8
8416	2557	6706	0861	5023	9192	3369	7552	1743	5940	0145	4356	8574	2799	7031	7
8319	2460	6608	0763	4926	9095	3272	7455	1646	5843	0048	4259	8478	2703	6935	6
8221	2362	6511	0666	4829	8998	3175	7358	1549	5747	9951	4163	8382	2607	6839	5
8123	2265	6413	0569	4731	8901	3078	7262	1452	5650	9855	4067	8285	2511	6743	4
8026	2167	6316	0471	4634	8804	2981	7165	1356	5554	9758	3970	8189	2415	6647	3
7928	2069	6218	0374	4537	8707	2884	7068	1259	5457	9662	3874	8093	2318	6551	2
7830	1972	6121	0277	4440	8610	2787	6971	1162	5360	9565	3777	7996	2222	6455	1
7733	1874	6023	0179	4342	8513	2690	6874	1065	5264	9469	3681	7900	2126	6359	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	"

13 Deg. Sine

″	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
	9.352	9.352	9.353	9.353	9.354	9.354	9.355	9.355	9.356	9.356	9.357	9.358	9.358	9.359	9.359
0	0880	6349	1810	7264	2710	8150	3582	9007	4426	9836	5240	0637	6027	1409	6785
1	0972	6440	1901	7355	2801	8241	3673	9098	4516	9927	5330	0727	6116	1499	6874
2	1063	6531	1992	7445	2892	8331	3763	9188	4606	0017	5420	0817	6206	1589	6964
3	1154	6622	2083	7536	2983	8422	3854	9279	4696	0107	5510	0907	6296	1678	7054
4	1245	6713	2174	7627	3073	8512	3944	9369	4786	0197	5600	0997	6386	1768	7143
5	1336	6804	2265	7718	3164	8603	4035	9459	4877	0287	5690	1086	6476	1858	7233
6	1427	6895	2356	7809	3255	8694	4125	9550	4967	0377	5780	1176	6565	1947	7322
7	1519	6986	2446	7900	3345	8784	4216	9640	5057	0467	5870	1266	6655	2037	7412
8	1610	7077	2537	7990	3436	8875	4306	9730	5147	0557	5960	1356	6745	2126	7501
9	1701	7168	2628	8081	3527	8965	4397	9821	5238	0647	6050	1446	6835	2216	7591
10	1792	7259	2719	8172	3618	9056	4487	9911	5328	0738	6140	1536	6924	2306	7680
11	1883	7350	2810	8263	3708	9146	4577	0001	5418	0828	6230	1626	7014	2395	7770
12	1975	7442	2901	8354	3799	9237	4668	0092	5508	0918	6320	1716	7104	2485	7859
13	2066	7533	2992	8444	3890	9328	4758	0182	5598	1008	6410	1805	7194	2575	7949
14	2157	7624	3083	8535	3980	9418	4849	0272	5689	1098	6500	1895	7283	2664	8038
15	2248	7715	3174	8626	4071	9509	4939	0363	5779	1188	6590	1985	7373	2754	8128
16	2339	7806	3265	8717	4162	9599	5039	0453	5869	1278	6680	2075	7463	2844	8217
17	2430	7897	3356	8808	4252	9690	5120	0543	5959	1368	6770	2165	7553	2933	8307
18	2522	7988	3447	8899	4343	9780	5211	0634	6050	1458	6860	2255	7642	3023	8396
19	2613	8079	3538	8989	4434	9871	5301	0724	6140	1548	6950	2345	7732	3112	8486
20	2704	8170	3629	9080	4524	9962	5391	0814	6230	1639	7040	2434	7822	3202	8575
21	2795	8261	3720	9171	4615	0052	5482	0905	6320	1729	7130	2524	7911	3292	8665
22	2886	8352	3810	9262	4706	0143	5572	0995	6410	1819	7220	2614	8001	3381	8754
23	2977	8443	3901	9352	4796	0233	5663	1085	6501	1909	7310	2704	8091	3471	8844
24	3069	8534	3992	9443	4887	0324	5753	1176	6591	1999	7400	2794	8181	3560	8933
25	3160	8625	4083	9534	4978	0414	5844	1266	6681	2089	7490	2884	8270	3650	9023
26	3251	8716	4174	9625	5068	0505	5934	1356	6771	2179	7580	2973	8360	3740	9112
27	3342	8807	4265	9716	5159	0595	6025	1446	6861	2269	7670	3063	8450	3829	9202
28	3433	8898	4356	9806	5250	0686	6115	1537	6952	2359	7760	3153	8539	3919	9291
29	3524	8989	4447	9897	5340	0776	6205	1627	7042	2449	7850	3243	8629	4008	9381
30	3615	9080	4538	9988	5431	0867	6296	1717	7132	2539	7940	3333	8719	4098	9470
31	3707	9171	4629	0079	5522	0958	6386	1808	7222	2629	8029	3423	8809	4188	9560
32	3798	9262	4719	0170	5612	1048	6477	1898	7312	2719	8119	3512	8898	4277	9649
33	3889	9353	4810	0260	5703	1139	6567	1988	7402	2809	8209	3602	8988	4367	9739
34	3980	9444	4901	0351	5794	1229	6657	2079	7493	2899	8299	3692	9078	4456	9828
35	4071	9535	4992	0442	5884	1320	6748	2169	7583	2990	8389	3782	9167	4546	9917
36	4162	9626	5083	0533	5975	1410	6838	2259	7673	3080	8479	3872	9257	4636	0007
37	4253	9717	5174	0623	6066	1501	6929	2349	7763	3170	8569	3961	9347	4725	0096
38	4344	9808	5265	0714	6156	1591	7019	2440	7853	3260	8659	4051	9437	4815	0186
39	4436	9899	5356	0805	6247	1682	7109	2530	7943	3350	8749	4141	9526	4904	0275
40	4527	9990	5447	0896	6338	1772	7200	2620	8034	3440	8839	4231	9616	4994	0365
41	4618	0081	5537	0986	6428	1863	7290	2711	8124	3530	8929	4321	9706	5083	0454
42	4709	0172	5628	1077	6519	1953	7381	2801	8214	3620	9019	4411	9795	5173	0544
43	4800	0263	5719	1168	6609	2044	7471	2891	8304	3710	9109	4500	9885	5263	0633
44	4891	0354	5810	1259	6700	2134	7561	2981	8394	3800	9199	4590	9975	5352	0723
45	4982	0445	5901	1349	6791	2225	7652	3072	8484	3890	9289	4680	0064	5442	0812
46	5073	0536	5992	1440	6881	2315	7742	3162	8575	3980	9378	4770	0154	5531	0901
47	5165	0627	6083	1531	6972	2406	7833	3252	8665	4070	9468	4860	0244	5621	0991
48	5256	0718	6174	1622	7063	2496	7923	3342	8755	4160	9558	4949	0333	5710	1080
49	5347	0809	6264	1712	7153	2587	8013	3433	8845	4250	9648	5039	0423	5800	1170
50	5438	0900	6355	1803	7244	2677	8104	3523	8935	4340	9738	5129	0513	5890	1259
51	5529	0991	6446	1894	7334	2768	8194	3613	9025	4430	9828	5219	0602	5979	1349
52	5620	1082	6537	1985	7425	2858	8285	3704	9115	4520	9918	5308	0692	6069	1438
53	5711	1173	6628	2075	7516	2949	8375	3794	9206	4610	0008	5398	0782	6158	1528
54	5802	1264	6719	2166	7606	3039	8465	3884	9296	4700	0098	5488	0871	6248	1617
55	5893	1355	6810	2257	7697	3130	8556	3974	9386	4790	0188	5578	0961	6337	1706
56	5984	1446	6900	2348	7788	3220	8646	4065	9476	4880	0277	5668	1051	6427	1796
57	6075	1537	6991	2438	7878	3311	8736	4155	9566	4970	0367	5757	1140	6516	1885
58	6167	1628	7082	2529	7969	3401	8827	4245	9656	5060	0457	5847	1230	6606	1975
59	6258	1719	7173	2620	8059	3492	8917	4335	9746	5150	0547	5937	1320	6695	2064
60	6349	1810	7264	2710	8150	3582	9007	4426	9836	5240	0637	6027	1409	6785	2154
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Sine Deg. 76

13 Deg. Co-Sine

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	″
9.988	9.988	9.988	9.988	9.988	9.988	9.988	9.988	9.988	9.988	9.988	9.988	9.988	9.988	9.988	
7239	6947	6655	6363	6070	5776	5482	5188	4894	4599	4303	4008	3712	3415	3118	60
7234	6943	6650	6358	6065	5771	5478	5183	4889	4594	4298	4003	3707	3410	3113	59
7230	6938	6645	6353	6060	5766	5473	5178	4884	4589	4294	3998	3702	3405	3108	58
7225	6933	6641	6348	6055	5762	5468	5174	4879	4584	4289	3993	3697	3400	3103	57
7220	6928	6636	6343	6050	5757	5463	5169	4874	4579	4284	3988	3692	3395	3098	56
7215	6923	6631	6338	6045	5752	5458	5164	4869	4574	4279	3983	3687	3390	3093	55
7210	6918	6626	6333	6040	5747	5453	5159	4864	4569	4274	3978	3682	3385	3088	54
7205	6913	6621	6328	6035	5742	5448	5154	4859	4564	4269	3973	3677	3380	3083	53
7200	6909	6616	6324	6030	5737	5443	5149	4854	4559	4264	3968	3672	3375	3079	52
7196	6904	6611	6319	6026	5732	5438	5144	4849	4554	4259	3963	3667	3371	3074	51
7191	6899	6606	6314	6021	5727	5433	5139	4845	4550	4254	3958	3662	3366	3069	50
7186	6894	6602	6309	6016	5722	5429	5134	4840	4545	4249	3953	3657	3361	3064	49
7181	6889	6597	6304	6011	5717	5424	5129	4835	4540	4244	3948	3652	3356	3059	48
7176	6884	6592	6299	6006	5713	5419	5124	4830	4535	4239	3944	3647	3351	3054	47
7171	6879	6587	6294	6001	5708	5414	5120	4825	4530	4234	3939	3642	3346	3049	46
7166	6874	6582	6289	5996	5703	5409	5115	4820	4525	4229	3934	3637	3341	3044	45
7162	6870	6577	6285	5991	5698	5404	5110	4815	4520	4225	3929	3633	3336	3039	44
7157	6865	6572	6280	5987	5693	5399	5105	4810	4515	4220	3924	3628	3331	3034	43
7152	6860	6567	6275	5982	5688	5394	5100	4805	4510	4215	3919	3623	3326	3029	42
7147	6855	6563	6270	5977	5683	5389	5095	4800	4505	4210	3914	3618	3321	3024	41
7142	6850	6558	6265	5972	5678	5384	5090	4795	4500	4205	3909	3613	3316	3019	40
7137	6845	6553	6260	5967	5673	5379	5085	4790	4495	4200	3904	3608	3311	3014	39
7132	6840	6548	6255	5962	5669	5375	5080	4786	4490	4195	3899	3603	3306	3009	38
7127	6835	6543	6250	5957	5664	5370	5075	4781	4486	4190	3894	3598	3301	3004	37
7123	6831	6538	6245	5952	5659	5365	5070	4776	4481	4185	3889	3593	3296	2999	36
7118	6826	6533	6241	5947	5654	5360	5066	4771	4476	4180	3884	3588	3291	2994	35
7113	6821	6528	6236	5943	5649	5355	5061	4766	4471	4175	3879	3583	3286	2989	34
7108	6816	6524	6231	5938	5644	5350	5056	4761	4466	4170	3874	3578	3281	2984	33
7103	6811	6519	6226	5933	5639	5345	5051	4756	4461	4165	3870	3573	3277	2979	32
7098	6806	6514	6221	5928	5634	5340	5046	4751	4456	4160	3865	3568	3272	2975	31
7093	6801	6509	6216	5923	5629	5335	5041	4746	4451	4156	3860	3563	3267	2970	30
7089	6797	6504	6211	5918	5624	5330	5036	4741	4446	4151	3855	3558	3262	2965	29
7084	6792	6499	6206	5913	5620	5326	5031	4736	4441	4146	3850	3553	3257	2960	28
7079	6787	6494	6202	5908	5615	5321	5026	4731	4436	4141	3845	3549	3252	2955	27
7074	6782	6489	6197	5903	5610	5316	5021	4727	4431	4136	3840	3544	3247	2950	26
7069	6777	6485	6192	5898	5605	5311	5016	4722	4426	4131	3835	3539	3242	2945	25
7064	6772	6480	6187	5894	5600	5306	5012	4717	4422	4126	3830	3534	3237	2940	24
7059	6767	6475	6182	5889	5595	5301	5007	4712	4417	4121	3825	3529	3232	2935	23
7055	6762	6470	6177	5884	5590	5296	5002	4707	4412	4116	3820	3524	3227	2930	22
7050	6758	6465	6172	5879	5585	5291	4997	4702	4407	4111	3815	3519	3222	2925	21
7045	6753	6460	6167	5874	5580	5286	4992	4697	4402	4106	3810	3514	3217	2920	20
7040	6748	6455	6162	5869	5575	5281	4987	4692	4397	4101	3805	3509	3212	2915	19
7035	6743	6450	6158	5864	5571	5277	4982	4687	4392	4096	3800	3504	3207	2910	18
7030	6738	6446	6153	5859	5566	5272	4977	4682	4387	4091	3795	3499	3202	2905	17
7025	6733	6441	6148	5854	5561	5267	4972	4677	4382	4087	3791	3494	3197	2900	16
7020	6728	6436	6143	5850	5556	5262	4967	4672	4377	4082	3786	3489	3192	2895	15
7016	6723	6431	6138	5845	5551	5257	4962	4668	4372	4077	3781	3484	3187	2890	14
7011	6719	6426	6133	5840	5546	5252	4958	4663	4367	4072	3776	3479	3183	2885	13
7006	6714	6421	6128	5835	5541	5247	4953	4658	4362	4067	3771	3474	3178	2880	12
7001	6709	6416	6123	5830	5536	5242	4948	4653	4358	4062	3766	3469	3173	2875	11
6996	6704	6411	6118	5825	5531	5237	4943	4648	4353	4057	3761	3464	3168	2870	10
6991	6699	6407	6114	5820	5527	5232	4938	4643	4348	4052	3756	3460	3163	2865	9
6986	6694	6402	6109	5815	5522	5227	4933	4638	4343	4047	3751	3455	3158	2861	8
6982	6689	6397	6104	5810	5517	5223	4928	4633	4338	4042	3746	3450	3153	2856	7
6977	6684	6392	6099	5806	5512	5218	4923	4628	4333	4037	3741	3445	3148	2851	6
6972	6680	6387	6094	5801	5507	5213	4918	4623	4328	4032	3736	3440	3143	2846	5
6967	6675	6382	6089	5796	5502	5208	4913	4618	4323	4027	3731	3435	3138	2841	4
6962	6670	6377	6084	5791	5497	5203	4908	4613	4318	4022	3726	3430	3133	2836	3
6957	6665	6372	6079	5786	5492	5198	4903	4609	4313	4018	3721	3425	3128	2831	2
6952	6660	6367	6074	5781	5487	5193	4899	4604	4308	4013	3716	3420	3123	2826	1
6947	6655	6363	6070	5776	5482	5188	4894	4599	4303	4008	3712	3415	3118	2821	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Sine Deg. 76

13 Deg. Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.363	9.363	9.364	9.365	9.365	9.366	9.366	9.367	9.367	9.368	9.369	9.369	9.370	9.370	9.371
0	3641	9401	5155	0901	6641	2374	8100	3819	9532	5238	0937	6629	2315	7994	3667
1	3737	9497	5250	0997	6736	2469	8195	3915	9627	5333	1032	6724	2410	8089	3761
2	3833	9593	5346	1093	6832	2565	8291	4010	9722	5428	1127	6819	2505	8183	3856
3	3929	9689	5442	1188	6928	2660	8386	4105	9817	5523	1222	6914	2599	8278	3950
4	4025	9785	5538	1284	7023	2756	8481	4200	9912	5618	1317	7009	2694	8373	4045
5	4121	9881	5634	1380	7119	2851	8577	4296	0008	5713	1412	7103	2789	8467	4139
6	4217	9977	5730	1475	7214	2947	8672	4391	0103	5808	1506	7198	2883	8562	4234
7	4313	0073	5825	1571	7310	3042	8767	4486	0198	5903	1601	7293	2978	8656	4328
8	4409	0169	5921	1667	7406	3138	8863	4581	0293	5998	1696	7388	3073	8751	4423
9	4505	0265	6017	1763	7501	3233	8958	4677	0388	6093	1791	7483	3167	8846	4517
10	4602	0361	6113	1858	7597	3329	9054	4772	0483	6188	1886	7577	3262	8940	4612
11	4698	0457	6209	1954	7692	3424	9149	4867	0578	6283	1981	7672	3357	9035	4706
12	4794	0552	6304	2050	7788	3520	9244	4962	0674	6378	2076	7767	3452	9129	4800
13	4890	0648	6400	2145	7884	3615	9340	5058	0769	6473	2171	7862	3546	9224	4895
14	4986	0744	6496	2241	7979	3710	9435	5153	0864	6568	2266	7957	3641	9318	4989
15	5082	0840	6592	2337	8075	3806	9530	5248	0959	6663	2361	8051	3736	9413	5084
16	5178	0936	6688	2432	8170	3901	9626	5343	1054	6758	2456	8146	3830	9508	5178
17	5274	1032	6783	2528	8266	3997	9721	5438	1149	6853	2550	8241	3925	9602	5273
18	5370	1128	6879	2624	8361	4092	9816	5534	1244	6948	2645	8336	4020	9697	5367
19	5466	1224	6975	2719	8457	4188	9912	5629	1339	7043	2740	8431	4114	9791	5462
20	5562	1320	7071	2815	8553	4283	0007	5724	1435	7138	2835	8525	4209	9886	5556
21	5658	1416	7167	2911	8648	4379	0102	5819	1530	7233	2930	8620	4304	9980	5651
22	5754	1512	7262	3006	8744	4474	0198	5915	1625	7328	3025	8715	4398	0075	5745
23	5850	1607	7358	3102	8839	4570	0293	6010	1720	7423	3120	8810	4493	0170	5839
24	5946	1703	7454	3198	8935	4665	0388	6105	1815	7518	3215	8904	4588	0264	5934
25	6042	1799	7550	3294	9030	4760	0484	6200	1910	7613	3310	8999	4682	0359	6028
26	6138	1895	7646	3389	9126	4856	0579	6296	2005	7708	3404	9094	4777	0453	6123
27	6234	1991	7741	3485	9221	4951	0674	6391	2100	7803	3499	9189	4872	0548	6217
28	6330	2087	7837	3581	9317	5047	0770	6486	2195	7898	3594	9284	4966	0642	6312
29	6426	2183	7933	3676	9413	5142	0865	6581	2291	7993	3689	9378	5061	0737	6406
30	6522	2279	8029	3772	9508	5238	0960	6676	2386	8088	3784	9473	5156	0831	6501
31	6618	2375	8124	3867	9604	5333	1056	6772	2481	8183	3879	9568	5250	0926	6595
32	6714	2471	8220	3963	9699	5429	1151	6867	2576	8278	3974	9663	5345	1020	6689
33	6810	2566	8316	4059	9795	5524	1246	6962	2671	8373	4069	9757	5440	1115	6784
34	6906	2662	8412	4154	9890	5619	1342	7057	2766	8468	4163	9852	5534	1210	6878
35	7002	2758	8508	4250	9986	5715	1437	7152	2861	8563	4258	9947	5629	1304	6973
36	7098	2854	8603	4346	0081	5810	1532	7248	2956	8658	4353	0042	5723	1399	7067
37	7194	2950	8699	4441	0177	5906	1628	7343	3051	8753	4448	0136	5818	1493	7162
38	7290	3046	8795	4537	0272	6001	1723	7438	3146	8848	4543	0231	5913	1588	7256
39	7386	3142	8891	4633	0368	6097	1818	7533	3241	8943	4638	0326	6007	1682	7350
40	7482	3238	8986	4728	0464	6192	1914	7628	3337	9038	4733	0421	6102	1777	7445
41	7578	3333	9082	4824	0559	6287	2009	7724	3432	9133	4827	0515	6197	1871	7539
42	7674	3429	9178	4920	0655	6383	2104	7819	3527	9228	4922	0610	6291	1966	7634
43	7770	3525	9274	5015	0750	6478	2199	7914	3622	9323	5017	0705	6386	2060	7728
44	7866	3621	9369	5111	0846	6574	2295	8009	3717	9418	5112	0800	6481	2155	7822
45	7962	3717	9465	5207	0941	6669	2390	8104	3812	9513	5207	0894	6575	2249	7917
46	8058	3813	9561	5302	1037	6764	2485	8200	3907	9608	5302	0989	6670	2344	8011
47	8154	3909	9657	5398	1132	6860	2581	8295	4002	9703	5397	1084	6764	2438	8106
48	8250	4004	9752	5493	1228	6955	2676	8390	4097	9798	5491	1179	6859	2533	8200
49	8346	4100	9848	5589	1323	7051	2771	8485	4192	9893	5586	1273	6954	2627	8294
50	8442	4196	9944	5685	1419	7146	2866	8580	4287	9988	5681	1368	7048	2722	8389
51	8538	4292	0040	5780	1514	7241	2962	8675	4382	0082	5776	1463	7143	2816	8483
52	8634	4388	0135	5876	1610	7337	3057	8771	4477	0177	5871	1557	7237	2911	8578
53	8730	4484	0231	5972	1705	7432	3152	8866	4572	0272	5966	1652	7332	3005	8672
54	8826	4580	0327	6067	1801	7528	3248	8961	4667	0367	6060	1747	7427	3100	8766
55	8921	4675	0423	6163	1896	7623	3343	9056	4762	0462	6155	1842	7521	3194	8861
56	9017	4771	0518	6258	1992	7718	3438	9151	4858	0557	6250	1936	7616	3289	8955
57	9113	4867	0614	6354	2087	7814	3533	9246	4953	0652	6345	2031	7711	3383	9050
58	9209	4963	0710	6450	2183	7909	3629	9342	5048	0747	6440	2126	7805	3478	9144
59	9305	5059	0805	6545	2278	8004	3724	9437	5143	0842	6535	2220	7900	3572	9238
60	9401	5155	0901	6641	2374	8100	3819	9532	5238	0937	6629	2315	7994	3667	9333
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Tangent Deg. 76

13 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
10.636	10.636	10.635	10.634	10.634	10.633	10.633	10.632	10.632	10.631	10.630	10.630	10.629	10.629	10.628	″
6359	0599	4845	9099	3359	7626	1900	6181	0468	4762	9063	3371	7685	2006	6333	60
6263	0503	4750	9003	3264	7531	1805	6085	0373	4667	8968	3276	7590	1911	6239	59
6167	0407	4654	8907	3168	7435	1709	5990	0278	4572	8873	3181	7495	1817	6144	58
6071	0311	4558	8812	3072	7340	1614	5895	0183	4477	8778	3086	7401	1722	6050	57
5975	0215	4462	8716	2977	7244	1519	5800	0088	4382	8683	2991	7306	1627	5955	56
5879	0119	4366	8620	2881	7149	1423	5704	9992	4287	8588	2897	7211	1533	5861	55
5783	0023	4270	8525	2786	7053	1328	5609	9897	4192	8494	2802	7117	1438	5766	54
5687	9927	4175	8429	2690	6958	1233	5514	9802	4097	8399	2707	7022	1344	5672	53
5591	9831	4079	8333	2594	6862	1137	5419	9707	4002	8304	2612	6927	1249	5577	52
5495	9735	3983	8237	2499	6767	1042	5323	9612	3907	8209	2517	6833	1154	5483	51
5398	9639	3887	8142	2403	6671	0946	5228	9517	3812	8114	2423	6738	1060	5388	50
5302	9543	3791	8046	2308	6576	0851	5133	9422	3717	8019	2328	6643	0965	5294	49
5206	9448	3696	7950	2212	6480	0756	5038	9326	3622	7924	2233	6548	0871	5200	48
5110	9352	3600	7855	2116	6385	0660	4942	9231	3527	7829	2138	6454	0776	5105	47
5014	9256	3504	7759	2021	6290	0565	4847	9136	3432	7734	2043	6359	0682	5011	46
4918	9160	3408	7663	1925	6194	0470	4752	9041	3337	7639	1949	6264	0587	4916	45
4822	9064	3312	7568	1830	6099	0374	4657	8946	3242	7544	1854	6170	0492	4822	44
4726	8968	3217	7472	1734	6003	0279	4562	8851	3147	7450	1759	6075	0398	4727	43
4630	8872	3121	7376	1639	5908	0184	4466	8756	3052	7355	1664	5980	0303	4633	42
4534	8776	3025	7281	1543	5812	0088	4371	8661	2957	7260	1569	5886	0209	4538	41
4438	8680	2929	7185	1447	5717	9993	4276	8565	2862	7165	1475	5791	0114	4444	40
4342	8584	2833	7089	1352	5621	9898	4181	8470	2767	7070	1380	5696	0020	4349	39
4246	8488	2738	6994	1256	5526	9802	4085	8375	2672	6975	1285	5602	9925	4255	38
4150	8393	2642	6898	1161	5430	9707	3990	8280	2577	6880	1190	5507	9830	4161	37
4054	8297	2546	6802	1065	5335	9612	3895	8185	2482	6785	1096	5412	9736	4066	36
3958	8201	2450	6706	0970	5240	9516	3800	8090	2387	6690	1001	5318	9641	3972	35
3862	8105	2354	6611	0874	5144	9421	3704	7995	2292	6596	0906	5223	9547	3877	34
3766	8009	2259	6515	0779	5049	9326	3609	7900	2197	6501	0811	5128	9452	3783	33
3670	7913	2163	6419	0683	4953	9230	3514	7805	2102	6406	0716	5034	9358	3688	32
3574	7817	2067	6324	0587	4858	9135	3419	7709	2007	6311	0622	4939	9263	3594	31
3478	7721	1971	6228	0492	4762	9040	3324	7614	1912	6216	0527	4844	9169	3499	30
3382	7625	1876	6133	0396	4667	8944	3228	7519	1817	6121	0432	4750	9074	3405	29
3286	7529	1780	6037	0301	4571	8849	3133	7424	1722	6026	0337	4655	8980	3311	28
3190	7434	1684	5941	0205	4476	8754	3038	7329	1627	5931	0243	4560	8885	3216	27
3094	7338	1588	5846	0110	4381	8658	2943	7234	1532	5837	0148	4466	8790	3122	26
2998	7242	1492	5750	0014	4285	8563	2848	7139	1437	5742	0053	4371	8696	3027	25
2902	7146	1397	5654	9919	4190	8468	2752	7044	1342	5647	9958	4277	8601	2933	24
2806	7050	1301	5559	9823	4094	8372	2657	6949	1247	5552	9864	4182	8507	2838	23
2710	6954	1205	5463	9728	3999	8277	2562	6854	1152	5457	9769	4087	8412	2744	22
2614	6858	1109	5367	9632	3903	8182	2467	6759	1057	5362	9674	3993	8318	2650	21
2518	6762	1014	5272	9536	3808	8086	2372	6663	0962	5267	9579	3898	8223	2555	20
2422	6667	0918	5176	9441	3713	7991	2276	6568	0867	5173	9485	3803	8129	2461	19
2326	6571	0822	5080	9345	3617	7896	2181	6473	0772	5078	9390	3709	8034	2366	18
2230	6475	0726	4985	9250	3522	7801	2086	6378	0677	4983	9295	3614	7940	2272	17
2134	6379	0631	4889	9154	3426	7705	1991	6283	0582	4888	9200	3519	7845	2178	16
2038	6283	0535	4793	9059	3331	7610	1896	6188	0487	4793	9106	3425	7751	2083	15
1942	6187	0439	4698	8963	3236	7515	1800	6093	0392	4698	9011	3330	7656	1989	14
1846	6091	0343	4602	8868	3140	7419	1705	5998	0297	4603	8916	3236	7562	1894	13
1750	5996	0248	4507	8772	3045	7324	1610	5903	0202	4509	8821	3141	7467	1800	12
1654	5900	0152	4411	8677	2949	7229	1515	5808	0107	4414	8727	3046	7373	1706	11
1558	5804	0056	4315	8581	2854	7134	1420	5713	0012	4319	8632	2952	7278	1611	10
1462	5708	9960	4220	8486	2759	7038	1325	5618	9918	4224	8537	2857	7184	1517	9
1366	5612	9865	4124	8390	2663	6943	1229	5523	9823	4129	8443	2763	7089	1422	8
1270	5516	9769	4028	8295	2568	6848	1134	5428	9728	4034	8348	2668	6995	1328	7
1174	5420	9673	3933	8199	2472	6752	1039	5333	9633	3940	8253	2573	6900	1234	6
1079	5325	9577	3837	8104	2377	6657	0944	5238	9538	3845	8158	2479	6806	1139	5
0983	5229	9482	3742	8008	2282	6562	0849	5142	9443	3750	8064	2384	6711	1045	4
0887	5133	9386	3646	7913	2186	6467	0754	5047	9348	3655	7969	2289	6617	0950	3
0791	5037	9290	3550	7817	2091	6371	0658	4952	9253	3560	7874	2195	6522	0856	2
0695	4941	9195	3455	7722	1996	6276	0563	4857	9158	3465	7780	2100	6428	0762	1
0599	4845	9099	3359	7626	1900	6181	0468	4762	9063	3371	7685	2006	6333	0667	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Tangent Deg. 76

13 Deg. Sine

"	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9. 360	9. 360	9. 361	9. 361	9. 362	9. 362	9. 363	9. 363	9. 364	9. 365	9. 365	9. 366	9. 366	9. 367	9. 367
0	2154	7515	2870	8217	3558	8892	4219	9539	4852	0158	5458	0750	6036	1315	6587
1	2243	7604	2959	8306	3647	8981	4308	9627	4940	0247	5546	0838	6124	1403	6675
2	2332	7694	3048	8396	3736	9070	4396	9716	5029	0335	5634	0926	6212	1491	6763
3	2422	7783	3137	8485	3825	9158	4485	9805	5117	0423	5722	1015	6300	1579	6851
4	2511	7872	3226	8574	3914	9247	4574	9893	5206	0512	5811	1103	6388	1667	6938
5	2601	7962	3316	8663	4003	9336	4662	9982	5294	0600	5899	1191	6476	1754	7026
6	2690	8051	3405	8752	4092	9425	4751	0070	5383	0688	5987	1279	6564	1842	7114
7	2779	8140	3494	8841	4181	9514	4840	0159	5471	0777	6075	1367	6652	1930	7202
8	2869	8229	3583	8930	4270	9603	4929	0248	5560	0865	6164	1455	6740	2018	7290
9	2958	8319	3672	9019	4359	9691	5017	0336	5648	0953	6252	1543	6828	2106	7377
10	3048	8408	3762	9108	4448	9780	5106	0425	5737	1042	6340	1632	6916	2194	7465
11	3137	8497	3851	9197	4537	9869	5195	0513	5825	1130	6428	1720	7004	2282	7553
12	3226	8587	3940	9286	4625	9958	5283	0602	5914	1219	6517	1808	7092	2370	7641
13	3316	8676	4029	9375	4714	0047	5372	0691	6002	1307	6605	1896	7180	2458	7729
14	3405	8765	4118	9464	4803	0135	5461	0779	6091	1395	6693	1984	7268	2546	7816
15	3495	8854	4207	9553	4892	0224	5549	0868	6179	1484	6781	2072	7356	2634	7904
16	3584	8944	4296	9642	4981	0313	5638	0956	6268	1572	6870	2160	7444	2721	7992
17	3673	9033	4386	9731	5070	0402	5727	1045	6356	1660	6958	2248	7532	2809	8080
18	3763	9122	4475	9820	5159	0491	5816	1133	6444	1749	7046	2337	7620	2897	8167
19	3852	9212	4564	9909	5248	0580	5904	1222	6533	1837	7134	2425	7708	2985	8255
20	3942	9301	4653	9998	5337	0668	5993	1311	6621	1925	7222	2513	7796	3073	8343
21	4031	9390	4742	0087	5426	0757	6082	1399	6710	2014	7311	2601	7884	3161	8431
22	4120	9479	4831	0176	5515	0846	6170	1488	6798	2102	7399	2689	7972	3249	8519
23	4210	9569	4921	0266	5604	0935	6259	1576	6887	2190	7487	2777	8060	3337	8606
24	4299	9658	5010	0355	5692	1023	6348	1665	6975	2279	7575	2865	8148	3425	8694
25	4388	9747	5099	0444	5781	1112	6436	1753	7064	2367	7664	2953	8236	3512	8782
26	4478	9836	5188	0533	5870	1201	6525	1842	7152	2455	7752	3041	8324	3600	8870
27	4567	9926	5277	0622	5959	1290	6614	1931	7241	2544	7840	3130	8412	3688	8957
28	4656	0015	5366	0711	6048	1379	6702	2019	7329	2632	7928	3218	8500	3776	9045
29	4746	0104	5455	0800	6137	1467	6791	2108	7417	2720	8016	3306	8588	3864	9133
30	4835	0193	5544	0889	6226	1556	6880	2196	7506	2809	8105	3394	8676	3952	9221
31	4925	0283	5634	0978	6315	1645	6968	2285	7594	2897	8193	3482	8764	4040	9308
32	5014	0372	5723	1067	6404	1734	7057	2373	7683	2985	8281	3570	8852	4128	9396
33	5103	0461	5812	1156	6493	1823	7146	2462	7771	3074	8369	3658	8940	4215	9484
34	5193	0550	5901	1245	6581	1911	7234	2550	7860	3162	8458	3746	9028	4303	9572
35	5282	0640	5990	1334	6670	2000	7323	2639	7948	3250	8546	3834	9116	4391	9659
36	5371	0729	6079	1423	6759	2089	7412	2727	8036	3339	8634	3922	9204	4479	9747
37	5461	0818	6168	1512	6848	2178	7500	2816	8125	3427	8722	4010	9292	4567	9835
38	5550	0907	6257	1601	6937	2266	7589	2905	8213	3515	8810	4099	9380	4655	9923
39	5639	0996	6347	1690	7026	2355	7678	2993	8302	3604	8899	4187	9468	4743	0010
40	5729	1086	6436	1779	7115	2444	7766	3082	8390	3692	8987	4275	9556	4830	0098
41	5818	1175	6525	1868	7204	2533	7855	3170	8479	3780	9075	4363	9644	4918	0186
42	5907	1264	6614	1957	7293	2621	7944	3259	8567	3868	9163	4451	9732	5006	0274
43	5997	1353	6703	2046	7381	2710	8032	3347	8655	3957	9251	4539	9820	5094	0361
44	6086	1443	6792	2135	7470	2799	8121	3436	8744	4045	9339	4627	9908	5182	0449
45	6175	1532	6881	2224	7559	2888	8209	3524	8832	4133	9428	4715	9996	5270	0537
46	6265	1621	6970	2313	7648	2976	8298	3613	8921	4222	9516	4803	0084	5358	0625
47	6354	1710	7059	2402	7737	3065	8387	3701	9009	4310	9604	4891	0172	5445	0712
48	6443	1799	7148	2491	7826	3154	8475	3790	9097	4398	9692	4979	0260	5533	0800
49	6533	1889	7238	2580	7915	3243	8564	3878	9186	4487	9780	5067	0348	5621	0888
50	6622	1978	7327	2668	8003	3331	8653	3967	9274	4575	9869	5155	0436	5709	0975
51	6711	2067	7416	2757	8092	3420	8741	4055	9363	4663	9957	5243	0523	5797	1063
52	6801	2156	7505	2846	8181	3509	8830	4144	9451	4751	0045	5332	0611	5885	1151
53	6890	2245	7594	2935	8270	3598	8918	4232	9539	4840	0133	5420	0699	5972	1239
54	6979	2335	7683	3024	8359	3686	9007	4321	9628	4928	0221	5508	0787	6060	1326
55	7069	2424	7772	3113	8448	3775	9096	4409	9716	5016	0309	5596	0875	6148	1414
56	7158	2513	7861	3202	8537	3864	9184	4498	9805	5104	0398	5684	0963	6236	1502
57	7247	2602	7950	3291	8625	3953	9273	4586	9893	5193	0486	5772	1051	6324	1589
58	7337	2691	8039	3380	8714	4041	9362	4675	9981	5281	0574	5860	1139	6411	1677
59	7426	2781	8128	3469	8803	4130	9450	4763	0070	5369	0662	5948	1227	6499	1765
60	7515	2870	8217	3558	8892	4219	9539	4852	0158	5458	0750	6036	1315	6587	1853
"	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Sine Deg. 76

13 Deg. Co-Sine

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	"
9. 988	9. 988	9. 988	9. 988	9. 988	9. 988	9. 988	9. 988	9. 988	9. 988	9. 987	9. 987	9. 987	9. 987	9. 987	
2821	2523	2225	1927	1628	1329	1029	0729	0429	0128	9827	9525	9223	8921	8618	60
2816	2518	2220	1922	1623	1324	1024	0724	0424	0123	9822	9520	9218	8916	8613	59
2811	2513	2215	1917	1618	1319	1019	0719	0419	0118	9817	9515	9213	8911	8608	58
2806	2508	2210	1912	1613	1314	1014	0714	0414	0113	9812	9510	9208	8906	8603	57
2801	2503	2205	1907	1608	1309	1009	0709	0409	0108	9807	9505	9203	8901	8598	56
2796	2498	2200	1902	1603	1304	1004	0704	0404	0103	9802	9500	9198	8896	8593	55
2791	2493	2195	1897	1598	1299	0999	0699	0399	0098	9797	9495	9193	8891	8588	54
2786	2488	2190	1892	1593	1294	0994	0694	0394	0093	9792	9490	9188	8886	8583	53
2781	2483	2185	1887	1588	1289	0989	0689	0389	0088	9787	9485	9183	8881	8578	52
2776	2479	2180	1882	1583	1284	0984	0684	0384	0083	9782	9480	9178	8876	8573	51
2771	2474	2175	1877	1578	1279	0979	0679	0379	0078	9777	9475	9173	8871	8568	50
2766	2469	2170	1872	1573	1274	0974	0674	0374	0073	9772	9470	9168	8866	8563	49
2761	2464	2166	1867	1568	1269	0969	0669	0369	0068	9766	9465	9163	8860	8558	48
2756	2459	2161	1862	1563	1264	0964	0664	0364	0063	9761	9460	9158	8855	8553	47
2751	2454	2156	1857	1558	1259	0959	0659	0359	0058	9756	9455	9153	8850	8548	46
2746	2449	2151	1852	1553	1254	0954	0654	0354	0053	9751	9450	9148	8845	8543	45
2742	2444	2146	1847	1548	1249	0949	0649	0349	0048	9746	9445	9143	8840	8537	44
2737	2439	2141	1842	1543	1244	0944	0644	0344	0043	9741	9440	9138	8835	8532	43
2732	2434	2136	1837	1538	1239	0939	0639	0339	0038	9736	9435	9133	8830	8527	42
2727	2429	2131	1832	1533	1234	0934	0634	0333	0033	9731	9430	9128	8825	8522	41
2722	2424	2126	1827	1528	1229	0929	0629	0328	0028	9726	9425	9123	8820	8517	40
2717	2419	2121	1822	1523	1224	0924	0624	0323	0023	9721	9420	9118	8815	8512	39
2712	2414	2116	1817	1518	1219	0919	0619	0318	0018	9716	9415	9112	8810	8507	38
2707	2409	2111	1812	1513	1214	0914	0614	0313	0013	9711	9410	9107	8805	8502	37
2702	2404	2106	1807	1508	1209	0909	0609	0308	0008	9706	9404	9102	8800	8497	36
2697	2399	2101	1802	1503	1204	0904	0604	0303	0002	9701	9399	9097	8795	8492	35
2692	2394	2096	1797	1498	1199	0899	0599	0298	9997	9696	9394	9092	8790	8487	34
2687	2389	2091	1792	1493	1194	0894	0594	0293	9992	9691	9389	9087	8785	8482	33
2682	2384	2086	1787	1488	1189	0889	0589	0288	9987	9686	9384	9082	8780	8477	32
2677	2379	2081	1782	1483	1184	0884	0584	0283	9982	9681	9379	9077	8775	8472	31
2672	2374	2076	1777	1478	1179	0879	0579	0278	9977	9676	9374	9072	8770	8467	30
2667	2369	2071	1772	1473	1174	0874	0574	0273	9972	9671	9369	9067	8765	8462	29
2662	2364	2066	1767	1468	1169	0869	0569	0268	9967	9666	9364	9062	8760	8457	28
2657	2359	2061	1762	1463	1164	0864	0564	0263	9962	9661	9359	9057	8755	8452	27
2652	2354	2056	1757	1458	1159	0859	0559	0258	9957	9656	9354	9052	8749	8447	26
2647	2349	2051	1752	1453	1154	0854	0554	0253	9952	9651	9349	9047	8744	8441	25
2642	2344	2046	1747	1448	1149	0849	0549	0248	9947	9646	9344	9042	8739	8436	24
2637	2339	2041	1742	1443	1144	0844	0544	0243	9942	9641	9339	9037	8734	8431	23
2632	2334	2036	1738	1438	1139	0839	0539	0238	9937	9636	9334	9032	8729	8426	22
2627	2330	2031	1733	1433	1134	0834	0534	0233	9932	9631	9329	9027	8724	8421	21
2622	2325	2026	1728	1428	1129	0829	0529	0228	9927	9626	9324	9022	8719	8416	20
2618	2320	2021	1723	1423	1124	0824	0524	0223	9922	9621	9319	9017	8714	8411	19
2613	2315	2016	1718	1418	1119	0819	0519	0218	9917	9616	9314	9012	8709	8406	18
2608	2310	2011	1713	1413	1114	0814	0514	0213	9912	9611	9309	9007	8704	8401	17
2603	2305	2006	1708	1409	1109	0809	0509	0208	9907	9606	9304	9002	8699	8396	16
2598	2300	2001	1703	1404	1104	0804	0504	0203	9902	9601	9299	8997	8694	8391	15
2593	2295	1996	1698	1399	1099	0799	0499	0198	9897	9596	9294	8992	8689	8386	14
2588	2290	1991	1693	1394	1094	0794	0494	0193	9892	9591	9289	8987	8684	8381	13
2583	2285	1986	1688	1389	1089	0789	0489	0188	9887	9586	9284	8981	8679	8376	12
2578	2280	1981	1683	1384	1084	0784	0484	0183	9882	9581	9279	8976	8674	8371	11
2573	2275	1976	1678	1379	1079	0779	0479	0178	9877	9576	9274	8971	8669	8366	10
2568	2270	1972	1673	1374	1074	0774	0474	0173	9872	9570	9269	8966	8664	8361	9
2563	2265	1967	1668	1369	1069	0769	0469	0168	9867	9565	9264	8961	8659	8356	8
2558	2260	1962	1663	1364	1064	0764	0464	0163	9862	9560	9259	8956	8654	8351	7
2553	2255	1957	1658	1359	1059	0759	0459	0158	9857	9555	9254	8951	8649	8345	6
2548	2250	1952	1653	1354	1054	0754	0454	0153	9852	9550	9248	8946	8643	8340	5
2543	2245	1947	1648	1349	1049	0749	0449	0148	9847	9545	9243	8941	8638	8335	4
2538	2240	1942	1643	1344	1044	0744	0444	0143	9842	9540	9238	8936	8633	8330	3
2533	2235	1937	1638	1339	1039	0739	0439	0138	9837	9535	9233	8931	8628	8325	2
2528	2230	1932	1633	1334	1034	0734	0434	0133	9832	9530	9228	8926	8623	8320	1
2523	2225	1927	1628	1329	1029	0729	0429	0128	9827	9525	9223	8921	8618	8315	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	"

Sine Deg. 76

13 Deg. Tangent

"	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9. 371	9. 372	9. 373	9. 373	9. 374	9. 374	9. 375	9. 375	9. 376	9. 377	9. 377	9. 378	9. 378	9. 379	9. 379
0	9333	4992	0645	6291	1930	7563	3190	8810	4423	0030	5631	1225	6813	2394	7969
1	9427	5086	0739	6385	2024	7657	3283	8903	4517	0124	5724	1318	6906	2487	8062
2	9521	5180	0833	6479	2118	7751	3377	8997	4610	0217	5817	1411	6999	2580	8155
3	9616	5275	0927	6573	2212	7845	3471	9091	4704	0310	5911	1504	7092	2673	8247
4	9710	5369	1021	6667	2306	7939	3565	9184	4797	0404	6004	1598	7185	2766	8340
5	9805	5463	1115	6761	2400	8032	3658	9278	4891	0497	6097	1691	7278	2859	8433
6	9899	5557	1210	6855	2494	8126	3752	9371	4984	0591	6190	1784	7371	2952	8526
7	9993	5652	1304	6949	2588	8220	3846	9465	5078	0684	6284	1877	7464	3045	8619
8	0088	5746	1398	7043	2682	8314	3939	9559	5171	0777	6377	1970	7557	3138	8712
9	0182	5840	1492	7137	2776	8408	4033	9652	5265	0871	6470	2063	7650	3231	8805
10	0276	5934	1586	7231	2870	8501	4127	9746	5358	0964	6564	2157	7743	3324	8897
11	0371	6029	1680	7325	2963	8595	4221	9839	5452	1057	6657	2250	7836	3416	8990
12	0465	6123	1774	7419	3057	8689	4314	9933	5545	1151	6750	2343	7929	3509	9083
13	0559	6217	1868	7513	3151	8783	4408	0027	5639	1244	6843	2436	8022	3602	9176
14	0654	6311	1963	7607	3245	8877	4502	0120	5732	1338	6937	2529	8115	3695	9269
15	0748	6406	2057	7701	3339	8970	4595	0214	5826	1431	7030	2622	8209	3788	9362
16	0842	6500	2151	7795	3433	9064	4689	0307	5919	1524	7123	2716	8302	3881	9454
17	0937	6594	2245	7889	3527	9158	4783	0401	6013	1618	7216	2809	8395	3974	9547
18	1031	6688	2339	7983	3621	9252	4876	0494	6106	1711	7310	2902	8488	4067	9640
19	1125	6783	2433	8077	3715	9346	4970	0588	6199	1804	7403	2995	8581	4160	9733
20	1220	6877	2527	8171	3809	9439	5064	0682	6293	1898	7496	3088	8674	4253	9826
21	1314	6971	2621	8265	3903	9533	5157	0775	6386	1991	7589	3181	8767	4346	9919
22	1408	7065	2716	8359	3996	9627	5251	0869	6480	2084	7683	3274	8860	4439	0011
23	1503	7160	2810	8453	4090	9721	5345	0962	6573	2178	7776	3368	8953	4532	0104
24	1597	7254	2904	8547	4184	9815	5438	1056	6667	2271	7869	3461	9046	4625	0197
25	1691	7348	2998	8641	4278	9908	5532	1149	6760	2365	7962	3554	9139	4718	0290
26	1786	7442	3092	8735	4372	0002	5626	1243	6854	2458	8056	3647	9232	4810	0383
27	1880	7536	3186	8829	4466	0096	5720	1337	6947	2551	8149	3740	9325	4903	0475
28	1974	7631	3280	8923	4560	0190	5813	1430	7041	2645	8242	3833	9418	4996	0568
29	2069	7725	3374	9017	4654	0284	5907	1524	7134	2738	8335	3926	9511	5089	0661
30	2163	7819	3468	9111	4748	0377	6001	1617	7228	2831	8429	4020	9604	5182	0754
31	2257	7913	3563	9205	4841	0471	6094	1711	7321	2925	8522	4113	9697	5275	0847
32	2352	8008	3657	9299	4935	0565	6188	1804	7414	3018	8615	4206	9790	5368	0940
33	2446	8102	3751	9393	5029	0659	6282	1898	7508	3111	8708	4299	9883	5461	1032
34	2540	8196	3845	9487	5123	0752	6375	1991	7601	3205	8802	4392	9976	5554	1125
35	2635	8290	3939	9581	5217	0846	6469	2085	7695	3298	8895	4485	0069	5647	1218
36	2729	8384	4033	9675	5311	0940	6562	2179	7788	3391	8988	4578	0162	5740	1311
37	2823	8479	4127	9769	5405	1034	6656	2272	7882	3485	9081	4671	0255	5833	1404
38	2918	8573	4221	9863	5499	1127	6750	2366	7975	3578	9174	4765	0348	5925	1496
39	3012	8667	4315	9957	5592	1221	6843	2459	8068	3671	9268	4858	0441	6018	1589
40	3106	8761	4409	0051	5686	1315	6937	2553	8162	3765	9361	4951	0534	6111	1682
41	3201	8855	4503	0145	5780	1409	7031	2646	8255	3858	9454	5044	0627	6204	1775
42	3295	8949	4598	0239	5874	1502	7124	2740	8349	3951	9547	5137	0720	6297	1867
43	3389	9044	4692	0333	5968	1596	7218	2833	8442	4045	9641	5230	0813	6390	1960
44	3483	9138	4786	0427	6062	1690	7312	2927	8536	4138	9734	5323	0906	6483	2053
45	3578	9232	4880	0521	6156	1784	7405	3020	8629	4231	9827	5416	0999	6576	2146
46	3672	9326	4974	0615	6249	1877	7499	3114	8722	4325	9920	5509	1092	6669	2239
47	3766	9420	5068	0709	6343	1971	7593	3207	8816	4418	0013	5602	1185	6761	2331
48	3861	9515	5162	0803	6437	2065	7686	3301	8909	4511	0107	5696	1278	6854	2424
49	3955	9609	5256	0897	6531	2159	7780	3395	9003	4604	0200	5789	1371	6947	2517
50	4049	9703	5350	0991	6625	2252	7873	3488	9096	4698	0293	5882	1464	7040	2610
51	4143	9797	5444	1085	6719	2346	7967	3582	9190	4791	0386	5975	1557	7133	2703
52	4238	9891	5538	1179	6813	2440	8061	3675	9283	4884	0479	6068	1650	7226	2795
53	4332	9985	5632	1273	6906	2534	8154	3769	9376	4978	0573	6161	1743	7319	2888
54	4426	0080	5726	1367	7000	2627	8248	3862	9470	5071	0666	6254	1836	7412	2981
55	4521	0174	5820	1461	7094	2721	8342	3956	9563	5164	0759	6347	1929	7504	3074
56	4615	0268	5914	1554	7188	2815	8435	4049	9657	5258	0852	6440	2022	7597	3166
57	4709	0362	6009	1648	7282	2909	8529	4143	9750	5351	0945	6533	2115	7690	3259
58	4803	0456	6103	1742	7376	3002	8622	4236	9843	5444	1039	6626	2208	7783	3352
59	4898	0550	6197	1836	7469	3096	8716	4330	9937	5537	1132	6720	2301	7876	3445
60	4992	0645	6291	1930	7563	3190	8810	4423	0030	5631	1225	6813	2394	7969	3537
"	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Tangent Deg. 76

13 Deg. Co-Tangent

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	"
10. 628	10. 627	10. 626	10. 626	10. 625	10. 625	10. 624	10. 624	10. 623	10. 622	10. 622	10. 621	10. 621	10. 620	10. 620	
0667	5008	9355	3709	8070	2437	6810	1190	5577	9970	4369	8775	3187	7606	2031	60
0573	4914	9261	3615	7976	2343	6717	1097	5483	9876	4276	8682	3094	7513	1938	59
0479	4820	9167	3521	7882	2249	6623	1003	5390	9783	4183	8589	3001	7420	1845	58
0384	4725	9073	3427	7788	2155	6529	0909	5296	9690	4089	8496	2908	7327	1753	57
0290	4631	8979	3333	7694	2061	6435	0816	5203	9596	3996	8402	2815	7234	1660	56
0195	4537	8885	3239	7600	1968	6342	0722	5109	9503	3903	8309	2722	7141	1567	55
0101	4443	8790	3145	7506	1874	6248	0629	5016	9409	3810	8216	2629	7048	1474	54
0007	4348	8696	3051	7412	1780	6154	0535	4922	9316	3716	8123	2536	6955	1381	53
9912	4254	8602	2957	7318	1686	6061	0441	4829	9223	3623	8030	2443	6862	1288	52
9818	4160	8508	2863	7224	1592	5967	0348	4735	9129	3530	7937	2350	6769	1195	51
9724	4066	8414	2769	7130	1499	5873	0254	4642	9036	3436	7843	2257	6676	1103	50
9629	3971	8320	2675	7037	1405	5779	0161	4548	8943	3343	7750	2164	6584	1010	49
9535	3877	8226	2581	6943	1311	5686	0067	4455	8849	3250	7657	2071	6491	0917	48
9441	3783	8132	2487	6849	1217	5592	9973	4361	8756	3157	7564	1978	6398	0824	47
9346	3689	8037	2393	6755	1123	5498	9880	4268	8662	3063	7471	1885	6305	0731	46
9252	3594	7943	2299	6661	1030	5405	9786	4174	8569	2970	7378	1791	6212	0638	45
9158	3500	7849	2205	6567	0936	5311	9693	4081	8476	2877	7284	1698	6119	0546	44
9063	3406	7755	2111	6473	0842	5217	9599	3987	8382	2784	7191	1605	6026	0453	43
8969	3312	7661	2017	6379	0748	5124	9506	3894	8289	2690	7098	1512	5933	0360	42
8875	3217	7567	1923	6285	0654	5030	9412	3801	8196	2597	7005	1419	5840	0267	41
8780	3123	7473	1829	6191	0561	4936	9318	3707	8102	2504	6912	1326	5747	0174	40
8686	3029	7379	1735	6097	0467	4843	9225	3614	8009	2411	6819	1233	5654	0081	39
8592	2935	7284	1641	6004	0373	4749	9131	3520	7916	2317	6726	1140	5561	9989	38
8497	2840	7190	1547	5910	0279	4655	9038	3427	7822	2224	6632	1047	5468	9896	37
8403	2746	7096	1453	5816	0185	4562	8944	3333	7729	2131	6539	0954	5375	9803	36
8309	2652	7002	1359	5722	0092	4468	8851	3240	7635	2038	6446	0861	5282	9710	35
8214	2558	6908	1265	5628	9998	4374	8757	3146	7542	1944	6353	0768	5190	9617	34
8120	2464	6814	1171	5534	9904	4280	8663	3053	7449	1851	6260	0675	5097	9525	33
8026	2369	6720	1077	5440	9810	4187	8570	2959	7355	1758	6167	0582	5004	9432	32
7931	2275	6626	0983	5346	9716	4093	8476	2866	7262	1665	6074	0489	4911	9339	31
7837	2181	6532	0889	5252	9623	3999	8383	2772	7169	1571	5980	0396	4818	9246	30
7743	2087	6437	0795	5159	9529	3906	8289	2679	7075	1478	5887	0303	4725	9153	29
7648	1992	6343	0701	5065	9435	3812	8196	2586	6982	1385	5794	0210	4632	9060	28
7554	1898	6249	0607	4971	9341	3718	8102	2492	6889	1292	5701	0117	4539	8968	27
7460	1804	6155	0513	4877	9248	3625	8009	2399	6795	1198	5608	0024	4446	8875	26
7365	1710	6061	0419	4783	9154	3531	7915	2305	6702	1105	5515	9931	4353	8782	25
7271	1616	5967	0325	4689	9060	3438	7821	2212	6609	1012	5422	9838	4260	8689	24
7177	1521	5873	0231	4595	8966	3344	7728	2118	6515	0919	5329	9745	4167	8596	23
7082	1427	5779	0137	4501	8873	3250	7634	2025	6422	0826	5235	9652	4075	8504	22
6988	1333	5685	0043	4408	8779	3157	7541	1932	6329	0732	5142	9559	3982	8411	21
6894	1239	5591	9949	4314	8685	3063	7447	1838	6235	0639	5049	9466	3889	8318	20
6799	1145	5497	9855	4220	8591	2969	7354	1745	6142	0546	4956	9373	3796	8225	19
6705	1051	5402	9761	4126	8498	2876	7260	1651	6049	0453	4863	9280	3703	8133	18
6611	0956	5308	9667	4032	8404	2782	7167	1558	5955	0359	4770	9187	3610	8040	17
6517	0862	5214	9573	3938	8310	2688	7073	1464	5862	0266	4677	9094	3517	7947	16
6422	0768	5120	9479	3844	8216	2595	6980	1371	5769	0173	4584	9001	3424	7854	15
6328	0674	5026	9385	3751	8123	2501	6886	1278	5675	0080	4491	8908	3331	7761	14
6234	0580	4932	9291	3657	8029	2407	6793	1184	5582	9987	4398	8815	3239	7669	13
6139	0485	4838	9197	3563	7935	2314	6699	1091	5489	9893	4304	8722	3146	7576	12
6045	0391	4744	9103	3469	7841	2220	6605	0997	5396	9800	4211	8629	3053	7483	11
5951	0297	4650	9009	3375	7748	2127	6512	0904	5302	9707	4118	8536	2960	7390	10
5857	0203	4556	8915	3281	7654	2033	6418	0810	5209	9614	4025	8443	2867	7297	9
5762	0109	4462	8821	3187	7560	1939	6325	0717	5116	9521	3932	8350	2774	7205	8
5668	0015	4368	8727	3094	7466	1846	6231	0624	5022	9427	3839	8257	2681	7112	7
5574	9920	4274	8633	3000	7373	1752	6138	0530	4929	9334	3746	8164	2588	7019	6
5479	9826	4180	8539	2906	7279	1658	6044	0437	4836	9241	3653	8071	2496	6926	5
5385	9732	4086	8446	2812	7185	1565	5951	0343	4742	9148	3560	7978	2403	6834	4
5291	9638	3991	8352	2718	7091	1471	5857	0250	4649	9055	3467	7885	2310	6741	3
5197	9544	3897	8258	2624	6998	1378	5764	0157	4556	8961	3374	7792	2217	6648	2
5102	9450	3803	8164	2531	6904	1284	5670	0063	4463	8868	3280	7699	2124	6555	1
5008	9355	3709	8070	2437	6810	1190	5577	9970	4369	8775	3187	7606	2031	6463	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	"

Tangent Deg. 76

13 Deg. Sine

"	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9.368	9.368	9.369	9.369	9.370	9.370	9.371	9.371	9.372	9.372	9.373	9.373	9.374	9.374	9.375
0	1853	7111	2363	7608	2847	8079	3304	8523	3735	8940	4139	9331	4517	9696	4868
1	1940	7199	2451	7696	2934	8166	3391	8610	3822	9027	4225	9417	4603	9782	4954
2	2028	7286	2538	7783	3022	8253	3478	8697	3908	9113	4312	9504	4689	9868	5040
3	2116	7374	2626	7871	3109	8340	3565	8784	3995	9200	4399	9590	4776	9954	5127
4	2203	7462	2713	7958	3196	8427	3652	8870	4082	9287	4485	9677	4862	0041	5213
5	2291	7549	2801	8045	3283	8515	3739	8957	4169	9374	4572	9763	4948	0127	5299
6	2379	7637	2888	8133	3371	8602	3826	9044	4256	9460	4658	9850	5035	0213	5385
7	2466	7724	2976	8220	3458	8689	3913	9131	4342	9547	4745	9936	5121	0299	5471
8	2554	7812	3063	8307	3545	8776	4000	9218	4429	9634	4831	0023	5207	0386	5557
9	2642	7899	3150	8395	3632	8863	4087	9305	4516	9720	4918	0109	5294	0472	5643
10	2729	7987	3238	8482	3719	8950	4174	9392	4603	9807	5005	0196	5380	0558	5730
11	2817	8075	3325	8569	3807	9037	4261	9479	4690	9894	5091	0282	5467	0644	5816
12	2905	8162	3413	8657	3894	9125	4348	9566	4776	9980	5178	0369	5553	0731	5902
13	2992	8250	3500	8744	3981	9212	4435	9653	4863	0067	5264	0455	5639	0817	5988
14	3080	8337	3588	8831	4068	9299	4522	9739	4950	0154	5351	0541	5726	0903	6074
15	3168	8425	3675	8919	4156	9386	4609	9826	5037	0240	5437	0628	5812	0989	6160
16	3256	8512	3763	9006	4243	9473	4696	9913	5123	0327	5524	0714	5898	1076	6246
17	3343	8600	3850	9093	4330	9560	4783	0000	5210	0414	5611	0801	5985	1162	6332
18	3431	8688	3937	9181	4417	9647	4870	0087	5297	0500	5697	0887	6071	1248	6419
19	3519	8775	4025	9268	4505	9734	4957	0174	5384	0587	5784	0974	6157	1334	6505
20	3606	8863	4112	9355	4592	9821	5044	0261	5471	0674	5870	1060	6244	1420	6591
21	3694	8950	4200	9443	4679	9909	5131	0348	5557	0760	5957	1147	6330	1507	6677
22	3782	9038	4287	9530	4766	9996	5218	0435	5644	0847	6043	1233	6416	1593	6763
23	3869	9125	4375	9617	4853	0083	5305	0521	5731	0934	6130	1320	6503	1679	6849
24	3957	9213	4462	9705	4941	0170	5392	0608	5818	1020	6216	1406	6589	1765	6935
25	4044	9300	4550	9792	5028	0257	5479	0695	5904	1107	6303	1492	6675	1852	7021
26	4132	9388	4637	9879	5115	0344	5566	0782	5991	1194	6390	1579	6762	1938	7107
27	4220	9475	4724	9967	5202	0431	5653	0869	6078	1280	6476	1665	6848	2024	7194
28	4307	9563	4812	0054	5289	0518	5740	0956	6165	1367	6563	1752	6934	2110	7280
29	4395	9651	4899	0141	5377	0605	5827	1043	6251	1454	6649	1838	7021	2196	7366
30	4483	9738	4987	0229	5464	0692	5914	1130	6338	1540	6736	1925	7107	2283	7452
31	4570	9826	5074	0316	5551	0779	6001	1216	6425	1627	6822	2011	7193	2369	7538
32	4658	9913	5162	0403	5638	0867	6088	1303	6512	1714	6909	2097	7279	2455	7624
33	4746	0001	5249	0491	5725	0954	6175	1390	6598	1800	6995	2184	7366	2541	7710
34	4833	0088	5336	0578	5813	1041	6262	1477	6685	1887	7082	2270	7452	2627	7796
35	4921	0176	5424	0665	5900	1128	6349	1564	6772	1973	7168	2357	7538	2714	7882
36	5009	0263	5511	0752	5987	1215	6436	1651	6859	2060	7255	2443	7625	2800	7968
37	5096	0351	5599	0840	6074	1302	6523	1738	6945	2147	7341	2529	7711	2886	8055
38	5184	0438	5686	0927	6161	1389	6610	1824	7032	2233	7428	2616	7797	2972	8141
39	5271	0526	5773	1014	6249	1476	6697	1911	7119	2320	7514	2702	7884	3058	8227
40	5359	0613	5861	1102	6336	1563	6784	1998	7206	2407	7601	2789	7970	3145	8313
41	5447	0701	5948	1189	6423	1650	6871	2085	7292	2493	7687	2875	8056	3231	8399
42	5534	0788	6036	1276	6510	1737	6958	2172	7379	2580	7774	2962	8143	3317	8485
43	5622	0876	6123	1363	6597	1824	7045	2259	7466	2666	7860	3048	8229	3403	8571
44	5710	0963	6210	1451	6684	1911	7132	2345	7553	2753	7947	3134	8315	3489	8657
45	5797	1051	6298	1538	6772	1998	7219	2432	7639	2840	8034	3221	8401	3576	8743
46	5885	1138	6385	1625	6859	2086	7306	2519	7726	2926	8120	3307	8488	3662	8829
47	5972	1226	6473	1713	6946	2173	7393	2606	7813	3013	8207	3394	8574	3748	8915
48	6060	1313	6560	1800	7033	2260	7480	2693	7900	3100	8293	3480	8660	3834	9001
49	6148	1401	6647	1887	7120	2347	7567	2780	7986	3186	8380	3566	8747	3920	9087
50	6235	1488	6735	1974	7207	2434	7653	2867	8073	3273	8466	3653	8833	4006	9174
51	6323	1576	6822	2062	7295	2521	7740	2953	8160	3359	8553	3739	8919	4093	9260
52	6410	1663	6909	2149	7382	2608	7827	3040	8246	3446	8639	3825	9005	4179	9346
53	6498	1751	6997	2236	7469	2695	7914	3127	8333	3533	8726	3912	9092	4265	9432
54	6586	1838	7084	2323	7556	2782	8001	3214	8420	3619	8812	3998	9178	4351	9518
55	6673	1926	7172	2411	7643	2869	8088	3301	8507	3706	8899	4085	9264	4437	9604
56	6761	2013	7259	2498	7730	2956	8175	3387	8593	3792	8985	4171	9351	4523	9690
57	6848	2101	7346	2585	7818	3043	8262	3474	8680	3879	9071	4257	9437	4610	9776
58	6936	2188	7434	2673	7905	3130	8349	3561	8767	3966	9158	4344	9523	4696	9862
59	7024	2276	7521	2760	7992	3217	8436	3648	8853	4052	9244	4430	9609	4782	9948
60	7111	2363	7608	2847	8079	3304	8523	3735	8940	4139	9331	4517	9696	4868	0034
"	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Sine Deg. 76

13 Deg. Co-Sine

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
9.987	9.987	9.987	9.987	9.987	9.987	9.987	9.987	9.987	9.987	9.987	9.987	9.987	9.987	9.987	"
8315	8012	7708	7404	7099	6794	6488	6183	5876	5570	5263	4955	4648	4339	4031	60
8310	8007	7703	7398	7094	6789	6483	6177	5871	5565	5258	4950	4642	4334	4026	59
8305	8002	7698	7393	7089	6784	6478	6172	5866	5560	5253	4945	4637	4329	4021	58
8300	7996	7693	7388	7084	6779	6473	6167	5861	5554	5247	4940	4632	4324	4015	57
8295	7991	7688	7383	7079	6773	6468	6162	5856	5549	5242	4935	4627	4319	4010	56
8290	7986	7682	7378	7073	6768	6463	6157	5851	5544	5237	4930	4622	4314	4005	55
8285	7981	7677	7373	7068	6763	6458	6152	5846	5539	5232	4925	4617	4309	4000	54
8280	7976	7672	7368	7063	6758	6453	6147	5841	5534	5227	4920	4612	4303	3995	53
8275	7971	7667	7363	7058	6753	6448	6142	5836	5529	5222	4914	4607	4298	3990	52
8270	7966	7662	7358	7053	6748	6443	6137	5830	5524	5217	4909	4601	4293	3985	51
8265	7961	7657	7353	7048	6743	6437	6132	5825	5519	5212	4904	4596	4288	3979	50
8260	7956	7652	7348	7043	6738	6432	6126	5820	5514	5206	4899	4591	4283	3974	49
8254	7951	7647	7343	7038	6733	6427	6121	5815	5508	5201	4894	4586	4278	3969	48
8249	7946	7642	7338	7033	6728	6422	6116	5810	5503	5196	4889	4581	4273	3964	47
8244	7941	7637	7332	7028	6723	6417	6111	5805	5498	5191	4884	4576	4268	3959	46
8239	7936	7632	7327	7023	6718	6412	6106	5800	5493	5186	4878	4571	4262	3954	45
8234	7931	7627	7322	7018	6712	6407	6101	5795	5488	5181	4873	4565	4257	3949	44
8229	7926	7622	7317	7012	6707	6402	6096	5790	5483	5176	4868	4560	4252	3943	43
8224	7921	7617	7312	7007	6702	6397	6091	5784	5478	5171	4863	4555	4247	3938	42
8219	7915	7611	7307	7002	6697	6392	6086	5779	5473	5165	4858	4550	4242	3933	41
8214	7910	7606	7302	6997	6692	6386	6081	5774	5467	5160	4853	4545	4237	3928	40
8209	7905	7601	7297	6992	6687	6381	6075	5769	5462	5155	4848	4540	4232	3923	39
8204	7900	7596	7292	6987	6682	6376	6070	5764	5457	5150	4843	4535	4226	3918	38
8199	7895	7591	7287	6982	6677	6371	6065	5759	5452	5145	4837	4530	4221	3913	37
8194	7890	7586	7282	6977	6672	6366	6060	5754	5447	5140	4832	4524	4216	3907	36
8189	7885	7581	7277	6972	6667	6361	6055	5749	5442	5135	4827	4519	4211	3902	35
8184	7880	7576	7272	6967	6662	6356	6050	5744	5437	5130	4822	4514	4206	3897	34
8179	7875	7571	7266	6962	6656	6351	6045	5738	5432	5125	4817	4509	4201	3892	33
8174	7870	7566	7261	6957	6651	6346	6040	5733	5427	5119	4812	4504	4196	3887	32
8169	7865	7561	7256	6951	6646	6341	6035	5728	5421	5114	4807	4499	4190	3882	31
8163	7860	7556	7251	6946	6641	6336	6030	5723	5416	5109	4802	4494	4185	3877	30
8158	7855	7551	7246	6941	6636	6330	6024	5718	5411	5104	4796	4488	4180	3871	29
8153	7850	7546	7241	6936	6631	6325	6019	5713	5406	5099	4791	4483	4175	3866	28
8148	7845	7540	7236	6931	6626	6320	6014	5708	5401	5094	4786	4478	4170	3861	27
8143	7840	7535	7231	6926	6621	6315	6009	5703	5396	5089	4781	4473	4165	3856	26
8138	7834	7530	7226	6921	6616	6310	6004	5698	5391	5084	4776	4468	4160	3851	25
8133	7829	7525	7221	6916	6611	6305	5999	5692	5386	5078	4771	4463	4154	3846	24
8128	7824	7520	7216	6911	6606	6300	5994	5687	5380	5073	4766	4458	4149	3840	23
8123	7819	7515	7211	6906	6600	6295	5989	5682	5375	5068	4761	4453	4144	3835	22
8118	7814	7510	7206	6901	6595	6290	5984	5677	5370	5063	4755	4447	4139	3830	21
8113	7809	7505	7200	6896	6590	6285	5978	5672	5365	5058	4750	4442	4134	3825	20
8108	7804	7500	7195	6890	6585	6279	5973	5667	5360	5053	4745	4437	4129	3820	19
8103	7799	7495	7190	6885	6580	6274	5968	5662	5355	5048	4740	4432	4124	3815	18
8098	7794	7490	7185	6880	6575	6269	5963	5657	5350	5043	4735	4427	4118	3810	17
8093	7789	7485	7180	6875	6570	6264	5958	5652	5345	5037	4730	4422	4113	3804	16
8088	7784	7480	7175	6870	6565	6259	5953	5646	5340	5032	4725	4417	4108	3799	15
8083	7779	7475	7170	6865	6560	6254	5948	5641	5334	5027	4719	4411	4103	3794	14
8077	7774	7469	7165	6860	6555	6249	5943	5636	5329	5022	4714	4406	4098	3789	13
8072	7769	7464	7160	6855	6550	6244	5938	5631	5324	5017	4709	4401	4093	3784	12
8067	7764	7459	7155	6850	6544	6239	5933	5626	5319	5012	4704	4396	4088	3779	11
8062	7758	7454	7150	6845	6539	6234	5927	5621	5314	5007	4699	4391	4082	3774	10
8057	7753	7449	7145	6840	6534	6228	5922	5616	5309	5002	4694	4386	4077	3768	9
8052	7748	7444	7140	6835	6529	6223	5917	5611	5304	4996	4689	4381	4072	3763	8
8047	7743	7439	7134	6829	6524	6218	5912	5606	5299	4991	4684	4375	4067	3758	7
8042	7738	7434	7129	6824	6519	6213	5907	5600	5293	4986	4678	4370	4062	3753	6
8037	7733	7429	7124	6819	6514	6208	5902	5595	5288	4981	4673	4365	4057	3748	5
8032	7728	7424	7119	6814	6509	6203	5897	5590	5283	4976	4668	4360	4052	3743	4
8027	7723	7419	7114	6809	6504	6198	5892	5585	5278	4971	4663	4355	4046	3737	3
8022	7718	7414	7109	6804	6499	6193	5887	5580	5273	4966	4658	4350	4041	3732	2
8017	7713	7409	7104	6799	6493	6188	5881	5575	5268	4961	4653	4345	4036	3727	1
8012	7708	7404	7099	6794	6488	6183	5876	5570	5263	4955	4648	4339	4031	3722	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	"

Sine Deg. 76

13 Deg. Tangent

"	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.
	380	380	381	382	382	383	383	384	384	385	385	386	386	387	388
0	3537	9100	4655	0205	5748	1285	6816	2340	7858	3370	8876	4376	9869	5356	0837
1	3630	9192	4748	0297	5841	1377	6908	2432	7950	3462	8968	4467	9960	5447	0928
2	3723	9285	4841	0390	5933	1470	7000	2524	8042	3554	9059	4559	0052	5539	1020
3	3816	9378	4933	0482	6025	1562	7092	2616	8134	3646	9151	4650	0143	5630	1111
4	3908	9470	5026	0575	6117	1654	7184	2708	8226	3738	9243	4742	0235	5722	1202
5	4001	9563	5118	0667	6210	1746	7276	2800	8318	3829	9335	4834	0326	5813	1294
6	4094	9655	5211	0760	6302	1838	7368	2892	8410	3921	9426	4925	0418	5904	1385
7	4187	9748	5303	0852	6394	1931	7461	2984	8502	4013	9518	5017	0509	5996	1476
8	4279	9841	5396	0944	6487	2023	7553	3076	8594	4105	9610	5108	0601	6087	1567
9	4372	9933	5488	1037	6579	2115	7645	3168	8686	4197	9701	5200	0692	6179	1659
10	4465	0026	5581	1129	6671	2207	7737	3260	8777	4288	9793	5292	0784	6270	1750
11	4558	0119	5673	1222	6764	2300	7829	3352	8869	4380	9885	5383	0875	6361	1841
12	4650	0211	5766	1314	6856	2392	7921	3444	8961	4472	9976	5475	0967	6453	1933
13	4743	0304	5858	1407	6948	2484	8013	3536	9053	4564	0068	5566	1058	6544	2024
14	4836	0396	5951	1499	7041	2576	8105	3628	9145	4656	0160	5658	1150	6636	2115
15	4929	0489	6043	1591	7133	2668	8197	3720	9237	4747	0251	5749	1241	6727	2206
16	5021	0582	6136	1684	7225	2761	8290	3812	9329	4839	0343	5841	1333	6818	2298
17	5114	0674	6228	1776	7318	2853	8382	3904	9421	4931	0435	5933	1424	6910	2389
18	5207	0767	6321	1869	7410	2945	8474	3996	9513	5023	0527	6024	1516	7001	2480
19	5299	0860	6413	1961	7502	3037	8566	4088	9604	5114	0618	6116	1607	7092	2572
20	5392	0952	6506	2053	7595	3129	8658	4180	9696	5206	0710	6207	1699	7184	2663
21	5485	1045	6598	2146	7687	3222	8750	4272	9788	5298	0802	6299	1790	7275	2754
22	5578	1137	6691	2238	7779	3314	8842	4364	9880	5390	0893	6390	1882	7367	2845
23	5670	1230	6783	2331	7871	3406	8934	4456	9972	5482	0985	6482	1973	7458	2937
24	5763	1323	6876	2423	7964	3498	9026	4548	0064	5573	1077	6574	2065	7549	3028
25	5856	1415	6968	2515	8056	3590	9118	4640	0156	5665	1168	6665	2156	7641	3119
26	5948	1508	7061	2608	8148	3682	9210	4732	0248	5757	1260	6757	2247	7732	3210
27	6041	1600	7153	2700	8241	3775	9303	4824	0339	5849	1352	6848	2339	7823	3302
28	6134	1693	7246	2793	8333	3867	9395	4916	0431	5940	1443	6940	2430	7915	3393
29	6227	1786	7338	2885	8425	3959	9487	5008	0523	6032	1535	7031	2522	8006	3484
30	6319	1878	7431	2977	8517	4051	9579	5100	0615	6124	1627	7123	2613	8097	3575
31	6412	1971	7523	3070	8610	4143	9671	5192	0707	6216	1718	7215	2705	8189	3667
32	6505	2063	7616	3162	8702	4236	9763	5284	0799	6307	1810	7306	2796	8280	3758
33	6597	2156	7708	3255	8794	4328	9855	5376	0891	6399	1902	7398	2888	8371	3849
34	6690	2249	7801	3347	8887	4420	9947	5468	0983	6491	1993	7489	2979	8463	3940
35	6783	2341	7893	3439	8979	4512	0039	5560	1074	6583	2085	7581	3071	8554	4032
36	6875	2434	7986	3532	9071	4604	0131	5652	1166	6674	2176	7672	3162	8645	4123
37	6968	2526	8078	3624	9163	4696	0223	5744	1258	6766	2268	7764	3253	8737	4214
38	7061	2619	8171	3716	9256	4789	0315	5836	1350	6858	2360	7855	3345	8828	4305
39	7154	2712	8263	3809	9348	4881	0407	5928	1442	6950	2451	7947	3436	8919	4397
40	7246	2804	8356	3901	9440	4973	0499	6020	1534	7041	2543	8038	3528	9011	4488
41	7339	2897	8448	3994	9532	5065	0591	6112	1626	7133	2635	8130	3619	9102	4579
42	7432	2989	8541	4086	9625	5157	0684	6204	1717	7225	2726	8222	3711	9193	4670
43	7524	3082	8633	4178	9717	5249	0776	6295	1809	7317	2818	8313	3802	9285	4761
44	7617	3174	8726	4271	9809	5342	0868	6387	1901	7408	2910	8405	3893	9376	4853
45	7710	3267	8818	4363	9901	5434	0960	6479	1993	7500	3001	8496	3985	9467	4944
46	7802	3360	8911	4455	9994	5526	1052	6571	2085	7592	3093	8588	4076	9559	5035
47	7895	3452	9003	4548	0086	5618	1144	6663	2177	7684	3185	8679	4168	9650	5126
48	7988	3545	9096	4640	0178	5710	1236	6755	2268	7775	3276	8771	4259	9741	5218
49	8080	3637	9188	4732	0270	5802	1328	6847	2360	7867	3368	8862	4351	9833	5309
50	8173	3730	9280	4825	0363	5894	1420	6939	2452	7959	3459	8954	4442	9924	5400
51	8266	3822	9373	4917	0455	5987	1512	7031	2544	8051	3551	9045	4533	0015	5491
52	8358	3915	9465	5009	0547	6079	1604	7123	2636	8142	3643	9137	4625	0107	5582
53	8451	4008	9558	5102	0639	6171	1696	7215	2728	8234	3734	9228	4716	0198	5674
54	8544	4100	9650	5194	0732	6263	1788	7307	2819	8326	3826	9320	4808	0289	5765
55	8636	4193	9743	5286	0824	6355	1880	7399	2911	8417	3917	9411	4899	0381	5856
56	8729	4285	9835	5379	0916	6447	1972	7491	3003	8509	4009	9503	4990	0472	5947
57	8822	4378	9928	5471	1008	6539	2064	7583	3095	8601	4101	9594	5082	0563	6038
58	8914	4470	0020	5563	1101	6632	2156	7675	3187	8693	4192	9686	5173	0655	6130
59	9007	4563	0113	5656	1193	6724	2248	7766	3278	8784	4284	9777	5265	0746	6221
60	9100	4655	0205	5748	1285	6816	2340	7858	3370	8876	4376	9869	5356	0837	6312
"	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Tangent Deg. 76

13 Deg. Co-Tangent

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	"
10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	
619	619	618	617	617	616	616	615	615	614	614	613	613	612	611	
6463	0900	5345	9795	4252	8715	3184	7660	2142	6630	1124	5624	0131	4644	9163	60
6370	0808	5252	9703	4159	8623	3092	7568	2050	6538	1032	5533	0040	4553	9072	59
6277	0715	5159	9610	4067	8530	3000	7476	1958	6446	0941	5441	9948	4461	8980	58
6184	0622	5067	9518	3975	8438	2908	7384	1866	6354	0849	5350	9857	4370	8889	57
6092	0530	4974	9425	3883	8346	2816	7292	1774	6262	0757	5258	9765	4278	8798	56
5999	0437	4882	9333	3790	8254	2724	7200	1682	6171	0665	5166	9674	4187	8706	55
5906	0345	4789	9240	3698	8162	2632	7108	1590	6079	0574	5075	9582	4096	8615	54
5813	0252	4697	9148	3606	8069	2539	7016	1498	5987	0482	4983	9491	4004	8524	53
5721	0159	4604	9056	3513	7977	2447	6924	1406	5895	0390	4892	9399	3913	8433	52
5628	0067	4512	8963	3421	7885	2355	6832	1314	5803	0299	4800	9308	3821	8341	51
5535	9974	4419	8871	3329	7793	2263	6740	1223	5712	0207	4708	9216	3730	8250	50
5442	9881	4327	8778	3236	7700	2171	6648	1131	5620	0115	4617	9125	3639	8159	49
5350	9789	4234	8686	3144	7608	2079	6556	1039	5528	0024	4525	9033	3547	8067	48
5257	9696	4142	8593	3052	7516	1987	6464	0947	5436	9932	4434	8942	3456	7976	47
5164	9604	4049	8501	2959	7424	1895	6372	0855	5344	9840	4342	8850	3364	7885	46
5071	9511	3957	8409	2867	7332	1803	6280	0763	5253	9749	4251	8759	3273	7794	45
4979	9418	3864	8316	2775	7239	1710	6188	0671	5161	9657	4159	8667	3182	7702	44
4886	9326	3772	8224	2682	7147	1618	6096	0579	5069	9565	4067	8576	3090	7611	43
4793	9233	3679	8131	2590	7055	1526	6004	0487	4977	9473	3976	8484	2999	7520	42
4701	9140	3587	8039	2498	6963	1434	5912	0396	4886	9382	3884	8393	2908	7428	41
4608	9048	3494	7947	2405	6871	1342	5820	0304	4794	9290	3793	8301	2816	7337	40
4515	8955	3402	7854	2313	6778	1250	5728	0212	4702	9198	3701	8210	2725	7246	39
4422	8863	3309	7762	2221	6686	1158	5636	0120	4610	9107	3610	8118	2633	7155	38
4330	8770	3217	7669	2129	6594	1066	5544	0028	4518	9015	3518	8027	2542	7063	37
4237	8677	3124	7577	2036	6502	0974	5452	9936	4427	8923	3426	7935	2451	6972	36
4144	8585	3032	7485	1944	6410	0882	5360	9844	4335	8832	3335	7844	2359	6881	35
4052	8492	2939	7392	1852	6318	0790	5268	9752	4243	8740	3243	7753	2268	6790	34
3959	8400	2847	7300	1759	6225	0697	5176	9661	4151	8648	3152	7661	2177	6698	33
3866	8307	2754	7207	1667	6133	0605	5084	9569	4060	8557	3060	7570	2085	6607	32
3773	8214	2662	7115	1575	6041	0513	4992	9477	3968	8465	2969	7478	1994	6516	31
3681	8122	2569	7023	1483	5949	0421	4900	9385	3876	8373	2877	7387	1903	6425	30
3588	8029	2477	6930	1390	5857	0329	4808	9293	3784	8282	2785	7295	1811	6333	29
3495	7937	2384	6838	1298	5764	0237	4716	9201	3693	8190	2694	7204	1720	6242	28
3403	7844	2292	6745	1206	5672	0145	4624	9109	3601	8098	2602	7112	1629	6151	27
3310	7751	2199	6653	1113	5580	0053	4532	9017	3509	8007	2511	7021	1537	6060	26
3217	7659	2107	6561	1021	5488	9961	4440	8926	3417	7915	2419	6929	1446	5968	25
3125	7566	2014	6468	0929	5396	9869	4348	8834	3326	7824	2328	6838	1355	5877	24
3032	7474	1922	6376	0837	5304	9777	4256	8742	3234	7732	2236	6747	1263	5786	23
2939	7381	1829	6284	0744	5211	9685	4164	8650	3142	7640	2145	6655	1172	5695	22
2846	7288	1737	6191	0652	5119	9593	4072	8558	3050	7549	2053	6564	1081	5603	21
2754	7196	1644	6099	0560	5027	9501	3980	8466	2959	7457	1962	6472	0989	5512	20
2661	7103	1552	6006	0468	4935	9409	3888	8374	2867	7365	1870	6381	0898	5421	19
2568	7011	1459	5914	0375	4843	9316	3796	8283	2775	7274	1778	6289	0807	5330	18
2476	6918	1367	5822	0283	4751	9224	3705	8191	2683	7182	1687	6198	0715	5239	17
2383	6826	1274	5729	0191	4658	9132	3613	8099	2592	7090	1595	6107	0624	5147	16
2290	6733	1182	5637	0099	4566	9040	3521	8007	2500	6999	1504	6015	0533	5056	15
2198	6640	1089	5545	0006	4474	8948	3429	7915	2408	6907	1412	5924	0441	4965	14
2105	6548	0997	5452	9914	4382	8856	3337	7823	2316	6815	1321	5832	0350	4874	13
2012	6455	0904	5360	9822	4290	8764	3245	7732	2225	6724	1229	5741	0259	4782	12
1920	6363	0812	5268	9730	4198	8672	3153	7640	2133	6632	1138	5649	0167	4691	11
1827	6270	0720	5175	9637	4106	8580	3061	7548	2041	6541	1046	5558	0076	4600	10
1734	6178	0627	5083	9545	4013	8488	2969	7456	1949	6449	0955	5467	9985	4509	9
1642	6085	0535	4991	9453	3921	8396	2877	7364	1858	6357	0863	5375	9893	4418	8
1549	5992	0442	4898	9361	3829	8304	2785	7272	1766	6266	0772	5284	9802	4326	7
1456	5900	0350	4806	9268	3737	8212	2693	7181	1674	6174	0680	5192	9711	4235	6
1364	5807	0257	4714	9176	3645	8120	2601	7089	1583	6083	0589	5101	9619	4144	5
1271	5715	0165	4621	9084	3553	8028	2509	6997	1491	5991	0497	5010	9528	4052	4
1178	5622	0072	4529	8992	3461	7936	2417	6905	1399	5899	0406	4918	9437	3962	3
1086	5530	9980	4437	8899	3368	7844	2325	6813	1307	5808	0314	4827	9345	3870	2
0993	5437	9887	4344	8807	3276	7752	2234	6722	1216	5716	0223	4735	9254	3770	1
0900	5345	9795	4252	8715	3184	7660	2142	6630	1124	5624	0131	4644	9163	3688	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	"

Tangent Deg. 76

″	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9.376	9.376	9.377	9.377	9.378	9.378	9.379	9.379	9.380	9.380	9.381	9.381	9.382	9.382	9.383
0	0034	5194	0347	5493	0633	5767	0894	6015	1129	6237	1339	6434	1523	6605	1682
1	0120	5279	0432	5579	0719	5852	0979	6100	1214	6322	1424	6519	1608	6690	1766
2	0206	5365	0518	5664	0804	5938	1065	6185	1299	6407	1509	6604	1692	6775	1851
3	0292	5451	0604	5750	0890	6023	1150	6271	1385	6492	1594	6689	1777	6859	1935
4	0378	5537	0690	5836	0976	6109	1235	6356	1470	6577	1679	6773	1862	6944	2020
5	0464	5623	0776	5922	1061	6194	1321	6441	1555	6662	1763	6858	1947	7029	2105
6	0550	5709	0861	6007	1147	6280	1406	6526	1640	6747	1848	6943	2031	7113	2189
7	0636	5795	0947	6093	1232	6365	1492	6612	1725	6833	1933	7028	2116	7198	2274
8	0722	5881	1033	6179	1318	6451	1577	6697	1810	6918	2018	7113	2201	7283	2358
9	0808	5967	1119	6264	1404	6536	1662	6782	1896	7003	2103	7198	2286	7367	2443
10	0894	6053	1205	6350	1489	6622	1748	6867	1981	7088	2188	7283	2370	7452	2527
11	0980	6139	1291	6436	1575	6707	1833	6953	2066	7173	2273	7367	2455	7537	2612
12	1066	6225	1376	6522	1660	6793	1919	7038	2151	7258	2358	7452	2540	7621	2696
13	1152	6311	1462	6607	1746	6878	2004	7123	2236	7343	2443	7537	2625	7706	2781
14	1239	6396	1548	6693	1832	6964	2089	7209	2321	7428	2528	7622	2709	7790	2865
15	1325	6482	1634	6779	1917	7049	2175	7294	2407	7513	2613	7707	2794	7875	2950
16	1411	6568	1720	6864	2003	7135	2260	7379	2492	7598	2698	7792	2879	7960	3034
17	1497	6654	1805	6950	2088	7220	2345	7464	2577	7683	2783	7876	2964	8044	3119
18	1583	6740	1891	7036	2174	7306	2431	7550	2662	7768	2868	7961	3048	8129	3203
19	1669	6826	1977	7121	2259	7391	2516	7635	2747	7853	2953	8046	3133	8214	3288
20	1755	6912	2063	7207	2345	7476	2602	7720	2832	7938	3038	8131	3218	8298	3372
21	1841	6998	2149	7293	2431	7562	2687	7805	2918	8023	3123	8216	3302	8383	3457
22	1927	7084	2234	7378	2516	7647	2772	7891	3003	8108	3208	8301	3387	8468	3541
23	2013	7170	2320	7464	2602	7733	2858	7976	3088	8193	3293	8385	3472	8552	3626
24	2099	7256	2406	7550	2687	7818	2943	8061	3173	8278	3378	8470	3557	8637	3711
25	2185	7341	2492	7636	2773	7904	3028	8146	3258	8363	3462	8555	3641	8721	3795
26	2271	7427	2577	7721	2858	7989	3114	8232	3343	8449	3547	8640	3726	8806	3880
27	2357	7513	2663	7807	2944	8075	3199	8317	3428	8534	3632	8725	3811	8891	3964
28	2443	7599	2749	7893	3030	8160	3284	8402	3514	8619	3717	8810	3896	8975	4049
29	2529	7685	2835	7978	3115	8246	3370	8487	3599	8704	3802	8894	3980	9060	4133
30	2615	7771	2921	8064	3201	8331	3455	8573	3684	8789	3887	8979	4065	9144	4218
31	2701	7857	3006	8150	3286	8417	3540	8658	3769	8874	3972	9064	4150	9229	4302
32	2787	7943	3092	8235	3372	8502	3626	8743	3854	8959	4057	9149	4234	9314	4387
33	2873	8028	3178	8321	3457	8587	3711	8828	3939	9044	4142	9234	4319	9398	4471
34	2959	8114	3264	8407	3543	8673	3796	8914	4024	9129	4227	9318	4404	9483	4556
35	3045	8200	3349	8492	3628	8758	3882	8999	4109	9214	4312	9403	4488	9567	4640
36	3131	8286	3435	8578	3714	8844	3967	9084	4195	9299	4397	9488	4573	9652	4725
37	3216	8372	3521	8663	3800	8929	4052	9169	4280	9384	4481	9573	4658	9737	4809
38	3302	8458	3607	8749	3885	9015	4138	9255	4365	9469	4566	9658	4743	9821	4893
39	3388	8544	3692	8835	3971	9100	4223	9340	4450	9554	4651	9742	4827	9906	4978
40	3474	8630	3778	8920	4056	9186	4308	9425	4535	9639	4736	9827	4912	9990	5062
41	3560	8715	3864	9006	4142	9271	4394	9510	4620	9724	4821	9912	4997	0075	5147
42	3646	8801	3950	9092	4227	9356	4479	9595	4705	9809	4906	9997	5081	0160	5231
43	3732	8887	4036	9177	4313	9442	4564	9681	4790	9894	4991	0082	5166	0244	5316
44	3818	8973	4121	9263	4398	9527	4650	9766	4876	9979	5076	0166	5251	0329	5400
45	3904	9059	4207	9349	4484	9613	4735	9851	4961	0064	5161	0251	5335	0413	5485
46	3990	9145	4293	9434	4569	9698	4820	9936	5046	0149	5246	0336	5420	0498	5569
47	4076	9231	4379	9520	4655	9784	4906	0021	5131	0234	5330	0421	5505	0582	5654
48	4162	9316	4464	9606	4740	9869	4991	0107	5216	0319	5415	0506	5589	0667	5738
49	4248	9402	4550	9691	4826	9954	5076	0192	5301	0404	5500	0590	5674	0752	5823
50	4334	9488	4636	9777	4912	0040	5162	0277	5386	0489	5585	0675	5759	0836	5907
51	4420	9574	4721	9862	4997	0125	5247	0362	5471	0574	5670	0760	5843	0921	5992
52	4506	9660	4807	9948	5083	0211	5332	0447	5556	0659	5755	0845	5928	1005	6076
53	4592	9746	4893	0034	5168	0296	5418	0533	5641	0744	5840	0929	6013	1090	6161
54	4678	9832	4979	0119	5254	0381	5503	0618	5727	0829	5925	1014	6097	1174	6245
55	4764	9917	5064	0205	5339	0467	5588	0703	5812	0914	6010	1099	6182	1259	6330
56	4850	0003	5150	0291	5425	0552	5673	0788	5897	0999	6094	1184	6267	1344	6414
57	4936	0089	5236	0376	5510	0638	5759	0873	5982	1084	6179	1269	6351	1428	6498
58	5022	0175	5322	0462	5596	0723	5844	0959	6067	1169	6264	1353	6436	1513	6583
59	5108	0261	5407	0547	5681	0808	5929	1044	6152	1254	6349	1438	6521	1597	6667
60	5194	0347	5493	0633	5767	0894	6015	1129	6237	1339	6434	1523	6605	1682	6752
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

″	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9.987	9.987	9.987	9.987	9.987	9.987	9.987	9.987	9.987	9.987	9.987	9.987	9.986	9.986	9.986
0	3722	3413	3103	2793	2482	2171	1860	1549	1236	0924	0611	0298	9984	9670	9356
1	3717	3408	3098	2788	2477	2166	1855	1543	1231	0919	0606	0293	9979	9665	9351
2	3712	3402	3093	2783	2472	2161	1850	1538	1226	0914	0601	0288	9974	9660	9345
3	3707	3397	3087	2777	2467	2156	1845	1533	1221	0908	0596	0282	9969	9655	9340
4	3701	3392	3082	2772	2462	2151	1839	1528	1216	0903	0590	0277	9963	9649	9335
5	3696	3387	3077	2767	2456	2146	1834	1523	1210	0898	0585	0272	9958	9644	9330
6	3691	3382	3072	2762	2451	2140	1829	1517	1205	0893	0580	0267	9953	9639	9325
7	3686	3377	3067	2757	2446	2135	1824	1512	1200	0888	0575	0261	9948	9634	9319
8	3681	3371	3062	2751	2441	2130	1819	1507	1195	0882	0569	0256	9943	9628	9314
9	3676	3366	3056	2746	2436	2125	1813	1502	1190	0877	0564	0251	9937	9623	9309
10	3670	3361	3051	2741	2431	2120	1808	1497	1184	0872	0559	0246	9932	9618	9304
11	3665	3356	3046	2736	2425	2114	1803	1491	1179	0867	0554	0241	9927	9613	9298
12	3660	3351	3041	2731	2420	2109	1798	1486	1174	0861	0549	0235	9922	9608	9293
13	3655	3346	3036	2726	2415	2104	1793	1481	1169	0856	0543	0230	9916	9602	9288
14	3650	3340	3031	2720	2410	2099	1788	1476	1164	0851	0538	0225	9911	9597	9283
15	3645	3335	3025	2715	2405	2094	1782	1471	1158	0846	0533	0220	9906	9592	9277
16	3640	3330	3020	2710	2399	2088	1777	1465	1153	0841	0528	0214	9901	9587	9272
17	3634	3325	3015	2705	2394	2083	1772	1460	1148	0835	0522	0209	9895	9581	9267
18	3629	3320	3010	2700	2389	2078	1767	1455	1143	0830	0517	0204	9890	9576	9262
19	3624	3315	3005	2695	2384	2073	1762	1450	1138	0825	0512	0199	9885	9571	9256
20	3619	3309	3000	2689	2379	2068	1756	1445	1132	0820	0507	0193	9880	9566	9251
21	3614	3304	2994	2684	2374	2063	1751	1439	1127	0815	0502	0188	9875	9560	9246
22	3609	3299	2989	2679	2368	2057	1746	1434	1122	0809	0496	0183	9869	9555	9241
23	3603	3294	2984	2674	2363	2052	1741	1429	1117	0804	0491	0178	9864	9550	9235
24	3598	3289	2979	2669	2358	2047	1736	1424	1112	0799	0486	0173	9859	9545	9230
25	3593	3284	2974	2664	2353	2042	1730	1419	1106	0794	0481	0167	9854	9539	9225
26	3588	3279	2969	2658	2348	2037	1725	1413	1101	0789	0476	0162	9848	9534	9220
27	3583	3273	2963	2653	2343	2031	1720	1408	1096	0783	0470	0157	9843	9529	9214
28	3578	3268	2958	2648	2337	2026	1715	1403	1091	0778	0465	0152	9838	9524	9209
29	3573	3263	2953	2643	2332	2021	1710	1398	1086	0773	0460	0146	9833	9518	9204
30	3567	3258	2948	2638	2327	2016	1704	1393	1080	0768	0455	0141	9827	9513	9199
31	3562	3253	2943	2632	2322	2011	1699	1387	1075	0762	0449	0136	9822	9508	9193
32	3557	3248	2938	2627	2317	2006	1694	1382	1070	0757	0444	0131	9817	9503	9188
33	3552	3242	2932	2622	2311	2000	1689	1377	1065	0752	0439	0126	9812	9497	9183
34	3547	3237	2927	2617	2306	1995	1684	1372	1059	0747	0434	0120	9806	9492	9178
35	3542	3232	2922	2612	2301	1990	1678	1367	1054	0742	0429	0115	9801	9487	9172
36	3536	3227	2917	2607	2296	1985	1673	1361	1049	0736	0423	0110	9796	9482	9167
37	3531	3222	2912	2601	2291	1980	1668	1356	1044	0731	0418	0105	9791	9477	9162
38	3526	3217	2907	2596	2285	1974	1663	1351	1039	0726	0413	0099	9786	9471	9157
39	3521	3211	2901	2591	2280	1969	1658	1346	1033	0721	0408	0094	9780	9466	9151
40	3516	3206	2896	2586	2275	1964	1652	1341	1028	0716	0402	0089	9775	9461	9146
41	3511	3201	2891	2581	2270	1959	1647	1335	1023	0710	0397	0084	9770	9456	9141
42	3506	3196	2886	2576	2265	1954	1642	1330	1018	0705	0392	0078	9765	9450	9136
43	3500	3191	2881	2570	2260	1948	1637	1325	1013	0700	0387	0073	9759	9445	9130
44	3495	3186	2876	2565	2254	1943	1632	1320	1007	0695	0382	0068	9754	9440	9125
45	3490	3180	2870	2560	2249	1938	1626	1315	1002	0689	0376	0063	9749	9435	9120
46	3485	3175	2865	2555	2244	1933	1621	1309	0997	0684	0371	0058	9744	9429	9115
47	3480	3170	2860	2550	2239	1928	1616	1304	0992	0679	0366	0052	9738	9424	9109
48	3475	3165	2855	2544	2234	1922	1611	1299	0987	0674	0361	0047	9733	9419	9104
49	3469	3160	2850	2539	2228	1917	1606	1294	0981	0669	0355	0042	9728	9414	9099
50	3464	3155	2845	2534	2223	1912	1601	1289	0976	0663	0350	0037	9723	9408	9094
51	3459	3149	2839	2529	2218	1907	1595	1283	0971	0658	0345	0031	9717	9403	9088
52	3454	3144	2834	2524	2213	1902	1591	1278	0966	0653	0340	0026	9712	9398	9083
53	3449	3139	2829	2519	2208	1897	1585	1273	0961	0648	0335	0021	9707	9393	9078
54	3444	3134	2824	2513	2203	1891	1580	1268	0955	0643	0329	0016	9702	9387	9073
55	3438	3129	2819	2508	2197	1886	1575	1262	0950	0637	0324	0011	9697	9382	9067
56	3433	3124	2814	2503	2192	1881	1569	1257	0945	0632	0319	0005	9691	9377	9062
57	3428	3118	2808	2498	2187	1876	1564	1252	0940	0627	0314	0000	9686	9372	9057
58	3423	3113	2803	2493	2182	1871	1559	1247	0934	0622	0308	9995	9681	9366	9052
59	3418	3108	2798	2488	2177	1865	1554	1242	0929	0616	0303	9990	9676	9361	9046
60	3413	3103	2793	2482	2171	1860	1549	1236	0924	0611	0298	9984	9670	9356	9041
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

13 Deg. Tangent

"	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9.388	9.389	9.389	9.390	9.390	9.391	9.391	9.392	9.392	9.393	9.394	9.394	9.395	9.395	9.396
0	6312	1781	7244	2700	8151	3595	9034	4466	9893	5313	0727	6136	1538	6935	2326
1	6403	1872	7335	2791	8242	3686	9124	4557	9983	5403	0818	6226	1628	7025	2416
2	6494	1963	7426	2882	8332	3777	9215	4647	0073	5494	0908	6316	1718	7115	2505
3	6586	2054	7517	2973	8423	3867	9305	4738	0164	5584	0998	6406	1808	7205	2595
4	6677	2145	7608	3064	8514	3958	9396	4828	0254	5674	1088	6496	1898	7295	2685
5	6768	2236	7699	3155	8605	4049	9487	4919	0344	5764	1178	6586	1988	7385	2775
6	6859	2327	7790	3246	8695	4139	9577	5009	0435	5855	1269	6676	2078	7474	2865
7	6950	2418	7880	3336	8786	4230	9668	5100	0525	5945	1359	6767	2168	7564	2954
8	7042	2510	7971	3427	8877	4321	9758	5190	0616	6035	1449	6857	2258	7654	3044
9	7133	2601	8062	3518	8968	4411	9849	5280	0706	6126	1539	6947	2348	7744	3134
10	7224	2692	8153	3609	9059	4502	9940	5371	0796	6216	1629	7037	2438	7834	3224
11	7315	2783	8244	3700	9149	4593	0030	5461	0887	6306	1719	7127	2528	7924	3313
12	7406	2874	8335	3791	9240	4683	0121	5552	0977	6396	1810	7217	2618	8014	3403
13	7497	2965	8426	3882	9331	4774	0211	5642	1067	6487	1900	7307	2708	8104	3493
14	7589	3056	8517	3973	9422	4865	0302	5733	1158	6577	1990	7397	2798	8193	3583
15	7680	3147	8608	4063	9512	4955	0392	5823	1248	6667	2080	7487	2888	8283	3673
16	7771	3238	8699	4154	9603	5046	0483	5914	1339	6757	2179	7577	2978	8373	3762
17	7862	3329	8790	4245	9694	5137	0573	6004	1429	6848	2260	7667	3068	8463	3852
18	7953	3420	8881	4336	9785	5227	0664	6095	1519	6938	2351	7757	3158	8553	3942
19	8045	3511	8972	4427	9875	5318	0755	6185	1610	7028	2441	7847	3248	8643	4032
20	8136	3602	9063	4518	9966	5409	0845	6276	1700	7118	2531	7937	3338	8733	4121
21	8227	3694	9154	4609	0057	5499	0936	6366	1790	7209	2621	8028	3428	8823	4211
22	8318	3785	9245	4699	0148	5590	1026	6457	1881	7299	2711	8118	3518	8912	4301
23	8409	3876	9336	4790	0239	5681	1117	6547	1971	7389	2801	8208	3608	9002	4391
24	8500	3967	9427	4881	0329	5771	1207	6637	2061	7479	2892	8298	3698	9092	4480
25	8591	4058	9518	4972	0420	5862	1298	6728	2152	7570	2982	8388	3788	9182	4570
26	8683	4149	9609	5063	0511	5953	1388	6818	2242	7660	3072	8478	3878	9272	4660
27	8774	4240	9700	5154	0602	6043	1479	6909	2332	7750	3162	8568	3968	9362	4750
28	8865	4331	9791	5245	0692	6134	1570	6999	2423	7840	3252	8658	4058	9451	4839
29	8956	4422	9882	5335	0783	6225	1660	7090	2513	7931	3342	8748	4148	9541	4929
30	9047	4513	9973	5426	0874	6315	1751	7180	2604	8021	3432	8838	4238	9631	5019
31	9138	4604	0064	5517	0964	6406	1841	7271	2694	8111	3523	8928	4327	9721	5109
32	9230	4695	0155	5608	1055	6496	1932	7361	2784	8201	3613	9018	4417	9811	5198
33	9321	4786	0245	5699	1146	6587	2022	7451	2875	8292	3703	9108	4507	9901	5288
34	9412	4877	0336	5790	1237	6678	2113	7542	2965	8382	3793	9198	4597	9991	5378
35	9503	4968	0427	5880	1327	6768	2203	7632	3055	8472	3883	9288	4687	0080	5468
36	9594	5059	0518	5971	1418	6859	2294	7723	3146	8562	3973	9378	4777	0170	5557
37	9685	5150	0609	6062	1509	6950	2384	7813	3236	8653	4063	9468	4867	0260	5647
38	9776	5241	0700	6153	1600	7040	2475	7904	3326	8743	4154	9558	4957	0350	5737
39	9867	5332	0791	6244	1690	7131	2565	7994	3417	8833	4244	9648	5047	0440	5827
40	9959	5423	0882	6335	1781	7222	2656	8084	3507	8923	4334	9738	5137	0530	5916
41	0050	5514	0973	6425	1872	7312	2747	8175	3597	9014	4424	9828	5227	0619	6006
42	0141	5605	1064	6516	1963	7403	2837	8265	3687	9104	4514	9918	5317	0709	6096
43	0232	5696	1155	6607	2053	7493	2928	8356	3778	9194	4604	0008	5407	0799	6185
44	0323	5787	1246	6698	2144	7584	3018	8446	3868	9284	4694	0098	5497	0889	6275
45	0414	5878	1337	6789	2235	7675	3109	8537	3958	9374	4784	0188	5586	0979	6365
46	0505	5969	1428	6879	2325	7765	3199	8627	4049	9465	4874	0278	5676	1068	6455
47	0596	6061	1518	6970	2416	7856	3290	8717	4139	9555	4965	0368	5766	1158	6544
48	0688	6152	1609	7061	2507	7946	3380	8808	4229	9645	5055	0458	5856	1248	6634
49	0779	6243	1700	7152	2598	8037	3471	8898	4320	9735	5145	0548	5946	1338	6724
50	0870	6334	1791	7243	2688	8128	3561	8989	4410	9825	5235	0638	6036	1428	6814
51	0961	6425	1882	7334	2779	8218	3652	9079	4500	9916	5325	0728	6126	1518	6903
52	1052	6516	1973	7424	2870	8309	3742	9169	4591	0006	5415	0818	6216	1607	6993
53	1143	6607	2064	7515	2960	8400	3833	9260	4681	0096	5505	0908	6306	1697	7083
54	1234	6698	2155	7606	3051	8490	3923	9350	4771	0186	5595	0998	6396	1787	7172
55	1325	6789	2246	7697	3142	8581	4014	9441	4862	0276	5685	1088	6486	1877	7262
56	1416	6880	2337	7788	3232	8671	4104	9531	4952	0367	5776	1178	6576	1967	7352
57	1508	6971	2428	7878	3323	8762	4195	9621	5042	0457	5866	1268	6665	2056	7441
58	1599	7062	2518	7969	3414	8853	4285	9712	5132	0547	5956	1358	6755	2146	7531
59	1690	7153	2609	8060	3505	8943	4376	9802	5223	0637	6046	1448	6845	2236	7621
60	1781	7244	2700	8151	3595	9034	4466	9893	5313	0727	6136	1538	6935	2326	7711
"	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

13 Deg. Co-Tangent

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	"
10.611	10.610	10.610	10.609	10.609	10.608	10.608	10.607	10.607	10.606	10.605	10.605	10.604	10.604	10.603	
3688	8219	2756	7300	1849	6405	0966	5534	0107	4687	9273	3864	8462	3065	7674	60
3597	8128	2665	7209	1758	6314	0876	5443	0017	4597	9182	3774	8372	2975	7584	59
3506	8037	2574	7118	1668	6223	0785	5353	9927	4506	9092	3684	8282	2885	7495	58
3414	7946	2483	7027	1577	6133	0695	5262	9836	4416	9002	3594	8192	2795	7405	57
3323	7855	2392	6936	1486	6042	0604	5172	9746	4326	8912	3504	8102	2705	7315	56
3232	7764	2301	6845	1395	5951	0513	5081	9656	4236	8822	3414	8012	2615	7225	55
3141	7673	2210	6754	1305	5861	0423	4991	9565	4145	8731	3324	7922	2526	7135	54
3050	7582	2120	6664	1214	5770	0332	4900	9475	4055	8641	3233	7832	2436	7046	53
2958	7490	2029	6573	1123	5679	0242	4810	9384	3965	8551	3143	7742	2346	6956	52
2867	7399	1938	6482	1032	5589	0151	4720	9294	3874	8461	3053	7652	2256	6866	51
2776	7308	1847	6391	0941	5498	0060	4629	9204	3784	8371	2963	7562	2166	6776	50
2685	7217	1756	6300	0851	5407	9970	4539	9113	3694	8281	2873	7472	2076	6687	49
2594	7126	1665	6209	0760	5317	9879	4448	9023	3604	8190	2783	7382	1986	6597	48
2503	7035	1574	6118	0669	5226	9789	4358	8933	3513	8100	2693	7292	1896	6507	47
2411	6944	1483	6027	0578	5135	9698	4267	8842	3423	8010	2603	7202	1807	6417	46
2320	6853	1392	5937	0488	5045	9608	4177	8752	3333	7920	2513	7112	1717	6327	45
2229	6762	1301	5846	0397	4954	9517	4086	8661	3243	7830	2423	7022	1627	6238	44
2138	6671	1210	5755	0306	4863	9427	3996	8571	3152	7740	2333	6932	1537	6148	43
2047	6580	1119	5664	0215	4773	9336	3905	8481	3062	7649	2243	6842	1447	6058	42
1955	6489	1028	5573	0125	4682	9245	3815	8390	2972	7559	2153	6752	1357	5968	41
1864	6398	0937	5482	0034	4591	9155	3724	8300	2882	7469	2063	6662	1267	5879	40
1773	6306	0846	5391	9943	4501	9064	3634	8210	2791	7379	1972	6572	1177	5789	39
1682	6215	0755	5301	9852	4410	8974	3543	8119	2701	7289	1882	6482	1088	5699	38
1591	6124	0664	5210	9761	4319	8883	3453	8029	2611	7199	1792	6392	0998	5609	37
1500	6033	0573	5119	9671	4229	8793	3363	7939	2521	7108	1702	6302	0908	5520	36
1409	5942	0482	5028	9580	4138	8702	3272	7848	2430	7018	1612	6212	0818	5430	35
1317	5851	0391	4937	9489	4047	8612	3182	7758	2340	6928	1522	6122	0728	5340	34
1226	5760	0300	4846	9398	3957	8521	3091	7668	2250	6838	1432	6032	0638	5250	33
1135	5669	0209	4755	9308	3866	8430	3001	7577	2160	6748	1342	5942	0549	5161	32
1044	5578	0118	4665	9217	3775	8340	2910	7487	2069	6658	1252	5852	0459	5071	31
0953	5487	0027	4574	9126	3685	8249	2820	7396	1979	6568	1162	5762	0369	4981	30
0862	5396	9936	4483	9036	3594	8159	2729	7306	1889	6477	1072	5673	0279	4891	29
0770	5305	9845	4392	8945	3504	8068	2639	7216	1799	6387	0982	5583	0189	4802	28
0679	5214	9755	4301	8854	3413	7978	2549	7125	1708	6297	0892	5493	0099	4712	27
0588	5123	9664	4210	8763	3322	7887	2458	7035	1618	6207	0802	5403	0009	4622	26
0497	5032	9573	4120	8673	3232	7797	2368	6945	1528	6117	0712	5313	9920	4532	25
0406	4941	9482	4029	8582	3141	7706	2277	6854	1438	6027	0622	5223	9830	4443	24
0315	4850	9391	3938	8491	3050	7616	2187	6764	1347	5937	0532	5133	9740	4353	23
0224	4759	9300	3847	8400	2960	7525	2096	6674	1257	5846	0442	5043	9650	4263	22
0133	4668	9209	3756	8310	2869	7435	2006	6583	1167	5756	0352	4953	9560	4173	21
0041	4577	9118	3665	8219	2778	7344	1916	6493	1077	5666	0262	4863	9470	4084	20
9950	4486	9027	3575	8128	2688	7253	1825	6403	0986	5576	0172	4773	9381	3994	19
9859	4395	8936	3484	8037	2597	7163	1735	6313	0896	5486	0082	4683	9291	3904	18
9768	4304	8845	3393	7947	2507	7072	1644	6222	0806	5396	9992	4593	9201	3815	17
9677	4213	8754	3302	7856	2416	6982	1554	6132	0716	5306	9902	4503	9111	3725	16
9586	4122	8663	3211	7765	2325	6891	1463	6042	0626	5216	9812	4414	9021	3635	15
9495	4031	8572	3121	7675	2235	6801	1373	5951	0535	5126	9722	4324	8932	3545	14
9404	3939	8482	3030	7584	2144	6710	1283	5861	0445	5035	9632	4234	8842	3456	13
9312	3848	8391	2939	7493	2054	6620	1192	5771	0355	4945	9542	4144	8752	3366	12
9221	3757	8300	2848	7402	1963	6529	1102	5680	0265	4855	9452	4054	8662	3276	11
9130	3666	8209	2757	7312	1872	6439	1011	5590	0175	4765	9362	3964	8572	3186	10
9039	3575	8118	2666	7221	1782	6348	0921	5500	0084	4675	9272	3874	8482	3097	9
8948	3484	8027	2576	7130	1691	6258	0831	5409	9994	4585	9182	3784	8393	3007	8
8857	3393	7936	2485	7040	1600	6167	0740	5319	9904	4495	9092	3694	8303	2917	7
8766	3302	7845	2394	6949	1510	6077	0650	5229	9814	4405	9002	3604	8213	2828	6
8675	3211	7754	2303	6858	1419	5986	0559	5138	9724	4315	8912	3514	8123	2738	5
8584	3120	7663	2212	6768	1329	5896	0469	5048	9633	4224	8822	3424	8033	2648	4
8492	3029	7572	2122	6677	1238	5805	0379	4958	9543	4134	8732	3335	7944	2559	3
8401	2938	7482	2031	6586	1147	5715	0288	4868	9453	4044	8642	3245	7854	2469	2
8310	2847	7391	1940	6495	1057	5624	0198	4777	9363	3954	8552	3155	7764	2379	1
8219	2756	7300	1849	6405	0966	5534	0107	4687	9273	3864	8462	3065	7674	2289	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	"

Co-Tangent Deg. 76

Tangent Deg. 76

14 Deg. Sine

"	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
	9.383	9.384	9.384	9.385	9.385	9.386	9.386	9.387	9.387	9.388	9.388	9.389	9.389	9.390	9.390
0	6752	1815	6873	1924	6969	2008	7040	2067	7087	2101	7109	2111	7106	2096	7079
1	6836	1900	6957	2008	7053	2092	7124	2151	7171	2185	7192	2194	7189	2179	7162
2	6921	1984	7041	2092	7137	2176	7208	2234	7254	2268	7276	2277	7273	2262	7245
3	7005	2069	7126	2177	7221	2260	7292	2318	7338	2352	7359	2361	7356	2345	7328
4	7090	2153	7210	2261	7305	2344	7376	2402	7421	2435	7443	2444	7439	2428	7411
5	7174	2237	7294	2345	7389	2428	7460	2485	7505	2519	7526	2527	7522	2511	7494
6	7258	2322	7378	2429	7473	2511	7543	2569	7589	2602	7609	2610	7605	2594	7577
7	7343	2406	7463	2513	7557	2595	7627	2653	7672	2686	7693	2694	7689	2677	7660
8	7427	2490	7547	2597	7641	2679	7711	2737	7756	2769	7776	2777	7772	2761	7743
9	7512	2575	7631	2681	7725	2763	7795	2820	7840	2853	7860	2860	7855	2844	7826
10	7596	2659	7715	2765	7809	2847	7879	2904	7923	2936	7943	2944	7938	2927	7909
11	7681	2743	7799	2850	7893	2931	7962	2988	8007	3020	8026	3027	8021	3010	7992
12	7765	2827	7884	2934	7977	3015	8046	3071	8090	3103	8110	3110	8105	3093	8075
13	7849	2912	7968	3018	8061	3099	8130	3155	8174	3187	8193	3194	8188	3176	8158
14	7934	2996	8052	3102	8145	3183	8214	3239	8257	3270	8277	3277	8271	3259	8241
15	8018	3080	8136	3186	8229	3267	8298	3322	8341	3354	8360	3360	8354	3342	8324
16	8103	3165	8221	3270	8313	3351	8381	3406	8425	3437	8443	3443	8437	3425	8407
17	8187	3249	8305	3354	8397	3434	8465	3490	8508	3521	8527	3527	8521	3508	8490
18	8272	3333	8389	3438	8481	3518	8549	3574	8592	3604	8610	3610	8604	3591	8573
19	8356	3418	8473	3522	8565	3602	8633	3657	8675	3688	8693	3693	8687	3674	8656
20	8440	3502	8557	3607	8649	3686	8717	3741	8759	3771	8777	3777	8770	3758	8739
21	8525	3586	8642	3691	8733	3770	8800	3825	8843	3854	8860	3860	8853	3841	8822
22	8609	3671	8726	3775	8817	3854	8884	3908	8926	3938	8944	3943	8936	3924	8905
23	8694	3755	8810	3859	8901	3938	8968	3992	9010	4021	9027	4026	9020	4007	8988
24	8778	3839	8894	3943	8985	4022	9052	4076	9093	4105	9110	4110	9103	4090	9071
25	8862	3924	8978	4027	9069	4106	9136	4159	9177	4188	9194	4193	9186	4173	9154
26	8947	4008	9063	4111	9153	4189	9219	4243	9261	4272	9277	4276	9269	4256	9237
27	9031	4092	9147	4195	9237	4273	9303	4327	9344	4355	9360	4359	9352	4339	9320
28	9116	4176	9231	4279	9321	4357	9387	4410	9428	4439	9444	4443	9435	4422	9403
29	9200	4261	9315	4363	9405	4441	9471	4494	9511	4522	9527	4526	9519	4505	9486
30	9284	4345	9399	4447	9489	4525	9554	4578	9595	4606	9611	4609	9602	4588	9569
31	9369	4429	9484	4532	9573	4609	9638	4661	9678	4689	9694	4692	9685	4671	9652
32	9453	4514	9568	4616	9657	4693	9722	4745	9762	4773	9777	4776	9768	4754	9735
33	9538	4598	9652	4700	9741	4777	9806	4829	9845	4856	9861	4859	9851	4837	9817
34	9622	4682	9736	4784	9825	4860	9889	4912	9929	4940	9944	4942	9934	4920	9900
35	9706	4766	9820	4868	9909	4944	9973	4996	0013	5023	0027	5025	0018	5003	9983
36	9791	4851	9904	4952	9993	5028	0057	5080	0096	5106	0111	5109	0101	5087	0066
37	9875	4935	9989	5036	0077	5112	0141	5163	0180	5190	0194	5192	0184	5170	0149
38	9960	5019	0073	5120	0161	5196	0225	5247	0263	5273	0277	5275	0267	5253	0232
39	0044	5104	0157	5204	0245	5280	0308	5331	0347	5357	0361	5358	0350	5336	0315
40	0128	5188	0241	5288	0329	5364	0392	5414	0430	5440	0444	5442	0433	5419	0398
41	0213	5272	0325	5372	0413	5447	0476	5498	0514	5524	0527	5525	0516	5502	0481
42	0297	5356	0409	5456	0497	5531	0560	5582	0597	5607	0611	5608	0600	5585	0564
43	0381	5441	0494	5540	0581	5615	0643	5665	0681	5691	0694	5691	0683	5668	0647
44	0466	5525	0578	5624	0665	5699	0727	5749	0765	5774	0777	5775	0766	5751	0730
45	0550	5609	0662	5708	0749	5783	0811	5833	0848	5858	0861	5858	0849	5834	0813
46	0635	5693	0746	5793	0833	5867	0895	5916	0932	5941	0944	5941	0932	5917	0896
47	0719	5778	0830	5877	0917	5951	0978	6000	1015	6024	1027	6024	1015	6000	0979
48	0803	5862	0914	5961	1001	6034	1062	6083	1099	6108	1111	6108	1098	6083	1062
49	0888	5946	0999	6045	1085	6118	1146	6167	1182	6191	1194	6191	1181	6166	1144
50	0972	6030	1083	6129	1169	6202	1230	6251	1266	6275	1277	6274	1265	6249	1227
51	1056	6115	1167	6213	1252	6286	1313	6334	1349	6358	1361	6357	1348	6332	1310
52	1141	6199	1251	6297	1336	6370	1397	6418	1433	6442	1444	6441	1431	6415	1393
53	1225	6283	1335	6381	1420	6454	1481	6502	1516	6525	1527	6524	1514	6498	1476
54	1309	6367	1419	6465	1504	6537	1564	6585	1600	6608	1611	6607	1597	6581	1559
55	1394	6452	1503	6549	1588	6621	1648	6669	1683	6692	1694	6690	1680	6664	1642
56	1478	6536	1588	6633	1672	6705	1732	6753	1767	6775	1777	6773	1763	6747	1725
57	1562	6620	1672	6717	1756	6789	1816	6836	1850	6859	1861	6857	1846	6830	1808
58	1647	6704	1756	6801	1840	6873	1899	6920	1934	6942	1944	6940	1930	6913	1891
59	1731	6789	1840	6885	1924	6957	1983	7003	2018	7025	2027	7023	2013	6996	1974
60	1815	6873	1924	6969	2008	7040	2067	7087	2101	7109	2111	7106	2096	7079	2057
"	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Sine Deg. 75

14 Deg. Co-Sine

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	"
9.986	9.986	9.986	9.986	9.986	9.986	9.986	9.986	9.986	9.986	9.986	9.986	9.986	9.986	9.986	
9041	8726	8410	8094	7778	7461	7144	6827	6509	6191	5872	5553	5233	4913	4593	60
9036	8721	8405	8089	7773	7456	7139	6821	6504	6185	5867	5547	5228	4908	4588	59
9031	8715	8400	8084	7768	7451	7134	6816	6498	6180	5861	5542	5223	4903	4583	58
9025	8710	8395	8079	7762	7446	7128	6811	6493	6175	5856	5537	5217	4897	4577	57
9020	8705	8389	8073	7757	7440	7123	6806	6488	6169	5851	5532	5212	4892	4572	56
9015	8700	8384	8068	7752	7435	7118	6800	6482	6164	5845	5526	5207	4887	4566	55
9010	8694	8379	8063	7746	7430	7113	6795	6477	6159	5840	5521	5201	4881	4561	54
9004	8689	8374	8058	7741	7424	7107	6790	6472	6153	5835	5516	5196	4876	4556	53
8999	8684	8368	8052	7736	7419	7102	6784	6466	6148	5829	5510	5191	4871	4550	52
8994	8679	8363	8047	7731	7414	7097	6779	6461	6143	5824	5505	5185	4865	4545	51
8989	8673	8358	8042	7725	7409	7091	6774	6456	6137	5819	5500	5180	4860	4540	50
8983	8668	8353	8037	7720	7403	7086	6769	6451	6132	5813	5494	5175	4855	4534	49
8978	8663	8347	8031	7715	7398	7081	6763	6445	6127	5808	5489	5169	4849	4529	48
8973	8658	8342	8026	7710	7393	7076	6758	6440	6122	5803	5484	5164	4844	4524	47
8968	8652	8337	8021	7704	7387	7070	6753	6435	6116	5797	5478	5159	4839	4518	46
8962	8647	8331	8015	7699	7382	7065	6747	6429	6111	5792	5473	5153	4833	4513	45
8957	8642	8326	8010	7694	7377	7060	6742	6424	6106	5787	5468	5148	4828	4508	44
8952	8637	8321	8005	7688	7372	7054	6737	6419	6100	5782	5462	5143	4823	4502	43
8947	8631	8316	8000	7683	7366	7049	6731	6413	6095	5776	5457	5137	4817	4497	42
8941	8626	8310	7994	7678	7361	7044	6726	6408	6090	5771	5452	5132	4812	4492	41
8936	8621	8305	7989	7673	7356	7038	6721	6403	6084	5766	5446	5127	4807	4486	40
8931	8616	8300	7984	7667	7350	7033	6716	6397	6079	5760	5441	5121	4801	4481	39
8926	8610	8295	7979	7662	7345	7028	6710	6392	6074	5755	5436	5116	4796	4476	38
8920	8605	8289	7973	7657	7340	7023	6705	6387	6068	5750	5430	5111	4791	4470	37
8915	8600	8284	7968	7651	7335	7017	6700	6382	6063	5744	5425	5105	4785	4465	36
8910	8595	8279	7963	7646	7329	7012	6694	6376	6058	5739	5420	5100	4780	4460	35
8905	8589	8274	7957	7641	7324	7007	6689	6371	6053	5734	5414	5095	4775	4454	34
8899	8584	8268	7952	7636	7319	7001	6684	6366	6047	5728	5409	5089	4769	4449	33
8894	8579	8263	7947	7630	7313	6996	6678	6360	6042	5723	5404	5084	4764	4444	32
8889	8574	8258	7942	7625	7308	6991	6673	6355	6037	5718	5398	5079	4759	4438	31
8884	8568	8253	7936	7620	7303	6986	6668	6350	6031	5712	5393	5073	4753	4433	30
8878	8563	8247	7931	7615	7298	6980	6663	6344	6026	5707	5388	5068	4748	4428	29
8873	8558	8242	7926	7609	7292	6975	6657	6339	6021	5702	5382	5063	4743	4422	28
8868	8552	8237	7921	7604	7287	6970	6652	6334	6015	5696	5377	5057	4737	4417	27
8863	8547	8231	7915	7599	7282	6964	6647	6329	6010	5691	5372	5052	4732	4412	26
8857	8542	8226	7910	7593	7276	6959	6641	6323	6005	5686	5366	5047	4727	4406	25
8852	8537	8221	7905	7588	7271	6954	6636	6318	5999	5680	5361	5041	4721	4401	24
8847	8531	8216	7899	7583	7266	6949	6631	6313	5994	5675	5356	5036	4716	4396	23
8842	8526	8210	7894	7578	7261	6943	6625	6307	5989	5670	5351	5031	4711	4390	22
8836	8521	8205	7889	7572	7255	6938	6620	6302	5983	5665	5345	5025	4705	4385	21
8831	8516	8200	7884	7567	7250	6933	6615	6297	5978	5659	5340	5020	4700	4379	20
8826	8510	8195	7878	7562	7245	6927	6610	6291	5973	5654	5335	5015	4695	4374	19
8821	8505	8189	7873	7556	7239	6922	6604	6286	5968	5649	5329	5009	4689	4369	18
8815	8500	8184	7868	7551	7234	6917	6599	6281	5962	5643	5324	5004	4684	4363	17
8810	8495	8179	7863	7546	7229	6911	6594	6275	5957	5638	5319	4999	4679	4358	16
8805	8489	8174	7857	7541	7224	6906	6588	6270	5952	5633	5313	4993	4673	4353	15
8800	8484	8168	7852	7535	7218	6901	6583	6265	5946	5627	5308	4988	4668	4347	14
8794	8479	8163	7847	7530	7213	6896	6578	6260	5941	5622	5303	4983	4663	4342	13
8789	8474	8158	7841	7525	7208	6890	6572	6254	5936	5617	5297	4977	4657	4337	12
8784	8468	8152	7836	7520	7202	6885	6567	6249	5930	5611	5292	4972	4652	4331	11
8779	8463	8147	7831	7514	7197	6880	6562	6244	5925	5606	5287	4967	4647	4326	10
8773	8458	8142	7826	7509	7192	6874	6557	6238	5920	5601	5281	4961	4641	4321	9
8768	8453	8137	7820	7504	7187	6869	6551	6233	5914	5595	5276	4956	4636	4315	8
8763	8447	8131	7815	7498	7181	6864	6546	6228	5909	5590	5271	4951	4631	4310	7
8758	8442	8126	7810	7493	7176	6859	6541	6222	5904	5585	5265	4945	4625	4305	6
8752	8437	8121	7805	7488	7171	6853	6535	6217	5898	5579	5260	4940	4620	4299	5
8747	8431	8116	7799	7483	7165	6848	6530	6212	5893	5574	5255	4935	4615	4294	4
8742	8426	8110	7794	7477	7160	6843	6525	6206	5888	5569	5249	4929	4609	4289	3
8737	8421	8105	7789	7472	7155	6837	6519	6201	5882	5563	5244	4924	4604	4283	2
8731	8416	8100	7783	7467	7150	6832	6514	6196	5877	5558	5239	4919	4599	4278	1
8726	8410	8094	7778	7461	7144	6827	6509	6191	5872	5553	5233	4913	4593	4273	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47	46′	45′	"

Sine Deg. 75

14 Deg. Tangent — 14 Deg. Co-Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′		0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
″	9. 396	9. 397	9. 397	9. 398	9. 398	9. 399	9. 399	9. 400	9. 401	9. 401	9. 402	9. 402	9. 403	9. 403	9. 404		10. 603	10. 602	10. 602	10. 601	10. 601	10. 600	10. 600	10. 599	10. 598	10. 598	10. 597	10. 597	10. 596	10. 596	10. 595	″
0	7711	3089	8463	3830	9191	4547	9896	5240	0578	5910	1237	6558	1873	7182	2486		2289	6911	1537	6170	0809	5453	0104	4760	9422	4090	8763	3442	8127	2818	7514	60
1	7800	3179	8552	3919	9280	4636	9985	5329	0667	5999	1326	6646	1961	7271	2574		2200	6821	1448	6081	0720	5364	0015	4671	9333	4001	8674	3354	8039	2729	7426	59
2	7890	3269	8642	4008	9370	4725	0074	5418	0756	6088	1414	6735	2050	7359	2663		2110	6731	1358	5992	0630	5275	9926	4582	9244	3912	8586	3265	7950	2641	7337	58
3	7980	3358	8731	4098	9459	4814	0164	5507	0845	6177	1503	6824	2139	7448	2751		2020	6642	1269	5902	0541	5186	9836	4493	9155	3823	8497	3176	7861	2552	7249	57
4	8069	3448	8821	4187	9548	4903	0253	5596	0934	6266	1592	6912	2227	7536	2839		1931	6552	1179	5813	0452	5097	9747	4404	9066	3734	8408	3088	7773	2464	7161	56
5	8159	3537	8910	4277	9638	4993	0342	5685	1023	6355	1681	7001	2316	7624	2928		1841	6463	1090	5723	0362	5007	9658	4315	8977	3645	8319	2999	7684	2376	7072	55
6	8249	3627	8999	4366	9727	5082	0431	5774	1112	6443	1769	7090	2404	7713	3016		1751	6373	1001	5634	0273	4918	9569	4226	8888	3557	8231	2910	7596	2287	6984	54
7	8338	3717	9089	4455	9816	5171	0520	5863	1201	6532	1858	7178	2493	7801	3104		1662	6283	0911	5545	0184	4829	9480	4137	8799	3468	8142	2822	7507	2199	6896	53
8	8428	3806	9177	4545	9905	5260	0609	5952	1289	6621	1947	7267	2581	7890	3193		1572	6194	0823	5455	0095	4740	9391	4048	8711	3379	8053	2733	7419	2110	6807	52
9	8518	3896	9267	4634	9995	5349	0698	6041	1378	6710	2036	7355	2670	7978	3281		1482	6104	0733	5366	0005	4651	9302	3959	8622	3290	7964	2645	7330	2022	6719	51
10	8607	3985	9357	4724	0084	5439	0787	6130	1467	6799	2124	7444	2758	8067	3369		1393	6015	0643	5276	9916	4561	9213	3870	8533	3201	7876	2556	7242	1933	6631	50
11	8697	4075	9447	4813	0173	5528	0876	6219	1556	6887	2213	7533	2847	8155	3458		1303	5925	0553	5187	9827	4472	9124	3781	8444	3113	7787	2467	7153	1845	6542	49
12	8787	4165	9536	4902	0263	5617	0965	6308	1645	6976	2302	7621	2935	8243	3546		1213	5835	0464	5098	9737	4383	9035	3692	8355	3024	7698	2379	7065	1757	6454	48
13	8877	4254	9626	4992	0352	5706	1055	6397	1734	7065	2390	7710	3024	8332	3634		1123	5746	0374	5008	9648	4294	8945	3603	8266	2935	7610	2290	6976	1668	6366	47
14	8966	4344	9715	5081	0441	5795	1144	6486	1823	7154	2479	7799	3112	8420	3723		1034	5656	0285	4919	9559	4205	8856	3514	8177	2846	7521	2201	6888	1580	6277	46
15	9056	4433	9805	5171	0530	5884	1233	6575	1912	7243	2568	7887	3201	8509	3811		0944	5567	0195	4829	9470	4116	8767	3425	8088	2757	7432	2113	6799	1491	6189	45
16	9146	4523	9894	5260	0620	5974	1322	6664	2001	7331	2656	7976	3289	8597	3899		0854	5477	0106	4740	9380	4026	8678	3336	7999	2669	7344	2024	6711	1403	6101	44
17	9235	4612	9984	5349	0709	6063	1411	6753	2090	7420	2745	8064	3378	8686	3988		0765	5388	0016	4651	9291	3937	8589	3247	7910	2580	7255	1936	6622	1314	6012	43
18	9325	4702	0073	5439	0798	6152	1500	6842	2178	7509	2834	8153	3466	8774	4076		0675	5298	9927	4561	9202	3848	8500	3158	7822	2491	7166	1847	6534	1226	5924	42
19	9415	4792	0163	5528	0888	6241	1589	6931	2267	7598	2923	8242	3555	8862	4164		0585	5208	9837	4472	9112	3759	8411	3069	7733	2402	7077	1758	6445	1138	5836	41
20	9504	4881	0252	5617	0977	6330	1678	7020	2356	7687	3011	8330	3643	8951	4253		0496	5119	9748	4383	9023	3670	8322	2980	7644	2313	6989	1670	6357	1049	5747	40
21	9594	4971	0342	5707	1066	6420	1767	7109	2445	7775	3100	8419	3732	9039	4341		0406	5029	9658	4293	8934	3580	8233	2891	7555	2225	6900	1581	6268	0961	5659	39
22	9684	5060	0431	5796	1155	6509	1856	7198	2534	7864	3189	8507	3820	9128	4429		0316	4940	9569	4204	8845	3491	8144	2802	7466	2136	6811	1493	6180	0872	5571	38
23	9773	5150	0521	5886	1245	6598	1945	7287	2623	7953	3277	8596	3909	9216	4518		0227	4850	9479	4114	8755	3402	8055	2713	7377	2047	6723	1404	6091	0784	5482	37
24	9863	5239	0610	5975	1334	6687	2034	7376	2712	8042	3366	8685	3997	9304	4606		0137	4761	9390	4025	8666	3313	7966	2624	7288	1958	6634	1315	6003	0696	5394	36
25	9953	5329	0700	6064	1423	6776	2124	7465	2801	8131	3455	8773	4086	9393	4694		0047	4671	9300	3936	8577	3224	7876	2535	7199	1869	6545	1227	5914	0607	5306	35
26	0042	5419	0789	6154	1512	6865	2213	7554	2890	8219	3543	8862	4174	9481	4782		9958	4581	9211	3846	8488	3135	7787	2440	7110	1781	6457	1138	5826	0519	5218	34
27	0132	5508	0878	6243	1602	6955	2302	7643	2978	8308	3632	8950	4263	9570	4871		9868	4492	9122	3757	8398	3045	7698	2357	7022	1692	6368	1050	5737	0430	5129	33
28	0221	5598	0968	6332	1691	7044	2391	7732	3067	8397	3721	9039	4351	9658	4959		9779	4402	9032	3668	8309	2956	7609	2268	6933	1603	6279	0961	5649	0342	5041	32
29	0311	5687	1057	6422	1780	7133	2480	7821	3156	8486	3809	9128	4440	9746	5047		9689	4313	8943	3578	8220	2867	7520	2179	6844	1514	6191	0872	5560	0254	4953	31
30	0401	5777	1147	6511	1869	7222	2569	7910	3245	8574	3898	9216	4528	9835	5136		9599	4223	8853	3489	8131	2778	7431	2090	6755	1426	6102	0784	5472	0165	4864	30
31	0490	5866	1236	6600	1959	7311	2658	7999	3334	8663	3987	9305	4617	9923	5224		9510	4134	8764	3400	8041	2689	7342	2001	6666	1337	6013	0695	5383	0077	4776	29
32	0580	5956	1326	6690	2048	7400	2747	8088	3423	8752	4076	9393	4705	0012	5312		9420	4044	8674	3310	7952	2600	7253	1912	6577	1248	5924	0607	5295	9988	4688	28
33	0670	6045	1415	6779	2137	7490	2836	8177	3512	8841	4164	9482	4794	0100	5401		9330	3955	8585	3221	7863	2510	7164	1823	6488	1159	5836	0518	5206	9900	4599	27
34	0759	6135	1505	6868	2227	7579	2925	8266	3601	8930	4253	9570	4882	0188	5489		9241	3865	8495	3132	7773	2421	7075	1734	6399	1070	5747	0430	5118	9812	4511	26
35	0849	6224	1594	6958	2316	7668	3014	8355	3689	9018	4342	9659	4971	0277	5577		9151	3776	8406	3042	7684	2332	6986	1645	6311	0982	5658	0341	5029	9723	4423	25
36	0939	6314	1684	7047	2405	7757	3103	8444	3778	9107	4430	9748	5059	0365	5665		9061	3686	8316	2953	7595	2243	6897	1556	6222	0893	5570	0252	4941	9635	4335	24
37	1028	6404	1773	7137	2494	7846	3192	8533	3867	9196	4519	9836	5148	0454	5754		8972	3596	8227	2863	7506	2154	6808	1467	6133	0804	5481	0164	4852	9546	4246	23
38	1118	6493	1862	7226	2583	7935	3281	8622	3956	9285	4608	9925	5236	0542	5842		8882	3507	8138	2774	7417	2065	6719	1378	6044	0715	5392	0075	4764	9458	4158	22
39	1208	6583	1952	7315	2673	8024	3370	8710	4045	9373	4696	0013	5325	0630	5930		8792	3417	8048	2685	7327	1976	6630	1290	5955	0627	5304	9987	4675	9370	4070	21
40	1297	6672	2041	7405	2762	8114	3459	8799	4134	9462	4785	0102	5413	0719	6019		8703	3328	7959	2595	7238	1886	6541	1201	5866	0538	5215	9898	4587	9281	3981	20
41	1387	6762	2131	7494	2851	8203	3548	8888	4223	9551	4874	0190	5502	0807	6107		8613	3238	7869	2506	7149	1797	6452	1112	5777	0449	5126	9810	4498	9193	3893	19
42	1476	6851	2220	7583	2940	8292	3638	8977	4311	9640	4962	0279	5590	0895	6195		8524	3149	7780	2417	7060	1708	6362	1023	5689	0360	5038	9721	4410	9105	3805	18
43	1566	6941	2310	7673	3030	8381	3727	9066	4400	9728	5051	0368	5679	0984	6283		8434	3059	7690	2327	6970	1619	6273	0934	5600	0272	4949	9632	4321	9016	3717	17
44	1656	7030	2399	7762	3119	8470	3816	9155	4489	9817	5140	0456	5767	1072	6372		8344	2970	7601	2238	6881	1530	6184	0845	5511	0183	4860	9544	4233	8928	3628	16
45	1745	7120	2488	7851	3208	8559	3905	9244	4578	9906	5228	0545	5855	1161	6460		8255	2880	7512	2149	6792	1441	6095	0756	5422	0094	4772	9455	4145	8839	3540	15
46	1835	7209	2578	7941	3297	8648	3994	9333	4667	9995	5317	0633	5944	1249	6548		8165	2791	7422	2059	6703	1352	6006	0667	5333	0005	4683	9367	4056	8751	3452	14
47	1925	7299	2667	8030	3387	8738	4083	9422	4756	0083	5405	0722	6032	1337	6637		8075	2701	7333	1970	6613	1262	5917	0578	5244	9917	4595	9278	3968	8663	3363	13
48	2014	7388	2757	8119	3476	8827	4172	9511	4844	0172	5494	0810	6121	1426	6725		7986	2612	7243	1881	6524	1173	5828	0489	5156	9828	4506	9190	3879	8574	3275	12
49	2104	7478	2846	8209	3565	8916	4261	9600	4933	0261	5583	0899	6209	1514	6813		7896	2522	7154	1791	6435	1084	5739	0400	5067	9739	4417	9101	3791	8486	3187	11
50	2193	7567	2936	8298	3654	9005	4350	9689	5022	0350	5671	0987	6298	1602	6901		7807	2433	7064	1702	6346	0995	5650	0311	4978	9650	4329	9013	3702	8398	3099	10
51	2283	7657	3025	8387	3744	9094	4439	9778	5111	0438	5760	1076	6386	1691	6990		7717	2343	6975	1613	6256	0906	5561	0222	4889	9562	4240	8924	3614	8309	3010	9
52	2373	7746	3114	8477	3833	9183	4528	9867	5200	0527	5849	1165	6475	1779	7078		7627	2254	6886	1523	6167	0817	5472	0133	4800	9473	4151	8835	3525	8221	2922	8
53	2462	7836	3204	8566	3922	9272	4617	9956	5289	0616	5937	1253	6563	1867	7166		7538	2164	6796	1434	6078	0728	5383	0044	4711	9384	4063	8747	3437	8133	2834	7
54	2552	7925	3293	8655	4011	9361	4706	0045	5377	0705	6026	1342	6652	1956	7254		7448	2075	6707	1345	5989	0639	5294	9955	4623	9295	3974	8658	3348	8044	2746	6
55	2641	8015	3383	8744	4100	9451	4795	0134	5466	0793	6115	1430	6740	2044	7343		7359	1985	6617	1256	5900	0549	5205	9866	4534	9207	3885	8570	3260	7956	2657	5
56	2731	8104	3472	8834	4190	9540	4884	0222	5555	0882	6203	1519	6829	2133	7431		7269	1896	6528	1166	5810	0460	5116	9778	4445	9118	3797	8481	3171	7867	2569	4
57	2821	8194	3561	8923	4279	9629	4973	0311	5644	0971	6292	1607	6917	2221	7519		7179	1806	6439	1077	5721	0371	5027	9689	4356	9029	3708	8393	3083	7779	2481	3
58	2910	8284	3651	9012	4368	9718	5062	0400	5733	1060	6381	1696	7005	2309	7607		7090	1716	6349	0988	5632	0282	4938	9600	4267	8940	3619	8304	2995	7691	2393	2
59	3000	8373	3740	9102	4457	9807	5151	0489	5822	1148	6469	1784	7094	2398	7696		7000	1627	6260	0898	5543	0193	4849	9511	4178	8852	3531	8216	2906	7602	2304	1
60	3089	8463	3830	9191	4547	9896	5240	0578	5910	1237	6558	1873	7182	2486	7784		6911	1537	6170	0809	5453	0104	4760	9422	4090	8763	3442	8127	2818	7514	2216	0
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′		59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Co-Tangent Deg. 75 — Tangent Deg. 75

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 391	9. 391	9. 392	9. 392	9. 393	9. 393	9. 394	9. 394	9. 395	9. 395	9. 396	9. 396	9. 397	9. 397	9. 398
0	2057	7028	1993	6952	1905	6852	1794	6729	1658	6581	1499	6410	1315	6215	1109
1	2139	7111	2076	7035	1988	6935	1876	6811	1740	6663	1580	6492	1397	6297	1190
2	2222	7193	2158	7117	2070	7017	1958	6893	1822	6745	1662	6574	1479	6378	1272
3	2305	7276	2241	7200	2153	7100	2041	6975	1904	6827	1744	6655	1561	6460	1353
4	2388	7359	2324	7283	2235	7182	2123	7058	1986	6909	1826	6737	1642	6541	1435
5	2471	7442	2406	7365	2318	7264	2205	7140	2069	6991	1908	6819	1724	6623	1516
6	2554	7525	2489	7448	2400	7347	2287	7222	2151	7073	1990	6901	1806	6705	1598
7	2637	7607	2572	7530	2483	7429	2370	7304	2233	7155	2072	6983	1887	6786	1679
8	2720	7690	2655	7613	2565	7512	2452	7386	2315	7237	2154	7064	1969	6868	1761
9	2803	7773	2737	7696	2648	7594	2534	7469	2397	7319	2236	7146	2051	6949	1842
10	2885	7856	2820	7778	2730	7676	2617	7551	2479	7401	2318	7228	2132	7031	1924
11	2968	7939	2903	7861	2813	7759	2699	7633	2561	7483	2399	7310	2214	7113	2005
12	3051	8021	2985	7943	2895	7841	2781	7715	2643	7565	2481	7391	2296	7194	2087
13	3134	8104	3068	8026	2978	7924	2863	7797	2725	7647	2563	7473	2377	7276	2168
14	3217	8187	3151	8108	3060	8006	2946	7879	2807	7729	2645	7555	2459	7357	2250
15	3300	8270	3233	8191	3143	8088	3028	7962	2889	7811	2727	7637	2541	7439	2331
16	3383	8352	3316	8274	3225	8171	3110	8044	2971	7893	2809	7719	2623	7521	2413
17	3466	8435	3399	8356	3308	8253	3193	8126	3054	7975	2891	7800	2704	7602	2494
18	3549	8518	3481	8439	3390	8335	3275	8208	3136	8057	2973	7882	2786	7684	2576
19	3631	8601	3564	8521	3473	8418	3357	8290	3218	8139	3054	7964	2868	7765	2657
20	3714	8684	3647	8604	3555	8500	3439	8373	3300	8221	3136	8046	2949	7847	2739
21	3797	8766	3729	8686	3638	8583	3522	8455	3382	8303	3218	8128	3031	7928	2820
22	3880	8849	3812	8769	3720	8665	3604	8537	3464	8385	3300	8209	3113	8010	2901
23	3963	8932	3895	8852	3802	8747	3686	8619	3546	8467	3382	8291	3194	8092	2983
24	4046	9015	3977	8934	3885	8830	3768	8701	3628	8549	3464	8373	3276	8173	3064
25	4129	9097	4060	9017	3967	8912	3851	8783	3710	8631	3546	8455	3358	8255	3146
26	4211	9180	4143	9099	4050	8994	3933	8866	3792	8713	3628	8536	3439	8336	3227
27	4294	9263	4225	9182	4132	9077	4015	8948	3874	8795	3709	8618	3521	8418	3309
28	4377	9346	4308	9264	4215	9159	4097	9030	3956	8877	3791	8700	3603	8499	3390
29	4460	9428	4391	9347	4297	9241	4180	9112	4038	8959	3873	8782	3684	8581	3472
30	4543	9511	4473	9430	4380	9324	4262	9194	4120	9041	3955	8863	3766	8663	3553
31	4626	9594	4556	9512	4462	9406	4344	9276	4202	9123	4037	8945	3848	8744	3635
32	4709	9677	4639	9595	4545	9489	4426	9358	4284	9205	4119	9027	3929	8826	3716
33	4791	9759	4721	9677	4627	9571	4509	9441	4367	9287	4201	9109	4011	8907	3798
34	4874	9842	4804	9760	4709	9653	4591	9523	4449	9368	4282	9190	4093	8989	3879
35	4957	9925	4887	9842	4792	9736	4673	9605	4531	9450	4364	9272	4174	9070	3961
36	5040	0008	4969	9925	4874	9818	4755	9687	4613	9532	4446	9354	4256	9152	4042
37	5123	0090	5052	0007	4957	9900	4838	9769	4695	9614	4528	9436	4337	9233	4123
38	5206	0173	5135	0090	5039	9983	4920	9851	4777	9696	4610	9517	4419	9315	4205
39	5289	0256	5217	0172	5122	0065	5002	9933	4859	9778	4692	9599	4501	9397	4286
40	5371	0339	5300	0255	5204	0147	5084	0016	4941	9860	4773	9681	4582	9478	4368
41	5454	0421	5382	0337	5287	0230	5167	0098	5023	9942	4855	9763	4664	9560	4449
42	5537	0504	5465	0420	5369	0312	5249	0180	5105	0024	4937	9844	4746	9641	4531
43	5620	0587	5548	0503	5451	0394	5331	0262	5187	0106	5019	9926	4827	9723	4612
44	5703	0670	5630	0585	5534	0477	5413	0344	5269	0188	5101	0008	4909	9804	4694
45	5786	0752	5713	0668	5616	0559	5496	0426	5351	0270	5183	0090	4991	9886	4775
46	5868	0835	5796	0750	5699	0641	5578	0508	5433	0352	5264	0171	5072	9967	4856
47	5951	0918	5678	0833	5781	0724	5660	0591	5515	0434	5346	0253	5154	0049	4938
48	6034	1000	5961	0915	5864	0806	5742	0673	5597	0516	5428	0335	5236	0130	5019
49	6117	1083	6043	0998	5946	0888	5824	0755	5679	0597	5510	0417	5317	0212	5101
50	6200	1166	6126	1080	6028	0971	5907	0837	5761	0679	5592	0498	5399	0293	5182
51	6282	1249	6209	1163	6111	1053	5989	0919	5843	0761	5674	0580	5480	0375	5264
52	6365	1331	6291	1245	6193	1135	6071	1001	5925	0843	5755	0662	5562	0456	5345
53	6448	1414	6374	1328	6276	1217	6153	1083	6007	0925	5837	0743	5644	0538	5426
54	6531	1497	6457	1410	6358	1300	6236	1165	6089	1007	5919	0825	5725	0620	5508
55	6614	1579	6539	1493	6440	1382	6318	1247	6171	1089	6001	0907	5807	0701	5589
56	6697	1662	6622	1575	6523	1464	6400	1330	6253	1171	6083	0989	5889	0783	5671
57	6779	1745	6704	1658	6605	1547	6482	1412	6335	1253	6165	1070	5970	0864	5752
58	6862	1828	6787	1740	6688	1629	6564	1494	6417	1335	6246	1152	6052	0946	5834
59	6945	1910	6870	1823	6770	1711	6647	1576	6499	1417	6328	1234	6133	1027	5915
60	7028	1993	6952	1905	6852	1794	6729	1658	6581	1499	6410	1315	6215	1109	5996
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 986	9. 986	9. 986	9. 986	9. 986	9. 986	9. 986	9. 986	9. 986	9. 986	9. 986	9. 986	9. 986	9. 986	9. 985
0	4273	3952	3630	3308	2986	2663	2340	2017	1693	1369	1045	0720	0394	0069	9742
1	4267	3946	3625	3303	2981	2658	2335	2012	1688	1364	1039	0714	0389	0063	9737
2	4262	3941	3619	3398	2975	2653	2330	2006	1683	1358	1034	0709	0383	0058	9732
3	4257	3935	3614	3292	2970	2647	2324	2001	1677	1353	1028	0703	0378	0052	9726
4	4251	3930	3609	3287	2965	2642	2319	1996	1672	1348	1023	0698	0373	0047	9721
5	4246	3925	3603	3281	2959	2637	2314	1990	1666	1342	1018	0693	0367	0041	9715
6	4240	3919	3598	3276	2954	2631	2308	1985	1661	1337	1012	0687	0362	0036	9710
7	4235	3914	3593	3271	2948	2626	2303	1979	1656	1331	1007	0682	0356	0031	9704
8	4230	3909	3587	3265	2943	2620	2297	1974	1650	1326	1001	0676	0351	0025	9699
9	4224	3903	3582	3260	2938	2615	2292	1969	1645	1320	0996	0671	0345	0020	9693
10	4219	3898	3576	3255	2932	2610	2287	1963	1639	1315	0990	0665	0340	0014	9688
11	4214	3893	3571	3249	2927	2604	2281	1958	1634	1310	0985	0660	0335	0009	9683
12	4208	3887	3566	3244	2922	2599	2276	1952	1629	1304	0980	0655	0329	0003	9677
13	4203	3882	3560	3238	2916	2594	2270	1947	1623	1299	0974	0649	0324	9998	9672
14	4198	3877	3555	3233	2911	2588	2265	1942	1618	1293	0969	0644	0318	9992	9666
15	4192	3871	3550	3228	2905	2583	2260	1936	1612	1288	0963	0638	0313	9987	9661
16	4187	3866	3544	3222	2900	2577	2254	1931	1607	1283	0958	0633	0307	9982	9655
17	4182	3860	3539	3217	2895	2572	2249	1925	1602	1277	0953	0627	0302	9976	9650
18	4176	3855	3534	3212	2889	2567	2243	1920	1596	1272	0947	0622	0297	9971	9645
19	4171	3850	3528	3206	2884	2561	2238	1915	1591	1266	0942	0617	0291	9965	9639
20	4166	3844	3523	3201	2879	2556	2233	1909	1585	1261	0936	0611	0286	9960	9634
21	4160	3839	3518	3196	2873	2550	2227	1904	1580	1256	0931	0606	0280	9954	9628
22	4155	3834	3512	3190	2868	2545	2222	1898	1574	1250	0925	0600	0275	9949	9623
23	4150	3828	3507	3185	2862	2540	2217	1893	1569	1245	0920	0595	0269	9944	9617
24	4144	3823	3501	3179	2857	2534	2211	1888	1564	1239	0915	0590	0264	9938	9612
25	4139	3818	3496	3174	2852	2529	2206	1882	1558	1234	0909	0584	0259	9933	9606
26	4133	3812	3491	3169	2846	2524	2200	1877	1553	1229	0904	0579	0253	9927	9601
27	4128	3807	3485	3163	2841	2518	2195	1871	1547	1223	0898	0573	0248	9922	9596
28	4123	3802	3480	3158	2836	2513	2190	1866	1542	1218	0893	0568	0242	9916	9590
29	4117	3796	3475	3153	2830	2507	2184	1861	1537	1212	0888	0562	0237	9911	9585
30	4112	3791	3469	3147	2825	2502	2179	1855	1531	1207	0882	0557	0231	9906	9579
31	4107	3785	3464	3142	2819	2497	2173	1850	1526	1202	0877	0552	0226	9900	9574
32	4101	3780	3459	3136	2814	2491	2168	1844	1520	1196	0871	0546	0221	9895	9568
33	4096	3775	3453	3131	2809	2486	2163	1839	1515	1191	0866	0541	0215	9889	9563
34	4091	3769	3448	3126	2803	2480	2157	1834	1510	1185	0860	0535	0210	9884	9557
35	4085	3764	3442	3120	2798	2475	2152	1828	1504	1180	0855	0530	0204	9878	9552
36	4080	3759	3437	3115	2793	2470	2146	1823	1499	1174	0850	0524	0199	9873	9547
37	4075	3753	3432	3110	2787	2464	2141	1817	1493	1169	0844	0519	0193	9867	9541
38	4069	3748	3426	3104	2782	2459	2136	1812	1488	1164	0839	0514	0188	9862	9536
39	4064	3743	3421	3099	2776	2454	2130	1807	1483	1158	0833	0508	0183	9857	9530
40	4059	3737	3416	3094	2771	2448	2125	1801	1477	1153	0828	0503	0177	9851	9525
41	4053	3732	3410	3088	2766	2443	2120	1796	1472	1147	0823	0497	0172	9846	9519
42	4048	3727	3405	3083	2760	2437	2114	1790	1466	1142	0817	0492	0166	9840	9514
43	4043	3721	3399	3077	2755	2432	2109	1785	1461	1137	0812	0487	0161	9835	9508
44	4037	3716	3394	3072	2750	2427	2103	1780	1456	1131	0806	0481	0155	9829	9503
45	4032	3710	3389	3067	2744	2421	2098	1774	1450	1126	0801	0476	0150	9824	9498
46	4026	3705	3383	3061	2739	2416	2093	1769	1445	1120	0795	0470	0145	9819	9492
47	4021	3700	3378	3056	2733	2410	2087	1763	1439	1115	0790	0465	0139	9813	9487
48	4016	3694	3373	3051	2728	2405	2082	1758	1434	1110	0785	0459	0134	9808	9481
49	4010	3689	3367	3045	2723	2400	2076	1753	1429	1104	0779	0454	0128	9802	9476
50	4005	3684	3362	3040	2717	2394	2071	1747	1423	1099	0774	0449	0123	9797	9470
51	4000	3678	3357	3034	2712	2389	2066	1742	1418	1093	0768	0443	0117	9791	9465
52	3994	3673	3351	3029	2707	2384	2060	1737	1412	1088	0763	0438	0112	9786	9459
53	3989	3668	3346	3024	2701	2378	2055	1731	1407	1082	0758	0432	0107	9780	9454
54	3984	3662	3340	3018	2696	2373	2049	1726	1402	1077	0752	0427	0101	9775	9449
55	3978	3657	3335	3013	2690	2367	2044	1720	1396	1072	0747	0421	0096	9770	9443
56	3973	3652	3330	3008	2685	2362	2039	1715	1391	1066	0741	0416	0090	9764	9438
57	3968	3646	3324	3002	2680	2357	2033	1710	1385	1061	0736	0411	0085	9759	9432
58	3962	3641	3319	2997	2674	2351	2028	1704	1380	1055	0730	0405	0079	9753	9427
59	3957	3635	3314	2991	2669	2346	2022	1699	1375	1050	0725	0400	0074	9748	9421
60	3952	3630	3308	2986	2663	2340	2017	1693	1369	1045	0720	0394	0069	9742	9416
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

14 Deg. Tangent

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 404	9. 405	9. 405	9. 406	9. 406	9. 407	9. 407	9. 408	9. 408	9. 409	9. 410	9. 410	9. 411	9. 411	9. 412
0	7784	3076	8363	3644	8919	4189	9453	4712	9965	5212	0454	5690	0921	6146	1366
1	7872	3164	8451	3732	9007	4277	9541	4799	0052	5300	0541	5778	1008	6233	1453
2	7960	3253	8539	3820	9095	4365	9629	4887	0140	5387	0629	5865	1095	6320	1540
3	8049	3341	8627	3908	9183	4452	9716	4974	0227	5474	0716	5952	1182	6408	1627
4	8137	3429	8715	3996	9271	4540	9804	5062	0315	5562	0803	6039	1270	6495	1714
5	8225	3517	8803	4084	9359	4628	9892	5150	0402	5649	0891	6126	1357	6582	1801
6	8313	3605	8891	4172	9446	4716	9979	5237	0490	5737	0978	6214	1444	6669	1888
7	8402	3693	8979	4260	9534	4803	0067	5325	0577	5824	1065	6301	1531	6756	1975
8	8490	3781	9067	4348	9622	4891	0155	5412	0665	5911	1152	6388	1618	6843	2062
9	8578	3870	9155	4436	9710	4979	0242	5500	0752	5999	1240	6475	1705	6930	2149
10	8666	3958	9243	4524	9798	5067	0330	5588	0840	6086	1327	6562	1792	7017	2236
11	8755	4046	9332	4611	9886	5155	0418	5675	0927	6174	1414	6650	1879	7104	2323
12	8843	4134	9420	4699	9974	5242	0505	5763	1015	6261	1502	6737	1967	7191	2409
13	8931	4222	9508	4787	0062	5330	0593	5850	1102	6348	1589	6824	2054	7278	2496
14	9019	4310	9596	4875	0149	5418	0681	5938	1190	6436	1676	6911	2141	7365	2583
15	9108	4398	9684	4963	0237	5506	0768	6025	1277	6523	1764	6999	2228	7452	2670
16	9196	4487	9772	5051	0325	5593	0856	6113	1365	6610	1851	7086	2315	7539	2757
17	9284	4575	9860	5139	0413	5681	0944	6201	1452	6698	1938	7173	2402	7626	2844
18	9372	4663	9948	5227	0501	5769	1031	6288	1540	6785	2025	7260	2489	7713	2931
19	9460	4751	0036	5315	0589	5857	1119	6376	1627	6873	2113	7347	2576	7800	3018
20	9549	4839	0124	5403	0676	5944	1207	6463	1714	6960	2200	7435	2663	7887	3105
21	9637	4927	0212	5491	0764	6032	1294	6551	1802	7047	2287	7522	2751	7974	3192
22	9725	5015	0300	5579	0852	6120	1382	6638	1889	7135	2375	7609	2838	8061	3279
23	9813	5103	0388	5667	0940	6208	1470	6726	1977	7222	2462	7696	2925	8148	3366
24	9902	5192	0476	5755	1028	6295	1557	6814	2064	7310	2549	7783	3012	8235	3453
25	9990	5280	0564	5843	1116	6383	1645	6901	2152	7397	2636	7870	3099	8322	3539
26	0078	5368	0652	5931	1204	6471	1733	6989	2239	7484	2724	7958	3186	8409	3626
27	0166	5456	0740	6019	1291	6559	1820	7076	2327	7572	2811	8045	3273	8496	3713
28	0254	5544	0828	6106	1379	6646	1908	7164	2414	7659	2898	8132	3360	8583	3800
29	0343	5632	0916	6194	1467	6734	1995	7251	2502	7746	2986	8219	3447	8670	3887
30	0431	5720	1004	6282	1555	6822	2083	7339	2589	7834	3073	8306	3534	8757	3974
31	0519	5808	1092	6370	1643	6910	2171	7426	2677	7921	3160	8394	3622	8844	4061
32	0607	5897	1180	6458	1730	6997	2258	7514	2764	8008	3247	8481	3709	8931	4148
33	0695	5985	1268	6546	1818	7085	2346	7602	2851	8096	3335	8568	3796	9018	4235
34	0784	6073	1356	6634	1906	7173	2434	7689	2939	8183	3422	8655	3883	9105	4322
35	0872	6161	1444	6722	1994	7260	2521	7777	3026	8271	3509	8742	3970	9192	4409
36	0960	6249	1532	6810	2082	7348	2609	7864	3114	8358	3596	8829	4057	9279	4495
37	1048	6337	1620	6898	2170	7436	2697	7952	3201	8445	3684	8917	4144	9366	4582
38	1136	6425	1708	6986	2257	7524	2784	8039	3289	8533	3771	9004	4231	9453	4669
39	1225	6513	1796	7074	2345	7611	2872	8127	3376	8620	3858	9091	4318	9540	4756
40	1313	6601	1884	7161	2433	7699	2959	8214	3464	8707	3945	9178	4405	9627	4843
41	1401	6689	1972	7249	2521	7787	3047	8302	3551	8795	4033	9265	4492	9714	4930
42	1489	6777	2060	7337	2609	7875	3135	8389	3638	8882	4120	9352	4579	9801	5017
43	1577	6866	2148	7425	2696	7962	3222	8477	3726	8969	4207	9440	4666	9888	5104
44	1666	6954	2236	7513	2784	8050	3310	8564	3813	9057	4294	9527	4754	9975	5191
45	1754	7042	2324	7601	2872	8138	3398	8652	3901	9144	4382	9614	4841	0062	5277
46	1842	7130	2412	7689	2960	8225	3485	8739	3988	9231	4469	9701	4928	0149	5364
47	1930	7218	2500	7777	3048	8313	3573	8827	4076	9319	4556	9788	5015	0236	5451
48	2018	7306	2588	7865	3136	8401	3660	8915	4163	9406	4643	9875	5102	0323	5538
49	2106	7394	2676	7953	3223	8488	3748	9002	4250	9493	4731	9963	5189	0410	5625
50	2195	7482	2764	8040	3311	8576	3836	9090	4338	9581	4818	0050	5276	0497	5712
51	2283	7570	2852	8128	3399	8664	3923	9177	4425	9668	4905	0137	5363	0584	5799
52	2371	7658	2940	8216	3487	8752	4011	9265	4513	9755	4992	0224	5450	0671	5886
53	2459	7746	3028	8304	3575	8839	4099	9352	4600	9843	5080	0311	5537	0758	5972
54	2547	7834	3116	8392	3662	8927	4186	9440	4688	9930	5167	0398	5624	0844	6059
55	2635	7923	3204	8480	3750	9015	4274	9527	4775	0017	5254	0485	5711	0931	6146
56	2724	8011	3292	8568	3838	9102	4361	9615	4862	0105	5341	0573	5798	1018	6233
57	2812	8099	3380	8656	3926	9190	4449	9702	4950	0192	5429	0660	5885	1105	6320
58	2900	8187	3468	8744	4013	9278	4537	9790	5037	0279	5516	0747	5972	1192	6407
59	2988	8275	3556	8831	4101	9365	4624	9877	5125	0367	5603	0834	6059	1279	6494
60	3076	8363	3644	8919	4189	9453	4712	9965	5212	0454	5690	0921	6146	1366	6581
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30

Co-Tangent Deg. 75

14 Deg. Co-Tangent

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
10. 595	10. 594	10. 594	10. 593	10. 593	10. 592	10. 592	10. 591	10. 591	10. 590	10. 589	10. 589	10. 588	10. 588	10. 587	″
2216	6924	1637	6356	1081	5811	0547	5288	0035	4788	9546	4310	9079	3854	8634	60
2128	6836	1549	6268	0993	5723	0459	5201	9948	4700	9459	4222	8992	3767	8547	59
2040	6747	1461	6180	0905	5635	0371	5113	9860	4613	9371	4135	8905	3680	8460	58
1951	6659	1373	6092	0817	5548	0284	5026	9773	4526	9284	4048	8818	3592	8373	57
1863	6571	1285	6004	0729	5460	0196	4938	9685	4438	9197	3961	8730	3505	8286	56
1775	6483	1197	5916	0641	5372	0108	4850	9598	4351	9109	3874	8643	3418	8199	55
1687	6395	1109	5828	0554	5284	0021	4763	9510	4263	9022	3786	8556	3331	8112	54
1598	6307	1021	5740	0466	5197	9933	4675	9423	4176	8935	3699	8469	3244	8025	53
1510	6219	0933	5652	0378	5109	9845	4588	9335	4089	8848	3612	8382	3157	7938	52
1422	6130	0845	5564	0290	5021	9758	4500	9248	4001	8760	3525	8295	3070	7851	51
1334	6042	0757	5476	0202	4933	9670	4412	9160	3914	8673	3438	8208	2983	7764	50
1245	5954	0668	5389	0114	4845	9582	4325	9073	3826	8586	3350	8121	2896	7677	49
1157	5866	0580	5301	0026	4758	9495	4237	8985	3739	8498	3263	8033	2809	7591	48
1069	5778	0492	5213	9938	4670	9407	4150	8898	3652	8411	3176	7946	2722	7504	47
0981	5690	0404	5125	9851	4582	9319	4062	8810	3564	8324	3089	7859	2635	7417	46
0892	5602	0316	5037	9763	4494	9232	3975	8723	3477	8236	3001	7772	2548	7330	45
0804	5513	0228	4949	9675	4407	9144	3887	8635	3390	8149	2914	7685	2461	7243	44
0716	5425	0140	4861	9587	4319	9056	3799	8548	3302	8062	2827	7598	2374	7156	43
0628	5337	0052	4773	9499	4231	8969	3712	8460	3215	7975	2740	7511	2287	7069	42
0540	5249	9964	4685	9411	4143	8881	3624	8373	3127	7887	2653	7424	2200	6982	41
0451	5161	9876	4597	9324	4056	8793	3537	8286	3040	7800	2565	7337	2113	6895	40
0363	5073	9788	4509	9236	3968	8706	3449	8198	2953	7713	2478	7249	2026	6808	39
0275	4985	9700	4421	9148	3880	8618	3362	8111	2865	7625	2391	7162	1939	6721	38
0187	4897	9612	4333	9060	3792	8530	3274	8023	2778	7538	2304	7075	1852	6634	37
0098	4808	9524	4245	8972	3705	8443	3186	7936	2690	7451	2217	6988	1765	6547	36
0010	4720	9436	4157	8884	3617	8355	3099	7848	2603	7364	2130	6901	1678	6461	35
9922	4632	9348	4069	8796	3529	8267	3011	7761	2516	7276	2042	6814	1591	6374	34
9834	4544	9260	3981	8709	3441	8180	2924	7673	2428	7189	1955	6727	1504	6287	33
9746	4456	9172	3894	8621	3354	8092	2836	7586	2341	7102	1868	6640	1417	6200	32
9657	4368	9084	3806	8533	3266	8005	2749	7498	2254	7014	1781	6553	1330	6113	31
9569	4280	8996	3718	8445	3178	7917	2661	7411	2166	6927	1694	6466	1243	6026	30
9481	4192	8908	3630	8357	3090	7829	2574	7323	2079	6840	1606	6378	1156	5939	29
9393	4103	8820	3542	8270	3003	7742	2486	7236	1992	6753	1519	6291	1069	5852	28
9305	4015	8732	3454	8182	2915	7654	2398	7149	1904	6665	1432	6204	0982	5765	27
9216	3927	8644	3366	8094	2827	7566	2311	7061	1817	6578	1345	6117	0895	5678	26
9128	3839	8556	3278	8006	2740	7479	2223	6974	1729	6491	1258	6030	0808	5591	25
9040	3751	8468	3190	7918	2652	7391	2136	6886	1642	6404	1171	5943	0721	5505	24
8952	3663	8380	3102	7830	2564	7303	2048	6799	1555	6316	1083	5856	0634	5418	23
8864	3575	8292	3014	7743	2476	7216	1961	6711	1467	6229	0996	5769	0547	5331	22
8775	3487	8204	2926	7655	2389	7128	1873	6624	1380	6142	0909	5682	0460	5244	21
8687	3399	8116	2839	7567	2301	7041	1786	6536	1293	6055	0822	5595	0373	5157	20
8599	3311	8028	2751	7479	2213	6953	1698	6449	1205	5967	0735	5508	0286	5070	19
8511	3223	7940	2663	7391	2125	6865	1611	6362	1118	5880	0648	5421	0199	4983	18
8423	3134	7852	2575	7304	2038	6778	1523	6274	1031	5793	0560	5334	0112	4896	17
8334	3046	7764	2487	7216	1950	6690	1436	6187	0943	5706	0473	5246	0025	4809	16
8246	2958	7676	2399	7128	1862	6602	1348	6099	0856	5618	0386	5159	9938	4723	15
8158	2870	7588	2311	7040	1775	6515	1261	6012	0769	5531	0299	5072	9851	4636	14
8070	2782	7500	2223	6952	1687	6427	1173	5924	0681	5444	0212	4985	9764	4549	13
7982	2694	7412	2135	6864	1599	6340	1085	5837	0594	5357	0125	4898	9677	4462	12
7894	2606	7324	2047	6777	1512	6252	0998	5750	0507	5269	0037	4811	9590	4375	11
7805	2518	7236	1960	6689	1424	6164	0910	5662	0419	5182	9950	4724	9503	4288	10
7717	2430	7148	1872	6601	1336	6077	0823	5575	0332	5095	9863	4637	9416	4201	9
7629	2342	7060	1784	6513	1248	5989	0735	5487	0245	5008	9776	4550	9329	4114	8
7541	2254	6972	1696	6425	1161	5901	0648	5400	0157	4920	9689	4463	9242	4028	7
7453	2166	6884	1608	6338	1073	5814	0560	5312	0070	4833	9602	4376	9156	3941	6
7365	2077	6796	1520	6250	0985	5726	0473	5225	9983	4746	9515	4289	9069	3854	5
7276	1989	6708	1432	6162	0898	5639	0385	5138	9895	4659	9427	4202	8982	3767	4
7188	1901	6620	1344	6074	0810	5551	0298	5050	9808	4571	9340	4115	8895	3680	3
7100	1813	6532	1256	5987	0722	5463	0210	4963	9721	4484	9253	4028	8808	3593	2
7012	1725	6444	1169	5899	0635	5376	0123	4875	9633	4397	9166	3941	8721	3506	1
6924	1637	6356	1081	5811	0547	5288	0035	4788	9546	4310	9079	3854	8634	3419	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Tangent Deg. 75

14 Deg. Sine

″	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9.398	9.399	9.399	9.400	9.400	9.401	9.401	9.402	9.402	9.402	9.403	9.403	9.404	9.404	9.405
0	5996	0878	5754	0625	5489	0348	5201	0048	4889	9724	4554	9378	4196	9009	3816
1	6078	0960	5836	0706	5570	0429	5281	0128	4970	9805	4635	9459	4277	9089	3896
2	6159	1041	5917	0787	5651	0510	5362	0209	5050	9885	4715	9539	4357	9169	3976
3	6241	1122	5998	0868	5732	0591	5443	0290	5131	9966	4795	9619	4437	9250	4056
4	6322	1204	6079	0949	5813	0671	5524	0371	5211	0047	4876	9700	4517	9330	4136
5	6403	1285	6161	1030	5894	0752	5605	0451	5292	0127	4956	9780	4598	9410	4216
6	6485	1366	6242	1111	5975	0833	5686	0532	5373	0208	5037	9860	4678	9490	4296
7	6566	1448	6323	1193	6056	0914	5766	0613	5453	0288	5117	9941	4758	9570	4376
8	6648	1529	6404	1274	6137	0995	5847	0693	5534	0369	5198	0021	4838	9650	4456
9	6729	1610	6485	1355	6218	1076	5928	0774	5615	0449	5278	0101	4919	9730	4537
10	6810	1691	6567	1436	6299	1157	6009	0855	5695	0530	5359	0182	4999	9811	4617
11	6892	1773	6648	1517	6380	1238	6090	0936	5776	0610	5439	0262	5079	9891	4697
12	6973	1854	6729	1598	6461	1319	6170	1016	5856	0691	5519	0342	5159	9971	4777
13	7055	1935	6810	1679	6542	1400	6251	1097	5937	0771	5600	0423	5240	0051	4857
14	7136	2017	6891	1760	6623	1481	6332	1178	6018	0852	5680	0503	5320	0131	4937
15	7217	2098	6973	1841	6704	1561	6413	1258	6098	0932	5761	0583	5400	0211	5017
16	7299	2179	7054	1922	6785	1642	6494	1339	6179	1013	5841	0664	5480	0291	5097
17	7380	2261	7135	2004	6866	1723	6574	1420	6260	1093	5922	0744	5561	0372	5177
18	7462	2342	7216	2085	6947	1804	6655	1501	6340	1174	6002	0824	5641	0452	5257
19	7543	2423	7297	2166	7028	1885	6736	1581	6421	1254	6082	0905	5721	0532	5337
20	7624	2504	7379	2247	7109	1966	6817	1662	6501	1335	6163	0985	5801	0612	5417
21	7706	2586	7460	2328	7190	2047	6898	1743	6582	1415	6243	1065	5882	0692	5497
22	7787	2667	7541	2409	7271	2128	6978	1823	6663	1496	6324	1146	5962	0772	5577
23	7869	2748	7622	2490	7352	2209	7059	1904	6743	1576	6404	1226	6042	0852	5657
24	7950	2829	7703	2571	7433	2290	7140	1985	6824	1657	6484	1306	6122	0933	5737
25	8031	2911	7784	2652	7514	2370	7221	2065	6904	1737	6565	1386	6202	1013	5817
26	8113	2992	7866	2733	7595	2451	7302	2146	6985	1818	6645	1467	6283	1093	5897
27	8194	3073	7947	2814	7676	2532	7382	2227	7066	1898	6726	1547	6363	1173	5977
28	8275	3155	8028	2895	7757	2613	7463	2308	7146	1979	6806	1627	6443	1253	6057
29	8357	3236	8109	2977	7838	2694	7544	2388	7227	2059	6886	1708	6523	1333	6137
30	8438	3317	8190	3058	7919	2775	7625	2469	7307	2140	6967	1788	6603	1413	6217
31	8519	3398	8271	3139	8000	2856	7706	2550	7388	2220	7047	1868	6684	1493	6297
32	8601	3480	8353	3220	8081	2937	7786	2630	7469	2301	7128	1949	6764	1573	6377
33	8682	3561	8434	3301	8162	3018	7867	2711	7549	2381	7208	2029	6844	1654	6457
34	8764	3642	8515	3382	8243	3098	7948	2792	7630	2462	7288	2109	6924	1734	6537
35	8845	3723	8596	3463	8324	3179	8029	2872	7710	2542	7369	2190	7005	1814	6617
36	8926	3805	8677	3544	8405	3260	8109	2953	7791	2623	7449	2270	7085	1894	6697
37	9008	3886	8758	3625	8486	3341	8190	3034	7871	2703	7530	2350	7165	1974	6777
38	9089	3967	8840	3706	8567	3422	8271	3114	7952	2784	7610	2430	7245	2054	6857
39	9170	4048	8921	3787	8648	3503	8352	3195	8033	2864	7690	2511	7325	2134	6937
40	9252	4130	9002	3868	8729	3584	8433	3276	8113	2945	7771	2591	7406	2214	7017
41	9333	4211	9083	3949	8810	3664	8513	3356	8194	3025	7851	2671	7486	2294	7097
42	9414	4292	9164	4030	8891	3745	8594	3437	8274	3106	7932	2752	7566	2375	7177
43	9496	4373	9245	4111	8972	3826	8675	3518	8355	3186	8012	2832	7646	2455	7257
44	9577	4455	9327	4193	9053	3907	8756	3598	8435	3267	8092	2912	7726	2535	7337
45	9658	4536	9408	4274	9134	3988	8836	3679	8516	3347	8173	2992	7806	2615	7417
46	9740	4617	9489	4355	9215	4069	8917	3760	8597	3428	8253	3073	7887	2695	7497
47	9821	4698	9570	4436	9296	4150	8998	3840	8677	3508	8333	3153	7967	2775	7577
48	9902	4780	9651	4517	9376	4230	9079	3921	8758	3589	8414	3233	8047	2855	7657
49	9984	4861	9732	4598	9457	4311	9159	4002	8838	3669	8494	3314	8127	2935	7737
50	0065	4942	9813	4679	9538	4392	9240	4082	8919	3750	8575	3394	8207	3015	7817
51	0146	5023	9895	4760	9619	4473	9321	4163	8999	3830	8655	3474	8288	3095	7897
52	0228	5105	9976	4841	9700	4554	9402	4244	9080	3910	8735	3554	8368	3175	7977
53	0309	5186	0057	4922	9781	4635	9482	4324	9161	3991	8816	3635	8448	3255	8057
54	0390	5267	0138	5003	9862	4716	9563	4405	9241	4071	8896	3715	8528	3336	8137
55	0472	5348	0219	5084	9943	4796	9644	4486	9322	4152	8976	3795	8608	3416	8217
56	0553	5430	0300	5165	0024	4877	9725	4566	9402	4232	9057	3875	8688	3496	8297
57	0634	5511	0381	5246	0105	4958	9805	4647	9483	4313	9137	3956	8769	3576	8377
58	0716	5592	0462	5327	0186	5039	9886	4728	9563	4393	9217	4036	8849	3656	8457
59	0797	5673	0544	5408	0267	5120	9967	4808	9644	4474	9298	4116	8929	3736	8537
60	0878	5754	0625	5489	0348	5201	0048	4889	9724	4554	9378	4196	9009	3816	8617
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Sine Deg. 75

14 Deg. Co-Sine

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	″
9.985	9.985	9.985	9.985	9.985	9.985	9.985	9.985	9.985	9.985	9.985	9.985	9.985	9.985	9.985	
9416	9089	8762	8434	8106	7777	7449	7119	6790	6460	6129	5798	5467	5135	4803	60
9410	9084	8756	8429	8100	7772	7443	7114	6784	6454	6124	5793	5462	5130	4798	59
9405	9078	8751	8423	8095	7766	7438	7108	6779	6449	6118	5787	5456	5124	4792	58
9400	9073	8745	8418	8090	7761	7432	7103	6773	6443	6113	5782	5451	5119	4787	57
9394	9067	8740	8412	8084	7756	7427	7097	6768	6438	6107	5776	5445	5113	4781	56
9389	9062	8734	8407	8079	7750	7421	7092	6762	6432	6102	5771	5439	5108	4776	55
9383	9056	8729	8401	8073	7745	7416	7086	6757	6427	6096	5765	5434	5102	4770	54
9378	9051	8723	8396	8068	7739	7410	7081	6751	6421	6091	5760	5428	5097	4765	53
9372	9045	8718	8390	8062	7734	7405	7075	6746	6416	6085	5754	5423	5091	4759	52
9367	9040	8713	8385	8057	7728	7399	7070	6740	6410	6080	5749	5417	5086	4754	51
9361	9034	8707	8379	8051	7723	7394	7064	6735	6405	6074	5743	5412	5080	4748	50
9356	9029	8702	8374	8046	7717	7388	7059	6729	6399	6069	5738	5406	5075	4743	49
9351	9024	8696	8368	8040	7712	7383	7053	6724	6394	6063	5732	5401	5069	4737	48
9345	9018	8691	8363	8035	7706	7377	7048	6718	6388	6058	5727	5395	5064	4731	47
9340	9013	8685	8357	8029	7701	7372	7042	6713	6383	6052	5721	5390	5058	4726	46
9334	9007	8680	8352	8024	7695	7366	7037	6707	6377	6046	5716	5384	5053	4720	45
9329	9002	8674	8347	8018	7690	7361	7031	6702	6372	6041	5710	5379	5047	4715	44
9323	8996	8669	8341	8013	7684	7355	7026	6696	6366	6035	5705	5373	5041	4709	43
9318	8991	8663	8336	8007	7679	7350	7020	6691	6361	6030	5699	5368	5036	4704	42
9312	8985	8658	8330	8002	7673	7344	7015	6685	6355	6024	5693	5362	5030	4698	41
9307	8980	8653	8325	7996	7668	7339	7009	6680	6349	6019	5688	5357	5025	4693	40
9302	8974	8647	8319	7991	7662	7333	7004	6674	6344	6013	5682	5351	5019	4687	39
9296	8969	8642	8314	7986	7657	7328	6998	6669	6338	6008	5677	5346	5014	4682	38
9291	8964	8636	8308	7980	7651	7322	6993	6663	6333	6002	5671	5340	5008	4676	37
9285	8958	8631	8303	7975	7646	7317	6987	6658	6327	5997	5666	5334	5003	4671	36
9280	8953	8625	8297	7969	7640	7311	6982	6652	6322	5991	5660	5329	4997	4665	35
9274	8947	8620	8292	7964	7635	7306	6976	6647	6316	5986	5655	5323	4992	4659	34
9269	8942	8614	8286	7958	7629	7300	6971	6641	6311	5980	5649	5318	4986	4654	33
9263	8936	8609	8281	7953	7624	7295	6966	6636	6305	5975	5644	5312	4981	4648	32
9258	8931	8603	8275	7947	7619	7289	6960	6630	6300	5969	5638	5307	4975	4643	31
9253	8925	8598	8270	7942	7613	7284	6955	6625	6294	5964	5633	5301	4970	4637	30
9247	8920	8592	8265	7936	7608	7278	6949	6619	6289	5958	5627	5296	4964	4632	29
9242	8914	8587	8259	7931	7602	7273	6944	6614	6283	5953	5622	5290	4958	4626	28
9236	8909	8582	8254	7925	7597	7268	6938	6608	6278	5947	5616	5285	4953	4621	27
9231	8904	8576	8248	7920	7591	7262	6933	6603	6272	5942	5611	5279	4947	4615	26
9225	8898	8571	8243	7914	7586	7257	6927	6597	6267	5936	5605	5274	4942	4610	25
9220	8893	8565	8237	7909	7580	7251	6922	6592	6261	5931	5600	5268	4936	4604	24
9214	8887	8560	8232	7903	7575	7246	6916	6586	6256	5925	5594	5263	4931	4599	23
9209	8882	8554	8226	7898	7569	7240	6911	6581	6250	5920	5589	5257	4925	4593	22
9203	8876	8549	8221	7892	7564	7235	6905	6575	6245	5914	5583	5252	4920	4587	21
9198	8871	8543	8215	7887	7558	7229	6900	6570	6239	5909	5578	5246	4914	4582	20
9193	8865	8538	8210	7881	7553	7224	6894	6564	6234	5903	5572	5241	4909	4576	19
9187	8860	8532	8204	7876	7547	7218	6889	6559	6228	5898	5567	5235	4903	4571	18
9182	8854	8527	8199	7871	7542	7213	6883	6553	6223	5892	5561	5229	4898	4565	17
9176	8849	8521	8193	7865	7536	7207	6878	6548	6217	5887	5555	5224	4892	4560	16
9171	8844	8516	8188	7860	7531	7202	6872	6542	6212	5881	5550	5218	4887	4554	15
9165	8838	8511	8183	7854	7525	7196	6867	6537	6206	5876	5544	5213	4881	4549	14
9160	8833	8505	8177	7849	7520	7191	6861	6531	6201	5870	5539	5207	4875	4543	13
9154	8827	8500	8172	7843	7514	7185	6856	6526	6195	5865	5533	5202	4870	4538	12
9149	8822	8494	8166	7838	7509	7180	6850	6520	6190	5859	5528	5196	4864	4532	11
9144	8816	8489	8161	7832	7503	7174	6845	6515	6184	5853	5522	5191	4859	4526	10
9138	8811	8483	8155	7827	7498	7169	6839	6509	6179	5848	5517	5185	4853	4521	9
9133	8805	8478	8150	7821	7492	7163	6834	6504	6173	5842	5511	5180	4848	4515	8
9127	8800	8472	8144	7816	7487	7158	6828	6498	6168	5837	5506	5174	4842	4510	7
9122	8794	8467	8139	7810	7481	7152	6823	6493	6162	5831	5500	5169	4837	4504	6
9116	8789	8461	8133	7805	7476	7147	6817	6487	6157	5826	5495	5163	4831	4499	5
9111	8784	8456	8128	7799	7471	7141	6812	6482	6151	5820	5489	5158	4826	4493	4
9105	8778	8450	8122	7794	7465	7136	6806	6476	6146	5815	5484	5152	4820	4488	3
9100	8773	8445	8117	7788	7460	7130	6801	6471	6140	5809	5478	5147	4815	4482	2
9094	8767	8439	8111	7783	7454	7125	6795	6465	6135	5804	5473	5141	4809	4477	1
9089	8762	8434	8106	7777	7449	7119	6790	6460	6129	5798	5467	5135	4803	4471	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Sine Deg. 75

14 Deg. Tangent

″	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.
	412	413	413	414	414	415	415	416	416	417	417	418	418	419	419
0	6581	1789	6993	2191	7383	2570	7752	2928	8099	3265	8425	3580	8729	3874	9013
1	6667	1876	7079	2277	7470	2657	7838	3015	8185	3351	8511	3666	8815	3959	9098
2	6754	1963	7166	2364	7556	2743	7925	3101	8271	3437	8597	3752	8901	4045	9184
3	6841	2050	7253	2450	7643	2830	8011	3187	8358	3523	8683	3837	8987	4131	9269
4	6928	2136	7339	2537	7729	2916	8097	3273	8444	3609	8769	3923	9072	4216	9355
5	7015	2223	7426	2624	7816	3002	8184	3359	8530	3695	8855	4009	9158	4302	9441
6	7102	2310	7513	2710	7902	3089	8270	3446	8616	3781	8941	4095	9244	4388	9526
7	7188	2397	7599	2797	7989	3175	8356	3532	8702	3867	9027	4181	9330	4473	9612
8	7275	2483	7686	2883	8075	3262	8442	3618	8788	3953	9113	4267	9416	4559	9697
9	7362	2570	7773	2970	8162	3348	8529	3704	8874	4039	9199	4353	9501	4645	9783
10	7449	2657	7859	3056	8248	3434	8615	3790	8961	4125	9284	4438	9587	4730	9869
11	7536	2744	7946	3143	8335	3521	8701	3877	9047	4211	9370	4524	9673	4816	9954
12	7623	2830	8033	3230	8421	3607	8788	3963	9133	4297	9456	4610	9759	4902	0040
13	7710	2917	8119	3316	8508	3693	8874	4049	9219	4383	9542	4696	9844	4987	0125
14	7796	3004	8206	3403	8594	3780	8960	4135	9305	4469	9628	4782	9930	5073	0211
15	7883	3091	8293	3489	8680	3866	9047	4222	9391	4555	9714	4868	0016	5159	0296
16	7970	3177	8379	3576	8767	3953	9133	4308	9477	4641	9800	4954	0102	5245	0382
17	8057	3264	8466	3662	8853	4039	9219	4394	9563	4727	9886	5039	0187	5330	0468
18	8144	3351	8553	3749	8940	4125	9305	4480	9649	4813	9972	5125	0273	5416	0553
19	8231	3438	8639	3836	9026	4212	9392	4566	9736	4899	0058	5211	0359	5502	0639
20	8317	3524	8726	3922	9113	4298	9478	4653	9822	4985	0144	5297	0445	5587	0724
21	8404	3611	8813	4009	9199	4385	9564	4739	9908	5071	0230	5383	0530	5673	0810
22	8491	3698	8899	4095	9286	4471	9651	4825	9994	5157	0316	5469	0616	5758	0895
23	8578	3785	8986	4182	9372	4557	9737	4911	0080	5243	0402	5554	0702	5844	0981
24	8665	3871	9073	4268	9459	4644	9823	4997	0166	5329	0488	5640	0788	5930	1067
25	8752	3958	9159	4355	9545	4730	9909	5083	0252	5416	0573	5726	0873	6015	1152
26	8838	4045	9246	4441	9632	4816	9996	5170	0338	5502	0659	5812	0959	6101	1238
27	8925	4132	9332	4528	9718	4903	0082	5256	0424	5588	0745	5898	1045	6187	1323
28	9012	4218	9419	4615	9805	4989	0168	5342	0510	5674	0831	5984	1131	6272	1409
29	9099	4305	9506	4701	9891	5075	0255	5428	0597	5760	0917	6069	1216	6358	1494
30	9186	4392	9592	4788	9977	5162	0341	5514	0683	5846	1003	6155	1302	6444	1580
31	9272	4478	9679	4874	0064	5248	0427	5601	0769	5932	1089	6241	1388	6529	1666
32	9359	4565	9766	4961	0150	5335	0513	5687	0855	6018	1175	6327	1474	6615	1751
33	9446	4652	9852	5047	0237	5421	0600	5773	0941	6104	1261	6413	1559	6701	1837
34	9533	4739	9939	5134	0323	5507	0686	5859	1027	6190	1347	6499	1645	6786	1922
35	9620	4825	0026	5220	0410	5594	0772	5945	1113	6276	1433	6584	1731	6872	2008
36	9706	4912	0112	5307	0496	5680	0858	6031	1199	6362	1519	6670	1817	6958	2093
37	9793	4999	0199	5393	0583	5766	0945	6118	1285	6448	1604	6756	1902	7043	2179
38	9880	5085	0285	5480	0669	5853	1031	6204	1371	6534	1690	6842	1988	7129	2264
39	9967	5172	0372	5566	0755	5939	1117	6290	1457	6620	1776	6928	2074	7215	2350
40	0054	5259	0459	5653	0842	6025	1203	6376	1544	6706	1862	7013	2159	7300	2436
41	0140	5346	0545	5739	0928	6112	1290	6462	1630	6791	1948	7099	2245	7386	2521
42	0227	5432	0632	5826	1015	6198	1376	6549	1716	6877	2034	7185	2331	7471	2607
43	0314	5519	0718	5913	1101	6284	1462	6635	1802	6963	2120	7271	2417	7557	2692
44	0401	5606	0805	5999	1188	6371	1548	6721	1888	7049	2206	7357	2502	7643	2778
45	0488	5692	0892	6086	1274	6457	1635	6807	1974	7135	2292	7442	2588	7728	2863
46	0574	5779	0978	6172	1360	6543	1721	6893	2060	7221	2378	7528	2674	7814	2949
47	0661	5866	1065	6259	1447	6630	1807	6979	2146	7307	2463	7614	2759	7900	3034
48	0748	5952	1152	6345	1533	6716	1893	7065	2232	7393	2549	7700	2845	7985	3120
49	0835	6039	1238	6432	1620	6802	1980	7152	2318	7479	2635	7786	2931	8071	3205
50	0922	6126	1325	6518	1706	6889	2066	7238	2404	7565	2721	7871	3017	8156	3291
51	1008	6213	1411	6605	1793	6975	2152	7324	2490	7651	2807	7957	3102	8242	3376
52	1095	6299	1498	6691	1879	7061	2238	7410	2576	7737	2893	8043	3188	8328	3462
53	1182	6386	1585	6778	1965	7148	2325	7496	2662	7823	2979	8129	3274	8413	3548
54	1269	6473	1671	6864	2052	7234	2411	7582	2748	7909	3065	8215	3359	8499	3633
55	1355	6559	1758	6951	2138	7320	2497	7669	2835	7995	3150	8300	3445	8584	3719
56	1442	6646	1844	7037	2225	7407	2583	7755	2921	8081	3236	8386	3531	8670	3804
57	1529	6733	1931	7124	2311	7493	2670	7841	3007	8167	3322	8472	3617	8756	3890
58	1616	6819	2018	7210	2397	7579	2756	7927	3093	8253	3408	8558	3702	8841	3975
59	1703	6906	2104	7297	2484	7666	2842	8013	3179	8339	3494	8644	3788	8927	4061
60	1789	6993	2191	7383	2570	7752	2928	8099	3265	8425	3580	8729	3874	9013	4146
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Tangent Deg. 75

14 Deg. Co-Tangent

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	″
10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	
587	586	586	585	585	584	584	583	583	582	582	581	581	580	580	
3419	8211	3007	7809	2617	7430	2248	7072	1901	6735	1575	6420	1271	6126	0987	60
3333	8124	2921	7723	2530	7343	2162	6985	1815	6649	1489	6334	1185	6041	0902	59
3246	8037	2834	7636	2444	7257	2075	6899	1729	6563	1403	6248	1099	5955	0816	58
3159	7950	2747	7550	2357	7170	1989	6813	1642	6477	1317	6163	1013	5869	0731	57
3072	7864	2661	7463	2271	7084	1903	6727	1556	6391	1231	6077	0928	5784	0645	56
2985	7777	2574	7376	2184	6998	1816	6641	1470	6305	1145	5991	0842	5698	0559	55
2898	7690	2487	7290	2098	6911	1730	6554	1384	6219	1059	5905	0756	5612	0474	54
2812	7603	2401	7203	2011	6825	1644	6468	1298	6133	0973	5819	0670	5527	0388	53
2725	7517	2314	7117	1925	6738	1558	6382	1212	6047	0887	5733	0584	5441	0303	52
2638	7430	2227	7030	1838	6652	1471	6296	1126	5961	0801	5647	0499	5355	0217	51
2551	7343	2141	6944	1752	6566	1385	6210	1039	5875	0716	5562	0413	5270	0131	50
2464	7256	2054	6857	1665	6479	1299	6123	0953	5789	0630	5476	0327	5184	0046	49
2377	7170	1967	6770	1579	6393	1212	6037	0867	5703	0544	5390	0241	5098	9960	48
2290	7083	1881	6684	1492	6307	1126	5951	0781	5617	0458	5304	0156	5013	9875	47
2204	6996	1794	6597	1406	6220	1040	5865	0695	5531	0372	5218	0070	4927	9789	46
2117	6909	1707	6511	1320	6134	0953	5778	0609	5445	0286	5132	9984	4841	9704	45
2030	6823	1621	6424	1233	6047	0867	5692	0523	5359	0200	5046	9898	4755	9618	44
1943	6736	1534	6338	1147	5961	0781	5606	0437	5273	0114	4961	9813	4670	9532	43
1856	6649	1447	6251	1060	5875	0695	5520	0351	5187	0028	4875	9727	4584	9447	42
1769	6562	1361	6164	0974	5788	0608	5434	0264	5101	9942	4789	9641	4498	9361	41
1683	6476	1274	6078	0887	5702	0522	5347	0178	5015	9856	4703	9555	4413	9276	40
1596	6389	1187	5991	0801	5615	0436	5261	0092	4929	9770	4617	9470	4327	9190	39
1509	6302	1101	5905	0714	5529	0349	5175	0006	4843	9684	4531	9384	4242	9105	38
1422	6215	1014	5818	0628	5443	0263	5089	9920	4757	9598	4446	9298	4156	9019	37
1335	6129	0927	5732	0541	5356	0177	5003	9834	4671	9512	4360	9212	4070	8933	36
1248	6042	0841	5645	0455	5270	0091	4917	9748	4584	9427	4274	9127	3985	8848	35
1162	5955	0754	5559	0368	5184	0004	4830	9662	4498	9341	4188	9041	3899	8762	34
1075	5868	0668	5472	0282	5097	9918	4744	9576	4412	9255	4102	8955	3813	8677	33
0988	5782	0581	5385	0195	5011	9832	4658	9490	4326	9169	4016	8869	3728	8591	32
0901	5695	0494	5299	0109	4925	9745	4572	9403	4240	9083	3931	8784	3642	8506	31
0814	5608	0408	5212	0023	4838	9659	4486	9317	4154	8997	3845	8698	3556	8420	30
0728	5522	0321	5126	9936	4752	9573	4399	9231	4068	8911	3759	8612	3471	8334	29
0641	5435	0234	5039	9850	4665	9487	4313	9145	3982	8825	3673	8526	3385	8249	28
0554	5348	0148	4953	9763	4579	9400	4227	9059	3896	8739	3587	8441	3299	8163	27
0467	5261	0061	4866	9677	4493	9314	4141	8973	3810	8653	3501	8355	3214	8078	26
0380	5175	9974	4780	9590	4406	9228	4055	8887	3724	8567	3416	8269	3128	7992	25
0294	5088	9888	4693	9504	4320	9142	3969	8801	3638	8481	3330	8183	3042	7907	24
0207	5001	9801	4607	9417	4234	9055	3882	8715	3552	8396	3244	8098	2957	7821	23
0120	4915	9715	4520	9331	4147	8969	3796	8629	3466	8310	3158	8012	2871	7736	22
0033	4828	9628	4434	9245	4061	8883	3710	8543	3380	8224	3072	7926	2785	7650	21
9946	4741	9541	4347	9158	3975	8797	3624	8456	3294	8138	2987	7841	2700	7564	20
9860	4654	9455	4261	9072	3888	8710	3538	8370	3209	8052	2901	7755	2614	7479	19
9773	4568	9368	4174	8985	3802	8624	3451	8284	3123	7966	2815	7669	2529	7393	18
9686	4481	9282	4087	8899	3716	8538	3365	8198	3037	7880	2729	7583	2443	7308	17
9599	4394	9195	4001	8812	3629	8452	3279	8112	2951	7794	2643	7498	2357	7222	16
9512	4308	9108	3914	8726	3543	8365	3193	8026	2865	7708	2558	7412	2272	7137	15
9426	4221	9022	3828	8640	3457	8279	3107	7940	2779	7622	2472	7326	2186	7051	14
9339	4134	8935	3741	8553	3370	8193	3021	7854	2693	7537	2386	7241	2100	6966	13
9252	4048	8848	3655	8467	3284	8107	2935	7768	2607	7451	2300	7155	2015	6880	12
9165	3961	8762	3568	8380	3198	8020	2848	7682	2521	7365	2214	7069	1929	6795	11
9078	3874	8675	3482	8294	3111	7934	2762	7596	2435	7279	2129	6983	1844	6709	10
8992	3787	8589	3395	8207	3025	7848	2676	7510	2349	7193	2043	6898	1758	6624	9
8905	3701	8502	3309	8121	2939	7762	2590	7424	2263	7107	1957	6812	1672	6538	8
8818	3614	8415	3222	8035	2852	7675	2504	7338	2177	7021	1871	6726	1587	6452	7
8731	3527	8329	3136	7948	2766	7589	2418	7252	2091	6935	1785	6641	1501	6367	6
8645	3441	8242	3049	7862	2680	7503	2331	7165	2005	6850	1700	6555	1416	6281	5
8558	3354	8156	2963	7775	2593	7417	2245	7079	1919	6764	1614	6469	1330	6196	4
8471	3267	8069	2876	7689	2507	7330	2159	6993	1833	6678	1528	6383	1244	6110	3
8384	3181	7982	2790	7603	2421	7244	2073	6907	1747	6592	1442	6298	1159	6025	2
8297	3094	7896	2703	7516	2334	7158	1987	6821	1661	6506	1356	6212	1073	5939	1
8211	3007	7809	2617	7430	2248	7072	1901	6735	1575	6420	1271	6126	0987	5854	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Tangent Deg. 75

14 Deg. Sine

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	9.405	9.406	9.406	9.407	9.407	9.408	9.408	9.409	9.409	9.410	9.410	9.411	9.411	9.412	9.412
0	8617	3413	8203	2987	7766	2539	7306	2068	6824	1575	6320	1059	5793	0522	5245
1	8697	3493	8282	3067	7845	2618	7385	2147	6903	1654	6399	1138	5872	0601	5323
2	8777	3573	8362	3146	7925	2698	7465	2226	6982	1733	6478	1217	5951	0679	5402
3	8857	3652	8442	3226	8004	2777	7544	2306	7062	1812	6557	1296	6030	0758	5481
4	8937	3732	8522	3306	8084	2857	7624	2385	7141	1891	6636	1375	6109	0837	5559
5	9017	3812	8602	3385	8164	2936	7703	2464	7220	1970	6715	1454	6188	0916	5638
6	9097	3892	8681	3465	8243	3016	7782	2544	7299	2049	6794	1533	6266	0994	5717
7	9177	3972	8761	3545	8323	3095	7862	2623	7379	2129	6873	1612	6345	1073	5795
8	9257	4052	8841	3624	8402	3175	7941	2702	7458	2208	6952	1691	6424	1152	5874
9	9337	4132	8921	3704	8482	3254	8021	2782	7537	2287	7031	1770	6503	1231	5953
10	9417	4211	9000	3784	8561	3334	8100	2861	7616	2366	7110	1849	6582	1309	6031
11	9497	4291	9080	3863	8641	3413	8179	2940	7695	2445	7189	1928	6661	1388	6110
12	9577	4371	9160	3943	8721	3493	8259	3019	7775	2524	7268	2007	6739	1467	6189
13	9657	4451	9240	4023	8800	3572	8338	3099	7854	2603	7347	2085	6818	1546	6267
14	9737	4531	9320	4102	8880	3651	8418	3178	7933	2682	7426	2164	6897	1624	6346
15	9817	4611	9399	4182	8959	3731	8497	3257	8012	2761	7505	2243	6976	1703	6425
16	9897	4691	9479	4262	9039	3810	8576	3337	8091	2841	7584	2322	7055	1782	6503
17	9977	4770	9559	4341	9119	3890	8656	3416	8171	2920	7663	2401	7134	1861	6582
18	0056	4850	9639	4421	9198	3969	8735	3495	8250	2999	7742	2480	7212	1939	6661
19	0136	4930	9718	4501	9278	4049	8814	3575	8329	3078	7821	2559	7291	2018	6739
20	0216	5010	9798	4580	9357	4128	8894	3654	8408	3157	7900	2638	7370	2097	6818
21	0296	5090	9878	4660	9437	4208	8973	3733	8487	3236	7979	2717	7449	2176	6897
22	0376	5170	9958	4740	9516	4287	9053	3812	8567	3315	8058	2796	7528	2254	6975
23	0456	5250	0037	4819	9596	4367	9132	3892	8646	3394	8137	2875	7607	2333	7054
24	0536	5329	0117	4899	9675	4446	9211	3971	8725	3473	8216	2954	7685	2412	7132
25	0616	5409	0197	4979	9755	4526	9291	4050	8804	3552	8295	3033	7764	2490	7211
26	0696	5489	0277	5058	9835	4605	9370	4130	8883	3632	8374	3111	7843	2569	7290
27	0776	5569	0356	5138	9914	4685	9449	4209	8963	3711	8453	3190	7922	2648	7368
28	0856	5649	0436	5218	9994	4764	9529	4288	9042	3790	8532	3269	8001	2727	7447
29	0936	5729	0516	5297	0073	4844	9608	4367	9121	3869	8611	3348	8079	2805	7526
30	1016	5808	0596	5377	0153	4923	9688	4447	9200	3948	8690	3427	8158	2884	7604
31	1096	5888	0675	5457	0232	5002	9767	4526	9279	4027	8769	3506	8237	2963	7683
32	1176	5968	0755	5536	0312	5082	9846	4605	9358	4106	8848	3585	8316	3041	7761
33	1255	6048	0835	5616	0391	5161	9926	4684	9438	4185	8927	3664	8395	3120	7840
34	1335	6128	0914	5696	0471	5241	0005	4764	9517	4264	9006	3743	8473	3199	7919
35	1415	6208	0994	5775	0551	5320	0084	4843	9596	4343	9085	3822	8552	3278	7997
36	1495	6287	1074	5855	0630	5400	0164	4922	9675	4422	9164	3900	8631	3356	8076
37	1575	6367	1154	5934	0710	5479	0243	5001	9754	4501	9243	3979	8710	3435	8155
38	1655	6447	1233	6014	0789	5559	0322	5081	9833	4581	9322	4058	8789	3514	8233
39	1735	6527	1313	6094	0869	5638	0402	5160	9913	4660	9401	4137	8867	3592	8312
40	1815	6607	1393	6173	0948	5717	0481	5239	9992	4739	9480	4216	8946	3671	8390
41	1895	6686	1473	6253	1028	5797	0560	5318	0071	4818	9559	4295	9025	3750	8469
42	1975	6766	1552	6333	1107	5876	0640	5398	0150	4897	9638	4374	9104	3829	8548
43	2055	6846	1632	6412	1187	5956	0719	5477	0229	4976	9717	4453	9183	3907	8626
44	2135	6926	1712	6492	1266	6035	0799	5556	0308	5055	9796	4531	9261	3986	8705
45	2214	7006	1791	6571	1346	6115	0878	5635	0388	5134	9875	4610	9340	4065	8783
46	2294	7086	1871	6651	1425	6194	0957	5715	0467	5213	9954	4689	9419	4143	8862
47	2374	7165	1951	6731	1505	6274	1037	5794	0546	5292	0033	4768	9498	4222	8941
48	2454	7245	2031	6810	1584	6353	1116	5873	0625	5371	0112	4847	9577	4301	9019
49	2534	7325	2110	6890	1664	6432	1195	5952	0704	5450	0191	4926	9655	4379	9098
50	2614	7405	2190	6970	1743	6512	1275	6032	0783	5529	0270	5005	9734	4458	9176
51	2694	7485	2270	7049	1823	6591	1354	6111	0862	5608	0349	5084	9813	4537	9255
52	2774	7564	2349	7129	1903	6671	1433	6190	0942	5687	0428	5162	9892	4615	9334
53	2854	7644	2429	7208	1982	6750	1513	6269	1021	5766	0507	5241	9970	4694	9412
54	2933	7724	2509	7288	2062	6830	1592	6349	1100	5846	0586	5320	0049	4773	9491
55	3013	7804	2588	7368	2141	6909	1671	6428	1179	5925	0665	5399	0128	4851	9569
56	3093	7884	2668	7447	2221	6988	1751	6507	1258	6004	0744	5478	0207	4930	9648
57	3173	7963	2748	7527	2300	7068	1830	6586	1337	6083	0822	5557	0286	5009	9727
58	3253	8043	2828	7606	2380	7147	1909	6666	1416	6162	0901	5636	0364	5087	9805
59	3333	8123	2907	7686	2459	7227	1988	6745	1496	6241	0980	5714	0443	5166	9884
60	3413	8203	2987	7766	2539	7306	2068	6824	1575	6320	1059	5793	0522	5245	9962
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Sine Deg. 75

14 Deg. Co-Sine

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
	9.985	9.985	9.985	9.985	9.985	9.985	9.985	9.985	9.985	9.985	9.985	9.985	9.985	9.985	9.984	″
	4471	4138	3805	3471	3138	2803	2468	2133	1798	1462	1125	0789	0452	0114	9776	60
	4466	4133	3800	3466	3132	2798	2463	2128	1792	1456	1120	0783	0446	0108	9770	59
	4460	4127	3794	3460	3126	2792	2457	2122	1786	1451	1114	0777	0440	0103	9765	58
	4454	4122	3788	3455	3121	2786	2452	2116	1781	1445	1109	0772	0435	0097	9759	57
	4449	4116	3783	3449	3115	2781	2446	2111	1775	1439	1103	0766	0429	0091	9754	56
	4443	4111	3777	3444	3110	2775	2440	2105	1770	1434	1097	0761	0423	0086	9748	55
	4438	4105	3772	3438	3104	2770	2435	2100	1764	1428	1092	0755	0418	0080	9742	54
	4432	4099	3766	3433	3099	2764	2429	2094	1758	1422	1086	0749	0412	0075	9737	53
	4427	4094	3761	3427	3093	2759	2424	2088	1753	1417	1081	0744	0407	0069	9731	52
	4421	4088	3755	3421	3087	2753	2418	2083	1747	1411	1075	0738	0401	0063	9725	51
	4416	4083	3749	3416	3082	2747	2413	2077	1742	1406	1069	0732	0395	0058	9720	50
	4410	4077	3744	3410	3076	2742	2407	2072	1736	1400	1064	0727	0390	0052	9714	49
	4405	4072	3738	3405	3071	2736	2401	2066	1731	1394	1058	0721	0384	0046	9708	48
	4399	4066	3733	3399	3065	2731	2396	2061	1725	1389	1052	0716	0378	0041	9703	47
	4393	4061	3727	3394	3060	2725	2390	2055	1719	1383	1047	0710	0373	0035	9697	46
	4388	4055	3722	3388	3054	2719	2385	2049	1714	1378	1041	0704	0367	0030	9692	45
	4382	4049	3716	3382	3048	2714	2379	2044	1708	1372	1036	0699	0362	0024	9686	44
	4377	4044	3711	3377	3043	2708	2373	2038	1703	1366	1030	0693	0356	0018	9680	43
	4371	4038	3705	3371	3037	2703	2368	2033	1697	1361	1024	0688	0350	0013	9675	42
	4366	4033	3699	3366	3032	2697	2362	2027	1691	1355	1019	0682	0345	0007	9669	41
	4360	4027	3694	3360	3026	2692	2357	2021	1686	1350	1013	0676	0339	0001	9663	40
	4355	4022	3688	3355	3021	2686	2351	2016	1680	1344	1008	0671	0333	9996	9658	39
	4349	4016	3683	3349	3015	2680	2346	2010	1675	1338	1002	0665	0328	9990	9652	38
	4344	4011	3677	3344	3009	2675	2340	2005	1669	1333	0996	0659	0322	9985	9646	37
	4338	4005	3672	3338	3004	2669	2334	1999	1663	1327	0991	0654	0317	9979	9641	36
	4332	3999	3666	3332	2998	2664	2329	1993	1658	1322	0985	0648	0311	9973	9635	35
	4327	3994	3661	3327	2993	2658	2323	1988	1652	1316	0980	0643	0305	9968	9630	34
	4321	3988	3655	3321	2987	2653	2318	1982	1647	1310	0974	0637	0300	9962	9624	33
	4316	3983	3649	3316	2982	2647	2312	1977	1641	1305	0968	0631	0294	9956	9618	32
	4310	3977	3644	3310	2976	2641	2306	1971	1635	1299	0963	0626	0288	9951	9613	31
	4305	3972	3638	3305	2970	2636	2301	1965	1630	1294	0957	0620	0283	9945	9607	30
	4299	3966	3633	3299	2965	2630	2295	1960	1624	1288	0951	0615	0277	9939	9601	29
	4294	3961	3627	3293	2959	2625	2290	1954	1619	1282	0946	0609	0272	9934	9596	28
	4288	3955	3622	3288	2954	2619	2284	1949	1613	1277	0940	0603	0266	9928	9590	27
	4283	3949	3616	3282	2948	2613	2278	1943	1607	1271	0935	0598	0260	9923	9584	26
	4277	3944	3611	3277	2942	2608	2273	1938	1602	1266	0929	0592	0255	9917	9579	25
	4271	3938	3605	3271	2937	2602	2267	1932	1596	1260	0923	0586	0249	9911	9573	24
	4266	3933	3599	3266	2931	2597	2262	1926	1591	1254	0918	0581	0243	9906	9568	23
	4260	3927	3594	3260	2926	2591	2256	1921	1585	1249	0912	0575	0238	9900	9562	22
	4255	3922	3588	3254	2920	2586	2251	1915	1579	1243	0907	0570	0232	9894	9556	21
	4249	3916	3583	3249	2915	2580	2245	1910	1574	1238	0901	0564	0227	9889	9551	20
	4244	3911	3577	3243	2909	2574	2239	1904	1568	1232	0895	0558	0221	9883	9545	19
	4238	3905	3572	3238	2903	2569	2234	1898	1563	1226	0890	0553	0215	9878	9539	18
	4233	3900	3566	3232	2898	2563	2228	1893	1557	1221	0884	0547	0210	9872	9534	17
	4227	3894	3560	3227	2892	2558	2223	1887	1551	1215	0878	0541	0204	9866	9528	16
	4221	3888	3555	3221	2887	2552	2217	1882	1546	1209	0873	0536	0198	9861	9522	15
	4216	3883	3549	3215	2881	2547	2211	1876	1540	1204	0867	0530	0193	9855	9517	14
	4210	3877	3544	3210	2876	2541	2206	1870	1535	1198	0862	0525	0187	9849	9511	13
	4205	3872	3538	3204	2870	2535	2200	1865	1529	1193	0856	0519	0182	9844	9505	12
	4199	3866	3533	3199	2864	2530	2195	1859	1523	1187	0850	0513	0176	9838	9500	11
	4194	3861	3527	3193	2859	2524	2189	1854	1518	1181	0845	0508	0170	9832	9494	10
	4188	3855	3522	3188	2853	2519	2184	1848	1512	1176	0839	0502	0165	9827	9489	9
	4183	3850	3516	3182	2848	2513	2178	1842	1507	1170	0834	0496	0159	9821	9483	8
	4177	3844	3510	3176	2842	2507	2172	1837	1501	1165	0828	0491	0153	9816	9477	7
	4172	3838	3505	3171	2837	2502	2167	1831	1495	1159	0822	0485	0148	9810	9472	6
	4166	3833	3499	3165	2831	2496	2161	1826	1490	1153	0817	0480	0142	9804	9466	5
	4160	3827	3494	3160	2825	2491	2156	1820	1484	1148	0811	0474	0137	9799	9460	4
	4155	3822	3488	3154	2820	2485	2150	1814	1479	1142	0805	0468	0131	9793	9455	3
	4149	3816	3483	3149	2814	2480	2144	1809	1473	1137	0800	0463	0125	9787	9449	2
	4144	3811	3477	3143	2809	2474	2139	1803	1467	1131	0794	0457	0120	9782	9443	1
	4138	3805	3471	3138	2803	2468	2133	1798	1462	1125	0789	0452	0114	9776	9438	0
	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Sine Deg. 75

14 Deg. Tangent

"	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9. 420	9. 420	9. 421	9. 421	9. 422	9. 422	9. 423	9. 423	9. 424	9. 425	9. 425	9. 426	9. 426	9. 427	9. 427
0	4146	9275	4398	9515	4628	9735	4838	9935	5026	0113	5194	0271	5342	0408	5469
1	4232	9360	4483	9601	4713	9821	4923	0019	5111	0198	5279	0355	5426	0492	5553
2	4317	9445	4568	9686	4798	9906	5008	0104	5196	0282	5364	0440	5511	0577	5637
3	4403	9531	4654	9771	4884	9991	5093	0189	5281	0367	5448	0524	5595	0661	5722
4	4488	9616	4739	9856	4969	0076	5178	0274	5366	0452	5533	0609	5680	0745	5806
5	4574	9702	4824	9942	5054	0161	5263	0359	5450	0537	5618	0693	5764	0830	5890
6	4659	9787	4910	0027	5139	0246	5348	0444	5535	0621	5702	0778	5849	0914	5975
7	4745	9872	4995	0112	5224	0331	5433	0529	5620	0706	5787	0863	5933	0999	6059
8	4830	9958	5080	0197	5309	0416	5518	0614	5705	0791	5872	0947	6018	1083	6143
9	4916	0043	5166	0283	5395	0501	5602	0699	5790	0876	5956	1032	6102	1167	6227
10	5001	0129	5251	0368	5480	0586	5687	0784	5874	0960	6041	1116	6187	1252	6312
11	5087	0214	5336	0453	5565	0671	5772	0868	5959	1045	6125	1201	6271	1336	6396
12	5172	0300	5422	0538	5650	0756	5857	0953	6044	1130	6210	1285	6355	1420	6480
13	5258	0385	5507	0624	5735	0841	5942	1038	6129	1214	6295	1370	6440	1505	6565
14	5343	0470	5592	0709	5820	0926	6027	1123	6214	1299	6379	1454	6524	1589	6649
15	5429	0556	5678	0794	5905	1011	6112	1208	6298	1384	6464	1539	6609	1674	6733
16	5514	0641	5763	0879	5991	1097	6197	1293	6383	1469	6549	1623	6693	1758	6817
17	5600	0727	5848	0965	6076	1182	6282	1378	6468	1553	6633	1708	6778	1842	6902
18	5685	0812	5934	1050	6161	1267	6367	1463	6553	1638	6718	1793	6862	1927	6986
19	5771	0897	6019	1135	6246	1352	6452	1548	6638	1723	6802	1877	6947	2011	7070
20	5856	0983	6104	1220	6331	1437	6537	1632	6722	1807	6887	1962	7031	2095	7155
21	5942	1068	6189	1305	6416	1522	6622	1717	6807	1892	6972	2046	7116	2180	7239
22	6027	1154	6275	1391	6501	1607	6707	1802	6892	1977	7056	2131	7200	2264	7323
23	6113	1239	6360	1476	6587	1692	6792	1887	6977	2061	7141	2215	7284	2348	7407
24	6198	1324	6445	1561	6672	1777	6877	1972	7062	2146	7226	2300	7369	2433	7492
25	6284	1410	6531	1646	6757	1862	6962	2057	7146	2231	7310	2384	7453	2517	7576
26	6369	1495	6616	1732	6842	1947	7047	2142	7231	2316	7395	2469	7538	2602	7660
27	6455	1581	6701	1817	6927	2032	7132	2227	7316	2400	7479	2553	7622	2686	7744
28	6540	1666	6787	1902	7012	2117	7217	2311	7401	2485	7564	2638	7707	2770	7829
29	6626	1751	6872	1987	7097	2202	7302	2396	7486	2570	7649	2722	7791	2855	7913
30	6711	1837	6957	2072	7182	2287	7387	2481	7570	2654	7733	2807	7875	2939	7997
31	6796	1922	7043	2158	7268	2372	7472	2566	7655	2739	7818	2891	7960	3023	8082
32	6882	2008	7128	2243	7353	2457	7557	2651	7740	2824	7902	2976	8044	3108	8166
33	6967	2093	7213	2328	7438	2542	7642	2736	7825	2908	7987	3060	8129	3192	8250
34	7053	2178	7298	2413	7523	2627	7727	2821	7909	2993	8072	3145	8213	3276	8334
35	7138	2264	7384	2498	7608	2712	7811	2905	7994	3078	8156	3229	8298	3361	8419
36	7224	2349	7469	2584	7693	2797	7896	2990	8079	3162	8241	3314	8382	3445	8503
37	7309	2434	7554	2669	7778	2882	7981	3075	8164	3247	8325	3398	8466	3529	8587
38	7395	2520	7640	2754	7863	2967	8066	3160	8248	3332	8410	3483	8551	3614	8671
39	7480	2605	7725	2839	7948	3052	8151	3245	8333	3416	8495	3568	8635	3698	8756
40	7566	2691	7810	2924	8034	3137	8236	3330	8418	3501	8579	3652	8720	3782	8840
41	7651	2776	7895	3010	8119	3222	8321	3415	8503	3586	8664	3737	8804	3867	8924
42	7737	2861	7981	3095	8204	3308	8406	3499	8588	3671	8748	3821	8889	3951	9008
43	7822	2947	8066	3180	8289	3393	8491	3584	8672	3755	8833	3906	8973	4035	9093
44	7907	3032	8151	3265	8374	3478	8576	3669	8757	3840	8918	3990	9057	4120	9177
45	7993	3117	8237	3350	8459	3563	8661	3754	8842	3925	9002	4075	9142	4204	9261
46	8078	3203	8322	3436	8544	3648	8746	3839	8927	4009	9087	4159	9226	4288	9345
47	8164	3288	8407	3521	8629	3733	8831	3924	9011	4094	9171	4244	9311	4373	9430
48	8249	3373	8492	3606	8714	3818	8916	4008	9096	4179	9256	4328	9395	4457	9514
49	8335	3459	8578	3691	8799	3903	9001	4093	9181	4263	9340	4412	9479	4541	9598
50	8420	3544	8663	3776	8885	3988	9085	4178	9266	4348	9425	4497	9564	4626	9682
51	8506	3629	8748	3862	8970	4073	9170	4263	9350	4433	9510	4581	9648	4710	9766
52	8591	3715	8833	3947	9055	4158	9255	4348	9435	4517	9594	4666	9733	4794	9851
53	8676	3800	8919	4032	9140	4243	9340	4433	9520	4602	9679	4750	9817	4879	9935
54	8762	3886	9004	4117	9225	4328	9425	4517	9605	4686	9763	4835	9901	4963	0019
55	8847	3971	9089	4202	9310	4413	9510	4602	9689	4771	9848	4919	9986	5047	0103
56	8933	4056	9174	4287	9395	4498	9595	4687	9774	4856	9932	5004	0070	5131	0188
57	9018	4142	9260	4373	9480	4583	9680	4772	9859	4940	0017	5088	0155	5216	0272
58	9104	4227	9345	4458	9565	4668	9765	4857	9943	5025	0102	5173	0239	5300	0356
59	9189	4312	9430	4543	9650	4753	9850	4942	0028	5110	0186	5257	0323	5384	0440
60	9275	4398	9515	4628	9735	4838	9935	5026	0113	5194	0271	5342	0408	5469	0525
"	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

14 Deg. Co-Tangent

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	"
10. 579	10. 579	10. 578	10. 578	10. 577	10. 577	10. 576	10. 576	10. 575	10. 574	10. 574	10. 573	10. 573	10. 572	10. 572	
5854	0725	5602	0485	5372	0265	5162	0065	4974	9887	4806	9729	4658	9592	4531	60
5768	0640	5517	0399	5287	0179	5077	9981	4889	9802	4721	9645	4574	9508	4447	59
5683	0555	5432	0314	5202	0094	4992	9896	4804	9718	4636	9560	4489	9423	4363	58
5597	0469	5346	0229	5116	0009	4907	9811	4719	9633	4552	9476	4405	9339	4278	57
5512	0384	5261	0144	5031	9924	4822	9726	4634	9548	4467	9391	4320	9255	4194	56
5426	0298	5176	0058	4946	9839	4737	9641	4550	9463	4382	9307	4236	9170	4110	55
5341	0213	5090	9973	4861	9754	4652	9556	4465	9379	4298	9222	4151	9086	4025	54
5255	0128	5005	9888	4776	9669	4567	9471	4380	9294	4213	9137	4067	9001	3941	53
5170	0042	4920	9803	4691	9584	4482	9386	4295	9209	4128	9053	3982	8917	3857	52
5084	9957	4834	9717	4605	9499	4398	9301	4210	9124	4044	8968	3898	8833	3773	51
4999	9871	4749	9632	4520	9414	4313	9216	4126	9040	3959	8884	3813	8748	3688	50
4913	9786	4664	9547	4435	9329	4228	9132	4041	8955	3875	8799	3729	8664	3604	49
4828	9700	4578	9462	4350	9244	4143	9047	3956	8870	3790	8715	3645	8580	3520	48
4742	9615	4493	9376	4265	9159	4058	8962	3871	8786	3705	8630	3560	8495	3435	47
4657	9530	4408	9291	4180	9074	3973	8877	3786	8701	3621	8546	3476	8411	3351	46
4571	9444	4322	9206	4095	8989	3888	8792	3702	8616	3536	8461	3391	8326	3267	45
4486	9359	4237	9121	4009	8903	3803	8707	3617	8531	3451	8377	3307	8242	3183	44
4400	9273	4152	9035	3924	8818	3718	8622	3532	8447	3367	8292	3222	8158	3098	43
4315	9188	4066	8950	3839	8733	3633	8537	3447	8362	3282	8207	3138	8073	3014	42
4229	9103	3981	8865	3754	8648	3548	8452	3362	8277	3198	8123	3053	7989	2930	41
4144	9017	3896	8780	3669	8563	3463	8368	3278	8193	3113	8038	2969	7905	2845	40
4058	8932	3811	8695	3584	8478	3378	8283	3193	8108	3028	7954	2884	7820	2761	39
3973	8846	3725	8609	3499	8393	3293	8198	3108	8023	2944	7869	2800	7736	2677	38
3887	8761	3640	8524	3413	8308	3208	8113	3023	7939	2859	7785	2716	7652	2593	37
3802	8676	3555	8439	3328	8223	3123	8028	2938	7854	2774	7700	2631	7567	2508	36
3716	8590	3469	8354	3243	8138	3038	7943	2854	7769	2690	7616	2547	7483	2424	35
3631	8505	3384	8268	3158	8053	2953	7858	2769	7684	2605	7531	2462	7398	2340	34
3545	8419	3299	8183	3073	7968	2868	7773	2684	7600	2521	7447	2378	7314	2256	33
3460	8334	3213	8098	2988	7883	2783	7689	2599	7515	2436	7362	2293	7230	2171	32
3374	8249	3128	8013	2903	7798	2698	7604	2514	7430	2351	7278	2209	7145	2087	31
3289	8163	3043	7928	2818	7713	2613	7519	2430	7346	2267	7193	2125	7061	2003	30
3204	8078	2957	7842	2732	7628	2528	7434	2345	7261	2182	7109	2040	6977	1918	29
3118	7992	2872	7757	2647	7543	2443	7349	2260	7176	2098	7024	1956	6892	1834	28
3033	7907	2787	7672	2562	7458	2358	7264	2175	7092	2013	6940	1871	6808	1750	27
2947	7822	2702	7587	2477	7373	2273	7179	2091	7007	1928	6855	1787	6724	1666	26
2862	7736	2616	7502	2392	7288	2189	7095	2006	6922	1844	6771	1702	6639	1581	25
2776	7651	2531	7416	2307	7203	2104	7010	1921	6838	1759	6686	1618	6555	1497	24
2691	7566	2446	7331	2222	7118	2019	6925	1836	6753	1675	6602	1534	6471	1413	23
2605	7480	2360	7246	2137	7033	1934	6840	1752	6668	1590	6517	1449	6386	1329	22
2520	7395	2275	7161	2052	6948	1849	6755	1667	6584	1505	6432	1365	6302	1244	21
2434	7309	2190	7076	1966	6863	1764	6670	1582	6499	1421	6348	1280	6218	1160	20
2349	7224	2105	6990	1881	6778	1679	6585	1497	6414	1336	6263	1196	6133	1076	19
2263	7139	2019	6905	1796	6692	1594	6501	1412	6329	1252	6179	1111	6049	0992	18
2178	7053	1934	6820	1711	6607	1509	6416	1328	6245	1167	6094	1027	5965	0907	17
2093	6968	1849	6735	1626	6522	1424	6331	1243	6160	1082	6010	0943	5880	0823	16
2007	6883	1763	6650	1541	6437	1339	6246	1158	6075	0998	5925	0858	5796	0739	15
1922	6797	1678	6564	1456	6352	1254	6161	1073	5991	0913	5841	0774	5712	0655	14
1836	6712	1593	6479	1371	6267	1169	6076	0989	5906	0829	5756	0689	5627	0570	13
1751	6627	1508	6394	1286	6182	1084	5992	0904	5821	0744	5672	0605	5543	0486	12
1665	6541	1422	6309	1201	6097	0999	5907	0819	5737	0660	5588	0521	5459	0402	11
1580	6456	1337	6224	1115	6012	0915	5822	0734	5652	0575	5503	0436	5374	0318	10
1494	6371	1252	6138	1030	5927	0830	5737	0650	5567	0490	5419	0352	5290	0234	9
1409	6285	1167	6053	0945	5842	0745	5652	0565	5483	0406	5334	0267	5206	0149	8
1324	6200	1081	5968	0860	5757	0660	5567	0480	5398	0321	5250	0183	5121	0065	7
1238	6114	0996	5883	0775	5672	0575	5483	0395	5314	0237	5165	0099	5037	9981	6
1153	6029	0911	5798	0690	5587	0490	5398	0311	5229	0152	5081	0014	4953	9897	5
1067	5944	0826	5713	0605	5502	0405	5313	0226	5144	0068	4996	9930	4869	9812	4
0982	5858	0740	5627	0520	5417	0320	5228	0141	5060	9983	4912	9845	4784	9728	3
0896	5773	0655	5542	0435	5332	0235	5143	0057	4975	9898	4827	9761	4700	9644	2
0811	5688	0570	5457	0350	5247	0150	5058	9972	4890	9814	4743	9677	4616	9560	1
0725	5602	0485	5372	0265	5162	0065	4974	9887	4806	9729	4658	9592	4531	9475	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	"

Co-Tangent Deg. 75

Tangent Deg. 75

15 Deg. Sine

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9. 412	9. 413	9. 413	9. 414	9. 414	9. 415	9. 415	9. 416	9. 416	9. 417	9. 417	9. 418	9. 418	9. 419	9. 419
0	9962	4674	9381	4082	8778	3468	8152	2832	7506	2174	6837	1495	6148	0795	5436
1	0041	4753	9459	4160	8856	3546	8230	2910	7584	2252	6915	1573	6225	0872	5514
2	0119	4831	9538	4239	8934	3624	8309	2988	7661	2330	6993	1650	6303	0950	5591
3	0198	4910	9616	4317	9012	3702	8387	3066	7739	2408	7070	1728	6380	1027	5668
4	0277	4988	9694	4395	9090	3780	8465	3144	7817	2485	7148	1806	6458	1104	5746
5	0355	5067	9773	4473	9169	3858	8543	3221	7895	2563	7226	1883	6535	1182	5823
6	0434	5145	9851	4552	9247	3936	8621	3299	7973	2641	7303	1961	6613	1259	5900
7	0512	5224	9930	4630	9325	4015	8699	3377	8051	2719	7381	2038	6690	1337	5978
8	0591	5302	0008	4708	9403	4093	8777	3455	8128	2796	7459	2116	6768	1414	6055
9	0669	5381	0086	4787	9481	4171	8855	3533	8206	2874	7536	2193	6845	1491	6132
10	0748	5459	0165	4865	9560	4249	8933	3611	8284	2952	7614	2271	6923	1569	6210
11	0827	5538	0243	4943	9638	4327	9011	3689	8362	3030	7692	2349	7000	1646	6287
12	0905	5616	0321	5021	9716	4405	9089	3767	8440	3107	7769	2426	7077	1723	6364
13	0984	5695	0400	5100	9794	4483	9167	3845	8518	3185	7847	2504	7155	1801	6441
14	1062	5773	0478	5178	9872	4561	9245	3923	8596	3263	7925	2581	7232	1878	6519
15	1141	5851	0557	5256	9951	4639	9323	4001	8673	3341	8002	2659	7310	1956	6596
16	1219	5930	0635	5335	0029	4717	9401	4079	8751	3418	8080	2736	7387	2033	6673
17	1298	6008	0713	5413	0107	4796	9479	4157	8829	3496	8158	2814	7465	2110	6751
18	1376	6087	0792	5491	0185	4874	9557	4235	8907	3574	8235	2891	7542	2188	6828
19	1455	6165	0870	5569	0263	4952	9635	4312	8985	3651	8313	2969	7620	2265	6905
20	1534	6244	0948	5648	0342	5030	9713	4390	9062	3729	8391	3047	7697	2343	6983
21	1612	6322	1027	5726	0420	5108	9791	4468	9140	3807	8468	3124	7775	2420	7060
22	1691	6401	1105	5804	0498	5186	9869	4546	9218	3885	8546	3202	7852	2497	7137
23	1769	6479	1184	5883	0576	5264	9947	4624	9296	3962	8624	3279	7930	2575	7214
24	1848	6558	1262	5961	0654	5342	0025	4702	9374	4040	8701	3357	8007	2652	7292
25	1926	6636	1340	6039	0732	5420	0103	4780	9452	4118	8779	3434	8085	2729	7369
26	2005	6714	1419	6117	0811	5498	0181	4858	9529	4196	8856	3512	8162	2807	7446
27	2083	6793	1497	6196	0889	5577	0259	4936	9607	4273	8934	3589	8239	2884	7524
28	2162	6871	1575	6274	0967	5655	0337	5014	9685	4351	9012	3667	8317	2962	7601
29	2240	6950	1654	6352	1045	5733	0415	5092	9763	4429	9089	3745	8394	3039	7678
30	2319	7028	1732	6430	1123	5811	0493	5169	9841	4506	9167	3822	8472	3116	7755
31	2398	7107	1810	6509	1201	5889	0571	5247	9918	4584	9245	3900	8549	3194	7833
32	2476	7185	1889	6587	1280	5967	0649	5325	9996	4662	9322	3977	8627	3271	7910
33	2555	7264	1967	6665	1358	6045	0727	5403	0074	4740	9400	4055	8704	3348	7987
34	2633	7342	2045	6743	1436	6123	0805	5481	0152	4817	9477	4132	8782	3426	8064
35	2712	7420	2124	6822	1514	6201	0883	5559	0230	4895	9555	4210	8859	3503	8142
36	2791	7499	2202	6900	1592	6279	0961	5637	0307	4973	9633	4287	8937	3580	8219
37	2869	7577	2280	6978	1670	6357	1039	5715	0385	5050	9710	4365	9014	3658	8296
38	2947	7656	2359	7056	1749	6435	1117	5793	0463	5128	9788	4442	9091	3735	8373
39	3026	7734	2437	7135	1827	6513	1195	5870	0541	5206	9866	4520	9169	3812	8451
40	3104	7813	2515	7213	1905	6591	1273	5948	0619	5284	9943	4597	9246	3890	8528
41	3183	7891	2594	7291	1983	6670	1351	6026	0696	5361	0021	4675	9324	3967	8605
42	3261	7969	2672	7369	2061	6748	1429	6104	0774	5439	0098	4752	9401	4045	8683
43	3340	8048	2750	7448	2139	6826	1507	6182	0852	5517	0176	4830	9479	4122	8760
44	3418	8126	2829	7526	2218	6904	1584	6260	0930	5594	0254	4908	9556	4199	8837
45	3497	8205	2907	7604	2296	6982	1662	6338	1008	5672	0331	4985	9633	4277	8914
46	3575	8283	2985	7682	2374	7060	1740	6416	1085	5750	0409	5063	9711	4354	8992
47	3654	8362	3064	7761	2452	7138	1818	6493	1163	5828	0486	5140	9788	4431	9069
48	3732	8440	3142	7839	2530	7216	1896	6571	1241	5905	0564	5218	9866	4509	9146
49	3811	8518	3220	7917	2608	7294	1974	6649	1319	5983	0642	5295	9943	4586	9223
50	3889	8597	3299	7995	2686	7372	2052	6727	1397	6061	0719	5373	0021	4663	9301
51	3968	8675	3377	8074	2765	7450	2130	6805	1474	6138	0797	5450	0098	4741	9378
52	4046	8754	3455	8152	2843	7528	2208	6883	1552	6216	0874	5528	0175	4818	9455
53	4125	8832	3534	8230	2921	7606	2286	6961	1630	6294	0952	5605	0253	4895	9532
54	4203	8910	3612	8308	2999	7684	2364	7039	1708	6371	1030	5683	0330	4973	9609
55	4282	8989	3690	8386	3077	7762	2442	7116	1785	6449	1107	5760	0408	5050	9687
56	4360	9067	3769	8465	3155	7840	2520	7194	1863	6527	1185	5838	0485	5127	9764
57	4439	9146	3847	8543	3233	7918	2598	7272	1941	6604	1262	5915	0562	5205	9841
58	4517	9224	3925	8621	3311	7996	2676	7350	2019	6682	1340	5993	0640	5282	9918
59	4596	9302	4004	8699	3390	8074	2754	7428	2096	6760	1418	6070	0717	5359	9996
60	4674	9381	4082	8778	3468	8152	2832	7506	2174	6837	1495	6148	0795	5436	0073
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Sine Deg. 74

15 Deg. Co-Sine

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
	9. 984	9. 984	9. 984	9. 984	9. 984	9. 984	9. 984	9. 984	9. 984	9. 984	9. 984	9. 984	9. 984	9. 984	9. 984	″
	9438	9099	8760	8420	8081	7740	7400	7059	6717	6375	6033	5690	5347	5004	4660	60
	9432	9093	8754	8415	8075	7735	7394	7053	6711	6370	6027	5685	5342	4998	4654	59
	9426	9088	8749	8409	8069	7729	7388	7047	6706	6364	6022	5679	5336	4992	4649	58
	9421	9082	8743	8404	8064	7723	7383	7042	6700	6358	6016	5673	5330	4987	4643	57
	9415	9076	8737	8398	8058	7718	7377	7036	6694	6352	6010	5668	5324	4981	4637	56
	9410	9071	8732	8392	8052	7712	7371	7030	6689	6347	6005	5662	5319	4975	4631	55
	9404	9065	8726	8387	8047	7706	7366	7024	6683	6341	5999	5656	5313	4970	4626	54
	9398	9060	8720	8381	8041	7701	7360	7019	6677	6335	5993	5650	5307	4964	4620	53
	9393	9054	8715	8375	8035	7695	7354	7013	6672	6330	5987	5645	5302	4958	4614	52
	9387	9048	8709	8370	8030	7689	7349	7007	6666	6324	5982	5639	5296	4952	4609	51
	9381	9043	8703	8364	8024	7684	7343	7002	6660	6318	5976	5633	5290	4947	4603	50
	9376	9037	8698	8358	8018	7678	7337	6996	6655	6313	5970	5628	5284	4941	4597	49
	9370	9031	8692	8353	8013	7672	7331	6990	6649	6307	5965	5622	5279	4935	4591	48
	9364	9026	8686	8347	8007	7667	7326	6985	6643	6301	5959	5616	5273	4929	4586	47
	9359	9020	8681	8341	8001	7661	7320	6979	6637	6295	5953	5610	5267	4924	4580	46
	9353	9014	8675	8336	7996	7655	7314	6973	6632	6290	5947	5605	5262	4918	4574	45
	9347	9009	8669	8330	7990	7650	7309	6968	6626	6284	5942	5599	5256	4912	4568	44
	9342	9003	8664	8324	7984	7644	7303	6962	6620	6278	5936	5593	5250	4907	4563	43
	9336	8997	8658	8319	7979	7638	7297	6956	6615	6273	5930	5588	5244	4901	4557	42
	9331	8992	8653	8313	7973	7633	7292	6951	6609	6267	5925	5582	5239	4895	4551	41
	9325	8986	8647	8307	7967	7627	7286	6945	6603	6261	5919	5576	5233	4889	4545	40
	9319	8980	8641	8302	7962	7621	7280	6939	6598	6256	5913	5570	5227	4884	4540	39
	9314	8975	8636	8296	7956	7615	7275	6933	6592	6250	5907	5565	5221	4878	4534	38
	9308	8969	8630	8290	7950	7610	7269	6928	6586	6244	5902	5559	5216	4872	4528	37
	9302	8963	8624	8285	7945	7604	7263	6922	6580	6238	5896	5553	5210	4866	4522	36
	9297	8958	8619	8279	7939	7598	7258	6916	6575	6233	5890	5548	5204	4861	4517	35
	9291	8952	8613	8273	7933	7593	7252	6911	6569	6227	5885	5542	5199	4855	4511	34
	9285	8947	8607	8268	7928	7587	7246	6905	6563	6221	5879	5536	5193	4849	4505	33
	9280	8941	8602	8262	7922	7581	7241	6899	6558	6216	5873	5530	5187	4844	4500	32
	9274	8935	8596	8256	7916	7576	7235	6894	6552	6210	5867	5525	5181	4838	4494	31
	9268	8930	8590	8251	7911	7570	7229	6888	6546	6204	5862	5519	5176	4832	4488	30
	9263	8924	8585	8245	7905	7564	7224	6882	6541	6199	5856	5513	5170	4826	4482	29
	9257	8918	8579	8239	7899	7559	7218	6877	6535	6193	5850	5507	5164	4821	4477	28
	9252	8913	8573	8234	7894	7553	7212	6871	6529	6187	5845	5502	5159	4815	4471	27
	9246	8907	8568	8228	7888	7547	7206	6865	6523	6181	5839	5496	5153	4809	4465	26
	9240	8901	8562	8222	7882	7542	7201	6859	6518	6176	5833	5490	5147	4803	4459	25
	9235	8896	8556	8217	7876	7536	7195	6854	6512	6170	5828	5485	5141	4798	4454	24
	9229	8890	8551	8211	7871	7530	7189	6848	6506	6164	5822	5479	5136	4792	4448	23
	9223	8884	8545	8205	7865	7525	7184	6842	6501	6159	5816	5473	5130	4786	4442	22
	9218	8879	8539	8200	7859	7519	7178	6837	6495	6153	5810	5467	5124	4780	4436	21
	9212	8873	8534	8194	7854	7513	7172	6831	6489	6147	5805	5462	5118	4775	4431	20
	9206	8867	8528	8188	7848	7508	7167	6825	6484	6141	5799	5456	5113	4769	4425	19
	9201	8862	8522	8183	7842	7502	7161	6820	6478	6136	5793	5450	5107	4763	4419	18
	9195	8856	8517	8177	7837	7496	7155	6814	6472	6130	5788	5445	5101	4758	4413	17
	9189	8850	8511	8171	7831	7491	7150	6808	6466	6124	5782	5439	5096	4752	4408	16
	9184	8845	8505	8166	7825	7485	7144	6803	6461	6119	5776	5433	5090	4746	4402	15
	9178	8839	8500	8160	7820	7479	7138	6797	6455	6113	5770	5427	5084	4740	4396	14
	9172	8833	8494	8154	7814	7474	7133	6791	6449	6107	5765	5422	5078	4735	4391	13
	9167	8828	8488	8149	7808	7468	7127	6785	6444	6102	5759	5416	5073	4729	4385	12
	9161	8822	8483	8143	7803	7462	7121	6780	6438	6096	5753	5410	5067	4723	4379	11
	9156	8817	8477	8137	7797	7456	7115	6774	6432	6090	5748	5405	5061	4717	4373	10
	9150	8811	8471	8132	7791	7451	7110	6768	6427	6084	5742	5399	5055	4712	4368	9
	9144	8805	8466	8126	7786	7445	7104	6763	6421	6079	5736	5393	5050	4706	4362	8
	9139	8800	8460	8120	7780	7439	7098	6757	6415	6073	5730	5387	5044	4700	4356	7
	9133	8794	8454	8115	7774	7434	7093	6751	6409	6067	5725	5382	5038	4695	4350	6
	9127	8788	8449	8109	7769	7428	7087	6746	6404	6062	5719	5376	5033	4689	4345	5
	9122	8783	8443	8103	7763	7422	7081	6740	6398	6056	5713	5370	5027	4683	4339	4
	9116	8777	8437	8098	7757	7417	7076	6734	6392	6050	5708	5365	5021	4677	4333	3
	9110	8771	8432	8092	7752	7411	7070	6729	6387	6044	5702	5359	5015	4672	4327	2
	9105	8766	8426	8086	7746	7405	7064	6723	6381	6039	5696	5353	5010	4666	4322	1
	9099	8760	8420	8081	7740	7400	7059	6717	6375	6033	5690	5347	5004	4660	4316	0
	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Sine Deg. 74

15 Deg. Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.428	9.428	9.429	9.429	9.430	9.430	9.431	9.431	9.432	9.432	9.433	9.433	9.434	9.434	9.435
0	0525	5575	0621	5661	0697	5727	0753	5773	0789	5799	0804	5805	0800	5791	0776
1	0609	5659	0705	5745	0781	5811	0836	5857	0872	5882	0888	5888	0883	5874	0859
2	0693	5743	0789	5829	0865	5895	0920	5940	0956	5966	0971	5971	0967	5957	0942
3	0777	5828	0873	5913	0949	5979	1004	6024	1039	6049	1055	6055	1050	6040	1026
4	0861	5912	0957	5997	1032	6063	1088	6108	1123	6133	1138	6138	1133	6123	1109
5	0946	5996	1041	6081	1116	6146	1171	6191	1206	6216	1221	6221	1216	6206	1192
6	1030	6080	1125	6165	1200	6230	1255	6275	1290	6300	1305	6305	1300	6290	1275
7	1114	6164	1209	6249	1284	6314	1339	6359	1373	6383	1388	6388	1383	6373	1358
8	1198	6248	1293	6333	1368	6398	1422	6442	1457	6467	1471	6471	1466	6456	1441
9	1282	6332	1377	6417	1452	6481	1506	6526	1540	6550	1555	6554	1549	6539	1524
10	1367	6417	1461	6501	1536	6565	1590	6609	1624	6634	1638	6638	1632	6622	1607
11	1451	6501	1545	6585	1620	6649	1674	6693	1708	6717	1721	6721	1716	6705	1690
12	1535	6585	1629	6669	1703	6733	1757	6777	1791	6800	1805	6804	1799	6788	1773
13	1619	6669	1713	6753	1787	6817	1841	6860	1875	6884	1888	6888	1882	6871	1856
14	1703	6753	1797	6837	1871	6900	1925	6944	1958	6967	1972	6971	1965	6955	1939
15	1788	6837	1881	6921	1955	6984	2008	7027	2042	7051	2055	7054	2048	7038	2022
16	1872	6921	1965	7005	2039	7068	2092	7111	2125	7134	2138	7137	2132	7121	2105
17	1956	7005	2050	7089	2123	7152	2176	7195	2209	7218	2222	7221	2215	7204	2188
18	2040	7089	2134	7173	2207	7236	2259	7278	2292	7301	2305	7304	2298	7287	2271
19	2124	7174	2218	7257	2290	7319	2343	7362	2376	7385	2388	7387	2381	7370	2354
20	2209	7258	2302	7340	2374	7403	2427	7446	2459	7468	2472	7471	2464	7453	2437
21	2293	7342	2386	7424	2458	7487	2510	7529	2543	7551	2555	7554	2548	7536	2520
22	2377	7426	2470	7508	2542	7571	2594	7613	2626	7635	2638	7637	2631	7619	2603
23	2461	7510	2554	7592	2626	7654	2678	7696	2710	7718	2722	7720	2714	7703	2686
24	2545	7594	2638	7676	2710	7738	2762	7780	2793	7802	2805	7804	2797	7786	2769
25	2630	7678	2722	7760	2794	7822	2845	7864	2877	7885	2888	7887	2880	7869	2852
26	2714	7762	2806	7844	2877	7906	2929	7947	2960	7969	2972	7970	2963	7952	2935
27	2798	7846	2890	7928	2961	7989	3013	8031	3044	8052	3055	8053	3047	8035	3018
28	2882	7930	2974	8012	3045	8073	3096	8114	3127	8135	3139	8137	3130	8118	3101
29	2966	8015	3058	8096	3129	8157	3180	8198	3211	8219	3222	8220	3213	8201	3184
30	3051	8099	3142	8180	3213	8241	3264	8281	3294	8302	3305	8303	3296	8284	3267
31	3135	8183	3226	8264	3297	8324	3347	8365	3378	8386	3389	8386	3379	8367	3350
32	3219	8267	3310	8348	3380	8408	3431	8449	3461	8469	3472	8470	3462	8450	3433
33	3303	8351	3394	8432	3464	8492	3515	8532	3545	8553	3555	8553	3546	8533	3516
34	3387	8435	3478	8515	3548	8576	3598	8616	3628	8636	3639	8636	3629	8617	3599
35	3471	8519	3562	8599	3632	8659	3682	8699	3712	8719	3722	8719	3712	8700	3682
36	3556	8603	3646	8683	3716	8743	3766	8783	3795	8803	3805	8803	3795	8783	3765
37	3640	8687	3730	8767	3800	8827	3849	8867	3879	8886	3889	8886	3878	8866	3848
38	3724	8771	3814	8851	3883	8911	3933	8950	3962	8970	3972	8969	3962	8949	3931
39	3808	8855	3898	8935	3967	8994	4017	9034	4046	9053	4055	9052	4045	9032	4014
40	3892	8940	3982	9019	4051	9078	4100	9117	4129	9136	4139	9136	4128	9115	4097
41	3976	9024	4066	9103	4135	9162	4184	9201	4213	9220	4222	9219	4211	9198	4180
42	4061	9108	4150	9187	4219	9246	4268	9284	4296	9303	4305	9302	4294	9281	4263
43	4145	9192	4234	9271	4303	9329	4351	9368	4380	9387	4389	9385	4377	9364	4346
44	4229	9276	4318	9355	4386	9413	4435	9452	4463	9470	4472	9469	4460	9447	4429
45	4313	9360	4402	9438	4470	9497	4519	9535	4547	9553	4555	9552	4544	9530	4512
46	4397	9444	4486	9522	4554	9581	4602	9619	4630	9637	4638	9635	4627	9614	4595
47	4481	9528	4570	9606	4638	9664	4686	9702	4714	9720	4722	9718	4710	9697	4678
48	4565	9612	4654	9690	4722	9748	4769	9786	4797	9804	4805	9802	4793	9780	4761
49	4650	9696	4738	9774	4805	9832	4853	9869	4881	9887	4888	9885	4876	9863	4844
50	4734	9780	4822	9858	4889	9916	4937	9953	4964	9970	4972	9968	4959	9946	4927
51	4818	9864	4906	9942	4973	9999	5020	0037	5048	0054	5055	0051	5043	0029	5010
52	4902	9948	4990	0026	5057	0083	5104	0120	5131	0137	5138	0134	5126	0112	5093
53	4986	0032	5074	0110	5141	0167	5188	0204	5215	0221	5222	0218	5209	0195	5176
54	5070	0117	5158	0194	5225	0250	5271	0287	5298	0304	5305	0301	5292	0278	5259
55	5155	0201	5242	0277	5308	0334	5355	0371	5382	0387	5388	0384	5375	0361	5342
56	5239	0285	5326	0361	5392	0418	5439	0454	5465	0471	5472	0467	5458	0444	5425
57	5323	0369	5409	0445	5476	0502	5522	0538	5549	0554	5555	0551	5541	0527	5508
58	5407	0453	5493	0529	5560	0585	5606	0621	5632	0638	5638	0634	5625	0610	5591
59	5491	0537	5577	0613	5644	0669	5690	0705	5715	0721	5721	0717	5708	0693	5674
60	5575	0621	5661	0697	5727	0753	5773	0789	5799	0804	5805	0800	5791	0776	5757
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Tangent Deg. 74

15 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
10.571	10.571	10.570	10.570	10.569	10.569	10.568	10.568	10.567	10.567	10.566	10.566	10.565	10.565	10.564	″
9475	4425	9379	4339	9303	4273	9247	4227	9211	4201	9196	4195	9200	4209	9224	60
9391	4341	9295	4255	9219	4189	9164	4143	9128	4118	9112	4112	9117	4126	9141	59
9307	4257	9211	4171	9135	4105	9080	4060	9044	4034	9029	4029	9033	4043	9058	58
9223	4172	9127	4087	9051	4021	8996	3976	8961	3951	8945	3945	8950	3960	8974	57
9139	4088	9043	4003	8968	3937	8912	3892	8877	3867	8862	3862	8867	3877	8891	56
9054	4004	8959	3919	8884	3854	8829	3809	8794	3784	8779	3779	8784	3794	8808	55
8970	3920	8875	3835	8800	3770	8745	3725	8710	3700	8695	3695	8700	3710	8725	54
8886	3836	8791	3751	8716	3686	8661	3641	8627	3617	8612	3612	8617	3627	8642	53
8802	3752	8707	3667	8632	3602	8578	3558	8543	3533	8529	3529	8534	3544	8559	52
8718	3668	8623	3583	8548	3519	8494	3474	8460	3450	8445	3446	8451	3461	8476	51
8633	3583	8539	3499	8464	3435	8410	3391	8376	3366	8362	3362	8368	3378	8393	50
8549	3499	8455	3415	8380	3351	8326	3307	8292	3283	8279	3279	8284	3295	8310	49
8465	3415	8371	3331	8297	3267	8243	3223	8209	3200	8195	3196	8201	3212	8227	48
8381	3331	8287	3247	8213	3183	8159	3140	8125	3116	8112	3112	8118	3129	8144	47
8297	3247	8203	3163	8129	3100	8075	3056	8042	3033	8028	3029	8035	3045	8061	46
8212	3163	8119	3079	8045	3016	7992	2973	7958	2949	7945	2946	7952	2962	7978	45
8128	3079	8035	2995	7961	2932	7908	2889	7875	2866	7862	2863	7868	2879	7895	44
8044	2995	7950	2911	7877	2848	7824	2805	7791	2782	7778	2779	7785	2796	7812	43
7960	2911	7866	2827	7793	2764	7741	2722	7708	2699	7695	2696	7702	2713	7729	42
7876	2826	7782	2743	7710	2681	7657	2638	7624	2615	7612	2613	7619	2630	7646	41
7791	2742	7698	2660	7626	2597	7573	2554	7541	2532	7528	2529	7536	2547	7563	40
7707	2658	7614	2576	7542	2513	7490	2471	7457	2449	7445	2446	7452	2464	7480	39
7623	2574	7530	2492	7458	2429	7406	2387	7374	2365	7362	2363	7369	2381	7397	38
7539	2490	7446	2408	7374	2346	7322	2304	7290	2282	7278	2280	7286	2297	7314	37
7455	2406	7362	2324	7290	2262	7238	2220	7207	2198	7195	2196	7203	2214	7231	36
7370	2322	7278	2240	7206	2178	7155	2136	7123	2115	7112	2113	7120	2131	7148	35
7286	2238	7194	2156	7123	2094	7071	2053	7040	2031	7028	2030	7037	2048	7065	34
7202	2154	7110	2072	7039	2011	6987	1969	6956	1948	6945	1947	6953	1965	6982	33
7118	2070	7026	1988	6955	1927	6904	1886	6873	1865	6861	1863	6870	1882	6899	32
7034	1985	6942	1904	6871	1843	6820	1802	6789	1781	6778	1780	6787	1799	6816	31
6949	1901	6858	1820	6787	1759	6736	1719	6706	1698	6695	1697	6704	1716	6733	30
6865	1817	6774	1736	6703	1676	6653	1635	6622	1614	6611	1614	6621	1633	6650	29
6781	1733	6690	1652	6620	1592	6569	1551	6539	1531	6523	1530	6538	1550	6567	28
6697	1649	6606	1568	6536	1508	6485	1468	6455	1447	6445	1447	6454	1467	6484	27
6613	1565	6522	1485	6452	1424	6402	1384	6372	1364	6361	1364	6371	1383	6401	26
6529	1481	6438	1401	6368	1341	6318	1301	6288	1281	6278	1281	6288	1300	6318	25
6444	1397	6354	1317	6284	1257	6234	1217	6205	1197	6195	1197	6205	1217	6235	24
6360	1313	6270	1233	6200	1173	6151	1133	6121	1114	6111	1114	6122	1134	6152	23
6276	1229	6186	1149	6117	1089	6067	1050	6038	1030	6028	1031	6038	1051	6069	22
6192	1145	6102	1065	6033	1006	5983	0966	5954	0947	5945	0948	5955	0968	5986	21
6108	1060	6018	0981	5949	0922	5900	0883	5871	0864	5861	0864	5872	0885	5903	20
6024	0976	5934	0897	5865	0838	5816	0799	5787	0780	5778	0781	5789	0802	5820	19
5939	0892	5850	0813	5781	0754	5732	0716	5704	0697	5695	0698	5706	0719	5737	18
5855	0808	5766	0729	5697	0671	5649	0632	5620	0613	5611	0615	5623	0636	5654	17
5771	0724	5682	0645	5614	0587	5565	0548	5537	0530	5528	0531	5540	0553	5571	16
5687	0640	5598	0562	5530	0503	5481	0465	5453	0447	5445	0448	5456	0470	5488	15
5603	0556	5514	0478	5446	0419	5398	0381	5370	0363	5362	0365	5373	0386	5405	14
5519	0472	5430	0394	5362	0336	5314	0298	5286	0280	5278	0282	5290	0303	5322	13
5435	0388	5346	0310	5278	0252	5231	0214	5203	0196	5195	0198	5207	0220	5239	12
5350	0304	5262	0226	5195	0168	5147	0131	5119	0113	5112	0115	5124	0137	5156	11
5266	0220	5178	0142	5111	0084	5063	0047	5036	0030	5028	0032	5041	0054	5073	10
5182	0136	5094	0058	5027	0001	4980	9963	4952	9946	4945	9949	4957	9971	4990	9
5098	0052	5010	9974	4943	9917	4896	9880	4869	9863	4862	9866	4874	9888	4907	8
5014	9968	4926	9890	4859	9833	4812	9796	4785	9779	4778	9782	4791	9805	4824	7
4930	9883	4842	9806	4775	9750	4729	9713	4702	9696	4695	9699	4708	9722	4741	6
4845	9799	4758	9723	4692	9666	4645	9629	4618	9613	4612	9616	4625	9639	4658	5
4761	9715	4674	9639	4608	9582	4561	9546	4535	9529	4528	9533	4542	9556	4575	4
4677	9631	4591	9555	4524	9498	4478	9462	4451	9446	4445	9449	4459	9473	4492	3
4593	9547	4507	9471	4440	9415	4394	9379	4368	9362	4362	9366	4375	9390	4409	2
4509	9463	4423	9387	4356	9331	4310	9295	4285	9279	4279	9283	4292	9307	4326	1
4425	9379	4339	9303	4273	9247	4227	9211	4201	9196	4195	9200	4209	9224	4243	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Tangent Deg. 74

15 Deg. Sine

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 420	9. 420	9. 420	9. 421	9. 421	9. 422	9. 422	9. 423	9. 423	9. 424	9. 424	9. 425	9. 425	9. 425	9. 426
0	0073	4704	9330	3950	8566	3176	7780	2380	6974	1563	6147	0726	5299	9867	4430
1	0150	4781	9407	4027	8642	3252	7857	2456	7051	1640	6223	0802	5375	9943	4506
2	0227	4858	9484	4104	8719	3329	7934	2533	7127	1716	6300	0878	5451	0019	4582
3	0305	4935	9561	4181	8796	3406	8010	2610	7204	1792	6376	0954	5528	0096	4658
4	0382	5013	9638	4258	8873	3483	8087	2686	7280	1869	6452	1031	5604	0172	4734
5	0459	5090	9715	4335	8950	3560	8164	2763	7357	1945	6529	1107	5680	0248	4810
6	0536	5167	9792	4412	9027	3636	8241	2839	7433	2022	6605	1183	5756	0324	4886
7	0613	5244	9869	4489	9104	3713	8317	2916	7510	2098	6681	1259	5832	0400	4962
8	0691	5321	9946	4566	9181	3790	8394	2993	7586	2175	6758	1336	5908	0476	5038
9	0768	5398	0023	4643	9257	3867	8471	3069	7663	2251	6834	1412	5985	0552	5114
10	0845	5475	0100	4720	9334	3943	8547	3146	7739	2327	6910	1488	6061	0628	5190
11	0922	5552	0177	4797	9411	4020	8624	3222	7816	2404	6987	1564	6137	0704	5266
12	1000	5630	0254	4874	9488	4097	8701	3299	7892	2480	7063	1641	6213	0780	5342
13	1077	5707	0331	4951	9565	4174	8777	3376	7969	2557	7139	1717	6289	0856	5418
14	1154	5784	0408	5028	9642	4251	8854	3452	8045	2633	7216	1793	6365	0932	5494
15	1231	5861	0485	5105	9719	4327	8931	3529	8122	2710	7292	1869	6442	1008	5570
16	1308	5938	0562	5182	9795	4404	9007	3605	8198	2786	7368	1946	6518	1085	5646
17	1386	6015	0640	5259	9872	4481	9084	3682	8275	2862	7445	2022	6594	1161	5722
18	1463	6092	0717	5335	9949	4558	9161	3759	8351	2939	7521	2098	6670	1237	5798
19	1540	6169	0794	5412	0026	4634	9237	3835	8428	3015	7597	2174	6746	1313	5874
20	1617	6247	0871	5489	0103	4711	9314	3912	8504	3092	7674	2251	6822	1389	5950
21	1694	6324	0948	5566	0180	4788	9391	3988	8581	3168	7750	2327	6898	1465	6026
22	1772	6401	1025	5643	0257	4865	9467	4065	8657	3244	7826	2403	6975	1541	6102
23	1849	6478	1102	5720	0333	4941	9544	4142	8734	3321	7903	2479	7051	1617	6178
24	1926	6555	1179	5797	0410	5018	9621	4218	8810	3397	7979	2556	7127	1693	6254
25	2003	6632	1256	5874	0487	5095	9697	4295	8887	3474	8055	2632	7203	1769	6330
26	2080	6709	1333	5951	0564	5172	9774	4371	8963	3550	8132	2708	7279	1845	6406
27	2158	6786	1410	6028	0641	5248	9851	4448	9040	3626	8208	2784	7355	1921	6482
28	2235	6863	1487	6105	0718	5325	9927	4524	9116	3703	8284	2860	7431	1997	6558
29	2312	6940	1564	6182	0794	5402	0004	4601	9193	3779	8361	2937	7508	2073	6634
30	2389	7018	1641	6259	0871	5479	0081	4678	9269	3856	8437	3013	7584	2149	6710
31	2466	7095	1718	6336	0948	5555	0157	4754	9346	3932	8513	3089	7660	2225	6786
32	2543	7172	1795	6412	1025	5632	0234	4831	9422	4008	8590	3165	7736	2302	6862
33	2621	7249	1872	6489	1102	5709	0311	4907	9499	4085	8666	3242	7812	2378	6938
34	2698	7326	1949	6566	1179	5786	0387	4984	9575	4161	8742	3318	7888	2454	7014
35	2775	7403	2026	6643	1255	5862	0464	5060	9652	4238	8818	3394	7964	2530	7090
36	2852	7480	2103	6720	1332	5939	0541	5137	9728	4314	8895	3470	8041	2606	7166
37	2929	7557	2180	6797	1409	6016	0617	5214	9805	4390	8971	3546	8117	2682	7242
38	3007	7634	2257	6874	1486	6093	0694	5290	9881	4467	9047	3623	8193	2758	7318
39	3084	7711	2334	6951	1563	6169	0771	5367	9958	4543	9124	3699	8269	2834	7394
40	3161	7788	2411	7028	1640	6246	0847	5443	0034	4620	9200	3775	8345	2910	7470
41	3238	7866	2488	7105	1716	6323	0924	5520	0110	4696	9276	3851	8421	2986	7545
42	3315	7943	2565	7182	1793	6399	1001	5596	0187	4772	9353	3927	8497	3062	7621
43	3392	8020	2642	7259	1870	6476	1077	5673	0263	4849	9429	4004	8573	3138	7697
44	3470	8097	2719	7335	1947	6553	1154	5749	0340	4925	9505	4080	8650	3214	7773
45	3547	8174	2796	7412	2024	6630	1230	5826	0416	5001	9581	4156	8726	3290	7849
46	3624	8251	2873	7489	2100	6706	1307	5903	0493	5078	9658	4232	8802	3366	7925
47	3701	8328	2950	7566	2177	6783	1384	5979	0569	5154	9734	4309	8878	3442	8001
48	3778	8405	3027	7643	2254	6860	1460	6056	0646	5231	9810	4385	8954	3518	8077
49	3855	8482	3104	7720	2331	6937	1537	6132	0722	5307	9887	4461	9030	3594	8153
50	3933	8559	3181	7797	2408	7013	1614	6209	0799	5383	9963	4537	9106	3670	8229
51	4010	8636	3258	7874	2484	7090	1690	6285	0875	5460	0039	4613	9182	3746	8305
52	4087	8713	3335	7951	2561	7167	1767	6362	0952	5536	0115	4689	9258	3822	8381
53	4164	8790	3412	8027	2638	7243	1843	6438	1028	5612	0192	4766	9335	3898	8457
54	4241	8867	3489	8104	2715	7320	1920	6515	1104	5689	0268	4842	9411	3974	8533
55	4318	8945	3566	8181	2792	7397	1997	6591	1181	5765	0344	4918	9487	4050	8609
56	4395	9022	3642	8258	2868	7474	2073	6668	1257	5841	0420	4994	9563	4126	8685
57	4473	9099	3719	8335	2945	7550	2150	6744	1334	5918	0497	5070	9639	4202	8760
58	4550	9176	3796	8412	3022	7627	2227	6821	1410	5994	0573	5147	9715	4278	8836
59	4627	9253	3873	8489	3099	7704	2303	6898	1487	6071	0649	5223	9791	4354	8912
60	4704	9330	3950	8566	3176	7780	2380	6974	1563	6147	0726	5299	9867	4430	8988
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Sine Deg. 74

15 Deg. Co-Sine

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
	9. 984	9. 984	9. 984	9. 984	9. 984	9. 984	9. 984	9. 984	9. 984	9. 984	9. 984	9. 984	9. 984	9. 983	9. 983	″
0	4316	3971	3626	3281	2935	2589	2242	1895	1548	1200	0852	0503	0154	9805	9455	60
1	4310	3966	3621	3275	2929	2583	2236	1889	1542	1194	0846	0498	0149	9799	9449	59
2	4304	3960	3615	3269	2924	2577	2231	1884	1536	1189	0840	0492	0143	9793	9444	58
3	4299	3954	3609	3264	2918	2572	2225	1878	1531	1183	0835	0486	0137	9788	9438	57
4	4293	3948	3603	3258	2912	2566	2219	1872	1525	1177	0829	0480	0131	9782	9432	56
5	4287	3943	3597	3252	2906	2560	2213	1866	1519	1171	0823	0474	0125	9776	9426	55
6	4281	3937	3592	3246	2900	2554	2208	1861	1513	1165	0817	0469	0120	9770	9420	54
7	4276	3931	3586	3241	2895	2548	2202	1855	1507	1160	0811	0463	0114	9764	9414	53
8	4270	3925	3580	3235	2889	2543	2196	1849	1502	1154	0806	0457	0108	9758	9409	52
9	4264	3920	3574	3229	2883	2537	2190	1843	1496	1148	0800	0451	0102	9753	9403	51
10	4258	3914	3569	3223	2877	2531	2184	1837	1490	1142	0794	0445	0096	9747	9397	50
11	4253	3908	3563	3217	2872	2525	2179	1832	1484	1136	0788	0439	0090	9741	9391	49
12	4247	3902	3557	3212	2866	2520	2173	1826	1478	1131	0782	0434	0085	9735	9385	48
13	4241	3897	3551	3206	2860	2514	2167	1820	1473	1125	0776	0428	0079	9729	9379	47
14	4236	3891	3546	3200	2854	2508	2161	1814	1467	1119	0771	0422	0073	9723	9374	46
15	4230	3885	3540	3194	2849	2502	2156	1808	1461	1113	0765	0416	0067	9718	9368	45
16	4224	3879	3534	3189	2843	2496	2150	1803	1455	1107	0759	0410	0061	9712	9362	44
17	4218	3874	3528	3183	2837	2491	2144	1797	1449	1102	0753	0405	0055	9706	9356	43
18	4213	3868	3523	3177	2831	2485	2138	1791	1444	1096	0747	0399	0050	9700	9350	42
19	4207	3862	3517	3171	2825	2479	2132	1785	1438	1090	0742	0393	0044	9694	9344	41
20	4201	3856	3511	3166	2820	2473	2127	1780	1432	1084	0736	0387	0038	9689	9339	40
21	4195	3851	3505	3160	2814	2468	2121	1774	1426	1078	0730	0381	0032	9683	9333	39
22	4190	3845	3500	3154	2808	2462	2115	1768	1420	1073	0724	0375	0026	9677	9327	38
23	4184	3839	3494	3148	2802	2456	2109	1762	1415	1067	0718	0370	0021	9671	9321	37
24	4178	3833	3488	3143	2797	2450	2104	1756	1409	1061	0713	0364	0015	9665	9315	36
25	4172	3828	3482	3137	2791	2444	2098	1751	1403	1055	0707	0358	0009	9659	9309	35
26	4167	3822	3477	3131	2785	2439	2092	1745	1397	1049	0701	0352	0003	9654	9304	34
27	4161	3816	3471	3125	2779	2433	2086	1739	1391	1043	0695	0346	9997	9648	9298	33
28	4155	3810	3465	3120	2774	2427	2080	1733	1386	1038	0689	0341	9991	9642	9292	32
29	4149	3805	3459	3114	2768	2421	2075	1727	1380	1032	0684	0335	9986	9636	9286	31
30	4144	3799	3454	3108	2762	2416	2069	1722	1374	1026	0678	0329	9980	9630	9280	30
31	4138	3793	3448	3102	2756	2410	2063	1716	1368	1020	0672	0323	9974	9624	9274	29
32	4132	3787	3442	3096	2750	2404	2057	1710	1362	1014	0666	0317	9968	9619	9269	28
33	4126	3782	3436	3091	2745	2398	2051	1704	1357	1009	0660	0312	9962	9613	9263	27
34	4121	3776	3431	3085	2739	2393	2046	1698	1351	1003	0654	0306	9957	9607	9257	26
35	4115	3770	3425	3079	2733	2387	2040	1693	1345	0997	0649	0300	9951	9601	9251	25
36	4109	3764	3419	3073	2727	2381	2034	1687	1339	0991	0643	0294	9945	9595	9245	24
37	4103	3759	3413	3068	2722	2375	2028	1681	1333	0985	0637	0288	9939	9589	9239	23
38	4098	3753	3408	3062	2716	2369	2023	1675	1328	0980	0631	0282	9933	9584	9234	22
39	4092	3747	3402	3056	2710	2364	2017	1670	1322	0974	0625	0277	9927	9578	9228	21
40	4086	3741	3396	3050	2704	2358	2011	1664	1316	0968	0620	0271	9922	9572	9222	20
41	4080	3736	3390	3045	2699	2352	2005	1658	1310	0962	0614	0265	9916	9566	9216	19
42	4075	3730	3385	3039	2693	2346	1999	1652	1305	0956	0608	0259	9910	9560	9210	18
43	4069	3724	3379	3033	2687	2341	1994	1646	1299	0951	0602	0253	9904	9554	9204	17
44	4063	3718	3373	3027	2681	2335	1988	1641	1293	0945	0596	0248	9898	9549	9199	16
45	4057	3713	3367	3022	2675	2329	1982	1635	1287	0939	0591	0242	9892	9543	9193	15
46	4052	3707	3361	3016	2670	2323	1976	1629	1281	0933	0585	0236	9887	9537	9187	14
47	4046	3701	3356	3010	2664	2317	1970	1623	1276	0927	0579	0230	9881	9531	9181	13
48	4040	3695	3350	3004	2658	2312	1965	1617	1270	0922	0573	0224	9875	9525	9175	12
49	4034	3690	3344	2998	2652	2306	1960	1612	1264	0916	0567	0218	9869	9519	9169	11
50	4029	3684	3338	2993	2647	2300	1953	1606	1258	0910	0562	0213	9863	9514	9164	10
51	4023	3678	3333	2987	2641	2294	1947	1600	1252	0904	0556	0207	9857	9508	9158	9
52	4017	3672	3327	2981	2635	2289	1942	1594	1247	0898	0550	0201	9852	9502	9152	8
53	4011	3667	3321	2975	2629	2283	1936	1588	1241	0893	0544	0195	9846	9496	9146	7
54	4006	3661	3315	2970	2623	2277	1930	1583	1235	0887	0538	0189	9840	9490	9140	6
55	4000	3655	3310	2964	2618	2271	1924	1577	1229	0881	0532	0184	9834	9484	9134	5
56	3994	3649	3304	2958	2612	2265	1918	1571	1223	0875	0527	0178	9828	9479	9129	4
57	3989	3644	3298	2952	2606	2260	1913	1565	1218	0869	0521	0172	9823	9473	9123	3
58	3983	3638	3292	2947	2600	2254	1907	1559	1212	0864	0515	0166	9817	9467	9117	2
59	3977	3632	3287	2941	2595	2248	1901	1554	1206	0858	0509	0160	9811	9461	9111	1
60	3971	3626	3281	2935	2589	2242	1895	1548	1200	0852	0503	0154	9805	9455	9105	0
	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30	″

Sine Deg. 74

15 Deg. Tangent — 15 Deg. Co-Tangent

"	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	"
	9.435	9.436	9.436	9.437	9.437	9.438	9.438	9.439	9.439	9.440	9.440	9.441	9.441	9.442	9.442	10.564	10.563	10.563	10.562	10.562	10.561	10.561	10.560	10.560	10.559	10.559	10.558	10.558	10.557	10.557	
0	5757	0733	5704	0670	5631	0587	5538	0485	5426	0363	5295	0222	5145	0062	4975	4243	9267	4296	9330	4369	9413	4462	9515	4574	9637	4705	9778	4855	9938	5025	60
1	5840	0816	5786	0752	5713	0669	5621	0567	5508	0445	5377	0304	5227	0144	5057	4160	9184	4214	9248	4287	9331	4379	9433	4492	9555	4623	9696	4773	9856	4943	59
2	5923	0899	5869	0835	5796	0752	5703	0649	5591	0527	5459	0386	5309	0226	5139	4077	9101	4131	9165	4204	9248	4297	9351	4409	9473	4541	9614	4691	9774	4861	58
3	6006	0981	5952	0918	5878	0834	5786	0732	5673	0610	5541	0468	5391	0308	5221	3994	9019	4048	9082	4122	9166	4214	9268	4327	9390	4459	9532	4609	9692	4779	57
4	6089	1064	6035	1000	5961	0917	5868	0814	5755	0692	5624	0550	5473	0390	5302	3911	8936	3965	9000	4039	9083	4132	9186	4245	9308	4376	9450	4527	9610	4698	56
5	6172	1147	6118	1083	6044	1000	5950	0897	5838	0774	5706	0633	5555	0472	5384	3828	8853	3882	8917	3956	9000	4050	9103	4162	9226	4294	9367	4445	9528	4616	55
6	6255	1230	6200	1166	6126	1082	6033	0979	5920	0856	5788	0715	5637	0554	5466	3745	8770	3800	8834	3874	8918	3967	9021	4080	9144	4212	9285	4363	9446	4534	54
7	6338	1313	6283	1249	6209	1165	6115	1061	6002	0939	5870	0797	5719	0636	5548	3662	8687	3717	8751	3791	8835	3885	8939	3998	9061	4130	9203	4281	9364	4452	53
8	6421	1396	6366	1331	6292	1247	6198	1144	6085	1021	5952	0879	5801	0717	5630	3579	8604	3634	8669	3708	8753	3802	8856	3915	8979	4048	9121	4199	9283	4370	52
9	6504	1479	6449	1414	6374	1330	6280	1226	6167	1103	6034	0961	5882	0799	5712	3496	8521	3551	8586	3626	8670	3720	8774	3833	8897	3966	9039	4118	9201	4288	51
10	6587	1562	6532	1497	6457	1412	6363	1308	6249	1185	6117	1043	5964	0881	5793	3413	8438	3468	8503	3543	8588	3637	8692	3751	8815	3883	8957	4036	9119	4207	50
11	6670	1644	6614	1579	6540	1495	6445	1391	6332	1268	6199	1125	6046	0963	5875	3330	8356	3386	8421	3460	8505	3555	8609	3668	8732	3801	8875	3954	9037	4125	49
12	6753	1727	6697	1662	6622	1577	6528	1473	6414	1350	6281	1207	6128	1045	5957	3247	8273	3303	8338	3378	8423	3472	8527	3586	8650	3719	8793	3872	8955	4043	48
13	6836	1810	6780	1745	6705	1660	6610	1556	6496	1432	6363	1289	6210	1127	6039	3164	8190	3220	8255	3295	8340	3390	8444	3504	8568	3637	8711	3790	8873	3961	47
14	6918	1893	6863	1828	6787	1742	6693	1638	6579	1514	6445	1371	6292	1209	6121	3082	8107	3137	8172	3213	8258	3307	8362	3421	8486	3555	8629	3708	8791	3879	46
15	7001	1976	6946	1910	6870	1825	6775	1720	6661	1596	6527	1453	6374	1291	6202	2999	8024	3054	8090	3130	8175	3225	8280	3339	8404	3473	8547	3626	8709	3798	45
16	7084	2059	7028	1993	6953	1908	6858	1803	6743	1679	6609	1535	6456	1373	6284	2916	7941	2972	8007	3047	8092	3142	8197	3257	8321	3391	8465	3544	8627	3716	44
17	7167	2142	7111	2076	7035	1990	6940	1885	6825	1761	6691	1617	6538	1455	6366	2833	7858	2889	7924	2965	8010	3060	8115	3175	8239	3309	8383	3462	8545	3634	43
18	7250	2225	7194	2158	7118	2073	7023	1968	6908	1843	6774	1699	6620	1537	6448	2750	7775	2806	7842	2882	7927	2977	8032	3092	8157	3226	8301	3380	8463	3552	42
19	7333	2307	7277	2241	7201	2155	7105	2050	6990	1925	6856	1781	6702	1618	6530	2667	7693	2723	7759	2799	7845	2895	7950	3010	8075	3144	8219	3298	8382	3470	41
20	7416	2390	7359	2324	7283	2238	7187	2132	7072	2008	6938	1863	6784	1700	6612	2584	7610	2641	7676	2717	7762	2813	7868	2928	7992	3062	8137	3216	8300	3388	40
21	7499	2473	7442	2406	7366	2320	7270	2215	7155	2090	7020	1946	6866	1782	6693	2501	7527	2558	7594	2634	7680	2730	7785	2845	7910	2980	8054	3134	8218	3307	39
22	7582	2556	7525	2489	7448	2403	7352	2297	7237	2172	7102	2028	6948	1864	6775	2418	7444	2475	7511	2552	7597	2648	7703	2763	7828	2898	7972	3052	8136	3225	38
23	7665	2639	7608	2572	7531	2485	7435	2379	7319	2254	7184	2110	7030	1946	6857	2335	7361	2392	7428	2469	7515	2565	7621	2681	7746	2816	7890	2970	8054	3143	37
24	7748	2722	7691	2655	7614	2568	7517	2462	7401	2336	7266	2192	7112	2028	6939	2252	7278	2309	7345	2386	7432	2483	7538	2599	7664	2734	7808	2888	8072	3061	36
25	7831	2805	7773	2737	7696	2650	7600	2544	7484	2419	7349	2274	7194	2110	7021	2169	7195	2227	7263	2304	7350	2400	7456	2516	7581	2651	7726	2806	7890	2979	35
26	7914	2887	7856	2820	7779	2733	7682	2627	7566	2501	7431	2356	7276	2192	7102	2086	7113	2144	7180	2221	7267	2318	7373	2434	7499	2569	7644	2724	7808	2898	34
27	7997	2970	7939	2903	7861	2815	7765	2709	7648	2583	7543	2438	7358	2274	7184	2003	7030	2061	7097	2139	7185	2235	7291	2352	7417	2487	7562	2642	7726	2816	33
28	8080	3053	8022	2985	7944	2898	7847	2791	7731	2665	7595	2520	7440	2355	7266	1920	6947	1978	7015	2056	7102	2153	7209	2269	7335	2405	7480	2560	7645	2734	32
29	8163	3136	8104	3068	8027	2980	7929	2874	7813	2747	7677	2602	7522	2437	7348	1837	6864	1896	6932	1973	7020	2071	7126	2187	7253	2323	7398	2478	7563	2652	31
30	8245	3219	8187	3151	8109	3063	8012	2956	7895	2830	7759	2684	7604	2519	7430	1755	6781	1813	6849	1891	6937	1988	7044	2105	7170	2241	7316	2396	7481	2570	30
31	8328	3302	8270	3233	8192	3146	8094	3038	7977	2912	7841	2766	7686	2601	7511	1672	6698	1730	6767	1808	6854	1906	6962	2023	7088	2159	7234	2314	7399	2489	29
32	8411	3384	8353	3316	8274	3228	8177	3121	8060	2994	7923	2848	7768	2683	7593	1589	6616	1647	6684	1726	6772	1823	6879	1940	7006	2077	7152	2232	7317	2407	28
33	8494	3467	8435	3399	8357	3311	8259	3203	8142	3076	8006	2930	7850	2765	7675	1506	6533	1565	6601	1643	6689	1741	6797	1858	6924	1994	7070	2150	7235	2325	27
34	8577	3550	8518	3481	8440	3393	8342	3285	8224	3158	8088	3012	7932	2847	7757	1423	6450	1482	6519	1560	6607	1658	6715	1776	6842	1912	6988	2068	7153	2243	26
35	8660	3633	8601	3564	8522	3476	8424	3368	8307	3241	8170	3094	8014	2929	7839	1340	6367	1399	6436	1478	6524	1576	6632	1693	6759	1830	6906	1986	7071	2161	25
36	8743	3716	8684	3647	8605	3558	8507	3450	8389	3323	8252	3176	8096	3010	7920	1257	6284	1316	6353	1395	6442	1493	6550	1611	6677	1748	6824	1904	6990	2080	24
37	8826	3799	8766	3729	8687	3641	8589	3532	8471	3405	8334	3258	8178	3092	8002	1174	6201	1234	6271	1313	6359	1411	6468	1529	6595	1666	6742	1822	6908	1998	23
38	8909	3882	8849	3812	8770	3723	8671	3615	8553	3487	8416	3340	8260	3174	8084	1091	6118	1151	6188	1230	6277	1329	6385	1447	6513	1584	6660	1740	6826	1916	22
39	8992	3964	8932	3895	8853	3806	8754	3697	8636	3569	8498	3422	8342	3256	8166	1008	6036	1068	6105	1147	6194	1246	6303	1364	6431	1502	6578	1658	6744	1834	21
40	9075	4047	9015	3977	8935	3888	8836	3779	8718	3652	8580	3504	8423	3338	8248	0925	5953	0985	6023	1065	6112	1164	6221	1282	6348	1420	6496	1577	6662	1752	20
41	9158	4130	9097	4060	9018	3971	8919	3862	8800	3734	8662	3586	8505	3420	8329	0842	5870	0903	5940	0982	6029	1081	6138	1200	6266	1338	6414	1495	6580	1671	19
42	9241	4213	9180	4143	9100	4053	9001	3944	8882	3816	8745	3668	8587	3502	8411	0759	5787	0820	5857	0900	5947	0999	6056	1118	6184	1255	6332	1413	6498	1589	18
43	9323	4296	9263	4225	9183	4136	9084	4027	8965	3898	8827	3750	8669	3584	8493	0677	5704	0737	5775	0817	5864	0916	5973	1035	6102	1173	6250	1331	6416	1507	17
44	9406	4379	9346	4308	9266	4218	9166	4109	9047	3980	8909	3832	8751	3665	8575	0594	5621	0654	5692	0734	5782	0834	5891	0953	6020	1091	6168	1249	6335	1425	16
45	9489	4461	9428	4391	9348	4301	9248	4191	9129	4062	8991	3914	8833	3747	8657	0511	5539	0572	5609	0652	5699	0752	5809	0871	5938	1009	6086	1167	6253	1343	15
46	9572	4544	9511	4473	9431	4383	9331	4274	9211	4145	9073	3996	8915	3829	8738	0428	5456	0489	5527	0569	5617	0669	5726	0789	5855	0927	6004	1085	6171	1262	14
47	9655	4627	9594	4556	9513	4466	9413	4356	9294	4227	9155	4078	8997	3911	8820	0345	5373	0406	5444	0487	5534	0587	5644	0706	5773	0845	5922	1003	6089	1180	13
48	9738	4710	9677	4639	9596	4548	9496	4438	9376	4309	9237	4160	9079	3993	8902	0262	5290	0323	5361	0404	5452	0504	5562	0624	5691	0763	5840	0921	6007	1098	12
49	9821	4793	9759	4721	9678	4631	9578	4521	9458	4391	9319	4242	9161	4075	8984	0179	5207	0241	5279	0322	5369	0422	5479	0542	5609	0681	5758	0839	5925	1016	11
50	9904	4875	9842	4804	9761	4713	9660	4603	9541	4473	9401	4324	9243	4157	9065	0096	5125	0158	5196	0239	5287	0340	5397	0459	5527	0599	5676	0757	5843	0935	10
51	9987	4958	9925	4887	9844	4796	9743	4685	9623	4555	9483	4406	9325	4238	9147	0013	5042	0075	5113	0156	5204	0257	5315	0377	5445	0517	5594	0675	5762	0853	9
52	0070	5041	0008	4969	9926	4878	9825	4768	9705	4638	9565	4489	9407	4320	9229	9930	4959	9992	5031	0074	5122	0175	5232	0295	5362	0435	5511	0593	5680	0771	8
53	0153	5124	0090	5052	0009	4961	9908	4850	9787	4720	9648	4571	9489	4402	9311	9847	4876	9910	4948	9991	5039	0092	5150	0213	5280	0352	5429	0511	5598	0689	7
54	0235	5207	0173	5135	0091	5043	9990	4932	9870	4802	9730	4653	9571	4484	9392	9765	4793	9827	4865	9909	4957	0010	5068	0130	5198	0270	5347	0429	5516	0608	6
55	0318	5290	0256	5217	0174	5126	0073	5015	9952	4884	9812	4735	9653	4566	9474	9682	4710	9744	4783	9826	4874	9927	4985	0048	5116	0188	5265	0347	5434	0526	5
56	0401	5372	0339	5300	0256	5208	0155	5097	0034	4966	9894	4817	9734	4648	9556	9599	4628	9661	4700	9744	4792	9845	4903	9966	5034	0106	5183	0266	5352	0444	4
57	0484	5455	0421	5383	0339	5291	0237	5179	0116	5048	9976	4899	9816	4729	9638	9516	4545	9579	4617	9661	4709	9763	4821	9884	4952	0024	5101	0184	5271	0362	3
58	0567	5538	0504	5465	0422	5373	0320	5262	0198	5131	0058	4981	9898	4811	9720	9433	4462	9496	4535	9578	4627	9680	4738	9802	4869	9942	5019	0102	5189	0280	2
59	0650	5621	0587	5548	0504	5456	0402	5344	0281	5213	0140	5063	9980	4893	9801	9350	4379	9413	4452	9496	4544	9598	4656	9719	4787	9860	4937	0020	5107	0199	1
60	0733	5704	0670	5631	0587	5538	0485	5426	0363	5295	0222	5145	0062	4975	9883	9267	4296	9330	4369	9413	4462	9515	4574	9637	4705	9778	4855	9938	5025	0117	0
"	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	"

Co-Tangent Deg. 74 — Tangent Deg. 74

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 426	9. 427	9. 427	9. 428	9. 428	9. 429	9. 429	9. 430	9. 430	9. 430	9. 431	9. 431	9. 432	9. 432	9. 433
0	8988	3541	8089	2631	7169	1701	6228	0750	5267	9779	4286	8788	3285	7777	2264
1	9064	3617	8164	2707	7244	1776	6304	0826	5343	9854	4361	8863	3360	7852	2339
2	9140	3693	8240	2783	7320	1852	6379	0901	5418	9930	4436	8938	3435	7927	2413
3	9216	3769	8316	2858	7395	1927	6454	0976	5493	0005	4511	9013	3510	8001	2488
4	9292	3844	8392	2934	7471	2003	6530	1052	5568	0080	4587	9088	3585	8076	2563
5	9368	3920	8467	3010	7546	2078	6605	1127	5644	0155	4662	9163	3660	8151	2637
6	9444	3996	8543	3085	7622	2154	6681	1202	5719	0230	4737	9238	3734	8226	2712
7	9520	4072	8619	3161	7698	2229	6756	1278	5794	0305	4812	9313	3809	8301	2787
8	9596	4148	8695	3236	7773	2305	6831	1353	5869	0381	4887	9388	3884	8375	2862
9	9671	4223	8770	3312	7849	2380	6907	1428	5944	0456	4962	9463	3959	8450	2936
10	9747	4299	8846	3388	7924	2456	6982	1503	6020	0531	5037	9538	4034	8525	3011
11	9823	4375	8922	3463	8000	2531	7058	1579	6095	0606	5112	9613	4109	8600	3086
12	9899	4451	8998	3539	8075	2607	7133	1654	6170	0681	5187	9688	4184	8675	3161
13	9975	4527	9073	3615	8151	2682	7208	1729	6245	0756	5262	9763	4259	8750	3235
14	0051	4603	9149	3690	8227	2758	7284	1805	6321	0831	5337	9838	4334	8824	3310
15	0127	4678	9225	3766	8302	2833	7359	1880	6396	0907	5412	9913	4409	8899	3385
16	0203	4754	9301	3842	8378	2909	7435	1955	6471	0982	5487	9988	4483	8974	3459
17	0279	4830	9376	3917	8453	2984	7510	2031	6546	1057	5562	0063	4558	9049	3534
18	0355	4906	9452	3993	8529	3060	7585	2106	6621	1132	5637	0138	4633	9124	3609
19	0431	4982	9528	4069	8604	3135	7661	2181	6697	1207	5712	0213	4708	9198	3684
20	0506	5057	9603	4144	8680	3211	7736	2257	6772	1282	5787	0288	4783	9273	3758
21	0582	5133	9679	4220	8755	3286	7811	2332	6847	1357	5863	0363	4858	9348	3833
22	0658	5209	9755	4296	8831	3361	7887	2407	6922	1432	5938	0438	4933	9423	3908
23	0734	5285	9831	4371	8907	3437	7962	2482	6998	1508	6013	0513	5008	9498	3982
24	0810	5361	9906	4447	8982	3512	8038	2558	7073	1583	6088	0588	5082	9572	4057
25	0886	5436	9982	4522	9058	3588	8113	2633	7148	1658	6163	0663	5157	9647	4132
26	0962	5512	0058	4598	9133	3663	8188	2708	7223	1733	6238	0737	5232	9722	4207
27	1038	5588	0133	4674	9209	3739	8264	2784	7298	1808	6313	0812	5307	9797	4281
28	1114	5664	0209	4749	9284	3814	8339	2859	7374	1883	6388	0887	5382	9871	4356
29	1189	5740	0285	4825	9360	3890	8414	2934	7449	1958	6463	0962	5457	9946	4431
30	1265	5815	0361	4901	9435	3965	8490	3009	7524	2033	6538	1037	5532	0021	4505
31	1341	5891	0436	4976	9511	4041	8565	3085	7599	2109	6613	1112	5607	0096	4580
32	1417	5967	0512	5052	9586	4116	8641	3160	7674	2184	6688	1187	5681	0171	4655
33	1493	6043	0588	5127	9662	4192	8716	3235	7750	2259	6763	1262	5756	0245	4729
34	1569	6119	0663	5203	9738	4267	8791	3311	7825	2334	6838	1337	5831	0320	4804
35	1645	6194	0739	5279	9813	4342	8867	3386	7900	2409	6913	1412	5906	0395	4879
36	1721	6270	0815	5354	9889	4418	8942	3461	7975	2484	6988	1487	5981	0470	4954
37	1796	6346	0890	5430	9964	4493	9017	3536	8050	2559	7063	1562	6056	0544	5028
38	1872	6422	0966	5505	0040	4569	9093	3612	8126	2634	7138	1637	6131	0619	5103
39	1948	6498	1042	5581	0115	4644	9168	3687	8201	2709	7213	1712	6205	0694	5178
40	2024	6573	1118	5657	0191	4720	9243	3762	8276	2785	7288	1787	6280	0769	5252
41	2100	6649	1193	5732	0266	4795	9319	3837	8351	2860	7363	1862	6355	0844	5327
42	2176	6725	1269	5808	0342	4870	9394	3913	8426	2935	7438	1937	6430	0918	5402
43	2252	6801	1345	5884	0417	4946	9470	3988	8501	3010	7513	2011	6505	0993	5476
44	2327	6876	1420	5959	0493	5021	9545	4063	8577	3085	7588	2086	6580	1068	5551
45	2403	6952	1496	6035	0568	5097	9620	4139	8652	3160	7663	2161	6654	1143	5626
46	2479	7028	1572	6110	0644	5172	9696	4214	8727	3235	7738	2236	6729	1217	5700
47	2555	7104	1647	6186	0719	5248	9771	4289	8802	3310	7813	2311	6804	1292	5775
48	2631	7180	1723	6262	0795	5323	9846	4364	8877	3385	7888	2386	6879	1367	5850
49	2707	7255	1799	6337	0870	5399	9922	4440	8953	3460	7963	2461	6954	1442	5924
50	2783	7331	1874	6413	0946	5474	9997	4515	9028	3535	8038	2536	7029	1516	5999
51	2858	7407	1950	6488	1021	5549	0072	4590	9103	3611	8113	2611	7103	1591	6074
52	2934	7483	2026	6564	1097	5625	0148	4665	9178	3686	8188	2686	7178	1666	6148
53	3010	7558	2101	6640	1172	5700	0223	4741	9253	3761	8263	2761	7253	1741	6223
54	3086	7634	2177	6715	1248	5776	0298	4816	9328	3836	8338	2836	7328	1815	6298
55	3162	7710	2253	6791	1323	5851	0374	4891	9404	3911	8413	2911	7403	1890	6372
56	3238	7786	2329	6866	1399	5926	0449	4966	9479	3986	8488	2985	7478	1965	6447
57	3314	7861	2404	6942	1474	6002	0524	5042	9554	4061	8563	3060	7552	2040	6522
58	3389	7937	2480	7017	1550	6077	0600	5117	9629	4136	8638	3135	7627	2114	6596
59	3465	8013	2556	7093	1625	6153	0675	5192	9704	4211	8713	3210	7702	2189	6671
60	3541	8089	2631	7169	1701	6228	0750	5267	9779	4286	8788	3285	7777	2264	6746
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
9. 983	9. 983	9. 983	9. 983	9. 983	9. 983	9. 983	9. 983	9. 983	9. 983	9. 983	9. 983	9. 983	9. 983	9. 983	″
9105	8755	8404	8052	7701	7348	6996	6643	6290	5936	5582	5227	4872	4517	4161	60
9099	8749	8398	8046	7695	7343	6990	6637	6284	5930	5576	5221	4867	4511	4156	59
9093	8743	8392	8041	7689	7337	6984	6631	6278	5924	5570	5216	4861	4505	4150	58
9088	8737	8386	8035	7683	7331	6978	6625	6272	5918	5564	5210	4855	4499	4144	57
9082	8731	8380	8029	7677	7325	6972	6619	6266	5912	5558	5204	4849	4493	4138	56
9076	8725	8374	8023	7671	7319	6967	6614	6260	5907	5552	5198	4843	4488	4132	55
9070	8720	8369	8017	7665	7313	6961	6608	6254	5901	5546	5192	4837	4482	4126	54
9064	8714	8363	8011	7660	7307	6955	6602	6248	5895	5541	5186	4831	4476	4120	53
9058	8708	8357	8005	7654	7301	6949	6596	6243	5889	5535	5180	4825	4470	4114	52
9053	8702	8351	8000	7648	7296	6943	6590	6237	5883	5529	5174	4819	4464	4108	51
9047	8696	8345	7994	7642	7290	6937	6584	6231	5877	5523	5168	4813	4458	4102	50
9041	8690	8339	7988	7636	7284	6931	6578	6225	5871	5517	5162	4807	4452	4096	49
9035	8684	8333	7982	7630	7278	6925	6572	6219	5865	5511	5156	4801	4446	4090	48
9029	8679	8328	7976	7624	7272	6920	6567	6213	5859	5505	5151	4796	4440	4084	47
9023	8673	8322	7970	7618	7266	6914	6561	6207	5853	5499	5145	4790	4434	4078	46
9018	8667	8316	7964	7613	7260	6908	6555	6201	5848	5493	5139	4784	4428	4073	45
9012	8661	8310	7959	7607	7255	6902	6549	6195	5842	5487	5133	4778	4422	4067	44
9006	8655	8304	7953	7601	7249	6896	6543	6190	5836	5481	5127	4772	4416	4061	43
9000	8649	8298	7947	7595	7243	6890	6537	6184	5830	5476	5121	4766	4411	4055	42
8994	8644	8292	7941	7589	7237	6884	6531	6178	5824	5470	5115	4760	4405	4049	41
8988	8638	8287	7935	7583	7231	6878	6525	6172	5818	5464	5109	4754	4399	4043	40
8983	8632	8281	7929	7577	7225	6872	6519	6166	5812	5458	5103	4748	4393	4037	39
8977	8626	8275	7923	7572	7219	6867	6514	6160	5806	5452	5097	4742	4387	4031	38
8971	8620	8269	7918	7566	7213	6861	6508	6154	5800	5446	5091	4736	4381	4025	37
8965	8614	8263	7912	7560	7208	6855	6502	6148	5794	5440	5085	4730	4375	4019	36
8959	8608	8257	7906	7554	7202	6849	6496	6142	5789	5434	5080	4724	4369	4013	35
8953	8603	8251	7900	7548	7196	6843	6490	6136	5783	5428	5074	4719	4363	4007	34
8947	8597	8246	7894	7542	7190	6837	6484	6131	5777	5422	5068	4713	4357	4001	33
8942	8591	8240	7888	7536	7184	6831	6478	6125	5771	5417	5062	4707	4351	3995	32
8936	8585	8234	7882	7530	7178	6825	6472	6119	5765	5411	5056	4701	4345	3989	31
8930	8579	8228	7877	7525	7172	6820	6466	6113	5759	5405	5050	4695	4339	3983	30
8924	8573	8222	7871	7519	7166	6814	6461	6107	5753	5399	5044	4689	4333	3978	29
8918	8568	8216	7865	7513	7161	6808	6455	6101	5747	5393	5038	4683	4328	3972	28
8912	8562	8210	7859	7507	7155	6802	6449	6095	5741	5387	5032	4677	4322	3966	27
8907	8556	8205	7853	7501	7149	6796	6443	6089	5735	5381	5026	4671	4316	3960	26
8901	8550	8199	7847	7495	7143	6790	6437	6083	5729	5375	5020	4665	4310	3954	25
8895	8544	8193	7841	7489	7137	6784	6431	6078	5724	5369	5014	4659	4304	3948	24
8889	8538	8187	7835	7484	7131	6778	6425	6072	5718	5363	5009	4653	4298	3942	23
8883	8532	8181	7830	7478	7125	6772	6419	6066	5712	5357	5003	4648	4292	3936	22
8877	8527	8175	7824	7472	7119	6767	6413	6060	5706	5352	4997	4642	4286	3930	21
8872	8521	8169	7818	7466	7114	6761	6408	6054	5700	5346	4991	4636	4280	3924	20
8866	8515	8164	7812	7460	7108	6755	6402	6048	5694	5340	4985	4630	4274	3918	19
8860	8509	8158	7806	7454	7102	6749	6396	6042	5688	5334	4979	4624	4268	3912	18
8854	8503	8152	7800	7448	7096	6743	6390	6036	5682	5328	4973	4618	4262	3906	17
8848	8497	8146	7794	7442	7090	6737	6384	6030	5676	5322	4967	4612	4256	3900	16
8842	8491	8140	7789	7437	7084	6731	6378	6024	5670	5316	4961	4606	4250	3894	15
8836	8486	8134	7783	7431	7078	6725	6372	6019	5665	5310	4955	4600	4245	3889	14
8831	8480	8128	7777	7425	7072	6720	6366	6013	5659	5304	4949	4594	4239	3883	13
8825	8474	8123	7771	7419	7066	6714	6360	6007	5653	5298	4943	4588	4233	3877	12
8819	8468	8117	7765	7413	7061	6708	6355	6001	5647	5292	4938	4582	4227	3871	11
8813	8462	8111	7759	7407	7055	6702	6349	5995	5641	5286	4932	4576	4221	3865	10
8807	8456	8105	7753	7401	7049	6696	6343	5989	5635	5281	4926	4571	4215	3859	9
8801	8450	8099	7748	7395	7043	6690	6337	5983	5629	5275	4920	4565	4209	3853	8
8796	8445	8093	7742	7390	7037	6684	6331	5977	5623	5269	4914	4559	4203	3847	7
8790	8439	8087	7736	7384	7031	6678	6325	5971	5617	5263	4908	4553	4197	3841	6
8784	8433	8082	7730	7378	7025	6672	6319	5965	5611	5257	4902	4547	4191	3835	5
8778	8427	8076	7724	7372	7019	6667	6313	5960	5606	5251	4896	4541	4185	3829	4
8772	8421	8070	7718	7366	7014	6661	6307	5954	5600	5245	4890	4535	4179	3823	3
8766	8415	8064	7712	7360	7008	6655	6301	5948	5594	5239	4884	4529	4173	3817	2
8760	8410	8058	7706	7354	7002	6649	6296	5942	5588	5233	4878	4523	4167	3811	1
8755	8404	8052	7701	7348	6996	6643	6290	5936	5582	5227	4872	4517	4161	3805	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

15 Deg. Tangent

"	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9. 442	9. 443	9. 443	9. 444	9. 444	9. 445	9. 445	9. 446	9. 446	9. 447	9. 447	9. 448	9. 448	9. 449	9. 449
0	9883	4786	9685	4579	9468	4352	9232	4107	8978	3843	8704	3561	8413	3260	8102
1	9965	4868	9767	4660	9549	4434	9313	4188	9059	3924	8785	3642	8493	3341	8183
2	0047	4950	9848	4742	9631	4515	9395	4270	9140	4005	8866	3723	8574	3421	8264
3	0128	5031	9930	4823	9712	4597	9476	4351	9221	4086	8947	3804	8655	3502	8344
4	0210	5113	0011	4905	9794	4678	9557	4432	9302	4168	9028	3884	8736	3583	8425
5	0292	5195	0093	4986	9875	4759	9639	4513	9383	4249	9109	3965	8817	3663	8506
6	0374	5276	0175	5068	9957	4841	9720	4594	9464	4330	9190	4046	8898	3744	8586
7	0455	5358	0256	5149	0038	4922	9801	4676	9546	4411	9271	4127	8978	3825	8667
8	0537	5440	0338	5231	0120	5003	9882	4757	9627	4492	9352	4208	9059	3906	8748
9	0619	5521	0419	5313	0201	5085	9964	4838	9708	4573	9433	4289	9140	3986	8828
10	0701	5603	0501	5394	0282	5166	0045	4919	9789	4654	9514	4370	9221	4067	8909
11	0782	5685	0583	5476	0364	5247	0126	5000	9870	4735	9595	4451	9302	4148	8990
12	0864	5767	0664	5557	0445	5329	0208	5082	9951	4816	9676	4532	9382	4229	9070
13	0946	5848	0746	5639	0527	5410	0289	5163	0032	4897	9757	4612	9463	4309	9151
14	1028	5930	0827	5720	0608	5491	0370	5244	0113	4978	9838	4693	9544	4390	9232
15	1109	6011	0909	5802	0690	5573	0451	5325	0194	5059	9919	4774	9625	4471	9312
16	1191	6093	0990	5883	0771	5654	0533	5406	0276	5140	0000	4855	9706	4552	9393
17	1273	6175	1072	5965	0852	5736	0614	5488	0357	5221	0081	4936	9786	4632	9474
18	1355	6256	1154	6046	0934	5817	0695	5569	0438	5302	0162	5017	9867	4713	9554
19	1436	6338	1235	6128	1015	5898	0776	5650	0519	5383	0243	5098	9948	4794	9635
20	1518	6420	1317	6209	1097	5980	0858	5731	0600	5464	0324	5179	0029	4874	9715
21	1600	6501	1398	6291	1178	6061	0939	5812	0681	5545	0405	5259	0110	4955	9796
22	1682	6583	1480	6372	1260	6142	1020	5894	0762	5626	0486	5340	0190	5036	9877
23	1763	6665	1562	6454	1341	6224	1102	5975	0843	5707	0567	5421	0271	5117	9957
24	1845	6746	1643	6535	1422	6305	1183	6056	0924	5788	0648	5502	0352	5197	0038
25	1927	6828	1725	6617	1504	6386	1264	6137	1006	5869	0728	5583	0433	5278	0119
26	2008	6910	1806	6698	1585	6468	1345	6218	1087	5950	0809	5664	0514	5359	0199
27	2090	6991	1888	6780	1667	6549	1427	6299	1168	6031	0890	5745	0594	5439	0280
28	2172	7073	1969	6861	1748	6630	1508	6381	1249	6112	0971	5826	0675	5520	0361
29	2254	7155	2051	6943	1829	6712	1589	6462	1330	6193	1052	5906	0756	5601	0441
30	2335	7236	2133	7024	1911	6793	1670	6543	1411	6274	1133	5987	0837	5682	0522
31	2417	7318	2214	7105	1992	6874	1752	6624	1492	6355	1214	6068	0918	5762	0602
32	2499	7400	2296	7187	2074	6956	1833	6705	1573	6436	1295	6149	0998	5843	0683
33	2580	7481	2377	7268	2155	7037	1914	6787	1654	6517	1376	6230	1079	5924	0764
34	2662	7563	2459	7350	2236	7118	1995	6868	1735	6598	1457	6311	1160	6004	0844
35	2744	7644	2540	7431	2318	7200	2077	6949	1817	6680	1538	6392	1241	6085	0925
36	2826	7726	2622	7513	2399	7281	2158	7030	1898	6761	1619	6472	1321	6166	1006
37	2907	7808	2703	7594	2481	7362	2239	7111	1979	6842	1700	6553	1402	6247	1086
38	2989	7889	2785	7676	2562	7443	2320	7192	2060	6923	1781	6634	1483	6327	1167
39	3071	7971	2867	7757	2643	7525	2401	7274	2141	7004	1862	6715	1564	6408	1248
40	3152	8053	2948	7839	2725	7606	2483	7355	2222	7085	1943	6796	1645	6489	1328
41	3234	8134	3030	7920	2806	7687	2564	7436	2303	7166	2023	6877	1725	6569	1409
42	3316	8216	3111	8002	2888	7769	2645	7517	2384	7247	2104	6958	1806	6650	1489
43	3398	8298	3193	8083	2969	7850	2726	7598	2465	7328	2185	7038	1887	6731	1570
44	3479	8379	3274	8165	3050	7931	2808	7679	2546	7409	2266	7119	1968	6811	1651
45	3561	8461	3356	8246	3132	8013	2889	7760	2627	7490	2347	7200	2048	6892	1731
46	3643	8542	3437	8328	3213	8094	2970	7842	2708	7571	2428	7281	2129	6973	1812
47	3724	8624	3519	8409	3295	8175	3051	7923	2789	7652	2509	7362	2210	7053	1892
48	3806	8706	3600	8491	3376	8257	3133	8004	2871	7733	2590	7443	2291	7134	1973
49	3888	8787	3682	8572	3457	8338	3214	8085	2952	7814	2671	7523	2371	7215	2054
50	3970	8869	3764	8653	3539	8419	3295	8166	3033	7895	2752	7604	2452	7296	2134
51	4051	8951	3845	8735	3620	8501	3376	8247	3114	7976	2833	7685	2533	7376	2215
52	4133	9032	3927	8816	3701	8582	3457	8328	3195	8057	2914	7766	2614	7457	2295
53	4215	9114	4008	8898	3783	8663	3539	8410	3276	8138	2994	7847	2694	7538	2376
54	4296	9195	4090	8979	3864	8744	3620	8491	3357	8218	3075	7928	2775	7618	2457
55	4378	9277	4171	9061	3946	8826	3701	8572	3438	8299	3156	8008	2856	7699	2537
56	4460	9359	4253	9142	4027	8907	3782	8653	3519	8380	3237	8089	2937	7780	2618
57	4541	9440	4334	9224	4108	8988	3864	8734	3600	8461	3318	8170	3018	7860	2698
58	4623	9522	4416	9305	4190	9070	3945	8815	3681	8542	3399	8251	3098	7941	2779
59	4705	9603	4497	9387	4271	9151	4026	8896	3762	8623	3480	8332	3179	8022	2860
60	4786	9685	4579	9468	4352	9232	4107	8978	3843	8704	3561	8413	3260	8102	2940
"	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Tangent Deg. 74

15 Deg. Co-Tangent

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	"
10. 557	10. 556	10. 556	10. 555	10. 555	10. 554	10. 554	10. 553	10. 553	10. 552	10. 552	10. 551	10. 551	10. 550	10. 550	
0117	5214	0315	5421	0532	5648	0768	5893	1022	6157	1296	6439	1587	6740	1898	60
0035	5132	0233	5340	0451	5566	0687	5812	0941	6076	1215	6358	1507	6659	1817	59
9953	5050	0152	5258	0369	5485	0605	5730	0860	5995	1134	6277	1426	6579	1736	58
9872	4969	0070	5177	0288	5403	0524	5649	0779	5914	1053	6196	1345	6498	1656	57
9790	4887	9989	5095	0206	5322	0443	5568	0698	5832	0972	6116	1264	6417	1575	56
9708	4805	9907	5014	0125	5241	0361	5487	0617	5751	0891	6035	1183	6337	1494	55
9626	4724	9825	4932	0043	5159	0280	5406	0536	5670	0810	5954	1102	6256	1414	54
9545	4642	9744	4851	9962	5078	0199	5324	0454	5589	0729	5873	1022	6175	1333	53
9463	4560	9662	4769	9880	4997	0118	5243	0373	5508	0648	5792	0941	6094	1252	52
9381	4479	9581	4687	9799	4915	0036	5162	0292	5427	0567	5711	0860	6014	1172	51
9299	4397	9499	4606	9718	4834	9955	5081	0211	5346	0486	5630	0779	5933	1091	50
9218	4315	9417	4524	9636	4753	9874	5000	0130	5265	0405	5549	0698	5852	1010	49
9136	4233	9336	4443	9555	4671	9792	4918	0049	5184	0324	5468	0618	5771	0930	48
9054	4152	9254	4361	9473	4590	9711	4837	9968	5103	0243	5388	0537	5691	0849	47
8972	4070	9173	4280	9392	4509	9630	4756	9887	5022	0162	5307	0456	5610	0768	46
8891	3989	9091	4198	9310	4427	9549	4675	9806	4941	0081	5226	0375	5529	0688	45
8809	3907	9010	4117	9229	4346	9467	4594	9724	4860	0000	5145	0294	5448	0607	44
8727	3825	8928	4035	9148	4264	9386	4512	9643	4779	9919	5064	0214	5368	0526	43
8645	3744	8846	3954	9066	4183	9305	4431	9562	4698	9838	4983	0133	5287	0446	42
8564	3662	8765	3872	8985	4102	9224	4350	9481	4617	9757	4902	0052	5206	0365	41
8482	3580	8683	3791	8903	4020	9142	4269	9400	4536	9676	4821	9971	5126	0285	40
8400	3499	8602	3709	8822	3939	9061	4188	9319	4455	9595	4741	9890	5045	0204	39
8318	3417	8520	3628	8740	3858	8980	4106	9238	4374	9514	4660	9810	4964	0123	38
8237	3335	8438	3546	8659	3776	8898	4025	9157	4293	9433	4579	9729	4883	0043	37
8155	3254	8357	3465	8578	3695	8817	3944	9076	4212	9352	4498	9648	4803	9962	36
8073	3172	8275	3383	8496	3614	8736	3863	8994	4131	9272	4417	9567	4722	9881	35
7992	3090	8194	3302	8415	3532	8655	3782	8913	4050	9191	4336	9486	4641	9801	34
7910	3009	8112	3220	8333	3451	8573	3701	8832	3969	9110	4255	9406	4561	9720	33
7828	2927	8031	3139	8252	3370	8492	3619	8751	3888	9029	4174	9325	4480	9639	32
7746	2845	7949	3057	8171	3288	8411	3538	8670	3807	8948	4094	9244	4399	9559	31
7665	2764	7867	2976	8089	3207	8330	3457	8589	3726	8867	4013	9163	4318	9478	30
7583	2682	7786	2895	8008	3126	8248	3376	8508	3645	8786	3932	9082	4238	9398	29
7501	2600	7704	2813	7926	3044	8167	3295	8427	3564	8705	3851	9002	4157	9317	28
7420	2519	7623	2732	7845	2963	8086	3213	8346	3483	8624	3770	8921	4076	9236	27
7338	2437	7541	2650	7764	2882	8005	3132	8265	3402	8543	3689	8840	3996	9156	26
7256	2356	7460	2569	7682	2800	7923	3051	8183	3320	8462	3608	8759	3915	9075	25
7174	2274	7378	2487	7601	2719	7842	2970	8102	3239	8381	3528	8679	3834	8994	24
7093	2192	7297	2406	7519	2638	7761	2889	8021	3158	8300	3447	8598	3753	8914	23
7011	2111	7215	2324	7438	2557	7680	2808	7940	3077	8219	3366	8517	3673	8833	22
6929	2029	7133	2243	7357	2475	7599	2726	7859	2996	8138	3285	8436	3592	8752	21
6848	1947	7052	2161	7275	2394	7517	2645	7778	2915	8057	3204	8355	3511	8672	20
6766	1866	6970	2080	7194	2313	7436	2564	7697	2834	7977	3123	8275	3431	8591	19
6684	1784	6889	1998	7112	2231	7355	2483	7616	2753	7896	3042	8194	3350	8511	18
6602	1702	6807	1917	7031	2150	7274	2402	7535	2672	7815	2962	8113	3269	8430	17
6521	1621	6726	1835	6950	2069	7192	2321	7454	2591	7734	2881	8032	3189	8349	16
6439	1539	6644	1754	6868	1987	7111	2240	7373	2510	7653	2800	7952	3108	8269	15
6357	1458	6563	1672	6787	1906	7030	2158	7292	2429	7572	2719	7871	3027	8188	14
6276	1376	6481	1591	6705	1825	6949	2077	7211	2348	7491	2638	7790	2947	8108	13
6194	1294	6400	1509	6624	1743	6867	1996	7129	2267	7410	2557	7709	2866	8027	12
6112	1213	6318	1428	6543	1662	6786	1915	7048	2186	7329	2477	7629	2785	7946	11
6030	1131	6236	1347	6461	1581	6705	1834	6967	2105	7248	2396	7548	2704	7866	10
5949	1049	6155	1265	6380	1499	6624	1753	6886	2024	7167	2315	7467	2624	7785	9
5867	0968	6073	1184	6299	1418	6543	1672	6805	1943	7086	2234	7386	2543	7705	8
5785	0886	5992	1102	6217	1337	6461	1590	6724	1862	7006	2153	7306	2462	7624	7
5704	0805	5910	1021	6136	1256	6380	1509	6643	1782	6925	2072	7225	2382	7543	6
5622	0723	5829	0939	6054	1174	6299	1428	6562	1701	6844	1992	7144	2301	7463	5
5540	0641	5747	0858	5973	1093	6218	1347	6481	1620	6763	1911	7063	2220	7382	4
5459	0560	5666	0776	5892	1012	6136	1266	6400	1539	6682	1830	6982	2140	7302	3
5377	0478	5584	0695	5810	0930	6055	1185	6319	1458	6601	1749	6902	2059	7221	2
5295	0397	5503	0613	5729	0849	5974	1104	6238	1377	6520	1668	6821	1978	7140	1
5214	0315	5421	0532	5648	0768	5893	1022	6157	1296	6439	1587	6740	1898	7060	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	"

Tangent Deg. 74

15 Deg. Sine — 15 Deg. Co-Sine

"	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	"
	9. 433	9. 434	9. 434	9. 435	9. 435	9. 435	9. 436	9. 436	9. 437	9. 437	9. 438	9. 438	9. 439	9. 439	9. 439	9. 983	9. 983	9. 983	9. 983	9. 983	9. 983	9. 983	9. 983	9. 983	9. 983	9. 983	9. 982	9. 982	9. 982	9. 982	
0	6746	1223	5694	0161	4623	9080	3532	7980	2422	6859	1292	5719	0142	4560	8973	3805	3449	3092	2735	2377	2019	1661	1302	0942	0583	0223	9862	9501	9140	8778	60
1	6820	1297	5769	0236	4698	9155	3607	8054	2496	6933	1365	5793	0216	4633	9046	3799	3443	3086	2729	2371	2013	1655	1296	0936	0577	0217	9856	9495	9134	8772	59
2	6895	1372	5843	0310	4772	9229	3681	8128	2570	7007	1439	5867	0289	4707	9120	3794	3437	3080	2723	2365	2007	1649	1290	0930	0571	0211	9850	9489	9128	8766	58
3	6970	1446	5918	0385	4846	9303	3755	8202	2644	7081	1513	5940	0363	4780	9193	3788	3431	3074	2717	2359	2001	1643	1284	0924	0565	0205	9844	9483	9122	8760	57
4	7044	1521	5992	0459	4921	9377	3829	8276	2718	7155	1587	6014	0437	4854	9267	3782	3425	3068	2711	2353	1995	1637	1278	0918	0559	0199	9838	9477	9116	8754	56
5	7119	1595	6067	0533	4995	9452	3903	8350	2792	7229	1661	6088	0510	4928	9340	3776	3419	3062	2705	2347	1989	1631	1272	0912	0553	0193	9832	9471	9110	8748	55
6	7194	1670	6141	0608	5069	9526	3977	8424	2866	7303	1735	6162	0584	5001	9414	3770	3413	3056	2699	2341	1983	1625	1266	0906	0547	0187	9826	9465	9104	8742	54
7	7268	1745	6216	0682	5144	9600	4052	8498	2940	7377	1808	6235	0658	5075	9487	3764	3407	3050	2693	2335	1977	1619	1260	0900	0541	0181	9820	9459	9098	8736	53
8	7343	1819	6290	0757	5218	9674	4126	8572	3014	7450	1882	6309	0731	5148	9561	3758	3401	3044	2687	2329	1971	1613	1254	0894	0535	0175	9814	9453	9092	8730	52
9	7418	1894	6365	0831	5292	9748	4200	8646	3088	7524	1956	6383	0805	5222	9634	3752	3395	3038	2681	2323	1965	1607	1248	0888	0529	0169	9808	9447	9086	8724	51
10	7492	1968	6439	0905	5367	9823	4274	8720	3162	7598	2030	6457	0879	5296	9708	3746	3389	3033	2675	2317	1959	1601	1242	0882	0523	0163	9802	9441	9080	8718	50
11	7567	2043	6514	0980	5441	9897	4348	8794	3236	7672	2104	6530	0952	5369	9781	3740	3384	3027	2669	2311	1953	1595	1236	0876	0517	0157	9796	9435	9074	8712	49
12	7641	2117	6588	1054	5515	9971	4422	8868	3310	7746	2178	6604	1026	5443	9855	3734	3378	3021	2663	2305	1947	1589	1230	0870	0511	0151	9790	9429	9068	8706	48
13	7716	2192	6663	1129	5589	0045	4496	8943	3384	7820	2251	6678	1099	5516	9928	3728	3372	3015	2657	2300	1941	1583	1224	0864	0505	0145	9784	9423	9062	8700	47
14	7791	2266	6737	1203	5664	0120	4571	9017	3458	7894	2325	6752	1173	5590	0002	3722	3366	3009	2651	2294	1935	1577	1218	0858	0499	0139	9778	9417	9056	8694	46
15	7865	2341	6812	1277	5738	0194	4645	9091	3532	7968	2399	6825	1247	5663	0075	3716	3360	3003	2645	2288	1929	1571	1212	0852	0493	0133	9772	9411	9050	8688	45
16	7940	2416	6886	1352	5812	0268	4719	9165	3606	8042	2473	6899	1320	5737	0149	3710	3354	2997	2639	2282	1923	1565	1206	0846	0487	0127	9766	9405	9044	8682	44
17	8015	2490	6961	1426	5887	0342	4793	9239	3680	8116	2547	6973	1394	5811	0222	3704	3348	2991	2633	2276	1917	1559	1200	0841	0481	0121	9760	9399	9038	8676	43
18	8089	2565	7035	1500	5961	0416	4867	9313	3754	8189	2620	7047	1468	5884	0296	3698	3342	2985	2627	2270	1911	1553	1194	0835	0475	0115	9754	9393	9032	8670	42
19	8164	2639	7109	1575	6035	0491	4941	9387	3828	8263	2694	7120	1541	5958	0369	3693	3336	2979	2622	2264	1906	1547	1188	0829	0469	0109	9748	9387	9026	8664	41
20	8239	2714	7184	1649	6110	0565	5015	9461	3902	8337	2768	7194	1615	6031	0443	3687	3330	2973	2616	2258	1900	1541	1182	0823	0463	0103	9742	9381	9020	8658	40
21	8313	2788	7258	1724	6184	0639	5090	9535	3975	8411	2842	7268	1689	6105	0516	3681	3324	2967	2610	2252	1894	1535	1176	0817	0457	0097	9736	9375	9014	8652	39
22	8388	2863	7333	1798	6258	0713	5164	9609	4049	8485	2916	7341	1762	6178	0590	3675	3318	2961	2604	2246	1888	1529	1170	0811	0451	0091	9730	9369	9008	8646	38
23	8462	2937	7407	1872	6332	0788	5238	9683	4123	8559	2989	7415	1836	6252	0663	3669	3312	2955	2598	2240	1882	1523	1164	0805	0445	0085	9724	9363	9001	8640	37
24	8537	3012	7482	1947	6407	0862	5312	9757	4197	8633	3063	7489	1910	6325	0736	3663	3306	2949	2592	2234	1876	1517	1158	0799	0439	0079	9718	9357	8995	8634	36
25	8612	3086	7556	2021	6481	0936	5386	9831	4271	8707	3137	7563	1983	6399	0810	3657	3300	2943	2586	2228	1870	1511	1152	0793	0433	0073	9712	9351	8989	8628	35
26	8686	3161	7631	2095	6555	1010	5460	9905	4345	8781	3211	7636	2057	6473	0883	3651	3294	2937	2580	2222	1864	1505	1146	0787	0427	0066	9706	9345	8983	8622	34
27	8761	3236	7705	2170	6630	1084	5534	9979	4419	8854	3285	7710	2130	6546	0957	3645	3288	2931	2574	2216	1858	1499	1140	0781	0421	0060	9700	9339	8977	8616	33
28	8835	3310	7780	2244	6704	1159	5608	0053	4493	8928	3358	7784	2204	6620	1030	3639	3282	2925	2568	2210	1852	1493	1134	0775	0415	0054	9694	9333	8971	8610	32
29	8910	3385	7854	2319	6778	1233	5683	0127	4567	9002	3432	7857	2278	6693	1104	3633	3276	2919	2562	2204	1846	1487	1128	0769	0409	0048	9688	9327	8965	8603	31
30	8985	3459	7929	2393	6852	1307	5757	0201	4641	9076	3506	7931	2351	6767	1177	3627	3271	2913	2556	2198	1840	1481	1122	0763	0403	0042	9682	9321	8959	8597	30
31	9059	3534	8003	2467	6927	1381	5831	0275	4715	9150	3580	8005	2425	6840	1251	3621	3265	2907	2550	2192	1834	1475	1116	0757	0397	0036	9676	9315	8953	8591	29
32	9134	3608	8077	2542	7001	1455	5905	0349	4789	9224	3654	8079	2499	6914	1324	3615	3259	2902	2544	2186	1828	1469	1110	0751	0391	0030	9670	9309	8947	8585	28
33	9209	3683	8152	2616	7075	1530	5979	0423	4863	9298	3727	8152	2572	6987	1398	3609	3253	2896	2538	2180	1822	1463	1104	0745	0385	0024	9664	9303	8941	8579	27
34	9283	3757	8226	2690	7150	1604	6053	0497	4937	9372	3801	8226	2646	7061	1471	3603	3247	2890	2532	2174	1816	1457	1098	0739	0379	0018	9658	9297	8935	8573	26
35	9358	3832	8301	2765	7224	1678	6127	0572	5011	9445	3875	8300	2720	7134	1545	3597	3241	2884	2526	2168	1810	1451	1092	0733	0373	0012	9652	9291	8929	8567	25
36	9432	3906	8375	2839	7298	1752	6201	0646	5085	9519	3949	8373	2793	7208	1618	3592	3235	2878	2520	2162	1804	1445	1086	0727	0367	0006	9646	9285	8923	8561	24
37	9507	3981	8450	2913	7372	1826	6275	0720	5159	9593	4023	8447	2867	7282	1692	3586	3229	2872	2514	2156	1798	1439	1080	0721	0361	0000	9640	9279	8917	8555	23
38	9582	4055	8524	2988	7447	1901	6350	0794	5233	9667	4096	8521	2940	7355	1765	3580	3223	2866	2508	2150	1792	1433	1074	0715	0355	9994	9634	9273	8911	8549	22
39	9656	4130	8598	3062	7521	1975	6424	0868	5307	9741	4170	8594	3014	7429	1838	3574	3217	2860	2502	2144	1786	1427	1068	0709	0349	9988	9628	9267	8905	8543	21
40	9731	4204	8673	3137	7595	2049	6498	0942	5381	9815	4244	8668	3088	7502	1912	3568	3211	2854	2496	2138	1780	1421	1062	0703	0343	9982	9622	9261	8899	8537	20
41	9805	4279	8747	3211	7670	2123	6572	1016	5455	9889	4318	8742	3161	7576	1985	3562	3205	2848	2490	2132	1774	1415	1056	0697	0337	9976	9616	9255	8893	8531	19
42	9880	4353	8822	3285	7744	2197	6646	1090	5529	9962	4391	8816	3235	7649	2059	3556	3199	2842	2484	2126	1768	1409	1050	0691	0331	9970	9610	9248	8887	8525	18
43	9955	4428	8896	3360	7818	2272	6720	1164	5602	0036	4465	8889	3308	7723	2132	3550	3193	2836	2478	2120	1762	1403	1044	0685	0325	9964	9604	9242	8881	8519	17
44	0029	4502	8971	3434	7892	2346	6794	1238	5676	0110	4539	8963	3382	7796	2206	3544	3187	2830	2472	2115	1756	1397	1038	0679	0319	9958	9598	9236	8875	8513	16
45	0104	4577	9045	3508	7967	2420	6868	1312	5750	0184	4613	9037	3456	7870	2279	3538	3181	2824	2467	2109	1750	1391	1032	0673	0313	9952	9592	9230	8869	8507	15
46	0178	4651	9120	3583	8041	2494	6942	1386	5824	0258	4687	9110	3529	7943	2353	3532	3175	2818	2461	2103	1744	1385	1026	0667	0307	9946	9586	9224	8863	8501	14
47	0253	4726	9194	3657	8115	2568	7016	1460	5898	0332	4760	9184	3603	8017	2426	3526	3169	2812	2455	2097	1738	1379	1020	0661	0301	9940	9580	9218	8857	8495	13
48	0328	4800	9268	3731	8189	2642	7091	1534	5972	0406	4834	9258	3677	8090	2500	3520	3163	2806	2449	2091	1732	1373	1014	0655	0295	9934	9574	9212	8851	8489	12
49	0402	4875	9343	3806	8264	2717	7165	1608	6046	0479	4908	9331	3750	8164	2573	3514	3157	2800	2443	2085	1726	1367	1008	0649	0289	9928	9568	9206	8845	8483	11
50	0477	4949	9417	3880	8338	2791	7239	1682	6120	0553	4982	9405	3824	8237	2646	3508	3152	2794	2437	2079	1720	1361	1002	0643	0283	9922	9561	9200	8839	8477	10
51	0551	5024	9492	3954	8412	2865	7313	1756	6194	0627	5055	9479	3897	8311	2720	3502	3146	2788	2431	2073	1714	1355	0996	0637	0277	9916	9555	9194	8833	8471	9
52	0626	5098	9566	4029	8486	2939	7387	1830	6268	0701	5129	9552	3971	8385	2793	3496	3140	2782	2425	2067	1708	1350	0990	0631	0271	9910	9549	9188	8827	8465	8
53	0700	5173	9640	4103	8561	3013	7461	1904	6342	0775	5203	9626	4045	8458	2867	3491	3134	2776	2419	2061	1702	1344	0984	0625	0265	9904	9543	9182	8821	8459	7
54	0775	5247	9715	4177	8635	3087	7535	1978	6416	0849	5277	9700	4118	8532	2940	3485	3128	2770	2413	2055	1696	1338	0978	0619	0259	9898	9537	9176	8815	8453	6
55	0850	5322	9789	4252	8709	3162	7609	2052	6490	0922	5350	9773	4192	8605	3014	3479	3122	2765	2407	2049	1690	1332	0972	0613	0253	9892	9531	9170	8809	8447	5
56	0924	5396	9864	4326	8783	3236	7683	2126	6564	0996	5424	9847	4265	8679	3087	3473	3116	2759	2401	2043	1684	1326	0966	0607	0247	9886	9525	9164	8803	8441	4
57	0999	5471	9938	4400	8858	3310	7757	2200	6637	1070	5498	9921	4339	8752	3160	3467	3110	2753	2395	2037	1678	1320	0960	0601	0241	9880	9519	9158	8797	8434	3
58	1073	5545	0013	4475	8932	3384	7831	2274	6711	1144	5572	9995	4413	8826	3234	3461	3104	2747	2389	2031	1672	1314	0954	0595	0235	9874	9513	9152	8790	8428	2
59	1148	5620	0087	4549	9006	3458	7906	2348	6785	1218	5645	0068	4486	8899	3307	3455	3098	2741	2383	2025	1666	1308	0948	0589	0229	9868	9507	9146	8784	8422	1
60	1223	5694	0161	4623	9080	3532	7980	2422	6859	1292	5719	0142	4560	8973	3381	3449	3092	2735	2377	2019	1661	1302	0942	0583	0223	9862	9501	9140	8778	8416	0
"	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	′0	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	"

Co-Sine Deg. 74 — Sine Deg. 74

15 Deg. Tangent

"	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9. 450	9. 450	9. 451	9. 451	9. 452	9. 452	9. 453	9. 453	9. 454	9. 454	9. 455	9. 455	9. 456	9. 456	9. 457
0	2940	7774	2602	7427	2246	7061	1872	6678	1479	6276	1069	5857	0641	5420	0194
1	3021	7854	2683	7507	2327	7142	1952	6758	1559	6356	1149	5937	0720	5499	0274
2	3101	7935	2763	7587	2407	7222	2032	6838	1639	6436	1229	6017	0800	5579	0353
3	3182	8015	2844	7668	2487	7302	2112	6918	1719	6516	1308	6096	0880	5658	0433
4	3263	8096	2924	7748	2567	7382	2192	6998	1799	6596	1388	6176	0959	5738	0512
5	3343	8176	3005	7828	2648	7462	2273	7078	1879	6676	1468	6256	1039	5818	0592
6	3424	8257	3085	7909	2728	7543	2353	7158	1959	6756	1548	6336	1119	5897	0671
7	3504	8337	3165	7989	2808	7623	2433	7238	2039	6836	1628	6415	1198	5977	0751
8	3585	8418	3246	8070	2889	7703	2513	7318	2119	6916	1708	6495	1278	6056	0830
9	3666	8498	3326	8150	2969	7783	2593	7398	2199	6996	1787	6575	1358	6136	0910
10	3746	8579	3407	8230	3049	7863	2673	7479	2279	7076	1867	6655	1437	6216	0990
11	3827	8659	3487	8311	3129	7944	2753	7559	2359	7155	1947	6734	1517	6295	1069
12	3907	8740	3568	8391	3210	8024	2834	7639	2439	7235	2027	6814	1597	6375	1149
13	3988	8820	3648	8471	3290	8104	2914	7719	2519	7315	2107	6894	1676	6454	1228
14	4068	8901	3728	8552	3370	8184	2994	7799	2599	7395	2187	6974	1756	6534	1308
15	4149	8981	3809	8632	3450	8264	3074	7879	2679	7475	2266	7053	1836	6614	1387
16	4230	9062	3889	8712	3531	8345	3154	7959	2759	7555	2346	7133	1915	6693	1467
17	4310	9142	3970	8793	3611	8425	3234	8039	2839	7635	2426	7213	1995	6773	1546
18	4391	9223	4050	8873	3691	8505	3314	8119	2919	7715	2506	7293	2075	6852	1626
19	4471	9303	4131	8953	3772	8585	3394	8199	2999	7795	2586	7372	2154	6932	1705
20	4552	9384	4211	9034	3852	8665	3474	8279	3079	7874	2665	7452	2234	7012	1785
21	4632	9464	4291	9114	3932	8746	3555	8359	3159	7954	2745	7532	2314	7091	1864
22	4713	9545	4372	9194	4012	8826	3635	8439	3239	8034	2825	7611	2393	7171	1944
23	4794	9625	4452	9275	4093	8906	3715	8519	3319	8114	2905	7691	2473	7250	2023
24	4874	9706	4533	9355	4173	8986	3795	8599	3399	8194	2985	7771	2553	7330	2103
25	4955	9786	4613	9435	4253	9066	3875	8679	3479	8274	3065	7851	2632	7410	2182
26	5035	9867	4693	9516	4333	9147	3955	8759	3559	8354	3144	7930	2712	7489	2262
27	5116	9947	4774	9596	4414	9227	4035	8839	3639	8434	3224	8010	2792	7569	2341
28	5196	0028	4854	9676	4494	9307	4115	8919	3719	8514	3304	8090	2871	7648	2421
29	5277	0108	4935	9757	4574	9387	4195	8999	3799	8593	3384	8170	2951	7728	2500
30	5358	0189	5015	9837	4654	9467	4276	9079	3879	8673	3464	8249	3031	7807	2580
31	5438	0269	5095	9917	4735	9547	4356	9159	3958	8753	3543	8329	3110	7887	2659
32	5519	0350	5176	9998	4815	9628	4436	9239	4038	8833	3623	8409	3190	7967	2739
33	5599	0430	5256	0078	4895	9708	4516	9319	4118	8913	3703	8489	3270	8046	2818
34	5680	0511	5337	0158	4975	9788	4596	9399	4198	8993	3783	8568	3349	8126	2898
35	5760	0591	5417	0239	5056	9868	4676	9479	4278	9073	3863	8648	3429	8205	2977
36	5841	0671	5497	0319	5136	9948	4756	9559	4358	9153	3942	8728	3509	8285	3057
37	5921	0752	5578	0399	5216	0028	4836	9639	4438	9232	4022	8807	3588	8364	3136
38	6002	0832	5658	0480	5296	0109	4916	9719	4518	9312	4102	8887	3668	8444	3216
39	6082	0913	5739	0560	5377	0189	4996	9799	4598	9392	4182	8967	3747	8524	3295
40	6163	0993	5819	0640	5457	0269	5076	9879	4678	9472	4261	9047	3827	8603	3375
41	6244	1074	5899	0721	5537	0349	5157	9959	4758	9552	4341	9126	3907	8683	3454
42	6324	1154	5980	0801	5617	0429	5237	0040	4838	9632	4421	9206	3986	8762	3534
43	6405	1235	6060	0881	5698	0509	5317	0120	4918	9712	4501	9286	4066	8842	3613
44	6485	1315	6141	0961	5778	0590	5397	0200	4998	9791	4581	9365	4146	8921	3693
45	6566	1396	6221	1042	5858	0670	5477	0280	5078	9871	4660	9445	4225	9001	3772
46	6646	1476	6301	1122	5938	0750	5557	0360	5158	9951	4740	9525	4305	9081	3852
47	6727	1557	6382	1202	6018	0830	5637	0440	5238	0031	4820	9604	4385	9160	3931
48	6807	1637	6462	1283	6099	0910	5717	0520	5317	0111	4900	9684	4464	9240	4011
49	6888	1717	6543	1363	6179	0990	5797	0600	5397	0191	4980	9764	4544	9319	4090
50	6968	1798	6623	1443	6259	1070	5877	0680	5477	0271	5059	9844	4623	9399	4170
51	7049	1878	6703	1524	6339	1151	5957	0760	5557	0350	5139	9923	4703	9478	4249
52	7129	1959	6784	1604	6420	1231	6037	0840	5637	0430	5219	0003	4783	9558	4329
53	7210	2039	6864	1684	6500	1311	6117	0920	5717	0510	5299	0083	4862	9637	4408
54	7290	2120	6944	1765	6580	1391	6198	1000	5797	0590	5378	0162	4942	9717	4488
55	7371	2200	7025	1845	6660	1471	6278	1080	5877	0670	5458	0242	5022	9797	4567
56	7452	2281	7105	1925	6741	1551	6358	1160	5957	0750	5538	0322	5101	9876	4647
57	7532	2361	7186	2005	6821	1632	6438	1240	6037	0829	5618	0401	5181	9956	4726
58	7613	2442	7266	2086	6901	1712	6518	1320	6117	0909	5697	0481	5260	0035	4805
59	7693	2522	7346	2166	6981	1792	6598	1399	6197	0989	5777	0561	5340	0115	4885
60	7774	2602	7427	2246	7061	1872	6678	1479	6276	1069	5857	0641	5420	0194	4964
"	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

15 Deg. Co-Tangent

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	"
10. 549	10. 549	10. 548	10. 548	10. 547	10. 547	10. 546	10. 546	10. 545	10. 545	10. 544	10. 544	10. 543	10. 543	10. 542	
7060	2226	7398	2573	7754	2939	8128	3322	8521	3724	8931	4143	9359	4580	9806	60
6979	2146	7317	2493	7673	2858	8048	3242	8441	3644	8851	4063	9280	4501	9726	59
6899	2065	7237	2413	7593	2778	7968	3162	8361	3564	8771	3983	9200	4421	9647	58
6818	1985	7156	2332	7513	2698	7888	3082	8281	3484	8692	3904	9120	4342	9567	57
6737	1904	7076	2252	7433	2618	7808	3002	8201	3404	8612	3824	9041	4262	9488	56
6657	1824	6995	2172	7352	2538	7727	2922	8121	3324	8532	3744	8961	4182	9408	55
6576	1743	6915	2091	7272	2457	7647	2842	8041	3244	8452	3664	8881	4103	9329	54
6496	1663	6835	2011	7192	2377	7567	2762	7961	3164	8372	3585	8802	4023	9249	53
6415	1582	6754	1930	7111	2297	7487	2682	7881	3084	8292	3505	8722	3944	9170	52
6334	1502	6674	1850	7031	2217	7407	2602	7801	3004	8213	3425	8642	3864	9090	51
6254	1421	6593	1770	6951	2137	7327	2521	7721	2924	8133	3345	8563	3784	9010	50
6173	1341	6513	1689	6871	2056	7247	2441	7641	2845	8053	3266	8483	3705	8931	49
6093	1260	6432	1609	6790	1976	7166	2361	7561	2765	7973	3186	8403	3625	8851	48
6012	1180	6352	1529	6710	1896	7086	2281	7481	2685	7893	3106	8324	3546	8772	47
5932	1099	6272	1448	6630	1816	7006	2201	7401	2605	7813	3026	8244	3466	8692	46
5851	1019	6191	1368	6550	1736	6926	2121	7321	2525	7734	2947	8164	3386	8613	45
5770	0938	6111	1288	6469	1655	6846	2041	7241	2445	7654	2867	8085	3307	8533	44
5690	0858	6030	1207	6389	1575	6766	1961	7161	2365	7574	2787	8005	3227	8454	43
5609	0777	5950	1127	6309	1495	6686	1881	7081	2285	7494	2707	7925	3148	8374	42
5529	0697	5869	1047	6228	1415	6606	1801	7001	2205	7414	2628	7846	3068	8295	41
5448	0616	5789	0966	6148	1335	6526	1721	6921	2126	7335	2548	7766	2988	8215	40
5368	0536	5709	0886	6068	1254	6445	1641	6841	2046	7255	2468	7686	2909	8136	39
5287	0455	5628	0806	5988	1174	6365	1561	6761	1966	7175	2389	7607	2829	8056	38
5206	0375	5548	0725	5907	1094	6285	1481	6681	1886	7095	2309	7527	2750	7977	37
5126	0294	5467	0645	5827	1014	6205	1401	6601	1806	7015	2229	7447	2670	7897	36
5045	0214	5387	0565	5747	0934	6125	1321	6521	1726	6935	2149	7368	2590	7818	35
4965	0133	5307	0484	5667	0853	6045	1241	6441	1646	6856	2070	7288	2511	7738	34
4884	0053	5226	0404	5586	0773	5965	1161	6361	1566	6776	1990	7208	2431	7659	33
4804	9972	5146	0324	5506	0693	5885	1081	6281	1486	6696	1910	7129	2352	7579	32
4723	9892	5065	0243	5426	0613	5805	1001	6201	1407	6616	1830	7049	2272	7500	31
4642	9811	4985	0163	5346	0533	5724	0921	6121	1327	6536	1751	6969	2193	7420	30
4562	9731	4905	0083	5265	0453	5644	0841	6042	1247	6457	1671	6890	2113	7341	29
4481	9650	4824	0002	5185	0372	5564	0761	5962	1167	6377	1591	6810	2033	7261	28
4401	9570	4744	9922	5105	0292	5484	0681	5882	1087	6297	1511	6730	1954	7182	27
4320	9489	4663	9842	5025	0212	5404	0601	5802	1007	6217	1432	6651	1874	7102	26
4240	9409	4583	9761	4944	0132	5324	0521	5722	0927	6137	1352	6571	1795	7023	25
4159	9329	4503	9681	4864	0052	5244	0441	5642	0847	6058	1272	6491	1715	6943	24
4079	9248	4422	9601	4784	9972	5164	0361	5562	0768	5978	1193	6412	1636	6864	23
3998	9168	4342	9520	4704	9891	5084	0281	5482	0688	5898	1113	6332	1556	6784	22
3918	9087	4261	9440	4623	9811	5004	0201	5402	0608	5818	1033	6253	1476	6705	21
3837	9007	4181	9360	4543	9731	4924	0121	5322	0528	5739	0953	6173	1397	6625	20
3756	8926	4101	9279	4463	9651	4843	0041	5242	0448	5659	0874	6093	1317	6546	19
3676	8846	4020	9199	4383	9571	4763	9960	5162	0368	5579	0794	6014	1238	6466	18
3595	8765	3940	9119	4302	9491	4683	9880	5082	0288	5499	0714	5934	1158	6387	17
3515	8685	3859	9039	4222	9410	4603	9800	5002	0209	5419	0635	5854	1079	6307	16
3434	8604	3779	8958	4142	9330	4523	9720	4922	0129	5340	0555	5775	0999	6228	15
3354	8524	3699	8878	4062	9250	4443	9640	4842	0049	5260	0475	5695	0919	6148	14
3273	8443	3618	8798	3982	9170	4363	9560	4762	9969	5180	0396	5615	0840	6069	13
3193	8363	3538	8717	3901	9090	4283	9480	4683	9889	5100	0316	5536	0760	5989	12
3112	8283	3457	8637	3821	9010	4203	9400	4603	9809	5020	0236	5456	0681	5910	11
3032	8202	3377	8557	3741	8930	4123	9320	4523	9729	4941	0156	5377	0601	5830	10
2951	8122	3297	8476	3661	8849	4043	9240	4443	9650	4861	0077	5297	0522	5751	9
2871	8041	3216	8396	3580	8769	3963	9160	4363	9570	4781	9997	5217	0442	5671	8
2790	7961	3136	8316	3500	8689	3883	9080	4283	9490	4701	9917	5138	0363	5592	7
2710	7880	3056	8235	3420	8609	3802	9000	4203	9410	4622	9838	5058	0283	5512	6
2629	7800	2975	8155	3340	8529	3722	8920	4123	9330	4542	9758	4978	0203	5433	5
2548	7719	2895	8075	3259	8449	3642	8840	4043	9250	4462	9678	4899	0124	5353	4
2468	7639	2814	7995	3179	8368	3562	8760	3963	9171	4382	9599	4819	0044	5274	3
2387	7558	2734	7914	3099	8288	3482	8680	3883	9091	4303	9519	4740	9965	5195	2
2307	7478	2654	7834	3019	8208	3402	8601	3803	9011	4223	9439	4660	9885	5115	1
2226	7398	2573	7754	2939	8128	3322	8521	3724	8931	4143	9359	4580	9806	5036	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	"

16 Deg. Sine

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.440	9.440	9.441	9.441	9.442	9.442	9.442	9.443	9.443	9.444	9.444	9.445	9.445	9.446	9.446
0	3381	7784	2182	6576	0965	5349	9728	4103	8472	2837	7197	1553	5904	0250	4591
1	3454	7857	2256	6649	1038	5422	9801	4176	8545	2910	7270	1625	5976	0322	4663
2	3528	7931	2329	6722	1111	5495	9874	4248	8618	2983	7343	1698	6049	0394	4735
3	3601	8004	2402	6796	1184	5568	9947	4321	8691	3055	7415	1771	6121	0467	4808
4	3674	8077	2476	6869	1257	5641	0020	4394	8763	3128	7488	1843	6193	0539	4880
5	3748	8151	2549	6942	1330	5714	0093	4467	8836	3201	7561	1916	6266	0612	4952
6	3821	8224	2622	7015	1404	5787	0166	4540	8909	3273	7633	1988	6338	0684	5025
7	3895	8297	2695	7088	1477	5860	0239	4613	8982	3346	7706	2061	6411	0756	5097
8	3968	8371	2769	7162	1550	5933	0312	4686	9055	3419	7778	2133	6483	0829	5169
9	4042	8444	2842	7235	1623	6006	0385	4758	9127	3492	7851	2206	6556	0901	5242
10	4115	8517	2915	7308	1696	6079	0458	4831	9200	3564	7924	2278	6628	0973	5314
11	4188	8591	2988	7381	1769	6152	0531	4904	9273	3637	7996	2351	6701	1046	5386
12	4262	8664	3062	7454	1842	6225	0603	4977	9346	3710	8069	2423	6773	1118	5459
13	4335	8737	3135	7527	1915	6298	0676	5050	9418	3782	8142	2496	6846	1191	5531
14	4409	8811	3208	7601	1988	6371	0749	5123	9491	3855	8214	2568	6918	1263	5603
15	4482	8884	3281	7674	2061	6444	0822	5196	9564	3928	8287	2641	6991	1335	5675
16	4555	8957	3355	7747	2134	6517	0895	5268	9637	4000	8359	2714	7063	1408	5748
17	4629	9031	3428	7820	2208	6590	0968	5341	9710	4073	8432	2786	7135	1480	5820
18	4702	9104	3501	7893	2281	6663	1041	5414	9782	4146	8505	2859	7208	1552	5892
19	4776	9177	3574	7966	2354	6736	1114	5487	9855	4218	8577	2931	7280	1625	5965
20	4849	9251	3648	8040	2427	6809	1187	5560	9928	4291	8650	3004	7353	1697	6037
21	4922	9324	3721	8113	2500	6882	1260	5633	0001	4364	8722	3076	7425	1770	6109
22	4996	9397	3794	8186	2573	6955	1333	5705	0073	4437	8795	3149	7498	1842	6181
23	5069	9471	3867	8259	2646	7028	1406	5778	0146	4509	8868	3221	7570	1914	6254
24	5143	9544	3941	8332	2719	7101	1479	5851	0219	4582	8940	3294	7643	1987	6326
25	5216	9617	4014	8405	2792	7174	1551	5924	0292	4655	9013	3366	7715	2059	6398
26	5289	9691	4087	8479	2865	7247	1624	5997	0364	4727	9085	3439	7787	2131	6471
27	5363	9764	4160	8552	2938	7320	1697	6070	0437	4800	9158	3511	7860	2204	6543
28	5436	9837	4233	8625	3011	7393	1770	6142	0510	4873	9231	3584	7932	2276	6615
29	5510	9911	4307	8698	3084	7466	1843	6215	0583	4945	9303	3656	8005	2348	6687
30	5583	9984	4380	8771	3158	7539	1916	6288	0655	5018	9376	3729	8077	2421	6760
31	5656	0057	4453	8844	3231	7612	1989	6361	0728	5091	9448	3801	8150	2493	6832
32	5730	0130	4526	8917	3304	7685	2062	6434	0801	5163	9521	3874	8222	2566	6904
33	5803	0204	4600	8991	3377	7758	2135	6507	0874	5236	9594	3946	8294	2638	6977
34	5877	0277	4673	9064	3450	7831	2208	6579	0946	5309	9666	4019	8367	2710	7049
35	5950	0350	4746	9137	3523	7904	2281	6652	1019	5381	9739	4091	8439	2783	7121
36	6023	0424	4819	9210	3596	7977	2353	6725	1092	5454	9811	4164	8512	2855	7193
37	6097	0497	4892	9283	3669	8050	2426	6798	1165	5527	9884	4236	8584	2927	7266
38	6170	0570	4966	9356	3742	8123	2499	6871	1237	5599	9956	4309	8657	3000	7338
39	6243	0644	5039	9429	3815	8196	2572	6943	1310	5672	0029	4381	8729	3072	7410
40	6317	0717	5112	9503	3888	8269	2645	7016	1383	5745	0102	4454	8801	3144	7482
41	6390	0790	5185	9576	3961	8342	2718	7089	1456	5817	0174	4526	8874	3217	7555
42	6464	0863	5259	9649	4034	8415	2791	7162	1528	5890	0247	4599	8946	3289	7627
43	6537	0937	5332	9722	4107	8488	2864	7235	1601	5963	0319	4671	9019	3361	7699
44	6610	1010	5405	9795	4180	8561	2937	7308	1674	6035	0392	4744	9091	3434	7771
45	6684	1083	5478	9868	4253	8634	3009	7380	1746	6108	0464	4816	9164	3506	7844
46	6757	1157	5551	9941	4326	8707	3082	7453	1819	6180	0537	4889	9236	3578	7916
47	6830	1230	5625	0014	4399	8780	3155	7526	1892	6253	0610	4961	9308	3651	7988
48	6904	1303	5698	0088	4473	8853	3228	7599	1965	6326	0682	5034	9381	3723	8060
49	6977	1376	5771	0161	4546	8926	3301	7672	2037	6398	0755	5106	9453	3795	8133
50	7050	1450	5844	0234	4619	8999	3374	7744	2110	6471	0827	5179	9526	3868	8205
51	7124	1523	5917	0307	4692	9072	3447	7817	2183	6544	0900	5251	9598	3940	8277
52	7197	1596	5991	0380	4765	9145	3520	7890	2256	6616	0972	5324	9670	4012	8349
53	7271	1670	6064	0453	4838	9218	3593	7963	2328	6689	1045	5396	9743	4085	8422
54	7344	1743	6137	0526	4911	9290	3665	8036	2401	6762	1118	5469	9815	4157	8494
55	7417	1816	6210	0599	4984	9363	3738	8108	2474	6834	1190	5541	9888	4229	8566
56	7491	1889	6283	0672	5057	9436	3811	8181	2546	6907	1263	5614	9960	4302	8638
57	7564	1963	6357	0746	5130	9509	3884	8254	2619	6980	1335	5686	0032	4374	8711
58	7637	2036	6430	0819	5203	9582	3957	8327	2692	7052	1408	5759	0105	4446	8783
59	7711	2109	6503	0892	5276	9655	4030	8400	2765	7125	1480	5831	0177	4519	8855
60	7784	2182	6576	0965	5349	9728	4103	8472	2837	7197	1553	5904	0250	4591	8927
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Sine Deg. 73

16 Deg. Co-Sine

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
9.982	9.982	9.982	9.982	9.982	9.982	9.982	9.982	9.982	9.982	9.982	9.982	9.982	9.982	9.982	″
8416	8054	7691	7328	6964	6600	6236	5871	5506	5140	4774	4408	4041	3674	3306	60
8410	8048	7685	7322	6958	6594	6230	5865	5500	5134	4768	4401	4035	3667	3300	59
8404	8042	7679	7316	6952	6588	6224	5859	5493	5128	4762	4395	4028	3661	3294	58
8398	8036	7673	7310	6946	6582	6217	5853	5487	5122	4756	4389	4022	3655	3287	57
8392	8030	7667	7304	6940	6576	6211	5847	5481	5116	4750	4383	4016	3649	3281	56
8386	8024	7661	7298	6934	6570	6205	5840	5475	5110	4743	4377	4010	3643	3275	55
8380	8018	7655	7291	6928	6564	6199	5834	5469	5103	4737	4371	4004	3637	3269	54
8374	8012	7649	7285	6922	6558	6193	5828	5463	5097	4731	4365	3998	3631	3263	53
8368	8006	7643	7279	6916	6552	6187	5822	5457	5091	4725	4359	3992	3625	3257	52
8362	8000	7637	7273	6910	6546	6181	5816	5451	5085	4719	4353	3986	3618	3251	51
8356	7993	7631	7267	6904	6539	6175	5810	5445	5079	4713	4346	3980	3612	3245	50
8350	7987	7625	7261	6897	6533	6169	5804	5439	5073	4707	4340	3973	3606	3238	49
8344	7981	7618	7255	6891	6527	6163	5798	5433	5067	4701	4334	3967	3600	3232	48
8338	7975	7612	7249	6885	6521	6157	5792	5426	5061	4695	4328	3961	3594	3226	47
8332	7969	7606	7243	6879	6515	6151	5786	5420	5055	4689	4322	3955	3588	3220	46
8326	7963	7600	7237	6873	6509	6145	5780	5414	5049	4682	4316	3949	3582	3214	45
8320	7957	7594	7231	6867	6503	6138	5774	5408	5042	4676	4310	3943	3576	3208	44
8314	7951	7588	7225	6861	6497	6132	5767	5402	5036	4670	4304	3937	3569	3202	43
8308	7945	7582	7219	6855	6491	6126	5761	5396	5030	4664	4298	3931	3563	3196	42
8302	7939	7576	7213	6849	6485	6120	5755	5390	5024	4658	4291	3924	3557	3189	41
8296	7933	7570	7207	6843	6479	6114	5749	5384	5018	4652	4285	3918	3551	3183	40
8290	7927	7564	7201	6837	6473	6108	5743	5378	5012	4646	4279	3912	3545	3177	39
8284	7921	7558	7195	6831	6467	6102	5737	5372	5006	4640	4273	3906	3539	3171	38
8277	7915	7552	7188	6825	6460	6096	5731	5366	5000	4634	4267	3900	3533	3165	37
8271	7909	7546	7182	6819	6454	6090	5725	5359	4994	4627	4261	3894	3527	3159	36
8265	7903	7540	7176	6813	6448	6084	5719	5353	4988	4621	4255	3888	3520	3153	35
8259	7897	7534	7170	6806	6442	6078	5713	5347	4981	4615	4249	3882	3514	3146	34
8253	7891	7528	7164	6800	6436	6072	5707	5341	4975	4609	4243	3876	3508	3140	33
8247	7885	7522	7158	6794	6430	6066	5700	5335	4969	4603	4236	3869	3502	3134	32
8241	7879	7516	7152	6788	6424	6059	5694	5329	4963	4597	4230	3863	3496	3128	31
8235	7873	7510	7146	6782	6418	6053	5688	5323	4957	4591	4224	3857	3490	3122	30
8229	7867	7503	7140	6776	6412	6047	5682	5317	4951	4585	4218	3851	3484	3116	29
8223	7860	7497	7134	6770	6406	6041	5676	5311	4945	4579	4212	3845	3477	3110	28
8217	7854	7491	7128	6764	6400	6035	5670	5305	4939	4573	4206	3839	3471	3104	27
8211	7848	7485	7122	6758	6394	6029	5664	5299	4933	4566	4200	3833	3465	3097	26
8205	7842	7479	7116	6752	6388	6023	5658	5292	4927	4560	4194	3827	3459	3091	25
8199	7836	7473	7110	6746	6382	6017	5652	5286	4920	4554	4188	3820	3453	3085	24
8193	7830	7467	7104	6740	6375	6011	5646	5280	4914	4548	4181	3814	3447	3079	23
8187	7824	7461	7098	6734	6369	6005	5640	5274	4908	4542	4175	3808	3441	3073	22
8181	7818	7455	7092	6728	6363	5999	5634	5268	4902	4536	4169	3802	3435	3067	21
8175	7812	7449	7085	6722	6357	5993	5627	5262	4896	4530	4163	3796	3428	3061	20
8169	7806	7443	7079	6715	6351	5986	5621	5256	4890	4524	4157	3790	3422	3054	19
8163	7800	7437	7073	6709	6345	5980	5615	5250	4884	4518	4151	3784	3416	3048	18
8157	7794	7431	7067	6703	6339	5974	5609	5244	4878	4511	4145	3778	3410	3042	17
8151	7788	7425	7061	6697	6333	5968	5603	5238	4872	4505	4139	3771	3404	3036	16
8145	7782	7419	7055	6691	6327	5962	5597	5231	4866	4499	4132	3765	3398	3030	15
8139	7776	7413	7049	6685	6321	5956	5591	5225	4859	4493	4126	3759	3392	3024	14
8132	7770	7407	7043	6679	6315	5950	5585	5219	4853	4487	4120	3753	3386	3018	13
8126	7764	7401	7037	6673	6309	5944	5579	5213	4847	4481	4114	3747	3379	3011	12
8120	7758	7394	7031	6667	6303	5938	5573	5207	4841	4475	4108	3741	3373	3005	11
8114	7752	7388	7025	6661	6296	5932	5567	5201	4835	4469	4102	3735	3367	2999	10
8108	7746	7382	7019	6655	6290	5926	5560	5195	4829	4463	4096	3729	3361	2993	9
8102	7739	7376	7013	6649	6284	5920	5554	5189	4823	4456	4090	3722	3355	2987	8
8096	7733	7370	7007	6643	6278	5913	5548	5183	4817	4450	4084	3716	3349	2981	7
8090	7727	7364	7001	6637	6272	5907	5542	5177	4811	4444	4077	3710	3343	2975	6
8084	7721	7358	6995	6631	6266	5901	5536	5171	4805	4438	4071	3704	3337	2969	5
8078	7715	7352	6988	6624	6260	5895	5530	5164	4798	4432	4065	3698	3330	2962	4
8072	7709	7346	6982	6618	6254	5889	5524	5158	4792	4426	4059	3692	3324	2956	3
8066	7703	7340	6976	6612	6248	5883	5518	5152	4786	4420	4053	3686	3318	2950	2
8060	7697	7334	6970	6606	6242	5877	5512	5146	4780	4414	4047	3680	3312	2944	1
8054	7691	7328	6964	6600	6236	5871	5506	5140	4774	4408	4041	3674	3306	2938	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Sine Deg. 73

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9. 457	9. 457	9. 458	9. 458	9. 459	9. 459	9. 460	9. 460	9. 461	9. 461	9. 462	9. 462	9. 463	9. 463	9. 464
0	4964	9730	4491	9248	4001	8749	3492	8232	2967	7697	2423	7145	1863	6576	1285
1	5044	9809	4571	9328	4080	8828	3571	8311	3046	7776	2502	7224	1941	6655	1363
2	5123	9889	4650	9407	4159	8907	3651	8390	3124	7855	2581	7303	2020	6733	1442
7	5203	9968	4729	9486	4238	8986	3730	8469	3203	7934	2660	7381	2099	6812	1520
4	5282	0048	4809	9565	4317	9065	3809	8548	3282	8012	2738	7460	2177	6890	1599
5	5362	0127	4888	9644	4397	9144	3888	8627	3361	8091	2817	7539	2256	6969	1677
6	5441	0206	4967	9724	4476	9223	3967	8705	3440	8170	2896	7617	2334	7047	1756
7	5521	0286	5047	9803	4555	9302	4046	8784	3519	8249	2975	7696	2413	7126	1834
8	5600	0365	5126	9882	4634	9382	4125	8863	3598	8328	3053	7775	2492	7204	1912
9	5680	0445	5205	9961	4713	9461	4204	8942	3677	8406	3132	7853	2570	7283	1991
10	5759	0524	5285	0041	4792	9540	4283	9021	3755	8485	3211	7932	2649	7361	2069
11	5838	0603	5364	0120	4872	9619	4362	9100	3834	8564	3289	8011	2727	7440	2148
12	5918	0683	5443	0199	4951	9698	4441	9179	3913	8643	3368	8089	2806	7518	2226
13	5997	0762	5522	0278	5030	9777	4520	9258	3992	8722	3447	8168	2884	7597	2305
14	6077	0841	5602	0358	5109	9856	4599	9337	4071	8800	3526	8246	2963	7675	2383
15	6156	0921	5681	0437	5188	9935	4678	9416	4150	8879	3604	8325	3042	7754	2462
16	6236	1000	5760	0516	5267	0014	4757	9495	4229	8958	3683	8404	3120	7832	2540
17	6315	1080	5840	0595	5346	0093	4836	9574	4307	9037	3762	8482	3199	7911	2618
18	6395	1159	5919	0674	5426	0172	4915	9653	4386	9116	3840	8561	3277	7989	2697
19	6474	1238	5998	0754	5505	0251	4994	9732	4465	9194	3919	8640	3356	8068	2775
20	6553	1318	6078	0833	5584	0331	5073	9811	4544	9273	3998	8718	3434	8146	2854
21	6633	1397	6157	0912	5663	0410	5152	9889	4623	9352	4077	8797	3513	8225	2932
22	6712	1476	6236	0991	5742	0489	5231	9968	4702	9431	4155	8876	3592	8303	3010
23	6792	1556	6315	1071	5821	0568	5310	0047	4781	9509	4234	8954	3670	8382	3089
24	6871	1635	6395	1150	5900	0647	5389	0126	4859	9588	4313	9033	3749	8460	3167
25	6951	1715	6474	1229	5980	0726	5468	0205	4938	9667	4391	9111	3827	8539	3246
26	7030	1794	6553	1308	6059	0805	5547	0284	5017	9746	4470	9190	3906	8617	3324
27	7110	1873	6633	1387	6138	0884	5626	0363	5096	9825	4549	9269	3984	8696	3403
28	7189	1953	6712	1467	6217	0963	5705	0442	5175	9903	4628	9347	4063	8774	3481
29	7268	2032	6791	1546	6296	1042	5784	0521	5254	9982	4706	9426	4141	8853	3559
30	7348	2111	6870	1625	6375	1121	5863	0600	5333	0061	4785	9505	4220	8931	3638
31	7427	2191	6950	1704	6454	1200	5942	0679	5411	0140	4864	9583	4299	9010	3716
32	7507	2270	7029	1783	6534	1279	6021	0758	5490	0218	4942	9662	4377	9088	3795
33	7586	2349	7108	1863	6613	1358	6100	0837	5569	0297	5021	9740	4456	9166	3873
34	7665	2429	7187	1942	6692	1437	6179	0915	5648	0376	5100	9819	4534	9245	3951
35	7745	2508	7267	2021	6771	1516	6258	0994	5727	0455	5178	9898	4613	9323	4030
36	7824	2587	7346	2100	6850	1596	6337	1073	5806	0533	5257	9976	4691	9402	4108
37	7904	2667	7425	2179	6929	1675	6416	1152	5884	0612	5336	0055	4770	9480	4187
38	7983	2746	7505	2259	7008	1754	6495	1231	5963	0691	5414	0134	4848	9559	4265
39	8063	2825	7584	2338	7087	1833	6574	1310	6042	0770	5493	0212	4927	9637	4343
40	8142	2905	7663	2417	7167	1912	6652	1389	6121	0849	5572	0291	5005	9716	4422
41	8221	2984	7742	2496	7246	1991	6731	1468	6200	0927	5651	0369	5084	9794	4500
42	8301	3063	7822	2575	7325	2070	6810	1547	6279	1006	5729	0448	5163	9873	4579
43	8380	3143	7901	2655	7404	2149	6889	1626	6357	1085	5808	0527	5241	9951	4657
44	8460	3222	7980	2734	7483	2228	6968	1704	6436	1164	5887	0605	5320	0030	4735
45	8539	3301	8059	2813	7562	2307	7047	1783	6515	1242	5965	0684	5398	0108	4814
46	8618	3381	8139	2892	7641	2386	7126	1862	6594	1321	6044	0762	5477	0187	4892
47	8698	3460	8218	2971	7720	2465	7205	1941	6673	1400	6123	0841	5555	0265	4971
48	8777	3539	8297	3051	7800	2544	7284	2020	6751	1479	6201	0920	5634	0344	5049
49	8857	3619	8377	3130	7879	2623	7363	2099	6830	1557	6280	0998	5712	0422	5127
50	8936	3698	8456	3209	7958	2702	7442	2178	6909	1636	6359	1077	5791	0500	5206
51	9016	3777	8535	3288	8037	2781	7521	2257	6988	1715	6437	1155	5869	0579	5284
52	9095	3857	8614	3367	8116	2860	7600	2336	7067	1794	6516	1234	5948	0657	5363
53	9174	3936	8694	3447	8195	2939	7679	2414	7146	1872	6595	1313	6026	0736	5441
54	9254	4015	8773	3526	8274	3018	7758	2493	7224	1951	6673	1391	6105	0814	5519
55	9333	4095	8852	3605	8353	3097	7837	2572	7303	2030	6752	1470	6183	0893	5598
56	9413	4174	8931	3684	8432	3176	7916	2651	7382	2109	6831	1548	6262	0971	5676
57	9492	4253	9011	3763	8511	3255	7995	2730	7461	2187	6909	1627	6341	1050	5754
58	9571	4333	9090	3842	8591	3334	8074	2809	7540	2266	6988	1706	6419	1128	5833
59	9651	4412	9169	3922	8670	3413	8153	2888	7618	2345	7067	1784	6498	1207	5911
60	9730	4491	9248	4001	8749	3492	8232	2967	7697	2423	7145	1863	6576	1285	5990
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
	10. 542	10. 542	10. 541	10. 541	10. 540	10. 540	10. 539	10. 539	10. 538	10. 538	10. 537	10. 537	10. 536	10. 536	10. 535	″
	5036	0270	5509	0752	5999	1251	6508	1768	7033	2303	7577	2855	8137	3424	8715	60
	4956	0191	5429	0672	5920	1172	6429	1689	6954	2224	7498	2776	8059	3345	8637	59
	4877	0111	5350	0593	5841	1093	6349	1610	6876	2145	7419	2697	7980	3267	8558	58
	4797	0032	5271	0514	5762	1014	6270	1531	6797	2066	7340	2619	7901	3188	8480	57
	4718	9952	5191	0435	5683	0935	6191	1452	6718	1988	7262	2540	7823	3110	8401	56
	4638	9873	5112	0356	5603	0856	6112	1373	6639	1909	7183	2461	7744	3031	8323	55
	4559	9794	5033	0276	5524	0777	6033	1295	6560	1830	7104	2383	7666	2953	8244	54
	4479	9714	4953	0197	5445	0698	5954	1216	6481	1751	7025	2304	7587	2874	8166	53
	4400	9635	4874	0118	5366	0618	5875	1137	6402	1672	6947	2225	7508	2796	8088	52
	4320	9555	4795	0039	5287	0539	5796	1058	6323	1594	6868	2147	7430	2717	8009	51
	4241	9476	4715	9959	5208	0460	5717	0979	6245	1515	6789	2068	7351	2639	7931	50
	4162	9397	4636	9880	5128	0381	5638	0900	6166	1436	6711	1989	7273	2560	7852	49
	4082	9317	4557	9801	5049	0302	5559	0821	6087	1357	6632	1911	7194	2482	7774	48
	4003	9238	4478	9722	4970	0223	5480	0742	6008	1278	6553	1832	7116	2403	7695	47
	3923	9159	4398	9642	4891	0144	5401	0663	5929	1200	6474	1754	7037	2325	7617	46
	3844	9079	4319	9563	4812	0065	5322	0584	5850	1121	6396	1675	6958	2246	7538	45
	3764	9000	4240	9484	4733	9986	5243	0505	5771	1042	6317	1596	6880	2168	7460	44
	3685	8920	4160	9405	4654	9907	5164	0426	5693	0963	6238	1518	6801	2089	7382	43
	3605	8841	4081	9326	4574	9828	5085	0347	5614	0884	6160	1439	6723	2011	7303	42
	3526	8762	4002	9246	4495	9749	5006	0268	5535	0806	6081	1360	6644	1932	7225	41
	3447	8682	3922	9167	4416	9669	4927	0189	5456	0727	6002	1282	6566	1854	7146	40
	3367	8603	3843	9088	4337	9590	4848	0111	5377	0648	5923	1203	6487	1775	7068	39
	3288	8524	3764	9009	4258	9511	4769	0032	5298	0569	5845	1124	6408	1697	6990	38
	3208	8444	3685	8929	4179	9432	4690	9953	5219	0491	5766	1046	6330	1618	6911	37
	3129	8365	3605	8850	4100	9353	4611	9874	5141	0412	5687	0967	6251	1540	6833	36
	3049	8285	3526	8771	4020	9274	4532	9795	5062	0333	5609	0889	6173	1461	6754	35
	2970	8206	3447	8692	3941	9195	4453	9716	4983	0254	5530	0810	6094	1383	6676	34
	2890	8127	3367	8613	3862	9116	4374	9637	4904	0175	5451	0731	6016	1304	6597	33
	2811	8047	3288	8533	3783	9037	4295	9558	4825	0097	5372	0653	5937	1226	6519	32
	2732	7968	3209	8454	3704	8958	4216	9479	4746	0018	5294	0574	5859	1147	6441	31
	2652	7889	3130	8375	3625	8879	4137	9400	4667	9939	5215	0495	5780	1069	6362	30
	2573	7809	3050	8296	3546	8800	4058	9321	4589	9860	5136	0417	5701	0990	6284	29
	2493	7730	2971	8217	3466	8721	3979	9242	4510	9782	5058	0338	5623	0912	6205	28
	2414	7651	2892	8137	3387	8642	3900	9163	4431	9703	4979	0260	5544	0834	6127	27
	2335	7571	2813	8058	3308	8563	3821	9085	4352	9624	4900	0181	5466	0755	6049	26
	2255	7492	2733	7979	3229	8484	3742	9006	4273	9545	4822	0102	5387	0677	5970	25
	2176	7413	2654	7900	3150	8404	3663	8927	4194	9467	4743	0024	5309	0598	5892	24
	2096	7333	2575	7821	3071	8325	3584	8848	4116	9388	4664	9945	5230	0520	5813	23
	2017	7254	2495	7741	2992	8246	3505	8769	4037	9309	4586	9866	5152	0441	5735	22
	1937	7175	2416	7662	2813	8167	3426	8690	3958	9230	4507	9788	5073	0363	5657	21
	1858	7095	2337	7583	2833	8088	3348	8611	3879	9151	4428	9709	4995	0284	5578	20
	1779	7016	2258	7504	2754	8009	3269	8532	3800	9073	4349	9631	4916	0206	5500	19
	1699	6937	2178	7425	2675	7930	3190	8453	3721	8994	4271	9552	4837	0127	5421	18
	1620	6857	2099	7345	2596	7851	3111	8374	3643	8915	4192	9473	4759	0049	5343	17
	1540	6778	2020	7266	2517	7772	3032	8296	3564	8836	4113	9395	4680	9970	5265	16
	1461	6699	1941	7187	2438	7693	2953	8217	3485	8758	4035	9316	4602	9892	5186	15
	1382	6619	1861	7108	2359	7614	2874	8138	3406	8679	3956	9238	4523	9813	5108	14
	1302	6540	1782	7029	2280	7535	2795	8059	3327	8600	3877	9159	4445	9735	5029	13
	1223	6461	1703	6949	2200	7456	2716	7980	3249	8521	3799	9080	4366	9656	4951	12
	1143	6381	1623	6870	2121	7377	2637	7901	3170	8443	3720	9002	4288	9578	4873	11
	1064	6302	1544	6791	2042	7298	2558	7822	3091	8364	3641	8923	4209	9500	4794	10
	0984	6223	1465	6712	1963	7219	2479	7743	3012	8285	3563	8845	4131	9421	4716	9
	0905	6143	1386	6633	1884	7140	2400	7664	2933	8206	3484	8766	4052	9343	4637	8
	0826	6064	1306	6553	1805	7061	2321	7586	2854	8128	3405	8687	3974	9264	4559	7
	0746	5985	1227	6474	1726	6982	2242	7507	2776	8049	3327	8609	3895	9186	4481	6
	0667	5905	1148	6395	1647	6903	2163	7428	2697	7970	3248	8530	3817	9107	4402	5
	0587	5826	1069	6316	1568	6824	2084	7349	2618	7891	3169	8452	3738	9029	4324	4
	0508	5747	0989	6237	1489	6745	2005	7270	2539	7813	3091	8373	3659	8950	4246	3
	0429	5667	0910	6158	1409	6666	1926	7191	2460	7734	3012	8294	3581	8872	4167	2
	0349	5588	0831	6078	1330	6587	1847	7112	2382	7655	2933	8216	3502	8793	4089	1
	0270	5509	0752	5999	1251	6508	1768	7033	2303	7577	2855	8137	3424	8715	4010	0
	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

16 Deg. Sine

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9.446	9.447	9.447	9.448	9.448	9.449	9.449	9.449	9.450	9.450	9.451	9.451	9.452	9.452	9.452
0	8927	3259	7586	1909	6227	0540	4849	9153	3452	7747	2037	6322	0603	4879	9151
1	9000	3331	7659	1981	6299	0612	4920	9224	3523	7818	2108	6393	0674	4950	9222
2	9072	3404	7731	2053	6371	0684	4992	9296	3595	7890	2179	6465	0746	5022	9293
3	9144	3476	7803	2125	6443	0756	5064	9368	3667	7961	2251	6536	0817	5093	9364
4	9216	3548	7875	2197	6515	0827	5136	9439	3738	8033	2322	6608	0888	5164	9436
5	9289	3620	7947	2269	6586	0899	5207	9511	3810	8104	2394	6679	0959	5235	9507
6	9361	3692	8019	2341	6658	0971	5279	9583	3882	8176	2465	6750	1031	5307	9578
7	9433	3764	8091	2413	6730	1043	5351	9654	3953	8247	2537	6822	1102	5378	9649
8	9505	3837	8163	2485	6802	1115	5423	9726	4025	8319	2608	6893	1173	5449	9720
9	9578	3909	8235	2557	6874	1187	5495	9798	4096	8390	2680	6964	1245	5520	9791
10	9650	3981	8307	2629	6946	1258	5566	9869	4168	8462	2751	7036	1316	5591	9862
11	9722	4053	8379	2701	7018	1330	5638	9941	4240	8533	2823	7107	1387	5663	9934
12	9794	4125	8451	2773	7090	1402	5710	0013	4311	8605	2894	7179	1459	5734	0005
13	9866	4197	8523	2845	7162	1474	5782	0084	4383	8676	2965	7250	1530	5805	0076
14	9939	4269	8596	2917	7234	1546	5853	0156	4454	8748	3037	7321	1601	5876	0147
15	0011	4342	8668	2989	7306	1618	5925	0228	4526	8819	3108	7393	1672	5948	0218
16	0083	4414	8740	3061	7378	1689	5997	0299	4598	8891	3180	7464	1744	6019	0289
17	0155	4486	8812	3133	7449	1761	6069	0371	4669	8962	3251	7535	1815	6090	0360
18	0227	4558	8884	3205	7521	1833	6140	0443	4741	9034	3323	7607	1886	6161	0432
19	0300	4630	8956	3277	7593	1905	6212	0514	4812	9106	3394	7678	1958	6232	0503
20	0372	4702	9028	3349	7665	1977	6284	0586	4884	9177	3466	7749	2029	6304	0574
21	0444	4774	9100	3421	7737	2049	6356	0658	4956	9249	3537	7821	2100	6375	0645
22	0516	4846	9172	3493	7809	2120	6427	0729	5027	9320	3608	7892	2171	6446	0716
23	0589	4919	9244	3565	7881	2192	6499	0801	5099	9392	3680	7964	2243	6517	0787
24	0661	4991	9316	3637	7953	2264	6571	0873	5170	9463	3751	8035	2314	6588	0858
25	0733	5063	9388	3709	8025	2336	6642	0944	5242	9535	3823	8106	2385	6660	0929
26	0805	5135	9460	3781	8097	2408	6714	1016	5313	9606	3894	8178	2457	6731	1001
27	0877	5207	9532	3853	8168	2480	6786	1088	5385	9678	3966	8249	2528	6802	1072
28	0950	5279	9604	3925	8240	2551	6858	1159	5457	9749	4037	8320	2599	6873	1143
29	1022	5351	9676	3997	8312	2623	6929	1231	5528	9821	4108	8392	2670	6944	1214
30	1094	5423	9748	4069	8384	2695	7001	1303	5600	9892	4180	8463	2742	7016	1285
31	1166	5496	9820	4140	8456	2767	7073	1374	5671	9964	4251	8534	2813	7087	1356
32	1238	5568	9892	4212	8528	2839	7145	1446	5743	0035	4323	8606	2884	7158	1427
33	1311	5640	9964	4284	8600	2910	7216	1518	5814	0107	4394	8677	2955	7229	1498
34	1383	5712	0037	4356	8672	2982	7288	1589	5886	0178	4466	8748	3027	7300	1570
35	1455	5784	0109	4428	8743	3054	7360	1661	5958	0250	4537	8820	3098	7372	1641
36	1527	5856	0181	4500	8815	3126	7432	1733	6029	0321	4608	8891	3169	7443	1712
37	1599	5928	0253	4572	8887	3198	7503	1804	6101	0393	4680	8962	3240	7514	1783
38	1671	6000	0325	4644	8959	3269	7575	1876	6172	0464	4751	9034	3312	7585	1854
39	1744	6073	0397	4716	9031	3341	7647	1948	6244	0536	4823	9105	3383	7656	1925
40	1816	6145	0469	4788	9103	3413	7718	2019	6315	0607	4894	9176	3454	7728	1996
41	1888	6217	0541	4860	9175	3485	7790	2091	6387	0679	4965	9248	3526	7799	2067
42	1960	6289	0613	4932	9247	3557	7862	2163	6459	0750	5037	9319	3597	7870	2138
43	2032	6361	0685	5004	9318	3628	7934	2234	6530	0822	5108	9390	3668	7941	2209
44	2105	6433	0757	5076	9390	3700	8005	2306	6602	0893	5180	9462	3739	8012	2281
45	2177	6505	0829	5148	9462	3772	8077	2377	6673	0964	5251	9533	3811	8083	2352
46	2249	6577	0901	5220	9534	3844	8149	2449	6745	1036	5323	9604	3882	8155	2423
47	2321	6649	0973	5292	9606	3916	8220	2521	6816	1107	5394	9676	3953	8226	2494
48	2393	6721	1045	5364	9678	3987	8292	2592	6888	1179	5465	9747	4024	8297	2565
49	2465	6794	1117	5436	9750	4059	8364	2664	6960	1250	5537	9818	4096	8368	2636
50	2538	6866	1189	5508	9822	4131	8436	2736	7031	1322	5608	9890	4167	8439	2707
51	2610	6938	1261	5579	9893	4203	8507	2807	7103	1393	5680	9961	4238	8510	2778
52	2682	7010	1333	5651	9965	4274	8579	2879	7174	1465	5751	0032	4309	8582	2849
53	2754	7082	1405	5723	0037	4346	8651	2950	7246	1536	5822	0104	4381	8653	2920
54	2826	7154	1477	5795	0109	4418	8722	3022	7317	1608	5894	0175	4452	8724	2992
55	2898	7226	1549	5867	0181	4490	8794	3094	7389	1679	5965	0246	4523	8795	3063
56	2971	7298	1621	5939	0253	4562	8866	3165	7460	1751	6036	0318	4594	8866	3134
57	3043	7370	1693	6011	0325	4633	8937	3237	7532	1822	6108	0389	4665	8937	3205
58	3115	7442	1765	6083	0396	4705	9009	3309	7603	1894	6179	0460	4737	9009	3276
59	3187	7514	1837	6155	0468	4777	9081	3380	7675	1965	6251	0532	4808	9080	3347
60	3259	7586	1909	6227	0540	4849	9153	3452	7747	2037	6322	0603	4879	9151	3418
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Sine Deg. 73

16 Deg. Co-Sine

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
	9.982	9.982	9.982	9.982	9.982	9.982	9.982	9.982	9.981	9.981	9.981	9.981	9.981	9.981	9.981	″
0	2938	2569	2201	1831	1462	1092	0721	0351	9979	9608	9236	8863	8490	8117	7744	60
1	2932	2563	2194	1825	1456	1086	0715	0344	9973	9602	9229	8857	8484	8111	7737	59
2	2926	2557	2188	1819	1449	1079	0709	0338	9967	9595	9223	8851	8478	8105	7731	58
3	2919	2551	2182	1813	1443	1073	0703	0332	9961	9589	9217	8845	8472	8099	7725	57
4	2913	2545	2176	1807	1437	1067	0697	0326	9955	9583	9211	8838	8466	8092	7719	56
5	2907	2539	2170	1801	1431	1061	0690	0320	9948	9577	9205	8832	8459	8086	7713	55
6	2901	2533	2164	1794	1425	1055	0684	0313	9942	9571	9198	8826	8453	8080	7706	54
7	2895	2526	2158	1788	1419	1049	0678	0307	9936	9564	9192	8820	8447	8074	7700	53
8	2889	2520	2151	1782	1412	1042	0672	0301	9930	9558	9186	8814	8441	8067	7694	52
9	2883	2514	2145	1776	1406	1036	0666	0295	9924	9552	9180	8807	8435	8061	7688	51
10	2876	2508	2139	1770	1400	1030	0660	0289	9917	9546	9174	8801	8428	8055	7681	50
11	2870	2502	2133	1764	1394	1024	0653	0283	9911	9540	9167	8795	8422	8049	7675	49
12	2864	2496	2127	1758	1388	1018	0647	0276	9905	9533	9161	8789	8416	8043	7669	48
13	2858	2490	2121	1751	1382	1012	0641	0270	9899	9527	9155	8783	8410	8036	7663	47
14	2852	2483	2115	1745	1375	1005	0635	0264	9893	9521	9149	8776	8403	8030	7656	46
15	2846	2477	2108	1739	1369	0999	0629	0258	9886	9515	9143	8770	8397	8024	7650	45
16	2840	2471	2102	1733	1363	0993	0623	0252	9880	9509	9136	8764	8391	8018	7644	44
17	2834	2465	2096	1727	1357	0987	0616	0245	9874	9502	9130	8758	8385	8011	7638	43
18	2827	2459	2090	1721	1351	0981	0610	0239	9868	9496	9124	8751	8379	8005	7631	42
19	2821	2453	2084	1714	1345	0975	0604	0233	9862	9490	9118	8745	8372	7999	7625	41
20	2815	2447	2078	1708	1338	0968	0598	0227	9855	9484	9112	8739	8366	7993	7619	40
21	2809	2440	2071	1702	1332	0962	0592	0221	9849	9478	9105	8733	8360	7987	7613	39
22	2803	2434	2065	1696	1326	0956	0585	0214	9843	9471	9099	8727	8354	7980	7607	38
23	2797	2428	2059	1690	1320	0950	0579	0208	9837	9465	9093	8720	8347	7974	7600	37
24	2791	2422	2053	1684	1314	0944	0573	0202	9831	9459	9087	8714	8341	7968	7594	36
25	2784	2416	2047	1677	1308	0937	0567	0196	9825	9453	9081	8708	8335	7962	7588	35
26	2778	2410	2041	1671	1301	0931	0561	0190	9818	9447	9074	8702	8329	7955	7582	34
27	2772	2404	2035	1665	1295	0925	0555	0184	9812	9440	9068	8696	8323	7949	7575	33
28	2766	2397	2028	1659	1289	0919	0548	0177	9806	9434	9062	8689	8316	7943	7569	32
29	2760	2391	2022	1653	1283	0913	0542	0171	9800	9428	9056	8683	8310	7937	7563	31
30	2754	2385	2016	1647	1277	0907	0536	0165	9794	9422	9050	8677	8304	7931	7557	30
31	2748	2379	2010	1640	1271	0900	0530	0159	9787	9416	9043	8671	8298	7924	7550	29
32	2741	2373	2004	1634	1264	0894	0524	0153	9781	9409	9037	8665	8291	7918	7544	28
33	2735	2367	1998	1628	1258	0888	0517	0146	9775	9403	9031	8658	8285	7912	7538	27
34	2729	2360	1991	1622	1252	0882	0511	0140	9769	9397	9025	8652	8279	7906	7532	26
35	2723	2354	1985	1616	1246	0876	0505	0134	9763	9391	9019	8646	8273	7899	7526	25
36	2717	2348	1979	1610	1240	0870	0499	0128	9756	9385	9012	8640	8267	7893	7519	24
37	2711	2342	1973	1604	1234	0863	0493	0122	9750	9378	9006	8633	8260	7887	7513	23
38	2705	2336	1967	1597	1227	0857	0487	0115	9744	9372	9000	8627	8254	7881	7507	22
39	2698	2330	1961	1591	1221	0851	0480	0109	9738	9366	8994	8621	8248	7874	7501	21
40	2692	2324	1955	1585	1215	0845	0474	0103	9732	9360	8987	8615	8242	7868	7494	20
41	2686	2317	1948	1579	1209	0839	0468	0097	9725	9354	8981	8609	8235	7862	7488	19
42	2680	2311	1942	1573	1203	0833	0462	0091	9719	9347	8975	8602	8229	7856	7482	18
43	2674	2305	1936	1567	1197	0826	0456	0085	9713	9341	8969	8596	8223	7850	7476	17
44	2668	2299	1930	1560	1190	0820	0449	0078	9707	9335	8963	8590	8217	7843	7469	16
45	2662	2293	1924	1554	1184	0814	0443	0072	9701	9329	8956	8584	8211	7837	7463	15
46	2655	2287	1918	1548	1178	0808	0437	0066	9694	9323	8950	8577	8204	7831	7457	14
47	2649	2281	1911	1542	1172	0802	0431	0060	9688	9316	8944	8571	8198	7825	7451	13
48	2643	2274	1905	1536	1166	0795	0425	0054	9682	9310	8938	8565	8192	7818	7444	12
49	2637	2268	1899	1530	1160	0789	0419	0047	9676	9304	8932	8559	8186	7812	7438	11
50	2631	2262	1893	1523	1153	0783	0412	0041	9670	9298	8925	8553	8179	7806	7432	10
51	2625	2256	1887	1517	1147	0777	0406	0035	9663	9292	8919	8546	8173	7800	7426	9
52	2619	2250	1881	1511	1141	0771	0400	0029	9657	9285	8913	8540	8167	7793	7420	8
53	2612	2244	1874	1505	1135	0765	0394	0023	9651	9279	8907	8534	8161	7787	7413	7
54	2606	2238	1868	1499	1129	0758	0388	0016	9645	9273	8901	8528	8155	7781	7407	6
55	2600	2231	1862	1493	1123	0752	0381	0010	9639	9267	8894	8522	8148	7775	7401	5
56	2594	2225	1856	1486	1116	0746	0375	0004	9632	9261	8888	8515	8142	7769	7395	4
57	2588	2219	1850	1480	1110	0740	0369	9998	9626	9254	8882	8509	8136	7762	7388	3
58	2582	2213	1844	1474	1104	0734	0363	9992	9620	9248	8876	8503	8130	7756	7382	2
59	2576	2207	1838	1468	1098	0728	0357	9986	9614	9242	8869	8497	8123	7750	7376	1
60	2569	2201	1831	1462	1092	0721	0351	9979	9608	9236	8863	8490	8117	7744	7370	0
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Sine Deg. 73

16 Deg. Tangent

"	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.
	464	465	465	466	466	466	467	467	468	468	469	469	470	470	471
0	5990	0690	5386	0078	4765	9448	4127	8802	3473	8139	2801	7459	2112	6762	1407
1	6068	0768	5464	0156	4843	9526	4205	8880	3550	8217	2879	7536	2190	6839	1485
2	6146	0846	5542	0234	4921	9604	4283	8958	3628	8294	2956	7614	2267	6917	1562
3	6225	0925	5621	0312	4999	9682	4361	9036	3706	8372	3034	7692	2345	6994	1639
4	6303	1003	5699	0390	5077	9760	4439	9114	3784	8450	3112	7769	2423	7072	1717
5	6381	1081	5777	0468	5156	9838	4517	9191	3862	8527	3189	7847	2500	7149	1794
6	6460	1160	5855	0547	5234	9916	4595	9269	3939	8605	3267	7924	2578	7227	1872
7	6538	1238	5933	0625	5312	9994	4673	9347	4017	8683	3345	8002	2655	7304	1949
8	6617	1316	6012	0703	5390	0072	4751	9425	4095	8761	3422	8079	2733	7382	2026
9	6695	1395	6090	0781	5468	0150	4829	9503	4173	8838	3500	8157	2810	7459	2104
10	6773	1473	6168	0859	5546	0228	4907	9581	4251	8916	3577	8235	2888	7536	2181
11	6852	1551	6246	0937	5624	0306	4985	9659	4328	8994	3655	8312	2965	7614	2258
12	6930	1629	6325	1015	5702	0384	5063	9736	4406	9072	3733	8390	3043	7691	2336
13	7008	1708	6403	1094	5780	0462	5141	9814	4484	9149	3810	8467	3120	7769	2413
14	7087	1786	6481	1172	5858	0540	5218	9892	4562	9227	3888	8545	3198	7846	2491
15	7165	1864	6559	1250	5936	0618	5296	9970	4639	9305	3966	8623	3275	7924	2568
16	7243	1943	6637	1328	6014	0696	5374	0048	4717	9382	4043	8700	3353	8001	2645
17	7322	2021	6716	1406	6092	0774	5452	0126	4795	9460	4121	8778	3430	8079	2723
18	7400	2099	6794	1484	6171	0852	5530	0204	4873	9538	4199	8855	3508	8156	2800
19	7478	2177	6872	1562	6249	0930	5608	0281	4951	9616	4276	8933	3585	8233	2877
20	7557	2256	6950	1641	6327	1008	5686	0359	5028	9693	4354	9010	3663	8311	2955
21	7635	2334	7028	1719	6405	1086	5764	0437	5106	9771	4432	9088	3740	8388	3032
22	7714	2412	7107	1797	6483	1164	5842	0515	5184	9849	4509	9166	3818	8466	3109
23	7792	2491	7185	1875	6561	1242	5920	0593	5262	9926	4587	9243	3895	8543	3187
24	7870	2569	7263	1953	6639	1320	5998	0671	5340	0004	4665	9321	3973	8621	3264
25	7949	2647	7341	2031	6717	1398	6076	0749	5417	0082	4742	9398	4050	8698	3342
26	8027	2725	7419	2109	6795	1476	6154	0826	5495	0160	4820	9476	4128	8775	3419
27	8105	2804	7498	2188	6873	1554	6231	0904	5573	0237	4897	9553	4205	8853	3496
28	8184	2882	7576	2266	6951	1632	6309	0982	5651	0315	4975	9631	4283	8930	3574
29	8262	2960	7654	2344	7029	1710	6387	1060	5728	0393	5053	9709	4360	9008	3651
30	8340	3038	7732	2422	7107	1788	6465	1138	5806	0470	5130	9786	4438	9085	3728
31	8419	3117	7810	2500	7185	1866	6543	1216	5884	0548	5208	9864	4515	9163	3806
32	8497	3195	7889	2578	7263	1944	6621	1293	5962	0626	5286	9941	4593	9240	3883
33	8575	3273	7967	2656	7341	2022	6699	1371	6039	0703	5363	0019	4670	9317	3960
34	8654	3351	8045	2734	7419	2100	6777	1449	6117	0781	5441	0096	4748	9395	4038
35	8732	3430	8123	2812	7497	2178	6855	1527	6195	0859	5518	0174	4825	9472	4115
36	8810	3508	8201	2891	7576	2256	6933	1605	6273	0937	5596	0251	4903	9550	4192
37	8889	3586	8280	2969	7654	2334	7011	1683	6351	1014	5674	0329	4980	9627	4270
38	8967	3665	8358	3047	7732	2412	7088	1760	6428	1092	5751	0407	5058	9704	4347
39	9045	3743	8436	3125	7810	2490	7166	1838	6506	1170	5829	0484	5135	9782	4424
40	9124	3821	8514	3203	7888	2568	7244	1916	6584	1247	5907	0562	5213	9859	4502
41	9202	3899	8592	3281	7966	2646	7322	1994	6662	1325	5984	0639	5290	9937	4579
42	9280	3978	8671	3359	8044	2724	7400	2072	6739	1403	6062	0717	5368	0014	4656
43	9359	4056	8749	3437	8122	2802	7478	2150	6817	1480	6139	0794	5445	0091	4734
44	9437	4134	8827	3516	8200	2880	7556	2227	6895	1558	6217	0872	5522	0169	4811
45	9515	4212	8905	3594	8278	2958	7634	2305	6973	1636	6295	0949	5600	0246	4889
46	9594	4291	8983	3672	8356	3036	7712	2383	7050	1713	6372	1027	5677	0324	4966
47	9672	4369	9061	3750	8434	3114	7790	2461	7128	1791	6450	1104	5755	0401	5043
48	9750	4447	9140	3828	8512	3192	7867	2539	7206	1869	6528	1182	5832	0479	5121
49	9828	4525	9218	3906	8590	3270	7945	2617	7284	1946	6605	1260	5910	0556	5198
50	9907	4604	9296	3984	8668	3348	8023	2694	7361	2024	6683	1337	5987	0633	5275
51	9985	4682	9374	4062	8746	3426	8101	2772	7439	2102	6760	1415	6065	0711	5352
52	0063	4760	9452	4140	8824	3504	8179	2850	7517	2180	6838	1492	6142	0788	5430
53	0142	4838	9530	4218	8902	3582	8257	2928	7595	2257	6916	1570	6220	0866	5507
54	0220	4916	9609	4297	8980	3660	8335	3006	7672	2335	6993	1647	6297	0943	5584
55	0298	4995	9687	4375	9058	3738	8413	3083	7750	2413	7071	1725	6375	1020	5662
56	0377	5073	9765	4453	9136	3815	8490	3161	7828	2490	7148	1802	6452	1098	5739
57	0455	5151	9843	4531	9214	3893	8568	3239	7906	2568	7226	1880	6530	1175	5816
58	0533	5229	9921	4609	9292	3971	8646	3317	7983	2646	7304	1957	6607	1252	5894
59	0612	5308	9999	4687	9370	4049	8724	3395	8061	2723	7381	2035	6684	1330	5971
60	0690	5386	0078	4765	9448	4127	8802	3473	8139	2801	7459	2112	6762	1407	6048
"	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

16 Deg. Co-Tangent

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	"
10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	
535	534	534	533	533	533	532	532	531	531	530	530	529	529	528	
4010	9310	4614	9922	5235	0552	5873	1198	6527	1861	7199	2541	7888	3238	8593	60
3932	9232	4536	9844	5157	0474	5795	1120	6450	1783	7121	2464	7810	3161	8515	59
3854	9154	4458	9766	5079	0396	5717	1042	6372	1706	7044	2386	7733	3083	8438	58
3775	9075	4379	9688	5001	0318	5639	0964	6294	1628	6966	2308	7655	3006	8361	57
3697	8997	4301	9610	4923	0240	5561	0886	6216	1550	6888	2231	7577	2928	8283	56
3619	8919	4223	9532	4844	0162	5483	0809	6138	1473	6811	2153	7500	2851	8206	55
3540	8840	4145	9453	4766	0084	5405	0731	6061	1395	6733	2076	7422	2773	8128	54
3462	8762	4067	9375	4688	0006	5327	0653	5983	1317	6655	1998	7345	2696	8051	53
3383	8684	3988	9297	4610	9928	5249	0575	5905	1239	6578	1921	7267	2618	7974	52
3305	8605	3910	9219	4532	9850	5171	0497	5827	1162	6500	1843	7190	2541	7896	51
3227	8527	3832	9141	4454	9772	5093	0419	5749	1084	6423	1765	7112	2464	7819	50
3148	8449	3754	9063	4376	9694	5015	0341	5672	1006	6345	1688	7035	2386	7742	49
3070	8371	3675	8985	4298	9616	4937	0264	5594	0928	6267	1610	6957	2309	7664	48
2992	8292	3597	8906	4220	9538	4859	0186	5516	0851	6190	1533	6880	2231	7587	47
2913	8214	3519	8828	4142	9460	4782	0108	5438	0773	6112	1455	6802	2154	7509	46
2835	8136	3441	8750	4064	9382	4704	0030	5361	0695	6034	1377	6725	2076	7432	45
2757	8057	3363	8672	3986	9304	4626	9952	5283	0618	5957	1300	6647	1999	7355	44
2678	7979	3284	8594	3908	9226	4548	9874	5205	0540	5879	1222	6570	1921	7277	43
2600	7901	3206	8516	3829	9148	4470	9796	5127	0462	5801	1145	6492	1844	7200	42
2522	7823	3128	8438	3751	9070	4392	9719	5049	0384	5724	1067	6415	1767	7123	41
2443	7744	3050	8359	3673	8992	4314	9641	4972	0307	5646	0990	6337	1689	7045	40
2365	7666	2972	8281	3595	8914	4236	9563	4894	0229	5568	0912	6260	1612	6968	39
2286	7588	2893	8203	3517	8836	4158	9485	4816	0151	5491	0834	6182	1534	6891	38
2208	7509	2815	8125	3439	8758	4080	9407	4738	0074	5413	0757	6105	1457	6813	37
2130	7431	2737	8047	3361	8680	4002	9329	4660	9996	5335	0679	6027	1379	6736	36
2051	7353	2659	7969	3283	8602	3924	9251	4583	9918	5258	0602	5950	1302	6658	35
1973	7275	2581	7891	3205	8524	3846	9174	4505	9840	5180	0524	5872	1225	6581	34
1895	7196	2502	7812	3127	8446	3769	9096	4427	9763	5103	0447	5795	1147	6504	33
1816	7118	2424	7734	3049	8368	3691	9018	4349	9685	5025	0369	5717	1070	6426	32
1738	7040	2346	7656	2971	8290	3613	8940	4272	9607	4947	0291	5640	0992	6349	31
1660	6962	2268	7578	2893	8212	3535	8862	4194	9530	4870	0214	5562	0915	6272	30
1581	6883	2190	7500	2815	8134	3457	8784	4116	9452	4792	0136	5485	0837	6194	29
1503	6805	2111	7422	2737	8056	3379	8707	4038	9374	4714	0059	5407	0760	6117	28
1425	6727	2033	7344	2659	7978	3301	8629	3961	9297	4637	9981	5330	0683	6040	27
1346	6649	1955	7266	2581	7900	3223	8551	3883	9219	4559	9904	5252	0605	5962	26
1268	6570	1877	7188	2503	7822	3145	8473	3805	9141	4482	9826	5175	0528	5885	25
1190	6492	1799	7109	2424	7744	3067	8395	3727	9063	4404	9749	5097	0450	5808	24
1111	6414	1720	7031	2346	7666	2989	8317	3649	8986	4326	9671	5020	0373	5730	23
1033	6335	1642	6953	2268	7588	2912	8240	3572	8908	4249	9593	4942	0296	5653	22
0955	6257	1564	6875	2190	7510	2834	8162	3494	8830	4171	9516	4865	0218	5576	21
0876	6179	1486	6797	2112	7432	2756	8084	3416	8753	4093	9438	4787	0141	5498	20
0798	6101	1408	6719	2034	7354	2678	8006	3338	8675	4016	9361	4710	0063	5421	19
0720	6022	1329	6641	1956	7276	2600	7928	3261	8597	3938	9283	4632	9986	5344	18
0641	5944	1251	6563	1878	7198	2522	7850	3183	8520	3861	9206	4555	9909	5266	17
0563	5866	1173	6484	1800	7120	2444	7773	3105	8442	3783	9128	4478	9831	5189	16
0485	5788	1095	6406	1722	7042	2366	7695	3027	8364	3705	9051	4400	9754	5111	15
0406	5709	1017	6328	1644	6964	2288	7617	2950	8287	3628	8973	4323	9676	5034	14
0328	5631	0939	6250	1566	6886	2210	7539	2872	8209	3550	8896	4245	9599	4957	13
0250	5553	0860	6172	1488	6808	2133	7461	2794	8131	3472	8818	4168	9521	4879	12
0172	5475	0782	6094	1410	6730	2055	7383	2716	8054	3395	8740	4090	9444	4802	11
0093	5396	0704	6016	1332	6652	1977	7306	2639	7976	3317	8663	4013	9367	4725	10
0015	5318	0626	5938	1254	6574	1899	7228	2561	7898	3240	8585	3935	9289	4648	9
9937	5240	0548	5860	1176	6496	1821	7150	2483	7820	3162	8508	3858	9212	4570	8
9858	5162	0470	5782	1098	6418	1743	7072	2405	7743	3084	8430	3780	9134	4493	7
9780	5084	0391	5703	1020	6340	1665	6994	2328	7665	3007	8353	3703	9057	4416	6
9702	5005	0313	5625	0942	6262	1587	6917	2250	7587	2929	8275	3625	8980	4338	5
9623	4927	0235	5547	0864	6185	1510	6839	2172	7510	2852	8198	3548	8902	4261	4
9545	4849	0157	5469	0786	6107	1432	6761	2094	7432	2774	8120	3470	8825	4184	3
9467	4771	0079	5391	0708	6029	1354	6683	2017	7354	2696	8043	3393	8748	4106	2
9388	4692	0001	5313	0630	5951	1276	6605	1939	7277	2619	7965	3316	8670	4029	1
9310	4614	9922	5235	0552	5873	1198	6527	1861	7199	2541	7888	3238	8593	3952	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	"

Co-Tangent Deg. 73

Tangent Deg. 73

16 Deg. Sine

″	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9. 453	9. 453	9. 454	9. 454	9. 455	9. 455	9. 455	9. 456	9. 456	9. 457	9. 457	9. 458	9. 458	9. 458	9. 459
0	3418	7681	1939	6192	0441	4686	8926	3161	7392	1618	5840	0058	4271	8480	2684
1	3489	7752	2010	6263	0512	4756	8996	3232	7462	1689	5911	0128	4341	8550	2754
2	3560	7823	2081	6334	0583	4827	9067	3302	7533	1759	5981	0198	4411	8620	2824
3	3631	7894	2151	6405	0653	4898	9137	3373	7603	1830	6051	0269	4482	8690	2894
4	3702	7965	2222	6476	0724	4968	9208	3443	7674	1900	6122	0339	4552	8760	2964
5	3773	8036	2293	6546	0795	5039	9279	3514	7744	1970	6192	0409	4622	8830	3034
6	3845	8107	2364	6617	0866	5110	9349	3584	7815	2041	6262	0479	4692	8900	3104
7	3916	8178	2435	6688	0937	5181	9420	3655	7885	2111	6333	0550	4762	8970	3174
8	3987	8249	2506	6759	1007	5251	9491	3725	7956	2182	6403	0620	4832	9040	3244
9	4058	8320	2577	6830	1078	5322	9561	3796	8026	2252	6473	0690	4903	9111	3314
10	4129	8391	2648	6901	1149	5393	9632	3866	8097	2322	6544	0760	4973	9181	3384
11	4200	8462	2719	6972	1220	5463	9702	3937	8167	2393	6614	0831	5043	9251	3454
12	4271	8533	2790	7042	1290	5534	9773	4008	8238	2463	6684	0901	5113	9321	3524
13	4342	8604	2861	7113	1361	5605	9844	4078	8308	2534	6755	0971	5183	9391	3594
14	4413	8675	2932	7184	1432	5675	9914	4149	8379	2604	6825	1041	5253	9461	3664
15	4484	8746	3002	7255	1503	5746	9985	4219	8449	2674	6895	1112	5324	9531	3734
16	4555	8817	3073	7326	1573	5817	0055	4290	8519	2745	6966	1182	5394	9601	3804
17	4626	8888	3144	7397	1644	5887	0126	4360	8590	2815	7036	1252	5464	9671	3874
18	4697	8959	3215	7467	1715	5958	0197	4431	8660	2885	7106	1322	5534	9741	3944
19	4768	9030	3286	7538	1786	6029	0267	4501	8731	2956	7176	1393	5604	9811	4014
20	4839	9100	3357	7609	1856	6099	0338	4572	8801	3026	7247	1463	5674	9882	4084
21	4910	9171	3428	7680	1927	6170	0408	4642	8872	3097	7317	1533	5745	9952	4154
22	4982	9242	3499	7751	1998	6241	0479	4713	8942	3167	7387	1603	5815	0022	4224
23	5053	9313	3570	7821	2069	6311	0550	4783	9013	3237	7458	1673	5885	0092	4294
24	5124	9384	3641	7892	2139	6382	0620	4854	9083	3308	7528	1744	5955	0162	4364
25	5195	9455	3712	7963	2210	6453	0691	4924	9154	3378	7598	1814	6025	0232	4434
26	5266	9526	3782	8034	2281	6523	0761	4995	9224	3449	7669	1884	6095	0302	4504
27	5337	9597	3853	8105	2352	6594	0832	5065	9294	3519	7739	1954	6165	0372	4574
28	5408	9668	3924	8176	2422	6665	0903	5136	9365	3589	7809	2025	6236	0442	4644
29	5479	9739	3995	8246	2493	6735	0973	5207	9435	3660	7879	2095	6306	0512	4714
30	5550	9810	4066	8317	2564	6806	1044	5277	9506	3730	7950	2165	6376	0582	4784
31	5621	9881	4137	8388	2635	6877	1114	5348	9576	3800	8020	2235	6446	0652	4854
32	5692	9952	4208	8459	2705	6947	1185	5418	9647	3871	8090	2305	6516	0722	4924
33	5763	0023	4279	8530	2776	7018	1256	5489	9717	3941	8161	2376	6586	0792	4994
34	5834	0094	4350	8600	2847	7089	1326	5559	9788	4011	8231	2446	6656	0863	5064
35	5905	0165	4420	8671	2918	7159	1397	5630	9858	4082	8301	2516	6727	0933	5134
36	5976	0236	4491	8742	2988	7230	1467	5700	9928	4152	8371	2586	6797	1003	5204
37	6047	0307	4562	8813	3059	7301	1538	5771	9999	4223	8442	2657	6867	1073	5274
38	6118	0378	4633	8884	3130	7371	1609	5841	0069	4293	8512	2727	6937	1143	5344
39	6189	0449	4704	8955	3201	7442	1679	5912	0140	4363	8582	2797	7007	1213	5414
40	6260	0520	4775	9025	3271	7513	1750	5982	0210	4434	8653	2867	7077	1283	5484
41	6331	0591	4846	9096	3342	7583	1820	6053	0281	4504	8723	2937	7147	1353	5554
42	6402	0662	4917	9167	3413	7654	1891	6123	0351	4574	8793	3008	7218	1423	5624
43	6473	0733	4987	9238	3483	7725	1961	6194	0421	4645	8863	3078	7288	1493	5694
44	6544	0804	5058	9309	3554	7795	2032	6264	0492	4715	8934	3148	7358	1563	5764
45	6615	0875	5129	9379	3625	7866	2103	6335	0562	4785	9004	3218	7428	1633	5834
46	6686	0946	5200	9450	3696	7937	2173	6405	0633	4856	9074	3288	7498	1703	5904
47	6757	1016	5271	9521	3766	8007	2244	6476	0703	4926	9145	3359	7568	1773	5974
48	6828	1087	5342	9592	3837	8078	2314	6546	0773	4996	9215	3429	7638	1843	6044
49	6900	1158	5413	9663	3908	8149	2385	6617	0844	5067	9285	3499	7708	1913	6114
50	6971	1229	5484	9733	3979	8219	2455	6687	0914	5137	9355	3569	7778	1983	6184
51	7042	1300	5554	9804	4049	8290	2526	6758	0985	5207	9426	3639	7849	2053	6254
52	7113	1371	5625	9875	4120	8361	2597	6828	1055	5278	9496	3710	7919	2123	6324
53	7184	1442	5696	9946	4191	8431	2667	6899	1126	5348	9566	3780	7989	2194	6394
54	7255	1513	5767	0016	4261	8502	2738	6969	1196	5418	9636	3850	8059	2264	6464
55	7326	1584	5838	0087	4332	8572	2808	7040	1266	5489	9707	3920	8129	2334	6534
56	7397	1655	5909	0158	4403	8643	2879	7110	1337	5559	9777	3990	8199	2404	6604
57	7468	1726	5980	0229	4474	8714	2949	7181	1407	5629	9847	4060	8269	2474	6674
58	7539	1797	6050	0300	4544	8784	3020	7251	1478	5700	9917	4131	8339	2544	6744
59	7610	1868	6121	0370	4615	8855	3090	7321	1548	5770	9988	4201	8410	2614	6814
60	7681	1939	6192	0441	4686	8926	3161	7392	1618	5840	0058	4271	8480	2684	6884
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Sine Deg. 73

16 Deg. Co-Sine

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	″
9. 981	9. 981	9. 981	9. 981	9. 981	9. 981	9. 981	9. 981	9. 981	9. 981	9. 981	9. 981	9. 981	9. 981	9. 981	″
7370	6995	6620	6245	5870	5494	5117	4740	4363	3986	3608	3229	2850	2471	2091	60
7363	6989	6614	6239	5863	5487	5111	4734	4357	3979	3601	3223	2844	2465	2085	59
7357	6983	6608	6233	5857	5481	5105	4728	4351	3973	3595	3217	2838	2458	2079	58
7351	6977	6602	6226	5851	5475	5098	4722	4344	3967	3589	3210	2831	2452	2073	57
7345	6970	6595	6220	5845	5469	5092	4715	4338	3960	3582	3204	2825	2446	2066	56
7338	6964	6589	6214	5838	5462	5086	4709	4332	3954	3576	3198	2819	2439	2060	55
7332	6958	6583	6208	5832	5456	5080	4703	4325	3948	3570	3191	2812	2433	2054	54
7326	6952	6577	6201	5826	5450	5073	4696	4319	3941	3563	3185	2806	2427	2047	53
7320	6945	6570	6195	5819	5443	5067	4690	4313	3935	3557	3179	2800	2421	2041	52
7314	6939	6564	6189	5813	5437	5061	4684	4307	3929	3551	3172	2793	2414	2035	51
7307	6933	6558	6183	5807	5431	5054	4678	4300	3923	3545	3166	2787	2408	2028	50
7301	6927	6552	6176	5801	5425	5048	4671	4294	3916	3538	3160	2781	2402	2022	49
7295	6920	6545	6170	5794	5418	5042	4665	4288	3910	3532	3153	2775	2395	2016	48
7289	6914	6539	6164	5788	5412	5036	4659	4281	3904	3526	3147	2768	2389	2009	47
7282	6908	6533	6158	5782	5406	5029	4652	4275	3897	3519	3141	2762	2383	2003	46
7276	6902	6527	6151	5776	5400	5023	4646	4269	3891	3513	3134	2756	2376	1997	45
7270	6895	6520	6145	5769	5393	5017	4640	4263	3885	3507	3128	2749	2370	1990	44
7264	6889	6514	6139	5763	5387	5010	4634	4256	3878	3500	3122	2743	2364	1984	43
7257	6883	6508	6133	5757	5381	5004	4627	4250	3872	3494	3116	2737	2357	1978	42
7251	6877	6502	6126	5751	5374	4998	4621	4244	3866	3488	3109	2730	2351	1971	41
7245	6870	6495	6120	5744	5368	4992	4615	4237	3860	3481	3103	2724	2345	1965	40
7239	6864	6489	6114	5738	5362	4985	4608	4231	3853	3475	3097	2718	2338	1959	39
7232	6858	6483	6108	5732	5356	4979	4602	4225	3847	3469	3090	2711	2332	1952	38
7226	6852	6477	6101	5726	5349	4973	4596	4218	3841	3463	3084	2705	2326	1946	37
7220	6845	6470	6095	5719	5343	4967	4590	4212	3834	3456	3078	2699	2319	1940	36
7214	6839	6464	6089	5713	5337	4960	4583	4206	3828	3450	3071	2692	2313	1933	35
7207	6833	6458	6082	5707	5331	4954	4577	4200	3822	3444	3065	2686	2307	1927	34
7201	6827	6452	6076	5700	5324	4948	4571	4193	3816	3437	3059	2680	2300	1921	33
7195	6820	6445	6070	5694	5318	4941	4564	4187	3809	3431	3052	2673	2294	1914	32
7189	6814	6439	6064	5688	5312	4935	4558	4181	3803	3425	3046	2667	2288	1908	31
7182	6808	6433	6057	5682	5305	4929	4552	4174	3797	3418	3040	2661	2281	1902	30
7176	6802	6427	6051	5675	5299	4923	4546	4168	3790	3412	3033	2654	2275	1895	29
7170	6795	6420	6045	5669	5293	4916	4539	4162	3784	3406	3027	2648	2269	1889	28
7164	6789	6414	6039	5663	5287	4910	4533	4156	3778	3399	3021	2642	2262	1883	27
7158	6783	6408	6032	5657	5280	4904	4527	4149	3771	3393	3015	2635	2256	1876	26
7151	6777	6402	6026	5650	5274	4897	4520	4143	3765	3387	3008	2629	2250	1870	25
7145	6770	6395	6020	5644	5268	4891	4514	4137	3759	3381	3002	2623	2243	1864	24
7139	6764	6389	6014	5638	5262	4885	4508	4130	3752	3374	2996	2617	2237	1857	23
7133	6758	6383	6007	5632	5255	4879	4502	4124	3746	3368	2989	2610	2231	1851	22
7126	6752	6377	6001	5625	5249	4872	4495	4118	3740	3362	2983	2604	2224	1845	21
7120	6745	6370	5995	5619	5243	4866	4489	4111	3734	3355	2977	2598	2218	1838	20
7114	6739	6364	5989	5613	5236	4860	4483	4105	3727	3349	2970	2591	2212	1832	19
7108	6733	6358	5982	5606	5230	4853	4476	4099	3721	3343	2964	2585	2205	1826	18
7101	6727	6352	5976	5600	5224	4847	4470	4093	3715	3336	2958	2579	2199	1819	17
7095	6720	6345	5970	5594	5218	4841	4464	4086	3708	3330	2951	2572	2193	1813	16
7089	6714	6339	5964	5588	5211	4835	4458	4080	3702	3324	2945	2566	2186	1807	15
7083	6708	6333	5957	5581	5205	4828	4451	4074	3696	3317	2939	2560	2180	1800	14
7076	6702	6327	5951	5575	5199	4822	4445	4067	3689	3311	2932	2553	2174	1794	13
7070	6695	6320	5945	5569	5193	4816	4439	4061	3683	3305	2926	2547	2167	1788	12
7064	6689	6314	5938	5563	5186	4809	4432	4055	3677	3299	2920	2541	2161	1781	11
7058	6683	6308	5932	5556	5180	4803	4426	4049	3671	3292	2913	2534	2155	1775	10
7051	6677	6302	5926	5550	5174	4797	4420	4042	3664	3286	2907	2528	2148	1769	9
7045	6670	6295	5920	5544	5167	4791	4413	4036	3658	3280	2901	2522	2142	1762	8
7039	6664	6289	5913	5537	5161	4784	4407	4030	3652	3273	2895	2515	2136	1756	7
7033	6658	6283	5907	5531	5155	4778	4401	4023	3645	3267	2888	2509	2129	1750	6
7026	6652	6276	5901	5525	5149	4772	4395	4017	3639	3261	2882	2503	2123	1743	5
7020	6645	6270	5895	5519	5142	4766	4388	4011	3633	3254	2876	2496	2117	1737	4
7014	6639	6264	5888	5512	5136	4759	4382	4004	3626	3248	2869	2490	2110	1730	3
7008	6633	6258	5882	5506	5130	4753	4376	3998	3620	3242	2863	2484	2104	1724	2
7001	6627	6251	5876	5500	5123	4747	4369	3992	3614	3235	2857	2477	2098	1718	1
6995	6620	6245	5870	5494	5117	4740	4363	3986	3608	3229	2850	2471	2091	1711	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Sine Deg. 73

16 Deg. Tangent

″	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9. 471	9. 472	9. 472	9. 472	9. 473	9. 473	9. 474	9. 474	9. 475	9. 475	9. 476	9. 476	9. 477	9. 477	9. 478
0	6048	0685	5318	9947	4572	9192	3808	8421	3029	7633	2233	6829	1421	6009	0592
1	6126	0763	5395	0024	4649	9269	3885	8497	3106	7710	2310	6905	1497	6085	0669
2	6203	0840	5473	0101	4726	9346	3962	8574	3182	7786	2386	6982	1574	6161	0745
3	6280	0917	5550	0178	4803	9423	4039	8651	3259	7863	2463	7058	1650	6238	0821
4	6358	0994	5627	0255	4880	9500	4116	8728	3336	7940	2539	7135	1727	6314	0898
5	6435	1072	5704	0333	4957	9577	4193	8805	3413	8016	2616	7212	1803	6391	0974
6	6512	1149	5781	0410	5034	9654	4270	8882	3489	8093	2693	7288	1880	6467	1050
7	6590	1226	5858	0487	5111	9731	4347	8958	3566	8170	2769	7365	1956	6543	1127
8	6667	1303	5936	0564	5188	9808	4424	9035	3643	8246	2846	7441	2033	6620	1203
9	6744	1381	6013	0641	5265	9885	4500	9112	3720	8323	2923	7518	2109	6696	1280
10	6822	1458	6090	0718	5342	9962	4577	9189	3796	8400	2999	7594	2186	6773	1356
11	6899	1535	6167	0795	5419	0039	4654	9266	3873	8477	3076	7671	2262	6849	1432
12	6976	1612	6244	0872	5496	0116	4731	9343	3950	8553	3152	7748	2339	6926	1509
13	7053	1690	6321	0949	5573	0193	4808	9419	4027	8630	3229	7824	2415	7002	1585
14	7131	1767	6399	1026	5650	0270	4885	9496	4103	8707	3306	7901	2492	7078	1661
15	7208	1844	6476	1104	5727	0347	4962	9573	4180	8783	3382	7977	2568	7155	1738
16	7285	1921	6553	1181	5804	0423	5039	9650	4257	8860	3459	8054	2644	7231	1814
17	7363	1998	6630	1258	5881	0500	5116	9727	4334	8937	3535	8130	2721	7308	1890
18	7440	2076	6707	1335	5958	0577	5192	9804	4410	9013	3612	8207	2797	7384	1967
19	7517	2153	6784	1412	6035	0654	5269	9880	4487	9090	3689	8283	2874	7460	2043
20	7595	2230	6862	1489	6112	0731	5346	9957	4564	9167	3765	8360	2950	7537	2119
21	7672	2307	6939	1566	6189	0808	5423	0034	4641	9243	3842	8436	3027	7613	2196
22	7749	2385	7016	1643	6266	0885	5500	0111	4717	9320	3919	8513	3103	7690	2272
23	7826	2462	7093	1720	6343	0962	5577	0188	4794	9397	3995	8590	3180	7766	2348
24	7904	2539	7170	1797	6420	1039	5654	0264	4871	9473	4072	8666	3256	7843	2425
25	7981	2616	7247	1874	6497	1116	5731	0341	4948	9550	4148	8743	3333	7919	2501
26	8058	2693	7325	1951	6574	1193	5808	0418	5024	9627	4225	8819	3409	7995	2577
27	8136	2771	7402	2029	6651	1270	5884	0495	5101	9703	4302	8896	3486	8072	2654
28	8213	2848	7479	2106	6728	1347	5961	0572	5178	9780	4378	8972	3562	8148	2730
29	8290	2925	7556	2183	6805	1424	6038	0648	5255	9857	4455	9049	3639	8225	2806
30	8367	3002	7633	2260	6882	1501	6115	0725	5331	9933	4531	9125	3715	8301	2883
31	8445	3080	7710	2337	6959	1578	6192	0802	5408	0010	4608	9202	3792	8377	2959
32	8522	3157	7787	2414	7036	1655	6269	0879	5485	0087	4685	9278	3868	8454	3035
33	8599	3234	7865	2491	7113	1732	6346	0956	5562	0163	4761	9355	3944	8530	3112
34	8677	3311	7942	2568	7190	1808	6423	1032	5638	0240	4838	9431	4021	8606	3188
35	8754	3388	8019	2645	7267	1885	6499	1109	5715	0317	4914	9508	4097	8683	3264
36	8831	3466	8096	2722	7344	1962	6576	1186	5792	0393	4991	9584	4174	8759	3341
37	8908	3543	8173	2799	7421	2039	6653	1263	5868	0470	5068	9661	4250	8836	3417
38	8986	3620	8250	2876	7498	2116	6730	1340	5945	0547	5144	9737	4327	8912	3493
39	9063	3697	8327	2953	7575	2193	6807	1416	6022	0623	5221	9814	4403	8988	3570
40	9140	3774	8405	3030	7652	2270	6884	1493	6099	0700	5297	9891	4480	9065	3646
41	9217	3852	8482	3108	7729	2347	6961	1570	6175	0777	5374	9967	4556	9141	3722
42	9295	3929	8559	3185	7806	2424	7037	1647	6252	0853	5450	0044	4633	9218	3799
43	9372	4006	8636	3262	7883	2501	7114	1724	6329	0930	5527	0120	4709	9294	3875
44	9449	4083	8713	3339	7960	2578	7191	1800	6406	1007	5604	0197	4785	9370	3951
45	9527	4160	8790	3416	8037	2655	7268	1877	6482	1083	5680	0273	4862	9447	4027
46	9604	4238	8867	3493	8114	2732	7345	1954	6559	1160	5757	0350	4938	9523	4104
47	9681	4315	8944	3570	8191	2809	7422	2031	6636	1237	5833	0426	5015	9599	4180
48	9758	4392	9022	3647	8268	2885	7499	2107	6712	1313	5910	0503	5091	9676	4256
49	9836	4469	9099	3724	8345	2962	7575	2184	6789	1390	5987	0579	5168	9752	4333
50	9913	4546	9176	3801	8422	3039	7652	2261	6866	1466	6063	0656	5244	9829	4409
51	9990	4624	9253	3878	8499	3116	7729	2338	6943	1543	6140	0732	5321	9905	4485
52	0067	4701	9330	3955	8576	3193	7806	2415	7019	1620	6216	0809	5397	9981	4562
53	0145	4778	9407	4032	8653	3270	7883	2491	7096	1696	6293	0885	5473	0058	4638
54	0222	4855	9484	4109	8730	3347	7960	2568	7173	1773	6369	0962	5550	0134	4714
55	0299	4932	9561	4186	8807	3424	8036	2645	7249	1850	6446	1038	5626	0210	4791
56	0376	5010	9639	4263	8884	3501	8113	2722	7326	1926	6523	1115	5703	0287	4867
57	0454	5087	9716	4340	8961	3578	8190	2798	7403	2003	6599	1191	5779	0363	4943
58	0531	5164	9793	4417	9038	3655	8267	2875	7479	2080	6676	1268	5856	0440	5019
59	0608	5241	9870	4495	9115	3731	8344	2952	7556	2156	6752	1344	5932	0516	5096
60	0685	5318	9947	4572	9192	3808	8421	3029	7633	2233	6829	1421	6009	0592	5172
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Tangent Deg. 73

16 Deg. Co-Tangent

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	″
10. 528	10. 527	10. 527	10. 527	10. 526	10. 526	10. 525	10. 525	10. 524	10. 524	10. 523	10. 523	10. 522	10. 522	10. 521	
3952	9315	4682	0053	5428	0808	6192	1579	6971	2367	7767	3171	8579	3991	9408	60
3874	9237	4605	9976	5351	0731	6115	1503	6894	2290	7690	3095	8503	3915	9331	59
3797	9160	4527	9899	5274	0654	6038	1426	6818	2214	7614	3018	8426	3839	9255	58
3720	9083	4450	9822	5197	0577	5961	1349	6741	2137	7537	2942	8350	3762	9179	57
3642	9006	4373	9745	5120	0500	5884	1272	6664	2060	7461	2865	8273	3686	9102	56
3565	8928	4296	9667	5043	0423	5807	1195	6587	1984	7384	2788	8197	3609	9026	55
3488	8851	4219	9590	4966	0346	5730	1118	6511	1907	7307	2712	8120	3533	8950	54
3410	8774	4142	9513	4889	0269	5653	1042	6434	1830	7231	2635	8044	3457	8873	53
3333	8697	4064	9436	4812	0192	5576	0965	6357	1754	7154	2559	7967	3380	8797	52
3256	8619	3987	9359	4735	0115	5500	0888	6280	1677	7077	2482	7891	3304	8720	51
3178	8542	3910	9282	4658	0038	5423	0811	6204	1600	7001	2406	7814	3227	8644	50
3101	8465	3833	9205	4581	9961	5346	0734	6127	1523	6924	2329	7738	3151	8568	49
3024	8388	3756	9128	4504	9884	5269	0657	6050	1447	6848	2252	7661	3074	8491	48
2947	8310	3679	9051	4427	9807	5192	0581	5973	1370	6771	2176	7585	2998	8415	47
2869	8233	3601	8974	4350	9730	5115	0504	5897	1293	6694	2099	7508	2922	8339	46
2792	8156	3524	8896	4273	9653	5038	0427	5820	1217	6618	2023	7432	2845	8262	45
2715	8079	3447	8819	4196	9577	4961	0350	5743	1140	6541	1946	7356	2769	8186	44
2637	8002	3370	8742	4119	9500	4884	0273	5666	1063	6465	1870	7279	2692	8110	43
2560	7924	3293	8665	4042	9423	4808	0196	5590	0987	6388	1793	7203	2616	8033	42
2483	7847	3216	8588	3965	9346	4731	0120	5513	0910	6311	1717	7126	2540	7957	41
2405	7770	3138	8511	3888	9269	4654	0043	5436	0833	6235	1640	7050	2463	7881	40
2328	7693	3061	8434	3811	9192	4577	9966	5359	0757	6158	1564	6973	2387	7804	39
2251	7615	2984	8357	3734	9115	4500	9889	5283	0680	6081	1487	6897	2310	7728	38
2174	7538	2907	8280	3657	9038	4423	9812	5206	0603	6005	1410	6820	2234	7652	37
2096	7461	2830	8203	3580	8961	4346	9736	5129	0527	5928	1334	6744	2157	7575	36
2019	7384	2753	8126	3503	8884	4269	9659	5052	0450	5852	1257	6667	2081	7499	35
1942	7307	2675	8049	3426	8807	4192	9582	4976	0373	5775	1181	6591	2005	7423	34
1864	7229	2598	7971	3349	8730	4116	9505	4899	0297	5698	1104	6514	1928	7346	33
1787	7152	2521	7894	3272	8653	4039	9428	4822	0220	5622	1028	6438	1852	7270	32
1710	7075	2444	7817	3195	8576	3962	9352	4745	0143	5545	0951	6361	1775	7194	31
1633	6998	2367	7740	3118	8499	3885	9275	4669	0067	5469	0875	6285	1699	7117	30
1555	6920	2290	7663	3041	8422	3808	9198	4592	9990	5392	0798	6208	1623	7041	29
1478	6843	2213	7586	2964	8345	3731	9121	4515	9913	5315	0722	6132	1546	6965	28
1401	6766	2135	7509	2887	8268	3654	9044	4438	9837	5239	0645	6056	1470	6888	27
1323	6689	2058	7432	2810	8192	3577	8968	4362	9760	5162	0569	5979	1394	6812	26
1246	6612	1981	7355	2733	8115	3501	8891	4285	9683	5086	0492	5903	1317	6736	25
1169	6534	1904	7278	2656	8038	3424	8814	4208	9607	5009	0416	5826	1241	6659	24
1092	6457	1827	7201	2579	7961	3347	8737	4132	9530	4932	0339	5750	1164	6583	23
1014	6380	1750	7124	2502	7884	3270	8660	4055	9453	4856	0263	5673	1088	6507	22
0937	6303	1673	7047	2425	7807	3193	8584	3978	9377	4779	0186	5597	1012	6430	21
0860	6226	1595	6970	2348	7730	3116	8507	3901	9300	4703	0109	5520	0935	6354	20
0783	6148	1518	6892	2271	7653	3039	8430	3825	9223	4626	0033	5444	0859	6278	19
0705	6071	1441	6815	2194	7576	2963	8353	3748	9147	4550	9956	5367	0782	6201	18
0628	5994	1364	6738	2117	7499	2886	8276	3671	9070	4473	9880	5291	0706	6125	17
0551	5917	1287	6661	2040	7422	2809	8200	3594	8993	4396	9803	5215	0630	6049	16
0473	5840	1210	6584	1963	7345	2732	8123	3518	8917	4320	9727	5138	0553	5973	15
0396	5762	1133	6507	1886	7268	2655	8046	3441	8840	4243	9650	5062	0477	5896	14
0319	5685	1056	6430	1809	7191	2578	7969	3364	8763	4167	9574	4985	0401	5820	13
0242	5608	0978	6353	1732	7115	2501	7893	3288	8687	4090	9497	4909	0324	5744	12
0164	5531	0901	6276	1655	7038	2425	7816	3211	8610	4013	9421	4832	0248	5667	11
0087	5454	0824	6199	1578	6961	2348	7739	3134	8534	3937	9344	4756	0171	5591	10
0010	5376	0747	6122	1501	6884	2271	7662	3057	8457	3860	9268	4679	0095	5515	9
9933	5299	0670	6045	1424	6807	2194	7585	2981	8380	3784	9191	4603	0019	5438	8
9855	5222	0593	5968	1347	6730	2117	7509	2904	8304	3707	9115	4527	9942	5362	7
9778	5145	0516	5891	1270	6653	2040	7432	2827	8227	3631	9038	4450	9866	5286	6
9701	5068	0439	5814	1193	6576	1964	7355	2751	8150	3554	8962	4374	9790	5209	5
9624	4990	0361	5737	1116	6499	1887	7278	2674	8074	3477	8885	4297	9713	5133	4
9546	4913	0284	5660	1039	6422	1810	7202	2597	7997	3401	8809	4221	9637	5057	3
9469	4836	0207	5583	0962	6345	1733	7125	2521	7920	3324	8732	4144	9560	4981	2
9392	4759	0130	5505	0885	6269	1656	7048	2444	7844	3248	8656	4068	9484	4904	1
9315	4682	0053	5428	0808	6192	1579	6971	2367	7767	3171	8579	3991	9408	4828	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Tangent Deg. 73

16 Deg. Sine

"	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9. 459	9. 460	9. 460	9. 460	9. 461	9. 461	9. 462	9. 462	9. 463	9. 463	9. 463	9. 464	9. 464	9. 465	9. 465
0	6884	1079	5270	9456	3638	7816	1989	6158	0323	4483	8639	2790	6938	1081	5219
1	6953	1149	5340	9526	3708	7886	2059	6228	0392	4552	8708	2860	7007	1150	5288
2	7023	1219	5409	9596	3778	7955	2128	6297	0462	4622	8777	2929	7076	1219	5357
3	7093	1288	5479	9665	3847	8025	2198	6367	0531	4691	8847	2998	7145	1288	5426
4	7163	1358	5549	9735	3917	8094	2267	6436	0600	4760	8916	3067	7214	1357	5495
5	7233	1428	5619	9805	3987	8164	2337	6505	0670	4830	8985	3136	7283	1426	5564
6	7303	1498	5689	9875	4056	8234	2406	6575	0739	4899	9054	3205	7352	1495	5633
7	7373	1568	5758	9944	4126	8303	2476	6644	0808	4968	9124	3275	7421	1564	5702
8	7443	1638	5828	0014	4196	8373	2545	6714	0878	5037	9193	3344	7490	1633	5771
9	7513	1708	5898	0084	4265	8442	2615	6783	0947	5107	9262	3413	7559	1702	5840
10	7583	1778	5968	0154	4335	8512	2684	6853	1017	5176	9331	3482	7628	1771	5908
11	7653	1848	6038	0223	4405	8581	2754	6922	1086	5245	9400	3551	7698	1840	5977
12	7723	1917	6107	0293	4474	8651	2823	6992	1155	5315	9470	3620	7767	1909	6046
13	7793	1987	6177	0363	4544	8721	2893	7061	1225	5384	9539	3689	7836	1978	6115
14	7863	2057	6247	0432	4614	8790	2962	7130	1294	5453	9608	3759	7905	2047	6184
15	7933	2127	6317	0502	4683	8860	3032	7200	1363	5522	9677	3828	7974	2116	6253
16	8003	2197	6387	0572	4753	8929	3101	7269	1433	5592	9746	3897	8043	2185	6322
17	8073	2267	6456	0642	4822	8999	3171	7339	1502	5661	9816	3966	8112	2254	6391
18	8143	2337	6526	0711	4892	9068	3240	7408	1571	5730	9885	4035	8181	2323	6460
19	8213	2406	6596	0781	4962	9138	3310	7478	1641	5800	9954	4104	8250	2392	6529
20	8282	2476	6666	0851	5031	9208	3379	7547	1710	5869	0023	4173	8319	2461	6598
21	8352	2546	6736	0920	5101	9277	3449	7616	1779	5938	0092	4243	8388	2530	6667
22	8422	2616	6805	0990	5171	9347	3518	7686	1849	6007	0162	4312	8457	2599	6736
23	8492	2686	6875	1060	5240	9416	3588	7755	1918	6077	0231	4381	8526	2668	6804
24	8562	2756	6945	1130	5310	9486	3657	7825	1987	6146	0300	4450	8595	2737	6873
25	8632	2826	7015	1199	5380	9555	3727	7894	2057	6215	0369	4519	8664	2806	6942
26	8702	2895	7084	1269	5449	9625	3796	7963	2126	6285	0438	4588	8733	2874	7011
27	8772	2965	7154	1339	5519	9695	3866	8033	2196	6354	0508	4657	8803	2943	7080
28	8842	3035	7224	1408	5588	9764	3935	8102	2265	6423	0577	4726	8872	3012	7149
29	8912	3105	7294	1478	5658	9834	4005	8172	2334	6492	0646	4796	8941	3081	7218
30	8982	3175	7364	1548	5728	9903	4074	8241	2404	6562	0715	4865	9010	3150	7287
31	9052	3245	7433	1618	5797	9973	4144	8311	2473	6631	0784	4934	9079	3219	7356
32	9122	3315	7503	1687	5867	0042	4213	8380	2542	6700	0854	5003	9148	3288	7425
33	9191	3384	7573	1757	5937	0112	4283	8449	2612	6769	0923	5072	9217	3357	7494
34	9261	3454	7643	1827	6006	0181	4352	8519	2681	6839	0992	5141	9286	3426	7562
35	9331	3524	7712	1896	6076	0251	4422	8588	2750	6908	1061	5210	9355	3495	7631
36	9401	3594	7782	1966	6145	0321	4491	8658	2820	6977	1130	5279	9424	3564	7700
37	9471	3664	7852	2036	6215	0390	4561	8727	2889	7046	1200	5348	9493	3633	7769
38	9541	3734	7922	2105	6285	0460	4630	8796	2958	7116	1269	5418	9562	3702	7838
39	9611	3803	7991	2175	6354	0529	4700	8866	3028	7185	1338	5487	9631	3771	7907
40	9681	3873	8061	2245	6424	0599	4769	8935	3097	7254	1407	5556	9700	3840	7976
41	9751	3943	8131	2314	6494	0668	4839	9005	3166	7323	1476	5625	9769	3909	8045
42	9821	4013	8201	2384	6563	0738	4908	9074	3235	7393	1545	5694	9838	3978	8114
43	9891	4083	8271	2454	6633	0807	4978	9143	3305	7462	1615	5763	9907	4047	8182
44	9961	4153	8340	2524	6702	0877	5047	9213	3374	7531	1684	5832	9976	4116	8251
45	0030	4222	8410	2593	6772	0946	5116	9282	3443	7600	1753	5901	0045	4185	8320
46	0100	4292	8480	2663	6842	1016	5186	9352	3513	7670	1822	5970	0114	4254	8389
47	0170	4362	8550	2733	6911	1085	5255	9421	3582	7739	1891	6040	0183	4323	8458
48	0240	4432	8619	2802	6981	1155	5325	9490	3651	7808	1961	6109	0252	4392	8527
49	0310	4502	8689	2872	7050	1225	5394	9560	3721	7877	2030	6178	0321	4461	8596
50	0380	4572	8759	2942	7120	1294	5464	9629	3790	7947	2099	6247	0390	4530	8665
51	0450	4641	8829	3011	7190	1364	5533	9698	3859	8016	2168	6316	0459	4599	8734
52	0520	4711	8898	3081	7259	1433	5603	9768	3929	8085	2237	6385	0528	4668	8802
53	0590	4781	8968	3151	7329	1503	5672	9837	3998	8154	2306	6454	0597	4737	8871
54	0660	4851	9038	3220	7398	1572	5742	9907	4067	8224	2376	6523	0666	4805	8940
55	0729	4921	9108	3290	7468	1642	5811	9976	4137	8293	2445	6592	0736	4874	9009
56	0799	4990	9177	3360	7538	1711	5880	0045	4206	8362	2514	6661	0805	4943	9078
57	0869	5060	9247	3429	7607	1781	5950	0115	4275	8431	2583	6730	0874	5012	9147
58	0939	5130	9317	3499	7677	1850	6019	0184	4344	8501	2652	6800	0943	5081	9216
59	1009	5200	9386	3569	7746	1920	6089	0253	4414	8570	2721	6869	1012	5150	9285
60	1079	5270	9456	3638	7816	1989	6158	0323	4483	8639	2790	6938	1081	5219	9353
"	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Sine Deg. 73

16 Deg. Co-Sine

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	"
9. 981	9. 981	9. 981	9. 981	9. 981	9. 980	9. 980	9. 980	9. 980	9. 980	9. 980	9. 980	9. 980	9. 980	9. 980	
1711	1331	0950	0569	0187	9805	9423	9040	8657	8273	7889	7505	7120	6735	6349	60
1705	1325	0944	0563	0181	9799	9417	9034	8651	8267	7883	7498	7114	6728	6343	59
1699	1318	0938	0556	0175	9793	9410	9027	8644	8261	7876	7492	7107	6722	6336	58
1692	1312	0931	0550	0168	9786	9404	9021	8638	8254	7870	7486	7101	6716	6330	57
1686	1306	0925	0544	0162	9780	9397	9015	8631	8248	7864	7479	7094	6709	6323	56
1680	1299	0919	0537	0156	9774	9391	9008	8625	8241	7857	7473	7088	6703	6317	55
1673	1293	0912	0531	0149	9767	9385	9002	8619	8235	7851	7466	7082	6696	6311	54
1667	1287	0906	0525	0143	9761	9378	8995	8612	8229	7844	7460	7075	6690	6304	53
1661	1280	0899	0518	0137	9754	9372	8989	8606	8222	7838	7454	7069	6683	6298	52
1654	1274	0893	0512	0130	9748	9366	8983	8599	8216	7832	7447	7062	6677	6291	51
1648	1268	0887	0505	0124	9742	9359	8976	8593	8209	7825	7441	7056	6671	6285	50
1642	1261	0880	0499	0117	9735	9353	8970	8587	8203	7819	7434	7049	6664	6278	49
1635	1255	0874	0493	0111	9729	9346	8964	8580	8197	7812	7428	7043	6658	6272	48
1629	1249	0868	0486	0105	9723	9340	8957	8574	8190	7806	7422	7037	6651	6266	47
1623	1242	0861	0480	0098	9716	9334	8951	8567	8184	7800	7415	7030	6645	6259	46
1616	1236	0855	0474	0092	9710	9327	8944	8561	8177	7793	7409	7024	6638	6253	45
1610	1230	0849	0467	0086	9703	9321	8938	8555	8171	7787	7402	7017	6632	6246	44
1604	1223	0842	0461	0079	9697	9315	8932	8548	8165	7780	7396	7011	6626	6240	43
1597	1217	0836	0455	0073	9691	9308	8925	8542	8158	7774	7389	7005	6619	6233	42
1591	1211	0830	0448	0066	9684	9302	8919	8536	8152	7768	7383	6998	6613	6227	41
1585	1204	0823	0442	0060	9678	9295	8912	8529	8145	7761	7377	6992	6606	6221	40
1578	1198	0817	0436	0054	9672	9289	8906	8523	8139	7755	7370	6985	6600	6214	39
1572	1191	0811	0429	0047	9665	9283	8900	8516	8133	7748	7364	6979	6593	6208	38
1566	1185	0804	0423	0041	9659	9276	8893	8510	8126	7742	7357	6972	6587	6201	37
1559	1179	0798	0416	0035	9652	9270	8887	8504	8120	7736	7351	6966	6581	6195	36
1553	1172	0791	0410	0028	9646	9264	8881	8497	8113	7729	7345	6960	6574	6188	35
1547	1166	0785	0404	0022	9640	9257	8874	8491	8107	7723	7338	6953	6568	6182	34
1540	1160	0779	0397	0016	9633	9251	8868	8484	8101	7716	7332	6947	6561	6176	33
1534	1153	0772	0391	0009	9627	9244	8861	8478	8094	7710	7325	6940	6555	6169	32
1528	1147	0766	0385	0003	9621	9238	8855	8472	8088	7704	7319	6934	6548	6163	31
1521	1141	0760	0378	9996	9614	9232	8849	8465	8081	7697	7313	6927	6542	6156	30
1515	1134	0753	0372	9990	9608	9225	8842	8459	8075	7691	7306	6921	6536	6150	29
1509	1128	0747	0366	9984	9601	9219	8836	8452	8069	7684	7300	6915	6529	6143	28
1502	1122	0741	0359	9977	9595	9212	8829	8446	8062	7678	7293	6908	6523	6137	27
1496	1115	0734	0353	9971	9589	9206	8823	8440	8056	7672	7287	6902	6516	6130	26
1490	1109	0728	0346	9965	9582	9200	8817	8433	8049	7665	7280	6895	6510	6124	25
1483	1103	0722	0340	9958	9576	9193	8810	8427	8043	7659	7274	6889	6503	6118	24
1477	1096	0715	0334	9952	9570	9187	8804	8420	8037	7652	7268	6883	6497	6111	23
1471	1090	0709	0327	9946	9563	9181	8798	8414	8030	7646	7261	6876	6491	6105	22
1464	1084	0703	0321	9939	9557	9174	8791	8408	8024	7639	7255	6870	6484	6098	21
1458	1077	0696	0315	9933	9551	9168	8785	8401	8017	7633	7248	6863	6478	6092	20
1452	1071	0690	0308	9926	9544	9161	8778	8395	8011	7627	7242	6857	6471	6085	19
1445	1065	0683	0302	9920	9538	9155	8772	8388	8005	7620	7236	6850	6465	6079	18
1439	1058	0677	0296	9914	9531	9149	8766	8382	7998	7614	7229	6844	6458	6073	17
1433	1052	0671	0289	9907	9525	9142	8759	8376	7992	7607	7223	6838	6452	6066	16
1426	1045	0664	0283	9901	9519	9136	8753	8369	7985	7601	7216	6831	6446	6060	15
1420	1039	0658	0277	9895	9512	9130	8746	8363	7979	7595	7210	6825	6439	6053	14
1414	1033	0652	0270	9888	9506	9123	8740	8356	7973	7588	7203	6818	6433	6047	13
1407	1026	0645	0264	9882	9500	9117	8734	8350	7966	7582	7197	6812	6426	6040	12
1401	1020	0639	0257	9875	9493	9110	8727	8344	7960	7575	7191	6805	6420	6034	11
1395	1014	0633	0251	9869	9487	9104	8721	8337	7953	7569	7184	6799	6413	6028	10
1388	1007	0626	0245	9863	9480	9098	8714	8331	7947	7563	7178	6793	6407	6021	9
1382	1001	0620	0238	9856	9474	9091	8708	8324	7941	7556	7171	6786	6401	6015	8
1375	0995	0614	0232	9850	9468	9085	8702	8318	7934	7550	7165	6780	6394	6008	7
1369	0988	0607	0226	9844	9461	9078	8695	8312	7928	7543	7159	6773	6388	6002	6
1363	0982	0601	0219	9837	9455	9072	8689	8305	7921	7537	7152	6767	6381	5995	5
1356	0976	0594	0213	9831	9448	9066	8683	8299	7915	7531	7146	6761	6375	5989	4
1350	0969	0588	0207	9825	9442	9059	8676	8293	7909	7524	7139	6754	6368	5982	3
1344	0963	0582	0200	9818	9436	9053	8670	8286	7902	7518	7133	6748	6362	5976	2
1337	0957	0575	0194	9812	9429	9047	8663	8280	7896	7511	7126	6741	6356	5970	1
1331	0950	0569	0187	9805	9423	9040	8657	8273	7889	7505	7120	6735	6349	5963	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	"

Sine Deg. 73

″	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9.478	9.478	9.479	9.479	9.480	9.480	9.481	9.481	9.482	9.482	9.483	9.483	9.483	9.484	9.484
0	5172	9748	4319	8887	3451	8011	2566	7118	1666	6210	0750	5286	9818	4346	8870
1	5248	9824	4396	8963	3527	8087	2642	7194	1742	6285	0825	5361	9893	4421	8945
2	5325	9900	4472	9039	3603	8163	2718	7270	1817	6361	0901	5437	9969	4497	9021
3	5401	9976	4548	9115	3679	8238	2794	7346	1893	6437	0977	5512	0044	4572	9096
4	5477	0053	4624	9192	3755	8314	2870	7421	1969	6513	1052	5588	0120	4647	9171
5	5554	0129	4700	9268	3831	8390	2946	7497	2045	6588	1128	5663	0195	4723	9247
6	5630	0205	4776	9344	3907	8466	3022	7573	2120	6664	1203	5739	0271	4798	9322
7	5706	0281	4853	9420	3983	8542	3098	7649	2196	6740	1279	5815	0346	4874	9398
8	5782	0358	4929	9496	4059	8618	3173	7725	2272	6815	1355	5890	0422	4949	9473
9	5859	0434	5005	9572	4135	8694	3249	7801	2348	6891	1430	5966	0497	5025	9548
10	5935	0510	5081	9648	4211	8770	3325	7876	2424	6967	1506	6041	0573	5100	9624
11	6011	0586	5157	9724	4287	8846	3401	7952	2499	7042	1582	6117	0648	5175	9699
12	6088	0662	5233	9800	4363	8922	3477	8028	2575	7118	1657	6192	0724	5251	9774
13	6164	0739	5309	9876	4439	8998	3553	8104	2651	7194	1733	6268	0799	5326	9850
14	6240	0815	5386	9952	4515	9074	3629	8180	2727	7269	1808	6343	0875	5402	9925
15	6316	0891	5462	0028	4591	9150	3705	8255	2802	7345	1884	6419	0950	5477	0000
16	6393	0967	5538	0105	4667	9226	3781	8331	2878	7421	1960	6495	1026	5553	0076
17	6469	1043	5614	0181	4743	9302	3856	8407	2954	7496	2035	6570	1101	5628	0151
18	6545	1120	5690	0257	4819	9378	3932	8483	3029	7572	2111	6646	1176	5703	0226
19	6621	1196	5766	0333	4895	9454	4008	8559	3105	7648	2186	6721	1252	5779	0302
20	6698	1272	5842	0409	4971	9530	4084	8634	3181	7724	2262	6797	1327	5854	0377
21	6774	1348	5919	0485	5047	9606	4160	8710	3257	7799	2338	6872	1403	5930	0452
22	6850	1425	5995	0561	5123	9682	4236	8786	3332	7875	2413	6948	1478	6005	0528
23	6927	1501	6071	0637	5199	9757	4312	8862	3408	7951	2489	7023	1554	6080	0603
24	7003	1577	6147	0713	5275	9833	4388	8938	3484	8026	2565	7099	1629	6156	0679
25	7079	1653	6223	0789	5351	9909	4463	9014	3560	8102	2640	7174	1705	6231	0754
26	7155	1729	6299	0865	5427	9985	4539	9089	3635	8178	2716	7250	1780	6307	0829
27	7232	1806	6375	0941	5503	0061	4615	9165	3711	8253	2791	7326	1856	6382	0905
28	7308	1882	6452	1017	5579	0137	4691	9241	3787	8329	2867	7401	1931	6458	0980
29	7384	1958	6528	1093	5655	0213	4767	9317	3863	8405	2943	7477	2007	6533	1055
30	7460	2034	6604	1170	5731	0289	4843	9393	3938	8480	3018	7552	2082	6608	1131
31	7537	2110	6680	1246	5807	0365	4919	9468	4014	8556	3094	7628	2158	6684	1206
32	7613	2187	6756	1322	5883	0441	4994	9544	4090	8632	3169	7703	2233	6759	1281
33	7689	2263	6832	1398	5959	0517	5070	9620	4166	8707	3245	7779	2309	6835	1357
34	7765	2339	6908	1474	6035	0593	5146	9696	4241	8783	3321	7854	2384	6910	1432
35	7842	2415	6984	1550	6111	0669	5222	9771	4317	8859	3396	7930	2460	6985	1507
36	7918	2491	7061	1626	6187	0745	5298	9847	4393	8934	3472	8005	2535	7061	1583
37	7994	2567	7137	1702	6263	0820	5374	9923	4468	9010	3547	8081	2610	7136	1658
38	8070	2644	7213	1778	6339	0896	5450	9999	4544	9085	3623	8156	2686	7212	1733
39	8147	2720	7289	1854	6415	0972	5525	0075	4620	9161	3698	8232	2761	7287	1809
40	8223	2796	7365	1930	6491	1048	5601	0150	4696	9237	3774	8307	2837	7362	1884
41	8299	2872	7441	2006	6567	1124	5677	0226	4771	9312	3850	8383	2912	7438	1959
42	8375	2948	7517	2082	6643	1200	5753	0302	4847	9388	3925	8458	2988	7513	2035
43	8452	3025	7593	2158	6719	1276	5829	0378	4923	9464	4001	8534	3063	7588	2110
44	8528	3101	7670	2234	6795	1352	5905	0454	4998	9539	4076	8609	3139	7664	2185
45	8604	3177	7746	2310	6871	1428	5981	0529	5074	9615	4152	8685	3214	7739	2261
46	8680	3253	7822	2386	6947	1504	6056	0605	5150	9691	4228	8761	3290	7815	2336
47	8757	3329	7898	2462	7023	1580	6132	0681	5226	9766	4303	8836	3365	7890	2411
48	8833	3405	7974	2538	7099	1656	6208	0757	5301	9842	4379	8912	3440	7965	2486
49	8909	3482	8050	2615	7175	1731	6284	0832	5377	9918	4454	8987	3516	8041	2562
50	8985	3558	8126	2691	7251	1807	6360	0908	5453	9993	4530	9063	3591	8116	2637
51	9062	3634	8202	2767	7327	1883	6436	0984	5528	0069	4605	9138	3667	8192	2712
52	9138	3710	8278	2843	7403	1959	6511	1060	5604	0145	4681	9214	3742	8267	2788
53	9214	3786	8354	2919	7479	2035	6587	1136	5680	0220	4757	9289	3818	8342	2863
54	9290	3862	8431	2995	7555	2111	6663	1211	5756	0296	4832	9365	3893	8418	2938
55	9367	3939	8507	3071	7631	2187	6739	1287	5831	0371	4908	9440	3969	8493	3014
56	9443	4015	8583	3147	7707	2263	6815	1363	5907	0447	4983	9516	4044	8568	3089
57	9519	4091	8659	3223	7783	2339	6891	1439	5983	0523	5059	9591	4119	8644	3164
58	9595	4167	8735	3299	7859	2415	6966	1514	6058	0598	5134	9667	4195	8719	3240
59	9672	4243	8811	3375	7935	2490	7042	1590	6134	0674	5210	9742	4270	8795	3315
60	9748	4319	8887	3451	8011	2566	7118	1666	6210	0750	5286	9818	4346	8870	3390
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	″
10.521	10.521	10.520	10.520	10.519	10.519	10.518	10.518	10.517	10.517	10.516	10.516	10.516	10.515	10.515	
4828	0252	5681	1113	6549	1989	7434	2882	8334	3790	9250	4714	0182	5654	1130	60
4752	0176	5604	1037	6473	1913	7358	2806	8258	3715	9175	4639	0107	5579	1055	59
4675	0100	5528	0961	6397	1837	7282	2730	8183	3639	9099	4563	0031	5503	0979	58
4599	0024	5452	0885	6321	1762	7206	2654	8107	3563	9023	4488	9956	5428	0904	57
4523	9947	5376	0808	6245	1686	7130	2579	8031	3487	8948	4412	9880	5353	0829	56
4446	9871	5300	0732	6169	1610	7054	2503	7955	3412	8872	4337	9805	5277	0753	55
4370	9795	5224	0656	6093	1534	6978	2427	7880	3336	8797	4261	9729	5202	0678	54
4294	9719	5147	0580	6017	1458	6902	2351	7804	3260	8721	4185	9654	5126	0602	53
4218	9642	5071	0504	5941	1382	6827	2275	7728	3185	8645	4110	9578	5051	0527	52
4141	9566	4995	0428	5865	1306	6751	2199	7652	3109	8570	4034	9503	4975	0452	51
4065	9490	4919	0352	5789	1230	6675	2124	7576	3033	8494	3959	9427	4900	0376	50
3989	9414	4843	0276	5713	1154	6599	2048	7501	2958	8418	3883	9352	4825	0301	49
3912	9338	4767	0200	5637	1078	6523	1972	7425	2882	8343	3808	9276	4749	0226	48
3836	9261	4691	0124	5561	1002	6447	1896	7349	2806	8267	3732	9201	4674	0150	47
3760	9185	4614	0048	5485	0926	6371	1820	7273	2731	8192	3657	9125	4598	0075	46
3684	9109	4538	9972	5409	0850	6295	1745	7198	2655	8116	3581	9050	4523	0000	45
3607	9033	4462	9895	5333	0774	6219	1669	7122	2579	8040	3505	8974	4447	9924	44
3531	8957	4386	9819	5257	0698	6144	1593	7046	2504	7965	3430	8899	4372	9849	43
3455	8880	4310	9743	5181	0622	6068	1517	6971	2428	7889	3354	8824	4297	9774	42
3379	8804	4234	9667	5105	0546	5992	1441	6895	2352	7814	3279	8748	4221	9698	41
3302	8728	4158	9591	5029	0470	5916	1366	6819	2276	7738	3203	8673	4146	9623	40
3226	8652	4081	9515	4953	0394	5840	1290	6743	2201	7662	3128	8597	4070	9548	39
3150	8575	4005	9439	4877	0318	5764	1214	6668	2125	7587	3052	8522	3995	9472	38
3073	8499	3929	9363	4801	0243	5688	1138	6592	2049	7511	2977	8446	3920	9397	37
2997	8423	3853	9287	4725	0167	5612	1062	6516	1974	7435	2901	8371	3844	9321	36
2921	8347	3777	9211	4649	0091	5537	0986	6440	1898	7360	2826	8295	3769	9246	35
2845	8271	3701	9135	4573	0015	5461	0911	6365	1822	7284	2750	8220	3693	9171	34
2768	8194	3625	9059	4497	9939	5385	0835	6289	1747	7209	2674	8144	3618	9095	33
2692	8118	3548	8983	4421	9863	5309	0759	6213	1671	7133	2599	8069	3542	9020	32
2616	8042	3472	8907	4345	9787	5233	0683	6137	1595	7057	2523	7993	3467	8945	31
2540	7966	3396	8830	4269	9711	5157	0607	6062	1520	6982	2448	7918	3392	8869	30
2463	7890	3320	8754	4193	9635	5081	0532	5986	1444	6906	2372	7842	3316	8794	29
2387	7813	3244	8678	4117	9559	5006	0456	5910	1368	6831	2297	7767	3241	8719	28
2311	7737	3168	8602	4041	9483	4930	0380	5834	1293	6755	2221	7691	3165	8643	27
2235	7661	3092	8526	3965	9407	4854	0304	5759	1217	6679	2146	7616	3090	8568	26
2158	7585	3016	8450	3889	9331	4778	0229	5683	1141	6604	2070	7540	3015	8493	25
2082	7509	2939	8374	3813	9255	4702	0153	5607	1066	6528	1995	7465	2939	8417	24
2006	7433	2863	8298	3737	9180	4626	0077	5532	0990	6453	1919	7390	2864	8342	23
1930	7356	2787	8222	3661	9104	4550	0001	5456	0915	6377	1844	7314	2788	8267	22
1853	7280	2711	8146	3585	9028	4475	9925	5380	0839	6302	1768	7239	2713	8191	21
1777	7204	2635	8070	3509	8952	4399	9850	5304	0763	6226	1693	7163	2638	8116	20
1701	7128	2559	7994	3433	8876	4323	9774	5229	0688	6150	1617	7088	2562	8041	19
1625	7052	2483	7918	3357	8800	4247	9698	5153	0612	6075	1542	7012	2487	7965	18
1548	6975	2407	7842	3281	8724	4171	9622	5077	0536	5999	1466	6937	2412	7890	17
1472	6899	2330	7766	3205	8648	4095	9546	5002	0461	5924	1391	6861	2336	7815	16
1396	6823	2254	7690	3129	8572	4019	9471	4926	0385	5848	1315	6786	2261	7739	15
1320	6747	2178	7614	3053	8496	3944	9395	4850	0309	5772	1239	6710	2185	7664	14
1243	6671	2102	7538	2977	8420	3868	9319	4774	0234	5697	1164	6635	2110	7589	13
1167	6595	2026	7462	2901	8344	3792	9243	4699	0158	5621	1088	6560	2035	7514	12
1091	6518	1950	7385	2825	8269	3716	9168	4623	0082	5546	1013	6484	1959	7438	11
1015	6442	1874	7309	2749	8193	3640	9092	4547	0007	5470	0937	6409	1884	7363	10
0938	6366	1798	7233	2673	8117	3564	9016	4472	9931	5395	0862	6333	1808	7288	9
0862	6290	1722	7157	2597	8041	3489	8940	4396	9855	5319	0786	6258	1733	7212	8
0786	6214	1646	7081	2521	7965	3413	8864	4320	9780	5243	0711	6182	1658	7137	7
0710	6138	1569	7005	2445	7889	3337	8789	4244	9704	5168	0635	6107	1582	7062	6
0633	6061	1493	6929	2369	7813	3261	8713	4169	9629	5092	0560	6031	1507	6986	5
0557	5985	1417	6853	2293	7737	3185	8637	4093	9553	5017	0484	5956	1432	6911	4
0481	5909	1341	6777	2217	7661	3109	8561	4017	9477	4941	0409	5881	1356	6836	3
0405	5833	1265	6701	2141	7585	3034	8486	3942	9402	4866	0333	5805	1281	6760	2
0328	5757	1189	6625	2065	7510	2958	8410	3866	9326	4790	0258	5730	1205	6685	1
0252	5681	1113	6549	1989	7434	2882	8334	3790	9250	4714	0182	5654	1130	6610	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

17 Deg. Sine

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.465	9.466	9.466	9.467	9.467	9.467	9.468	9.468	9.469	9.469	9.470	9.470	9.470	9.471	9.471
0	9353	3483	7609	1730	5848	9960	4069	8173	2273	6369	0461	4548	8631	2710	6785
1	9422	3552	7678	1799	5916	0029	4137	8242	2342	6437	0529	4616	8699	2778	6853
2	9491	3621	7746	1868	5985	0097	4206	8310	2410	6506	0597	4684	8768	2846	6921
3	9560	3690	7815	1936	6053	0166	4274	8378	2478	6574	0665	4753	8836	2914	6989
4	9629	3759	7884	2005	6122	0234	4343	8447	2547	6642	0733	4821	8904	2982	7057
5	9698	3827	7953	2074	6190	0303	4411	8515	2615	6710	0802	4889	8972	3050	7125
6	9767	3896	8021	2142	6259	0371	4480	8583	2683	6779	0870	4957	9040	3118	7193
7	9835	3965	8090	2211	6328	0440	4548	8652	2751	6847	0938	5025	9108	3186	7260
8	9904	4034	8159	2280	6396	0508	4616	8720	2820	6915	1006	5093	9176	3254	7328
9	9973	4102	8228	2348	6465	0577	4685	8789	2888	6983	1074	5161	9244	3322	7396
10	0042	4171	8296	2417	6533	0645	4753	8857	2956	7051	1142	5229	9312	3390	7464
11	0111	4240	8365	2486	6602	0714	4822	8925	3025	7120	1211	5297	9380	3458	7532
12	0180	4309	8434	2554	6670	0782	4890	8994	3093	7188	1279	5365	9448	3526	7600
13	0249	4378	8502	2623	6739	0851	4959	9062	3161	7256	1347	5433	9516	3594	7668
14	0317	4446	8571	2691	6808	0919	5027	9130	3229	7324	1415	5501	9584	3662	7735
15	0386	4515	8640	2760	6876	0988	5095	9199	3298	7393	1483	5569	9652	3730	7803
16	0455	4584	8708	2829	6945	1056	5164	9267	3366	7461	1551	5638	9720	3798	7871
17	0524	4653	8777	2897	7013	1125	5232	9335	3434	7529	1619	5706	9788	3865	7939
18	0593	4722	8846	2966	7082	1193	5301	9404	3503	7597	1688	5774	9856	3933	8007
19	0662	4790	8915	3035	7150	1262	5369	9472	3571	7665	1756	5842	9924	4001	8075
20	0731	4859	8983	3103	7219	1330	5438	9540	3639	7734	1824	5910	9992	4069	8143
21	0799	4928	9052	3172	7287	1399	5506	9609	3707	7802	1892	5978	0060	4137	8210
22	0868	4997	9121	3241	7356	1467	5574	9677	3776	7870	1960	6046	0128	4205	8278
23	0937	5065	9189	3309	7425	1536	5643	9745	3844	7938	2028	6114	0196	4273	8346
24	1006	5134	9258	3378	7493	1604	5711	9814	3912	8006	2096	6182	0264	4341	8414
25	1075	5203	9327	3446	7562	1673	5780	9882	3980	8075	2164	6250	0332	4409	8482
26	1144	5272	9395	3515	7630	1741	5848	9951	4049	8143	2233	6318	0400	4477	8550
27	1212	5340	9464	3584	7699	1810	5916	0019	4117	8211	2301	6386	0468	4545	8618
28	1281	5409	9533	3652	7767	1878	5985	0087	4185	8279	2369	6454	0536	4613	8685
29	1350	5478	9602	3721	7836	1947	6053	0156	4254	8347	2437	6522	0604	4680	8753
30	1419	5547	9670	3789	7904	2015	6122	0224	4322	8416	2505	6590	0671	4748	8821
31	1488	5615	9739	3858	7973	2084	6190	0292	4390	8484	2573	6658	0739	4816	8889
32	1557	5684	9808	3927	8042	2152	6258	0361	4458	8552	2641	6727	0807	4884	8957
33	1625	5753	9876	3995	8110	2221	6327	0429	4527	8620	2709	6795	0875	4952	9025
34	1694	5822	9945	4064	8179	2289	6395	0497	4595	8688	2778	6863	0943	5020	9092
35	1763	5891	0014	4133	8247	2358	6464	0566	4663	8757	2846	6931	1011	5088	9160
36	1832	5959	0082	4201	8316	2426	6532	0634	4731	8825	2914	6999	1079	5156	9228
37	1901	6028	0151	4270	8384	2494	6600	0702	4800	8893	2982	7067	1147	5224	9296
38	1970	6097	0220	4338	8453	2563	6669	0770	4868	8961	3050	7135	1215	5292	9364
39	2038	6166	0288	4407	8521	2631	6737	0839	4936	9029	3118	7203	1283	5360	9432
40	2107	6234	0357	4476	8590	2700	6806	0907	5004	9097	3186	7271	1351	5427	9499
41	2176	6303	0426	4544	8658	2768	6874	0975	5073	9166	3254	7339	1419	5495	9567
42	2245	6372	0494	4613	8727	2837	6942	1044	5141	9234	3322	7407	1487	5563	9635
43	2314	6441	0563	4681	8795	2905	7011	1112	5209	9302	3391	7475	1555	5631	9703
44	2382	6509	0632	4750	8864	2974	7079	1180	5277	9370	3459	7543	1623	5699	9771
45	2451	6578	0700	4819	8933	3042	7148	1249	5346	9438	3527	7611	1691	5767	9839
46	2520	6647	0769	4887	9001	3111	7216	1317	5414	9507	3595	7679	1759	5835	9906
47	2589	6715	0838	4956	9070	3179	7284	1385	5482	9575	3663	7747	1827	5903	9974
48	2658	6784	0906	5024	9138	3248	7353	1454	5550	9643	3731	7815	1895	5971	0042
49	2727	6853	0975	5093	9207	3316	7421	1522	5619	9711	3799	7883	1963	6039	0110
50	2795	6922	1044	5162	9275	3384	7490	1590	5687	9779	3867	7951	2031	6106	0178
51	2864	6990	1112	5230	9344	3453	7558	1659	5755	9847	3935	8019	2099	6174	0246
52	2933	7059	1181	5299	9412	3521	7626	1727	5823	9916	4004	8087	2167	6242	0313
53	3002	7128	1250	5367	9481	3590	7695	1795	5892	9984	4072	8155	2235	6310	0381
54	3071	7197	1318	5436	9549	3658	7763	1864	5960	0052	4140	8223	2303	6378	0449
55	3139	7265	1387	5505	9618	3727	7831	1932	6028	0120	4208	8291	2371	6446	0517
56	3208	7334	1456	5573	9686	3795	7900	2000	6096	0188	4276	8359	2439	6514	0585
57	3277	7403	1524	5642	9755	3864	7968	2068	6165	0256	4344	8427	2507	6582	0652
58	3346	7472	1593	5710	9823	3932	8037	2137	6233	0325	4412	8495	2575	6650	0720
59	3415	7540	1662	5779	9892	4001	8105	2205	6301	0393	4480	8563	2643	6717	0788
60	3483	7609	1730	5848	9960	4069	8173	2273	6369	0461	4548	8631	2710	6785	0856
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Sine Deg. 72

17 Deg. Co-Sine

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
9.980	9.980	9.980	9.980	9.980	9.980	9.980	9.980	9.980	9.980	9.980	9.980	9.980	9.980	9.980	″
5963	5577	5190	4803	4415	4027	3639	3250	2860	2471	2081	1690	1299	0908	0516	60
5957	5570	5183	4796	4409	4020	3632	3243	2854	2464	2074	1684	1293	0902	0510	59
5950	5564	5177	4790	4402	4014	3626	3237	2847	2458	2068	1677	1286	0895	0503	58
5944	5557	5171	4783	4396	4008	3619	3230	2841	2451	2061	1671	1280	0889	0497	57
5937	5551	5164	4777	4389	4001	3613	3224	2834	2445	2055	1664	1273	0882	0490	56
5931	5545	5158	4770	4383	3995	3606	3217	2828	2438	2048	1658	1267	0876	0484	55
5925	5538	5151	4764	4376	3988	3600	3211	2821	2432	2042	1651	1260	0869	0477	54
5918	5532	5145	4757	4370	3982	3593	3204	2815	2425	2035	1645	1254	0862	0471	53
5912	5525	5138	4751	4363	3975	3587	3198	2808	2419	2029	1638	1247	0856	0464	52
5905	5519	5132	4745	4357	3969	3580	3191	2802	2412	2022	1632	1241	0849	0458	51
5899	5512	5125	4738	4350	3962	3574	3185	2796	2406	2016	1625	1234	0843	0451	50
5892	5506	5119	4732	4344	3956	3567	3178	2789	2399	2009	1619	1228	0836	0445	49
5886	5499	5112	4725	4337	3949	3561	3172	2783	2393	2003	1612	1221	0830	0438	48
5879	5493	5106	4719	4331	3943	3554	3165	2776	2386	1996	1606	1215	0823	0432	47
5873	5486	5100	4712	4325	3936	3548	3159	2770	2380	1990	1599	1208	0817	0425	46
5867	5480	5093	4706	4318	3930	3541	3152	2763	2373	1983	1593	1202	0810	0419	45
5860	5474	5087	4699	4312	3923	3535	3146	2757	2367	1977	1586	1195	0804	0412	44
5854	5467	5080	4693	4305	3917	3528	3139	2750	2360	1970	1580	1189	0797	0405	43
5847	5461	5074	4686	4299	3910	3522	3133	2744	2354	1964	1573	1182	0791	0399	42
5841	5454	5067	4680	4292	3904	3515	3126	2737	2347	1957	1567	1176	0784	0392	41
5834	5448	5061	4673	4286	3898	3509	3120	2731	2341	1951	1560	1169	0778	0386	40
5828	5441	5054	4667	4279	3891	3502	3113	2724	2334	1944	1554	1163	0771	0379	39
5822	5435	5048	4661	4273	3885	3496	3107	2718	2328	1938	1547	1156	0765	0373	38
5815	5428	5041	4654	4266	3878	3490	3101	2711	2321	1931	1540	1149	0758	0366	37
5809	5422	5035	4648	4260	3872	3483	3094	2705	2315	1925	1534	1143	0752	0360	36
5802	5416	5029	4641	4253	3865	3477	3088	2698	2308	1918	1527	1136	0745	0353	35
5796	5409	5022	4635	4247	3859	3470	3081	2692	2302	1912	1521	1130	0738	0347	34
5789	5403	5016	4628	4240	3852	3464	3075	2685	2295	1905	1514	1123	0732	0340	33
5783	5396	5009	4622	4234	3846	3457	3068	2679	2289	1899	1508	1117	0725	0334	32
5776	5390	5003	4615	4228	3839	3451	3062	2672	2282	1892	1501	1110	0719	0327	31
5770	5383	4996	4609	4221	3833	3444	3055	2666	2276	1886	1495	1104	0712	0320	30
5764	5377	4990	4602	4215	3826	3438	3049	2659	2269	1879	1488	1097	0706	0314	29
5757	5370	4983	4596	4208	3820	3431	3042	2653	2263	1873	1482	1091	0699	0307	28
5751	5364	4977	4589	4202	3813	3425	3036	2646	2256	1866	1475	1084	0693	0301	27
5744	5358	4971	4583	4195	3807	3418	3029	2640	2250	1860	1469	1078	0686	0294	26
5738	5351	4964	4577	4189	3800	3412	3023	2633	2243	1853	1462	1071	0680	0288	25
5731	5345	4958	4570	4182	3794	3405	3016	2627	2237	1846	1456	1065	0673	0281	24
5725	5338	4951	4564	4176	3787	3399	3010	2620	2230	1840	1449	1058	0667	0275	23
5718	5332	4945	4557	4169	3781	3392	3003	2614	2224	1833	1443	1052	0660	0268	22
5712	5325	4938	4551	4163	3775	3386	2997	2607	2217	1827	1436	1045	0654	0262	21
5706	5319	4932	4544	4156	3768	3379	2990	2601	2211	1820	1430	1039	0647	0255	20
5699	5312	4925	4538	4150	3762	3373	2984	2594	2204	1814	1423	1032	0641	0249	19
5693	5306	4919	4531	4143	3755	3366	2977	2588	2198	1807	1417	1026	0634	0242	18
5686	5300	4912	4525	4137	3749	3360	2971	2581	2191	1801	1410	1019	0627	0236	17
5680	5293	4906	4518	4130	3742	3353	2964	2575	2185	1794	1404	1013	0621	0229	16
5673	5287	4899	4512	4124	3736	3347	2958	2568	2178	1788	1397	1006	0614	0222	15
5667	5280	4893	4505	4118	3729	3340	2951	2562	2172	1781	1391	0999	0608	0216	14
5660	5274	4887	4499	4111	3723	3334	2945	2555	2165	1775	1384	0993	0601	0209	13
5654	5267	4880	4493	4105	3716	3327	2938	2549	2159	1768	1378	0986	0595	0203	12
5648	5261	4874	4486	4098	3710	3321	2932	2542	2152	1762	1371	0980	0588	0196	11
5641	5254	4867	4480	4092	3703	3315	2925	2536	2146	1755	1365	0973	0582	0190	10
5635	5248	4861	4473	4085	3697	3308	2919	2529	2139	1749	1358	0967	0575	0183	9
5628	5241	4854	4467	4079	3690	3302	2912	2523	2133	1742	1352	0960	0569	0177	8
5622	5235	4848	4460	4072	3684	3295	2906	2516	2126	1736	1345	0954	0562	0170	7
5615	5229	4841	4454	4066	3677	3289	2899	2510	2120	1729	1339	0947	0556	0164	6
5609	5222	4835	4447	4059	3671	3282	2893	2503	2113	1723	1332	0941	0549	0157	5
5602	5216	4828	4441	4053	3664	3276	2886	2497	2107	1716	1325	0934	0543	0151	4
5596	5209	4822	4434	4046	3658	3269	2880	2490	2100	1710	1319	0928	0536	0144	3
5590	5203	4816	4428	4040	3651	3263	2873	2484	2094	1703	1312	0921	0530	0137	2
5583	5196	4809	4421	4033	3645	3256	2867	2477	2087	1697	1306	0915	0523	0131	1
5577	5190	4803	4415	4027	3639	3250	2860	2471	2081	1690	1299	0908	0516	0124	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Sine Deg. 72

17 Deg. Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9. 485	9. 485	9. 486	9. 486	9. 487	9. 487	9. 488	9. 488	9. 488	9. 489	9. 489	9. 490	9. 490	9. 491	9. 491
0	3390	7907	2419	6928	1433	5933	0430	4924	9413	3898	8380	2858	7332	1802	6269
1	3466	7982	2494	7003	1508	6008	0505	4998	9488	3973	8455	2933	7407	1877	6343
2	3541	8057	2569	7078	1583	6083	0580	5073	9563	4048	8529	3007	7481	1951	6418
3	3616	8132	2645	7153	1658	6158	0655	5148	9637	4123	8604	3082	7556	2026	6492
4	3691	8208	2720	7228	1733	6233	0730	5223	9712	4197	8679	3156	7630	2100	6566
5	3767	8283	2795	7303	1808	6308	0805	5298	9787	4272	8753	3231	7705	2175	6641
6	3842	8358	2870	7378	1883	6383	0880	5373	9862	4347	8828	3306	7779	2249	6715
7	3917	8433	2945	7454	1958	6458	0955	5448	9936	4422	8903	3380	7854	2324	6790
8	3993	8509	3021	7529	2033	6533	1030	5522	0011	4496	8977	3455	7928	2398	6864
9	4068	8584	3096	7604	2108	6608	1105	5597	0086	4571	9052	3529	8003	2473	6938
10	4143	8659	3171	7679	2183	6683	1180	5672	0161	4646	9127	3604	8077	2547	7013
11	4219	8734	3246	7754	2258	6758	1254	5747	0236	4720	9201	3679	8152	2621	7087
12	4294	8809	3321	7829	2333	6833	1329	5822	0310	4795	9276	3753	8226	2696	7162
13	4369	8885	3396	7904	2408	6908	1404	5897	0385	4870	9351	3828	8301	2770	7236
14	4444	8960	3471	7979	2483	6983	1479	5971	0460	4945	9425	3902	8375	2845	7310
15	4520	9035	3547	8054	2558	7058	1554	6046	0535	5019	9500	3977	8450	2919	7385
16	4595	9110	3622	8129	2633	7133	1629	6121	0609	5094	9575	4051	8525	2994	7459
17	4670	9186	3697	8204	2708	7208	1704	6196	0684	5169	9649	4126	8599	3068	7534
18	4746	9261	3772	8280	2783	7283	1779	6271	0759	5243	9724	4201	8674	3143	7608
19	4821	9336	3847	8355	2858	7358	1854	6346	0834	5318	9799	4275	8748	3217	7682
20	4896	9411	3922	8430	2933	7433	1929	6420	0909	5393	9873	4350	8823	3292	7757
21	4971	9486	3998	8505	3008	7508	2003	6495	0983	5467	9948	4424	8897	3366	7831
22	5047	9562	4073	8580	3083	7583	2078	6570	1058	5542	0022	4499	8972	3440	7906
23	5122	9637	4148	8655	3158	7658	2153	6645	1133	5617	0097	4574	9046	3515	7980
24	5197	9712	4223	8730	3233	7733	2228	6720	1208	5692	0172	4648	9121	3589	8054
25	5273	9787	4298	8805	3308	7808	2303	6795	1282	5766	0246	4723	9195	3664	8129
26	5348	9863	4373	8880	3383	7883	2378	6869	1357	5841	0321	4797	9270	3738	8203
27	5423	9938	4448	8955	3458	7958	2453	6944	1432	5916	0396	4872	9344	3813	8277
28	5498	0013	4524	9030	3533	8032	2528	7019	1507	5990	0470	4946	9419	3887	8352
29	5574	0088	4599	9106	3608	8107	2603	7094	1581	6065	0545	5021	9493	3962	8426
30	5649	0163	4674	9181	3683	8182	2677	7169	1656	6140	0620	5096	9568	4036	8501
31	5724	0239	4749	9256	3758	8257	2752	7244	1731	6214	0694	5170	9642	4110	8575
32	5799	0314	4824	9331	3833	8332	2827	7318	1806	6289	0769	5245	9717	4185	8649
33	5875	0389	4899	9406	3908	8407	2902	7393	1880	6364	0843	5319	9791	4259	8724
34	5950	0464	4974	9481	3983	8482	2977	7468	1955	6439	0918	5394	9866	4334	8798
35	6025	0539	5050	9556	4058	8557	3052	7543	2030	6513	0993	5468	9940	4408	8872
36	6101	0615	5125	9631	4134	8632	3127	7618	2105	6588	1067	5543	0015	4483	8947
37	6176	0690	5200	9706	4209	8707	3202	7692	2179	6663	1142	5617	0089	4557	9021
38	6251	0765	5275	9781	4284	8782	3277	7767	2254	6737	1217	5692	0164	4632	9096
39	6326	0840	5350	9856	4359	8857	3351	7842	2329	6812	1291	5767	0238	4706	9170
40	6402	0915	5425	9931	4434	8932	3426	7917	2404	6887	1366	5841	0313	4780	9244
41	6477	0991	5500	0006	4509	9007	3501	7992	2478	6961	1440	5916	0387	4855	9319
42	6552	1066	5576	0081	4584	9082	3576	8067	2553	7036	1515	5990	0462	4929	9393
43	6627	1141	5651	0157	4659	9157	3651	8141	2628	7111	1590	6065	0536	5004	9467
44	6703	1216	5726	0232	4734	9232	3726	8216	2703	7185	1664	6139	0611	5078	9542
45	6778	1291	5801	0307	4809	9307	3801	8291	2777	7260	1739	6214	0685	5153	9616
46	6853	1367	5876	0382	4884	9381	3876	8366	2852	7335	1814	6288	0760	5227	9691
47	6928	1442	5951	0457	4959	9456	3950	8441	2927	7409	1888	6363	0834	5301	9765
48	7004	1517	6026	0532	5034	9531	4025	8515	3002	7484	1963	6438	0909	5376	9839
49	7079	1592	6101	0607	5109	9606	4100	8590	3076	7559	2037	6512	0983	5450	9914
50	7154	1667	6177	0682	5184	9681	4175	8665	3151	7633	2112	6587	1058	5525	9988
51	7229	1743	6252	0757	5259	9756	4250	8740	3226	7708	2187	6661	1132	5599	0062
52	7305	1818	6327	0832	5333	9831	4325	8815	3301	7783	2261	6736	1207	5673	0137
53	7380	1893	6402	0907	5408	9906	4400	8889	3375	7857	2336	6810	1281	5748	0211
54	7455	1968	6477	0982	5483	9981	4474	8964	3450	7932	2410	6885	1355	5822	0285
55	7530	2043	6552	1057	5558	0056	4549	9039	3525	8007	2485	6959	1430	5897	0360
56	7606	2118	6627	1132	5633	0131	4624	9114	3600	8081	2560	7034	1504	5971	0434
57	7681	2194	6702	1207	5708	0206	4699	9189	3674	8156	2634	7108	1579	6046	0508
58	7756	2269	6778	1282	5783	0281	4774	9263	3749	8231	2709	7183	1653	6120	0583
59	7831	2344	6853	1357	5858	0356	4849	9338	3824	8305	2783	7258	1728	6194	0657
60	7907	2419	6928	1433	5933	0430	4924	9413	3898	8380	2858	7332	1802	6269	0731
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Tangent Deg. 72

17 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
10. 514	10. 514	10. 513	10. 513	10. 512	10. 512	10. 511	10. 511	10. 511	10. 510	10. 510	10. 509	10. 509	10. 508	10. 508	″
6610	2093	7581	3072	8567	4067	9570	5076	0587	6102	1620	7142	2668	8198	3731	60
6534	2018	7506	2997	8492	3992	9495	5002	0512	6027	1545	7067	2593	8123	3657	59
6459	1943	7431	2922	8417	3917	9420	4927	0437	5952	1471	6993	2519	8049	3582	58
6384	1868	7355	2847	8342	3842	9345	4852	0363	5877	1396	6918	2444	7974	3508	57
6309	1792	7280	2772	8267	3767	9270	4777	0288	5803	1321	6844	2370	7900	3434	56
6233	1717	7205	2697	8192	3692	9195	4702	0213	5728	1247	6769	2295	7825	3359	55
6158	1642	7130	2622	8117	3617	9120	4627	0138	5653	1172	6694	2221	7751	3285	54
6083	1567	7055	2546	8042	3542	9045	4552	0064	5578	1097	6620	2146	7676	3210	53
6007	1491	6979	2471	7967	3467	8970	4478	9989	5504	1023	6545	2072	7602	3136	52
5932	1416	6904	2396	7892	3392	8895	4403	9914	5429	0948	6471	1997	7527	3062	51
5857	1341	6829	2321	7817	3317	8820	4328	9839	5354	0873	6396	1923	7453	2987	50
5781	1266	6754	2246	7742	3242	8746	4253	9764	5280	0799	6321	1848	7379	2913	49
5706	1191	6679	2171	7667	3167	8671	4178	9690	5205	0724	6247	1774	7304	2838	48
5631	1115	6604	2096	7592	3092	8596	4103	9615	5130	0649	6172	1699	7230	2764	47
5556	1040	6529	2021	7517	3017	8521	4029	9540	5055	0575	6098	1625	7155	2690	46
5480	0965	6453	1946	7442	2942	8446	3954	9465	4981	0500	6023	1550	7081	2615	45
5405	0890	6378	1871	7367	2867	8371	3879	9391	4906	0425	5949	1475	7006	2541	44
5330	0814	6303	1796	7292	2792	8296	3804	9316	4831	0351	5874	1401	6932	2466	43
5254	0739	6228	1720	7217	2717	8221	3729	9241	4757	0276	5799	1326	6857	2392	42
5179	0664	6153	1645	7142	2642	8146	3654	9166	4682	0201	5725	1252	6783	2318	41
5104	0589	6078	1570	7067	2567	8071	3580	9091	4607	0127	5650	1177	6708	2243	40
5029	0514	6002	1495	6992	2492	7997	3505	9017	4533	0052	5576	1103	6634	2169	39
4953	0438	5927	1420	6917	2417	7922	3430	8942	4458	9978	5501	1028	6560	2094	38
4878	0363	5852	1345	6842	2342	7847	3355	8867	4383	9903	5426	0954	6485	2020	37
4803	0288	5777	1270	6767	2267	7772	3280	8792	4308	9828	5352	0879	6411	1946	36
4727	0213	5702	1195	6692	2192	7697	3205	8718	4234	9754	5277	0805	6336	1871	35
4652	0137	5627	1120	6617	2117	7622	3131	8643	4159	9679	5203	0730	6262	1797	34
4577	0062	5552	1045	6542	2042	7547	3056	8568	4084	9604	5128	0656	6187	1723	33
4502	9987	5476	0970	6467	1968	7472	2981	8493	4010	9530	5054	0581	6113	1648	32
4426	9912	5401	0894	6392	1893	7397	2906	8419	3935	9455	4979	0507	6038	1574	31
4351	9837	5326	0819	6317	1818	7323	2831	8344	3860	9380	4904	0432	5964	1499	30
4276	9761	5251	0744	6242	1743	7248	2756	8269	3786	9306	4830	0358	5890	1425	29
4201	9686	5176	0669	6167	1668	7173	2682	8194	3711	9231	4755	0283	5815	1351	28
4125	9611	5101	0594	6092	1593	7098	2607	8120	3636	9157	4681	0209	5741	1276	27
4050	9536	5026	0519	6017	1518	7023	2532	8045	3561	9082	4606	0134	5666	1202	26
3975	9461	4950	0444	5942	1443	6948	2457	7970	3487	9007	4532	0060	5592	1128	25
3899	9385	4875	0369	5866	1368	6873	2382	7895	3412	8933	4457	9985	5517	1053	24
3824	9310	4800	0294	5791	1293	6798	2308	7821	3337	8858	4383	9911	5443	0979	23
3749	9235	4725	0219	5716	1218	6723	2233	7746	3263	8783	4308	9836	5368	0904	22
3674	9160	4650	0144	5641	1143	6649	2158	7671	3188	8709	4233	9762	5294	0830	21
3598	9085	4575	0069	5566	1068	6574	2083	7596	3113	8634	4159	9687	5220	0756	20
3523	9009	4500	9994	5491	0993	6499	2008	7522	3039	8560	4084	9613	5145	0681	19
3448	8934	4424	9919	5416	0918	6424	1933	7447	2964	8485	4010	9538	5071	0607	18
3373	8859	4349	9843	5341	0843	6349	1859	7372	2889	8410	3935	9464	4996	0533	17
3297	8784	4274	9768	5266	0768	6274	1784	7297	2815	8336	3861	9389	4922	0458	16
3222	8709	4199	9693	5191	0693	6199	1709	7223	2740	8261	3786	9315	4847	0384	15
3147	8633	4124	9618	5116	0619	6124	1634	7148	2665	8186	3712	9240	4773	0309	14
3072	8558	4049	9543	5041	0544	6050	1559	7073	2591	8112	3637	9166	4699	0235	13
2996	8483	3974	9468	4966	0469	5975	1485	6998	2516	8037	3562	9091	4624	0161	12
2921	8408	3899	9393	4891	0394	5900	1410	6924	2441	7963	3488	9017	4550	0086	11
2846	8333	3823	9318	4816	0319	5825	1335	6849	2367	7888	3413	8942	4475	0012	10
2771	8257	3748	9243	4741	0244	5750	1260	6774	2292	7813	3339	8868	4401	9938	9
2695	8182	3673	9168	4667	0169	5675	1185	6699	2217	7739	3264	8793	4327	9863	8
2620	8107	3598	9093	4592	0094	5600	1111	6625	2143	7664	3190	8719	4252	9789	7
2545	8032	3523	9018	4517	0019	5526	1036	6550	2068	7590	3115	8645	4178	9715	6
2470	7957	3448	8943	4442	9944	5451	0961	6475	1993	7515	3041	8570	4103	9640	5
2394	7882	3373	8868	4367	9869	5376	0886	6400	1919	7440	2966	8496	4029	9566	4
2319	7806	3298	8793	4292	9794	5301	0811	6326	1844	7366	2892	8421	3954	9492	3
2244	7731	3222	8718	4217	9719	5226	0737	6251	1769	7291	2817	8347	3880	9417	2
2169	7656	3147	8643	4142	9644	5151	0662	6176	1695	7217	2742	8272	3806	9343	1
2093	7581	3072	8567	4067	9570	5076	0587	6102	1620	7142	2668	8198	3731	9269	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Tangent Deg. 72

17 Deg. Sine

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 472	9. 472	9. 472	9. 473	9. 473	9. 474	9. 474	9. 474	9. 475	9. 475	9. 476	9. 476	9. 476	9. 477	9. 477
0	0856	4922	8985	3043	7097	1146	5192	9234	3271	7304	1334	5359	9380	3396	7409
1	0924	4990	9052	3110	7164	1214	5260	9301	3338	7372	1401	5426	9447	3463	7476
2	0992	5058	9120	3178	7232	1281	5327	9368	3406	7439	1468	5493	9514	3530	7543
3	1059	5126	9188	3246	7299	1349	5394	9436	3473	7506	1535	5560	9581	3597	7610
4	1127	5193	9255	3313	7367	1416	5462	9503	3540	7573	1602	5627	9648	3664	7677
5	1195	5261	9323	3381	7434	1484	5529	9570	3607	7640	1669	5694	9714	3731	7744
6	1263	5329	9391	3448	7502	1551	5596	9638	3675	7707	1736	5761	9781	3798	7810
7	1331	5396	9458	3516	7569	1619	5664	9705	3742	7775	1803	5828	9848	3865	7877
8	1398	5464	9526	3583	7637	1686	5731	9772	3809	7842	1870	5895	9915	3932	7944
9	1466	5532	9594	3651	7704	1754	5799	9840	3876	7909	1938	5962	9982	3999	8011
10	1534	5600	9661	3719	7772	1821	5866	9907	3944	7976	2005	6029	0049	4066	8078
11	1602	5667	9729	3786	7839	1888	5933	9974	4011	8043	2072	6096	0116	4132	8145
12	1670	5735	9797	3854	7907	1956	6001	0041	4078	8111	2139	6163	0183	4199	8211
13	1737	5803	9864	3921	7974	2023	6068	0109	4145	8178	2206	6230	0250	4266	8278
14	1805	5871	9932	3989	8042	2091	6136	0176	4213	8245	2273	6297	0317	4333	8345
15	1873	5938	0000	4057	8109	2158	6203	0243	4280	8312	2340	6364	0384	4400	8412
16	1941	6006	0067	4124	8177	2226	6270	0311	4347	8379	2407	6431	0451	4467	8479
17	2008	6074	0135	4192	8245	2293	6338	0378	4414	8446	2474	6498	0518	4534	8546
18	2076	6141	0202	4259	8312	2361	6405	0445	4481	8514	2541	6565	0585	4601	8612
19	2144	6209	0270	4327	8380	2428	6472	0513	4549	8581	2609	6632	0652	4668	8679
20	2212	6277	0338	4394	8447	2495	6540	0580	4616	8648	2676	6699	0719	4735	8746
21	2280	6345	0405	4462	8515	2563	6607	0647	4683	8715	2743	6766	0786	4801	8813
22	2347	6412	0473	4530	8582	2630	6674	0715	4750	8782	2810	6833	0853	4868	8880
23	2415	6480	0541	4597	8650	2698	6742	0782	4818	8849	2877	6900	0920	4935	8946
24	2483	6548	0608	4665	8717	2765	6809	0849	4885	8917	2944	6967	0987	5002	9013
25	2551	6615	0676	4732	8785	2833	6877	0916	4952	8984	3011	7035	1054	5069	9080
26	2619	6683	0744	4800	8852	2900	6944	0984	5019	9051	3078	7102	1121	5136	9147
27	2686	6751	0811	4868	8920	2968	7011	1051	5087	9118	3145	7169	1188	5203	9214
28	2754	6819	0879	4935	8987	3035	7079	1118	5154	9185	3212	7236	1255	5270	9281
29	2822	6886	0947	5003	9055	3102	7146	1186	5221	9252	3279	7303	1322	5337	9347
30	2890	6954	1014	5070	9122	3170	7213	1253	5288	9319	3347	7370	1389	5403	9414
31	2957	7022	1082	5138	9190	3237	7281	1320	5355	9387	3414	7437	1455	5470	9481
32	3025	7089	1149	5205	9257	3305	7348	1387	5423	9454	3481	7504	1522	5537	9548
33	3093	7157	1217	5273	9325	3372	7415	1455	5490	9521	3548	7571	1589	5604	9615
34	3161	7225	1285	5340	9392	3440	7483	1522	5557	9588	3615	7638	1656	5671	9681
35	3228	7292	1352	5408	9460	3507	7550	1589	5624	9655	3682	7705	1723	5738	9748
36	3296	7360	1420	5476	9527	3574	7618	1657	5692	9722	3749	7772	1790	5805	9815
37	3364	7428	1488	5543	9595	3642	7685	1724	5759	9789	3816	7839	1857	5872	9882
38	3432	7496	1555	5611	9662	3709	7752	1791	5826	9857	3883	7906	1924	5938	9949
39	3500	7563	1623	5678	9730	3777	7820	1858	5893	9924	3950	7973	1991	6005	0015
40	3567	7631	1690	5746	9797	3844	7887	1926	5960	9991	4017	8040	2058	6072	0082
41	3635	7699	1758	5813	9864	3911	7954	1993	6028	0058	4084	8107	2125	6139	0149
42	3703	7766	1826	5881	9932	3979	8022	2060	6095	0125	4152	8174	2192	6206	0216
43	3771	7834	1893	5948	9999	4046	8089	2128	6162	0192	4219	8241	2259	6273	0283
44	3838	7902	1961	6016	0067	4114	8156	2195	6229	0259	4286	8308	2326	6340	0349
45	3906	7969	2029	6084	0134	4181	8224	2262	6296	0327	4353	8375	2393	6406	0416
46	3974	8037	2096	6151	0202	4249	8291	2329	6364	0394	4420	8442	2460	6473	0483
47	4042	8105	2164	6219	0269	4316	8358	2397	6431	0461	4487	8509	2526	6540	0550
48	4109	8172	2231	6286	0337	4383	8426	2464	6498	0528	4554	8576	2593	6607	0617
49	4177	8240	2299	6354	0404	4451	8493	2531	6565	0595	4621	8643	2660	6674	0683
50	4245	8308	2367	6421	0472	4518	8560	2598	6632	0662	4688	8710	2727	6741	0750
51	4313	8376	2434	6489	0539	4586	8628	2666	6700	0729	4755	8777	2794	6808	0817
52	4380	8443	2502	6556	0607	4653	8695	2733	6767	0797	4822	8844	2861	6874	0884
53	4448	8511	2569	6624	0674	4720	8762	2800	6834	0864	4889	8911	2928	6941	0951
54	4516	8579	2637	6691	0742	4788	8830	2868	6901	0931	4956	8978	2995	7008	1017
55	4584	8646	2705	6759	0809	4855	8897	2935	6968	0998	5023	9045	3062	7075	1084
56	4651	8714	2772	6827	0877	4923	8964	3002	7036	1065	5090	9112	3129	7142	1151
57	4719	8782	2840	6894	0944	4990	9032	3069	7103	1132	5157	9179	3196	7209	1218
58	4787	8849	2908	6962	1012	5057	9099	3137	7170	1199	5224	9246	3263	7276	1284
59	4855	8917	2975	7029	1079	5125	9166	3204	7237	1266	5292	9313	3330	7342	1351
60	4922	8985	3043	7097	1146	5192	9234	3271	7304	1334	5359	9380	3396	7409	1418
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Sine Deg. 72

17 Deg. Co-Sine

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
9. 980	9. 979	9. 979	9. 979	9. 979	9. 979	9. 979	9. 979	9. 979	9. 979	9. 979	9. 979	9. 979	9. 979	9. 979	″
0124	9732	9339	8946	8552	8158	7764	7369	6973	6578	6182	5785	5388	4991	4593	60
0118	9725	9333	8939	8546	8151	7757	7362	6967	6571	6175	5778	5382	4984	4587	59
0111	9719	9326	8933	8539	8145	7750	7355	6960	6564	6168	5772	5375	4978	4580	58
0105	9712	9319	8926	8532	8138	7744	7349	6954	6558	6162	5765	5368	4971	4573	57
0098	9706	9313	8920	8526	8132	7737	7342	6947	6551	6155	5759	5362	4964	4567	56
0092	9699	9306	8913	8519	8125	7731	7336	6940	6545	6149	5752	5355	4958	4560	55
0085	9693	9300	8906	8513	8119	7724	7329	6934	6538	6142	5745	5348	4951	4553	54
0079	9686	9293	8900	8506	8112	7717	7323	6927	6531	6135	5739	5342	4944	4547	53
0072	9680	9287	8893	8500	8105	7711	7316	6921	6525	6129	5732	5335	4938	4540	52
0066	9673	9280	8887	8493	8099	7704	7309	6914	6518	6122	5726	5329	4931	4533	51
0059	9666	9274	8880	8486	8092	7698	7303	6907	6512	6116	5719	5322	4925	4527	50
0052	9660	9267	8874	8480	8086	7691	7296	6901	6505	6109	5712	5315	4918	4520	49
0046	9653	9260	8867	8473	8079	7685	7290	6894	6498	6102	5706	5309	4911	4514	48
0039	9647	9254	8861	8467	8073	7678	7283	6888	6492	6096	5699	5302	4905	4507	47
0033	9640	9247	8854	8460	8066	7671	7276	6881	6485	6089	5692	5295	4898	4500	46
0026	9634	9241	8847	8454	8059	7665	7270	6874	6479	6082	5686	5289	4891	4494	45
0020	9627	9234	8841	8447	8053	7658	7263	6868	6472	6076	5679	5282	4885	4487	44
0013	9621	9228	8834	8440	8046	7652	7257	6861	6465	6069	5673	5276	4878	4480	43
0007	9614	9221	8828	8434	8040	7645	7250	6855	6459	6063	5666	5269	4872	4474	42
0000	9608	9215	8821	8427	8033	7639	7244	6848	6452	6056	5659	5262	4865	4467	41
9994	9601	9208	8815	8421	8027	7632	7237	6842	6446	6049	5653	5256	4858	4460	40
9987	9594	9201	8808	8414	8020	7625	7230	6835	6439	6043	5646	5249	4852	4454	39
9981	9588	9195	8801	8408	8013	7619	7224	6828	6432	6036	5640	5243	4845	4447	38
9974	9581	9188	8795	8401	8007	7612	7217	6822	6426	6030	5633	5236	4838	4441	37
9967	9575	9182	8788	8395	8000	7606	7211	6815	6419	6023	5626	5229	4832	4434	36
9961	9568	9175	8782	8388	7994	7599	7204	6809	6413	6016	5620	5223	4825	4427	35
9954	9562	9169	8775	8381	7987	7592	7197	6802	6406	6010	5613	5216	4819	4421	34
9948	9555	9162	8769	8375	7981	7586	7191	6795	6399	6003	5607	5209	4812	4414	33
9941	9549	9156	8762	8368	7974	7579	7184	6789	6393	5997	5600	5203	4805	4407	32
9935	9542	9149	8756	8362	7967	7573	7178	6782	6386	5990	5593	5196	4799	4401	31
9928	9536	9142	8749	8355	7961	7566	7171	6776	6380	5983	5587	5190	4792	4394	30
9922	9529	9136	8742	8349	7954	7560	7164	6769	6373	5977	5580	5183	4785	4387	29
9915	9522	9129	8736	8342	7948	7553	7158	6762	6366	5970	5573	5176	4779	4381	28
9909	9516	9123	8729	8335	7941	7546	7151	6756	6360	5964	5567	5170	4772	4374	27
9902	9509	9116	8723	8329	7935	7540	7145	6749	6353	5957	5560	5163	4766	4368	26
9896	9503	9110	8716	8322	7928	7533	7138	6743	6347	5950	5554	5156	4759	4361	25
9889	9496	9103	8710	8316	7921	7527	7132	6736	6340	5944	5547	5150	4752	4354	24
9882	9490	9097	8703	8309	7915	7520	7125	6729	6333	5937	5540	5143	4746	4348	23
9876	9483	9090	8697	8303	7908	7513	7118	6723	6327	5930	5534	5137	4739	4341	22
9869	9477	9083	8690	8296	7902	7507	7112	6716	6320	5924	5527	5130	4732	4334	21
9863	9470	9077	8683	8289	7895	7500	7105	6710	6314	5917	5521	5123	4726	4328	20
9856	9464	9070	8677	8283	7889	7494	7099	6703	6307	5911	5514	5117	4719	4321	19
9850	9457	9064	8670	8276	7882	7487	7092	6696	6300	5904	5507	5110	4712	4314	18
9843	9450	9057	8664	8270	7875	7481	7085	6690	6294	5897	5501	5103	4706	4308	17
9837	9444	9051	8657	8263	7869	7474	7079	6683	6287	5891	5494	5097	4699	4301	16
9830	9437	9044	8651	8257	7862	7467	7072	6677	6281	5884	5487	5090	4693	4295	15
9824	9431	9038	8644	8250	7856	7461	7066	6670	6274	5878	5481	5084	4686	4288	14
9817	9424	9031	8637	8243	7849	7454	7059	6663	6267	5871	5474	5077	4679	4281	13
9810	9418	9024	8631	8237	7842	7448	7052	6657	6261	5864	5468	5070	4673	4275	12
9804	9411	9018	8624	8230	7836	7441	7046	6650	6254	5858	5461	5064	4666	4268	11
9797	9405	9011	8618	8224	7829	7435	7039	6644	6248	5851	5454	5057	4659	4261	10
9791	9398	9005	8611	8217	7823	7428	7033	6637	6241	5845	5448	5050	4653	4255	9
9784	9391	8998	8605	8211	7816	7421	7026	6630	6234	5838	5441	5044	4646	4248	8
9778	9385	8992	8598	8204	7810	7415	7020	6624	6228	5831	5434	5037	4640	4241	7
9771	9378	8985	8592	8197	7803	7408	7013	6617	6221	5825	5428	5031	4633	4235	6
9765	9372	8979	8585	8191	7796	7402	7006	6611	6215	5818	5421	5024	4626	4228	5
9758	9365	8972	8578	8184	7790	7395	7000	6604	6208	5812	5415	5017	4620	4222	4
9752	9359	8965	8572	8178	7783	7388	6993	6597	6201	5805	5408	5011	4613	4215	3
9745	9352	8959	8565	8171	7777	7382	6987	6591	6195	5798	5401	5004	4606	4208	2
9738	9346	8952	8559	8165	7770	7375	6980	6584	6188	5792	5395	4997	4600	4202	1
9732	9339	8946	8552	8158	7764	7369	6973	6578	6182	5785	5388	4991	4593	4195	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Sine Deg. 72

17 Deg. Tangent

"	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9.492	9.492	9.492	9.493	9.493	9.494	9.494	9.495	9.495	9.496	9.496	9.496	9.497	9.497	9.498
0	0731	5190	9646	4097	8545	2988	7429	1865	6298	0727	5152	9574	3991	8406	2816
1	0806	5265	9720	4171	8619	3062	7503	1939	6372	0800	5226	9647	4065	8479	2890
2	0880	5339	9794	4245	8693	3136	7577	2013	6445	0874	5299	9721	4139	8553	2963
3	0955	5413	9868	4319	8767	3211	7650	2087	6519	0948	5373	9795	4212	8626	3037
4	1029	5488	9942	4394	8841	3285	7724	2161	6593	1022	5447	9868	4286	8700	3110
5	1103	5562	0017	4468	8915	3359	7798	2235	6667	1096	5521	9942	4359	8773	3184
6	1178	5636	0091	4542	8989	3433	7872	2308	6741	1169	5594	0015	4433	8847	3257
7	1252	5710	0165	4616	9063	3507	7946	2382	6815	1243	5668	0089	4507	8920	3330
8	1326	5785	0239	4690	9137	3581	8020	2456	6888	1317	5742	0163	4580	8994	3404
9	1401	5859	0313	4764	9211	3655	8094	2530	6962	1391	5815	0236	4654	9067	3477
10	1475	5933	0388	4838	9285	3729	8168	2604	7036	1464	5889	0310	4727	9141	3551
11	1549	6007	0462	4913	9360	3803	8242	2678	7110	1538	5963	0384	4801	9215	3624
12	1624	6082	0536	4987	9434	3877	8316	2752	7184	1612	6037	0457	4875	9288	3698
13	1698	6156	0610	5061	9508	3951	8390	2826	7258	1686	6110	0531	4948	9362	3771
14	1772	6230	0685	5135	9582	4025	8464	2900	7331	1760	6184	0605	5022	9435	3845
15	1847	6305	0759	5209	9656	4099	8538	2974	7405	1833	6258	0678	5095	9509	3918
16	1921	6379	0833	5283	9730	4173	8612	3047	7479	1907	6331	0752	5169	9582	3992
17	1995	6453	0907	5357	9804	4247	8686	3121	7553	1981	6405	0826	5242	9656	4065
18	2070	6527	0981	5432	9878	4321	8760	3195	7627	2055	6479	0899	5316	9729	4139
19	2144	6602	1056	5506	9952	4395	8834	3269	7701	2128	6553	0973	5390	9803	4212
20	2218	6676	1130	5580	0026	4469	8908	3343	7774	2202	6626	1047	5463	9876	4286
21	2293	6750	1204	5654	0100	4543	8982	3417	7848	2276	6700	1120	5537	9950	4359
22	2367	6824	1278	5728	0174	4617	9056	3491	7922	2350	6774	1194	5610	0023	4432
23	2441	6899	1352	5802	0248	4691	9130	3565	7996	2423	6847	1267	5684	0097	4506
24	2516	6973	1427	5876	0323	4765	9204	3639	8070	2497	6921	1341	5758	0170	4579
25	2590	7047	1501	5951	0397	4839	9278	3712	8144	2571	6995	1415	5831	0244	4653
26	2664	7121	1575	6025	0471	4913	9351	3786	8217	2645	7068	1488	5905	0317	4726
27	2738	7196	1649	6099	0545	4987	9425	3860	8291	2719	7142	1562	5978	0391	4800
28	2813	7270	1723	6173	0619	5061	9499	3934	8365	2792	7216	1636	6052	0464	4873
29	2887	7344	1798	6247	0693	5135	9573	4008	8439	2866	7290	1709	6125	0538	4947
30	2961	7418	1872	6321	0767	5209	9647	4082	8513	2940	7363	1783	6199	0611	5020
31	3036	7493	1946	6395	0841	5283	9721	4156	8586	3014	7437	1857	6273	0685	5093
32	3110	7567	2020	6469	0915	5357	9795	4230	8660	3087	7511	1930	6346	0758	5167
33	3184	7641	2094	6544	0989	5431	9869	4303	8734	3161	7584	2004	6420	0832	5240
34	3259	7715	2168	6618	1063	5505	9943	4377	8808	3235	7658	2077	6493	0905	5314
35	3333	7790	2243	6692	1137	5579	0017	4451	8882	3309	7732	2151	6567	0979	5387
36	3407	7864	2317	6766	1211	5653	0091	4525	8956	3382	7805	2225	6640	1052	5461
37	3482	7938	2391	6840	1285	5727	0165	4599	9029	3456	7879	2298	6714	1126	5534
38	3556	8012	2465	6914	1359	5801	0239	4673	9103	3530	7953	2372	6788	1199	5608
39	3630	8087	2539	6988	1433	5875	0313	4747	9177	3604	8026	2446	6861	1273	5681
40	3705	8161	2614	7062	1508	5949	0387	4821	9251	3677	8100	2519	6935	1346	5754
41	3779	8235	2688	7137	1582	6023	0461	4894	9325	3751	8174	2593	7008	1420	5828
42	3853	8309	2762	7211	1656	6097	0534	4968	9398	3825	8247	2666	7082	1493	5901
43	3927	8384	2836	7285	1730	6171	0608	5042	9472	3899	8321	2740	7155	1567	5975
44	4002	8458	2910	7359	1804	6245	0682	5116	9546	3972	8395	2814	7229	1640	6048
45	4076	8532	2984	7433	1878	6319	0756	5190	9620	4046	8468	2887	7302	1714	6122
46	4150	8606	3059	7507	1952	6393	0830	5264	9694	4120	8542	2961	7376	1787	6195
47	4225	8681	3133	7581	2026	6467	0904	5338	9767	4193	8616	3035	7450	1861	6269
48	4299	8755	3207	7655	2100	6541	0978	5411	9841	4267	8690	3108	7523	1934	6342
49	4373	8829	3281	7729	2174	6615	1052	5485	9915	4341	8763	3182	7597	2008	6415
50	4448	8903	3355	7804	2248	6689	1126	5559	9989	4415	8837	3255	7670	2081	6489
51	4522	8978	3429	7878	2322	6763	1200	5633	0063	4488	8911	3329	7744	2155	6562
52	4596	9052	3504	7952	2396	6837	1274	5707	0136	4562	8984	3403	7817	2228	6636
53	4670	9126	3578	8026	2470	6911	1348	5781	0210	4636	9058	3476	7891	2302	6709
54	4745	9200	3652	8100	2544	6985	1422	5855	0284	4710	9132	3550	7964	2375	6783
55	4819	9274	3726	8174	2618	7059	1495	5928	0358	4783	9205	3623	8038	2449	6856
56	4893	9349	3800	8248	2692	7133	1569	6002	0432	4857	9279	3697	8111	2522	6929
57	4968	9423	3874	8322	2766	7207	1643	6076	0505	4931	9353	3771	8185	2596	7003
58	5042	9497	3949	8396	2840	7281	1717	6150	0579	5005	9426	3844	8259	2669	7076
59	5116	9571	4023	8470	2914	7355	1791	6224	0653	5078	9500	3918	8332	2743	7150
60	5190	9646	4097	8545	2988	7429	1865	6298	0727	5152	9574	3991	8406	2816	7223
"	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Tangent Deg. 72

17 Deg. Co-Tangent

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	"
10.507	10.507	10.507	10.506	10.506	10.505	10.505	10.504	10.504	10.503	10.503	10.503	10.502	10.502	10.501	
9269	4810	0354	5903	1455	7012	2571	8135	3702	9273	4848	0426	6009	1594	7184	60
9194	4735	0280	5829	1381	6938	2497	8061	3628	9200	4774	0353	5935	1521	7110	59
9120	4661	0206	5755	1307	6864	2423	7987	3555	9126	4701	0279	5861	1447	7037	58
9045	4587	0132	5681	1233	6789	2350	7913	3481	9052	4627	0205	5788	1374	6963	57
8971	4512	0058	5606	1159	6715	2276	7839	3407	8978	4553	0132	5714	1300	6890	56
8897	4438	9983	5532	1085	6641	2202	7765	3333	8904	4479	0058	5641	1227	6816	55
8822	4364	9909	5458	1011	6567	2128	7692	3259	8831	4406	9985	5567	1153	6743	54
8748	4290	9835	5384	0937	6493	2054	7618	3185	8757	4332	9911	5493	1080	6670	53
8674	4215	9761	5310	0863	6419	1980	7544	3112	8683	4258	9837	5420	1006	6596	52
8599	4141	9687	5236	0789	6345	1906	7470	3038	8609	4185	9764	5346	0933	6523	51
8525	4067	9612	5162	0715	6271	1832	7396	2964	8536	4111	9690	5273	0859	6449	50
8451	3993	9538	5087	0640	6197	1758	7322	2890	8462	4037	9616	5199	0785	6376	49
8376	3918	9464	5013	0566	6123	1684	7248	2816	8388	3963	9543	5125	0712	6302	48
8302	3844	9390	4939	0492	6049	1610	7174	2742	8314	3890	9469	5052	0638	6229	47
8228	3770	9315	4865	0418	5975	1536	7100	2669	8240	3816	9395	4978	0565	6155	46
8153	3695	9241	4791	0344	5901	1462	7026	2595	8167	3742	9322	4905	0491	6082	45
8079	3621	9167	4717	0270	5827	1388	6953	2521	8093	3669	9248	4831	0418	6008	44
8005	3547	9093	4643	0196	5753	1314	6879	2447	8019	3595	9174	4758	0344	5935	43
7930	3473	9019	4568	0122	5679	1240	6805	2373	7945	3521	9101	4684	0271	5861	42
7856	3398	8944	4494	0048	5605	1166	6731	2299	7872	3447	9027	4610	0197	5788	41
7782	3324	8870	4420	9974	5531	1092	6657	2226	7798	3374	8953	4537	0124	5714	40
7707	3250	8796	4346	9900	5457	1018	6583	2152	7724	3300	8880	4463	0050	5641	39
7633	3176	8722	4272	9826	5383	0944	6509	2078	7650	3226	8806	4390	9977	5568	38
7559	3101	8648	4198	9752	5309	0870	6435	2004	7577	3153	8733	4316	9903	5494	37
7484	3027	8573	4124	9677	5235	0796	6361	1930	7503	3079	8659	4242	9830	5421	36
7410	2953	8499	4049	9603	5161	0722	6288	1856	7429	3005	8585	4169	9756	5347	35
7336	2879	8425	3975	9529	5087	0649	6214	1783	7355	2932	8512	4095	9683	5274	34
7262	2804	8351	3901	9455	5013	0575	6140	1709	7281	2858	8438	4022	9609	5200	33
7187	2730	8277	3827	9381	4939	0501	6066	1635	7208	2784	8364	3948	9536	5127	32
7113	2656	8202	3753	9307	4865	0427	5992	1561	7134	2710	8291	3875	9462	5053	31
7039	2582	8128	3679	9233	4791	0353	5918	1487	7060	2637	8217	3801	9389	4980	30
6964	2507	8054	3605	9159	4717	0279	5844	1414	6986	2563	8143	3727	9315	4907	29
6890	2433	7980	3531	9085	4643	0205	5770	1340	6913	2489	8070	3654	9242	4833	28
6816	2359	7906	3456	9011	4569	0131	5697	1266	6839	2416	7996	3580	9168	4760	27
6741	2285	7832	3382	8937	4495	0057	5623	1192	6765	2342	7923	3507	9095	4686	26
6667	2210	7757	3308	8863	4421	9983	5549	1118	6691	2268	7849	3433	9021	4613	25
6593	2136	7683	3234	8789	4347	9909	5475	1044	6618	2195	7775	3360	8948	4539	24
6518	2062	7609	3160	8715	4273	9835	5401	0971	6544	2121	7702	3286	8874	4466	23
6444	1988	7535	3086	8641	4199	9761	5327	0897	6470	2047	7628	3212	8801	4392	22
6370	1913	7461	3012	8567	4125	9687	5253	0823	6396	1974	7554	3139	8727	4319	21
6295	1839	7386	2938	8492	4051	9613	5179	0749	6323	1900	7481	3065	8654	4246	20
6221	1765	7312	2863	8418	3977	9539	5106	0675	6249	1826	7407	2992	8580	4172	19
6147	1691	7238	2789	8344	3903	9466	5032	0602	6175	1753	7334	2918	8507	4099	18
6073	1616	7164	2715	8270	3829	9392	4958	0528	6101	1679	7260	2845	8433	4025	17
5998	1542	7090	2641	8196	3755	9318	4884	0454	6028	1605	7186	2771	8360	3952	16
5924	1468	7016	2567	8122	3681	9244	4810	0380	5954	1532	7113	2698	8286	3878	15
5850	1394	6941	2493	8048	3607	9170	4736	0306	5880	1458	7039	2624	8213	3805	14
5775	1319	6867	2419	7974	3533	9096	4662	0233	5807	1384	6965	2550	8139	3731	13
5701	1245	6793	2345	7900	3459	9022	4589	0159	5733	1310	6892	2477	8066	3658	12
5627	1171	6719	2271	7826	3385	8948	4515	0085	5659	1237	6818	2403	7992	3585	11
5552	1097	6645	2196	7752	3311	8874	4441	0011	5585	1163	6745	2330	7919	3511	10
5478	1022	6571	2122	7678	3237	8800	4367	9937	5512	1089	6671	2256	7845	3438	9
5404	0948	6496	2048	7604	3163	8726	4293	9864	5438	1016	6597	2183	7772	3364	8
5330	0874	6422	1974	7530	3089	8652	4219	9790	5364	0942	6524	2109	7698	3291	7
5255	0800	6348	1900	7456	3015	8578	4145	9716	5290	0868	6450	2036	7625	3217	6
5181	0726	6274	1826	7382	2941	8505	4072	9642	5217	0795	6377	1962	7551	3144	5
5107	0651	6200	1752	7308	2867	8431	3998	9568	5143	0721	6303	1889	7478	3071	4
5032	0577	6126	1678	7234	2793	8357	3924	9495	5069	0647	6229	1815	7404	2997	3
4958	0503	6051	1604	7160	2719	8283	3850	9421	4995	0574	6156	1741	7331	2924	2
4884	0429	5977	1530	7086	2645	8209	3776	9347	4922	0500	6082	1668	7257	2850	1
4810	0354	5903	1455	7012	2571	8135	3702	9273	4848	0426	6009	1594	7184	2777	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	"

Tangent Deg. 72

17 Deg. Sine

″	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9.478	9.478	9.478	9.479	9.479	9.480	9.480	9.480	9.481	9.481	9.482	9.482	9.482	9.483	9.483
0	1418	5423	9423	3420	7412	1401	5385	9366	3342	7315	1283	5248	9208	3165	7117
1	1485	5489	9490	3486	7479	1467	5452	9432	3409	7381	1349	5314	9274	3231	7183
2	1552	5556	9557	3553	7545	1534	5518	9498	3475	7447	1415	5380	9340	3296	7249
3	1618	5623	9623	3620	7612	1600	5585	9565	3541	7513	1482	5446	9406	3362	7315
4	1685	5690	9690	3686	7678	1667	5651	9631	3607	7579	1548	5512	9472	3428	7380
5	1752	5756	9757	3753	7745	1733	5717	9697	3674	7646	1614	5578	9538	3494	7446
6	1819	5823	9823	3819	7811	1800	5784	9764	3740	7712	1680	5644	9604	3560	7512
7	1885	5890	9890	3886	7878	1866	5850	9830	3806	7778	1746	5710	9670	3626	7578
8	1952	5956	9956	3952	7944	1932	5916	9896	3872	7844	1812	5776	9736	3692	7644
9	2019	6023	0023	4019	8011	1999	5983	9963	3938	7910	1878	5842	9802	3758	7710
10	2086	6090	0090	4086	8077	2065	6049	0029	4005	7976	1944	5908	9868	3824	7776
11	2153	6156	0156	4152	8144	2132	6115	0095	4071	8043	2010	5974	9934	3890	7841
12	2219	6223	0223	4219	8210	2198	6182	0161	4137	8109	2076	6040	0000	3955	7907
13	2286	6290	0290	4285	8277	2265	6248	0228	4203	8175	2143	6106	0066	4021	7973
14	2353	6357	0356	4352	8343	2331	6315	0294	4270	8241	2209	6172	0132	4087	8039
15	2420	6423	0423	4418	8410	2397	6381	0360	4336	8307	2275	6238	0198	4153	8105
16	2486	6490	0489	4485	8476	2464	6447	0427	4402	8373	2341	6304	0264	4219	8170
17	2553	6557	0556	4552	8543	2530	6514	0493	4468	8440	2407	6370	0330	4285	8236
18	2620	6623	0623	4618	8609	2597	6580	0559	4534	8506	2473	6436	0395	4351	8302
19	2687	6690	0689	4685	8676	2663	6646	0626	4601	8572	2539	6502	0461	4417	8368
20	2753	6757	0756	4751	8742	2730	6713	0692	4667	8638	2605	6568	0527	4483	8434
21	2820	6823	0823	4818	8809	2796	6779	0758	4733	8704	2671	6634	0593	4548	8500
22	2887	6890	0889	4884	8875	2862	6845	0824	4799	8770	2737	6700	0659	4614	8565
23	2954	6957	0956	4951	8942	2929	6912	0891	4866	8836	2803	6766	0725	4680	8631
24	3020	7023	1022	5017	9008	2995	6978	0957	4932	8903	2869	6832	0791	4746	8697
25	3087	7090	1089	5084	9075	3062	7044	1023	4998	8969	2936	6898	0857	4812	8763
26	3154	7157	1156	5151	9141	3128	7111	1090	5064	9035	3002	6964	0923	4878	8829
27	3221	7224	1222	5217	9208	3194	7177	1156	5130	9101	3068	7030	0989	4944	8894
28	3287	7290	1289	5284	9274	3261	7243	1222	5197	9167	3134	7096	1055	5010	8960
29	3354	7357	1356	5350	9341	3327	7310	1288	5263	9233	3200	7162	1121	5075	9026
30	3421	7424	1422	5417	9407	3394	7376	1355	5329	9299	3266	7228	1187	5141	9092
31	3488	7490	1489	5483	9474	3460	7442	1421	5395	9366	3332	7294	1253	5207	9158
32	3554	7557	1555	5550	9540	3527	7509	1487	5461	9432	3398	7360	1319	5273	9224
33	3621	7624	1622	5616	9607	3593	7575	1553	5528	9498	3464	7426	1385	5339	9289
34	3688	7690	1689	5683	9673	3659	7642	1620	5594	9564	3530	7492	1451	5405	9355
35	3755	7757	1755	5749	9740	3726	7708	1686	5660	9630	3596	7558	1517	5471	9421
36	3821	7824	1822	5816	9806	3792	7774	1752	5726	9696	3662	7624	1582	5537	9487
37	3888	7890	1888	5882	9873	3859	7841	1818	5792	9762	3728	7690	1648	5602	9553
38	3955	7957	1955	5949	9939	3925	7907	1885	5859	9829	3794	7756	1714	5668	9618
39	4022	8024	2022	6016	0005	3991	7973	1951	5925	9895	3861	7822	1780	5734	9684
40	4088	8090	2088	6082	0072	4058	8040	2017	5991	9961	3927	7888	1846	5800	9750
41	4155	8157	2155	6149	0138	4124	8106	2084	6057	0027	3993	7954	1912	5866	9816
42	4222	8224	2221	6215	0205	4191	8172	2150	6123	0093	4059	8020	1978	5932	9882
43	4288	8290	2288	6282	0271	4257	8238	2216	6190	0159	4125	8086	2044	5998	9947
44	4355	8357	2355	6348	0338	4323	8305	2282	6256	0225	4191	8152	2110	6064	0013
45	4422	8424	2421	6415	0404	4390	8371	2349	6322	0291	4257	8218	2176	6129	0079
46	4489	8490	2488	6481	0471	4456	8437	2415	6388	0358	4323	8284	2242	6195	0145
47	4555	8557	2554	6548	0537	4522	8504	2481	6454	0424	4389	8350	2308	6261	0211
48	4622	8624	2621	6614	0604	4589	8570	2547	6521	0490	4455	8416	2374	6327	0276
49	4689	8690	2688	6681	0670	4655	8636	2614	6587	0556	4521	8482	2440	6393	0342
50	4756	8757	2754	6747	0736	4722	8703	2680	6653	0622	4587	8548	2505	6459	0408
51	4822	8824	2821	6814	0803	4788	8769	2746	6719	0688	4653	8614	2571	6525	0474
52	4889	8890	2887	6880	0869	4854	8835	2812	6785	0754	4719	8680	2637	6590	0539
53	4956	8957	2954	6947	0936	4921	8902	2879	6852	0820	4785	8746	2703	6656	0605
54	5022	9023	3020	7013	1002	4987	8968	2945	6918	0887	4851	8812	2769	6722	0671
55	5089	9090	3087	7080	1069	5054	9034	3011	6984	0953	4917	8878	2835	6788	0737
56	5156	9157	3154	7146	1135	5120	9101	3077	7050	1019	4983	8944	2901	6854	0803
57	5223	9223	3220	7213	1202	5186	9167	3144	7116	1085	5050	9010	2967	6920	0868
58	5289	9290	3287	7279	1268	5253	9233	3210	7182	1151	5116	9076	3033	6985	0934
59	5356	9357	3353	7346	1335	5319	9300	3276	7249	1217	5182	9142	3099	7051	1000
60	5423	9423	3420	7412	1401	5385	9366	3342	7315	1283	5248	9208	3165	7117	1066
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Sine Deg. 72

17 Deg. Co-Sine

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	″
9.979	9.979	9.979	9.979	9.979	9.979	9.979	9.979	9.979	9.979	9.979	9.978	9.978	9.978	9.978	″
4195	3796	3398	2998	2599	2198	1798	1397	0996	0594	0192	9789	9386	8983	8579	60
4188	3790	3391	2992	2592	2192	1791	1390	0989	0587	0185	9782	9379	8976	8572	59
4182	3783	3384	2985	2585	2185	1784	1383	0982	0580	0178	9776	9373	8969	8565	58
4175	3777	3378	2978	2579	2178	1778	1377	0975	0574	0171	9769	9366	8963	8559	57
4168	3770	3371	2972	2572	2172	1771	1370	0969	0567	0165	9762	9359	8956	8552	56
4162	3763	3364	2965	2565	2165	1764	1363	0962	0560	0158	9755	9352	8949	8545	55
4155	3757	3358	2958	2559	2158	1758	1357	0955	0554	0151	9749	9346	8942	8538	54
4149	3750	3351	2952	2552	2152	1751	1350	0949	0547	0145	9742	9339	8936	8532	53
4142	3743	3344	2945	2545	2145	1744	1343	0942	0540	0138	9735	9332	8929	8525	52
4135	3737	3338	2938	2539	2138	1738	1337	0935	0533	0131	9729	9326	8922	8518	51
4129	3730	3331	2932	2532	2132	1731	1330	0929	0527	0125	9722	9319	8915	8512	50
4122	3723	3324	2925	2525	2125	1724	1323	0922	0520	0118	9715	9312	8909	8505	49
4115	3717	3318	2918	2519	2118	1718	1317	0915	0513	0111	9708	9305	8902	8498	48
4109	3710	3311	2912	2512	2112	1711	1310	0909	0507	0104	9702	9299	8895	8491	47
4102	3703	3304	2905	2505	2105	1704	1303	0902	0500	0098	9695	9292	8889	8485	46
4095	3697	3298	2898	2499	2098	1698	1297	0895	0493	0091	9688	9285	8882	8478	45
4089	3690	3291	2892	2492	2092	1691	1290	0888	0487	0084	9682	9279	8875	8471	44
4082	3684	3284	2885	2485	2085	1684	1283	0882	0480	0078	9675	9272	8868	8464	43
4076	3677	3278	2878	2479	2078	1678	1277	0875	0473	0071	9668	9265	8862	8458	42
4069	3670	3271	2872	2472	2072	1671	1270	0868	0466	0064	9661	9258	8855	8451	41
4062	3664	3265	2865	2465	2065	1664	1263	0862	0460	0057	9655	9252	8848	8444	40
4056	3657	3258	2858	2458	2058	1658	1256	0855	0453	0051	9648	9245	8841	8437	39
4049	3650	3251	2852	2452	2052	1651	1250	0848	0446	0044	9641	9238	8835	8431	38
4042	3644	3245	2845	2445	2045	1644	1243	0842	0440	0037	9635	9231	8828	8424	37
4036	3637	3238	2838	2438	2038	1637	1236	0835	0433	0031	9628	9225	8821	8417	36
4029	3630	3231	2832	2432	2032	1631	1230	0828	0426	0024	9621	9218	8814	8411	35
4022	3624	3225	2825	2425	2025	1624	1223	0821	0420	0017	9614	9211	8808	8404	34
4016	3617	3218	2818	2418	2018	1617	1216	0815	0413	0010	9608	9205	8801	8397	33
4009	3610	3211	2812	2412	2011	1611	1210	0808	0406	0004	9601	9198	8794	8390	32
4002	3604	3205	2805	2405	2005	1604	1203	0801	0399	9997	9594	9191	8788	8384	31
3996	3597	3198	2798	2398	1998	1597	1196	0795	0393	9990	9588	9184	8781	8377	30
3989	3590	3191	2792	2392	1991	1591	1190	0788	0386	9984	9581	9178	8774	8370	29
3983	3584	3185	2785	2385	1985	1584	1183	0781	0379	9977	9574	9171	8767	8363	28
3976	3577	3178	2778	2378	1978	1577	1176	0775	0373	9970	9567	9164	8761	8357	27
3969	3570	3171	2772	2372	1971	1571	1169	0768	0366	9964	9561	9158	8754	8350	26
3963	3564	3165	2765	2365	1965	1564	1163	0761	0359	9957	9554	9151	8747	8343	25
3956	3557	3158	2758	2358	1958	1557	1156	0755	0353	9950	9547	9144	8740	8336	24
3949	3551	3151	2752	2352	1951	1551	1149	0748	0346	9943	9541	9137	8734	8330	23
3943	3544	3145	2745	2345	1945	1544	1143	0741	0339	9937	9534	9131	8727	8323	22
3936	3537	3138	2738	2338	1938	1537	1136	0734	0332	9930	9527	9124	8720	8316	21
3929	3531	3131	2732	2332	1931	1531	1129	0728	0326	9923	9520	9117	8714	8309	20
3923	3524	3125	2725	2325	1925	1524	1123	0721	0319	9917	9514	9110	8707	8303	19
3916	3517	3118	2718	2318	1918	1517	1116	0714	0312	9910	9507	9104	8700	8296	18
3909	3511	3111	2712	2312	1911	1511	1109	0708	0306	9903	9500	9097	8693	8289	17
3903	3504	3105	2705	2305	1905	1504	1103	0701	0299	9896	9494	9090	8687	8283	16
3896	3497	3098	2698	2298	1898	1497	1096	0694	0292	9890	9487	9084	8680	8276	15
3890	3491	3091	2692	2292	1891	1490	1089	0688	0285	9883	9480	9077	8673	8269	14
3883	3484	3085	2685	2285	1885	1484	1083	0681	0279	9876	9473	9070	8666	8262	13
3876	3477	3078	2678	2278	1878	1477	1076	0674	0272	9870	9467	9063	8660	8256	12
3870	3471	3071	2672	2272	1871	1470	1069	0667	0265	9863	9460	9057	8653	8249	11
3863	3464	3065	2665	2265	1865	1464	1062	0661	0259	9856	9453	9050	8646	8242	10
3856	3457	3058	2658	2258	1858	1457	1056	0654	0252	9849	9447	9043	8639	8235	9
3850	3451	3052	2652	2252	1851	1450	1049	0647	0245	9843	9440	9036	8633	8229	8
3843	3444	3045	2645	2245	1845	1444	1042	0641	0239	9836	9433	9030	8626	8222	7
3836	3437	3038	2638	2238	1838	1437	1036	0634	0232	9829	9426	9023	8619	8215	6
3830	3431	3032	2632	2232	1831	1430	1029	0627	0225	9823	9420	9016	8613	8208	5
3823	3424	3025	2625	2225	1825	1424	1022	0621	0218	9816	9413	9010	8606	8202	4
3816	3418	3018	2618	2218	1818	1417	1016	0614	0212	9809	9406	9003	8599	8195	3
3810	3411	3012	2612	2212	1811	1410	1009	0607	0205	9802	9399	8996	8592	8188	2
3803	3404	3005	2605	2205	1804	1404	1002	0600	0198	9796	9393	8989	8586	8181	1
3796	3398	2998	2599	2198	1798	1397	0996	0594	0192	9789	9386	8983	8579	8175	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Sine Deg. 72

17 Deg. Tangent

"	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9. 498	9. 499	9. 499	9. 500	9. 500	9. 500	9. 501	9. 501	9. 502	9. 502	9. 503	9. 503	9. 503	9. 504	9. 504
0	7223	1626	6026	0422	4814	9203	3588	7969	2347	6721	1092	5459	9822	4182	8538
1	7296	1700	6099	0495	4887	9276	3661	8042	2420	6794	1164	5531	9895	4255	8611
2	7370	1773	6172	0568	4960	9349	3734	8115	2493	6867	1237	5604	9967	4327	8683
3	7443	1846	6246	0641	5033	9422	3807	8188	2566	6940	1310	5677	0040	4400	8756
4	7517	1920	6319	0715	5107	9495	3880	8261	2639	7012	1383	5750	0113	4472	8829
5	7590	1993	6392	0788	5180	9568	3953	8334	2711	7085	1456	5822	0186	4545	8901
6	7664	2066	6466	0861	5253	9641	4026	8407	2784	7158	1528	5895	0258	4618	8974
7	7737	2140	6539	0934	5326	9714	4099	8480	2857	7231	1601	5968	0331	4690	9046
8	7810	2213	6612	1008	5399	9787	4172	8553	2930	7304	1674	6041	0404	4763	9119
9	7884	2286	6685	1081	5472	9861	4245	8626	3003	7377	1747	6113	0476	4836	9191
10	7957	2360	6759	1154	5546	9934	4318	8699	3076	7450	1820	6186	0549	4908	9264
11	8031	2433	6832	1227	5619	0007	4391	8772	3149	7523	1892	6259	0622	4981	9337
12	8104	2506	6905	1300	5692	0080	4464	8845	3222	7595	1965	6332	0694	5053	9409
13	8177	2580	6979	1374	5765	0153	4537	8918	3295	7668	2038	6404	0767	5126	9482
14	8251	2653	7052	1447	5838	0226	4610	8991	3368	7741	2111	6477	0840	5199	9554
15	8324	2726	7125	1520	5911	0299	4683	9064	3441	7814	2184	6550	0912	5271	9627
16	8398	2800	7198	1593	5985	0372	4756	9137	3514	7887	2256	6623	0985	5344	9699
17	8471	2873	7272	1667	6058	0445	4829	9210	3587	7960	2329	6695	1058	5417	9772
18	8544	2946	7345	1740	6131	0518	4902	9283	3659	8033	2402	6768	1130	5489	9844
19	8618	3020	7418	1813	6204	0592	4975	9356	3732	8105	2475	6841	1203	5562	9917
20	8691	3093	7491	1886	6277	0665	5048	9429	3805	8178	2548	6913	1276	5634	9990
21	8765	3166	7565	1959	6350	0738	5122	9502	3878	8251	2620	6986	1348	5707	0062
22	8838	3240	7638	2033	6424	0811	5195	9575	3951	8324	2693	7059	1421	5780	0135
23	8911	3313	7711	2106	6497	0884	5268	9648	4024	8397	2766	7132	1494	5852	0207
24	8985	3386	7785	2179	6570	0957	5341	9721	4097	8470	2839	7204	1566	5925	0280
25	9058	3460	7858	2252	6643	1030	5414	9794	4170	8543	2912	7277	1639	5997	0352
26	9132	3533	7931	2325	6716	1103	5487	9867	4243	8615	2984	7350	1712	6070	0425
27	9205	3606	8004	2399	6789	1176	5560	9939	4316	8688	3057	7423	1784	6143	0497
28	9278	3680	8078	2472	6862	1249	5633	0012	4389	8761	3130	7495	1857	6215	0570
29	9352	3753	8151	2545	6936	1322	5706	0085	4461	8834	3203	7568	1930	6288	0643
30	9425	3826	8224	2618	7009	1396	5779	0158	4534	8907	3276	7641	2002	6361	0715
31	9498	3900	8297	2691	7082	1469	5852	0231	4607	8980	3348	7714	2075	6433	0788
32	9572	3973	8371	2765	7155	1542	5925	0304	4680	9052	3421	7786	2148	6506	0860
33	9645	4046	8444	2838	7228	1615	5998	0377	4753	9125	3494	7859	2220	6578	0933
34	9719	4120	8517	2911	7301	1688	6071	0450	4826	9198	3567	7932	2293	6651	1005
35	9792	4193	8591	2984	7374	1761	6144	0523	4899	9271	3639	8004	2366	6724	1078
36	9865	4266	8664	3057	7448	1834	6217	0596	4972	9344	3712	8077	2438	6796	1150
37	9939	4340	8737	3131	7521	1907	6290	0669	5045	9417	3785	8150	2511	6869	1223
38	0012	4413	8810	3204	7594	1980	6363	0742	5118	9489	3858	8223	2584	6941	1295
39	0086	4486	8884	3277	7667	2053	6436	0815	5190	9562	3931	8295	2656	7014	1368
40	0159	4560	8957	3350	7740	2126	6509	0888	5263	9635	4003	8368	2729	7087	1440
41	0232	4633	9030	3423	7813	2199	6582	0961	5336	9708	4076	8441	2802	7159	1513
42	0306	4706	9103	3497	7886	2272	6655	1034	5409	9781	4149	8513	2874	7232	1586
43	0379	4780	9177	3570	7960	2346	6728	1107	5482	9854	4222	8586	2947	7304	1658
44	0452	4853	9250	3643	8033	2419	6801	1180	5555	9926	4294	8659	3020	7377	1731
45	0526	4926	9323	3716	8106	2492	6874	1253	5628	9999	4367	8732	3092	7449	1803
46	0599	5000	9396	3789	8179	2565	6947	1326	5701	0072	4440	8804	3165	7522	1876
47	0673	5073	9470	3863	8252	2638	7020	1399	5774	0145	4513	8877	3238	7595	1948
48	0746	5146	9543	3936	8325	2711	7093	1472	5846	0218	4586	8950	3310	7667	2021
49	0819	5219	9616	4009	8398	2784	7166	1544	5919	0291	4658	9022	3383	7740	2093
50	0893	5293	9689	4082	8471	2857	7239	1617	5992	0363	4731	9095	3456	7812	2166
51	0966	5366	9763	4155	8545	2930	7312	1690	6065	0436	4804	9168	3528	7885	2238
52	1039	5439	9836	4229	8618	3003	7385	1763	6138	0509	4877	9240	3601	7958	2311
53	1113	5513	9909	4302	8691	3076	7458	1836	6211	0582	4949	9313	3673	8030	2383
54	1186	5586	9982	4375	8764	3149	7531	1909	6284	0655	5022	9386	3746	8103	2456
55	1259	5659	0056	4448	8837	3222	7604	1982	6357	0728	5095	9459	3819	8175	2528
56	1333	5733	0129	4521	8910	3295	7677	2055	6430	0800	5168	9531	3891	8248	2601
57	1406	5806	0202	4594	8983	3368	7750	2128	6502	0873	5240	9604	3964	8321	2673
58	1480	5879	0275	4668	9056	3442	7823	2201	6575	0946	5313	9677	4037	8393	2746
59	1553	5952	0348	4741	9129	3515	7896	2274	6648	1019	5386	9749	4109	8466	2818
60	1626	6026	0422	4814	9203	3588	7969	2347	6721	1092	5459	9822	4182	8538	2891
"	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

17 Deg. Co-Tangent

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	"
10. 501	10. 500	10. 500	10. 499	10. 499	10. 499	10. 498	10. 498	10. 497	10. 497	10. 496	10. 496	10. 496	10. 495	10. 495	"
2777	8374	3974	9578	5186	0797	6412	2031	7653	3279	8908	4541	0178	5818	1462	60
2704	8300	3901	9505	5113	0724	6339	1958	7580	3206	8836	4469	0105	5745	1389	59
2630	8227	3828	9432	5040	0651	6266	1885	7507	3133	8763	4396	0033	5673	1317	58
2557	8154	3754	9359	4967	0578	6193	1812	7434	3060	8690	4323	9960	5600	1244	57
2483	8080	3681	9285	4893	0505	6120	1739	7361	2988	8617	4250	9887	5528	1171	56
2410	8007	3608	9212	4820	0432	6047	1666	7289	2915	8544	4178	9814	5455	1099	55
2336	7934	3534	9139	4747	0359	5974	1593	7216	2842	8472	4105	9742	5382	1026	54
2263	7860	3461	9066	4674	0286	5901	1520	7143	2769	8399	4032	9669	5310	0954	53
2190	7787	3388	8992	4601	0213	5828	1447	7070	2696	8326	3959	9596	5237	0881	52
2116	7714	3315	8919	4528	0139	5755	1374	6997	2623	8253	3887	9524	5164	0809	51
2043	7640	3241	8846	4454	0066	5682	1301	6924	2550	8180	3814	9451	5092	0736	50
1969	7567	3168	8773	4381	9993	5609	1228	6851	2477	8108	3741	9378	5019	0663	49
1896	7494	3095	8700	4308	9920	5536	1155	6778	2405	8035	3668	9306	4947	0591	48
1823	7420	3021	8626	4235	9847	5463	1082	6705	2332	7962	3596	9233	4874	0518	47
1749	7347	2948	8553	4162	9774	5390	1009	6632	2259	7889	3523	9160	4801	0446	46
1676	7274	2875	8480	4089	9701	5317	0936	6559	2186	7816	3450	9088	4729	0373	45
1602	7200	2802	8407	4015	9628	5244	0863	6486	2113	7744	3377	9015	4656	0301	44
1529	7127	2728	8333	3942	9555	5171	0790	6413	2040	7671	3305	8942	4583	0228	43
1456	7054	2655	8260	3869	9482	5098	0717	6341	1967	7598	3232	8870	4511	0156	42
1382	6980	2582	8187	3796	9408	5025	0644	6268	1895	7525	3159	8797	4438	0083	41
1309	6907	2509	8114	3723	9335	4952	0571	6195	1822	7452	3087	8724	4366	0010	40
1235	6834	2435	8041	3650	9262	4878	0498	6122	1749	7380	3014	8652	4293	9938	39
1162	6760	2362	7967	3576	9189	4805	0425	6049	1676	7307	2941	8579	4220	9865	38
1089	6687	2289	7894	3503	9116	4732	0352	5976	1603	7234	2868	8506	4148	9793	37
1015	6614	2215	7821	3430	9043	4659	0279	5903	1530	7161	2796	8434	4075	9720	36
0942	6540	2142	7748	3357	8970	4586	0206	5830	1457	7088	2723	8361	4003	9648	35
0868	6467	2069	7675	3284	8897	4513	0133	5757	1385	7016	2650	8288	3930	9575	34
0795	6394	1996	7601	3211	8824	4440	0061	5684	1312	6943	2577	8216	3857	9503	33
0722	6320	1922	7528	3138	8751	4367	9988	5611	1239	6870	2505	8143	3785	9430	32
0648	6247	1849	7455	3064	8678	4294	9915	5539	1166	6797	2432	8070	3712	9357	31
0575	6174	1776	7382	2991	8604	4221	9842	5466	1093	6724	2359	7998	3639	9285	30
0502	6100	1703	7309	2918	8531	4148	9769	5393	1020	6652	2286	7925	3567	9212	29
0428	6027	1629	7235	2845	8458	4075	9696	5320	0948	6579	2214	7852	3494	9140	28
0355	5954	1556	7162	2772	8385	4002	9623	5247	0875	6506	2141	7780	3422	9067	27
0281	5880	1483	7089	2699	8312	3929	9550	5174	0802	6433	2068	7707	3349	8995	26
0208	5807	1409	7016	2626	8239	3856	9477	5101	0729	6361	1996	7634	3276	8922	25
0135	5734	1336	6943	2552	8166	3783	9404	5028	0656	6288	1923	7562	3204	8850	24
0061	5660	1263	6869	2479	8093	3710	9331	4955	0583	6215	1850	7489	3131	8777	23
9988	5587	1190	6796	2406	8020	3637	9258	4882	0511	6142	1777	7416	3059	8705	22
9914	5514	1116	6723	2333	7947	3564	9185	4810	0438	6069	1705	7344	2986	8632	21
9841	5440	1043	6650	2260	7874	3491	9112	4737	0365	5997	1632	7271	2913	8560	20
9768	5367	0970	6577	2187	7801	3418	9039	4664	0292	5924	1559	7198	2841	8487	19
9694	5294	0897	6503	2114	7728	3345	8966	4591	0219	5851	1487	7126	2768	8414	18
9621	5220	0823	6430	2040	7654	3272	8893	4518	0146	5778	1414	7053	2696	8342	17
9548	5147	0750	6357	1967	7581	3199	8820	4445	0074	5706	1341	6980	2623	8269	16
9474	5074	0677	6284	1894	7508	3126	8747	4372	0001	5633	1268	6908	2551	8197	15
9401	5000	0604	6211	1821	7435	3053	8674	4299	9928	5560	1196	6835	2478	8124	14
9327	4927	0530	6137	1748	7362	2980	8601	4226	9855	5487	1123	6762	2405	8052	13
9254	4854	0457	6064	1675	7289	2907	8528	4154	9782	5414	1050	6690	2333	7979	12
9181	4781	0384	5991	1602	7216	2834	8456	4081	9709	5342	0978	6617	2260	7907	11
9107	4707	0311	5918	1529	7143	2761	8383	4008	9637	5269	0905	6544	2188	7834	10
9034	4634	0237	5845	1455	7070	2688	8310	3935	9564	5196	0832	6472	2115	7762	9
8961	4561	0164	5771	1382	6997	2615	8237	3862	9491	5123	0760	6399	2042	7689	8
8887	4487	0091	5698	1309	6924	2542	8164	3789	9418	5051	0687	6327	1970	7617	7
8814	4414	0018	5625	1236	6851	2469	8091	3716	9345	4978	0614	6254	1897	7544	6
8741	4341	9944	5552	1163	6778	2396	8018	3643	9272	4905	0541	6181	1825	7472	5
8667	4267	9871	5479	1090	6705	2323	7945	3570	9200	4832	0469	6109	1752	7399	4
8594	4194	9798	5406	1017	6632	2250	7872	3498	9127	4760	0396	6036	1679	7327	3
8520	4121	9725	5332	0944	6558	2177	7799	3425	9054	4687	0323	5963	1607	7254	2
8447	4048	9652	5259	0871	6485	2104	7726	3352	8981	4614	0251	5891	1534	7182	1
8374	3974	9578	5186	0797	6412	2031	7653	3279	8908	4541	0178	5818	1462	7109	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	"

Co-Tangent Deg. 72

Tangent Deg. 72

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	9.484	9.484	9.484	9.485	9.485	9.486	9.486	9.486	9.487	9.487	9.488	9.488	9.488	9.489	9.489
0	1066	5010	8951	2888	6820	0749	4674	8595	2512	6426	0335	4240	8142	2040	5934
1	1131	5076	9017	2953	6886	0815	4740	8661	2578	6491	0400	4306	8207	2105	5999
2	1197	5142	9082	3019	6951	0880	4805	8726	2643	6556	0465	4371	8272	2170	6063
3	1263	5207	9148	3084	7017	0946	4870	8791	2708	6621	0530	4436	8337	2235	6128
4	1329	5273	9214	3150	7083	1011	4936	8857	2773	6686	0596	4501	8402	2300	6193
5	1395	5339	9279	3216	7148	1077	5001	8922	2839	6752	0661	4566	8467	2364	6258
6	1460	5405	9345	3281	7214	1142	5067	8987	2904	6817	0726	4631	8532	2429	6323
7	1526	5470	9410	3347	7279	1207	5132	9053	2969	6882	0791	4696	8597	2494	6388
8	1592	5536	9476	3412	7345	1273	5197	9118	3034	6947	0856	4761	8662	2559	6453
9	1658	5602	9542	3478	7410	1338	5263	9183	3100	7012	0921	4826	8727	2624	6517
10	1723	5667	9607	3543	7476	1404	5328	9248	3165	7078	0986	4891	8792	2689	6582
11	1789	5733	9673	3609	7541	1469	5393	9314	3230	7143	1051	4956	8857	2754	6647
12	1855	5799	9739	3675	7607	1535	5459	9379	3295	7208	1116	5021	8922	2819	6712
13	1921	5864	9804	3740	7672	1600	5524	9444	3361	7273	1182	5086	8987	2884	6777
14	1986	5930	9870	3806	7738	1666	5590	9510	3426	7338	1247	5151	9052	2949	6842
15	2052	5996	9936	3871	7803	1731	5655	9575	3491	7403	1312	5216	9117	3014	6907
16	2118	6062	0001	3937	7869	1796	5720	9640	3556	7469	1377	5281	9182	3079	6971
17	2184	6127	0067	4002	7934	1862	5786	9706	3622	7534	1442	5346	9247	3143	7036
18	2249	6193	0132	4068	8000	1927	5851	9771	3687	7599	1507	5411	9312	3208	7101
19	2315	6259	0198	4133	8065	1993	5916	9836	3752	7664	1572	5476	9377	3273	7166
20	2381	6324	0264	4199	8131	2058	5982	9901	3817	7729	1637	5541	9442	3338	7231
21	2447	6390	0329	4265	8196	2124	6047	9967	3883	7794	1702	5606	9507	3403	7296
22	2513	6456	0395	4330	8262	2189	6112	0032	3948	7860	1767	5672	9572	3468	7360
23	2578	6521	0461	4396	8327	2254	6178	0097	4013	7925	1833	5737	9637	3533	7425
24	2644	6587	0526	4461	8392	2320	6243	0163	4078	7990	1898	5802	9702	3598	7490
25	2710	6653	0592	4527	8458	2385	6309	0228	4143	8055	1963	5867	9767	3663	7555
26	2776	6718	0657	4592	8523	2451	6374	0293	4209	8120	2028	5932	9832	3728	7620
27	2841	6784	0723	4658	8589	2516	6439	0359	4274	8185	2093	5997	9897	3793	7685
28	2907	6850	0789	4723	8654	2581	6505	0424	4339	8251	2158	6062	9961	3857	7749
29	2973	6915	0854	4789	8720	2647	6570	0489	4404	8316	2223	6127	0026	3922	7814
30	3038	6981	0920	4855	8785	2712	6635	0554	4470	8381	2288	6192	0091	3987	7879
31	3104	7047	0985	4920	8851	2778	6701	0620	4535	8446	2353	6257	0156	4052	7944
32	3170	7112	1051	4986	8916	2843	6766	0685	4600	8511	2418	6322	0221	4117	8009
33	3236	7178	1117	5051	8982	2909	6831	0750	4665	8576	2484	6387	0286	4182	8074
34	3301	7244	1182	5117	9047	2974	6897	0816	4730	8641	2549	6452	0351	4247	8138
35	3367	7310	1248	5182	9113	3039	6962	0881	4796	8707	2614	6517	0416	4312	8203
36	3433	7375	1313	5248	9178	3105	7027	0946	4861	8772	2679	6582	0481	4377	8268
37	3499	7441	1379	5313	9244	3170	7093	1011	4926	8837	2744	6647	0546	4441	8333
38	3564	7507	1445	5379	9309	3236	7158	1077	4991	8902	2809	6712	0611	4506	8398
39	3630	7572	1510	5444	9375	3301	7223	1142	5056	8967	2874	6777	0676	4571	8463
40	3696	7638	1576	5510	9440	3366	7289	1207	5122	9032	2939	6842	0741	4636	8527
41	3762	7704	1641	5576	9506	3432	7354	1272	5187	9097	3004	6907	0806	4701	8592
42	3827	7769	1707	5641	9571	3497	7419	1338	5252	9163	3069	6972	0871	4766	8657
43	3893	7835	1773	5707	9637	3563	7485	1403	5317	9228	3134	7037	0936	4831	8722
44	3959	7901	1838	5772	9702	3628	7550	1468	5383	9293	3199	7102	1001	4896	8787
45	4025	7966	1904	5838	9767	3693	7615	1534	5448	9358	3264	7167	1066	4961	8852
46	4090	8032	1969	5903	9833	3759	7681	1599	5513	9423	3330	7232	1131	5025	8916
47	4156	8097	2035	5969	9898	3824	7746	1664	5578	9488	3395	7297	1196	5090	8981
48	4222	8163	2101	6034	9964	3890	7811	1729	5643	9553	3460	7362	1261	5155	9046
49	4287	8229	2166	6100	0029	3955	7877	1795	5709	9619	3525	7427	1325	5220	9111
50	4353	8294	2232	6165	0095	4020	7942	1860	5774	9684	3590	7492	1390	5285	9176
51	4419	8360	2297	6231	0160	4086	8007	1925	5839	9749	3655	7557	1455	5350	9240
52	4485	8426	2363	6296	0226	4151	8073	1990	5904	9814	3720	7622	1520	5415	9305
53	4550	8491	2429	6362	0291	4217	8138	2056	5969	9879	3785	7687	1585	5480	9370
54	4616	8557	2494	6427	0357	4282	8203	2121	6035	9944	3850	7752	1650	5544	9435
55	4682	8623	2560	6493	0422	4347	8269	2186	6100	0009	3915	7817	1715	5609	9500
56	4747	8688	2625	6558	0488	4413	8334	2251	6165	0075	3980	7882	1780	5674	9564
57	4813	8754	2691	6624	0553	4478	8399	2317	6230	0140	4045	7947	1845	5739	9629
58	4879	8820	2757	6689	0618	4544	8465	2382	6295	0205	4110	8012	1910	5804	9694
59	4945	8885	2822	6755	0684	4609	8530	2447	6360	0270	4175	8077	1975	5869	9759
60	5010	8951	2888	6820	0749	4674	8595	2512	6426	0335	4240	8142	2040	5934	9824
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
	9.978	9.978	9.978	9.978	9.978	9.978	9.978	9.978	9.978	9.978	9.978	9.978	9.978	9.978	9.978	″
0	8175	7770	7365	6960	6554	6148	5741	5334	4927	4519	4111	3702	3293	2883	2474	60
1	8168	7763	7358	6953	6547	6141	5734	5327	4920	4512	4104	3695	3286	2877	2467	59
2	8161	7757	7352	6946	6540	6134	5728	5320	4913	4505	4097	3688	3279	2870	2460	58
3	8154	7750	7345	6939	6534	6127	5721	5314	4906	4498	4090	3681	3272	2863	2453	57
4	8148	7743	7338	6933	6527	6121	5714	5307	4899	4492	4083	3675	3266	2856	2446	56
5	8141	7736	7331	6926	6520	6114	5707	5300	4893	4485	4077	3668	3259	2849	2439	55
6	8134	7730	7325	6919	6513	6107	5700	5293	4886	4478	4070	3661	3252	2842	2433	54
7	8128	7723	7318	6912	6507	6100	5694	5287	4879	4471	4063	3654	3245	2836	2426	53
8	8121	7716	7311	6906	6500	6094	5687	5280	4872	4464	4056	3647	3238	2829	2419	52
9	8114	7709	7304	6899	6493	6087	5680	5273	4865	4458	4049	3641	3231	2822	2412	51
10	8107	7703	7298	6892	6486	6080	5673	5266	4859	4451	4042	3634	3225	2815	2405	50
11	8101	7696	7291	6885	6479	6073	5666	5259	4852	4444	4036	3627	3218	2808	2398	49
12	8094	7689	7284	6879	6473	6066	5660	5253	4845	4437	4029	3620	3211	2801	2392	48
13	8087	7682	7277	6872	6466	6060	5653	5246	4838	4430	4022	3613	3204	2795	2385	47
14	8080	7676	7271	6865	6459	6053	5646	5239	4832	4424	4015	3606	3197	2788	2378	46
15	8074	7669	7264	6858	6452	6046	5639	5232	4825	4417	4008	3600	3191	2781	2371	45
16	8067	7662	7257	6852	6446	6039	5633	5225	4818	4410	4002	3593	3184	2774	2364	44
17	8060	7655	7250	6845	6439	6033	5626	5219	4811	4403	3995	3586	3177	2767	2357	43
18	8053	7649	7244	6838	6432	6026	5619	5212	4804	4396	3988	3579	3170	2760	2350	42
19	8047	7642	7237	6831	6425	6019	5612	5205	4798	4390	3981	3572	3163	2754	2344	41
20	8040	7635	7230	6824	6419	6012	5605	5198	4791	4383	3974	3566	3156	2747	2337	40
21	8033	7628	7223	6818	6412	6005	5599	5192	4784	4376	3968	3559	3150	2740	2330	39
22	8026	7622	7217	6811	6405	5999	5592	5185	4777	4369	3961	3552	3143	2733	2323	38
23	8020	7615	7210	6804	6398	5992	5585	5178	4770	4362	3954	3545	3136	2726	2316	37
24	8013	7608	7203	6797	6391	5985	5578	5171	4764	4356	3947	3538	3129	2719	2309	36
25	8006	7601	7196	6791	6385	5978	5572	5164	4757	4349	3940	3532	3122	2713	2303	35
26	7999	7595	7189	6784	6378	5972	5565	5158	4750	4342	3934	3525	3115	2706	2296	34
27	7993	7588	7183	6777	6371	5965	5558	5151	4743	4335	3927	3518	3109	2699	2289	33
28	7986	7581	7176	6770	6364	5958	5551	5144	4736	4328	3920	3511	3102	2692	2282	32
29	7979	7574	7169	6764	6358	5951	5544	5137	4730	4322	3913	3504	3095	2685	2275	31
30	7972	7568	7162	6757	6351	5944	5538	5130	4723	4315	3906	3497	3088	2679	2268	30
31	7966	7561	7156	6750	6344	5938	5531	5124	4716	4308	3899	3491	3081	2672	2262	29
32	7959	7554	7149	6743	6337	5931	5524	5117	4709	4301	3893	3484	3075	2665	2255	28
33	7952	7547	7142	6737	6331	5924	5517	5110	4702	4294	3886	3477	3068	2658	2248	27
34	7945	7541	7135	6730	6324	5917	5510	5103	4696	4288	3879	3470	3061	2651	2241	26
35	7939	7534	7129	6723	6317	5911	5504	5096	4689	4281	3872	3463	3054	2644	2234	25
36	7932	7527	7122	6716	6310	5904	5497	5090	4682	4274	3865	3457	3047	2638	2227	24
37	7925	7520	7115	6710	6303	5897	5490	5083	4675	4267	3859	3450	3040	2631	2221	23
38	7919	7514	7108	6703	6297	5890	5483	5076	4668	4260	3852	3443	3034	2624	2214	22
39	7912	7507	7102	6696	6290	5883	5477	5069	4662	4253	3845	3436	3027	2617	2207	21
40	7905	7500	7095	6689	6283	5877	5470	5062	4655	4247	3838	3429	3020	2610	2200	20
41	7898	7493	7088	6682	6276	5870	5463	5056	4648	4240	3831	3422	3013	2603	2193	19
42	7892	7487	7081	6676	6270	5863	5456	5049	4641	4233	3825	3416	3006	2597	2186	18
43	7885	7480	7075	6669	6263	5856	5449	5042	4634	4226	3818	3409	2999	2590	2180	17
44	7878	7473	7068	6662	6256	5850	5443	5035	4628	4219	3811	3402	2993	2583	2173	16
45	7871	7466	7061	6655	6249	5843	5436	5029	4621	4213	3804	3395	2986	2576	2166	15
46	7865	7460	7054	6649	6243	5836	5429	5022	4614	4206	3797	3388	2979	2569	2159	14
47	7858	7453	7048	6642	6236	5829	5422	5015	4607	4199	3790	3382	2972	2562	2152	13
48	7851	7446	7041	6635	6229	5822	5415	5008	4600	4192	3784	3375	2965	2556	2145	12
49	7844	7439	7034	6628	6222	5816	5409	5001	4594	4185	3777	3368	2958	2549	2139	11
50	7838	7433	7027	6622	6215	5809	5402	4995	4587	4179	3770	3361	2952	2542	2132	10
51	7831	7426	7021	6615	6209	5802	5395	4988	4580	4172	3763	3354	2945	2535	2125	9
52	7824	7419	7014	6608	6202	5795	5388	4981	4573	4165	3756	3347	2938	2528	2118	8
53	7817	7412	7007	6601	6195	5789	5382	4974	4566	4158	3750	3341	2931	2521	2111	7
54	7811	7406	7000	6595	6188	5782	5375	4967	4560	4151	3743	3334	2924	2515	2104	6
55	7804	7399	6994	6588	6182	5775	5368	4961	4553	4145	3736	3327	2918	2508	2097	5
56	7797	7392	6987	6581	6175	5768	5361	4954	4546	4138	3729	3320	2911	2501	2091	4
57	7790	7385	6980	6574	6168	5761	5354	4947	4539	4131	3722	3313	2904	2494	2084	3
58	7784	7379	6973	6567	6161	5755	5348	4940	4532	4124	3716	3306	2897	2487	2077	2
59	7777	7372	6966	6561	6154	5748	5341	4933	4526	4117	3709	3300	2890	2480	2070	1
60	7770	7365	6960	6554	6148	5741	5334	4927	4519	4111	3702	3293	2883	2474	2063	0
	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

17 Deg. Tangent

"	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9. 505	9. 505	9. 506	9. 506	9. 507	9. 507	9. 507	9. 508	9. 508	9. 509	9. 509	9. 510	9. 510	9. 510	9. 511
0	2891	7240	1586	5928	0267	4602	8933	3261	7586	1907	6224	0539	4849	9156	3460
1	2963	7313	1658	6000	0339	4674	9005	3333	7658	1979	6296	0610	4921	9228	3532
2	3036	7385	1731	6073	0411	4746	9078	3405	7730	2051	6368	0682	4993	9300	3604
3	3109	7458	1803	6145	0483	4818	9150	3478	7802	2123	6440	0754	5065	9372	3675
4	3181	7530	1875	6217	0556	4891	9222	3550	7874	2195	6512	0826	5136	9443	3747
5	3254	7602	1948	6290	0628	4963	9294	3622	7946	2267	6584	0898	5208	9515	3819
6	3326	7675	2020	6362	0700	5035	9366	3694	8018	2339	6656	0970	5280	9587	3890
7	3399	7747	2093	6434	0772	5107	9438	3766	8090	2411	6728	1042	5352	9659	3962
8	3471	7820	2165	6507	0845	5179	9510	3838	8162	2483	6800	1114	5424	9730	4034
9	3544	7892	2237	6579	0917	5252	9583	3910	8234	2555	6872	1185	5496	9802	4105
10	3616	7965	2310	6651	0989	5324	9655	3982	8306	2627	6944	1257	5567	9874	4177
11	3689	8037	2382	6724	1062	5396	9727	4054	8378	2699	7016	1329	5639	9946	4249
12	3761	8110	2455	6796	1134	5468	9799	4126	8450	2771	7088	1401	5711	0017	4320
13	3834	8182	2527	6868	1206	5540	9871	4199	8522	2843	7159	1473	5783	0089	4392
14	3906	8254	2599	6941	1278	5613	9943	4271	8594	2915	7231	1545	5855	0161	4464
15	3979	8327	2672	7013	1351	5685	0016	4343	8666	2987	7303	1617	5926	0233	4536
16	4051	8399	2744	7085	1423	5757	0088	4415	8738	3059	7375	1688	5998	0304	4607
17	4124	8472	2816	7158	1495	5829	0160	4487	8810	3131	7447	1760	6070	0376	4679
18	4196	8544	2889	7230	1567	5901	0232	4559	8883	3203	7519	1832	6142	0448	4751
19	4269	8617	2961	7302	1640	5974	0304	4631	8955	3275	7591	1904	6214	0520	4822
20	4341	8689	3034	7375	1712	6046	0376	4703	9027	3346	7663	1976	6285	0591	4894
21	4414	8762	3106	7447	1784	6118	0448	4775	9099	3418	7735	2048	6357	0663	4966
22	4486	8834	3178	7519	1856	6190	0521	4847	9171	3490	7807	2120	6429	0735	5037
23	4559	8906	3251	7592	1929	6262	0593	4919	9243	3562	7879	2191	6501	0807	5109
24	4631	8979	3323	7664	2001	6335	0665	4992	9315	3634	7951	2263	6573	0878	5181
25	4704	9051	3395	7736	2073	6407	0737	5064	9387	3706	8022	2335	6644	0950	5252
26	4776	9124	3468	7808	2146	6479	0809	5136	9459	3778	8094	2407	6716	1022	5324
27	4849	9196	3540	7881	2218	6551	0881	5208	9531	3850	8166	2479	6788	1093	5396
28	4921	9269	3613	7953	2290	6623	0953	5280	9603	3922	8238	2551	6860	1165	5467
29	4994	9341	3685	8025	2362	6696	1026	5352	9675	3994	8310	2622	6931	1237	5539
30	5066	9413	3757	8098	2435	6768	1098	5424	9747	4066	8382	2694	7003	1309	5611
31	5139	9486	3830	8170	2507	6840	1170	5496	9819	4138	8454	2766	7075	1380	5682
32	5211	9558	3902	8242	2579	6912	1242	5568	9891	4210	8526	2838	7147	1452	5754
33	5283	9631	3974	8315	2651	6984	1314	5640	9963	4282	8598	2910	7219	1524	5826
34	5356	9703	4047	8387	2724	7057	1386	5712	0035	4354	8670	2982	7290	1596	5897
35	5428	9776	4119	8459	2796	7129	1458	5784	0107	4426	8741	3054	7362	1667	5969
36	5501	9848	4192	8532	2868	7201	1530	5856	0179	4498	8813	3125	7434	1739	6041
37	5573	9920	4264	8604	2940	7273	1603	5928	0251	4570	8885	3197	7506	1811	6112
38	5646	9993	4336	8676	3013	7345	1675	6001	0323	4642	8957	3269	7578	1882	6184
39	5718	0065	4409	8748	3085	7418	1747	6073	0395	4714	9029	3341	7649	1954	6256
40	5791	0138	4481	8821	3157	7490	1819	6145	0467	4786	9101	3413	7721	2026	6327
41	5863	0210	4553	8893	3229	7562	1891	6217	0539	4858	9173	3485	7793	2098	6399
42	5936	0283	4626	8965	3301	7634	1963	6289	0611	4930	9245	3556	7865	2169	6471
43	6008	0355	4698	9038	3374	7706	2035	6361	0683	5002	9317	3628	7936	2241	6542
44	6081	0427	4770	9110	3446	7778	2107	6433	0755	5073	9388	3700	8008	2313	6614
45	6153	0500	4843	9182	3518	7851	2180	6505	0827	5145	9460	3772	8080	2385	6686
46	6226	0572	4915	9255	3590	7923	2252	6577	0899	5217	9532	3844	8152	2456	6757
47	6298	0645	4987	9327	3663	7995	2324	6649	0971	5289	9604	3916	8223	2528	6829
48	6371	0717	5060	9399	3735	8067	2396	6721	1043	5361	9676	3987	8295	2600	6901
49	6443	0789	5132	9471	3807	8139	2468	6793	1115	5433	9748	4059	8367	2671	6972
50	6516	0862	5205	9544	3879	8212	2540	6865	1187	5505	9820	4131	8439	2743	7044
51	6588	0934	5277	9616	3952	8284	2612	6937	1259	5577	9892	4203	8511	2815	7116
52	6660	1007	5349	9688	4024	8356	2684	7009	1331	5649	9964	4275	8582	2886	7187
53	6733	1079	5422	9761	4096	8428	2757	7081	1403	5721	0035	4346	8654	2958	7259
54	6805	1151	5494	9833	4168	8500	2829	7154	1475	5793	0107	4418	8726	3030	7331
55	6878	1224	5566	9905	4241	8572	2901	7226	1547	5865	0179	4490	8798	3102	7402
56	6950	1296	5639	9977	4313	8645	2973	7298	1619	5937	0251	4562	8869	3173	7474
57	7023	1369	5711	0050	4385	8717	3045	7370	1691	6009	0323	4634	8941	3245	7545
58	7095	1441	5783	0122	4457	8789	3117	7442	1763	6081	0395	4706	9013	3317	7617
59	7168	1513	5856	0194	4529	8861	3189	7514	1835	6153	0467	4777	9085	3388	7689
60	7240	1586	5928	0267	4602	8933	3261	7586	1907	6224	0539	4849	9156	3460	7760
"	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Tangent Deg. 72

17 Deg. Co-Tangent

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	"
10. 494	10. 494	10. 493	10. 493	10. 492	10. 492	10. 492	10. 491	10. 491	10. 490	10. 490	10. 489	10. 489	10. 489	10. 488	
7109	2760	8414	4072	9733	5398	1067	6739	2414	8093	3776	9461	5151	0844	6540	60
7037	2687	8342	4000	9661	5326	0995	6667	2342	8021	3704	9390	5079	0772	6468	59
6964	2615	8269	3927	9589	5254	0922	6595	2270	7949	3632	9318	5007	0700	6396	58
6891	2542	8197	3855	9517	5182	0850	6522	2198	7877	3560	9246	4935	0628	6325	57
6819	2470	8125	3783	9444	5109	0778	6450	2126	7805	3488	9174	4864	0557	6253	56
6746	2398	8052	3710	9372	5037	0706	6378	2054	7733	3416	9102	4792	0485	6181	55
6674	2325	7980	3638	9300	4965	0634	6306	1982	7661	3344	9030	4720	0413	6110	54
6601	2253	7907	3566	9228	4893	0562	6234	1910	7589	3272	8958	4648	0341	6038	53
6529	2180	7835	3493	9155	4821	0490	6162	1838	7517	3200	8886	4576	0270	5966	52
6456	2108	7763	3421	9083	4748	0417	6090	1766	7445	3128	8815	4504	0198	5895	51
6384	2035	7690	3349	9011	4676	0345	6018	1694	7373	3056	8743	4433	0126	5823	50
6311	1963	7618	3276	8938	4604	0273	5946	1622	7301	2984	8671	4361	0054	5751	49
6239	1890	7545	3204	8866	4532	0201	5874	1550	7229	2912	8599	4289	9983	5680	48
6166	1818	7473	3132	8794	4460	0129	5801	1478	7157	2841	8527	4217	9911	5608	47
6094	1746	7401	3059	8722	4387	0057	5729	1406	7085	2769	8455	4145	9839	5536	46
6021	1673	7328	2987	8649	4315	9984	5657	1334	7013	2697	8383	4074	9767	5464	45
5949	1601	7256	2915	8577	4243	9912	5585	1262	6941	2625	8312	4002	9696	5393	44
5876	1528	7184	2842	8505	4171	9840	5513	1190	6869	2553	8240	3930	9624	5321	43
5804	1456	7111	2770	8433	4099	9768	5441	1117	6797	2481	8168	3858	9552	5249	42
5731	1383	7039	2698	8360	4026	9696	5369	1045	6725	2409	8096	3786	9480	5178	41
5659	1311	6966	2625	8288	3954	9624	5297	0973	6654	2337	8024	3715	9409	5106	40
5586	1238	6894	2553	8216	3882	9552	5225	0901	6582	2265	7952	3643	9337	5034	39
5514	1166	6822	2481	8144	3810	9479	5153	0829	6510	2193	7880	3571	9265	4963	38
5441	1094	6749	2408	8071	3738	9407	5081	0757	6438	2121	7809	3499	9193	4891	37
5369	1021	6677	2336	7999	3665	9335	5008	0685	6366	2049	7737	3427	9122	4819	36
5296	0949	6605	2264	7927	3593	9263	4936	0613	6294	1978	7665	3356	9050	4748	35
5224	0876	6532	2192	7854	3521	9191	4864	0541	6222	1906	7593	3284	8978	4676	34
5151	0804	6460	2119	7782	3449	9119	4792	0469	6150	1834	7521	3212	8907	4604	33
5079	0731	6387	2047	7710	3377	9047	4720	0397	6078	1762	7449	3140	8835	4533	32
5006	0659	6315	1975	7638	3304	8974	4648	0325	6006	1690	7378	3069	8763	4461	31
4934	0587	6243	1902	7565	3232	8902	4576	0253	5934	1618	7306	2997	8691	4389	30
4861	0514	6170	1830	7493	3160	8830	4504	0181	5862	1546	7234	2925	8620	4318	29
4789	0442	6098	1758	7421	3088	8758	4432	0109	5790	1474	7162	2853	8548	4246	28
4717	0369	6026	1685	7349	3016	8686	4360	0037	5718	1402	7090	2781	8476	4174	27
4644	0297	5953	1613	7276	2943	8614	4288	9965	5646	1330	7018	2710	8404	4103	26
4572	0224	5881	1541	7204	2871	8542	4216	9893	5574	1259	6946	2638	8333	4031	25
4499	0152	5808	1468	7132	2799	8470	4144	9821	5502	1187	6875	2566	8261	3959	24
4427	0080	5736	1396	7060	2727	8397	4072	9749	5430	1115	6803	2494	8189	3888	23
4354	0007	5664	1324	6987	2655	8325	3999	9677	5358	1043	6731	2422	8118	3816	22
4282	9935	5591	1252	6915	2582	8253	3927	9605	5286	0971	6659	2351	8046	3744	21
4209	9862	5519	1179	6843	2510	8181	3855	9533	5214	0899	6587	2279	7974	3673	20
4137	9790	5447	1107	6771	2438	8109	3783	9461	5142	0827	6515	2207	7902	3601	19
4064	9717	5374	1035	6699	2366	8037	3711	9389	5070	0755	6444	2135	7831	3529	18
3992	9645	5302	0962	6626	2294	7965	3639	9317	4998	0683	6372	2064	7759	3458	17
3919	9573	5230	0890	6554	2222	7893	3567	9245	4927	0612	6300	1992	7687	3386	16
3847	9500	5157	0818	6482	2149	7820	3495	9173	4855	0540	6228	1920	7615	3314	15
3774	9428	5085	0745	6410	2077	7748	3423	9101	4783	0468	6156	1848	7544	3243	14
3702	9355	5013	0673	6337	2005	7676	3351	9029	4711	0396	6084	1777	7472	3171	13
3629	9283	4940	0601	6265	1933	7604	3279	8957	4639	0324	6013	1705	7400	3099	12
3557	9211	4868	0529	6193	1861	7532	3207	8885	4567	0252	5941	1633	7329	3028	11
3484	9138	4795	0456	6121	1788	7460	3135	8813	4495	0180	5869	1561	7257	2956	10
3412	9066	4723	0384	6048	1716	7388	3063	8741	4423	0108	5797	1489	7185	2884	9
3340	8993	4651	0312	5976	1644	7316	2991	8669	4351	0036	5725	1418	7114	2813	8
3267	8921	4578	0239	5904	1572	7243	2919	8597	4279	9965	5654	1346	7042	2741	7
3195	8849	4506	0167	5832	1500	7171	2846	8525	4207	9893	5582	1274	6970	2669	6
3122	8776	4434	0095	5759	1428	7099	2774	8453	4135	9821	5510	1202	6898	2598	5
3050	8704	4361	0023	5687	1355	7027	2702	8381	4063	9749	5438	1131	6827	2526	4
2977	8631	4289	9950	5615	1283	6955	2630	8309	3991	9677	5366	1059	6755	2455	3
2905	8559	4217	9878	5543	1211	6883	2558	8237	3919	9605	5294	0987	6683	2383	2
2832	8487	4144	9806	5471	1139	6811	2486	8165	3847	9533	5223	0915	6612	2311	1
2760	8414	4072	9733	5398	1067	6739	2414	8093	3776	9461	5151	0844	6540	2240	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	"

Tangent Deg. 72

18 Deg. Sine

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9. 489	9. 490	9. 490	9. 491	9. 491	9. 491	9. 492	9. 492	9. 493	9. 493	9. 493	9. 494	9. 494	9. 495	9. 495
0	9824	3710	7592	1471	5345	9216	3083	6946	0806	4661	8513	2361	6205	0046	3883
1	9888	3775	7657	1535	5410	9281	3147	7011	0870	4725	8577	2425	6269	0110	3947
2	9953	3839	7721	1600	5474	9345	3212	7075	0934	4790	8641	2489	6333	0174	4010
3	0018	3904	7786	1664	5539	9409	3276	7139	0999	4854	8706	2553	6398	0238	4074
4	0083	3969	7851	1729	5603	9474	3341	7204	1063	4918	8770	2618	6462	0302	4138
5	0148	4033	7915	1794	5668	9538	3405	7268	1127	4982	8834	2682	6526	0366	4202
6	0212	4098	7980	1858	5732	9603	3470	7332	1191	5047	8898	2746	6590	0430	4266
7	0277	4163	8045	1923	5797	9667	3534	7397	1256	5111	8962	2810	6654	0494	4330
8	0342	4228	8109	1987	5862	9732	3598	7461	1320	5175	9026	2874	6718	0558	4394
9	0407	4292	8174	2052	5926	9796	3663	7525	1384	5239	9091	2938	6782	0622	4458
10	0472	4357	8239	2117	5991	9861	3727	7590	1449	5304	9155	3002	6846	0686	4522
11	0536	4422	8303	2181	6055	9925	3792	7654	1513	5368	9219	3066	6910	0750	4586
12	0601	4487	8368	2246	6120	9990	3856	7718	1577	5432	9283	3130	6974	0814	4650
13	0666	4551	8433	2310	6184	0054	3920	7783	1641	5496	9347	3194	7038	0878	4713
14	0731	4616	8497	2375	6249	0119	3985	7847	1706	5560	9411	3258	7102	0941	4777
15	0796	4681	8562	2440	6313	0183	4049	7911	1770	5625	9475	3323	7166	1005	4841
16	0860	4745	8627	2504	6378	0248	4114	7976	1834	5689	9540	3387	7230	1069	4905
17	0925	4810	8691	2569	6442	0312	4178	8040	1898	5753	9604	3451	7294	1133	4969
18	0990	4875	8756	2633	6507	0377	4242	8104	1963	5817	9668	3515	7358	1197	5033
19	1055	4940	8821	2698	6571	0441	4307	8169	2027	5881	9732	3579	7422	1261	5097
20	1119	5004	8885	2763	6636	0505	4371	8233	2091	5946	9796	3643	7486	1325	5161
21	1184	5069	8950	2827	6700	0570	4436	8297	2156	6010	9860	3707	7550	1389	5225
22	1249	5134	9015	2892	6765	0634	4500	8362	2220	6074	9924	3771	7614	1453	5289
23	1314	5198	9079	2956	6829	0699	4564	8426	2284	6138	9989	3835	7678	1517	5352
24	1379	5263	9144	3021	6894	0763	4629	8490	2348	6202	0053	3899	7742	1581	5416
25	1443	5328	9209	3085	6959	0828	4693	8555	2413	6267	0117	3963	7806	1645	5480
26	1508	5393	9273	3150	7023	0892	4758	8619	2477	6331	0181	4027	7870	1709	5544
27	1573	5457	9338	3215	7088	0957	4822	8683	2541	6395	0245	4092	7934	1773	5608
28	1638	5522	9403	3279	7152	1021	4886	8748	2605	6459	0309	4156	7998	1837	5672
29	1702	5587	9467	3344	7217	1086	4951	8812	2670	6523	0373	4220	8062	1901	5736
30	1767	5651	9532	3408	7281	1150	5015	8876	2734	6588	0438	4284	8126	1965	5800
31	1832	5716	9596	3473	7346	1214	5080	8941	2798	6652	0502	4348	8190	2029	5863
32	1897	5781	9661	3538	7410	1279	5144	9005	2862	6716	0566	4412	8254	2093	5927
33	1961	5846	9726	3602	7475	1343	5208	9069	2927	6780	0630	4476	8318	2157	5991
34	2026	5910	9790	3667	7539	1408	5273	9134	2991	6844	0694	4540	8382	2221	6055
35	2091	5975	9855	3731	7604	1472	5337	9198	3055	6909	0758	4604	8446	2284	6119
36	2156	6040	9920	3796	7668	1537	5401	9262	3119	6973	0822	4668	8510	2348	6183
37	2221	6104	9984	3860	7733	1601	5466	9327	3184	7037	0886	4732	8574	2412	6247
38	2285	6169	0049	3925	7797	1666	5530	9391	3248	7101	0951	4796	8638	2476	6311
39	2350	6234	0114	3990	7862	1730	5595	9455	3312	7165	1015	4860	8702	2540	6375
40	2415	6298	0178	4054	7926	1794	5659	9520	3376	7230	1079	4924	8766	2604	6438
41	2480	6363	0243	4119	7991	1859	5723	9584	3441	7294	1143	4988	8830	2668	6502
42	2544	6428	0307	4183	8055	1923	5788	9648	3505	7358	1207	5053	8894	2732	6566
43	2609	6493	0373	4248	8120	1988	5852	9713	3569	7422	1271	5117	8958	2796	6630
44	2674	6557	0437	4312	8184	2052	5916	9777	3633	7486	1335	5181	9022	2860	6694
45	2739	6622	0501	4377	8249	2117	5981	9841	3698	7550	1399	5245	9086	2924	6758
46	2803	6687	0566	4441	8313	2181	6045	9905	3762	7615	1464	5309	9150	2988	6822
47	2868	6751	0631	4506	8378	2246	6110	9970	3826	7679	1528	5373	9214	3052	6885
48	2933	6816	0695	4571	8442	2310	6174	0034	3890	7743	1592	5437	9278	3116	6949
49	2998	6881	0760	4635	8507	2374	6238	0098	3955	7807	1656	5501	9342	3180	7013
50	3062	6945	0824	4700	8571	2439	6303	0163	4019	7871	1720	5565	9406	3243	7077
51	3127	7010	0889	4764	8636	2503	6367	0227	4083	7936	1784	5629	9470	3307	7141
52	3192	7075	0954	4829	8700	2568	6431	0291	4147	8000	1848	5693	9534	3371	7205
53	3257	7139	1018	4893	8765	2632	6496	0356	4212	8064	1912	5757	9598	3435	7269
54	3321	7204	1083	4958	8829	2697	6560	0420	4276	8128	1977	5821	9662	3499	7333
55	3386	7269	1148	5022	8894	2761	6624	0484	4340	8192	2041	5885	9726	3563	7396
56	3451	7333	1212	5087	8958	2825	6689	0548	4404	8256	2105	5949	9790	3627	7460
57	3516	7398	1277	5152	9023	2890	6753	0613	4469	8321	2169	6013	9854	3691	7524
58	3580	7463	1341	5216	9087	2954	6818	0677	4533	8385	2233	6077	9918	3755	7588
59	3645	7527	1406	5281	9152	3019	6882	0741	4597	8449	2297	6141	9982	3819	7652
60	3710	7592	1471	5345	9216	3083	6946	0806	4661	8513	2361	6205	0046	3883	7716
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Sine Deg. 71

18 Deg. Co-Sine

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
9. 978	9. 978	9. 978	9. 978	9. 978	9. 978	9. 977	9. 977	9. 977	9. 977	9. 977	9. 977	9. 977	9. 977	9. 977	″
2063	1653	1241	0830	0418	0006	9593	9180	8766	8353	7938	7523	7108	6693	6277	60
2056	1646	1235	0823	0411	9999	9586	9173	8760	8346	7931	7517	7101	6686	6270	59
2050	1639	1228	0816	0404	9992	9579	9166	8753	8339	7924	7510	7094	6679	6263	58
2043	1632	1221	0809	0397	9985	9572	9159	8746	8332	7917	7503	7088	6672	6256	57
2036	1625	1214	0803	0391	9978	9566	9152	8739	8325	7911	7496	7081	6665	6249	56
2029	1618	1207	0796	0384	9971	9559	9146	8732	8318	7904	7489	7074	6658	6242	55
2022	1611	1200	0789	0377	9965	9552	9139	8725	8311	7897	7482	7067	6651	6235	54
2015	1605	1194	0782	0370	9958	9545	9132	8718	8304	7890	7475	7060	6644	6228	53
2009	1598	1187	0775	0363	9951	9538	9125	8711	8297	7883	7468	7053	6637	6221	52
2002	1591	1180	0768	0356	9944	9531	9118	8704	8290	7876	7461	7046	6630	6214	51
1995	1584	1173	0761	0349	9937	9524	9111	8697	8283	7869	7454	7039	6623	6207	50
1988	1577	1166	0755	0343	9930	9517	9104	8691	8277	7862	7447	7032	6616	6200	49
1981	1570	1159	0748	0336	9923	9511	9097	8684	8270	7855	7440	7025	6610	6194	48
1974	1564	1152	0741	0329	9916	9504	9090	8677	8263	7848	7434	7018	6603	6187	47
1967	1557	1146	0734	0322	9910	9497	9084	8670	8256	7841	7427	7011	6596	6180	46
1961	1550	1139	0727	0315	9903	9490	9077	8663	8249	7835	7420	7004	6589	6173	45
1954	1543	1132	0720	0308	9896	9483	9070	8656	8242	7828	7413	6998	6582	6166	44
1947	1536	1125	0713	0301	9889	9476	9063	8649	8235	7821	7406	6991	6575	6159	43
1940	1529	1118	0706	0294	9882	9469	9056	8642	8228	7814	7399	6984	6568	6152	42
1933	1522	1111	0700	0288	9875	9462	9049	8635	8221	7807	7392	6977	6561	6145	41
1926	1516	1104	0693	0281	9868	9455	9042	8629	8214	7800	7385	6970	6554	6138	40
1920	1509	1098	0686	0274	9861	9449	9035	8622	8208	7793	7378	6963	6547	6131	39
1913	1502	1091	0679	0267	9855	9442	9028	8615	8201	7786	7371	6956	6540	6124	38
1906	1495	1084	0672	0260	9848	9435	9022	8608	8194	7779	7364	6949	6533	6117	37
1899	1488	1077	0665	0253	9841	9428	9015	8601	8187	7772	7357	6942	6526	6110	36
1892	1481	1070	0658	0246	9834	9421	9008	8594	8180	7765	7351	6935	6519	6103	35
1885	1474	1063	0652	0239	9827	9414	9001	8587	8173	7759	7344	6928	6513	6096	34
1879	1468	1056	0645	0233	9820	9407	8994	8580	8166	7752	7337	6921	6506	6089	33
1872	1461	1050	0638	0226	9813	9400	8987	8573	8159	7745	7330	6914	6499	6083	32
1865	1454	1043	0631	0219	9806	9393	8980	8566	8152	7738	7323	6907	6492	6076	31
1858	1447	1036	0624	0212	9799	9387	8973	8560	8145	7731	7316	6901	6485	6069	30
1851	1440	1029	0617	0205	9793	9380	8966	8553	8138	7724	7309	6894	6478	6062	29
1844	1433	1022	0610	0198	9786	9373	8959	8546	8132	7717	7302	6887	6471	6055	28
1837	1427	1015	0604	0191	9779	9366	8953	8539	8125	7710	7295	6880	6464	6048	27
1831	1420	1008	0597	0185	9772	9359	8946	8532	8118	7703	7288	6873	6457	6041	26
1824	1413	1002	0590	0178	9765	9352	8939	8525	8111	7696	7281	6866	6450	6034	25
1817	1406	0995	0583	0171	9758	9345	8932	8518	8104	7689	7274	6859	6443	6027	24
1810	1399	0988	0576	0164	9751	9338	8925	8511	8097	7682	7267	6852	6436	6020	23
1803	1392	0981	0569	0157	9744	9331	8918	8504	8090	7676	7261	6845	6429	6013	22
1796	1385	0974	0562	0150	9738	9325	8911	8497	8083	7669	7254	6838	6422	6006	21
1790	1379	0967	0555	0143	9731	9318	8904	8491	8076	7662	7247	6831	6415	5999	20
1783	1372	0960	0549	0136	9724	9311	8897	8484	8069	7655	7240	6824	6409	5992	19
1776	1365	0953	0542	0130	9717	9304	8891	8477	8063	7648	7233	6817	6402	5985	18
1769	1358	0947	0535	0123	9710	9297	8884	8470	8056	7641	7226	6811	6395	5978	17
1762	1351	0940	0528	0116	9703	9290	8877	8463	8049	7634	7219	6804	6388	5971	16
1755	1344	0933	0521	0109	9696	9283	8870	8456	8042	7627	7212	6797	6381	5965	15
1748	1337	0926	0514	0102	9689	9276	8863	8449	8035	7620	7205	6790	6374	5958	14
1742	1331	0919	0507	0095	9683	9270	8856	8442	8028	7613	7198	6783	6367	5951	13
1735	1324	0912	0501	0088	9676	9263	8849	8435	8021	7606	7191	6776	6360	5944	12
1728	1317	0905	0494	0081	9669	9256	8842	8428	8014	7600	7184	6769	6353	5937	11
1721	1310	0899	0487	0075	9662	9249	8835	8422	8007	7593	7178	6762	6346	5930	10
1714	1303	0892	0480	0068	9655	9242	8829	8415	8000	7586	7171	6755	6339	5923	9
1707	1296	0885	0473	0061	9648	9235	8822	8408	7993	7579	7164	6748	6332	5916	8
1701	1289	0878	0466	0054	9641	9228	8815	8401	7987	7572	7157	6741	6325	5909	7
1694	1283	0871	0459	0047	9634	9221	8808	8394	7980	7565	7150	6734	6318	5902	6
1687	1276	0864	0452	0040	9627	9214	8801	8387	7973	7558	7143	6727	6311	5895	5
1680	1269	0857	0446	0033	9621	9208	8794	8380	7966	7551	7136	6720	6305	5888	4
1673	1262	0851	0439	0026	9614	9201	8787	8373	7959	7544	7129	6714	6298	5881	3
1666	1255	0844	0432	0020	9607	9194	8780	8366	7952	7537	7122	6707	6291	5874	2
1659	1248	0837	0425	0013	9600	9187	8773	8359	7945	7530	7115	6700	6284	5867	1
1653	1241	0830	0418	0006	9593	9180	8766	8353	7938	7523	7108	6693	6277	5860	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Sine Deg. 71

18 Deg. Tangent

"	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
	9	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.
	511	512	512	513	513	513	514	514	515	515	516	516	516	517	517
0	7760	2057	6351	0641	4927	9210	3490	7766	2039	6309	0575	4838	9097	3353	7606
1	7832	2129	6422	0712	4999	9282	3561	7838	2110	6380	0646	4909	9168	3424	7677
2	7904	2200	6494	0784	5070	9353	3633	7909	2182	6451	0717	4980	9239	3495	7748
3	7975	2272	6565	0855	5141	9424	3704	7980	2253	6522	0788	5051	9310	3566	7818
4	8047	2344	6637	0926	5213	9496	3775	8051	2324	6593	0859	5122	9381	3637	7889
5	8119	2415	6708	0998	5284	9567	3846	8122	2395	6664	0930	5193	9452	3708	7960
6	8190	2487	6780	1069	5356	9638	3918	8194	2466	6736	1001	5264	9523	3779	8031
7	8262	2558	6851	1141	5427	9710	3989	8265	2537	6807	1072	5335	9594	3850	8102
8	8333	2630	6923	1212	5498	9781	4060	8336	2609	6878	1143	5406	9665	3920	8173
9	8405	2701	6994	1284	5570	9852	4132	8407	2680	6949	1215	5477	9736	3991	8244
10	8477	2773	7066	1355	5641	9924	4203	8479	2751	7020	1286	5548	9807	4062	8314
11	8548	2845	7137	1427	5713	9995	4274	8550	2822	7091	1357	5619	9878	4133	8385
12	8620	2916	7209	1498	5784	0066	4346	8621	2893	7162	1428	5690	9949	4204	8456
13	8692	2988	7280	1570	5855	0138	4417	8692	2965	7233	1499	5761	0020	4275	8527
14	8763	3059	7352	1641	5927	0209	4488	8764	3036	7304	1570	5832	0090	4346	8598
15	8835	3131	7423	1713	5998	0280	4559	8835	3107	7376	1641	5903	0161	4417	8669
16	8907	3202	7495	1784	6070	0352	4631	8906	3178	7447	1712	5974	0232	4488	8739
17	8978	3274	7566	1855	6141	0423	4702	8977	3249	7518	1783	6045	0303	4558	8810
18	9050	3346	7638	1927	6212	0495	4773	9049	3320	7589	1854	6116	0374	4629	8881
19	9121	3417	7709	1998	6284	0566	4845	9120	3392	7660	1925	6187	0445	4700	8952
20	9193	3489	7781	2070	6355	0637	4916	9191	3463	7731	1996	6258	0516	4771	9023
21	9265	3560	7852	2141	6427	0709	4987	9262	3534	7802	2067	6329	0587	4842	9094
22	9336	3632	7924	2213	6498	0780	5058	9333	3605	7873	2138	6400	0658	4913	9164
23	9408	3703	7995	2284	6569	0851	5130	9405	3676	7945	2209	6471	0729	4984	9235
24	9480	3775	8067	2356	6641	0923	5201	9476	3747	8016	2280	6542	0800	5055	9306
25	9551	3847	8139	2427	6712	0994	5272	9547	3819	8087	2351	6613	0871	5126	9377
26	9623	3918	8210	2498	6784	1065	5343	9618	3890	8158	2423	6684	0942	5196	9448
27	9694	3990	8282	2570	6855	1137	5415	9690	3961	8229	2494	6755	1013	5267	9519
28	9766	4061	8353	2641	6926	1208	5486	9761	4032	8300	2565	6826	1084	5338	9589
29	9838	4133	8425	2713	6998	1279	5557	9832	4103	8371	2636	6897	1155	5409	9660
30	9909	4204	8496	2784	7069	1351	5629	9903	4174	8442	2707	6968	1226	5480	9731
31	9981	4276	8568	2856	7140	1422	5700	9974	4246	8513	2778	7039	1297	5551	9802
32	0052	4347	8639	2927	7212	1493	5771	0046	4317	8584	2849	7110	1367	5622	9873
33	0124	4419	8711	2999	7283	1565	5842	0117	4388	8656	2920	7181	1438	5693	9943
34	0196	4491	8782	3070	7355	1636	5914	0188	4459	8727	2991	7252	1509	5763	0014
35	0267	4562	8854	3141	7426	1707	5985	0259	4530	8798	3062	7323	1580	5834	0085
36	0339	4634	8925	3213	7497	1778	6056	0330	4601	8869	3133	7394	1651	5905	0156
37	0411	4705	8996	3284	7569	1850	6127	0402	4672	8940	3204	7465	1722	5976	0227
38	0482	4777	9068	3356	7640	1921	6199	0473	4744	9011	3275	7536	1793	6047	0298
39	0554	4848	9139	3427	7712	1992	6270	0544	4815	9082	3346	7607	1864	6118	0368
40	0625	4920	9211	3499	7783	2064	6341	0615	4886	9153	3417	7678	1935	6189	0439
41	0697	4991	9282	3570	7854	2135	6412	0686	4957	9224	3488	7749	2006	6260	0510
42	0769	5063	9354	3642	7926	2206	6484	0758	5028	9295	3559	7820	2077	6330	0581
43	0840	5134	9425	3713	7997	2278	6555	0829	5099	9367	3630	7891	2148	6401	0652
44	0912	5206	9497	3784	8068	2349	6626	0900	5171	9438	3701	7962	2219	6472	0722
45	0983	5278	9568	3856	8140	2420	6698	0971	5242	9509	3772	8033	2289	6543	0793
46	1055	5349	9640	3927	8211	2492	6769	1042	5313	9580	3843	8104	2360	6614	0864
47	1127	5421	9711	3999	8283	2563	6840	1114	5384	9651	3914	8175	2431	6685	0935
48	1198	5492	9783	4070	8354	2634	6911	1185	5455	9722	3985	8246	2502	6756	1006
49	1270	5564	9854	4142	8425	2706	6983	1256	5526	9793	4056	8316	2573	6826	1076
50	1341	5635	9926	4213	8497	2777	7054	1327	5597	9864	4127	8387	2644	6897	1147
51	1413	5707	9997	4284	8568	2848	7125	1398	5669	9935	4198	8458	2715	6968	1218
52	1485	5778	0069	4356	8639	2920	7196	1470	5740	0006	4270	8529	2786	7039	1289
53	1556	5850	0140	4427	8711	2991	7268	1541	5811	0077	4341	8600	2857	7110	1360
54	1628	5921	0212	4499	8782	3062	7339	1612	5882	0148	4412	8671	2928	7181	1430
55	1699	5993	0283	4570	8853	3133	7410	1683	5953	0220	4483	8742	2999	7252	1501
56	1771	5064	0355	4641	8925	3205	7481	1754	6024	0291	4554	8813	3070	7322	1572
57	1842	6136	0426	4713	8996	3276	7553	1826	6095	0362	4625	8884	3140	7393	1643
58	1914	6208	0498	4784	9068	3347	7624	1897	6166	0433	4696	8955	3211	7464	1714
59	1986	6279	0569	4856	9139	3419	7695	1968	6238	0504	4767	9026	3282	7535	1784
60	2057	6351	0641	4927	9210	3490	7766	2039	6309	0575	4838	9097	3353	7606	1855
"	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Tangent Deg. 71

18 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	"
10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10	
488	487	487	486	486	486	485	485	484	484	483	483	483	482	482	
2240	7943	3649	9359	5073	0790	6510	2234	7961	3691	9425	5162	0903	6647	2394	60
2168	7871	3578	9288	5001	0718	6439	2162	7890	3620	9354	5091	0832	6576	2323	59
2096	7800	3506	9216	4930	0647	6367	2091	7818	3549	9283	5020	0761	6505	2252	58
2025	7728	3435	9145	4859	0576	6296	2020	7747	3478	9212	4949	0690	6434	2182	57
1953	7656	3363	9074	4787	0504	6225	1949	7676	3407	9141	4878	0619	6363	2111	56
1881	7585	3292	9002	4716	0433	6154	1878	7605	3336	9070	4807	0548	6292	2040	55
1810	7513	3220	8931	4644	0362	6082	1806	7534	3264	8999	4736	0477	6221	1969	54
1738	7442	3149	8859	4573	0290	6011	1735	7463	3193	8928	4665	0406	6150	1898	53
1667	7370	3077	8788	4502	0219	5940	1664	7391	3122	8857	4594	0335	6080	1827	52
1595	7299	3006	8716	4430	0148	5868	1593	7320	3051	8785	4523	0264	6009	1756	51
1523	7227	2934	8645	4359	0076	5797	1521	7249	2980	8714	4452	0193	5938	1686	50
1452	7155	2863	8573	4287	0005	5726	1450	7178	2909	8643	4381	0122	5867	1615	49
1380	7084	2791	8502	4216	9934	5654	1379	7107	2838	8572	4310	0051	5796	1544	48
1308	7012	2720	8430	4145	9862	5583	1308	7035	2767	8501	4239	9980	5725	1473	47
1237	6941	2648	8359	4073	9791	5512	1236	6964	2696	8430	4168	9910	5654	1402	46
1165	6869	2577	8287	4002	9720	5441	1165	6893	2624	8359	4097	9839	5583	1331	45
1093	6798	2505	8216	3930	9648	5369	1094	6822	2553	8288	4026	9768	5512	1261	44
1022	6726	2434	8145	3859	9577	5298	1023	6751	2482	8217	3955	9697	5442	1190	43
0950	6654	2362	8073	3788	9505	5227	0951	6680	2411	8146	3884	9626	5371	1119	42
0879	6583	2291	8002	3716	9434	5155	0880	6608	2340	8075	3813	9555	5300	1048	41
0807	6511	2219	7930	3645	9363	5084	0809	6537	2269	8004	3742	9484	5229	0977	40
0735	6440	2148	7859	3573	9291	5013	0738	6466	2198	7933	3671	9413	5158	0906	39
0664	6368	2076	7787	3502	9220	4942	0667	6395	2127	7862	3600	9342	5087	0836	38
0592	6297	2005	7716	3431	9149	4870	0595	6324	2055	7791	3529	9271	5016	0765	37
0520	6225	1933	7644	3359	9077	4799	0524	6253	1984	7720	3458	9200	4945	0694	36
0449	6153	1861	7573	3288	9006	4728	0453	6181	1913	7649	3387	9129	4874	0623	35
0377	6082	1790	7502	3216	8935	4657	0382	6110	1842	7577	3316	9058	4804	0552	34
0306	6010	1718	7430	3145	8863	4585	0310	6039	1771	7506	3245	8987	4733	0481	33
0234	5939	1647	7359	3074	8792	4514	0239	5968	1700	7435	3174	8916	4662	0411	32
0162	5867	1575	7287	3002	8721	4443	0168	5897	1629	7364	3103	8845	4591	0340	31
0091	5796	1504	7216	2931	8649	4371	0097	5826	1558	7293	3032	8774	4520	0269	30
0019	5724	1432	7144	2860	8578	4300	0026	5754	1487	7222	2961	8703	4449	0198	29
9948	5653	1361	7073	2788	8507	4229	9954	5683	1416	7151	2890	8633	4378	0127	28
9876	5581	1289	7001	2717	8435	4158	9883	5612	1344	7080	2819	8562	4307	0057	27
9804	5509	1218	6930	2645	8364	4086	9812	5541	1273	7009	2748	8491	4237	9986	26
9733	5438	1146	6859	2574	8293	4015	9741	5470	1202	6938	2677	8420	4166	9915	25
9661	5366	1075	6787	2503	8222	3944	9670	5399	1131	6867	2606	8349	4095	9844	24
9589	5295	1004	6716	2431	8150	3873	9598	5328	1060	6796	2535	8278	4024	9773	23
9518	5223	0932	6644	2360	8079	3801	9527	5256	0989	6725	2464	8207	3953	9702	22
9446	5152	0861	6573	2288	8008	3730	9456	5185	0918	6654	2393	8136	3882	9632	21
9375	5080	0789	6501	2217	7936	3659	9385	5114	0847	6583	2322	8065	3811	9561	20
9303	5009	0718	6430	2146	7865	3588	9314	5043	0776	6512	2251	7994	3740	9490	19
9231	4937	0646	6358	2074	7794	3516	9242	4972	0705	6441	2180	7923	3670	9419	18
9160	4866	0575	6287	2003	7722	3445	9171	4901	0633	6370	2109	7852	3599	9348	17
9088	4794	0503	6216	1932	7651	3374	9100	4829	0562	6299	2038	7781	3528	9278	16
9017	4722	0432	6144	1860	7580	3302	9029	4758	0491	6228	1967	7711	3457	9207	15
8945	4651	0360	6073	1789	7508	3231	8958	4687	0420	6157	1896	7640	3386	9136	14
8873	4579	0289	6001	1717	7437	3160	8886	4616	0349	6086	1825	7569	3315	9065	13
8802	4508	0217	5930	1646	7366	3089	8815	4545	0278	6015	1754	7498	3244	8994	12
8730	4436	0146	5858	1575	7294	3017	8744	4474	0207	5944	1684	7427	3174	8924	11
8659	4365	0074	5787	1503	7223	2946	8673	4403	0136	5873	1613	7356	3103	8853	10
8587	4293	0003	5716	1432	7152	2875	8602	4331	0065	5802	1542	7285	3032	8782	9
8515	4222	9931	5644	1361	7080	2804	8530	4260	9994	5730	1471	7214	2961	8711	8
8444	4150	9860	5573	1289	7009	2732	8459	4189	9923	5659	1400	7143	2890	8640	7
8372	4079	9788	5501	1218	6938	2661	8388	4118	9852	5588	1329	7072	2819	8570	6
8301	4007	9717	5430	1147	6867	2590	8317	4047	9780	5517	1258	7001	2748	8499	5
8229	3936	9645	5359	1075	6795	2519	8246	3976	9709	5446	1187	6930	2678	8428	4
8158	3864	9574	5287	1004	6724	2447	8174	3905	9638	5375	1116	6860	2607	8357	3
8086	3792	9502	5216	0932	6653	2376	8103	3834	9567	5304	1045	6789	2536	8286	2
8014	3721	9431	5144	0861	6581	2305	8032	3762	9496	5233	0974	6718	2465	8216	1
7943	3649	9359	5073	0790	6510	2234	7961	3691	9425	5162	0903	6647	2394	8145	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	"

Tangent Deg. 71

18 Deg. Sine

′	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9.495	9.496	9.496	9.496	9.497	9.497	9.498	9.498	9.498	9.499	9.499	9.499	9.500	9.500	9.501
0	7716	1545	5370	9192	3010	6824	0635	4442	8245	2045	5840	9633	3421	7206	0987
1	7779	1609	5434	9256	3074	6888	0699	4505	8309	2108	5904	9696	3484	7269	1050
2	7843	1672	5498	9319	3137	6952	0762	4569	8372	2171	5967	9759	3547	7332	1113
3	7907	1736	5562	9383	3201	7015	0826	4632	8435	2235	6030	9822	3610	7395	1176
4	7971	1800	5625	9447	3265	7079	0889	4696	8499	2298	6093	9885	3674	7458	1239
5	8035	1864	5689	9510	3328	7142	0952	4759	8562	2361	6157	9948	3737	7521	1302
6	8099	1928	5753	9574	3392	7206	1016	4822	8625	2424	6220	0012	3800	7584	1365
7	8163	1991	5816	9638	3455	7269	1079	4886	8689	2488	6283	0075	3863	7647	1428
8	8226	2055	5880	9701	3519	7333	1143	4949	8752	2551	6346	0138	3926	7710	1491
9	8290	2119	5944	9765	3583	7396	1206	5013	8815	2614	6410	0201	3989	7773	1554
10	8354	2183	6008	9829	3646	7460	1270	5076	8879	2678	6473	0264	4052	7836	1617
11	8418	2246	6071	9892	3710	7523	1333	5140	8942	2741	6536	0327	4115	7899	1680
12	8482	2310	6135	9956	3773	7587	1397	5203	9005	2804	6599	0391	4178	7962	1743
13	8546	2374	6199	0020	3837	7650	1460	5266	9069	2867	6662	0454	4241	8025	1806
14	8609	2438	6262	0083	3901	7714	1524	5330	9132	2931	6726	0517	4305	8088	1869
15	8673	2502	6326	0147	3964	7777	1587	5393	9195	2994	6789	0580	4368	8151	1932
16	8737	2565	6390	0211	4028	7841	1651	5457	9259	3057	6852	0643	4431	8215	1995
17	8801	2629	6454	0274	4091	7905	1714	5520	9322	3121	6915	0706	4494	8278	2058
18	8865	2693	6517	0338	4155	7968	1778	5583	9385	3184	6979	0770	4557	8341	2121
19	8929	2757	6581	0402	4218	8032	1841	5647	9449	3247	7042	0833	4620	8404	2184
20	8992	2820	6645	0465	4282	8095	1904	5710	9512	3310	7105	0896	4683	8467	2247
21	9056	2884	6708	0529	4346	8159	1968	5774	9575	3374	7168	0959	4746	8530	2310
22	9120	2948	6772	0593	4409	8222	2031	5837	9639	3437	7231	1022	4809	8593	2372
23	9184	3012	6836	0656	4473	8286	2095	5900	9702	3500	7295	1085	4872	8656	2435
24	9248	3076	6900	0720	4536	8349	2158	5964	9765	3563	7358	1148	4935	8719	2498
25	9312	3139	6963	0783	4600	8413	2222	6027	9829	3627	7421	1212	4999	8782	2561
26	9375	3203	7027	0847	4664	8476	2285	6090	9892	3690	7484	1275	5062	8845	2624
27	9439	3267	7091	0911	4727	8540	2349	6154	9955	3753	7547	1338	5125	8908	2687
28	9503	3331	7154	0974	4791	8603	2412	6217	0019	3817	7611	1401	5188	8971	2750
29	9567	3394	7218	1038	4854	8667	2476	6281	0082	3880	7674	1464	5251	9034	2813
30	9631	3458	7282	1102	4918	8730	2539	6344	0145	3943	7737	1527	5314	9097	2876
31	9695	3522	7345	1165	4981	8794	2602	6407	0209	4006	7800	1590	5377	9160	2939
32	9758	3586	7409	1229	5045	8857	2666	6471	0272	4070	7863	1654	5440	9223	3002
33	9822	3649	7473	1293	5109	8921	2729	6534	0335	4133	7927	1717	5503	9286	3065
34	9886	3713	7536	1356	5172	8984	2793	6598	0399	4196	7990	1780	5566	9349	3128
35	9950	3777	7600	1420	5236	9048	2856	6661	0462	4259	8053	1843	5629	9412	3191
36	0014	3841	7664	1483	5299	9111	2920	6724	0525	4323	8116	1906	5692	9475	3254
37	0077	3904	7728	1547	5363	9175	2983	6788	0589	4386	8179	1969	5755	9538	3317
38	0141	3968	7791	1611	5426	9238	3047	6851	0652	4449	8243	2032	5819	9601	3380
39	0205	4032	7855	1674	5490	9302	3110	6914	0715	4512	8306	2096	5882	9664	3443
40	0269	4096	7919	1738	5553	9365	3173	6978	0779	4576	8369	2159	5945	9727	3506
41	0333	4159	7982	1802	5617	9429	3237	7041	0842	4639	8432	2222	6008	9790	3569
42	0396	4223	8046	1865	5681	9492	3300	7105	0905	4702	8495	2285	6071	9853	3632
43	0460	4287	8110	1929	5744	9556	3364	7168	0969	4765	8559	2348	6134	9916	3695
44	0524	4351	8173	1992	5808	9619	3427	7231	1032	4829	8622	2411	6197	9979	3757
45	0588	4414	8237	2056	5871	9683	3491	7295	1095	4892	8685	2474	6260	0042	3820
46	0652	4478	8301	2120	5935	9746	3554	7358	1158	4955	8748	2537	6323	0105	3883
47	0716	4542	8364	2183	5998	9810	3617	7421	1222	5018	8811	2601	6386	0168	3946
48	0779	4606	8428	2247	6062	9873	3681	7485	1285	5082	8874	2664	6449	0231	4009
49	0843	4669	8492	2310	6125	9937	3744	7548	1348	5145	8938	2727	6512	0294	4072
50	0907	4733	8555	2374	6189	0000	3808	7612	1412	5208	9001	2790	6575	0357	4135
51	0971	4797	8619	2438	6253	0064	3871	7675	1475	5271	9064	2853	6638	0420	4198
52	1035	4861	8683	2501	6316	0127	3935	7738	1538	5335	9127	2916	6701	0483	4261
53	1098	4924	8746	2565	6380	0191	3998	7802	1602	5398	9190	2979	6764	0546	4324
54	1162	4988	8810	2629	6443	0254	4061	7865	1665	5461	9254	3042	6828	0609	4387
55	1226	5052	8874	2692	6507	0318	4125	7928	1728	5524	9317	3106	6891	0672	4450
56	1290	5115	8937	2756	6570	0381	4188	7992	1792	5588	9380	3169	6954	0735	4513
57	1353	5179	9001	2819	6634	0445	4252	8055	1855	5651	9443	3232	7017	0798	4576
58	1417	5243	9065	2883	6697	0508	4315	8118	1918	5714	9506	3295	7080	0861	4639
59	1481	5307	9128	2947	6761	0572	4379	8182	1981	5777	9569	3358	7143	0924	4702
60	1545	5370	9192	3010	6824	0635	4442	8245	2045	5840	9633	3421	7206	0987	4764
′	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Sine Deg. 71

18 Deg. Co-Sine

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	″
9.977	9.977	9.977	9.977	9.977	9.977	9.977	9.977	9.977	9.977	9.977	9.977	9.977	9.977	9.976	
5860	5444	5026	4609	4191	3772	3354	2934	2515	2095	1674	1253	0832	0410	9988	60
5853	5437	5019	4602	4184	3765	3347	2927	2508	2088	1667	1246	0825	0403	9981	59
5846	5430	5013	4595	4177	3758	3340	2920	2501	2081	1660	1239	0818	0396	9974	58
5840	5423	5006	4588	4170	3751	3333	2913	2494	2074	1653	1232	0811	0389	9967	57
5833	5416	4999	4581	4163	3744	3326	2906	2487	2067	1646	1225	0804	0382	9960	56
5826	5409	4992	4574	4156	3738	3319	2899	2480	2060	1639	1218	0797	0375	9953	55
5819	5402	4985	4567	4149	3731	3312	2892	2473	2053	1632	1211	0790	0368	9946	54
5812	5395	4978	4560	4142	3724	3305	2885	2466	2046	1625	1204	0783	0361	9939	53
5805	5388	4971	4553	4135	3717	3298	2878	2459	2039	1618	1197	0776	0354	9932	52
5798	5381	4964	4546	4128	3710	3291	2871	2452	2032	1611	1190	0769	0347	9925	51
5791	5374	4957	4539	4121	3703	3284	2864	2445	2025	1604	1183	0762	0340	9918	50
5784	5367	4950	4532	4114	3696	3277	2857	2438	2018	1597	1176	0755	0333	9911	49
5777	5360	4943	4525	4107	3689	3270	2850	2431	2011	1590	1169	0748	0326	9904	48
5770	5353	4936	4518	4100	3682	3263	2843	2424	2004	1583	1162	0741	0319	9897	47
5763	5346	4929	4511	4093	3675	3256	2836	2417	1997	1576	1155	0734	0312	9890	46
5756	5339	4922	4504	4086	3668	3249	2829	2410	1990	1569	1148	0727	0305	9883	45
5749	5332	4915	4497	4079	3661	3242	2822	2403	1983	1562	1141	0720	0298	9876	44
5742	5325	4908	4490	4072	3654	3235	2815	2396	1976	1555	1134	0713	0291	9869	43
5735	5318	4901	4483	4065	3647	3228	2809	2389	1969	1548	1127	0706	0284	9862	42
5728	5312	4894	4476	4058	3640	3221	2802	2382	1962	1541	1120	0699	0277	9855	41
5722	5305	4887	4470	4051	3633	3214	2795	2375	1955	1534	1113	0692	0270	9848	40
5715	5298	4880	4463	4044	3626	3207	2788	2368	1948	1527	1106	0685	0263	9841	39
5708	5291	4873	4456	4037	3619	3200	2781	2361	1941	1520	1099	0678	0256	9833	38
5701	5284	4866	4449	4030	3612	3193	2774	2354	1934	1513	1092	0670	0249	9826	37
5694	5277	4859	4442	4023	3605	3186	2767	2347	1927	1506	1085	0663	0242	9819	36
5687	5270	4852	4435	4017	3598	3179	2760	2340	1920	1499	1078	0656	0235	9812	35
5680	5263	4846	4428	4010	3591	3172	2753	2333	1913	1492	1071	0649	0228	9805	34
5673	5256	4839	4421	4003	3584	3165	2746	2326	1906	1485	1064	0642	0221	9798	33
5666	5249	4832	4414	3996	3577	3158	2739	2319	1899	1478	1057	0635	0213	9791	32
5659	5242	4825	4407	3989	3570	3151	2732	2312	1892	1471	1050	0628	0206	9784	31
5652	5235	4818	4400	3982	3563	3144	2725	2305	1884	1464	1043	0621	0199	9777	30
5645	5228	4811	4393	3975	3556	3137	2718	2298	1877	1457	1036	0614	0192	9770	29
5638	5221	4804	4386	3968	3549	3130	2711	2291	1870	1450	1029	0607	0185	9763	28
5631	5214	4797	4379	3961	3542	3123	2704	2284	1863	1443	1022	0600	0178	9756	27
5624	5207	4790	4372	3954	3535	3116	2697	2277	1856	1436	1015	0593	0171	9749	26
5617	5200	4783	4365	3947	3528	3109	2690	2270	1849	1429	1008	0586	0164	9742	25
5610	5193	4776	4358	3940	3521	3102	2683	2263	1842	1422	1001	0579	0157	9735	24
5603	5186	4769	4351	3933	3514	3095	2676	2256	1835	1415	0994	0572	0150	9728	23
5596	5179	4762	4344	3926	3507	3088	2669	2249	1828	1408	0987	0565	0143	9721	22
5590	5172	4755	4337	3919	3500	3081	2662	2242	1821	1401	0980	0558	0136	9714	21
5583	5166	4748	4330	3912	3493	3074	2655	2235	1814	1394	0973	0551	0129	9707	20
5576	5159	4741	4323	3905	3486	3067	2648	2228	1807	1387	0966	0544	0122	9700	19
5569	5152	4734	4316	3898	3479	3060	2641	2221	1800	1380	0959	0537	0115	9693	18
5562	5145	4727	4309	3891	3472	3053	2634	2214	1793	1373	0951	0530	0108	9686	17
5555	5138	4720	4302	3884	3465	3046	2627	2207	1786	1366	0944	0523	0101	9679	16
5548	5131	4713	4295	3877	3458	3039	2620	2200	1779	1359	0937	0516	0094	9672	15
5541	5124	4706	4288	3870	3451	3032	2613	2193	1772	1352	0930	0509	0087	9664	14
5534	5117	4699	4281	3863	3444	3025	2606	2186	1765	1345	0923	0502	0080	9657	13
5527	5110	4692	4274	3856	3437	3018	2599	2179	1758	1338	0916	0495	0073	9650	12
5520	5103	4685	4267	3849	3430	3011	2592	2172	1751	1331	0909	0488	0066	9643	11
5513	5096	4678	4261	3842	3423	3004	2585	2165	1744	1324	0902	0481	0059	9636	10
5506	5089	4671	4254	3835	3416	2997	2578	2158	1737	1317	0895	0474	0052	9629	9
5499	5082	4665	4247	3828	3409	2990	2571	2151	1730	1310	0888	0467	0045	9622	8
5492	5075	4658	4240	3821	3402	2983	2564	2144	1723	1302	0881	0460	0038	9615	7
5485	5068	4651	4233	3814	3395	2976	2557	2137	1716	1295	0874	0453	0031	9608	6
5478	5061	4644	4226	3807	3388	2969	2550	2130	1709	1288	0867	0446	0024	9601	5
5471	5054	4637	4219	3800	3382	2962	2543	2123	1702	1281	0860	0439	0016	9594	4
5464	5047	4630	4212	3793	3375	2955	2536	2116	1695	1274	0853	0432	0009	9587	3
5458	5040	4623	4205	3786	3368	2948	2529	2109	1688	1267	0846	0424	0002	9580	2
5451	5033	4616	4198	3779	3361	2941	2522	2102	1681	1260	0839	0417	9995	9573	1
5444	5026	4609	4191	3772	3354	2934	2515	2095	1674	1253	0832	0410	9988	9566	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Sine Deg. 71

18 Deg. Tangent

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 518	9. 518	9. 519	9. 519	9. 519	9. 520	9. 520	9. 521	9. 521	9. 521	9. 522	9. 522	9. 523	9. 523	9. 524
0	1855	6101	0344	4583	8819	3052	7282	1508	5730	9950	4166	8379	2589	6795	0999
1	1926	6172	0415	4654	8890	3123	7352	1578	5801	0020	4237	8449	2659	6866	1069
2	1997	6243	0485	4725	8961	3193	7422	1648	5871	0091	4307	8520	2729	6936	1139
3	2068	6313	0556	4795	9031	3264	7493	1719	5942	0161	4377	8590	2799	7006	1209
4	2138	6384	0627	4866	9102	3334	7563	1789	6012	0231	4447	8660	2870	7076	1279
5	2209	6455	0697	4936	9172	3405	7634	1860	6082	0301	4517	8730	2940	7146	1349
6	2280	6526	0768	5007	9243	3475	7704	1930	6153	0372	4588	8800	3010	7216	1419
7	2351	6596	0839	5078	9313	3546	7775	2000	6223	0442	4658	8871	3080	7286	1489
8	2422	6667	0909	5148	9384	3616	7845	2071	6293	0512	4728	8941	3150	7356	1559
9	2492	6738	0980	5219	9454	3687	7916	2141	6364	0583	4798	9011	3220	7426	1629
10	2563	6809	1051	5290	9525	3757	7986	2212	6434	0653	4869	9081	3290	7496	1699
11	2634	6879	1121	5360	9596	3828	8057	2282	6504	0723	4939	9151	3360	7566	1769
12	2705	6950	1192	5431	9666	3898	8127	2352	6575	0794	5009	9221	3431	7636	1839
13	2776	7021	1263	5501	9737	3969	8197	2423	6645	0864	5079	9292	3501	7706	1909
14	2846	7092	1333	5572	9807	4039	8268	2493	6715	0934	5150	9362	3571	7776	1979
15	2917	7162	1404	5643	9878	4110	8338	2564	6786	1004	5220	9432	3641	7847	2049
16	2988	7233	1475	5713	9948	4180	8409	2634	6856	1075	5290	9502	3711	7917	2119
17	3059	7304	1545	5784	0019	4251	8479	2704	6926	1145	5360	9572	3781	7987	2189
18	3129	7374	1616	5854	0090	4321	8550	2775	6997	1215	5431	9643	3851	8057	2259
19	3200	7445	1687	5925	0160	4392	8620	2845	7067	1286	5501	9713	3921	8127	2329
20	3271	7516	1757	5996	0231	4462	8691	2916	7137	1356	5571	9783	3992	8197	2399
21	3342	7587	1828	6066	0301	4533	8761	2986	7208	1426	5641	9853	4062	8267	2469
22	3413	7657	1899	6137	0372	4603	8831	3056	7278	1496	5711	9923	4132	8337	2539
23	3483	7728	1969	6208	0442	4674	8902	3127	7348	1567	5782	9993	4202	8407	2609
24	3554	7799	2040	6278	0513	4744	8972	3197	7419	1637	5852	0064	4272	8477	2679
25	3625	7869	2111	6349	0583	4815	9043	3268	7489	1707	5922	0134	4342	8547	2749
26	3696	7940	2181	6419	0654	4885	9113	3338	7559	1777	5992	0204	4412	8617	2819
27	3766	8011	2252	6490	0725	4956	9184	3408	7630	1848	6063	0274	4482	8687	2889
28	3837	8082	2323	6561	0795	5026	9254	3479	7700	1918	6133	0344	4552	8757	2959
29	3908	8152	2393	6631	0866	5097	9325	3549	7770	1988	6203	0414	4623	8827	3029
30	3979	8223	2464	6702	0936	5167	9395	3619	7841	2059	6273	0485	4693	8897	3099
31	4049	8294	2535	6772	1007	5238	9465	3690	7911	2129	6343	0555	4763	8968	3169
32	4120	8364	2605	6843	1077	5308	9536	3760	7981	2199	6414	0625	4833	9038	3239
33	4191	8435	2676	6914	1148	5379	9606	3831	8052	2269	6484	0695	4903	9108	3309
34	4262	8506	2747	6984	1218	5449	9677	3901	8122	2340	6554	0765	4973	9178	3379
35	4332	8577	2817	7055	1289	5520	9747	3971	8192	2410	6624	0835	5043	9248	3449
36	4403	8647	2888	7125	1359	5590	9818	4042	8263	2480	6694	0906	5113	9318	3519
37	4474	8718	2959	7196	1430	5661	9888	4112	8333	2550	6765	0976	5183	9388	3589
38	4545	8789	3029	7267	1500	5731	9958	4182	8403	2621	6835	1046	5253	9458	3659
39	4616	8859	3100	7337	1571	5802	0029	4253	8474	2691	6905	1116	5324	9528	3729
40	4686	8930	3171	7408	1642	5872	0099	4323	8544	2761	6975	1186	5394	9598	3799
41	4757	9001	3241	7478	1712	5943	0170	4394	8614	2831	7046	1256	5464	9668	3869
42	4828	9072	3312	7549	1783	6013	0240	4464	8684	2902	7116	1326	5534	9738	3939
43	4899	9142	3383	7619	1853	6084	0311	4534	8755	2972	7186	1397	5604	9808	4009
44	4969	9213	3453	7690	1924	6154	0381	4605	8825	3042	7256	1467	5674	9878	4079
45	5040	9284	3524	7761	1994	6224	0451	4675	8895	3113	7326	1537	5744	9948	4149
46	5111	9354	3594	7831	2065	6295	0522	4745	8966	3183	7397	1607	5814	0018	4219
47	5182	9425	3665	7902	2135	6365	0592	4816	9036	3253	7467	1677	5884	0088	4289
48	5252	9496	3736	7972	2206	6436	0663	4886	9106	3323	7537	1747	5954	0158	4359
49	5323	9566	3806	8043	2276	6506	0733	4957	9177	3394	7607	1817	6025	0228	4429
50	5394	9637	3877	8114	2347	6577	0804	5027	9247	3464	7677	1888	6095	0298	4499
51	5465	9708	3948	8184	2417	6647	0874	5097	9317	3534	7748	1958	6165	0368	4569
52	5535	9778	4018	8255	2488	6718	0944	5168	9388	3604	7818	2028	6235	0438	4639
53	5606	9849	4089	8325	2558	6788	1015	5238	9458	3675	7888	2098	6305	0508	4709
54	5677	9920	4160	8396	2629	6859	1085	5308	9528	3745	7958	2168	6375	0578	4779
55	5748	9991	4230	8466	2699	6929	1156	5379	9599	3815	8028	2238	6445	0649	4849
56	5818	0061	4301	8537	2770	7000	1226	5449	9669	3885	8099	2308	6515	0719	4919
57	5889	0132	4371	8608	2841	7070	1296	5519	9739	3956	8169	2379	6585	0789	4989
58	5960	0203	4442	8678	2911	7141	1367	5590	9809	4026	8239	2449	6655	0859	5059
59	6031	0273	4513	8749	2982	7211	1437	5660	9880	4096	8309	2519	6725	0929	5129
60	6101	0344	4583	8819	3052	7282	1508	5730	9950	4166	8379	2589	6795	0999	5199
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

18 Deg. Co-Tangent

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
	10. 481	10. 481	10. 480	10. 480	10. 480	10. 479	10. 479	10. 478	10. 478	10. 478	10. 477	10. 477	10. 476	10. 476	10. 475	″
	8145	3899	9656	5417	1181	6948	2718	8492	4270	0050	5834	1621	7411	3205	9001	60
	8074	3828	9585	5346	1110	6877	2648	8422	4199	9980	5763	1551	7341	3134	8931	59
	8003	3757	9515	5275	1039	6807	2578	8352	4129	9909	5693	1480	7271	3064	8861	58
	7932	3687	9444	5205	0969	6736	2507	8281	4058	9839	5623	1410	7201	2994	8791	57
	7862	3616	9373	5134	0898	6666	2437	8211	3988	9769	5553	1340	7130	2924	8721	56
	7791	3545	9303	5064	0828	6595	2366	8140	3918	9699	5483	1270	7060	2854	8651	55
	7720	3474	9232	4993	0757	6525	2296	8070	3847	9628	5412	1200	6990	2784	8581	54
	7649	3404	9161	4922	0687	6454	2225	8000	3777	9558	5342	1129	6920	2714	8511	53
	7578	3333	9091	4852	0616	6384	2155	7929	3707	9488	5272	1059	6850	2644	8441	52
	7508	3262	9020	4781	0546	6313	2084	7859	3636	9417	5202	0989	6780	2574	8371	51
	7437	3191	8949	4710	0475	6243	2014	7788	3566	9347	5131	0919	6710	2504	8301	50
	7366	3121	8879	4640	0404	6172	1943	7718	3496	9277	5061	0849	6640	2434	8231	49
	7295	3050	8808	4569	0334	6102	1873	7648	3425	9206	4991	0779	6569	2364	8161	48
	7224	2979	8737	4499	0263	6031	1803	7577	3355	9136	4921	0708	6499	2294	8091	47
	7154	2908	8667	4428	0193	5961	1732	7507	3285	9066	4850	0638	6429	2224	8021	46
	7083	2838	8596	4357	0122	5890	1662	7436	3214	8996	4780	0568	6359	2153	7951	45
	7012	2767	8525	4287	0052	5820	1591	7366	3144	8925	4710	0498	6289	2083	7881	44
	6941	2696	8455	4216	9981	5749	1521	7296	3074	8855	4640	0428	6219	2013	7811	43
	6871	2626	8384	4146	9910	5679	1450	7225	3003	8785	4569	0357	6149	1943	7741	42
	6800	2555	8313	4075	9840	5608	1380	7155	2933	8714	4499	0287	6079	1873	7671	41
	6729	2484	8243	4004	9769	5538	1309	7084	2863	8644	4429	0217	6008	1803	7601	40
	6658	2413	8172	3934	9699	5467	1239	7014	2792	8574	4359	0147	5938	1733	7531	39
	6587	2343	8101	3863	9628	5397	1169	6944	2722	8504	4289	0077	5868	1663	7461	38
	6517	2272	8031	3792	9558	5326	1098	6873	2652	8433	4218	0007	5798	1593	7391	37
	6446	2201	7960	3722	9487	5256	1028	6803	2581	8363	4148	9936	5728	1523	7321	36
	6375	2131	7889	3651	9417	5185	0957	6732	2511	8293	4078	9866	5658	1453	7251	35
	6304	2060	7819	3581	9346	5115	0887	6662	2441	8223	4008	9796	5588	1383	7181	34
	6234	1989	7748	3510	9275	5044	0816	6592	2370	8152	3937	9726	5518	1313	7111	33
	6163	1918	7677	3439	9205	4974	0746	6521	2300	8082	3867	0656	5448	1243	7041	32
	6092	1848	7607	3369	9134	4903	0675	6451	2230	8012	3797	9586	5377	1173	6971	31
	6021	1777	7536	3298	9064	4833	0605	6381	2159	7941	3727	9515	5307	1103	6901	30
	5951	1706	7465	3228	8993	4762	0535	6310	2089	7871	3657	9445	5237	1032	6831	29
	5880	1636	7395	3157	8923	4692	0464	6240	2019	7801	3586	9375	5167	0962	6761	28
	5809	1565	7324	3086	8852	4621	0394	6169	1948	7731	3516	9305	5097	0892	6691	27
	5738	1494	7253	3016	8782	4551	0323	6099	1878	7660	3446	9235	5027	0822	6621	26
	5668	1423	7183	2945	8711	4480	0253	6029	1808	7590	3376	9165	4957	0752	6551	25
	5597	1353	7112	2875	8641	4410	0182	5958	1737	7520	3306	9094	4887	0682	6481	24
	5526	1282	7041	2804	8570	4339	0112	5888	1667	7450	3235	9024	4817	0612	6411	23
	5455	1211	6971	2733	8500	4269	0042	5818	1597	7379	3165	8954	4747	0542	6341	22
	5384	1141	6900	2663	8429	4198	9971	5747	1526	7309	3095	8884	4676	0472	6271	21
	5314	1070	6829	2592	8358	4128	9901	5677	1456	7239	3025	8814	4606	0402	6201	20
	5243	0999	6759	2522	8288	4057	9830	5606	1386	7169	2954	8744	4536	0332	6131	19
	5172	0928	6688	2451	8217	3987	9760	5536	1316	7098	2884	8674	4466	0262	6061	18
	5101	0858	6617	2381	8147	3916	9689	5466	1245	7028	2814	8603	4396	0192	5991	17
	5031	0787	6547	2310	8076	3846	9619	5395	1175	6958	2744	8533	4326	0122	5921	16
	4960	0716	6476	2239	8006	3776	9549	5325	1105	6887	2674	8463	4256	0052	5851	15
	4889	0646	6406	2169	7935	3705	9478	5255	1034	6817	2603	8393	4186	9982	5781	14
	4818	0575	6335	2098	7865	3635	9408	5184	0964	6747	2533	8323	4116	9912	5711	13
	4748	0504	6264	2028	7794	3564	9337	5114	0894	6677	2463	8253	4046	9842	5641	12
	4677	0434	6194	1957	7724	3494	9267	5043	0823	6606	2393	8183	3975	9772	5571	11
	4606	0363	6123	1886	7653	3423	9196	4973	0753	6536	2323	8112	3905	9702	5501	10
	4535	0292	6052	1816	7583	3353	9126	4903	0683	6466	2252	8042	3835	9632	5431	9
	4465	0222	5982	1745	7512	3282	9056	4832	0612	6396	2182	7972	3765	9562	5361	8
	4394	0151	5911	1675	7442	3212	8985	4762	0542	6325	2112	7902	3695	9492	5291	7
	4323	0080	5840	1604	7371	3141	8915	4692	0472	6255	2042	7832	3625	9422	5221	6
	4252	0009	5770	1534	7301	3071	8844	4621	0401	6185	1972	7762	3555	9351	5151	5
	4182	9939	5699	1463	7230	3000	8774	4551	0331	6115	1901	7692	3485	9281	5081	4
	4111	9868	5629	1392	7159	2930	8704	4481	0261	6044	1831	7621	3415	9211	5011	3
	4040	9797	5558	1322	7089	2859	8633	4410	0191	5974	1761	7551	3345	9141	4941	2
	3969	9727	5487	1251	7018	2789	8563	4340	0120	5904	1691	7481	3275	9071	4871	1
	3899	9656	5417	1181	6948	2718	8492	4270	0050	5834	1621	7411	3205	9001	4801	0
	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Co-Tangent Deg. 71

Tangent Deg. 71

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 501	9. 501	9. 502	9. 502	9. 502	9. 503	9. 503	9. 504	9. 504	9. 504	9. 505	9. 505	9. 505	9. 506	9. 506
0	4764	8538	2308	6075	9838	3597	7353	1105	4853	8598	2339	6077	9811	3542	7269
1	4827	8601	2371	6138	9901	3660	7415	1167	4916	8661	2402	6139	9873	3604	7331
2	4890	8664	2434	6200	9963	3722	7478	1230	4978	8723	2464	6202	9936	3666	7393
3	4953	8727	2497	6263	0026	3785	7541	1292	5041	8785	2526	6264	9998	3728	7455
4	5016	8790	2560	6326	0089	3848	7603	1355	5103	8848	2589	6326	0060	3790	7517
5	5079	8853	2622	6389	0151	3910	7666	1417	5166	8910	2651	6388	0122	3852	7579
6	5142	8915	2685	6451	0214	3973	7728	1480	5228	8972	2713	6451	0184	3915	7641
7	5205	8978	2748	6514	0277	4036	7791	1542	5290	9035	2776	6513	0247	3977	7703
8	5268	9041	2811	6577	0339	4098	7853	1605	5353	9097	2838	6575	0309	4039	7765
9	5331	9104	2874	6640	0402	4161	7916	1667	5415	9160	2900	6637	0371	4101	7827
10	5394	9167	2936	6702	0465	4223	7978	1730	5478	9222	2963	6700	0433	4163	7889
11	5457	9230	2999	6765	0527	4286	8041	1792	5540	9284	3025	6762	0495	4225	7951
12	5520	9293	3062	6828	0590	4349	8104	1855	5603	9347	3087	6824	0558	4287	8014
13	5582	9355	3125	6891	0653	4411	8166	1917	5665	9409	3150	6886	0620	4349	8076
14	5645	9418	3188	6953	0715	4474	8229	1980	5727	9471	3212	6949	0682	4412	8138
15	5708	9481	3250	7016	0778	4536	8291	2042	5790	9534	3274	7011	0744	4474	8200
16	5771	9544	3313	7079	0841	4599	8354	2105	5852	9596	3336	7073	0806	4536	8262
17	5834	9607	3376	7142	0903	4662	8416	2167	5915	9659	3399	7135	0868	4598	8324
18	5897	9670	3439	7204	0966	4724	8479	2230	5977	9721	3461	7198	0931	4660	8386
19	5960	9733	3502	7267	1029	4787	8541	2292	6040	9783	3523	7260	0993	4722	8448
20	6023	9795	3564	7330	1091	4849	8604	2355	6102	9846	3586	7322	1055	4784	8510
21	6086	9858	3627	7392	1154	4912	8666	2417	6164	9908	3648	7384	1117	4846	8572
22	6149	9921	3690	7455	1217	4975	8729	2480	6227	9970	3710	7447	1179	4909	8634
23	6212	9984	3753	7518	1279	5037	8792	2542	6289	0033	3773	7509	1242	4971	8696
24	6274	0047	3815	7581	1342	5100	8854	2605	6352	0095	3835	7571	1304	5033	8758
25	6337	0110	3878	7643	1405	5162	8917	2667	6414	0157	3897	7633	1366	5095	8820
26	6400	0172	3941	7706	1467	5225	8979	2730	6477	0220	3959	7696	1428	5157	8882
27	6463	0235	4004	7769	1530	5288	9042	2792	6539	0282	4022	7758	1490	5219	8945
28	6526	0298	4067	7831	1593	5350	9104	2855	6601	0345	4084	7820	1552	5281	9007
29	6589	0361	4129	7894	1655	5413	9167	2917	6664	0407	4146	7882	1615	5343	9069
30	6652	0424	4192	7957	1718	5475	9229	2980	6726	0469	4209	7945	1677	5406	9131
31	6715	0487	4255	8020	1781	5538	9292	3042	6789	0532	4271	8007	1739	5468	9193
32	6778	0549	4318	8082	1843	5601	9354	3104	6851	0594	4333	8069	1801	5530	9255
33	6841	0612	4380	8145	1906	5663	9417	3167	6913	0656	4396	8131	1863	5592	9317
34	6903	0675	4443	8208	1969	5726	9479	3229	6976	0719	4458	8193	1926	5654	9379
35	6966	0738	4506	8270	2031	5788	9542	3292	7038	0781	4520	8256	1988	5716	9441
36	7029	0801	4569	8333	2094	5851	9604	3354	7101	0843	4582	8318	2050	5778	9503
37	7092	0864	4632	8396	2157	5914	9667	3417	7163	0906	4645	8380	2112	5840	9565
38	7155	0926	4694	8459	2219	5976	9730	3479	7225	0968	4707	8442	2174	5902	9627
39	7218	0989	4757	8521	2282	6039	9792	3542	7288	1030	4769	8505	2236	5965	9689
40	7281	1052	4820	8584	2344	6101	9855	3604	7350	1093	4832	8567	2299	6027	9751
41	7344	1115	4883	8647	2407	6164	9917	3667	7413	1155	4894	8629	2361	6089	9813
42	7407	1178	4945	8709	2470	6227	9980	3729	7475	1217	4956	8691	2423	6151	9875
43	7469	1241	5008	8772	2532	6289	0042	3792	7537	1280	5018	8754	2485	6213	9937
44	7532	1303	5071	8835	2595	6352	0105	3854	7600	1342	5081	8816	2547	6275	9999
45	7595	1366	5134	8897	2658	6414	0167	3917	7662	1404	5143	8878	2609	6337	0061
46	7658	1429	5196	8960	2720	6477	0230	3979	7725	1467	5205	8940	2672	6399	0123
47	7721	1492	5259	9023	2783	6539	0292	4041	7787	1529	5268	9002	2734	6461	0186
48	7784	1555	5322	9086	2846	6602	0355	4104	7849	1591	5330	9065	2796	6523	0248
49	7847	1618	5385	9148	2908	6665	0417	4166	7912	1654	5392	9127	2858	6586	0310
50	7910	1680	5447	9211	2971	6727	0480	4229	7974	1716	5454	9189	2920	6648	0372
51	7972	1743	5510	9274	3033	6790	0542	4291	8037	1778	5517	9251	2982	6710	0434
52	8035	1806	5573	9336	3096	6852	0605	4354	8099	1841	5579	9313	3044	6772	0496
53	8098	1869	5636	9399	3159	6915	0667	4416	8161	1903	5641	9376	3107	6834	0558
54	8161	1932	5698	9462	3221	6977	0730	4479	8224	1965	5703	9438	3169	6896	0620
55	8224	1994	5761	9524	3284	7040	0792	4541	8286	2028	5766	9500	3231	6958	0682
56	8287	2057	5824	9587	3347	7103	0855	4604	8349	2090	5828	9562	3293	7020	0744
57	8350	2120	5887	9650	3409	7165	0917	4666	8411	2152	5890	9625	3355	7082	0806
58	8413	2183	5949	9713	3472	7228	0980	4728	8473	2215	5953	9687	3417	7144	0868
59	8475	2246	6012	9775	3535	7290	1042	4791	8536	2277	6015	9749	3480	7207	0930
60	8538	2308	6075	9838	3597	7353	1105	4853	8598	2339	6077	9811	3542	7269	0992
′″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
	9. 976	9. 976	9. 976	9. 976	9. 976	9. 976	9. 976	9. 976	9. 976	9. 976	9. 976	9. 976	9. 976	9. 976	9. 976	″
0	9566	9143	8720	8296	7872	7447	7022	6597	6171	5745	5318	4891	4464	4036	3608	60
1	9559	9136	8713	8289	7865	7440	7015	6590	6164	5738	5311	4884	4457	4029	3601	59
2	9552	9129	8706	8282	7858	7433	7008	6583	6157	5731	5304	4877	4450	4022	3594	58
3	9545	9122	8698	8275	7851	7426	7001	6576	6150	5724	5297	4870	4443	4015	3587	57
4	9538	9115	8691	8268	7843	7419	6994	6569	6143	5717	5290	4863	4436	4008	3579	56
5	9531	9108	8684	8261	7836	7412	6987	6561	6136	5709	5283	4856	4428	4001	3572	55
6	9524	9101	8677	8254	7829	7405	6980	6554	6129	5702	5276	4849	4421	3993	3565	54
7	9517	9094	8670	8246	7822	7398	6973	6547	6121	5695	5269	4842	4414	3986	3558	53
8	9509	9087	8663	8239	7815	7391	6966	6540	6114	5688	5262	4834	4407	3979	3551	52
9	9502	9079	8656	8232	7808	7384	6959	6533	6107	5681	5254	4827	4400	3972	3544	51
10	9495	9072	8649	8225	7801	7376	6951	6526	6100	5674	5247	4820	4393	3965	3537	50
11	9488	9065	8642	8218	7794	7369	6944	6519	6093	5667	5240	4813	4386	3958	3529	49
12	9481	9058	8635	8211	7787	7362	6937	6512	6086	5660	5233	4806	4378	3951	3522	48
13	9474	9051	8628	8204	7780	7355	6930	6505	6079	5653	5226	4799	4371	3943	3515	47
14	9467	9044	8621	8197	7773	7348	6923	6498	6072	5645	5219	4792	4364	3936	3508	46
15	9460	9037	8614	8190	7766	7341	6916	6491	6065	5638	5212	4785	4357	3929	3501	45
16	9453	9030	8607	8183	7759	7334	6909	6483	6058	5631	5205	4777	4350	3922	3494	44
17	9446	9023	8600	8176	7752	7327	6902	6476	6050	5624	5197	4770	4343	3915	3487	43
18	9439	9016	8593	8169	7744	7320	6895	6469	6043	5617	5190	4763	4336	3908	3479	42
19	9432	9009	8585	8162	7737	7313	6888	6462	6036	5610	5183	4756	4329	3901	3472	41
20	9425	9002	8578	8155	7730	7306	6881	6455	6029	5603	5176	4749	4321	3894	3465	40
21	9418	8995	8571	8148	7723	7299	6873	6448	6022	5596	5169	4742	4314	3886	3458	39
22	9411	8988	8564	8140	7716	7291	6866	6441	6015	5589	5162	4735	4307	3879	3451	38
23	9404	8981	8557	8133	7709	7284	6859	6434	6008	5582	5155	4728	4300	3872	3444	37
24	9397	8974	8550	8126	7702	7277	6852	6427	6001	5574	5148	4721	4293	3865	3437	36
25	9390	8967	8543	8119	7695	7270	6845	6420	5994	5567	5141	4713	4286	3858	3429	35
26	9383	8960	8536	8112	7688	7263	6838	6412	5987	5560	5133	4706	4279	3851	3422	34
27	9376	8952	8529	8105	7681	7256	6831	6405	5979	5553	5126	4699	4272	3844	3415	33
28	9369	8945	8522	8098	7674	7249	6824	6398	5972	5546	5119	4692	4264	3836	3408	32
29	9361	8938	8515	8091	7667	7242	6817	6391	5965	5539	5112	4685	4257	3829	3401	31
30	9354	8931	8508	8084	7660	7235	6810	6384	5958	5532	5105	4678	4250	3822	3394	30
31	9347	8924	8501	8077	7652	7228	6803	6377	5951	5525	5098	4671	4243	3815	3387	29
32	9340	8917	8494	8070	7645	7221	6795	6370	5944	5518	5091	4664	4236	3808	3379	28
33	9333	8910	8487	8063	7638	7214	6788	6363	5937	5510	5084	4656	4229	3801	3372	27
34	9326	8903	8480	8056	7631	7206	6781	6356	5930	5503	5077	4648	4222	3794	3365	26
35	9319	8896	8473	8049	7624	7199	6774	6349	5923	5496	5069	4641	4215	3786	3358	25
36	9312	8889	8465	8041	7617	7192	6767	6342	5916	5489	5062	4634	4207	3779	3351	24
37	9305	8882	8458	8034	7610	7185	6760	6334	5908	5482	5055	4627	4200	3772	3344	23
38	9298	8875	8451	8027	7603	7178	6753	6327	5901	5475	5048	4620	4193	3765	3337	22
39	9291	8868	8444	8020	7596	7171	6746	6320	5894	5468	5041	4613	4186	3758	3329	21
40	9284	8861	8437	8013	7589	7164	6739	6313	5887	5461	5034	4607	4179	3751	3322	20
41	9277	8854	8430	8006	7582	7157	6732	6306	5880	5454	5027	4599	4172	3744	3315	19
42	9270	8847	8423	7999	7575	7150	6725	6299	5873	5446	5020	4592	4165	3736	3308	18
43	9263	8840	8416	7992	7568	7143	6717	6292	5866	5439	5012	4585	4157	3729	3301	17
44	9256	8833	8409	7985	7560	7136	6710	6285	5859	5432	5005	4578	4150	3722	3294	16
45	9249	8825	8402	7978	7553	7129	6703	6278	5852	5425	4998	4571	4143	3715	3287	15
46	9242	8818	8395	7971	7546	7121	6696	6271	5844	5418	4991	4564	4136	3708	3279	14
47	9235	8811	8388	7964	7539	7114	6689	6263	5837	5411	4984	4557	4129	3701	3272	13
48	9228	8804	8381	7957	7532	7107	6682	6256	5830	5404	4977	4550	4122	3694	3265	12
49	9220	8797	8374	7950	7525	7100	6675	6249	5823	5397	4970	4542	4115	3687	3258	11
50	9213	8790	8367	7942	7518	7093	6668	6242	5816	5390	4963	4535	4108	3679	3251	10
51	9206	8783	8359	7935	7511	7086	6661	6235	5809	5382	4955	4528	4100	3672	3244	9
52	9199	8776	8352	7928	7504	7079	6654	6228	5802	5375	4948	4521	4093	3665	3237	8
53	9192	8769	8345	7921	7497	7072	6647	6221	5795	5368	4941	4514	4086	3658	3229	7
54	9185	8762	8338	7914	7490	7065	6639	6214	5788	5361	4934	4507	4079	3651	3222	6
55	9178	8755	8331	7907	7483	7058	6632	6207	5781	5354	4927	4500	4072	3644	3215	5
56	9171	8748	8324	7900	7476	7051	6625	6200	5773	5347	4920	4493	4065	3637	3208	4
57	9164	8741	8317	7893	7468	7044	6618	6192	5766	5340	4913	4485	4058	3629	3201	3
58	9157	8734	8310	7886	7461	7036	6611	6185	5759	5333	4906	4478	4050	3622	3194	2
59	9150	8727	8303	7879	7454	7029	6604	6178	5752	5326	4899	4471	4043	3615	3186	1
60	9143	8720	8296	7872	7447	7022	6597	6171	5745	5318	4891	4464	4036	3608	3179	0
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

18 Deg. Tangent

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 524	9. 524	9. 525	9. 525	9. 526	9. 526	9. 527	9. 527	9. 527	9. 528	9. 528	9. 529	9. 529	9. 529	9. 530
0	5199	9395	3589	7779	1966	6150	0331	4508	8682	2853	7021	1186	5347	9505	3661
1	5269	9465	3659	7849	2036	6220	0400	4578	8752	2923	7090	1255	5416	9575	3730
2	5339	9535	3729	7919	2106	6289	0470	4647	8821	2992	7160	1324	5486	9644	3799
3	5409	9605	3798	7989	2175	6359	0539	4717	8891	3062	7229	1394	5555	9713	3868
4	5478	9675	3868	8058	2245	6429	0609	4786	8960	3131	7299	1463	5624	9783	3938
5	5548	9745	3938	8128	2315	6498	0679	4856	9030	3201	7368	1533	5694	9852	4007
6	5618	9815	4008	8198	2385	6568	0748	4925	9099	3270	7438	1602	5763	9921	4076
7	5688	9885	4078	8268	2454	6638	0818	4995	9169	3340	7507	1671	5832	9990	4145
8	5758	9955	4148	8338	2524	6708	0888	5065	9238	3409	7576	1741	5902	0060	4214
9	5828	0025	4218	8407	2594	6777	0957	5134	9308	3479	7646	1810	5971	0129	4284
10	5898	0094	4287	8477	2664	6847	1027	5204	9378	3548	7715	1879	6040	0198	4353
11	5968	0164	4357	8547	2733	6917	1097	5273	9447	3618	7785	1949	6110	0267	4422
12	6038	0234	4427	8617	2803	6986	1166	5343	9517	3687	7854	2018	6179	0337	4491
13	6108	0304	4497	8687	2873	7056	1236	5413	9586	3756	7924	2088	6248	0406	4560
14	6178	0374	4567	8756	2943	7126	1306	5482	9656	3826	7993	2157	6318	0475	4630
15	6248	0444	4637	8826	3012	7195	1375	5552	9725	3895	8062	2226	6387	0545	4699
16	6318	0514	4707	8896	3082	7265	1445	5621	9795	3965	8132	2296	6456	0614	4768
17	6388	0584	4776	8966	3152	7335	1514	5691	9864	4034	8201	2365	6526	0683	4837
18	6458	0654	4846	9036	3222	7404	1584	5761	9934	4104	8271	2434	6595	0752	4907
19	6528	0724	4916	9105	3291	7474	1654	5830	0003	4173	8340	2504	6664	0822	4976
20	6598	0794	4986	9175	3361	7544	1723	5900	0073	4243	8410	2573	6734	0891	5045
21	6668	0863	5056	9245	3431	7613	1793	5969	0142	4312	8479	2643	6803	0960	5114
22	6738	0933	5126	9315	3501	7683	1863	6039	0212	4382	8548	2712	6872	1029	5183
23	6808	1003	5195	9384	3570	7753	1932	6108	0281	4451	8618	2781	6942	1099	5253
24	6878	1073	5265	9454	3640	7823	2002	6178	0351	4521	8687	2851	7011	1168	5322
25	6948	1143	5335	9524	3710	7892	2072	6248	0420	4590	8757	2920	7080	1237	5391
26	7018	1213	5405	9594	3779	7962	2141	6317	0490	4660	8826	2989	7149	1306	5460
27	7088	1283	5475	9664	3849	8032	2211	6387	0559	4729	8895	3059	7219	1376	5529
28	7157	1353	5545	9733	3919	8101	2280	6456	0629	4799	8965	3128	7288	1445	5599
29	7227	1423	5615	9803	3989	8171	2350	6526	0699	4868	9034	3197	7357	1514	5668
30	7297	1492	5684	9873	4058	8241	2420	6595	0768	4937	9104	3267	7427	1583	5737
31	7367	1562	5754	9943	4128	8310	2489	6665	0838	5007	9173	3336	7496	1653	5806
32	7437	1632	5824	0013	4198	8380	2559	6735	0907	5076	9243	3406	7565	1722	5875
33	7507	1702	5894	0082	4268	8450	2628	6804	0977	5146	9312	3475	7635	1791	5945
34	7577	1772	5964	0152	4337	8519	2698	6874	1046	5215	9381	3544	7704	1860	6014
35	7647	1842	6034	0222	4407	8589	2768	6943	1116	5285	9451	3614	7773	1930	6083
36	7717	1912	6103	0292	4477	8659	2837	7013	1185	5354	9520	3683	7843	1999	6152
37	7787	1982	6173	0361	4547	8728	2907	7082	1255	5424	9590	3752	7912	2068	6221
38	7857	2052	6243	0431	4616	8798	2977	7152	1324	5493	9659	3822	7981	2137	6291
39	7927	2121	6313	0501	4686	8868	3046	7222	1394	5563	9728	3891	8050	2207	6360
40	7997	2191	6383	0571	4756	8937	3116	7291	1463	5632	9798	3960	8120	2276	6429
41	8067	2261	6453	0641	4825	9007	3185	7361	1533	5702	9867	4030	8189	2345	6498
42	8137	2331	6522	0710	4895	9077	3255	7430	1602	5771	9937	4099	8258	2414	6567
43	8207	2401	6592	0780	4965	9146	3325	7500	1672	5840	0006	4168	8328	2484	6637
44	8277	2471	6662	0850	5035	9216	3394	7569	1741	5910	0075	4238	8397	2553	6706
45	8346	2541	6732	0920	5104	9286	3464	7639	1811	5979	0145	4307	8466	2622	6775
46	8416	2611	6802	0989	5174	9355	3533	7708	1880	6049	0214	4376	8535	2691	6844
47	8486	2681	6871	1059	5244	9425	3603	7778	1950	6118	0284	4446	8605	2761	6913
48	8556	2750	6941	1129	5313	9495	3673	7848	2019	6188	0353	4515	8674	2830	6982
49	8626	2820	7011	1199	5383	9564	3742	7917	2089	6257	0422	4584	8743	2899	7052
50	8696	2890	7081	1268	5453	9634	3812	7987	2158	6327	0492	4654	8813	2968	7121
51	8766	2960	7151	1338	5523	9704	3882	8056	2228	6396	0561	4723	8882	3038	7190
52	8836	3030	7221	1408	5592	9773	3951	8126	2297	6465	0631	4792	8951	3107	7259
53	8906	3100	7290	1478	5662	9843	4021	8195	2367	6535	0700	4862	9020	3176	7328
54	8976	3170	7360	1548	5732	9913	4090	8265	2436	6604	0769	4931	9090	3245	7398
55	9046	3239	7430	1617	5801	9982	4160	8334	2506	6674	0839	5000	9159	3314	7467
56	9116	3309	7500	1687	5871	0052	4230	8404	2575	6743	0908	5070	9228	3384	7536
57	9186	3379	7570	1757	5941	0122	4299	8474	2645	6813	0977	5139	9298	3453	7605
58	9255	3449	7639	1827	6011	0191	4369	8543	2714	6882	1047	5208	9367	3522	7674
59	9325	3519	7709	1896	6080	0261	4438	8613	2784	6952	1116	5278	9436	3591	7743
60	9395	3589	7779	1966	6150	0331	4508	8682	2853	7021	1186	5347	9505	3661	7813
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

18 Deg. Co-Tangent

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	″
10. 475	10. 475	10. 474	10. 474	10. 473	10. 473	10. 472	10. 472	10. 472	10. 471	10. 471	10. 470	10. 470	10. 470	10. 469	″
4801	0605	6411	2221	8034	3850	9669	5492	1318	7147	2979	8814	4653	0495	6339	60
4731	0535	6341	2151	7964	3780	9600	5422	1248	7077	2910	8745	4584	0425	6270	59
4661	0465	6271	2081	7894	3711	9530	5353	1179	7008	2840	8676	4514	0356	6201	58
4591	0395	6202	2011	7825	3641	9461	5283	1109	6938	2771	8606	4445	0287	6132	57
4522	0325	6132	1942	7755	3571	9391	5214	1040	6869	2701	8537	4376	0217	6062	56
4452	0255	6062	1872	7685	3502	9321	5144	0970	6799	2632	8467	4306	0148	5993	55
4382	0185	5992	1802	7615	3432	9252	5075	0901	6730	2562	8398	4237	0079	5924	54
4312	0115	5922	1732	7546	3362	9182	5005	0831	6660	2493	8329	4168	0010	5855	53
4242	0045	5852	1662	7476	3292	9112	4935	0762	6591	2424	8259	4098	9940	5786	52
4172	9975	5782	1593	7406	3223	9043	4866	0692	6521	2354	8190	4029	9871	5716	51
4102	9906	5713	1523	7336	3153	8973	4796	0622	6452	2285	8121	3960	9802	5647	50
4032	9836	5643	1453	7267	3083	8903	4727	0553	6382	2215	8051	3890	9733	5578	49
3962	9766	5573	1383	7197	3014	8834	4657	0483	6313	2146	7982	3821	9663	5509	48
3892	9696	5503	1313	7127	2944	8764	4587	0414	6244	2076	7912	3752	9594	5440	47
3822	9626	5433	1244	7057	2874	8694	4518	0344	6174	2007	7843	3682	9525	5370	46
3752	9556	5363	1174	6988	2805	8625	4448	0275	6105	1938	7774	3613	9455	5301	45
3682	9486	5293	1104	6918	2735	8555	4379	0205	6035	1868	7704	3544	9386	5232	44
3612	9416	5224	1034	6848	2665	8486	4309	0136	5966	1799	7635	3474	9317	5163	43
3542	9346	5154	0964	6778	2596	8416	4239	0066	5896	1729	7566	3405	9248	5093	42
3472	9276	5084	0895	6709	2526	8346	4170	9997	5827	1660	7496	3336	9178	5024	41
3402	9206	5014	0825	6639	2456	8277	4100	9927	5757	1590	7427	3266	9109	4955	40
3332	9137	4944	0755	6569	2387	8207	4031	9858	5688	1521	7357	3197	9040	4886	39
3262	9067	4874	0685	6499	2317	8137	3961	9788	5618	1452	7288	3128	8971	4817	38
3192	8997	4805	0616	6430	2247	8068	3892	9719	5549	1382	7219	3058	8901	4747	37
3122	8927	4735	0546	6360	2177	7998	3822	9649	5479	1313	7149	2989	8832	4678	36
3052	8857	4665	0476	6290	2108	7928	3752	9580	5410	1243	7080	2920	8763	4609	35
2982	8787	4595	0406	6221	2038	7859	3683	9510	5340	1174	7011	2851	8694	4540	34
2912	8717	4525	0336	6151	1968	7789	3613	9441	5271	1105	6941	2781	8624	4471	33
2843	8647	4455	0267	6081	1899	7720	3544	9371	5201	1035	6872	2712	8555	4401	32
2773	8577	4385	0197	6011	1829	7650	3474	9301	5132	0966	6803	2643	8486	4332	31
2703	8508	4316	0127	5942	1759	7580	3405	9232	5063	0896	6733	2573	8417	4263	30
2633	8438	4246	0057	5872	1690	7511	3335	9162	4993	0827	6664	2504	8347	4194	29
2563	8368	4176	9987	5802	1620	7441	3265	9093	4924	0757	6594	2435	8278	4125	28
2493	8298	4106	9918	5732	1550	7372	3196	9023	4854	0688	6525	2365	8209	4055	27
2423	8228	4036	9848	5663	1481	7302	3126	8954	4785	0619	6456	2296	8140	3986	26
2353	8158	3966	9778	5593	1411	7232	3057	8884	4715	0549	6386	2227	8070	3917	25
2283	8088	3897	9708	5523	1341	7163	2987	8815	4646	0480	6317	2157	8001	3848	24
2213	8018	3827	9639	5453	1272	7093	2918	8745	4576	0410	6248	2088	7932	3779	23
2143	7948	3757	9569	5384	1202	7023	2848	8676	4507	0341	6178	2019	7863	3709	22
2073	7879	3687	9499	5314	1132	6954	2778	8606	4437	0272	6109	1950	7793	3640	21
2003	7809	3617	9429	5244	1063	6884	2709	8537	4368	0202	6040	1880	7724	3571	20
1933	7739	3547	9359	5175	0993	6815	2639	8467	4298	0133	5970	1811	7655	3502	19
1863	7669	3478	9290	5105	0923	6745	2570	8398	4229	0063	5901	1742	7586	3433	18
1793	7599	3408	9220	5035	0854	6675	2500	8328	4160	9994	5832	1672	7516	3363	17
1723	7529	3338	9150	4965	0784	6606	2431	8259	4090	9925	5762	1603	7447	3294	16
1654	7459	3268	9080	4896	0714	6536	2361	8189	4021	9855	5693	1534	7378	3225	15
1584	7389	3198	9011	4826	0645	6467	2292	8120	3951	9786	5624	1465	7309	3156	14
1514	7319	3129	8941	4756	0575	6397	2222	8050	3882	9716	5554	1395	7239	3087	13
1444	7250	3059	8871	4687	0505	6327	2152	7981	3812	9647	5485	1326	7170	3018	12
1374	7180	2989	8801	4617	0436	6258	2083	7911	3743	9578	5416	1257	7101	2948	11
1304	7110	2919	8732	4547	0366	6188	2013	7842	3673	9508	5346	1187	7032	2879	10
1234	7040	2849	8662	4477	0296	6118	1944	7772	3604	9439	5277	1118	6962	2810	9
1164	6970	2779	8592	4408	0227	6049	1874	7703	3535	9369	5208	1049	6893	2741	8
1094	6900	2710	8522	4338	0157	5979	1805	7633	3465	9300	5138	0980	6824	2672	7
1024	6830	2640	8452	4268	0087	5910	1735	7564	3396	9231	5069	0910	6755	2602	6
0954	6761	2570	8383	4199	0018	5840	1666	7494	3326	9161	5000	0841	6686	2533	5
0884	6691	2500	8313	4129	9948	5770	1596	7425	3257	9092	4930	0772	6616	2464	4
0814	6621	2430	8243	4059	9878	5701	1526	7355	3187	9023	4861	0702	6547	2395	3
0745	6551	2361	8173	3989	9809	5631	1457	7286	3118	8953	4792	0633	6478	2326	2
0675	6481	2291	8104	3920	9739	5562	1387	7216	3048	8884	4722	0564	6409	2257	1
0605	6411	2221	8034	3850	9669	5492	1318	7147	2979	8814	4653	0495	6339	2187	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Co-Tangent Deg. 71

Tangent Deg. 71

18 Deg. Sine

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	9.507	9.507	9.507	9.508	9.508	9.508	9.509	9.509	9.510	9.510	9.510	9.511	9.511	9.511	9.512
0	0992	4712	8428	2141	5850	9556	3258	6956	0651	4343	8031	1716	5397	9074	2749
1	1054	4774	8490	2203	5912	9617	3319	7018	0713	4405	8093	1777	5458	9136	2810
2	1116	4836	8552	2264	5974	9679	3381	7080	0775	4466	8154	1838	5519	9197	2871
3	1178	4898	8614	2326	6035	9741	3443	7141	0836	4528	8215	1900	5581	9258	2932
4	1240	4960	8676	2388	6097	9803	3504	7203	0898	4589	8277	1961	5642	9319	2993
5	1302	5022	8738	2450	6159	9864	3566	7264	0959	4650	8338	2023	5703	9381	3055
6	1364	5084	8799	2512	6221	9926	3628	7326	1021	4712	8400	2084	5765	9442	3116
7	1426	5146	8861	2574	6282	9988	3689	7388	1082	4773	8461	2145	5826	9503	3177
8	1488	5207	8923	2636	6344	0049	3751	7449	1144	4835	8523	2207	5887	9564	3238
9	1550	5269	8985	2697	6406	0111	3813	7511	1205	4896	8584	2268	5949	9626	3299
10	1612	5331	9047	2759	6468	0173	3874	7572	1267	4958	8645	2329	6010	9687	3361
11	1674	5393	9109	2821	6530	0235	3936	7634	1328	5019	8707	2391	6071	9748	3422
12	1736	5455	9171	2883	6591	0296	3998	7696	1390	5081	8768	2452	6133	9809	3483
13	1798	5517	9233	2945	6653	0358	4059	7757	1452	5142	8830	2514	6194	9871	3544
14	1860	5579	9295	3007	6715	0420	4121	7819	1513	5204	8891	2575	6255	9932	3605
15	1922	5641	9357	3068	6777	0481	4183	7880	1575	5265	8953	2636	6317	9993	3667
16	1984	5703	9418	3130	6838	0543	4244	7942	1636	5327	9014	2698	6378	0054	3728
17	2046	5765	9480	3192	6900	0605	4306	8004	1698	5388	9075	2759	6439	0116	3789
18	2108	5827	9542	3254	6962	0667	4368	8065	1759	5450	9137	2820	6500	0177	3850
19	2170	5889	9604	3316	7024	0728	4429	8127	1821	5511	9198	2882	6562	0238	3911
20	2232	5951	9666	3378	7086	0790	4491	8188	1882	5573	9260	2943	6623	0299	3972
21	2294	6013	9728	3439	7147	0852	4553	8250	1944	5634	9321	3004	6684	0361	4034
22	2356	6075	9790	3501	7209	0913	4614	8312	2005	5696	9383	3066	6746	0422	4095
23	2418	6137	9852	3563	7271	0975	4676	8373	2067	5757	9444	3127	6807	0483	4156
24	2480	6199	9914	3625	7333	1037	4738	8435	2128	5819	9505	3189	6868	0544	4217
25	2542	6261	9975	3687	7394	1099	4799	8496	2190	5880	9567	3250	6930	0606	4278
26	2604	6323	0037	3749	7456	1160	4861	8558	2252	5942	9628	3311	6991	0667	4340
27	2666	6385	0099	3810	7518	1222	4923	8620	2313	6003	9690	3373	7052	0728	4401
28	2728	6446	0161	3872	7580	1284	4984	8681	2375	6065	9751	3434	7113	0789	4462
29	2790	6508	0223	3934	7641	1345	5046	8743	2436	6126	9812	3495	7175	0851	4523
30	2852	6570	0285	3996	7703	1407	5107	8804	2498	6187	9874	3557	7236	0912	4584
31	2914	6632	0347	4058	7765	1469	5169	8866	2559	6249	9935	3618	7297	0973	4645
32	2976	6694	0409	4119	7827	1531	5231	8927	2621	6310	9997	3679	7359	1034	4707
33	3038	6756	0470	4181	7889	1592	5292	8989	2682	6372	0058	3741	7420	1096	4768
34	3100	6818	0532	4243	7950	1654	5354	9051	2744	6433	0119	3802	7481	1157	4829
35	3162	6880	0594	4305	8012	1716	5416	9112	2805	6495	0181	3863	7542	1218	4890
36	3224	6942	0656	4367	8074	1777	5477	9174	2867	6556	0242	3925	7604	1279	4951
37	3286	7004	0718	4429	8136	1839	5539	9235	2928	6618	0304	3986	7665	1341	5013
38	3348	7066	0780	4490	8197	1901	5601	9297	2990	6679	0365	4047	7726	1402	5074
39	3410	7128	0842	4552	8259	1962	5662	9359	3051	6741	0426	4109	7788	1463	5135
40	3472	7190	0904	4614	8321	2024	5724	9420	3113	6802	0488	4170	7849	1524	5196
41	3534	7252	0965	4676	8383	2086	5786	9482	3174	6864	0549	4231	7910	1585	5257
42	3596	7314	1027	4738	8444	2147	5847	9543	3236	6925	0611	4293	7971	1647	5318
43	3658	7375	1089	4799	8506	2209	5909	9605	3297	6987	0672	4354	8033	1708	5380
44	3720	7437	1151	4861	8568	2271	5970	9666	3359	7048	0733	4415	8094	1769	5441
45	3782	7499	1213	4923	8630	2333	6032	9728	3420	7109	0795	4477	8155	1830	5502
46	3844	7561	1275	4985	8691	2394	6094	9790	3482	7171	0856	4538	8217	1892	5563
47	3906	7623	1337	5047	8753	2456	6155	9851	3543	7232	0918	4600	8278	1953	5624
48	3968	7685	1399	5108	8815	2518	6217	9913	3605	7294	0979	4661	8339	2014	5685
49	4030	7747	1460	5170	8877	2579	6279	9974	3666	7355	1040	4722	8400	2075	5746
50	4092	7809	1522	5232	8938	2641	6340	0036	3728	7417	1102	4784	8462	2136	5808
51	4154	7871	1584	5294	9000	2703	6402	0097	3790	7478	1163	4845	8523	2198	5869
52	4216	7933	1646	5356	9062	2764	6463	0159	3851	7540	1225	4906	8584	2259	5930
53	4278	7995	1708	5417	9123	2826	6525	0221	3913	7601	1286	4967	8646	2320	5991
54	4340	8057	1770	5479	9185	2888	6587	0282	3974	7662	1347	5029	8707	2381	6052
55	4402	8119	1832	5541	9247	2949	6648	0344	4036	7724	1409	5090	8768	2442	6113
56	4464	8180	1893	5603	9309	3011	6710	0405	4097	7785	1470	5151	8829	2504	6175
57	4526	8242	1955	5665	9370	3073	6772	0467	4159	7847	1532	5213	8891	2565	6236
58	4588	8304	2017	5726	9432	3134	6833	0528	4220	7908	1593	5274	8952	2626	6297
59	4650	8366	2079	5788	9494	3196	6895	0590	4282	7970	1654	5335	9013	2687	6358
60	4712	8428	2141	5850	9556	3258	6956	0651	4343	8031	1716	5397	9074	2749	6419
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Sine Deg. 71

18 Deg. Co-Sine

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
	9.976	9.976	9.976	9.976	9.976	9.976	9.976	9.976	9.975	9.975	9.975	9.975	9.975	9.975	9.975	″
0	3179	2750	2321	1891	1461	1030	0599	0167	9736	9303	8870	8437	8004	7570	7135	60
1	3172	2743	2314	1884	1454	1023	0592	0160	9728	9296	8863	8430	7997	7563	7128	59
2	3165	2736	2307	1877	1446	1016	0585	0153	9721	9289	8856	8423	7989	7555	7121	58
3	3158	2729	2299	1869	1439	1009	0577	0146	9714	9282	8849	8416	7982	7548	7114	57
4	3151	2722	2292	1862	1432	1001	0570	0139	9707	9274	8842	8408	7975	7541	7106	56
5	3144	2715	2285	1855	1425	0994	0563	0131	9700	9267	8834	8401	7968	7534	7099	55
6	3136	2707	2278	1848	1418	0987	0556	0124	9692	9260	8827	8394	7960	7526	7092	54
7	3129	2700	2271	1841	1411	0980	0549	0117	9685	9253	8820	8387	7953	7519	7085	53
8	3122	2693	2264	1834	1403	0973	0541	0110	9678	9246	8813	8380	7946	7512	7077	52
9	3115	2686	2256	1826	1396	0965	0534	0103	9671	9238	8806	8372	7939	7505	7070	51
10	3108	2679	2249	1819	1389	0958	0527	0095	9664	9231	8798	8365	7931	7497	7063	50
11	3101	2672	2242	1812	1382	0951	0520	0088	9656	9224	8791	8358	7924	7490	7056	49
12	3094	2664	2235	1805	1375	0944	0513	0081	9649	9217	8784	8351	7917	7483	7049	48
13	3086	2657	2228	1798	1367	0937	0505	0074	9642	9209	8777	8343	7910	7476	7041	47
14	3079	2650	2221	1791	1360	0929	0498	0067	9635	9202	8769	8336	7903	7468	7034	46
15	3072	2643	2213	1783	1353	0922	0491	0060	9627	9195	8762	8329	7895	7461	7027	45
16	3065	2636	2206	1776	1346	0915	0484	0052	9620	9188	8755	8322	7888	7454	7020	44
17	3058	2629	2199	1769	1339	0908	0477	0045	9613	9181	8748	8315	7881	7447	7012	43
18	3051	2622	2192	1762	1332	0901	0470	0038	9606	9173	8741	8307	7874	7440	7005	42
19	3044	2614	2185	1755	1324	0894	0462	0031	9599	9166	8733	8300	7866	7432	6998	41
20	3036	2607	2178	1748	1317	0886	0455	0024	9591	9159	8726	8293	7859	7425	6991	40
21	3029	2600	2170	1740	1310	0879	0448	0016	9584	9152	8719	8286	7852	7418	6983	39
22	3022	2593	2163	1733	1303	0872	0441	0009	9577	9145	8712	8278	7845	7411	6976	38
23	3015	2586	2156	1726	1296	0865	0434	0002	9570	9137	8704	8271	7837	7403	6969	37
24	3008	2579	2149	1719	1289	0858	0426	9995	9563	9130	8697	8264	7830	7396	6962	36
25	3001	2571	2142	1712	1281	0850	0419	9988	9555	9123	8690	8257	7823	7389	6954	35
26	2993	2564	2135	1705	1274	0843	0412	9980	9548	9116	8683	8250	7816	7382	6947	34
27	2986	2557	2127	1697	1267	0836	0405	9973	9541	9109	8676	8242	7809	7374	6940	33
28	2979	2550	2120	1690	1260	0829	0398	9966	9534	9101	8668	8235	7801	7367	6933	32
29	2972	2543	2113	1683	1253	0822	0390	9959	9527	9094	8661	8228	7794	7360	6925	31
30	2965	2536	2106	1676	1245	0815	0383	9952	9519	9087	8654	8221	7787	7353	6918	30
31	2958	2528	2099	1669	1238	0807	0376	9944	9512	9080	8647	8213	7780	7345	6911	29
32	2951	2521	2092	1662	1231	0800	0369	9937	9505	9072	8640	8206	7772	7338	6904	28
33	2943	2514	2084	1654	1224	0793	0362	9930	9498	9065	8632	8199	7765	7331	6896	27
34	2936	2507	2077	1647	1217	0786	0354	9923	9491	9058	8625	8192	7758	7324	6889	26
35	2929	2500	2070	1640	1210	0779	0347	9916	9483	9051	8618	8184	7751	7316	6882	25
36	2922	2493	2063	1633	1202	0771	0340	9908	9476	9044	8611	8177	7743	7309	6875	24
37	2915	2486	2056	1626	1195	0764	0333	9901	9469	9036	8603	8170	7736	7302	6867	23
38	2908	2478	2049	1619	1188	0757	0326	9894	9462	9029	8596	8163	7729	7295	6860	22
39	2901	2471	2041	1611	1181	0750	0319	9887	9455	9022	8589	8156	7722	7288	6853	21
40	2893	2464	2034	1604	1174	0743	0311	9880	9447	9015	8582	8148	7715	7280	6846	20
41	2886	2457	2027	1597	1166	0736	0304	9872	9440	9008	8575	8141	7707	7273	6838	19
42	2879	2450	2020	1590	1159	0728	0297	9865	9433	9000	8567	8134	7700	7266	6831	18
43	2872	2443	2013	1583	1152	0721	0290	9858	9426	8993	8560	8127	7693	7259	6824	17
44	2865	2435	2006	1576	1145	0714	0283	9851	9419	8986	8553	8119	7686	7251	6817	16
45	2858	2428	1999	1568	1138	0707	0275	9844	9411	8979	8546	8112	7678	7244	6809	15
46	2850	2421	1991	1561	1131	0700	0268	9836	9404	8971	8538	8105	7671	7237	6802	14
47	2843	2414	1984	1554	1123	0692	0261	9829	9397	8964	8531	8098	7664	7230	6795	13
48	2836	2407	1977	1547	1116	0685	0254	9822	9390	8957	8524	8091	7657	7222	6788	12
49	2829	2400	1970	1540	1109	0678	0247	9815	9383	8950	8517	8083	7649	7215	6780	11
50	2822	2392	1963	1532	1102	0671	0239	9808	9375	8943	8510	8076	7642	7208	6773	10
51	2815	2385	1956	1525	1095	0664	0232	9800	9368	8935	8502	8069	7635	7201	6766	9
52	2808	2378	1948	1518	1087	0656	0225	9793	9361	8928	8495	8062	7628	7193	6759	8
53	2800	2371	1941	1511	1080	0649	0218	9786	9354	8921	8488	8054	7620	7186	6751	7
54	2793	2364	1934	1504	1073	0642	0211	9779	9346	8914	8481	8047	7613	7179	6744	6
55	2786	2357	1927	1497	1066	0635	0203	9772	9339	8907	8473	8040	7606	7172	6737	5
56	2779	2350	1920	1489	1059	0628	0196	9764	9332	8899	8466	8033	7599	7164	6730	4
57	2772	2342	1913	1482	1052	0621	0189	9757	9325	8892	8459	8025	7592	7157	6722	3
58	2765	2335	1905	1475	1044	0613	0182	9750	9318	8885	8452	8018	7584	7150	6715	2
59	2757	2328	1898	1468	1037	0606	0175	9743	9310	8878	8445	8011	7577	7143	6708	1
60	2750	2321	1891	1461	1030	0599	0167	9736	9303	8870	8437	8004	7570	7135	6701	0
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Sine Deg. 71

18 Deg. Tangent

″	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9.530	9.531	9.531	9.532	9.532	9.532	9.533	9.533	9.534	9.534	9.534	9.535	9.535	9.536	9.536
0	7813	1961	6107	0250	4389	8526	2659	6789	0916	5040	9161	3278	7393	1505	5613
1	7882	2031	6176	0319	4458	8594	2728	6858	0985	5109	9229	3347	7462	1573	5682
2	7951	2100	6245	0388	4527	8663	2797	6927	1053	5177	9298	3416	7530	1642	5750
3	8020	2169	6314	0457	4596	8732	2865	6995	1122	5246	9367	3484	7599	1710	5818
4	8089	2238	6383	0526	4665	8801	2934	7064	1191	5315	9435	3553	7667	1779	5887
5	8158	2307	6453	0595	4734	8870	3003	7133	1260	5383	9504	3621	7736	1847	5955
6	8228	2376	6522	0664	4803	8939	3072	7202	1328	5452	9573	3690	7804	1916	6024
7	8297	2445	6591	0733	4872	9008	3141	7271	1397	5521	9641	3759	7873	1984	6092
8	8366	2514	6660	0802	4941	9077	3210	7339	1466	5589	9710	3827	7941	2053	6161
9	8435	2584	6729	0871	5010	9146	3279	7408	1535	5658	9778	3896	8010	2121	6229
10	8504	2653	6798	0940	5079	9215	3347	7477	1603	5727	9847	3964	8078	2190	6298
11	8573	2722	6867	1009	5148	9284	3416	7546	1672	5796	9916	4033	8147	2258	6366
12	8643	2791	6936	1078	5217	9352	3485	7615	1741	5864	9984	4102	8216	2327	6434
13	8712	2860	7005	1147	5286	9421	3554	7683	1810	5933	0053	4170	8284	2395	6503
14	8781	2929	7074	1216	5355	9490	3623	7752	1878	6002	0122	4239	8353	2463	6571
15	8850	2998	7143	1285	5424	9559	3692	7821	1947	6070	0190	4307	8421	2532	6640
16	8919	3067	7212	1354	5493	9628	3760	7890	2016	6139	0259	4376	8490	2600	6708
17	8988	3136	7281	1423	5562	9697	3829	7959	2085	6208	0328	4444	8558	2669	6777
18	9058	3206	7350	1492	5630	9766	3898	8027	2153	6276	0396	4513	8627	2737	6845
19	9127	3275	7419	1561	5699	9835	3967	8096	2222	6345	0465	4582	8695	2806	6913
20	9196	3344	7488	1630	5768	9904	4036	8165	2291	6414	0534	4650	8764	2874	6982
21	9265	3413	7557	1699	5837	9973	4105	8234	2360	6482	0602	4719	8832	2943	7050
22	9334	3482	7627	1768	5906	0041	4174	8302	2428	6551	0671	4787	8901	3011	7119
23	9403	3551	7696	1837	5975	0110	4242	8371	2497	6620	0739	4856	8969	3080	7187
24	9473	3620	7765	1906	6044	0179	4311	8440	2566	6689	0808	4925	9038	3148	7256
25	9542	3689	7834	1975	6113	0248	4380	8509	2635	6757	0877	4993	9107	3217	7324
26	9611	3758	7903	2044	6182	0317	4449	8578	2703	6826	0945	5062	9175	3285	7392
27	9680	3827	7972	2113	6251	0386	4518	8646	2772	6895	1014	5130	9244	3354	7461
28	9749	3897	8041	2182	6320	0455	4587	8715	2841	6963	1083	5199	9312	3422	7529
29	9818	3966	8110	2251	6389	0524	4655	8784	2910	7032	1151	5267	9381	3491	7598
30	9887	4035	8179	2320	6458	0593	4724	8853	2978	7101	1220	5336	9449	3559	7666
31	9957	4104	8248	2389	6527	0661	4793	8922	3047	7169	1288	5405	9518	3628	7735
32	0026	4173	8317	2458	6596	0730	4862	8990	3116	7238	1357	5473	9586	3696	7803
33	0095	4242	8386	2527	6665	0799	4931	9059	3184	7307	1426	5542	9655	3765	7871
34	0164	4311	8455	2596	6734	0868	5000	9128	3253	7375	1494	5610	9723	3833	7940
35	0233	4380	8524	2665	6802	0937	5068	9197	3322	7444	1563	5679	9792	3902	8008
36	0302	4449	8593	2734	6871	1006	5137	9265	3391	7513	1632	5748	9860	3970	8077
37	0371	4518	8662	2803	6940	1075	5206	9334	3459	7581	1700	5816	9929	4039	8145
38	0441	4587	8731	2872	7009	1144	5275	9403	3528	7650	1769	5885	9997	4107	8214
39	0510	4657	8800	2941	7078	1213	5344	9472	3597	7719	1837	5953	0066	4175	8282
40	0579	4726	8869	3010	7147	1281	5413	9541	3666	7787	1906	6022	0134	4244	8350
41	0648	4795	8938	3079	7216	1350	5481	9609	3734	7856	1975	6090	0203	4312	8419
42	0717	4864	9007	3148	7285	1419	5550	9678	3803	7925	2043	6159	0271	4381	8487
43	0786	4933	9076	3217	7354	1488	5619	9747	3872	7993	2112	6227	0340	4449	8556
44	0855	5002	9145	3286	7423	1557	5688	9816	3940	8062	2181	6296	0408	4518	8624
45	0925	5071	9214	3355	7492	1626	5757	9884	4009	8131	2249	6365	0477	4586	8692
46	0994	5140	9283	3424	7561	1695	5825	9953	4078	8199	2318	6433	0545	4655	8761
47	1063	5209	9352	3493	7630	1764	5894	0022	4147	8268	2386	6502	0614	4723	8829
48	1132	5278	9422	3562	7699	1832	5963	0091	4215	8337	2455	6570	0683	4792	8898
49	1201	5347	9491	3631	7767	1901	6032	0160	4284	8405	2524	6639	0751	4860	8966
50	1270	5416	9560	3700	7836	1970	6101	0228	4353	8474	2592	6707	0820	4929	9034
51	1339	5486	9629	3769	7905	2039	6170	0297	4421	8543	2661	6776	0888	4997	9103
52	1408	5555	9698	3837	7974	2108	6238	0366	4490	8611	2729	6845	0957	5065	9171
53	1478	5624	9767	3906	8043	2177	6307	0435	4559	8680	2798	6913	1025	5134	9240
54	1547	5693	9836	3975	8112	2246	6376	0503	4628	8749	2867	6982	1094	5202	9308
55	1616	5762	9905	4044	8181	2314	6445	0572	4696	8817	2935	7050	1162	5271	9377
56	1685	5831	9974	4113	8250	2383	6514	0641	4765	8886	3004	7119	1231	5339	9445
57	1754	5900	0043	4182	8319	2452	6582	0710	4834	8955	3073	7187	1299	5408	9513
58	1823	5969	0112	4251	8388	2521	6651	0778	4902	9023	3141	7256	1368	5476	9582
59	1892	6038	0181	4320	8457	2590	6720	0847	4971	9092	3210	7324	1436	5545	9650
60	1961	6107	0250	4389	8526	2659	6789	0916	5040	9161	3278	7393	1505	5613	9719
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

18 Deg. Co-Tangent

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55	56′	57	58′	59′	″
10.469	10.468	10.468	10.467	10.467	10.467	10.466	10.466	10.465	10.465	10.465	10.464	10.464	10.463	10.463	
2187	8039	3893	9750	5611	1474	7341	3211	9084	4960	0839	6722	2607	8495	4387	60
2118	7969	3824	9681	5542	1406	7272	3142	9015	4891	0771	6653	2538	8427	4318	59
2049	7900	3755	9612	5473	1337	7203	3073	8947	4823	0702	6584	2470	8358	4250	58
1980	7831	3686	9543	5404	1268	7135	3005	8878	4754	0633	6516	2401	8290	4182	57
1911	7762	3617	9474	5335	1199	7066	2936	8809	4685	0565	6447	2333	8221	4113	56
1842	7693	3547	9405	5266	1130	6997	2867	8740	4617	0496	6379	2264	8153	4045	55
1772	7624	3478	9336	5197	1061	6928	2798	8672	4548	0427	6310	2196	8084	3976	54
1703	7555	3409	9267	5128	0992	6859	2729	8603	4479	0359	6241	2127	8016	3908	53
1634	7486	3340	9198	5059	0923	6790	2661	8534	4411	0290	6173	2059	7947	3839	52
1565	7416	3271	9129	4990	0854	6721	2592	8465	4342	0222	6104	1990	7879	3771	51
1496	7347	3202	9060	4921	0785	6653	2523	8397	4273	0153	6036	1922	7810	3702	50
1427	7278	3133	8991	4852	0716	6584	2454	8328	4204	0084	5967	1853	7742	3634	49
1357	7209	3064	8922	4783	0648	6515	2385	8259	4136	0016	5898	1784	7673	3566	48
1288	7140	2995	8853	4714	0579	6446	2317	8190	4067	9947	5830	1716	7605	3497	47
1219	7071	2926	8784	4645	0510	6377	2248	8122	3998	9878	5761	1647	7537	3429	46
1150	7002	2857	8715	4576	0441	6308	2179	8053	3930	9810	5693	1579	7468	3360	45
1081	6933	2788	8646	4507	0372	6240	2110	7984	3861	9741	5624	1510	7400	3292	44
1012	6864	2719	8577	4438	0303	6171	2041	7915	3792	9672	5556	1442	7331	3223	43
0942	6794	2650	8508	4370	0234	6102	1973	7847	3724	9604	5487	1373	7263	3155	42
0873	6725	2581	8439	4301	0165	6033	1904	7778	3655	9535	5418	1305	7194	3087	41
0804	6656	2512	8370	4232	0096	5964	1835	7709	3586	9466	5350	1236	7126	3018	40
0735	6587	2443	8301	4163	0027	5895	1766	7640	3518	9398	5281	1168	7057	2950	39
0666	6518	2373	8232	4094	9959	5826	1698	7572	3449	9329	5213	1099	6989	2881	38
0597	6449	2304	8163	4025	9890	5758	1629	7503	3380	9261	5144	1031	6920	2813	37
0527	6380	2235	8094	3956	9821	5689	1560	7434	3311	9192	5075	0962	6852	2744	36
0458	6311	2166	8025	3887	9752	5620	1491	7365	3243	9123	5007	0893	6783	2676	35
0389	6242	2097	7956	3818	9683	5551	1422	7297	3174	9055	4938	0825	6715	2608	34
0320	6173	2028	7887	3749	9614	5482	1354	7228	3105	8986	4870	0756	6646	2539	33
0251	6103	1959	7818	3680	9545	5413	1285	7159	3037	8917	4801	0688	6578	2471	32
0182	6034	1890	7749	3611	9476	5345	1216	7090	2968	8849	4733	0619	6509	2402	31
0113	5965	1821	7680	3542	9407	5276	1147	7022	2899	8780	4664	0551	6441	2334	30
0043	5896	1752	7611	3473	9339	5207	1078	6953	2831	8712	4595	0482	6372	2265	29
9974	5827	1683	7542	3404	9270	5138	1010	6884	2762	8643	4527	0414	6304	2197	28
9905	5758	1614	7473	3335	9201	5069	0941	6816	2693	8574	4458	0345	6235	2129	27
9836	5689	1545	7404	3266	9132	5000	0872	6747	2625	8506	4390	0277	6167	2060	26
9767	5620	1476	7335	3198	9063	4932	0803	6678	2556	8437	4321	0208	6098	1992	25
9698	5551	1407	7266	3129	8994	4863	0735	6609	2487	8368	4252	0140	6030	1923	24
9629	5482	1338	7197	3060	8925	4794	0666	6541	2419	8300	4184	0071	5961	1855	23
9559	5413	1269	7128	2991	8856	4725	0597	6472	2350	8231	4115	0003	5893	1786	22
9490	5343	1200	7059	2922	8787	4656	0528	6403	2281	8163	4047	9934	5825	1718	21
9421	5274	1131	6990	2853	8719	4587	0459	6334	2213	8094	3978	9866	5756	1650	20
9352	5205	1062	6921	2784	8650	4519	0391	6266	2144	8025	3910	9797	5688	1581	19
9283	5136	0993	6852	2715	8581	4450	0322	6197	2075	7957	3841	9729	5619	1513	18
9214	5067	0924	6783	2646	8512	4381	0253	6128	2007	7888	3773	9660	5551	1444	17
9145	4998	0855	6714	2577	8443	4312	0184	6060	1938	7819	3704	9592	5482	1376	16
9075	4929	0786	6645	2508	8374	4243	0116	5991	1869	7751	3635	9523	5414	1308	15
9006	4860	0717	6576	2439	8305	4175	0047	5922	1801	7682	3567	9455	5345	1239	14
8937	4791	0648	6507	2370	8236	4106	9978	5853	1732	7614	3498	9386	5277	1171	13
8868	4722	0578	6438	2301	8168	4037	9909	5785	1663	7545	3430	9317	5208	1102	12
8799	4653	0509	6369	2233	8099	3968	9840	5716	1595	7476	3361	9249	5140	1034	11
8730	4584	0440	6300	2164	8030	3899	9772	5647	1526	7408	3293	9180	5071	0966	10
8661	4514	0371	6231	2095	7961	3830	9703	5579	1457	7339	3224	9112	5003	0897	9
8592	4445	0302	6163	2026	7892	3762	9634	5510	1389	7271	3155	9043	4935	0829	8
8522	4376	0233	6094	1957	7823	3693	9565	5441	1320	7202	3087	8975	4866	0760	7
8453	4307	0164	6025	1888	7754	3624	9497	5372	1251	7133	3018	8906	4798	0692	6
8384	4238	0095	5956	1819	7686	3555	9428	5304	1183	7065	2950	8838	4729	0623	5
8315	4169	0026	5887	1750	7617	3486	9359	5235	1114	6996	2881	8769	4661	0555	4
8246	4100	9957	5818	1681	7548	3418	9290	5166	1045	6927	2813	8701	4592	0487	3
8177	4031	9888	5749	1612	7479	3349	9222	5098	0977	6859	2744	8632	4524	0418	2
8108	3962	9819	5680	1543	7410	3280	9153	5029	0908	6790	2676	8564	4455	0350	1
8039	3893	9750	5611	1474	7341	3211	9084	4960	0839	6722	2607	8495	4387	0281	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9. 512	9. 513	9. 513	9. 513	9. 514	9. 514	9. 514	9. 515	9. 515	9. 515	9. 516	9. 516	9. 517	9. 517	9. 517
0	6419	0086	3750	7410	1067	4721	8371	2017	5660	9300	2936	6569	0198	3824	7447
1	6480	0147	3811	7471	1128	4781	8431	2078	5721	9360	2997	6629	0259	3885	7507
2	6541	0209	3872	7532	1189	4842	8492	2139	5781	9421	3057	6690	0319	3945	7568
3	6603	0270	3933	7593	1250	4903	8553	2199	5842	9482	3118	6750	0380	4006	7628
4	6664	0331	3994	7654	1311	4964	8614	2260	5903	9542	3178	6811	0440	4066	7688
5	6725	0392	4055	7715	1372	5025	8675	2321	5964	9603	3239	6871	0501	4126	7749
6	6786	0453	4116	7776	1433	5086	8735	2381	6024	9664	3299	6932	0561	4187	7809
7	6847	0514	4177	7837	1494	5147	8796	2442	6085	9724	3360	6992	0622	4247	7869
8	6908	0575	4238	7898	1555	5207	8857	2503	6146	9785	3421	7053	0682	4308	7930
9	6969	0636	4299	7959	1615	5268	8918	2564	6206	9845	3481	7113	0742	4368	7990
10	7031	0697	4360	8020	1676	5329	8979	2624	6267	9906	3542	7174	0803	4428	8050
11	7092	0758	4421	8081	1737	5390	9039	2685	6328	9967	3602	7235	0863	4489	8111
12	7153	0819	4482	8142	1798	5451	9100	2746	6388	0027	3663	7295	0924	4549	8171
13	7214	0880	4543	8203	1859	5512	9161	2807	6449	0088	3723	7356	0984	4610	8231
14	7275	0942	4604	8264	1920	5573	9222	2867	6510	0149	3784	7416	1045	4670	8292
15	7336	1003	4665	8325	1981	5633	9282	2928	6570	0209	3845	7477	1105	4730	8352
16	7397	1064	4727	8386	2042	5694	9343	2989	6631	0270	3905	7537	1166	4791	8412
17	7459	1125	4788	8447	2103	5755	9404	3050	6692	0330	3966	7598	1226	4851	8473
18	7520	1186	4849	8508	2164	5816	9465	3110	6752	0391	4026	7658	1286	4911	8533
19	7581	1247	4910	8569	2224	5877	9526	3171	6813	0452	4087	7719	1347	4972	8593
20	7642	1308	4971	8630	2285	5938	9586	3232	6874	0512	4147	7779	1407	5032	8654
21	7703	1369	5032	8691	2346	5998	9647	3292	6934	0573	4208	7840	1468	5093	8714
22	7764	1430	5093	8752	2407	6059	9708	3353	6995	0633	4268	7900	1528	5153	8774
23	7825	1491	5154	8813	2468	6120	9769	3414	7056	0694	4329	7961	1589	5213	8835
24	7886	1552	5215	8874	2529	6181	9830	3475	7116	0755	4390	8021	1649	5274	8895
25	7948	1613	5276	8934	2590	6242	9890	3535	7177	0815	4450	8082	1710	5334	8955
26	8009	1674	5337	8995	2651	6303	9951	3596	7238	0876	4511	8142	1770	5395	9016
27	8070	1735	5398	9056	2712	6363	0012	3657	7298	0937	4571	8203	1830	5455	9076
28	8131	1797	5459	9117	2773	6424	0073	3718	7359	0997	4632	8263	1891	5515	9136
29	8192	1858	5520	9178	2833	6485	0133	3778	7420	1058	4692	8324	1951	5576	9197
30	8253	1919	5581	9239	2894	6546	0194	3839	7480	1118	4753	8384	2012	5636	9257
31	8314	1980	5642	9300	2955	6607	0255	3900	7541	1179	4813	8444	2072	5696	9317
32	8375	2041	5703	9361	3016	6668	0316	3960	7602	1240	4874	8505	2133	5757	9378
33	8437	2102	5764	9422	3077	6728	0377	4021	7662	1300	4935	8565	2193	5817	9438
34	8498	2163	5825	9483	3138	6789	0437	4082	7723	1361	4995	8626	2253	5878	9498
35	8559	2224	5886	9544	3199	6850	0498	4143	7784	1421	5056	8686	2314	5938	9559
36	8620	2285	5947	9605	3260	6911	0559	4203	7844	1482	5116	8747	2374	5998	9619
37	8681	2346	6008	9666	3321	6972	0620	4264	7905	1543	5177	8807	2435	6059	9679
38	8742	2407	6069	9727	3381	7033	0680	4325	7966	1603	5237	8868	2495	6119	9740
39	8803	2468	6130	9788	3442	7093	0741	4385	8026	1664	5298	8928	2556	6179	9800
40	8864	2529	6191	9849	3503	7154	0802	4446	8087	1724	5358	8989	2616	6240	9860
41	8925	2590	6252	9910	3564	7215	0863	4507	8148	1785	5419	9049	2676	6300	9921
42	8987	2651	6313	9971	3625	7276	0923	4568	8208	1846	5479	9110	2737	6361	9981
43	9048	2712	6374	0031	3686	7337	0984	4628	8269	1906	5540	9170	2797	6421	0041
44	9109	2773	6435	0092	3747	7398	1045	4689	8330	1967	5600	9231	2858	6481	0101
45	9170	2834	6496	0153	3808	7458	1106	4750	8390	2027	5661	9291	2918	6542	0162
46	9231	2896	6557	0214	3868	7519	1166	4810	8451	2088	5722	9352	2979	6602	0222
47	9292	2957	6618	0275	3929	7580	1227	4871	8511	2148	5782	9412	3039	6662	0282
48	9353	3018	6679	0336	3990	7641	1288	4932	8572	2209	5843	9473	3099	6723	0343
49	9414	3079	6740	0397	4051	7702	1349	4992	8633	2270	5903	9533	3160	6783	0403
50	9475	3140	6801	0458	4112	7762	1410	5053	8693	2330	5964	9594	3220	6843	0463
51	9537	3201	6862	0519	4173	7823	1470	5114	8754	2391	6024	9654	3281	6904	0524
52	9598	3262	6923	0580	4234	7884	1531	5175	8815	2451	6085	9715	3341	6964	0584
53	9659	3323	6984	0641	4295	7945	1592	5235	8875	2512	6145	9775	3401	7025	0644
54	9720	3384	7044	0702	4355	8006	1653	5296	8936	2573	6206	9836	3462	7085	0704
55	9781	3445	7105	0763	4416	8066	1713	5357	8997	2633	6266	9896	3522	7145	0765
56	9842	3506	7166	0824	4477	8127	1774	5417	9057	2694	6327	9956	3583	7206	0825
57	9903	3567	7227	0884	4538	8188	1835	5478	9118	2754	6387	0017	3643	7266	0885
58	9964	3628	7288	0945	4599	8249	1896	5539	9179	2815	6448	0077	3704	7326	0946
59	0025	3689	7349	1006	4660	8310	1956	5599	9239	2875	6508	0138	3764	7387	1006
60	0086	3750	7410	1067	4721	8371	2017	5660	9300	2936	6569	0198	3824	7447	1066
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
	9. 975	9. 975	9. 975	9. 975	9. 975	9. 975	9. 975	9. 975	9. 975	9. 975	9. 975	9. 975	9. 975	9. 975	9. 975	″
	6701	6265	5830	5394	4957	4521	4083	3646	3208	2769	2330	1891	1451	1011	0570	60
	6693	6258	5823	5387	4950	4513	4076	3638	3200	2762	2323	1884	1444	1004	0563	59
	6686	6251	5815	5379	4943	4506	4069	3631	3193	2754	2316	1876	1436	0996	0556	58
	6679	6244	5808	5372	4936	4499	4061	3624	3186	2747	2308	1869	1429	0989	0548	57
	6672	6236	5801	5365	4928	4491	4054	3616	3178	2740	2301	1862	1422	0982	0541	56
	6664	6229	5794	5357	4921	4484	4047	3609	3171	2732	2294	1854	1414	0974	0534	55
	6657	6222	5786	5350	4914	4477	4040	3602	3164	2725	2286	1847	1407	0967	0526	54
	6650	6215	5779	5343	4906	4470	4032	3595	3156	2718	2279	1840	1400	0960	0519	53
	6643	6207	5772	5336	4899	4462	4025	3587	3149	2711	2272	1832	1392	0952	0512	52
	6635	6200	5764	5328	4892	4455	4018	3580	3142	2703	2264	1825	1385	0945	0504	51
	6628	6193	5757	5321	4885	4448	4010	3573	3134	2696	2257	1818	1378	0938	0497	50
	6621	6186	5750	5314	4877	4440	4003	3565	3127	2689	2250	1810	1370	0930	0490	49
	6614	6178	5743	5307	4870	4433	3996	3558	3120	2681	2242	1803	1363	0923	0482	48
	6606	6171	5735	5299	4863	4426	3989	3551	3113	2674	2235	1796	1356	0916	0475	47
	6599	6164	5728	5292	4855	4419	3981	3543	3105	2667	2228	1788	1348	0908	0468	46
	6592	6157	5721	5285	4848	4411	3974	3536	3098	2659	2220	1781	1341	0901	0460	45
	6585	6149	5714	5277	4841	4404	3967	3529	3091	2652	2213	1774	1334	0894	0453	44
	6577	6142	5706	5270	4834	4397	3959	3522	3083	2645	2206	1766	1326	0886	0446	43
	6570	6135	5699	5263	4826	4389	3952	3514	3076	2637	2198	1759	1319	0879	0438	42
	6563	6128	5692	5256	4819	4382	3945	3507	3069	2630	2191	1752	1312	0872	0431	41
	6556	6120	5685	5248	4812	4375	3937	3500	3061	2623	2184	1744	1304	0864	0423	40
	6548	6113	5677	5241	4805	4368	3930	3492	3054	2615	2176	1737	1297	0857	0416	39
	6541	6106	5670	5234	4797	4360	3923	3485	3047	2608	2169	1730	1290	0849	0409	38
	6534	6099	5663	5227	4790	4353	3916	3478	3040	2601	2162	1722	1282	0842	0401	37
	6527	6091	5655	5219	4783	4346	3908	3470	3032	2594	2154	1715	1275	0835	0394	36
	6519	6084	5648	5212	4775	4338	3901	3463	3025	2586	2147	1708	1268	0827	0387	35
	6512	6077	5641	5205	4768	4331	3894	3456	3018	2579	2140	1700	1260	0820	0379	34
	6505	6069	5634	5197	4761	4324	3886	3449	3010	2572	2133	1693	1253	0813	0372	33
	6498	6062	5626	5190	4754	4317	3879	3441	3003	2564	2125	1686	1246	0805	0365	32
	6490	6055	5619	5183	4746	4309	3872	3434	2996	2557	2118	1678	1238	0798	0357	31
	6483	6048	5612	5176	4739	4302	3865	3427	2988	2550	2111	1671	1231	0791	0350	30
	6476	6040	5605	5168	4732	4295	3857	3419	2981	2542	2103	1664	1224	0783	0343	29
	6469	6033	5597	5161	4724	4287	3850	3412	2974	2535	2096	1656	1216	0776	0335	28
	6461	6026	5590	5154	4717	4280	3843	3405	2966	2528	2089	1649	1209	0769	0328	27
	6454	6019	5583	5147	4710	4273	3835	3397	2959	2520	2081	1642	1202	0761	0321	26
	6447	6011	5576	5139	4703	4266	3828	3390	2952	2513	2074	1634	1194	0754	0313	25
	6440	6004	5568	5132	4695	4258	3821	3383	2945	2506	2067	1627	1187	0747	0306	24
	6432	5997	5561	5125	4688	4251	3813	3376	2937	2498	2059	1620	1180	0739	0299	23
	6425	5990	5554	5117	4681	4244	3806	3368	2930	2491	2052	1612	1172	0732	0291	22
	6418	5982	5546	5110	4673	4236	3799	3361	2923	2484	2045	1605	1165	0725	0284	21
	6411	5975	5539	5103	4666	4229	3792	3354	2915	2477	2037	1598	1158	0717	0277	20
	6403	5968	5532	5096	4659	4222	3784	3346	2908	2469	2030	1590	1150	0710	0269	19
	6396	5961	5525	5088	4652	4215	3777	3339	2901	2462	2023	1583	1143	0703	0262	18
	6389	5953	5517	5081	4644	4207	3770	3332	2893	2455	2015	1576	1136	0695	0254	17
	6382	5946	5510	5074	4637	4200	3762	3324	2886	2447	2008	1568	1128	0688	0247	16
	6374	5939	5503	5067	4630	4193	3755	3317	2879	2440	2001	1561	1121	0681	0240	15
	6367	5932	5496	5059	4623	4185	3748	3310	2871	2433	1993	1554	1114	0673	0232	14
	6360	5924	5488	5052	4615	4178	3740	3303	2864	2425	1986	1546	1106	0666	0225	13
	6353	5917	5481	5045	4608	4171	3733	3295	2857	2418	1979	1539	1099	0659	0218	12
	6345	5910	5474	5037	4601	4163	3726	3288	2849	2411	1971	1532	1092	0651	0210	11
	6338	5902	5467	5030	4593	4156	3719	3281	2842	2403	1964	1524	1084	0644	0203	10
	6331	5895	5459	5023	4586	4149	3711	3273	2835	2396	1957	1517	1077	0637	0196	9
	6324	5888	5452	5016	4579	4142	3704	3266	2828	2389	1949	1510	1070	0629	0188	8
	6316	5881	5445	5008	4572	4134	3697	3259	2820	2381	1942	1502	1062	0622	0181	7
	6309	5873	5437	5001	4564	4127	3689	3251	2813	2374	1935	1495	1055	0615	0174	6
	6302	5866	5430	4994	4557	4120	3682	3244	2806	2367	1927	1488	1048	0607	0166	5
	6294	5859	5423	4987	4550	4112	3675	3237	2798	2359	1920	1480	1040	0600	0159	4
	6287	5852	5416	4979	4542	4105	3668	3229	2791	2352	1913	1473	1033	0592	0152	3
	6280	5844	5408	4972	4535	4098	3660	3222	2784	2345	1905	1466	1026	0585	0144	2
	6273	5837	5401	4965	4528	4091	3653	3215	2776	2337	1898	1458	1018	0578	0137	1
	6265	5830	5394	4957	4521	4083	3646	3208	2769	2330	1891	1451	1011	0570	0129	0
	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

19 Deg. Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.536	9.537	9.537	9.538	9.538	9.539	9.539	9.539	9.540	9.540	9.541	9.541	9.541	9.542	9.542
0	9719	3821	7920	2017	6110	0200	4287	8371	2453	6531	0606	4678	8747	2813	6877
1	9787	3889	7989	2085	6178	0268	4355	8439	2521	6599	0674	4746	8815	2881	6944
2	9855	3958	8057	2153	6246	0336	4423	8507	2589	6667	0742	4814	8883	2949	7012
3	9924	4026	8125	2221	6314	0404	4492	8576	2657	6735	0810	4882	8951	3017	7080
4	9992	4094	8193	2290	6383	0473	4560	8644	2725	6802	0877	4949	9018	3084	7147
5	0061	4163	8262	2358	6451	0541	4628	8712	2793	6870	0945	5017	9086	3152	7215
6	0129	4231	8330	2426	6519	0609	4696	8780	2861	6938	1013	5085	9154	3220	7283
7	0197	4299	8398	2494	6587	0677	4764	8848	2929	7006	1081	5153	9222	3288	7350
8	0266	4368	8467	2562	6655	0745	4832	8916	2996	7074	1149	5221	9290	3355	7418
9	0334	4436	8535	2631	6724	0813	4900	8984	3064	7142	1217	5289	9357	3423	7486
10	0402	4504	8603	2699	6792	0881	4968	9052	3132	7210	1285	5356	9425	3491	7553
11	0471	4573	8671	2767	6860	0950	5036	9120	3200	7278	1353	5424	9493	3558	7621
12	0539	4641	8740	2835	6928	1018	5104	9188	3268	7346	1421	5492	9561	3626	7689
13	0608	4709	8808	2904	6996	1086	5172	9256	3336	7414	1488	5560	9628	3694	7757
14	0676	4778	8876	2972	7064	1154	5240	9324	3404	7482	1556	5628	9696	3762	7824
15	0744	4846	8945	3040	7133	1222	5309	9392	3472	7550	1624	5696	9764	3829	7892
16	0813	4914	9013	3108	7201	1290	5377	9460	3540	7618	1692	5763	9832	3897	7960
17	0881	4983	9081	3177	7269	1358	5445	9528	3608	7686	1760	5831	9900	3965	8027
18	0950	5051	9149	3245	7337	1427	5513	9596	3676	7754	1828	5899	9967	4033	8095
19	1018	5119	9218	3313	7405	1495	5581	9664	3744	7822	1896	5967	0035	4100	8163
20	1086	5188	9286	3381	7474	1563	5649	9732	3812	7889	1964	6035	0103	4168	8230
21	1155	5256	9354	3450	7542	1631	5717	9800	3880	7957	2031	6103	0171	4236	8298
22	1223	5324	9423	3518	7610	1699	5785	9868	3948	8025	2099	6170	0238	4304	8366
23	1291	5393	9491	3586	7678	1767	5853	9936	4016	8093	2167	6238	0306	4371	8433
24	1360	5461	9559	3654	7746	1835	5921	0004	4084	8161	2235	6306	0374	4439	8501
25	1428	5529	9627	3722	7814	1903	5989	0072	4152	8229	2303	6374	0442	4507	8569
26	1497	5598	9696	3791	7883	1972	6057	0140	4220	8297	2371	6442	0510	4574	8636
27	1565	5666	9764	3859	7951	2040	6125	0208	4288	8365	2439	6510	0577	4642	8704
28	1633	5734	9832	3927	8019	2108	6194	0276	4356	8433	2507	6577	0645	4710	8772
29	1702	5803	9901	3995	8087	2176	6262	0344	4424	8501	2574	6645	0713	4778	8839
30	1770	5871	9969	4064	8155	2244	6330	0412	4492	8569	2642	6713	0781	4845	8907
31	1838	5939	0037	4132	8223	2312	6398	0480	4560	8637	2710	6781	0848	4913	8975
32	1907	6008	0105	4200	8292	2380	6466	0548	4628	8705	2778	6849	0916	4981	9042
33	1975	6076	0174	4268	8360	2448	6534	0616	4696	8772	2846	6916	0984	5048	9110
34	2044	6144	0242	4336	8428	2516	6602	0684	4764	8840	2914	6984	1052	5116	9178
35	2112	6213	0310	4405	8496	2585	6670	0752	4832	8908	2982	7052	1119	5184	9245
36	2180	6281	0378	4473	8564	2653	6738	0820	4900	8976	3050	7120	1187	5252	9313
37	2249	6349	0447	4541	8632	2721	6806	0888	4968	9044	3117	7188	1255	5319	9381
38	2317	6418	0515	4609	8701	2789	6874	0956	5036	9112	3185	7256	1323	5387	9448
39	2385	6486	0583	4678	8769	2857	6942	1024	5104	9180	3253	7323	1391	5455	9516
40	2454	6554	0651	4746	8837	2925	7010	1093	5172	9248	3321	7391	1458	5522	9584
41	2522	6622	0720	4814	8905	2993	7078	1161	5240	9316	3389	7459	1526	5590	9651
42	2591	6691	0788	4882	8973	3061	7146	1229	5308	9384	3457	7527	1594	5658	9719
43	2659	6759	0856	4950	9041	3129	7215	1297	5376	9452	3525	7595	1662	5726	9787
44	2727	6827	0924	5019	9110	3198	7283	1365	5444	9519	3592	7662	1729	5793	9854
45	2796	6896	0993	5087	9178	3266	7351	1433	5511	9587	3660	7730	1797	5861	9922
46	2864	6964	1061	5155	9246	3334	7419	1501	5579	9655	3728	7798	1865	5929	9990
47	2932	7032	1129	5223	9314	3402	7487	1569	5647	9723	3796	7866	1933	5996	0057
48	3001	7101	1198	5291	9382	3470	7555	1637	5715	9791	3864	7934	2000	6064	0125
49	3069	7169	1266	5360	9450	3538	7623	1705	5783	9859	3932	8001	2068	6132	0193
50	3137	7237	1334	5428	9519	3606	7691	1773	5851	9927	4000	8069	2136	6200	0260
51	3206	7306	1402	5496	9587	3674	7759	1841	5919	9995	4067	8137	2204	6267	0328
52	3274	7374	1471	5564	9655	3742	7827	1909	5987	0063	4135	8205	2271	6335	0396
53	3342	7442	1539	5632	9723	3811	7895	1977	6055	0131	4203	8273	2339	6403	0463
54	3411	7510	1607	5701	9791	3879	7963	2045	6123	0198	4271	8340	2407	6470	0531
55	3479	7579	1675	5769	9859	3947	8031	2113	6191	0266	4339	8408	2475	6538	0599
56	3548	7647	1744	5837	9927	4015	8099	2181	6259	0334	4407	8476	2542	6606	0666
57	3616	7715	1812	5905	9996	4083	8167	2249	6327	0402	4474	8544	2610	6673	0734
58	3684	7784	1880	5973	0064	4151	8235	2317	6395	0470	4542	8612	2678	6741	0801
59	3753	7852	1948	6042	0132	4219	8303	2385	6463	0538	4610	8679	2746	6809	0869
60	3821	7920	2017	6110	0200	4287	8371	2453	6531	0606	4678	8747	2813	6877	0937
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Tangent Deg. 70

19 Deg. Co-Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
	10.463	10.462	10.462	10.461	10.461	10.460	10.460	10.460	10.459	10.459	10.458	10.458	10.458	10.457	10.457	″
0	0281	6179	2080	7983	3890	9800	5713	1629	7547	3469	9394	5322	1253	7187	3123	60
1	0213	6111	2011	7915	3822	9732	5645	1561	7479	3401	9326	5254	1185	7119	3056	59
2	0145	6042	1943	7847	3754	9664	5577	1493	7411	3333	9258	5186	1117	7051	2988	58
3	0076	5974	1875	7779	3686	9596	5508	1424	7343	3265	9190	5118	1049	6983	2920	57
4	0008	5906	1807	7710	3617	9527	5440	1356	7275	3198	9123	5051	0982	6916	2853	56
5	9939	5837	1738	7642	3549	9459	5372	1288	7207	3130	9055	4983	0914	6848	2785	55
6	9871	5769	1670	7574	3481	9391	5304	1220	7139	3062	8987	4915	0846	6780	2717	54
7	9803	5701	1602	7506	3413	9323	5236	1152	7071	2994	8919	4847	0778	6712	2650	53
8	9734	5632	1533	7438	3345	9255	5168	1084	7004	2926	8851	4779	0710	6645	2582	52
9	9666	5564	1465	7369	3276	9187	5100	1016	6936	2858	8783	4711	0643	6577	2514	51
10	9598	5496	1397	7301	3208	9119	5032	0948	6868	2790	8715	4644	0575	6509	2447	50
11	9529	5427	1329	7233	3140	9050	4964	0880	6800	2722	8647	4576	0507	6442	2379	49
12	9461	5359	1260	7165	3072	8982	4896	0812	6732	2654	8579	4508	0439	6374	2311	48
13	9392	5291	1192	7096	3004	8914	4828	0744	6664	2586	8512	4440	0372	6306	2243	47
14	9324	5222	1124	7028	2936	8846	4760	0676	6596	2518	8444	4372	0304	6238	2176	46
15	9256	5154	1055	6960	2867	8778	4691	0608	6528	2450	8376	4304	0236	6171	2108	45
16	9187	5086	0987	6892	2799	8710	4623	0540	6460	2382	8308	4237	0168	6103	2040	44
17	9119	5017	0919	6823	2731	8642	4555	0472	6392	2314	8240	4169	0100	6035	1973	43
18	9050	4949	0851	6755	2663	8573	4487	0404	6324	2246	8172	4101	0033	5967	1905	42
19	8982	4881	0782	6687	2595	8505	4419	0336	6256	2178	8104	4033	9965	5900	1837	41
20	8914	4812	0714	6619	2526	8437	4351	0268	6188	2111	8036	3965	9897	5832	1770	40
21	8845	4744	0646	6550	2458	8369	4283	0200	6120	2043	7969	3897	9829	5764	1702	39
22	8777	4676	0577	6482	2390	8301	4215	0132	6052	1975	7901	3830	9762	5696	1634	38
23	8709	4607	0509	6414	2322	8233	4147	0064	5984	1907	7833	3762	9694	5629	1567	37
24	8640	4539	0441	6346	2254	8165	4079	9996	5916	1839	7765	3694	9626	5561	1499	36
25	8572	4471	0373	6278	2186	8097	4011	9928	5848	1771	7697	3626	9558	5493	1431	35
26	8503	4402	0304	6209	2117	8028	3943	9860	5780	1703	7629	3558	9490	5426	1364	34
27	8435	4334	0236	6141	2049	7960	3875	9792	5712	1635	7561	3490	9423	5358	1296	33
28	8367	4266	0168	6073	1981	7892	3806	9724	5644	1567	7493	3423	9355	5290	1228	32
29	8298	4197	0099	6005	1913	7824	3738	9656	5576	1499	7426	3355	9287	5222	1161	31
30	8230	4129	0031	5936	1845	7756	3670	9588	5508	1431	7358	3287	9219	5155	1093	30
31	8162	4061	9963	5868	1777	7688	3602	9520	5440	1363	7290	3219	9152	5087	1025	29
32	8093	3992	9895	5800	1708	7620	3534	9452	5372	1295	7222	3151	9084	5019	0958	28
33	8025	3924	9826	5732	1640	7552	3466	9384	5304	1228	7154	3084	9016	4952	0890	27
34	7956	3856	9758	5664	1572	7484	3398	9316	5236	1160	7086	3016	8948	4884	0822	26
35	7888	3787	9690	5595	1504	7415	3330	9248	5168	1092	7018	2948	8881	4816	0755	25
36	7820	3719	9622	5527	1436	7347	3262	9180	5100	1024	6950	2880	8813	4748	0687	24
37	7751	3651	9553	5459	1368	7279	3194	9112	5032	0956	6883	2812	8745	4681	0619	23
38	7683	3582	9485	5391	1299	7211	3126	9044	4964	0888	6815	2744	8677	4613	0552	22
39	7615	3514	9417	5322	1231	7143	3058	8976	4896	0820	6747	2677	8609	4545	0484	21
40	7546	3446	9349	5254	1163	7075	2990	8907	4828	0752	6679	2609	8542	4478	0416	20
41	7478	3378	9280	5186	1095	7007	2922	8839	4760	0684	6611	2541	8474	4410	0349	19
42	7409	3309	9212	5118	1027	6939	2854	8771	4692	0616	6543	2473	8406	4342	0281	18
43	7341	3241	9144	5050	0959	6871	2785	8703	4624	0548	6475	2405	8338	4274	0213	17
44	7273	3173	9076	4981	0890	6802	2717	8635	4556	0481	6408	2338	8271	4207	0146	16
45	7204	3104	9007	4913	0822	6734	2649	8567	4489	0413	6340	2270	8203	4139	0078	15
46	7136	3036	8939	4845	0754	6666	2581	8499	4421	0345	6272	2202	8135	4071	0010	14
47	7068	2968	8871	4777	0686	6598	2513	8431	4353	0277	6204	2134	8067	4004	9943	13
48	6999	2899	8802	4709	0618	6530	2445	8363	4285	0209	6136	2066	8000	3936	9875	12
49	6931	2831	8734	4640	0550	6462	2377	8295	4217	0141	6068	1999	7932	3868	9807	11
50	6863	2763	8666	4572	0481	6394	2309	8227	4149	0073	6000	1931	7864	3800	9740	10
51	6794	2694	8598	4504	0413	6326	2241	8159	4081	0005	5933	1863	7796	3733	9672	9
52	6726	2626	8529	4436	0345	6258	2173	8091	4013	9937	5865	1795	7729	3665	9604	8
53	6658	2558	8461	4368	0277	6189	2105	8023	3945	9869	5797	1727	7661	3597	9537	7
54	6589	2490	8393	4299	0209	6121	2037	7955	3877	9802	5729	1660	7593	3530	9469	6
55	6521	2421	8325	4231	0141	6053	1969	7887	3809	9734	5661	1592	7525	3462	9401	5
56	6452	2353	8256	4163	0073	5985	1901	7819	3741	9666	5593	1524	7458	3394	9334	4
57	6384	2285	8188	4095	0004	5917	1833	7751	3673	9598	5526	1456	7390	3327	9266	3
58	6316	2216	8120	4027	9936	5849	1765	7683	3605	9530	5458	1388	7322	3259	9199	2
59	6247	2148	8052	3958	9868	5781	1697	7615	3537	9462	5390	1321	7254	3191	9131	1
60	6179	2080	7983	3890	9800	5713	1629	7547	3469	9394	5322	1253	7187	3123	9063	0
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Tangent Deg. 70

19 Deg. Sine

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9.518	9.518	9.518	9.519	9.519	9.519	9.520	9.520	9.520	9.521	9.521	9.522	9.522	9.522	9.523
0	1066	4682	8295	1904	5510	9112	2711	6307	9899	3488	7074	0656	4235	7811	1383
1	1127	4742	8355	1964	5570	9172	2771	6367	9959	3548	7134	0716	4295	7871	1443
2	1187	4803	8415	2024	5630	9232	2831	6427	0019	3608	7193	0776	4354	7930	1502
3	1247	4863	8475	2084	5690	9292	2891	6486	0079	3667	7253	0835	4414	7990	1562
4	1307	4923	8535	2144	5750	9352	2951	6546	0138	3727	7313	0895	4474	8049	1621
5	1368	4983	8596	2204	5810	9412	3011	6606	0198	3787	7372	0955	4533	8109	1681
6	1428	5044	8656	2264	5870	9472	3071	6666	0258	3847	7432	1014	4593	8168	1740
7	1488	5104	8716	2325	5930	9532	3131	6726	0318	3907	7492	1074	4653	8228	1800
8	1549	5164	8776	2385	5990	9592	3191	6786	0378	3966	7552	1134	4712	8288	1860
9	1609	5224	8836	2445	6050	9652	3251	6846	0438	4026	7611	1193	4772	8347	1919
10	1669	5284	8896	2505	6110	9712	3311	6906	0497	4086	7671	1253	4831	8407	1979
11	1729	5345	8957	2565	6170	9772	3370	6966	0557	4146	7731	1313	4891	8466	2038
12	1790	5405	9017	2625	6230	9832	3430	7025	0617	4206	7791	1372	4951	8526	2098
13	1850	5465	9077	2685	6290	9892	3490	7085	0677	4265	7850	1432	5010	8585	2157
14	1910	5525	9137	2745	6350	9952	3550	7145	0737	4325	7910	1492	5070	8645	2217
15	1971	5586	9197	2806	6410	0012	3610	7205	0797	4385	7970	1551	5130	8704	2276
16	2031	5646	9257	2866	6471	0072	3670	7265	0856	4445	8029	1611	5189	8764	2336
17	2091	5706	9318	2926	6531	0132	3730	7325	0916	4504	8089	1671	5249	8824	2395
18	2151	5766	9378	2986	6591	0192	3790	7385	0976	4564	8149	1730	5308	8883	2455
19	2212	5826	9438	3046	6651	0252	3850	7445	1036	4624	8209	1790	5368	8943	2514
20	2272	5887	9498	3106	6711	0312	3910	7505	1096	4684	8268	1850	5428	9002	2574
21	2332	5947	9558	3166	6771	0372	3970	7564	1156	4743	8328	1909	5487	9062	2633
22	2392	6007	9618	3226	6831	0432	4030	7624	1215	4803	8388	1969	5547	9121	2692
23	2453	6067	9679	3286	6891	0492	4090	7684	1275	4863	8447	2029	5606	9181	2752
24	2513	6128	9739	3346	6951	0552	4150	7744	1335	4923	8507	2088	5666	9240	2811
25	2573	6188	9799	3407	7011	0612	4210	7804	1395	4983	8567	2148	5726	9300	2871
26	2634	6248	9859	3467	7071	0672	4270	7864	1455	5042	8627	2208	5785	9359	2930
27	2694	6308	9919	3527	7131	0732	4329	7924	1515	5102	8686	2267	5845	9419	2990
28	2754	6368	9979	3587	7191	0792	4389	7984	1574	5162	8746	2327	5904	9479	3049
29	2814	6429	0039	3647	7251	0852	4449	8043	1634	5222	8806	2386	5964	9538	3109
30	2875	6489	0100	3707	7311	0912	4509	8103	1694	5281	8865	2446	6024	9598	3168
31	2935	6549	0160	3767	7371	0972	4569	8163	1754	5341	8925	2506	6083	9657	3228
32	2995	6609	0220	3827	7431	1032	4629	8223	1814	5401	8985	2565	6143	9717	3287
33	3055	6669	0280	3887	7491	1092	4689	8283	1873	5461	9045	2625	6202	9776	3347
34	3116	6730	0340	3947	7551	1152	4749	8343	1933	5520	9104	2685	6262	9836	3406
35	3176	6790	0400	4008	7611	1212	4809	8403	1993	5580	9164	2744	6322	9895	3466
36	3236	6850	0461	4068	7671	1272	4869	8463	2053	5640	9224	2804	6381	9955	3525
37	3296	6910	0521	4128	7731	1332	4929	8522	2113	5700	9283	2864	6441	0014	3585
38	3357	6970	0581	4188	7791	1392	4989	8582	2173	5759	9343	2923	6500	0074	3644
39	3417	7031	0641	4248	7851	1452	5049	8642	2232	5819	9403	2983	6560	0133	3704
40	3477	7091	0701	4308	7912	1512	5109	8702	2292	5879	9462	3043	6619	0193	3763
41	3537	7151	0761	4368	7972	1572	5168	8762	2352	5939	9522	3102	6679	0253	3823
42	3598	7211	0821	4428	8032	1632	5228	8822	2412	5998	9582	3162	6739	0312	3882
43	3658	7271	0882	4488	8092	1692	5288	8882	2472	6058	9642	3222	6798	0372	3942
44	3718	7332	0942	4548	8152	1752	5348	8941	2531	6118	9701	3281	6858	0431	4001
45	3778	7392	1002	4608	8212	1812	5408	9001	2591	6178	9761	3341	6917	0491	4061
46	3839	7452	1062	4668	8272	1872	5468	9061	2651	6237	9821	3400	6977	0550	4120
47	3899	7512	1122	4729	8332	1931	5528	9121	2711	6297	9880	3460	7037	0610	4180
48	3959	7572	1182	4789	8392	1991	5588	9181	2771	6357	9940	3520	7096	0669	4239
49	4019	7633	1242	4849	8452	2051	5648	9241	2830	6417	0000	3579	7156	0729	4298
50	4080	7693	1302	4909	8512	2111	5708	9301	2890	6476	0059	3639	7215	0788	4358
51	4140	7753	1363	4969	8572	2171	5768	9360	2950	6536	0119	3699	7275	0848	4417
52	4200	7813	1423	5029	8632	2231	5827	9420	3010	6596	0179	3758	7334	0907	4477
53	4260	7873	1483	5089	8692	2291	5887	9480	3070	6656	0238	3818	7394	0967	4536
54	4321	7934	1543	5149	8752	2351	5947	9540	3129	6715	0298	3877	7454	1026	4596
55	4381	7994	1603	5209	8812	2411	6007	9600	3189	6775	0358	3937	7513	1086	4655
56	4441	8054	1663	5269	8872	2471	6067	9660	3249	6835	0417	3997	7573	1145	4715
57	4501	8114	1723	5329	8932	2531	6127	9720	3309	6895	0477	4056	7632	1205	4774
58	4562	8174	1784	5389	8992	2591	6187	9779	3369	6954	0537	4116	7692	1264	4834
59	4622	8234	1844	5449	9052	2651	6247	9839	3428	7014	0597	4176	7751	1324	4893
60	4682	8295	1904	5510	9112	2711	6307	9899	3488	7074	0656	4235	7811	1383	4953
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Sine Deg. 70

19 Deg. Co-Sine

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
9.975	9.974	9.974	9.974	9.974	9.974	9.974	9.974	9.974	9.974	9.974	9.974	9.974	9.974	9.974	″
0129	9688	9246	8804	8361	7918	7475	7031	6587	6142	5697	5252	4806	4359	3913	60
0122	9681	9239	8797	8354	7911	7468	7024	6580	6135	5690	5244	4798	4352	3905	59
0115	9673	9232	8789	8347	7904	7460	7016	6572	6127	5682	5237	4791	4345	3898	58
0107	9666	9224	8782	8339	7896	7453	7009	6565	6120	5675	5229	4783	4337	3890	57
0100	9659	9217	8775	8332	7889	7445	7002	6557	6113	5667	5222	4776	4330	3883	56
0093	9651	9209	8767	8325	7882	7438	6994	6550	6105	5660	5215	4769	4322	3875	55
0085	9644	9202	8760	8317	7874	7431	6987	6542	6098	5653	5207	4761	4315	3868	54
0078	9637	9195	8752	8310	7867	7423	6979	6535	6090	5645	5200	4754	4307	3861	53
0071	9629	9187	8745	8302	7859	7416	6972	6528	6083	5638	5192	4746	4300	3853	52
0063	9622	9180	8738	8295	7852	7408	6965	6520	6076	5630	5185	4739	4292	3846	51
0056	9614	9173	8730	8288	7845	7401	6957	6513	6068	5623	5177	4731	4285	3838	50
0049	9607	9165	8723	8280	7837	7394	6950	6505	6061	5616	5170	4724	4278	3831	49
0041	9600	9158	8716	8273	7830	7386	6942	6498	6053	5608	5163	4717	4270	3823	48
0034	9592	9151	8708	8266	7822	7379	6935	6491	6046	5601	5155	4709	4263	3816	47
0027	9585	9143	8701	8258	7815	7372	6928	6483	6038	5593	5148	4702	4255	3808	46
0019	9578	9136	8693	8251	7808	7364	6920	6476	6031	5586	5140	4694	4248	3801	45
0012	9570	9128	8686	8243	7800	7357	6913	6468	6024	5578	5133	4687	4240	3793	44
0004	9563	9121	8679	8236	7793	7349	6905	6461	6016	5571	5125	4679	4233	3786	43
9997	9556	9114	8671	8229	7785	7342	6898	6454	6009	5564	5118	4672	4225	3779	42
9990	9548	9106	8664	8221	7778	7335	6891	6446	6001	5556	5110	4664	4218	3771	41
9982	9541	9099	8657	8214	7771	7327	6883	6439	5994	5549	5103	4657	4211	3764	40
9975	9534	9092	8649	8206	7763	7320	6876	6431	5987	5541	5096	4650	4203	3756	39
9968	9526	9084	8642	8199	7756	7312	6868	6424	5979	5534	5088	4642	4196	3749	38
9960	9519	9077	8634	8192	7749	7305	6861	6417	5972	5526	5081	4635	4188	3741	37
9953	9511	9069	8627	8184	7741	7298	6854	6409	5964	5519	5073	4627	4181	3734	36
9946	9504	9062	8620	8177	7734	7290	6846	6402	5957	5512	5066	4620	4173	3726	35
9938	9497	9055	8612	8170	7726	7283	6839	6394	5949	5504	5058	4612	4166	3719	34
9931	9489	9047	8605	8162	7719	7275	6831	6387	5942	5497	5051	4605	4158	3712	33
9924	9482	9040	8598	8155	7712	7268	6824	6379	5935	5489	5044	4598	4151	3704	32
9916	9475	9033	8590	8147	7704	7261	6817	6372	5927	5482	5036	4590	4144	3697	31
9909	9467	9025	8583	8140	7697	7253	6809	6365	5920	5474	5029	4583	4136	3689	30
9901	9460	9018	8575	8133	7689	7246	6802	6357	5912	5467	5021	4575	4129	3682	29
9894	9453	9011	8568	8125	7682	7238	6794	6350	5905	5460	5014	4568	4121	3674	28
9887	9445	9003	8561	8118	7675	7231	6787	6342	5897	5452	5006	4560	4114	3667	27
9879	9438	8996	8553	8111	7667	7224	6779	6335	5890	5445	4999	4553	4106	3659	26
9872	9430	8988	8546	8103	7660	7216	6772	6328	5883	5437	4992	4545	4099	3652	25
9865	9423	8981	8539	8096	7652	7209	6765	6320	5875	5430	4984	4538	4091	3644	24
9857	9416	8974	8531	8088	7645	7201	6757	6313	5868	5422	4977	4531	4084	3637	23
9850	9408	8966	8524	8081	7638	7194	6750	6305	5860	5415	4969	4523	4077	3630	22
9843	9401	8959	8516	8074	7630	7187	6742	6298	5853	5408	4962	4516	4069	3622	21
9835	9394	8952	8509	8066	7623	7179	6735	6291	5846	5400	4954	4508	4062	3615	20
9828	9386	8944	8502	8059	7616	7172	6728	6283	5838	5393	4947	4501	4054	3607	19
9821	9379	8937	8494	8051	7608	7164	6720	6276	5831	5385	4940	4493	4047	3600	18
9813	9372	8929	8487	8044	7601	7157	6713	6268	5823	5378	4932	4486	4039	3592	17
9806	9364	8922	8480	8037	7593	7150	6705	6261	5816	5370	4925	4478	4032	3585	16
9798	9357	8915	8472	8029	7586	7142	6698	6253	5808	5363	4917	4471	4024	3577	15
9791	9349	8907	8465	8022	7579	7135	6691	6246	5801	5356	4910	4464	4017	3570	14
9784	9342	8900	8457	8014	7571	7127	6683	6239	5794	5348	4902	4456	4010	3562	13
9776	9335	8893	8450	8007	7564	7120	6676	6231	5786	5341	4895	4449	4002	3555	12
9769	9327	8885	8443	8000	7556	7113	6668	6224	5779	5333	4888	4441	3995	3548	11
9762	9320	8878	8435	7992	7549	7105	6661	6216	5771	5326	4880	4434	3987	3540	10
9754	9313	8870	8428	7985	7542	7098	6654	6209	5764	5319	4873	4426	3980	3533	9
9747	9305	8863	8421	7978	7534	7090	6646	6202	5757	5311	4865	4419	3972	3525	8
9740	9298	8856	8413	7970	7527	7083	6639	6194	5749	5304	4858	4412	3965	3518	7
9732	9291	8848	8406	7963	7519	7076	6631	6187	5742	5296	4850	4404	3957	3510	6
9725	9283	8841	8398	7955	7512	7068	6624	6179	5734	5289	4843	4397	3950	3503	5
9718	9276	8834	8391	7948	7505	7061	6617	6172	5727	5281	4835	4389	3942	3495	4
9710	9268	8826	8384	7941	7497	7053	6609	6164	5719	5274	4828	4382	3935	3488	3
9703	9261	8819	8376	7933	7490	7046	6602	6157	5712	5267	4821	4374	3928	3480	2
9695	9254	8811	8369	7926	7482	7039	6594	6150	5705	5259	4813	4367	3920	3473	1
9688	9246	8804	8361	7918	7475	7031	6587	6142	5697	5252	4806	4359	3913	3466	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Sine Deg. 70

19 Deg. Tangent

"	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.
	543	543	543	544	544	545	545	545	546	546	547	547	547	548	548
0	0937	4994	9048	3100	7148	1193	5236	9276	3312	7346	1377	5405	9430	3452	7471
1	1004	5062	9116	3167	7215	1261	5303	9343	3379	7413	1444	5472	9497	3519	7538
2	1072	5129	9183	3235	7283	1328	5371	9410	3447	7480	1511	5539	9564	3586	7605
3	1140	5197	9251	3302	7350	1396	5438	9477	3514	7547	1578	5606	9631	3653	7672
4	1207	5264	9318	3370	7418	1463	5505	9545	3581	7615	1645	5673	9698	3720	7739
5	1275	5332	9386	3437	7485	1530	5573	9612	3648	7682	1712	5740	9765	3787	7806
6	1343	5400	9454	3505	7553	1598	5640	9679	3716	7749	1780	5807	9832	3854	7873
7	1410	5467	9521	3572	7620	1665	5707	9747	3783	7816	1847	5874	9899	3921	7939
8	1478	5535	9589	3640	7688	1733	5775	9814	3850	7883	1914	5941	9966	3988	8006
9	1546	5602	9656	3707	7755	1800	5842	9881	3917	7951	1981	6008	0033	4055	8073
10	1613	5670	9724	3775	7822	1867	5909	9949	3985	8018	2048	6076	0100	4122	8140
11	1681	5738	9791	3842	7890	1935	5977	0016	4052	8085	2115	6143	0167	4189	8207
12	1748	5805	9859	3910	7957	2002	6044	0083	4119	8152	2182	6210	0234	4256	8274
13	1816	5873	9926	3977	8025	2070	6111	0150	4186	8219	2250	6277	0301	4323	8341
14	1884	5940	9994	4045	8092	2137	6179	0218	4254	8287	2317	6344	0368	4390	8408
15	1951	6008	0061	4112	8160	2204	6246	0285	4321	8354	2384	6411	0435	4457	8475
16	2019	6075	0129	4180	8227	2272	6313	0352	4388	8421	2451	6478	0502	4524	8542
17	2087	6143	0196	4247	8295	2339	6381	0420	4455	8488	2518	6545	0569	4591	8609
18	2154	6211	0264	4314	8362	2407	6448	0487	4523	8555	2585	6612	0636	4658	8676
19	2222	6278	0332	4382	8429	2474	6515	0554	4590	8623	2652	6679	0703	4725	8743
20	2290	6346	0399	4449	8497	2541	6583	0621	4657	8690	2720	6747	0771	4792	8810
21	2357	6413	0467	4517	8564	2609	6650	0689	4724	8757	2787	6814	0838	4859	8877
22	2425	6481	0534	4584	8632	2676	6717	0756	4792	8824	2854	6881	0905	4926	8944
23	2492	6549	0602	4652	8699	2743	6785	0823	4859	8891	2921	6948	0972	4993	9011
24	2560	6616	0669	4719	8767	2811	6852	0891	4926	8959	2988	7015	1039	5060	9078
25	2638	6684	0737	4787	8834	2878	6919	0958	4993	9026	3055	7082	1106	5127	9145
26	2705	6751	0804	4854	8901	2946	6987	1025	5060	9093	3122	7149	1173	5194	9212
27	2773	6819	0872	4922	8969	3013	7054	1092	5128	9160	3190	7216	1240	5261	9278
28	2841	6886	0939	4989	9036	3080	7121	1160	5195	9227	3257	7283	1307	5328	9345
29	2908	6954	1007	5057	9104	3148	7189	1227	5262	9294	3324	7350	1374	5395	9412
30	2966	7022	1074	5124	9171	3215	7256	1294	5329	9362	3391	7417	1441	5462	9479
31	3033	7089	1142	5192	9239	3282	7323	1361	5397	9429	3458	7484	1508	5529	9546
32	3101	7157	1209	5259	9306	3350	7391	1429	5464	9496	3525	7552	1575	5596	9613
33	3169	7224	1277	5327	9373	3417	7458	1496	5531	9563	3592	7619	1642	5662	9680
34	3236	7292	1344	5394	9441	3485	7525	1563	5598	9630	3659	7686	1709	5729	9747
35	3304	7359	1412	5462	9508	3552	7593	1631	5666	9698	3727	7753	1776	5796	9814
36	3371	7427	1479	5529	9576	3619	7660	1698	5733	9765	3794	7820	1843	5863	9881
37	3439	7495	1547	5597	9643	3687	7727	1765	5800	9832	3861	7887	1910	5930	9948
38	3507	7562	1615	5664	9710	3754	7795	1832	5867	9899	3928	7954	1977	5997	0015
39	3574	7630	1682	5731	9778	3821	7862	1900	5934	9966	3995	8021	2044	6064	0082
40	3642	7697	1750	5799	9845	3889	7929	1967	6002	0033	4062	8088	2111	6131	0149
41	3710	7765	1817	5866	9913	3956	7997	2034	6069	0101	4129	8155	2178	6198	0216
42	3777	7832	1885	5934	9980	4024	8064	2101	6136	0168	4196	8222	2245	6265	0282
43	3845	7900	1952	6001	0048	4091	8131	2169	6203	0235	4264	8289	2312	6332	0349
44	3912	7967	2020	6069	0115	4158	8199	2236	6270	0302	4331	8356	2379	6399	0416
45	3980	8035	2087	6136	0182	4226	8266	2303	6338	0369	4398	8424	2446	6466	0483
46	4048	8103	2155	6204	0250	4293	8333	2371	6405	0436	4465	8491	2513	6533	0550
47	4115	8170	2222	6271	0317	4360	8401	2438	6472	0504	4532	8558	2580	6600	0617
48	4183	8238	2290	6339	0385	4428	8468	2505	6539	0571	4599	8625	2647	6667	0684
49	4250	8305	2357	6406	0452	4495	8535	2572	6607	0638	4666	8692	2714	6734	0751
50	4318	8373	2425	6474	0519	4562	8602	2640	6674	0705	4733	8759	2781	6801	0818
51	4386	8440	2492	6541	0587	4630	8670	2707	6741	0772	4801	8826	2848	6868	0885
52	4453	8508	2560	6608	0654	4697	8737	2774	6808	0839	4868	8893	2915	6935	0952
53	4521	8575	2627	6676	0722	4764	8804	2841	6875	0907	4935	8960	2982	7002	1019
54	4588	8643	2695	6743	0789	4832	8872	2909	6943	0974	5002	9027	3050	7069	1086
55	4656	8711	2762	6811	0856	4899	8939	2976	7010	1041	5069	9094	3117	7136	1152
56	4724	8778	2830	6878	0924	4967	9006	3043	7077	1108	5136	9161	3184	7203	1219
57	4791	8846	2897	6946	0991	5034	9074	3110	7144	1175	5203	9228	3251	7270	1286
58	4859	8913	2965	7013	1059	5101	9141	3178	7211	1242	5270	9295	3318	7337	1353
59	4926	8981	3032	7081	1126	5169	9208	3245	7279	1310	5337	9362	3385	7404	1420
60	4994	9048	3100	7148	1193	5236	9276	3312	7346	1377	5405	9430	3452	7471	1487
"	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Tangent Deg. 70

19 Deg. Co-Tangent

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	"
10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	
456	456	456	455	455	454	454	454	453	453	452	452	452	451	451	
9063	5006	0952	6900	2852	8807	4764	0724	6688	2654	8623	4595	0570	6548	2529	60
8996	4938	0884	6833	2785	8739	4697	0657	6621	2587	8556	4528	0503	6481	2462	59
8928	4871	0817	6765	2717	8672	4629	0590	6553	2520	8489	4461	0436	6414	2395	58
8860	4803	0749	6698	2650	8604	4562	0523	6486	2453	8422	4394	0369	6347	2328	57
8793	4736	0682	6630	2582	8537	4495	0455	6419	2385	8355	4327	0302	6280	2261	56
8725	4668	0614	6563	2515	8470	4427	0388	6352	2318	8288	4260	0235	6213	2194	55
8657	4600	0546	6495	2447	8402	4360	0321	6284	2251	8220	4193	0168	6146	2127	54
8590	4533	0479	6428	2380	8335	4293	0253	6217	2184	8153	4126	0101	6079	2061	53
8522	4465	0411	6360	2312	8267	4225	0186	6150	2117	8086	4059	0034	6012	1994	52
8454	4398	0344	6293	2245	8200	4158	0119	6083	2049	8019	3992	9967	5945	1927	51
8387	4330	0276	6225	2178	8133	4091	0051	6015	1982	7952	3924	9900	5878	1860	50
8319	4262	0209	6158	2110	8065	4023	9984	5948	1915	7885	3857	9833	5811	1793	49
8252	4195	0141	6090	2043	7998	3956	9917	5881	1848	7818	3790	9766	5744	1726	48
8184	4127	0074	6023	1975	7930	3889	9850	5814	1781	7750	3723	9699	5677	1659	47
8116	4060	0006	5955	1908	7863	3821	9782	5746	1713	7683	3656	9632	5610	1592	46
8049	3992	9939	5888	1840	7796	3754	9715	5679	1646	7616	3589	9565	5543	1525	45
7981	3925	9871	5820	1773	7728	3687	9648	5612	1579	7549	3522	9498	5476	1458	44
7913	3857	9804	5753	1705	7661	3619	9580	5545	1512	7482	3455	9431	5409	1391	43
7846	3789	9736	5686	1638	7593	3552	9513	5477	1445	7415	3388	9364	5342	1324	42
7778	3722	9668	5618	1571	7526	3485	9446	5410	1377	7348	3321	9297	5275	1257	41
7710	3654	9601	5551	1503	7459	3417	9379	5343	1310	7280	3253	9229	5208	1190	40
7643	3587	9533	5483	1436	7391	3350	9311	5276	1243	7213	3186	9162	5141	1123	39
7575	3519	9466	5416	1368	7324	3283	9244	5208	1176	7146	3119	9095	5074	1056	38
7508	3451	9398	5348	1301	7257	3215	9177	5141	1109	7079	3052	9028	5007	0989	37
7440	3384	9331	5281	1233	7189	3148	9109	5074	1041	7012	2985	8961	4940	0922	36
7362	3316	9263	5213	1166	7122	3081	9042	5007	0974	6945	2918	8894	4873	0855	35
7295	3249	9196	5146	1099	7054	3013	8975	4940	0907	6878	2851	8827	4806	0788	34
7227	3181	9128	5078	1031	6987	2946	8908	4872	0840	6810	2784	8760	4739	0722	33
7159	3114	9061	5011	0964	6920	2879	8840	4805	0773	6743	2717	8693	4672	0655	32
7092	3046	8993	4943	0896	6852	2811	8773	4738	0706	6676	2650	8626	4605	0588	31
7034	2978	8926	4876	0829	6785	2744	8706	4671	0638	6609	2583	8559	4538	0521	30
6967	2911	8858	4808	0761	6718	2677	8639	4603	0571	6542	2516	8492	4471	0454	29
6899	2843	8791	4741	0694	6650	2609	8571	4536	0504	6475	2448	8425	4404	0387	28
6831	2776	8723	4673	0627	6583	2542	8504	4469	0437	6408	2381	8358	4338	0320	27
6764	2708	8656	4606	0559	6515	2475	8437	4402	0370	6341	2314	8291	4271	0253	26
6696	2641	8588	4538	0492	6448	2407	8369	4334	0302	6273	2247	8224	4204	0186	25
6629	2573	8521	4471	0424	6381	2340	8302	4267	0235	6206	2180	8157	4137	0119	24
6561	2505	8453	4403	0357	6313	2273	8235	4200	0168	6139	2113	8090	4070	0052	23
6493	2438	8385	4336	0290	6246	2205	8168	4133	0101	6072	2046	8023	4003	9985	22
6426	2370	8318	4269	0222	6179	2138	8100	4066	0034	6005	1979	7956	3936	9918	21
6358	2303	8250	4201	0155	6111	2071	8033	3998	9967	5938	1912	7889	3869	9851	20
6290	2235	8183	4134	0087	6044	2003	7966	3931	9899	5871	1845	7822	3802	9784	19
6223	2168	8115	4066	0020	5976	1936	7899	3864	9832	5804	1778	7755	3735	9718	18
6155	2100	8048	3999	9952	5909	1869	7831	3797	9765	5736	1711	7688	3668	9651	17
6088	2033	7980	3931	9885	5842	1801	7764	3730	9698	5669	1644	7621	3601	9584	16
6020	1965	7913	3864	9818	5774	1734	7697	3662	9631	5602	1576	7554	3534	9517	15
5952	1897	7845	3796	9750	5707	1667	7629	3595	9564	5535	1509	7487	3467	9450	14
5885	1830	7778	3729	9683	5640	1599	7562	3528	9496	5468	1442	7420	3400	9383	13
5817	1762	7710	3661	9615	5572	1532	7495	3461	9429	5401	1375	7353	3333	9316	12
5750	1695	7643	3594	9548	5505	1465	7428	3393	9362	5334	1308	7286	3266	9249	11
5682	1627	7575	3526	9481	5438	1398	7360	3326	9295	5267	1241	7219	3199	9182	10
5614	1560	7508	3459	9413	5370	1330	7293	3259	9228	5199	1174	7152	3132	9115	9
5547	1492	7440	3392	9346	5303	1263	7226	3192	9161	5132	1107	7085	3065	9048	8
5479	1425	7373	3324	9278	5236	1196	7159	3125	9093	5065	1040	7018	2998	8981	7
5412	1357	7305	3257	9211	5168	1128	7091	3057	9026	4998	0973	6950	2931	8914	6
5344	1289	7238	3189	9144	5101	1061	7024	2990	8959	4931	0906	6883	2864	8848	5
5276	1222	7170	3122	9076	5033	0994	6957	2923	8892	4864	0839	6816	2797	8781	4
5209	1154	7103	3054	9009	4966	0926	6890	2856	8825	4797	0772	6749	2730	8714	3
5141	1087	7035	2987	8941	4899	0859	6822	2789	8758	4730	0705	6682	2663	8647	2
5074	1019	6968	2919	8874	4831	0792	6755	2721	8691	4663	0638	6615	2596	8580	1
5006	0952	6900	2852	8807	4764	0724	6688	2654	8623	4595	0570	6548	2529	8513	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	"

Tangent Deg. 70

19 Deg. Sine

″	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.
	523	523	524	524	524	525	525	525	526	526	527	527	527	528	528
0	4953	8518	2081	5640	9196	2749	6298	9844	3387	6927	0463	3997	7526	1053	4577
1	5012	8578	2140	5699	9255	2808	6357	9904	3446	6986	0522	4055	7585	1112	4635
2	5071	8637	2200	5759	9315	2867	6417	9963	3505	7045	0581	4114	7644	1171	4694
3	5131	8697	2259	5818	9374	2926	6476	0022	3564	7104	0640	4173	7703	1229	4753
4	5190	8756	2318	5877	9433	2986	6535	0081	3623	7163	0699	4232	7762	1288	4811
5	5250	8815	2378	5937	9492	3045	6594	0140	3682	7222	0758	4291	7820	1347	4870
6	5309	8875	2437	5996	9552	3104	6653	0199	3741	7281	0817	4350	7879	1406	4929
7	5369	8934	2496	6055	9611	3163	6712	0258	3800	7340	0876	4409	7938	1464	4987
8	5428	8994	2556	6115	9670	3222	6771	0317	3859	7399	0935	4467	7997	1523	5046
9	5488	9053	2615	6174	9729	3281	6830	0376	3918	7458	0994	4526	8056	1582	5105
10	5547	9112	2674	6233	9789	3341	6890	0435	3978	7517	1052	4585	8114	1641	5163
11	5607	9172	2734	6292	9848	3400	6949	0494	4037	7576	1111	4644	8173	1699	5222
12	5666	9231	2793	6352	9907	3459	7008	0553	4096	7635	1170	4703	8232	1758	5281
13	5725	9291	2852	6411	9966	3518	7067	0612	4155	7693	1229	4762	8291	1817	5340
14	5785	9350	2912	6470	0025	3577	7126	0671	4214	7752	1288	4820	8350	1876	5398
15	5844	9409	2971	6529	0085	3637	7185	0730	4273	7811	1347	4879	8408	1934	5457
16	5904	9469	3030	6589	0144	3696	7244	0790	4332	7870	1406	4938	8467	1993	5516
17	5963	9528	3090	6648	0203	3755	7303	0849	4391	7929	1465	4997	8526	2052	5574
18	6023	9588	3149	6707	0262	3814	7362	0908	4450	7988	1524	5056	8585	2110	5633
19	6082	9647	3208	6767	0322	3873	7422	0967	4509	8047	1583	5115	8644	2169	5692
20	6142	9706	3268	6826	0381	3932	7481	1026	4568	8106	1641	5174	8702	2228	5750
21	6201	9766	3327	6885	0440	3992	7540	1085	4627	8165	1700	5232	8761	2287	5809
22	6260	9825	3386	6944	0499	4051	7599	1144	4686	8224	1759	5291	8820	2345	5868
23	6320	9884	3446	7004	0558	4110	7658	1203	4745	8283	1818	5350	8879	2404	5926
24	6379	9944	3505	7063	0618	4169	7717	1262	4804	8342	1877	5409	8937	2463	5985
25	6439	0003	3564	7122	0677	4228	7776	1321	4863	8401	1936	5468	8996	2522	6044
26	6498	0063	3624	7182	0736	4287	7835	1380	4922	8460	1995	5527	9055	2580	6102
27	6558	0122	3683	7241	0795	4347	7894	1439	4981	8519	2054	5585	9114	2639	6161
28	6617	0181	3742	7300	0854	4406	7954	1498	5040	8578	2113	5644	9173	2698	6220
29	6676	0241	3802	7359	0914	4465	8013	1557	5099	8637	2171	5703	9231	2757	6278
30	6736	0300	3861	7419	0973	4524	8072	1616	5158	8696	2230	5762	9290	2815	6337
31	6795	0359	3920	7478	1032	4583	8131	1675	5217	8755	2289	5821	9349	2874	6396
32	6855	0419	3980	7537	1091	4642	8190	1734	5276	8813	2348	5880	9408	2933	6454
33	6914	0478	4039	7596	1151	4701	8249	1793	5335	8872	2407	5938	9467	2991	6513
34	6974	0538	4098	7656	1210	4761	8308	1852	5394	8931	2466	5997	9525	3050	6572
35	7033	0597	4158	7715	1269	4820	8367	1912	5453	8990	2525	6056	9584	3109	6630
36	7092	0656	4217	7774	1328	4879	8426	1971	5512	9049	2584	6115	9643	3168	6689
37	7152	0716	4276	7833	1387	4938	8485	2030	5571	9108	2643	6174	9702	3226	6748
38	7211	0775	4336	7893	1447	4997	8545	2089	5629	9167	2701	6233	9760	3285	6806
39	7271	0834	4395	7952	1506	5056	8604	2148	5688	9226	2760	6291	9819	3344	6865
40	7330	0894	4454	8011	1565	5116	8663	2207	5747	9285	2819	6350	9878	3402	6924
41	7390	0953	4513	8070	1624	5175	8722	2266	5806	9344	2878	6409	9937	3461	6982
42	7449	1013	4573	8130	1683	5234	8781	2325	5865	9403	2937	6468	9995	3520	7041
43	7508	1072	4632	8189	1743	5293	8840	2384	5924	9462	2996	6527	0054	3579	7100
44	7568	1131	4691	8248	1802	5352	8899	2443	5983	9521	3055	6585	0113	3637	7158
45	7627	1191	4751	8307	1861	5411	8958	2502	6042	9580	3114	6644	0172	3696	7217
46	7687	1250	4810	8367	1920	5470	9017	2561	6101	9639	3172	6703	0231	3755	7276
47	7746	1309	4869	8426	1979	5530	9076	2620	6160	9697	3231	6762	0289	3813	7334
48	7805	1369	4929	8485	2039	5589	9135	2679	6219	9756	3290	6821	0348	3872	7393
49	7865	1428	4988	8544	2098	5648	9195	2738	6278	9815	3349	6880	0407	3931	7452
50	7924	1487	5047	8604	2157	5707	9254	2797	6337	9874	3408	6938	0466	3990	7510
51	7984	1547	5107	8663	2216	5766	9312	2856	6396	9933	3467	6997	0524	4048	7569
52	8043	1606	5166	8722	2275	5825	9372	2915	6455	9992	3526	7056	0583	4107	7628
53	8103	1665	5225	8781	2335	5884	9431	2974	6514	0051	3584	7115	0642	4166	7686
54	8162	1725	5284	8841	2394	5943	9490	3033	6573	0110	3643	7174	0701	4224	7745
55	8221	1784	5344	8900	2453	6003	9549	3092	6632	0169	3702	7232	0759	4283	7804
56	8281	1844	5403	8959	2512	6062	9608	3151	6691	0228	3761	7291	0818	4342	7862
57	8340	1903	5462	9018	2571	6121	9667	3210	6750	0287	3820	7350	0877	4400	7921
58	8400	1962	5522	9078	2630	6180	9726	3269	6809	0346	3879	7409	0936	4459	7979
59	8459	2022	5581	9137	2690	6239	9785	3328	6868	0404	3938	7468	0994	4518	8038
60	8518	2081	5640	9196	2749	6298	9844	3387	6927	0463	3997	7526	1053	4577	8097
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Sine Deg. 70

19 Deg. Co-Sine

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	
	974	974	974	974	974	974	974	974	973	973	973	973	973	973	973	″
0	3466	3018	2570	2122	1673	1224	0774	0324	9873	9422	8971	8519	8067	7615	7162	60
1	3458	3010	2562	2114	1665	1216	0766	0316	9866	9415	8964	8512	8060	7607	7154	59
2	3451	3003	2555	2107	1658	1209	0759	0309	9858	9407	8956	8504	8052	7600	7147	58
3	3443	2996	2548	2099	1650	1201	0751	0301	9851	9400	8949	8497	8045	7592	7139	57
4	3436	2988	2540	2092	1643	1194	0744	0294	9843	9392	8941	8489	8037	7585	7132	56
5	3428	2981	2533	2084	1635	1186	0736	0286	9836	9385	8934	8482	8030	7577	7124	55
6	3421	2973	2525	2077	1628	1179	0729	0279	9828	9377	8926	8474	8022	7570	7117	54
7	3413	2966	2518	2069	1620	1171	0721	0271	9821	9370	8919	8467	8015	7562	7109	53
8	3406	2958	2510	2062	1613	1164	0714	0264	9813	9362	8911	8459	8007	7554	7101	52
9	3398	2951	2503	2054	1605	1156	0706	0256	9806	9355	8903	8452	8000	7547	7094	51
10	3391	2943	2495	2047	1598	1149	0699	0249	9798	9347	8896	8444	7992	7539	7086	50
11	3383	2936	2488	2039	1590	1141	0691	0241	9791	9340	8888	8437	7984	7532	7079	49
12	3376	2928	2480	2032	1583	1134	0684	0234	9783	9332	8881	8429	7977	7524	7071	48
13	3369	2921	2473	2024	1575	1126	0676	0226	9776	9325	8873	8422	7969	7517	7064	47
14	3361	2913	2465	2017	1568	1119	0669	0219	9768	9317	8866	8414	7962	7509	7056	46
15	3354	2906	2458	2009	1560	1111	0661	0211	9761	9310	8858	8407	7954	7502	7049	45
16	3346	2899	2450	2002	1553	1104	0654	0204	9753	9302	8851	8399	7947	7494	7041	44
17	3339	2891	2443	1994	1546	1096	0646	0196	9746	9295	8843	8391	7939	7487	7033	43
18	3331	2884	2435	1987	1538	1089	0639	0189	9738	9287	8836	8384	7932	7479	7026	42
19	3324	2876	2428	1979	1531	1081	0631	0181	9731	9280	8828	8376	7924	7471	7018	41
20	3316	2869	2421	1972	1523	1074	0624	0174	9723	9272	8821	8369	7917	7464	7011	40
21	3309	2861	2413	1965	1516	1066	0616	0166	9716	9265	8813	8361	7909	7456	7003	39
22	3301	2854	2406	1957	1508	1059	0609	0159	9708	9257	8806	8354	7901	7449	6996	38
23	3294	2846	2398	1950	1501	1051	0601	0151	9701	9250	8798	8346	7894	7441	6988	37
24	3287	2839	2391	1942	1493	1044	0594	0144	9693	9242	8791	8339	7886	7434	6981	36
25	3279	2831	2383	1935	1486	1036	0586	0136	9686	9235	8783	8331	7879	7426	6973	35
26	3272	2824	2376	1927	1478	1029	0579	0129	9678	9227	8776	8324	7871	7419	6965	34
27	3264	2816	2368	1920	1471	1021	0571	0121	9671	9219	8768	8316	7864	7411	6958	33
28	3257	2809	2361	1912	1463	1014	0564	0114	9663	9212	8760	8309	7856	7404	6950	32
29	3249	2801	2353	1905	1456	1006	0556	0106	9656	9204	8753	8301	7849	7396	6943	31
30	3242	2794	2346	1897	1448	0999	0549	0099	9648	9197	8745	8293	7841	7388	6935	30
31	3234	2787	2338	1890	1441	0991	0541	0091	9640	9189	8738	8286	7834	7381	6928	29
32	3227	2779	2331	1882	1433	0984	0534	0084	9633	9182	8730	8278	7826	7373	6920	28
33	3219	2772	2323	1875	1426	0976	0526	0076	9625	9174	8723	8271	7819	7366	6913	27
34	3212	2764	2316	1867	1418	0969	0519	0069	9618	9167	8715	8263	7811	7358	6905	26
35	3204	2757	2308	1860	1411	0961	0511	0061	9610	9159	8708	8256	7803	7351	6897	25
36	3197	2749	2301	1852	1403	0954	0504	0054	9603	9152	8700	8248	7796	7343	6890	24
37	3190	2742	2294	1845	1396	0946	0496	0046	9595	9144	8693	8241	7788	7336	6882	23
38	3182	2734	2286	1837	1388	0939	0489	0039	9588	9137	8685	8233	7781	7328	6875	22
39	3175	2727	2279	1830	1381	0931	0481	0031	9580	9129	8678	8226	7773	7320	6867	21
40	3167	2719	2271	1822	1373	0924	0474	0024	9573	9122	8670	8218	7766	7313	6860	20
41	3160	2712	2264	1815	1366	0916	0466	0016	9565	9114	8663	8211	7758	7305	6852	19
42	3152	2704	2256	1807	1358	0909	0459	0009	9558	9107	8655	8203	7751	7298	6845	18
43	3145	2697	2249	1800	1351	0901	0451	0001	9550	9099	8648	8196	7743	7290	6837	17
44	3137	2689	2241	1792	1343	0894	0444	9994	9543	9092	8640	8188	7736	7283	6829	16
45	3130	2682	2234	1785	1336	0886	0436	9986	9535	9084	8632	8180	7728	7275	6822	15
46	3122	2675	2226	1778	1328	0879	0429	9979	9528	9077	8625	8173	7720	7268	6814	14
47	3115	2667	2219	1770	1321	0871	0421	9971	9520	9069	8617	8165	7713	7260	6807	13
48	3107	2660	2211	1763	1313	0864	0414	9964	9513	9061	8610	8158	7705	7253	6799	12
49	3100	2652	2204	1755	1306	0856	0406	9956	9505	9054	8602	8150	7698	7245	6792	11
50	3093	2645	2196	1748	1298	0849	0399	9948	9498	9046	8595	8143	7690	7237	6784	10
51	3085	2637	2189	1740	1291	0841	0391	9941	9490	9039	8587	8135	7683	7230	6777	9
52	3078	2630	2181	1733	1283	0834	0384	9933	9483	9031	8580	8128	7675	7222	6769	8
53	3070	2622	2174	1725	1276	0826	0376	9926	9475	9024	8572	8120	7668	7215	6761	7
54	3063	2615	2166	1718	1268	0819	0369	9918	9468	9016	8565	8113	7660	7207	6754	6
55	3055	2607	2159	1710	1261	0811	0361	9911	9460	9009	8557	8105	7653	7200	6746	5
56	3048	2600	2151	1703	1253	0804	0354	9903	9453	9001	8550	8098	7645	7192	6739	4
57	3040	2592	2144	1695	1246	0796	0346	9896	9445	8994	8542	8090	7637	7185	6731	3
58	3033	2585	2137	1688	1239	0789	0339	9888	9438	8986	8535	8082	7630	7177	6724	2
59	3025	2577	2129	1680	1231	0781	0331	9881	9430	8979	8527	8075	7622	7169	6716	1
60	3018	2570	2122	1673	1224	0774	0324	9873	9422	8971	8519	8067	7615	7162	6709	0
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Sine Deg. 70

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 549	9. 549	9. 549	9. 550	9. 550	9. 551	9. 551	9. 551	9. 552	9. 552	9. 553	9. 553	9. 553	9. 554	9. 554
0	1487	5500	9511	3519	7523	1525	5524	9521	3514	7504	1492	5477	9459	3438	7415
1	1554	5567	9578	3585	7590	1592	5591	9587	3580	7571	1559	5543	9525	3505	7481
2	1621	5634	9645	3652	7657	1659	5658	9654	3647	7637	1625	5610	9592	3571	7547
3	1688	5701	9711	3719	7724	1725	5724	9720	3714	7704	1691	5676	9658	3637	7613
4	1755	5768	9778	3786	7790	1792	5791	9787	3780	7770	1758	5743	9724	3703	7680
5	1822	5835	9845	3852	7857	1859	5858	9853	3847	7837	1824	5809	9791	3770	7746
6	1889	5902	9912	3919	7924	1925	5924	9920	3913	7903	1891	5875	9857	3836	7812
7	1955	5968	9979	3986	7990	1992	5991	9987	3980	7970	1957	5942	9923	3902	7878
8	2022	6035	0045	4053	8057	2059	6057	0053	4046	8036	2024	6008	9990	3969	7945
9	2089	6102	0112	4120	8124	2125	6124	0120	4113	8103	2090	6075	0056	4035	8011
10	2156	6169	0179	4186	8191	2192	6191	0186	4179	8169	2157	6141	0122	4101	8077
11	2223	6236	0246	4253	8257	2259	6257	0253	4246	8236	2223	6207	0189	4167	8143
12	2290	6303	0313	4320	8324	2325	6324	0319	4312	8302	2289	6274	0255	4234	8210
13	2357	6370	0380	4387	8391	2392	6390	0386	4379	8369	2356	6340	0321	4300	8276
14	2424	6436	0446	4453	8457	2459	6457	0453	4445	8435	2422	6406	0388	4366	8342
15	2491	6503	0513	4520	8524	2525	6524	0519	4512	8502	2489	6473	0454	4433	8408
16	2558	6570	0580	4587	8591	2592	6590	0586	4578	8568	2555	6539	0520	4499	8475
17	2624	6637	0647	4654	8658	2659	6657	0652	4645	8635	2622	6606	0587	4565	8541
18	2691	6704	0714	4720	8724	2725	6724	0719	4711	8701	2688	6672	0653	4631	8607
19	2758	6771	0780	4787	8791	2792	6790	0785	4778	8768	2754	6738	0719	4698	8673
20	2825	6838	0847	4854	8858	2859	6857	0852	4844	8834	2821	6805	0786	4764	8740
21	2892	6904	0914	4921	8924	2925	6923	0919	4911	8901	2887	6871	0852	4830	8806
22	2959	6971	0981	4987	8991	2992	6990	0985	4977	8967	2954	6937	0918	4897	8872
23	3026	7038	1048	5054	9058	3059	7057	1052	5044	9033	3020	7004	0985	4963	8938
24	3093	7105	1114	5121	9125	3125	7123	1118	5111	9100	3086	7070	1051	5029	9004
25	3160	7172	1181	5188	9191	3192	7190	1185	5177	9166	3153	7137	1117	5095	9071
26	3227	7239	1248	5254	9258	3259	7256	1251	5244	9233	3219	7203	1184	5162	9137
27	3293	7306	1315	5321	9325	3325	7323	1318	5310	9299	3286	7269	1250	5228	9203
28	3360	7372	1382	5388	9391	3392	7390	1385	5377	9366	3352	7336	1316	5294	9269
29	3427	7439	1448	5455	9458	3459	7456	1451	5443	9432	3419	7402	1383	5361	9336
30	3494	7506	1515	5521	9525	3525	7523	1518	5510	9499	3485	7468	1449	5427	9402
31	3561	7573	1582	5588	9591	3592	7589	1584	5576	9565	3551	7535	1515	5493	9468
32	3628	7640	1649	5655	9658	3659	7656	1651	5643	9632	3618	7601	1582	5559	9534
33	3695	7707	1716	5722	9725	3725	7723	1717	5709	9698	3684	7668	1648	5626	9601
34	3762	7773	1782	5788	9792	3792	7789	1784	5776	9765	3751	7734	1714	5692	9667
35	3829	7840	1849	5855	9858	3858	7856	1850	5842	9831	3817	7800	1781	5758	9733
36	3895	7907	1916	5922	9925	3925	7922	1917	5909	9897	3883	7867	1847	5824	9799
37	3962	7974	1983	5989	9992	3992	7989	1984	5975	9964	3950	7933	1913	5891	9865
38	4029	8041	2049	6055	0058	4058	8056	2050	6042	0030	4016	7999	1980	5957	9932
39	4096	8108	2116	6122	0125	4125	8122	2117	6108	0097	4083	8066	2046	6023	9998
40	4163	8174	2183	6189	0192	4192	8189	2183	6175	0163	4149	8132	2112	6090	0064
41	4230	8241	2250	6256	0258	4258	8255	2250	6241	0230	4215	8198	2179	6156	0130
42	4297	8308	2317	6322	0325	4325	8322	2316	6308	0296	4282	8265	2245	6222	0196
43	4364	8375	2383	6389	0392	4392	8389	2383	6374	0363	4348	8331	2311	6288	0263
44	4430	8442	2450	6456	0458	4458	8455	2449	6441	0429	4415	8397	2377	6355	0329
45	4497	8509	2517	6522	0525	4525	8522	2516	6507	0496	4481	8464	2444	6421	0395
46	4564	8575	2584	6589	0592	4592	8588	2582	6574	0562	4547	8530	2510	6487	0461
47	4631	8642	2651	6656	0658	4658	8655	2649	6640	0628	4614	8597	2576	6553	0528
48	4698	8709	2717	6723	0725	4725	8722	2716	6707	0695	4680	8663	2643	6620	0594
49	4765	8776	2784	6789	0792	4791	8788	2782	6773	0761	4747	8729	2709	6686	0660
50	4832	8843	2851	6856	0859	4858	8855	2849	6840	0828	4813	8796	2775	6752	0726
51	4899	8910	2918	6923	0925	4925	8921	2915	6906	0894	4879	8862	2842	6818	0792
52	4965	8976	2984	6990	0992	4991	8988	2982	6973	0961	4946	8928	2908	6885	0859
53	5032	9043	3051	7056	1059	5058	9055	3048	7039	1027	5012	8995	2974	6951	0925
54	5099	9110	3118	7123	1125	5125	9121	3115	7106	1094	5079	9061	3040	7017	0991
55	5166	9177	3185	7190	1192	5191	9188	3181	7172	1160	5145	9127	3107	7083	1057
56	5233	9244	3252	7257	1259	5258	9254	3248	7239	1226	5211	9194	3173	7150	1123
57	5300	9311	3318	7323	1325	5325	9321	3314	7305	1293	5278	9260	3239	7216	1190
58	5367	9377	3385	7390	1392	5391	9387	3381	7372	1359	5344	9326	3306	7282	1256
59	5434	9444	3452	7457	1459	5458	9454	3447	7438	1426	5411	9393	3372	7348	1322
60	5500	9511	3519	7523	1525	5524	9521	3514	7504	1492	5477	9459	3438	7415	1388
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
	10. 450	10. 450	10. 450	10. 449	10. 449	10. 448	10. 448	10. 448	10. 447	10. 447	10. 446	10. 446	10. 446	10. 445	10. 445	″
	8513	4500	0489	6481	2477	8475	4476	0479	6486	2496	8508	4523	0541	6562	2585	60
	8446	4433	0422	6415	2410	8408	4409	0413	6420	2429	8441	4457	0475	6495	2519	59
	8379	4366	0355	6348	2343	8341	4342	0346	6353	2363	8375	4390	0408	6429	2453	58
	8312	4299	0289	6281	2276	8275	4276	0280	6286	2296	8309	4324	0342	6363	2387	57
	8245	4232	0222	6214	2210	8208	4209	0213	6220	2230	8242	4257	0276	6297	2320	56
	8178	4165	0155	6148	2143	8141	4142	0147	6153	2163	8176	4191	0209	6230	2254	55
	8111	4098	0088	6081	2076	8075	4076	0080	6087	2097	8109	4125	0143	6164	2188	54
	8045	4032	0021	6014	2010	8008	4009	0013	6020	2030	8043	4058	0077	6098	2122	53
	7978	3965	9955	5947	1943	7941	3943	9947	5954	1964	7976	3992	0010	6031	2055	52
	7911	3898	9888	5880	1876	7875	3876	9880	5887	1897	7910	3925	9944	5965	1989	51
	7844	3831	9821	5814	1809	7808	3809	9814	5821	1831	7843	3859	9878	5899	1923	50
	7777	3764	9754	5747	1743	7741	3743	9747	5754	1764	7777	3793	9811	5833	1857	49
	7710	3697	9687	5680	1676	7675	3676	9681	5688	1698	7711	3726	9745	5766	1790	48
	7643	3630	9620	5613	1609	7608	3610	9614	5621	1631	7644	3660	9679	5700	1724	47
	7576	3564	9554	5547	1543	7541	3543	9547	5555	1565	7578	3594	9612	5634	1658	46
	7509	3497	9487	5480	1476	7475	3476	9481	5488	1498	7511	3527	9546	5567	1592	45
	7442	3430	9420	5413	1409	7408	3410	9414	5422	1432	7445	3461	9480	5501	1525	44
	7376	3363	9353	5346	1342	7341	3343	9348	5355	1365	7378	3394	9413	5435	1459	43
	7309	3296	9286	5280	1276	7275	3276	9281	5289	1299	7312	3328	9347	5369	1393	42
	7242	3229	9220	5213	1209	7208	3210	9215	5222	1232	7246	3262	9281	5302	1327	41
	7175	3162	9153	5146	1142	7141	3143	9148	5156	1166	7179	3195	9214	5236	1260	40
	7108	3096	9086	5079	1076	7075	3077	9081	5089	1099	7113	3129	9148	5170	1194	39
	7041	3029	9019	5013	1009	7008	3010	9015	5023	1033	7046	3063	9082	5103	1128	38
	6974	2962	8952	4946	0942	6941	2943	8948	4956	0967	6980	2996	9015	5037	1062	37
	6907	2895	8886	4879	0875	6875	2877	8882	4889	0900	6914	2930	8949	4971	0996	36
	6840	2828	8819	4812	0809	6808	2810	8815	4823	0834	6847	2863	8883	4905	0929	35
	6773	2761	8752	4746	0742	6741	2744	8749	4756	0767	6781	2797	8816	4838	0863	34
	6707	2694	8685	4679	0675	6675	2677	8682	4690	0701	6714	2731	8750	4772	0797	33
	6640	2628	8618	4612	0609	6608	2610	8615	4623	0634	6648	2664	8684	4706	0731	32
	6573	2561	8552	4545	0542	6541	2544	8549	4557	0568	6581	2598	8617	4639	0664	31
	6506	2494	8485	4479	0475	6475	2477	8482	4490	0501	6515	2532	8551	4573	0598	30
	6439	2427	8418	4412	0409	6408	2411	8416	4424	0435	6449	2465	8485	4507	0532	29
	6372	2360	8351	4345	0342	6341	2344	8349	4357	0368	6382	2399	8418	4441	0466	28
	6305	2293	8284	4278	0275	6275	2277	8283	4291	0302	6316	2332	8352	4374	0399	27
	6238	2227	8218	4212	0208	6208	2211	8216	4224	0235	6249	2266	8286	4308	0333	26
	6171	2160	8151	4145	0142	6142	2144	8150	4158	0169	6183	2200	8219	4242	0267	25
	6105	2093	8084	4078	0075	6075	2078	8083	4091	0103	6117	2133	8153	4176	0201	24
	6038	2026	8017	4011	0008	6008	2011	8016	4025	0036	6050	2067	8087	4109	0135	23
	5971	1959	7951	3945	9942	5942	1944	7950	3958	9970	5984	2001	8020	4043	0068	22
	5904	1892	7884	3878	9875	5875	1878	7883	3892	9903	5917	1934	7954	3977	0002	21
	5837	1826	7817	3811	9808	5808	1811	7817	3825	9837	5851	1868	7888	3910	9936	20
	5770	1759	7750	3744	9742	5742	1745	7750	3759	9770	5785	1802	7821	3844	9870	19
	5703	1692	7683	3678	9675	5675	1678	7684	3692	9704	5718	1735	7755	3778	9804	18
	5636	1625	7617	3611	9608	5608	1611	7617	3626	9637	5652	1669	7689	3712	9737	17
	5570	1558	7550	3544	9542	5542	1545	7551	3559	9571	5585	1603	7623	3645	9671	16
	5503	1491	7483	3478	9475	5475	1478	7484	3493	9504	5519	1536	7556	3579	9605	15
	5436	1425	7416	3411	9408	5408	1412	7418	3426	9438	5453	1470	7490	3513	9539	14
	5369	1358	7349	3344	9342	5342	1345	7351	3360	9372	5386	1403	7424	3447	9472	13
	5302	1291	7283	3277	9275	5275	1278	7284	3293	9305	5320	1337	7357	3380	9406	12
	5235	1224	7216	3211	9208	5209	1212	7218	3227	9239	5253	1271	7291	3314	9340	11
	5168	1157	7149	3144	9141	5142	1145	7151	3160	9172	5187	1204	7225	3248	9274	10
	5101	1090	7082	3077	9075	5075	1079	7085	3094	9106	5121	1138	7158	3182	9208	9
	5035	1024	7016	3010	9008	5009	1012	7018	3027	9039	5054	1072	7092	3115	9141	8
	4968	0957	6949	2944	8941	4942	0945	6952	2961	8973	4988	1005	7026	3049	9075	7
	4901	0890	6882	2877	8875	4875	0879	6885	2894	8906	4921	0939	6960	2983	9009	6
	4834	0823	6815	2810	8808	4809	0812	6819	2828	8840	4855	0873	6893	2917	8943	5
	4767	0756	6748	2743	8741	4742	0746	6752	2761	8774	4789	0806	6827	2850	8877	4
	4700	0689	6682	2677	8675	4675	0679	6686	2695	8707	4722	0740	6761	2784	8810	3
	4633	0623	6615	2610	8608	4609	0613	6619	2628	8641	4656	0674	6694	2718	8744	2
	4566	0556	6548	2543	8541	4542	0546	6553	2562	8574	4589	0607	6628	2652	8678	1
	4500	0489	6481	2477	8475	4476	0479	6486	2496	8508	4523	0541	6562	2585	8612	0
	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

19 Deg. Sine

″	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9.528	9.529	9.529	9.529	9.530	9.530	9.530	9.531	9.531	9.531	9.532	9.532	9.533	9.533	9.533
0	8097	1614	5128	8638	2146	5650	9151	2649	6143	9635	3123	6608	0090	3569	7044
1	8155	1672	5186	8697	2204	5708	9209	2707	6201	9693	3181	6666	0148	3627	7102
2	8214	1731	5245	8755	2262	5766	9267	2765	6260	9751	3239	6724	0206	3685	7160
3	8273	1790	5303	8814	2321	5825	9326	2823	6318	9809	3297	6782	0264	3743	7218
4	8331	1848	5362	8872	2379	5883	9384	2882	6376	9867	3355	6840	0322	3801	7276
5	8390	1907	5420	8931	2438	5942	9442	2940	6434	9925	3413	6898	0380	3858	7334
6	8449	1965	5479	8989	2496	6000	9501	2998	6492	9984	3472	6956	0438	3916	7392
7	8507	2024	5537	9048	2555	6058	9559	3056	6551	0042	3530	7014	0496	3974	7450
8	8566	2082	5596	9106	2613	6117	9617	3115	6609	0100	3588	7072	0554	4032	7508
9	8625	2141	5654	9164	2671	6175	9676	3173	6667	0158	3646	7130	0612	4090	7565
10	8683	2200	5713	9223	2730	6233	9734	3231	6725	0216	3704	7189	0670	4148	7623
11	8742	2258	5771	9281	2788	6292	9792	3289	6783	0274	3762	7247	0728	4206	7681
12	8800	2317	5830	9340	2847	6350	9851	3348	6842	0333	3820	7305	0786	4264	7739
13	8859	2375	5888	9398	2905	6409	9909	3406	6900	0391	3878	7363	0844	4322	7797
14	8918	2434	5947	9457	2963	6467	9967	3464	6958	0449	3936	7421	0902	4380	7855
15	8976	2493	6006	9515	3022	6525	0025	3522	7016	0507	3994	7479	0960	4438	7913
16	9035	2551	6064	9574	3080	6584	0084	3581	7075	0565	4053	7537	1018	4496	7971
17	9094	2610	6123	9632	3139	6642	0142	3639	7133	0623	4111	7595	1076	4554	8029
18	9152	2668	6181	9691	3197	6700	0200	3697	7191	0681	4169	7653	1134	4612	8086
19	9211	2727	6240	9749	3256	6759	0259	3756	7249	0740	4227	7711	1192	4670	8144
20	9269	2785	6298	9808	3314	6817	0317	3814	7307	0798	4285	7769	1250	4728	8202
21	9328	2844	6357	9866	3372	6875	0375	3872	7366	0856	4343	7827	1308	4786	8260
22	9387	2903	6415	9925	3431	6934	0434	3930	7424	0914	4401	7885	1366	4843	8318
23	9445	2961	6474	9983	3489	6992	0492	3989	7482	0972	4459	7943	1424	4901	8376
24	9504	3020	6532	0042	3548	7051	0550	4047	7540	1030	4517	8001	1482	4959	8434
25	9563	3078	6591	0100	3606	7109	0609	4105	7598	1088	4575	8059	1540	5017	8492
26	9621	3137	6649	0158	3664	7167	0667	4163	7657	1147	4633	8117	1598	5075	8549
27	9680	3195	6708	0217	3723	7226	0725	4222	7715	1205	4692	8175	1656	5133	8607
28	9738	3254	6766	0275	3781	7284	0783	4280	7773	1263	4750	8233	1714	5191	8665
29	9797	3313	6825	0334	3840	7342	0842	4338	7831	1321	4808	8291	1772	5249	8723
30	9856	3371	6883	0392	3898	7401	0900	4396	7889	1379	4866	8349	1830	5307	8781
31	9914	3430	6942	0451	3956	7459	0958	4454	7947	1437	4924	8407	1888	5365	8839
32	9973	3488	7000	0509	4015	7517	1017	4513	8006	1495	4982	8465	1946	5423	8897
33	0032	3547	7059	0568	4073	7576	1075	4571	8064	1554	5040	8523	2004	5481	8955
34	0090	3605	7117	0626	4132	7634	1133	4629	8122	1612	5098	8581	2062	5539	9012
35	0149	3664	7176	0685	4190	7692	1191	4687	8180	1670	5156	8639	2120	5597	9070
36	0207	3722	7234	0743	4248	7751	1250	4746	8238	1728	5214	8698	2178	5654	9128
37	0266	3781	7293	0801	4307	7809	1308	4804	8297	1786	5272	8756	2236	5712	9186
38	0325	3840	7351	0860	4365	7867	1366	4862	8355	1844	5330	8814	2294	5770	9244
39	0383	3898	7410	0918	4424	7926	1425	4920	8413	1902	5389	8872	2351	5828	9302
40	0442	3957	7468	0977	4482	7984	1483	4979	8471	1960	5447	8930	2409	5886	9360
41	0500	4015	7527	1035	4540	8042	1541	5037	8529	2019	5505	8988	2467	5944	9418
42	0559	4074	7585	1094	4599	8101	1600	5095	8587	2077	5563	9046	2525	6002	9475
43	0618	4132	7644	1152	4657	8159	1658	5153	8646	2135	5621	9104	2583	6060	9533
44	0676	4191	7702	1211	4716	8217	1716	5212	8704	2193	5679	9162	2641	6118	9591
45	0735	4249	7761	1269	4774	8276	1774	5270	8762	2251	5737	9220	2699	6176	9649
46	0793	4308	7819	1327	4832	8334	1833	5328	8820	2309	5795	9278	2757	6234	9707
47	0852	4367	7878	1386	4891	8392	1891	5386	8878	2367	5853	9336	2815	6292	9765
48	0911	4425	7936	1444	4949	8451	1949	5444	8937	2425	5911	9394	2873	6349	9823
49	0969	4484	7995	1503	5008	8509	2008	5503	8995	2484	5969	9452	2931	6407	9880
50	1028	4542	8053	1561	5066	8567	2066	5561	9053	2542	6027	9510	2989	6465	9938
51	1086	4601	8112	1620	5124	8626	2124	5619	9111	2600	6085	9568	3047	6523	9996
52	1145	4659	8170	1678	5183	8684	2182	5677	9169	2658	6143	9626	3105	6581	0054
53	1204	4718	8229	1737	5241	8742	2241	5736	9227	2716	6202	9684	3163	6639	0112
54	1262	4776	8287	1795	5299	8801	2299	5794	9286	2774	6260	9742	3221	6697	0170
55	1321	4835	8346	1853	5358	8859	2357	5852	9344	2832	6318	9800	3279	6755	0228
56	1379	4893	8404	1912	5416	8917	2415	5910	9402	2890	6376	9858	3337	6813	0285
57	1438	4952	8463	1970	5475	8976	2474	5968	9460	2949	6434	9916	3395	6871	0343
58	1497	5011	8521	2029	5533	9034	2532	6027	9518	3007	6492	9974	3453	6929	0401
59	1555	5069	8580	2087	5591	9092	2590	6085	9576	3065	6550	0032	3511	6986	0459
60	1614	5128	8638	2146	5650	9151	2649	6143	9635	3123	6608	0090	3569	7044	0517
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Sine Deg. 70

19 Deg. Co-Sine

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	″
9.973	9.973	9.973	9.973	9.973	9.973	9.973	9.973	9.973	9.973	9.973	9.973	9.973	9.973	9.973	
6709	6255	5801	5346	4891	4435	3980	3523	3067	2610	2152	1694	1236	0777	0318	60
6701	6247	5793	5338	4883	4428	3972	3516	3059	2602	2144	1686	1228	0769	0310	59
6693	6240	5785	5331	4876	4420	3964	3508	3051	2594	2137	1679	1220	0762	0302	58
6686	6232	5778	5323	4868	4413	3957	3500	3044	2587	2129	1671	1213	0754	0295	57
6678	6224	5770	5316	4861	4405	3949	3493	3036	2579	2121	1664	1205	0746	0287	56
6671	6217	5763	5308	4853	4397	3942	3485	3029	2571	2114	1656	1198	0739	0279	55
6663	6209	5755	5300	4845	4390	3934	3478	3021	2564	2106	1648	1190	0731	0272	54
6656	6202	5748	5293	4838	4382	3926	3470	3013	2556	2099	1641	1182	0723	0264	53
6648	6194	5740	5285	4830	4375	3919	3462	3006	2549	2091	1633	1175	0716	0257	52
6640	6187	5732	5278	4823	4367	3911	3455	2998	2541	2083	1625	1167	0708	0249	51
6633	6179	5725	5270	4815	4360	3904	3447	2990	2533	2076	1618	1159	0700	0241	50
6625	6171	5717	5263	4807	4352	3896	3440	2983	2526	2068	1610	1152	0693	0234	49
6618	6164	5710	5255	4800	4344	3888	3432	2975	2518	2060	1602	1144	0685	0226	48
6610	6156	5702	5247	4792	4337	3881	3424	2968	2510	2053	1595	1136	0677	0218	47
6603	6149	5694	5240	4785	4329	3873	3417	2960	2503	2045	1587	1129	0670	0211	46
6595	6141	5687	5232	4777	4322	3866	3409	2952	2495	2038	1580	1121	0662	0203	45
6588	6134	5679	5225	4769	4314	3858	3402	2945	2488	2030	1572	1113	0655	0195	44
6580	6126	5672	5217	4762	4306	3850	3394	2937	2480	2022	1564	1106	0647	0188	43
6572	6119	5664	5209	4754	4299	3843	3386	2930	2472	2015	1557	1098	0639	0180	42
6565	6111	5657	5202	4747	4291	3835	3379	2922	2465	2007	1549	1090	0632	0172	41
6557	6103	5649	5194	4739	4284	3828	3371	2914	2457	1999	1541	1083	0624	0165	40
6550	6096	5641	5187	4732	4276	3820	3364	2907	2449	1992	1534	1075	0616	0157	39
6542	6088	5634	5179	4724	4268	3812	3356	2899	2442	1984	1526	1068	0609	0149	38
6535	6081	5626	5172	4716	4261	3805	3348	2891	2434	1977	1518	1060	0601	0142	37
6527	6073	5619	5164	4709	4253	3797	3341	2884	2427	1969	1511	1052	0593	0134	36
6519	6066	5611	5156	4701	4246	3790	3333	2876	2419	1961	1503	1045	0586	0126	35
6512	6058	5604	5149	4694	4238	3782	3325	2869	2411	1954	1495	1037	0578	0119	34
6504	6050	5596	5141	4686	4230	3774	3318	2861	2404	1946	1488	1029	0570	0111	33
6497	6043	5588	5134	4678	4223	3767	3310	2853	2396	1938	1480	1022	0563	0103	32
6489	6035	5581	5126	4671	4215	3759	3303	2846	2388	1931	1473	1014	0555	0096	31
6482	6028	5573	5118	4663	4208	3752	3295	2838	2381	1923	1465	1006	0547	0088	30
6474	6020	5566	5111	4656	4200	3744	3287	2831	2373	1915	1457	0999	0540	0080	29
6467	6013	5558	5103	4648	4192	3736	3280	2823	2366	1908	1450	0991	0532	0073	28
6459	6005	5551	5096	4640	4185	3729	3272	2815	2358	1900	1442	0983	0524	0065	27
6451	5997	5543	5088	4633	4177	3721	3265	2808	2350	1893	1434	0976	0517	0057	26
6444	5990	5535	5081	4625	4170	3713	3257	2800	2343	1885	1427	0968	0509	0050	25
6436	5982	5528	5073	4618	4162	3706	3249	2792	2335	1877	1419	0961	0501	0042	24
6429	5975	5520	5065	4610	4154	3698	3242	2785	2327	1870	1411	0953	0494	0034	23
6421	5967	5513	5058	4602	4147	3691	3234	2777	2320	1862	1404	0945	0486	0027	22
6414	5960	5505	5050	4595	4139	3683	3227	2770	2312	1854	1396	0938	0479	0019	21
6406	5952	5498	5043	4587	4132	3675	3219	2762	2305	1847	1389	0930	0471	0011	20
6398	5944	5490	5035	4580	4124	3668	3211	2754	2297	1839	1381	0922	0463	0004	19
6391	5937	5482	5027	4572	4116	3660	3204	2747	2289	1831	1373	0915	0456	9996	18
6383	5929	5475	5020	4565	4109	3653	3196	2739	2282	1824	1366	0907	0448	9988	17
6376	5922	5467	5012	4557	4101	3645	3188	2731	2274	1816	1358	0899	0440	9981	16
6368	5914	5460	5005	4549	4094	3637	3181	2724	2266	1809	1350	0892	0433	9973	15
6361	5907	5452	4997	4542	4086	3630	3173	2716	2259	1801	1343	0884	0425	9965	14
6353	5899	5444	4990	4534	4078	3622	3166	2709	2251	1793	1335	0876	0417	9958	13
6346	5891	5437	4982	4527	4071	3615	3158	2701	2244	1786	1327	0869	0410	9950	12
6338	5884	5429	4974	4519	4063	3607	3150	2693	2236	1778	1320	0861	0402	9942	11
6330	5876	5422	4967	4511	4056	3599	3143	2686	2228	1770	1312	0853	0394	9935	10
6323	5869	5414	4959	4504	4048	3592	3135	2678	2221	1763	1304	0846	0387	9927	9
6315	5861	5407	4952	4496	4040	3584	3128	2670	2213	1755	1297	0838	0379	9919	8
6308	5854	5399	4944	4489	4033	3577	3120	2663	2205	1748	1289	0830	0371	9912	7
6300	5846	5391	4936	4481	4025	3569	3112	2655	2198	1740	1282	0823	0364	9904	6
6293	5838	5384	4929	4473	4018	3561	3105	2648	2190	1732	1274	0815	0356	9896	5
6285	5831	5376	4921	4466	4010	3554	3097	2640	2183	1725	1266	0808	0348	9889	4
6277	5823	5369	4914	4458	4002	3546	3089	2632	2175	1717	1259	0800	0341	9881	3
6270	5816	5361	4906	4451	3995	3539	3082	2625	2167	1709	1251	0792	0333	9873	2
6262	5808	5353	4898	4443	3987	3531	3074	2617	2160	1702	1243	0785	0325	9866	1
6255	5801	5346	4891	4435	3980	3523	3067	2610	2152	1694	1236	0777	0318	9858	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Sine Deg. 70

19 Deg. Tangent

″	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9.555	9.555	9.555	9.556	9.556	9.557	9.557	9.557	9.558	9.558	9.559	9.559	9.559	9.560	9.560
0	1388	5359	9327	3292	7255	1214	5171	9125	3077	7025	0971	4914	8854	2792	6727
1	1454	5425	9393	3358	7321	1280	5237	9191	3142	7091	1037	4980	8920	2857	6792
2	1521	5491	9459	3424	7387	1346	5303	9257	3208	7157	1102	5045	8986	2923	6858
3	1587	5558	9525	3490	7453	1412	5369	9323	3274	7222	1168	5111	9051	2989	6923
4	1653	5624	9591	3556	7519	1478	5435	9389	3340	7288	1234	5177	9117	3054	6989
5	1719	5690	9658	3623	7585	1544	5501	9455	3406	7354	1300	5242	9182	3120	7054
6	1785	5756	9724	3689	7651	1610	5567	9521	3472	7420	1365	5308	9248	3185	7120
7	1852	5822	9790	3755	7717	1676	5633	9586	3537	7486	1431	5374	9314	3251	7185
8	1918	5888	9856	3821	7783	1742	5699	9652	3603	7551	1497	5439	9379	3317	7251
9	1984	5954	9922	3887	7849	1808	5764	9718	3669	7617	1563	5505	9445	3382	7317
10	2050	6021	9988	3953	7915	1874	5830	9784	3735	7683	1628	5571	9511	3448	7382
11	2116	6087	0054	4019	7981	1940	5896	9850	3801	7749	1694	5637	9576	3513	7448
12	2183	6153	0120	4085	8047	2006	5962	9916	3866	7814	1760	5702	9642	3579	7513
13	2249	6219	0186	4151	8113	2072	6028	9982	3932	7880	1825	5768	9708	3645	7579
14	2315	6285	0253	4217	8179	2138	6094	0047	3998	7946	1891	5834	9773	3710	7644
15	2381	6351	0319	4283	8245	2204	6160	0113	4064	8012	1957	5899	9839	3776	7710
16	2447	6417	0385	4349	8311	2270	6226	0179	4130	8078	2023	5965	9904	3841	7775
17	2514	6484	0451	4415	8377	2336	6292	0245	4196	8143	2088	6031	9970	3907	7841
18	2580	6550	0517	4481	8443	2402	6358	0311	4261	8209	2154	6096	0036	3973	7907
19	2646	6616	0583	4547	8509	2468	6424	0377	4327	8275	2220	6162	0101	4038	7972
20	2712	6682	0649	4613	8575	2534	6489	0443	4393	8341	2286	6228	0167	4104	8038
21	2778	6748	0715	4679	8641	2599	6555	0508	4459	8406	2351	6293	0233	4169	8103
22	2845	6814	0781	4745	8707	2665	6621	0574	4525	8472	2417	6359	0298	4235	8169
23	2911	6880	0847	4812	8773	2731	6687	0640	4590	8538	2483	6425	0364	4300	8234
24	2977	6947	0913	4878	8839	2797	6753	0706	4656	8604	2548	6490	0430	4366	8300
25	3043	7013	0980	4944	8905	2863	6819	0772	4722	8669	2614	6556	0495	4432	8365
26	3109	7079	1046	5010	8971	2929	6885	0838	4788	8735	2680	6622	0561	4497	8431
27	3175	7145	1112	5076	9037	2995	6951	0904	4854	8801	2746	6687	0626	4563	8496
28	3242	7211	1178	5142	9103	3061	7017	0970	4920	8867	2811	6753	0692	4628	8562
29	3308	7277	1244	5208	9169	3127	7083	1035	4985	8933	2877	6819	0758	4694	8627
30	3374	7343	1310	5274	9235	3193	7149	1101	5051	8998	2943	6884	0823	4760	8693
31	3440	7410	1376	5340	9301	3259	7214	1167	5117	9064	3008	6950	0889	4825	8759
32	3506	7476	1442	5406	9367	3325	7280	1233	5183	9130	3074	7016	0955	4891	8824
33	3573	7542	1508	5472	9433	3391	7346	1299	5249	9196	3140	7081	1020	4956	8890
34	3639	7608	1574	5538	9499	3457	7412	1365	5314	9261	3206	7147	1086	5022	8955
35	3705	7674	1640	5604	9565	3523	7478	1430	5380	9327	3271	7213	1151	5087	9021
36	3771	7740	1707	5670	9631	3589	7544	1496	5446	9393	3337	7278	1217	5153	9086
37	3837	7806	1773	5736	9697	3655	7610	1562	5512	9459	3403	7344	1283	5219	9152
38	3903	7872	1839	5802	9763	3721	7676	1628	5578	9524	3468	7410	1348	5284	9217
39	3970	7939	1905	5868	9829	3787	7742	1694	5643	9590	3534	7475	1414	5350	9283
40	4036	8005	1971	5934	9895	3852	7807	1760	5709	9656	3600	7541	1480	5415	9348
41	4102	8071	2037	6000	9961	3918	7873	1826	5775	9722	3666	7607	1545	5481	9414
42	4168	8137	2103	6066	0027	3984	7939	1891	5841	9787	3731	7672	1611	5546	9479
43	4234	8203	2169	6132	0093	4050	8005	1957	5907	9853	3797	7738	1676	5612	9545
44	4300	8269	2235	6198	0159	4116	8071	2023	5972	9919	3863	7804	1742	5678	9610
45	4367	8335	2301	6264	0225	4182	8137	2089	6038	9985	3928	7869	1808	5743	9676
46	4433	8401	2367	6330	0291	4248	8203	2155	6104	0050	3994	7935	1873	5809	9741
47	4499	8468	2433	6396	0357	4314	8269	2221	6170	0116	4060	8001	1939	5874	9807
48	4565	8534	2499	6462	0423	4380	8335	2286	6236	0182	4126	8066	2004	5940	9872
49	4631	8600	2566	6528	0489	4446	8401	2352	6301	0248	4191	8132	2070	6005	9938
50	4697	8666	2632	6594	0555	4512	8466	2418	6367	0313	4257	8198	2136	6071	0004
51	4764	8732	2698	6660	0621	4578	8532	2484	6433	0379	4323	8263	2201	6137	0069
52	4830	8798	2764	6726	0686	4644	8598	2550	6499	0445	4388	8329	2267	6202	0135
53	4896	8864	2830	6793	0752	4710	8664	2616	6565	0511	4454	8395	2333	6268	0200
54	4962	8930	2896	6859	0818	4776	8730	2682	6630	0576	4520	8460	2398	6333	0266
55	5028	8996	2962	6925	0884	4842	8796	2747	6696	0642	4585	8526	2464	6399	0331
56	5094	9063	3028	6991	0950	4907	8862	2813	6762	0708	4651	8592	2529	6464	0397
57	5161	9129	3094	7057	1016	4973	8928	2879	6828	0774	4717	8657	2595	6530	0462
58	5227	9195	3160	7123	1082	5039	8993	2945	6894	0839	4783	8723	2661	6595	0528
59	5293	9261	3226	7189	1148	5105	9059	3011	6959	0905	4848	8789	2726	6661	0593
60	5359	9327	3292	7255	1214	5171	9125	3077	7025	0971	4914	8854	2792	6727	0659
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

19 Deg. Co-Tangent

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	″
10.444	10.444	10.444	10.443	10.443	10.442	10.442	10.442	10.441	10.441	10.440	10.440	10.440	10.439	10.439	
8612	4641	0673	6708	2745	8786	4829	0875	6923	2975	9029	5086	1146	7208	3273	60
8546	4575	0607	6642	2679	8720	4763	0809	6858	2909	8963	5020	1080	7143	3208	59
8479	4509	0541	6576	2613	8654	4697	0743	6792	2843	8898	4955	1014	7077	3142	58
8413	4442	0475	6510	2547	8588	4631	0677	6726	2778	8832	4889	0949	7011	3077	57
8347	4376	0409	6444	2481	8522	4565	0611	6660	2712	8766	4823	0883	6946	3011	56
8281	4310	0342	6377	2415	8456	4499	0545	6594	2646	8700	4758	0818	6880	2946	55
8215	4244	0276	6311	2349	8390	4433	0479	6528	2580	8635	4692	0752	6815	2880	54
8148	4178	0210	6245	2283	8324	4367	0414	6463	2514	8569	4626	0686	6749	2815	53
8082	4112	0144	6179	2217	8258	4301	0348	6397	2449	8503	4561	0621	6683	2749	52
8016	4046	0078	6113	2151	8192	4236	0282	6331	2383	8437	4495	0555	6618	2683	51
7950	3979	0012	6047	2085	8126	4170	0216	6265	2317	8372	4429	0489	6552	2618	50
7884	3913	9946	5981	2019	8060	4104	0150	6199	2251	8306	4363	0424	6487	2552	49
7817	3847	9880	5915	1953	7994	4038	0084	6134	2186	8240	4298	0358	6421	2487	48
7751	3781	9814	5849	1887	7928	3972	0018	6068	2120	8175	4232	0292	6355	2421	47
7685	3715	9747	5783	1821	7862	3906	9953	6002	2054	8109	4166	0227	6290	2356	46
7619	3649	9681	5717	1755	7796	3840	9887	5936	1988	8043	4101	0161	6224	2290	45
7553	3583	9615	5651	1689	7730	3774	9821	5870	1922	7977	4035	0096	6159	2225	44
7486	3516	9549	5585	1623	7664	3708	9755	5804	1857	7912	3969	0030	6093	2159	43
7420	3450	9483	5519	1557	7598	3642	9689	5739	1791	7846	3904	9964	6027	2093	42
7354	3384	9417	5453	1491	7532	3576	9623	5673	1725	7780	3838	9899	5962	2028	41
7288	3318	9351	5387	1425	7466	3511	9557	5607	1659	7714	3772	9833	5896	1962	40
7222	3252	9285	5321	1359	7401	3445	9492	5541	1594	7649	3707	9767	5831	1897	39
7155	3186	9219	5255	1293	7335	3379	9426	5475	1528	7583	3641	9702	5765	1831	38
7089	3120	9153	5188	1227	7269	3313	9360	5410	1462	7517	3575	9636	5700	1766	37
7023	3053	9087	5122	1161	7203	3247	9294	5344	1396	7452	3510	9570	5634	1700	36
6957	2987	9020	5056	1095	7137	3181	9228	5278	1331	7386	3444	9505	5568	1635	35
6891	2921	8954	4990	1029	7071	3115	9162	5212	1265	7320	3378	9439	5503	1569	34
6825	2855	8888	4924	0963	7005	3049	9096	5146	1199	7254	3313	9374	5437	1504	33
6758	2789	8822	4858	0897	6939	2983	9030	5080	1133	7189	3247	9308	5372	1438	32
6692	2723	8756	4792	0831	6873	2917	8965	5015	1067	7123	3181	9242	5306	1373	31
6626	2657	8690	4726	0765	6807	2851	8899	4949	1002	7057	3116	9177	5240	1307	30
6560	2590	8624	4660	0699	6741	2786	8833	4883	0936	6992	3050	9111	5175	1241	29
6494	2524	8558	4594	0633	6675	2720	8767	4817	0870	6926	2984	9045	5109	1176	28
6427	2458	8492	4528	0567	6609	2654	8701	4751	0804	6860	2919	8980	5044	1110	27
6361	2392	8426	4462	0501	6543	2588	8635	4686	0739	6794	2853	8914	4978	1045	26
6295	2326	8360	4396	0435	6477	2522	8570	4620	0673	6729	2787	8849	4913	0979	25
6229	2260	8293	4330	0369	6411	2456	8504	4554	0607	6663	2722	8783	4847	0914	24
6163	2194	8227	4264	0303	6345	2390	8438	4488	0541	6597	2656	8717	4781	0848	23
6097	2128	8161	4198	0237	6279	2324	8372	4422	0476	6532	2590	8652	4716	0783	22
6030	2061	8095	4132	0171	6213	2258	8306	4357	0410	6466	2525	8586	4650	0717	21
5964	1995	8029	4066	0105	6148	2193	8240	4291	0344	6400	2459	8520	4585	0652	20
5898	1929	7963	4000	0039	6082	2127	8174	4225	0278	6334	2393	8455	4519	0586	19
5832	1863	7897	3934	9973	6016	2061	8109	4159	0213	6269	2328	8389	4454	0521	18
5766	1797	7831	3868	9907	5950	1995	8043	4093	0147	6203	2262	8324	4388	0455	17
5700	1731	7765	3802	9841	5884	1929	7977	4028	0081	6137	2196	8258	4322	0390	16
5633	1665	7699	3736	9775	5818	1863	7911	3962	0015	6072	2131	8192	4257	0324	15
5567	1599	7633	3670	9709	5752	1797	7845	3896	9950	6006	2065	8127	4191	0259	14
5501	1532	7567	3604	9643	5686	1731	7779	3830	9884	5940	1999	8061	4126	0193	13
5435	1466	7501	3538	9577	5620	1665	7714	3764	9818	5874	1934	7996	4060	0128	12
5369	1400	7434	3472	9511	5554	1599	7648	3699	9752	5809	1868	7930	3995	0062	11
5303	1334	7368	3406	9445	5488	1534	7582	3633	9687	5743	1802	7864	3929	9996	10
5236	1268	7302	3340	9379	5422	1468	7516	3567	9621	5677	1737	7799	3863	9931	9
5170	1202	7236	3274	9314	5356	1402	7450	3501	9555	5612	1671	7733	3798	9865	8
5104	1136	7170	3207	9248	5290	1336	7384	3435	9489	5546	1605	7667	3732	9800	7
5038	1070	7104	3141	9182	5224	1270	7318	3370	9424	5480	1540	7602	3667	9734	6
4972	1004	7038	3075	9116	5158	1204	7253	3304	9358	5415	1474	7536	3601	9669	5
4906	0937	6972	3009	9050	5093	1138	7187	3238	9292	5349	1408	7471	3536	9603	4
4839	0871	6906	2943	8984	5027	1072	7121	3172	9226	5283	1343	7405	3470	9538	3
4773	0805	6840	2877	8918	4961	1007	7055	3106	9161	5217	1277	7339	3405	9472	2
4707	0739	6774	2811	8852	4895	0941	6989	3041	9095	5152	1211	7274	3339	9407	1
4641	0673	6708	2745	8786	4829	0875	6923	2975	9029	5086	1146	7208	3273	9341	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Co-Tangent Deg. 70 Tangent Deg. 70

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9. 534	9. 534	9. 534	9. 535	9. 535	9. 535	9. 536	9. 536	9. 536	9. 537	9. 537	9. 537	9. 538	9. 538	9. 538
0	0517	3986	7452	0915	4375	7832	1286	4737	8184	1629	5070	8508	1943	5375	8804
1	0575	4044	7510	0973	4433	7890	1344	4794	8242	1686	5127	8565	2000	5432	8861
2	0633	4102	7568	1031	4491	7947	1401	4852	8299	1743	5184	8623	2058	5490	8918
3	0690	4160	7626	1089	4548	8005	1459	4909	8356	1801	5242	8680	2115	5547	8976
4	0748	4217	7683	1146	4606	8063	1516	4967	8414	1858	5299	8737	2172	5604	9033
5	0806	4275	7741	1204	4664	8120	1574	5024	8471	1915	5356	8794	2229	5661	9090
6	0864	4333	7799	1262	4721	8178	1631	5081	8529	1973	5414	8852	2286	5718	9147
7	0922	4391	7857	1319	4779	8235	1689	5139	8586	2030	5471	8909	2344	5775	9204
8	0980	4449	7914	1377	4837	8293	1746	5196	8644	2088	5528	8966	2401	5833	9261
9	1037	4506	7972	1435	4894	8351	1804	5254	8701	2145	5586	9023	2458	5890	9318
10	1095	4564	8030	1492	4952	8408	1861	5311	8758	2202	5643	9081	2515	5947	9375
11	1153	4622	8088	1550	5009	8466	1919	5369	8816	2260	5700	9138	2573	6004	9432
12	1211	4680	8145	1608	5067	8523	1976	5426	8873	2317	5758	9195	2630	6061	9490
13	1269	4737	8203	1665	5125	8581	2034	5484	8931	2374	5815	9253	2687	6118	9547
14	1327	4795	8261	1723	5182	8638	2091	5541	8988	2432	5872	9310	2744	6176	9604
15	1384	4853	8318	1781	5240	8696	2149	5599	9045	2489	5930	9367	2801	6233	9661
16	1442	4911	8376	1838	5298	8754	2206	5656	9103	2546	5987	9424	2859	6290	9718
17	1500	4969	8434	1896	5355	8811	2264	5714	9160	2604	6044	9482	2916	6347	9775
18	1558	5026	8492	1954	5413	8869	2322	5771	9218	2661	6102	9539	2973	6404	9832
19	1616	5084	8549	2011	5470	8926	2379	5829	9275	2719	6159	9596	3030	6461	9889
20	1674	5142	8607	2069	5528	8984	2437	5886	9333	2776	6216	9653	3087	6519	9946
21	1731	5200	8665	2127	5586	9041	2494	5944	9390	2833	6274	9711	3145	6576	0004
22	1789	5258	8723	2185	5643	9099	2552	6001	9447	2891	6331	9768	3202	6633	0061
23	1847	5315	8780	2242	5701	9157	2609	6059	9505	2948	6388	9825	3259	6690	0118
24	1905	5373	8838	2300	5759	9214	2667	6116	9562	3005	6445	9882	3316	6747	0175
25	1963	5431	8896	2358	5816	9272	2724	6173	9620	3063	6503	9940	3374	6804	0232
26	2021	5489	8953	2415	5874	9329	2782	6231	9677	3120	6560	9997	3431	6861	0289
27	2078	5546	9011	2473	5931	9387	2839	6288	9734	3177	6617	0054	3488	6919	0346
28	2136	5604	9069	2531	5989	9444	2897	6346	9792	3235	6675	0111	3545	6976	0403
29	2194	5662	9127	2588	6047	9502	2954	6403	9849	3292	6732	0169	3602	7033	0460
30	2252	5720	9184	2646	6104	9560	3012	6461	9907	3350	6789	0226	3660	7090	0517
31	2310	5777	9242	2704	6162	9617	3069	6518	9964	3407	6847	0283	3717	7147	0575
32	2368	5835	9300	2761	6219	9675	3127	6576	0022	3464	6904	0340	3774	7204	0632
33	2425	5893	9357	2819	6277	9732	3184	6633	0079	3522	6961	0398	3831	7261	0689
34	2483	5951	9415	2877	6335	9790	3242	6691	0136	3579	7018	0455	3888	7319	0746
35	2541	6009	9473	2934	6392	9847	3299	6748	0194	3636	7076	0512	3946	7376	0803
36	2599	6066	9531	2992	6450	9905	3357	6805	0251	3694	7133	0569	4003	7433	0860
37	2657	6124	9588	3050	6508	9962	3414	6863	0309	3751	7190	0627	4060	7490	0917
38	2714	6182	9646	3107	6565	0020	3472	6920	0366	3808	7248	0684	4117	7547	0974
39	2772	6240	9704	3165	6623	0078	3529	6978	0423	3866	7305	0741	4174	7604	1031
40	2830	6297	9761	3222	6680	0135	3587	7035	0481	3923	7362	0798	4232	7661	1088
41	2888	6355	9819	3280	6738	0193	3644	7093	0538	3980	7420	0856	4289	7719	1145
42	2946	6413	9877	3338	6796	0250	3702	7150	0596	4038	7477	0913	4346	7776	1203
43	3004	6471	9935	3395	6853	0308	3759	7208	0653	4095	7534	0970	4403	7833	1260
44	3061	6528	9992	3453	6911	0365	3817	7265	0710	4152	7591	1027	4460	7890	1317
45	3119	6586	0050	3511	6968	0423	3874	7323	0768	4210	7649	1085	4517	7947	1374
46	3177	6644	0108	3568	7026	0480	3932	7380	0825	4267	7706	1142	4575	8004	1431
47	3235	6702	0165	3626	7084	0538	3989	7437	0882	4324	7763	1199	4632	8061	1488
48	3293	6759	0223	3684	7141	0596	4047	7495	0940	4382	7821	1256	4689	8119	1545
49	3350	6817	0281	3741	7199	0653	4104	7552	0997	4439	7878	1314	4746	8176	1602
50	3408	6875	0339	3799	7256	0711	4162	7610	1055	4496	7935	1371	4803	8233	1659
51	3466	6933	0396	3857	7314	0768	4219	7667	1112	4554	7992	1428	4861	8290	1716
52	3524	6990	0454	3914	7372	0826	4277	7725	1169	4611	8050	1485	4918	8347	1773
53	3582	7048	0512	3972	7429	0883	4334	7782	1227	4668	8107	1543	4975	8404	1830
54	3639	7106	0569	4030	7487	0941	4392	7839	1284	4726	8164	1600	5032	8461	1888
55	3697	7164	0627	4087	7544	0998	4449	7897	1342	4783	8222	1657	5089	8519	1945
56	3755	7221	0685	4145	7602	1056	4507	7954	1399	4840	8279	1714	5146	8576	2002
57	3813	7279	0742	4203	7660	1113	4564	8012	1456	4898	8336	1771	5204	8633	2059
58	3871	7337	0800	4260	7717	1171	4622	8069	1514	4955	8393	1829	5261	8690	2116
59	3928	7395	0858	4318	7775	1228	4679	8127	1571	5012	8451	1886	5318	8747	2173
60	3986	7452	0915	4375	7832	1286	4737	8184	1629	5070	8508	1943	5375	8804	2230
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
	9. 972	9. 972	9. 972	9. 972	9. 972	9. 972	9. 972	9. 972	9. 972	9. 972	9. 972	9. 972	9. 972	9. 972	9. 972	″
0	9858	9398	8938	8477	8016	7554	7092	6629	6166	5703	5239	4775	4310	3845	3380	60
1	9851	9390	8930	8469	8008	7546	7084	6622	6159	5695	5232	4767	4303	3838	3372	59
2	9843	9383	8922	8461	8000	7539	7076	6614	6151	5688	5224	4760	4295	3830	3365	58
3	9835	9375	8915	8454	7993	7531	7069	6606	6143	5680	5216	4752	4287	3822	3357	57
4	9828	9367	8907	8446	7985	7523	7061	6598	6136	5672	5208	4744	4279	3814	3349	56
5	9820	9360	8899	8438	7977	7515	7053	6591	6128	5664	5201	4736	4272	3807	3341	55
6	9812	9352	8892	8431	7969	7508	7046	6583	6120	5657	5193	4729	4264	3799	3333	54
7	9805	9344	8884	8423	7962	7500	7038	6575	6112	5649	5185	4721	4256	3791	3326	53
8	9797	9337	8876	8415	7954	7492	7030	6568	6105	5641	5177	4713	4249	3783	3318	52
9	9789	9329	8869	8408	7946	7485	7022	6560	6097	5633	5170	4705	4241	3776	3310	51
10	9782	9321	8861	8400	7939	7477	7015	6552	6089	5626	5162	4698	4233	3768	3302	50
11	9774	9314	8853	8392	7931	7469	7007	6544	6081	5618	5154	4690	4225	3760	3295	49
12	9766	9306	8846	8385	7923	7462	6999	6537	6074	5610	5146	4682	4218	3752	3287	48
13	9759	9298	8838	8377	7916	7454	6992	6529	6066	5603	5139	4674	4210	3745	3279	47
14	9751	9291	8830	8369	7908	7446	6984	6521	6058	5595	5131	4667	4202	3737	3271	46
15	9743	9283	8823	8362	7900	7438	6976	6514	6051	5587	5123	4659	4194	3729	3264	45
16	9736	9275	8815	8354	7893	7431	6969	6506	6043	5579	5116	4651	4187	3721	3256	44
17	9728	9268	8807	8346	7885	7423	6961	6498	6035	5572	5108	4643	4179	3714	3248	43
18	9720	9260	8800	8339	7877	7415	6953	6490	6027	5564	5100	4636	4171	3706	3240	42
19	9713	9252	8792	8331	7869	7408	6945	6483	6020	5556	5092	4628	4163	3698	3233	41
20	9705	9245	8784	8323	7862	7400	6938	6475	6012	5548	5085	4620	4156	3690	3225	40
21	9697	9237	8776	8315	7854	7392	6930	6467	6004	5541	5077	4613	4148	3683	3217	39
22	9690	9229	8769	8308	7846	7385	6922	6460	5997	5533	5069	4605	4140	3675	3209	38
23	9682	9222	8761	8300	7839	7377	6915	6452	5989	5525	5061	4597	4132	3667	3202	37
24	9674	9214	8753	8292	7831	7369	6907	6444	5981	5518	5054	4589	4125	3659	3194	36
25	9667	9206	8746	8285	7823	7361	6899	6436	5973	5510	5046	4582	4117	3652	3186	35
26	9659	9199	8738	8277	7816	7354	6891	6429	5966	5502	5038	4574	4109	3644	3178	34
27	9651	9191	8730	8269	7808	7346	6884	6421	5958	5494	5030	4566	4101	3636	3170	33
28	9644	9183	8723	8262	7800	7338	6876	6413	5950	5487	5023	4558	4094	3628	3163	32
29	9636	9176	8715	8254	7793	7331	6868	6406	5942	5479	5015	4551	4086	3621	3155	31
30	9628	9168	8707	8246	7785	7323	6861	6398	5935	5471	5007	4543	4078	3613	3147	30
31	9621	9160	8700	8239	7777	7315	6853	6390	5927	5463	4999	4535	4070	3605	3139	29
32	9613	9153	8692	8231	7769	7308	6845	6382	5919	5456	4992	4527	4063	3597	3132	28
33	9605	9145	8684	8223	7762	7300	6837	6375	5912	5448	4984	4520	4055	3590	3124	27
34	9598	9137	8677	8216	7754	7292	6830	6367	5904	5440	4976	4512	4047	3582	3116	26
35	9590	9130	8669	8208	7746	7284	6822	6359	5896	5433	4969	4504	4039	3574	3108	25
36	9582	9122	8661	8200	7739	7277	6814	6352	5888	5425	4961	4496	4032	3566	3101	24
37	9575	9114	8654	8192	7731	7269	6807	6344	5881	5417	4953	4489	4024	3558	3093	23
38	9567	9107	8646	8185	7723	7261	6799	6336	5873	5409	4945	4481	4016	3551	3085	22
39	9559	9099	8638	8177	7716	7254	6791	6328	5865	5402	4938	4473	4008	3543	3077	21
40	9552	9091	8631	8169	7708	7246	6784	6321	5858	5394	4930	4465	4001	3535	3070	20
41	9544	9084	8623	8162	7700	7238	6776	6313	5850	5386	4922	4458	3993	3527	3062	19
42	9536	9076	8615	8154	7692	7230	6768	6305	5842	5378	4914	4450	3985	3520	3054	18
43	9529	9068	8607	8146	7685	7223	6760	6298	5834	5371	4907	4442	3977	3512	3046	17
44	9521	9061	8600	8139	7677	7215	6753	6290	5827	5363	4899	4434	3970	3504	3038	16
45	9513	9053	8592	8131	7669	7207	6745	6282	5819	5355	4891	4427	3962	3496	3031	15
46	9506	9045	8584	8123	7662	7200	6737	6274	5811	5348	4883	4419	3954	3489	3023	14
47	9498	9038	8577	8116	7654	7192	6730	6267	5803	5340	4876	4411	3946	3481	3015	13
48	9490	9030	8569	8108	7646	7184	6722	6259	5796	5332	4868	4403	3939	3473	3007	12
49	9483	9022	8561	8100	7639	7177	6714	6251	5788	5324	4860	4396	3931	3465	3000	11
50	9475	9014	8554	8093	7631	7169	6706	6244	5780	5317	4852	4388	3923	3458	2992	10
51	9467	9007	8546	8085	7623	7161	6699	6236	5773	5309	4845	4380	3915	3450	2984	9
52	9460	8999	8538	8077	7616	7153	6691	6228	5765	5301	4837	4372	3907	3442	2976	8
53	9452	8991	8531	8069	7608	7146	6683	6220	5757	5293	4829	4365	3900	3434	2969	7
54	9444	8984	8523	8062	7600	7138	6676	6213	5749	5286	4822	4357	3892	3427	2961	6
55	9436	8976	8515	8054	7592	7130	6668	6205	5742	5278	4814	4349	3884	3419	2953	5
56	9429	8968	8508	8046	7585	7123	6660	6197	5734	5270	4806	4341	3876	3411	2945	4
57	9421	8961	8500	8039	7577	7115	6652	6190	5726	5262	4798	4334	3869	3403	2937	3
58	9413	8953	8492	8031	7569	7107	6645	6182	5718	5255	4791	4326	3861	3396	2930	2
59	9406	8945	8485	8023	7562	7100	6637	6174	5711	5247	4783	4318	3853	3388	2922	1
60	9398	8938	8477	8016	7554	7092	6629	6166	5703	5239	4775	4310	3845	3380	2914	0
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

20 Deg. Tangent — 20 Deg. Co-Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.561	9.561	9.561	9.562	9.562	9.563	9.563	9.563	9.564	9.564	9.564	9.565	9.565	9.566	9.566
0	0659	4588	8515	2439	6360	0278	4194	8107	2018	5925	9831	3733	7633	1530	5424
1	0724	4654	8580	2504	6425	0344	4259	8172	2083	5991	9896	3798	7698	1595	5489
2	0790	4719	8646	2569	6491	0409	4325	8238	2148	6056	9961	3863	7763	1660	5554
3	0855	4784	8711	2635	6556	0474	4390	8303	2213	6121	0026	3928	7828	1724	5619
4	0921	4850	8776	2700	6621	0539	4455	8368	2278	6186	0091	3993	7893	1789	5684
5	0986	4915	8842	2765	6686	0605	4520	8433	2343	6251	0156	4058	7958	1854	5749
6	1052	4981	8907	2831	6752	0670	4586	8498	2409	6316	0221	4123	8022	1919	5813
7	1117	5046	8973	2896	6817	0735	4651	8564	2474	6381	0286	4188	8087	1984	5878
8	1183	5112	9038	2962	6882	0801	4716	8629	2539	6446	0351	4253	8152	2049	5943
9	1248	5177	9103	3027	6948	0866	4781	8694	2604	6511	0416	4318	8217	2114	6008
10	1314	5243	9169	3092	7013	0931	4847	8759	2669	6577	0481	4383	8282	2179	6073
11	1379	5308	9234	3158	7078	0996	4912	8824	2734	6642	0546	4448	8347	2244	6138
12	1445	5374	9300	3223	7144	1062	4977	8890	2799	6707	0611	4513	8412	2309	6203
13	1510	5439	9365	3288	7209	1127	5042	8955	2865	6772	0676	4578	8477	2374	6268
14	1576	5505	9431	3354	7274	1192	5107	9020	2930	6837	0741	4643	8542	2439	6332
15	1641	5570	9496	3419	7340	1258	5173	9085	2995	6902	0806	4708	8607	2504	6397
16	1707	5635	9561	3485	7405	1323	5238	9150	3060	6967	0871	4773	8672	2568	6462
17	1772	5701	9627	3550	7470	1388	5303	9216	3125	7032	0936	4838	8737	2633	6527
18	1838	5766	9692	3615	7536	1453	5368	9281	3190	7097	1002	4903	8802	2698	6592
19	1903	5832	9758	3681	7601	1519	5434	9346	3255	7162	1067	4968	8867	2763	6657
20	1969	5897	9823	3746	7666	1584	5499	9411	3321	7227	1132	5033	8932	2828	6722
21	2034	5963	9888	3811	7732	1649	5564	9476	3386	7293	1197	5098	8997	2893	6787
22	2100	6028	9954	3877	7797	1714	5629	9541	3451	7358	1262	5163	9062	2958	6851
23	2165	6094	0019	3942	7862	1780	5695	9607	3516	7423	1327	5228	9127	3023	6916
24	2231	6159	0085	4007	7928	1845	5760	9672	3581	7488	1392	5293	9192	3088	6981
25	2296	6224	0150	4073	7993	1910	5825	9737	3646	7553	1457	5358	9257	3153	7046
26	2362	6290	0215	4138	8058	1976	5890	9802	3711	7618	1522	5423	9322	3218	7111
27	2427	6355	0281	4204	8124	2041	5955	9867	3777	7683	1587	5488	9387	3283	7176
28	2493	6421	0346	4269	8189	2106	6021	9932	3842	7748	1652	5553	9452	3347	7241
29	2558	6486	0412	4334	8254	2171	6086	9998	3907	7813	1717	5618	9517	3412	7305
30	2624	6552	0477	4400	8319	2237	6151	0063	3972	7878	1782	5683	9582	3477	7370
31	2689	6617	0542	4465	8385	2302	6216	0128	4037	7943	1847	5748	9646	3542	7435
32	2755	6683	0608	4530	8450	2367	6282	0193	4102	8009	1912	5813	9711	3607	7500
33	2820	6748	0673	4596	8515	2432	6347	0258	4167	8074	1977	5878	9776	3672	7565
34	2886	6813	0739	4661	8581	2498	6412	0324	4232	8139	2042	5943	9841	3737	7630
35	2951	6879	0804	4726	8646	2563	6477	0389	4298	8204	2107	6008	9906	3802	7695
36	3017	6944	0869	4792	8711	2628	6542	0454	4363	8269	2172	6073	9971	3867	7759
37	3082	7010	0935	4857	8777	2693	6608	0519	4428	8334	2237	6138	0036	3932	7824
38	3148	7075	1000	4922	8842	2759	6673	0584	4493	8399	2302	6203	0101	3996	7889
39	3213	7141	1066	4988	8907	2824	6738	0649	4558	8464	2367	6268	0166	4061	7954
40	3279	7206	1131	5053	8972	2889	6803	0715	4623	8529	2432	6333	0231	4126	8019
41	3344	7272	1196	5118	9038	2954	6868	0780	4688	8594	2497	6398	0296	4191	8084
42	3410	7337	1262	5184	9103	3020	6934	0845	4753	8659	2562	6463	0361	4256	8149
43	3475	7402	1327	5249	9168	3085	6999	0910	4819	8724	2628	6528	0426	4321	8213
44	3540	7468	1393	5314	9234	3150	7064	0975	4884	8789	2693	6593	0491	4386	8278
45	3606	7533	1458	5380	9299	3215	7129	1040	4949	8855	2758	6658	0556	4451	8343
46	3671	7599	1523	5445	9364	3281	7194	1106	5014	8920	2823	6723	0621	4516	8408
47	3737	7664	1589	5510	9430	3346	7260	1171	5079	8985	2888	6788	0686	4581	8473
48	3802	7730	1654	5576	9495	3411	7325	1236	5144	9050	2953	6853	0751	4645	8538
49	3868	7795	1719	5641	9560	3476	7390	1301	5209	9115	3018	6918	0815	4710	8603
50	3933	7860	1785	5706	9625	3542	7455	1366	5274	9180	3083	6983	0880	4775	8667
51	3999	7926	1850	5772	9691	3607	7520	1431	5339	9245	3148	7048	0945	4840	8732
52	4064	7991	1916	5837	9756	3672	7586	1496	5405	9310	3213	7113	1010	4905	8797
53	4130	8057	1981	5903	9821	3737	7651	1562	5470	9375	3278	7178	1075	4970	8862
54	4195	8122	2046	5968	9887	3803	7716	1627	5535	9440	3343	7243	1140	5035	8927
55	4261	8188	2112	6033	9952	3868	7781	1692	5600	9505	3408	7308	1205	5100	8992
56	4326	8253	2177	6099	0017	3933	7847	1757	5665	9570	3473	7373	1270	5165	9056
57	4392	8318	2242	6164	0082	3998	7912	1822	5730	9635	3538	7438	1335	5229	9121
58	4457	8384	2308	6229	0148	4064	7977	1887	5795	9700	3603	7503	1400	5294	9186
59	4523	8449	2373	6295	0213	4129	8042	1953	5860	9765	3668	7568	1465	5359	9251
60	4588	8515	2439	6360	0278	4194	8107	2018	5925	9831	3733	7633	1530	5424	9316
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
	10.438	10.438	10.438	10.437	10.437	10.436	10.436	10.436	10.435	10.435	10.435	10.434	10.434	10.433	10.433	″
	9341	5412	1485	7561	3640	9722	5806	1893	7982	4075	0169	6267	2367	8470	4576	60
	9276	5346	1420	7496	3575	9656	5741	1828	7917	4009	0104	6202	2302	8405	4511	59
	9210	5281	1354	7431	3509	9591	5675	1762	7852	3944	0039	6137	2237	8340	4446	58
	9145	5216	1289	7365	3444	9526	5610	1697	7787	3879	9974	6072	2172	8276	4381	57
	9079	5150	1224	7300	3379	9461	5545	1632	7722	3814	9909	6007	2107	8211	4316	56
	9014	5085	1158	7235	3314	9395	5480	1567	7657	3749	9844	5942	2042	8146	4251	55
	8948	5019	1093	7169	3248	9330	5414	1502	7591	3684	9779	5877	1978	8081	4187	54
	8883	4954	1027	7104	3183	9265	5349	1436	7526	3619	9714	5812	1913	8016	4122	53
	8817	4888	0962	7038	3118	9199	5284	1371	7461	3554	9649	5747	1848	7951	4057	52
	8752	4823	0897	6973	3052	9134	5219	1306	7396	3489	9584	5682	1783	7886	3992	51
	8686	4757	0831	6908	2987	9069	5153	1241	7331	3423	9519	5617	1718	7821	3927	50
	8621	4692	0766	6842	2922	9004	5088	1176	7266	3358	9454	5552	1653	7756	3862	49
	8555	4626	0700	6777	2856	8938	5023	1110	7201	3293	9389	5487	1588	7691	3797	48
	8490	4561	0635	6712	2791	8873	4958	1045	7135	3228	9324	5422	1523	7626	3732	47
	8424	4495	0569	6646	2726	8808	4893	0980	7070	3163	9259	5357	1458	7561	3668	46
	8359	4430	0504	6581	2660	8742	4827	0915	7005	3098	9194	5292	1393	7496	3603	45
	8293	4365	0439	6515	2595	8677	4762	0850	6940	3033	9129	5227	1328	7432	3538	44
	8228	4299	0373	6450	2530	8612	4697	0784	6875	2968	9064	5162	1263	7367	3473	43
	8162	4234	0308	6385	2464	8547	4632	0719	6810	2903	8998	5097	1198	7302	3408	42
	8097	4168	0242	6319	2399	8481	4566	0654	6745	2838	8933	5032	1133	7237	3343	41
	8031	4103	0177	6254	2334	8416	4501	0589	6679	2773	8868	4967	1068	7172	3278	40
	7966	4037	0112	6189	2268	8351	4436	0524	6614	2707	8803	4902	1003	7107	3213	39
	7900	3972	0046	6123	2203	8286	4371	0459	6549	2642	8738	4837	0938	7042	3149	38
	7835	3906	9981	6058	2138	8220	4305	0393	6484	2577	8673	4772	0873	6977	3084	37
	7769	3841	9915	5993	2072	8155	4240	0328	6419	2512	8608	4707	0808	6912	3019	36
	7704	3776	9850	5927	2007	8090	4175	0263	6354	2447	8543	4642	0743	6847	2954	35
	7638	3710	9785	5862	1942	8024	4110	0198	6289	2382	8478	4577	0678	6782	2889	34
	7573	3645	9719	5796	1876	7959	4045	0133	6223	2317	8413	4512	0613	6717	2824	33
	7507	3579	9654	5731	1811	7894	3979	0068	6158	2252	8348	4447	0548	6653	2759	32
	7442	3514	9588	5666	1746	7829	3914	0002	6093	2187	8283	4382	0483	6588	2695	31
	7376	3448	9523	5600	1681	7763	3849	9937	6028	2122	8218	4317	0418	6523	2630	30
	7311	3383	9458	5535	1615	7698	3784	9872	5963	2057	8153	4252	0354	6458	2565	29
	7245	3317	9392	5470	1550	7633	3718	9807	5898	1991	8088	4187	0289	6393	2500	28
	7180	3252	9327	5404	1485	7568	3653	9742	5833	1926	8023	4122	0224	6328	2435	27
	7114	3187	9261	5339	1419	7502	3588	9676	5768	1861	7958	4057	0159	6263	2370	26
	7049	3121	9196	5274	1354	7437	3523	9611	5702	1796	7893	3992	0094	6198	2305	25
	6983	3056	9131	5208	1289	7372	3458	9546	5637	1731	7828	3927	0029	6133	2241	24
	6918	2990	9065	5143	1223	7307	3392	9481	5572	1666	7763	3862	9964	6068	2176	23
	6852	2925	9000	5078	1158	7241	3327	9416	5507	1601	7698	3797	9899	6004	2111	22
	6787	2859	8934	5012	1093	7176	3262	9351	5442	1536	7633	3732	9834	5939	2046	21
	6721	2794	8869	4947	1028	7111	3197	9285	5377	1471	7568	3667	9769	5874	1981	20
	6656	2728	8804	4882	0962	7046	3132	9220	5312	1406	7503	3602	9704	5809	1916	19
	6590	2663	8738	4816	0897	6980	3066	9155	5247	1341	7438	3537	9639	5744	1851	18
	6525	2598	8673	4751	0832	6915	3001	9090	5181	1276	7372	3472	9574	5679	1787	17
	6460	2532	8607	4686	0766	6850	2936	9025	5116	1211	7307	3407	9509	5614	1722	16
	6394	2467	8542	4620	0701	6785	2871	8960	5051	1145	7242	3342	9444	5549	1657	15
	6329	2401	8477	4555	0636	6719	2806	8894	4986	1080	7177	3277	9379	5484	1592	14
	6263	2336	8411	4490	0570	6654	2740	8829	4921	1015	7112	3212	9314	5419	1527	13
	6198	2270	8346	4424	0505	6589	2675	8764	4856	0950	7047	3147	9249	5355	1462	12
	6132	2205	8281	4359	0440	6524	2610	8699	4791	0885	6982	3082	9185	5290	1397	11
	6067	2140	8215	4294	0375	6458	2545	8634	4726	0820	6917	3017	9120	5225	1333	10
	6001	2074	8150	4228	0309	6393	2480	8569	4661	0755	6852	2952	9055	5160	1268	9
	5936	2009	8084	4163	0244	6328	2414	8504	4595	0690	6787	2887	8990	5095	1203	8
	5870	1943	8019	4097	0179	6263	2349	8438	4530	0625	6722	2822	8925	5030	1138	7
	5805	1878	7954	4032	0113	6197	2284	8373	4465	0560	6657	2757	8860	4965	1073	6
	5739	1812	7888	3967	0048	6132	2219	8308	4400	0495	6592	2692	8795	4900	1008	5
	5674	1747	7823	3901	9983	6067	2153	8243	4335	0430	6527	2627	8730	4835	0944	4
	5608	1682	7758	3836	9918	6002	2088	8178	4270	0365	6462	2562	8665	4771	0879	3
	5543	1616	7692	3771	9852	5936	2023	8113	4205	0300	6397	2497	8600	4706	0814	2
	5477	1551	7627	3705	9787	5871	1958	8047	4140	0235	6332	2432	8535	4641	0749	1
	5412	1485	7561	3640	9722	5806	1893	7982	4075	0169	6267	2367	8470	4576	0684	0
	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Co-Tangent Deg. 69 — Tangent Deg. 69

20 Deg. Sine

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 539	9. 539	9. 539	9. 540	9. 540	9. 540	9. 541	9. 541	9. 541	9. 542	9. 542	9. 542	9. 543	9. 543	9. 543
0	2230	5653	9073	2489	5903	9314	2721	6126	9527	2926	6321	9713	3103	6489	9873
1	2287	5710	9130	2546	5960	9370	2778	6182	9584	2982	6378	9770	3159	6546	9929
2	2344	5767	9187	2603	6017	9427	2835	6239	9640	3039	6434	9826	3216	6602	9985
3	2401	5824	9244	2660	6074	9484	2891	6296	9697	3095	6491	9883	3272	6658	0042
4	2458	5881	9300	2717	6130	9541	2948	6352	9754	3152	6547	9939	3329	6715	0098
5	2515	5938	9357	2774	6187	9598	3005	6409	9810	3209	6604	9996	3385	6771	0154
6	2572	5995	9414	2831	6244	9654	3062	6466	9867	3265	6660	0052	3442	6828	0211
7	2630	6052	9471	2888	6301	9711	3118	6523	9924	3322	6717	0109	3498	6884	0267
8	2687	6109	9528	2945	6358	9768	3175	6579	9980	3378	6773	0166	3555	6940	0323
9	2744	6166	9585	3002	6415	9825	3232	6636	0037	3435	6830	0222	3611	6997	0380
10	2801	6223	9642	3058	6472	9882	3289	6693	0094	3492	6887	0279	3667	7053	0436
11	2858	6280	9699	3115	6528	9939	3346	6749	0150	3548	6943	0335	3724	7110	0493
12	2915	6337	9756	3172	6585	9995	3402	6806	0207	3605	7000	0392	3780	7166	0549
13	2972	6394	9813	3229	6642	0052	3459	6863	0264	3662	7056	0448	3837	7223	0605
14	3029	6451	9870	3286	6699	0109	3516	6920	0320	3718	7113	0505	3893	7279	0662
15	3086	6508	9927	3343	6756	0166	3573	6976	0377	3775	7169	0561	3950	7335	0718
16	3143	6565	9984	3400	6813	0223	3629	7033	0434	3831	7226	0618	4006	7392	0774
17	3200	6622	0041	3457	6870	0279	3686	7090	0490	3888	7282	0674	4063	7448	0831
18	3257	6679	0098	3514	6926	0336	3743	7146	0547	3945	7339	0731	4119	7505	0887
19	3314	6736	0155	3571	6983	0393	3800	7203	0604	4001	7396	0787	4175	7561	0943
20	3371	6793	0212	3628	7040	0450	3856	7260	0660	4058	7452	0844	4232	7617	1000
21	3428	6850	0269	3684	7097	0507	3913	7316	0717	4114	7509	0900	4288	7674	1056
22	3485	6907	0326	3741	7154	0563	3970	7373	0774	4171	7565	0957	4345	7730	1112
23	3542	6964	0383	3798	7211	0620	4027	7430	0830	4228	7622	1013	4401	7787	1169
24	3600	7021	0440	3855	7268	0677	4083	7487	0887	4284	7678	1070	4458	7843	1225
25	3657	7078	0497	3912	7324	0734	4140	7543	0944	4341	7735	1126	4514	7899	1281
26	3714	7135	0554	3969	7381	0791	4197	7600	1000	4397	7791	1183	4571	7956	1338
27	3771	7192	0610	4026	7438	0847	4254	7657	1057	4454	7848	1239	4627	8012	1394
28	3828	7249	0667	4083	7495	0904	4310	7713	1113	4510	7905	1296	4683	8068	1450
29	3885	7306	0724	4140	7552	0961	4367	7770	1170	4567	7961	1352	4740	8125	1507
30	3942	7363	0781	4197	7609	1018	4424	7827	1227	4624	8018	1408	4796	8181	1563
31	3999	7420	0838	4253	7665	1075	4480	7883	1283	4680	8074	1465	4853	8238	1619
32	4056	7477	0895	4310	7722	1131	4537	7940	1340	4737	8131	1521	4909	8294	1676
33	4113	7534	0952	4367	7779	1188	4594	7997	1397	4793	8187	1578	4966	8350	1732
34	4170	7591	1009	4424	7836	1245	4651	8054	1453	4850	8244	1634	5022	8407	1788
35	4227	7648	1066	4481	7893	1302	4707	8110	1510	4907	8300	1691	5079	8463	1845
36	4284	7705	1123	4538	7950	1358	4764	8167	1567	4963	8357	1747	5135	8520	1901
37	4341	7762	1180	4595	8007	1415	4821	8224	1623	5020	8413	1804	5191	8576	1957
38	4398	7819	1237	4652	8063	1472	4878	8280	1680	5076	8470	1860	5248	8632	2014
39	4455	7876	1294	4709	8120	1529	4934	8337	1736	5133	8526	1917	5304	8689	2070
40	4512	7933	1351	4765	8177	1586	4991	8394	1793	5190	8583	1973	5361	8745	2126
41	4569	7990	1408	4822	8234	1642	5048	8450	1850	5246	8639	2030	5417	8801	2183
42	4626	8047	1465	4879	8291	1699	5105	8507	1906	5303	8696	2086	5474	8858	2239
43	4683	8104	1522	4936	8348	1756	5161	8564	1963	5359	8753	2143	5530	8914	2295
44	4740	8161	1578	4993	8404	1813	5218	8620	2020	5416	8809	2199	5586	8971	2352
45	4797	8218	1635	5050	8461	1870	5275	8677	2076	5472	8866	2256	5643	9027	2408
46	4854	8275	1692	5107	8518	1926	5332	8734	2133	5529	8922	2312	5699	9083	2464
47	4911	8332	1749	5164	8575	1983	5388	8790	2189	5586	8979	2369	5756	9140	2521
48	4969	8389	1806	5220	8632	2040	5445	8847	2246	5642	9035	2425	5812	9196	2577
49	5026	8446	1863	5277	8689	2097	5502	8904	2303	5699	9092	2482	5869	9253	2633
50	5083	8503	1920	5334	8745	2153	5558	8960	2359	5755	9148	2538	5925	9309	2690
51	5140	8560	1977	5391	8802	2210	5615	9017	2416	5812	9205	2595	5981	9365	2746
52	5197	8617	2034	5448	8859	2267	5672	9074	2473	5868	9261	2651	6038	9422	2802
53	5254	8674	2091	5505	8916	2324	5729	9130	2529	5925	9318	2708	6094	9478	2859
54	5311	8731	2148	5562	8973	2380	5785	9187	2586	5982	9374	2764	6151	9534	2915
55	5368	8788	2205	5619	9029	2437	5842	9244	2642	6038	9431	2820	6207	9591	2971
56	5425	8845	2262	5675	9086	2494	5899	9300	2699	6095	9487	2877	6264	9647	3028
57	5482	8902	2319	5732	9143	2551	5955	9357	2756	6151	9544	2933	6320	9703	3084
58	5539	8959	2375	5789	9200	2608	6012	9414	2812	6208	9600	2990	6376	9760	3140
59	5596	9016	2432	5846	9257	2664	6069	9470	2869	6264	9657	3046	6433	9816	3197
60	5653	9073	2489	5903	9314	2721	6126	9527	2926	6321	9713	3103	6489	9873	3253
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33″	32′	31′	30′

Co-Sine Deg. 69

20 Deg. Co-Sine

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
	9. 972	9. 972	9. 972	9. 972	9. 972	9. 972	9. 972	9. 971	9. 971	9. 971	9. 971	9. 971	9. 971	9. 971	9. 971	″
	2914	2448	1981	1514	1047	0579	0110	9642	9172	8703	8233	7762	7291	6820	6348	60
	2906	2440	1973	1506	1039	0571	0102	9634	9165	8695	8225	7754	7284	6812	6341	59
	2899	2432	1966	1499	1031	0563	0095	9626	9157	8687	8217	7747	7276	6804	6333	58
	2891	2425	1958	1491	1023	0555	0087	9618	9149	8679	8209	7739	7268	6797	6325	57
	2883	2417	1950	1483	1015	0547	0079	9610	9141	8671	8201	7731	7260	6789	6317	56
	2875	2409	1942	1475	1008	0540	0071	9602	9133	8664	8194	7723	7252	6781	6309	55
	2868	2401	1935	1467	1000	0532	0063	9595	9125	8656	8186	7715	7244	6773	6301	54
	2860	2393	1927	1460	0992	0524	0056	9587	9118	8648	8178	7707	7236	6765	6293	53
	2852	2386	1919	1452	0984	0516	0048	9579	9110	8640	8170	7699	7229	6757	6285	52
	2844	2378	1911	1444	0976	0508	0040	9571	9102	8632	8162	7692	7221	6749	6278	51
	2836	2370	1903	1436	0969	0501	0032	9563	9094	8624	8154	7684	7213	6741	6270	50
	2829	2362	1896	1428	0961	0493	0024	9556	9086	8617	8146	7676	7205	6734	6262	49
	2821	2355	1888	1421	0953	0485	0017	9548	9078	8609	8139	7668	7197	6726	6254	48
	2813	2347	1880	1413	0945	0477	0009	9540	9071	8601	8131	7660	7189	6718	6246	47
	2805	2339	1872	1405	0937	0469	0001	9532	9063	8593	8123	7652	7181	6710	6238	46
	2798	2331	1864	1397	0930	0462	9993	9524	9055	8585	8115	7645	7174	6702	6230	45
	2790	2324	1857	1389	0922	0454	9985	9516	9047	8577	8107	7637	7166	6694	6223	44
	2782	2316	1849	1382	0914	0446	9978	9509	9039	8570	8099	7629	7158	6686	6215	43
	2774	2308	1841	1374	0906	0438	9970	9501	9031	8562	8092	7621	7150	6679	6207	42
	2767	2300	1833	1366	0898	0430	9962	9493	9024	8554	8084	7613	7142	6671	6199	41
	2759	2292	1826	1358	0891	0423	9954	9485	9016	8546	8076	7605	7134	6663	6191	40
	2751	2285	1818	1351	0883	0415	9946	9477	9008	8538	8068	7597	7126	6655	6183	39
	2743	2277	1810	1343	0875	0407	9938	9470	9000	8530	8060	7590	7119	6647	6175	38
	2735	2269	1802	1335	0867	0399	9931	9462	8992	8523	8052	7582	7111	6639	6167	37
	2728	2261	1794	1327	0859	0391	9923	9454	8985	8515	8045	7574	7103	6631	6160	36
	2720	2254	1787	1319	0852	0384	9915	9446	8977	8507	8037	7566	7095	6624	6152	35
	2712	2246	1779	1312	0844	0376	9907	9438	8969	8499	8029	7558	7087	6616	6144	34
	2704	2238	1771	1304	0836	0368	9899	9430	8961	8491	8021	7550	7079	6608	6136	33
	2697	2230	1763	1296	0828	0360	9892	9423	8953	8483	8013	7543	7071	6600	6128	32
	2689	2222	1756	1288	0820	0352	9884	9415	8945	8476	8005	7535	7064	6592	6120	31
	2681	2215	1748	1280	0813	0345	9876	9407	8938	8468	7998	7527	7056	6584	6112	30
	2673	2207	1740	1273	0805	0337	9868	9399	8930	8460	7990	7519	7048	6576	6105	29
	2666	2199	1732	1265	0797	0329	9860	9391	8922	8452	7982	7511	7040	6569	6097	28
	2658	2191	1724	1257	0789	0321	9853	9384	8914	8444	7974	7503	7032	6561	6089	27
	2650	2184	1717	1249	0781	0313	9845	9376	8906	8436	7966	7495	7024	6553	6081	26
	2642	2176	1709	1241	0774	0306	9837	9368	8898	8429	7958	7488	7017	6545	6073	25
	2634	2168	1701	1234	0766	0298	9829	9360	8891	8421	7950	7480	7009	6537	6065	24
	2627	2160	1693	1226	0758	0290	9821	9352	8883	8413	7943	7472	7001	6529	6057	23
	2619	2152	1685	1218	0750	0282	9813	9344	8875	8405	7935	7464	6993	6521	6049	22
	2611	2145	1678	1210	0742	0274	9806	9337	8867	8397	7927	7456	6985	6514	6042	21
	2603	2137	1670	1202	0735	0266	9798	9329	8859	8389	7919	7448	6977	6506	6034	20
	2596	2129	1662	1195	0727	0259	9790	9321	8851	8382	7911	7441	6969	6498	6026	19
	2588	2121	1654	1187	0719	0251	9782	9313	8844	8374	7903	7433	6962	6490	6018	18
	2580	2113	1647	1179	0711	0243	9774	9305	8836	8366	7896	7425	6954	6482	6010	17
	2572	2106	1639	1171	0703	0235	9767	9297	8828	8358	7888	7417	6946	6474	6002	16
	2565	2098	1631	1164	0696	0227	9759	9290	8820	8350	7880	7409	6938	6466	5994	15
	2557	2090	1623	1156	0688	0220	9751	9282	8812	8342	7872	7401	6930	6458	5986	14
	2549	2082	1615	1148	0680	0212	9743	9274	8805	8335	7864	7393	6922	6451	5979	13
	2541	2075	1608	1140	0672	0204	9735	9266	8797	8327	7856	7386	6914	6443	5971	12
	2533	2067	1600	1132	0664	0196	9727	9258	8789	8319	7849	7378	6907	6435	5963	11
	2526	2059	1592	1125	0657	0188	9720	9251	8781	8311	7841	7370	6899	6427	5955	10
	2518	2051	1584	1117	0649	0181	9712	9243	8773	8303	7833	7362	6891	6419	5947	9
	2510	2043	1576	1109	0641	0173	9704	9235	8765	8295	7825	7354	6883	6411	5939	8
	2502	2036	1569	1101	0633	0165	9696	9227	8758	8288	7817	7346	6875	6403	5931	7
	2495	2028	1561	1093	0625	0157	9688	9219	8750	8280	7809	7338	6867	6396	5923	6
	2487	2020	1553	1086	0618	0149	9681	9211	8742	8272	7801	7331	6859	6388	5916	5
	2479	2012	1545	1078	0610	0142	9673	9204	8734	8264	7794	7323	6852	6380	5908	4
	2471	2005	1537	1070	0602	0134	9665	9196	8726	8256	7786	7315	6844	6372	5900	3
	2463	1997	1530	1062	0594	0126	9657	9188	8718	8248	7778	7307	6836	6364	5892	2
	2456	1989	1522	1054	0586	0118	9649	9180	8711	8241	7770	7299	6828	6356	5884	1
	2448	1981	1514	1047	0579	0110	9642	9172	8703	8233	7762	7291	6820	6348	5876	0
	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Sine Deg. 69

″	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9.566	9.567	9.567	9.568	9.568	9.568	9.569	9.569	9.570	9.570	9.570	9.571	9.571	9.571	9.572
0	9316	3205	7091	0975	4856	8735	2611	6484	0355	4223	8088	1951	5811	9669	3524
1	9381	3270	7156	1040	4921	8800	2675	6549	0419	4287	8153	2016	5876	9733	3588
2	9446	3335	7221	1105	4986	8864	2740	6613	0484	4352	8217	2080	5940	9798	3653
3	9510	3399	7286	1169	5050	8929	2805	6678	0548	4416	8282	2144	6004	9862	3717
4	9575	3464	7350	1234	5115	8993	2869	6742	0613	4481	8346	2209	6069	9926	3781
5	9640	3529	7415	1299	5180	9058	2934	6807	0677	4545	8410	2273	6133	9990	3845
6	9705	3594	7480	1363	5244	9123	2998	6871	0742	4610	8475	2337	6197	0055	3910
7	9770	3658	7545	1428	5309	9187	3063	6936	0806	4674	8539	2402	6262	0119	3974
8	9835	3723	7609	1493	5374	9252	3127	7000	0871	4738	8604	2466	6326	0183	4038
9	9899	3788	7674	1558	5438	9316	3192	7065	0935	4803	8668	2530	6390	0248	4102
10	9964	3853	7739	1622	5503	9381	3257	7129	1000	4867	8732	2595	6455	0312	4166
11	0029	3918	7804	1687	5568	9446	3321	7194	1064	4932	8797	2659	6519	0376	4231
12	0094	3982	7868	1752	5632	9510	3386	7258	1129	4996	8861	2723	6583	0440	4295
13	0159	4047	7933	1816	5697	9575	3450	7323	1193	5061	8925	2788	6647	0505	4359
14	0224	4112	7998	1881	5762	9640	3515	7388	1258	5125	8990	2852	6712	0569	4423
15	0288	4177	8063	1946	5826	9704	3579	7452	1322	5189	9054	2916	6776	0633	4488
16	0353	4242	8127	2010	5891	9769	3644	7517	1387	5254	9119	2981	6840	0697	4552
17	0418	4306	8192	2075	5956	9833	3709	7581	1451	5318	9183	3045	6905	0762	4616
18	0483	4371	8257	2140	6020	9898	3773	7646	1515	5383	9247	3110	6969	0826	4680
19	0548	4436	8322	2205	6085	9963	3838	7710	1580	5447	9312	3174	7033	0890	4744
20	0613	4501	8386	2269	6149	0027	3902	7775	1644	5512	9376	3238	7098	0954	4809
21	0677	4565	8451	2334	6214	0092	3967	7839	1709	5576	9441	3303	7162	1019	4873
22	0742	4630	8516	2399	6279	0156	4031	7904	1773	5640	9505	3367	7226	1083	4937
23	0807	4695	8580	2463	6343	0221	4096	7968	1838	5705	9569	3431	7291	1147	5001
24	0872	4760	8645	2528	6408	0286	4160	8033	1902	5769	9634	3496	7355	1211	5066
25	0937	4825	8710	2593	6473	0350	4225	8097	1967	5834	9698	3560	7419	1276	5130
26	1001	4889	8775	2657	6537	0415	4290	8162	2031	5898	9763	3624	7483	1340	5194
27	1066	4954	8839	2722	6602	0479	4354	8226	2096	5963	9827	3689	7548	1404	5258
28	1131	5019	8904	2787	6667	0544	4419	8291	2160	6027	9891	3753	7612	1468	5322
29	1196	5084	8969	2851	6731	0609	4483	8355	2225	6091	9956	3817	7676	1533	5387
30	1261	5148	9034	2916	6796	0673	4548	8420	2289	6156	0020	3882	7741	1597	5451
31	1326	5213	9098	2981	6861	0738	4612	8484	2354	6220	0084	3946	7805	1661	5515
32	1390	5278	9163	3045	6925	0802	4677	8549	2418	6285	0149	4010	7869	1725	5579
33	1455	5343	9228	3110	6990	0867	4741	8613	2483	6349	0213	4075	7933	1790	5643
34	1520	5408	9293	3175	7055	0932	4806	8678	2547	6414	0278	4139	7998	1854	5708
35	1585	5472	9357	3240	7119	0996	4871	8742	2611	6478	0342	4203	8062	1918	5772
36	1650	5537	9422	3304	7184	1061	4935	8807	2676	6542	0406	4268	8126	1982	5836
37	1714	5602	9487	3369	7248	1125	5000	8871	2740	6607	0471	4332	8191	2047	5900
38	1779	5667	9551	3434	7313	1190	5064	8936	2805	6671	0535	4396	8255	2111	5964
39	1844	5731	9616	3498	7378	1255	5129	9000	2869	6736	0599	4461	8319	2175	6029
40	1909	5796	9681	3563	7442	1319	5193	9065	2934	6800	0664	4525	8384	2239	6093
41	1974	5861	9746	3628	7507	1384	5258	9129	2998	6865	0728	4589	8448	2304	6157
42	2038	5926	9810	3692	7572	1448	5322	9194	3063	6929	0793	4654	8512	2368	6221
43	2103	5990	9875	3757	7636	1513	5387	9258	3127	6993	0857	4718	8576	2432	6285
44	2168	6055	9940	3822	7701	1577	5451	9323	3192	7058	0921	4782	8641	2496	6350
45	2233	6120	0004	3886	7766	1642	5516	9387	3256	7122	0986	4847	8705	2561	6414
46	2298	6185	0069	3951	7830	1707	5581	9452	3321	7187	1050	4911	8769	2625	6478
47	2363	6250	0134	4016	7895	1771	5645	9516	3385	7251	1114	4975	8834	2689	6542
48	2427	6314	0199	4080	7959	1836	5710	9581	3449	7315	1179	5040	8898	2753	6606
49	2492	6379	0263	4145	8024	1900	5774	9645	3514	7380	1243	5104	8962	2818	6671
50	2557	6444	0328	4210	8089	1965	5839	9710	3578	7444	1308	5168	9026	2882	6735
51	2622	6509	0393	4274	8153	2030	5903	9774	3643	7509	1372	5233	9091	2946	6799
52	2687	6573	0457	4339	8218	2094	5968	9839	3707	7573	1436	5297	9155	3010	6863
53	2751	6638	0522	4404	8283	2159	6032	9903	3772	7637	1501	5361	9219	3075	6927
54	2816	6703	0587	4468	8347	2223	6097	9968	3836	7702	1565	5426	9283	3139	6992
55	2881	6768	0652	4533	8412	2288	6161	0032	3901	7766	1629	5490	9348	3203	7056
56	2946	6832	0716	4598	8476	2353	6226	0097	3965	7831	1694	5554	9412	3267	7120
57	3011	6897	0781	4662	8541	2417	6291	0161	4030	7895	1758	5618	9476	3332	7184
58	3075	6962	0846	4727	8606	2482	6355	0226	4094	7960	1822	5683	9541	3396	7248
59	3140	7027	0910	4792	8670	2546	6420	0290	4158	8024	1887	5747	9605	3460	7313
60	3205	7091	0975	4856	8735	2611	6484	0355	4223	8088	1951	5811	9669	3524	7377
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	″
10.433	10.432	10.432	10.431	10.431	10.431	10.430	10.430	10.429	10.429	10.429	10.428	10.428	10.428	10.427	″
0684	6795	2909	9025	5144	1265	7389	3516	9645	5777	1912	8049	4189	0331	6476	60
0619	6730	2844	8960	5079	1200	7325	3451	9581	5713	1847	7984	4124	0267	6412	59
0554	6665	2779	8895	5014	1136	7260	3387	9516	5648	1783	7920	4060	0202	6347	58
0490	6601	2714	8831	4950	1071	7195	3322	9452	5584	1718	7856	3996	0138	6283	57
0425	6536	2650	8766	4885	1007	7131	3258	9387	5519	1654	7791	3931	0074	6219	56
0360	6471	2585	8701	4820	0942	7066	3193	9323	5455	1590	7727	3867	0010	6155	55
0295	6406	2520	8637	4756	0877	7002	3129	9258	5390	1525	7663	3803	9945	6090	54
0230	6342	2455	8572	4691	0813	6937	3064	9194	5326	1461	7598	3738	9881	6026	53
0165	6277	2391	8507	4626	0748	6873	3000	9129	5262	1396	7534	3674	9817	5962	52
0101	6212	2326	8442	4562	0684	6808	2935	9065	5197	1332	7470	3610	9752	5898	51
0036	6147	2261	8378	4497	0619	6743	2871	9000	5133	1268	7405	3545	9688	5834	50
9971	6082	2196	8313	4432	0554	6679	2806	8936	5068	1203	7341	3481	9624	5769	49
9906	6018	2132	8248	4368	0490	6614	2742	8871	5004	1139	7277	3417	9560	5705	48
9841	5953	2067	8184	4303	0425	6550	2677	8807	4939	1075	7212	3353	9495	5641	47
9776	5888	2002	8119	4238	0360	6485	2612	8742	4875	1010	7148	3288	9431	5577	46
9712	5823	1937	8054	4174	0296	6421	2548	8678	4811	0946	7084	3224	9367	5512	45
9647	5758	1873	7990	4109	0231	6356	2483	8613	4746	0881	7019	3160	9303	5448	44
9582	5694	1808	7925	4044	0167	6291	2419	8549	4682	0817	6955	3095	9238	5384	43
9517	5629	1743	7860	3980	0102	6227	2354	8485	4617	0753	6899	3031	9174	5320	42
9452	5564	1678	7795	3915	0037	6162	2290	8420	4553	0688	6826	2967	9110	5256	41
9387	5499	1614	7731	3851	9973	6098	2225	8356	4488	0624	6762	2902	9046	5191	40
9323	5435	1549	7666	3786	9908	6033	2161	8291	4424	0559	6697	2838	8981	5127	39
9258	5370	1484	7601	3721	9844	5969	2096	8227	4360	0495	6633	2774	8917	5063	38
9193	5305	1420	7537	3657	9779	5904	2032	8162	4295	0431	6569	2709	8853	4999	37
9128	5240	1355	7472	3592	9714	5840	1967	8098	4231	0366	6504	2645	8789	4934	36
9063	5175	1290	7407	3527	9650	5775	1903	8033	4166	0302	6440	2581	8724	4870	35
8999	5111	1225	7343	3463	9585	5710	1838	7969	4102	0237	6376	2517	8660	4806	34
8934	5046	1161	7278	3398	9521	5646	1774	7904	4037	0173	6311	2452	8596	4742	33
8869	4981	1096	7213	3333	9456	5581	1709	7840	3973	0109	6247	2388	8532	4678	32
8804	4916	1031	7149	3269	9391	5517	1645	7775	3909	0044	6183	2324	8467	4613	31
8739	4852	0966	7084	3204	9327	5452	1580	7711	3844	9980	6118	2259	8403	4549	30
8674	4787	0902	7019	3139	9262	5388	1516	7646	3780	9916	6054	2195	8339	4485	29
8610	4722	0837	6955	3075	9198	5323	1451	7582	3715	9851	5990	2131	8275	4421	28
8545	4657	0772	6890	3010	9133	5259	1387	7517	3651	9787	5925	2067	8210	4357	27
8480	4592	0707	6825	2945	9068	5194	1322	7453	3586	9722	5861	2002	8146	4292	26
8415	4528	0643	6760	2881	9004	5129	1258	7389	3522	9658	5797	1938	8082	4228	25
8350	4463	0578	6696	2816	8939	5065	1193	7324	3458	9594	5732	1874	8018	4164	24
8286	4398	0513	6631	2752	8875	5000	1129	7260	3393	9529	5668	1809	7953	4100	23
8221	4333	0449	6566	2687	8810	4936	1064	7195	3329	9465	5604	1745	7889	4036	22
8156	4269	0384	6502	2622	8745	4871	1000	7131	3264	9401	5539	1681	7825	3971	21
8091	4204	0319	6437	2558	8681	4807	0935	7066	3200	9336	5475	1616	7761	3907	20
8026	4139	0254	6372	2493	8616	4742	0871	7002	3135	9272	5411	1552	7696	3843	19
7962	4074	0190	6308	2428	8552	4678	0806	6937	3071	9207	5346	1488	7632	3779	18
7897	4010	0125	6243	2364	8487	4613	0742	6873	3007	9143	5282	1424	7568	3715	17
7832	3945	0060	6178	2299	8423	4549	0677	6808	2942	9079	5218	1359	7504	3650	16
7767	3880	9996	6114	2234	8358	4484	0613	6744	2878	9014	5153	1295	7439	3586	15
7702	3815	9931	6049	2170	8293	4419	0548	6679	2813	8950	5089	1231	7375	3522	14
7637	3750	9866	5984	2105	8229	4355	0484	6615	2749	8886	5025	1166	7311	3458	13
7573	3686	9801	5920	2041	8164	4290	0419	6551	2685	8821	4960	1102	7247	3394	12
7508	3621	9737	5855	1976	8100	4226	0355	6486	2620	8757	4896	1038	7182	3329	11
7443	3556	9672	5790	1911	8035	4161	0290	6422	2556	8692	4832	0974	7118	3265	10
7378	3491	9607	5726	1847	7970	4097	0226	6357	2491	8628	4767	0909	7054	3201	9
7313	3427	9543	5661	1782	7906	4032	0161	6293	2427	8564	4703	0845	6990	3137	8
7249	3362	9478	5596	1717	7841	3968	0097	6228	2363	8499	4639	0781	6925	3073	7
7184	3297	9413	5532	1653	7777	3903	0032	6164	2298	8435	4574	0717	6861	3008	6
7119	3232	9348	5467	1588	7712	3839	9968	6099	2234	8371	4510	0652	6797	2944	5
7054	3168	9284	5402	1524	7647	3774	9903	6035	2169	8306	4446	0588	6733	2880	4
6989	3103	9219	5338	1459	7583	3709	9839	5970	2105	8242	4382	0524	6668	2816	3
6925	3038	9154	5273	1394	7518	3645	9774	5906	2040	8178	4317	0459	6604	2752	2
6860	2973	9090	5208	1330	7454	3580	9710	5842	1976	8113	4253	0395	6540	2687	1
6795	2909	9025	5144	1265	7389	3516	9645	5777	1912	8049	4189	0331	6476	2623	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

″	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9. 544	9. 544	9. 545	9. 545	9. 545	9. 546	9. 546	9. 546	9. 547	9. 547	9. 547	9. 548	9. 548	9. 548	9. 549
0	3253	6630	0005	3376	6745	0110	3472	6832	0189	3542	6893	0240	3585	6927	0266
1	3309	6687	0061	3432	6801	0166	3528	6888	0244	3598	6949	0296	3641	6983	0321
2	3366	6743	0117	3488	6857	0222	3584	6944	0300	3654	7004	0352	3697	7038	0377
3	3422	6799	0173	3545	6913	0278	3641	7000	0356	3710	7060	0408	3752	7094	0433
4	3478	6855	0230	3601	6969	0334	3697	7056	0412	3766	7116	0463	3808	7150	0488
5	3535	6912	0286	3657	7025	0390	3753	7112	0468	3821	7172	0519	3864	7205	0544
6	3591	6968	0342	3713	7081	0446	3809	7168	0524	3877	7228	0575	3919	7261	0599
7	3647	7024	0398	3769	7137	0502	3865	7224	0580	3933	7283	0631	3975	7317	0655
8	3703	7080	0454	3825	7193	0558	3921	7280	0636	3989	7339	0687	4031	7372	0711
9	3760	7137	0511	3882	7250	0615	3977	7336	0692	4045	7395	0742	4087	7428	0766
10	3816	7193	0567	3938	7306	0671	4033	7392	0748	4101	7451	0798	4142	7484	0822
11	3872	7249	0623	3994	7362	0727	4089	7448	0804	4157	7507	0854	4198	7539	0878
12	3929	7305	0679	4050	7418	0783	4145	7504	0859	4212	7562	0910	4254	7595	0933
13	3985	7362	0735	4106	7474	0839	4201	7559	0915	4268	7618	0965	4309	7651	0989
14	4041	7418	0792	4162	7530	0895	4257	7615	0971	4324	7674	1021	4365	7706	1044
15	4098	7474	0848	4219	7586	0951	4313	7671	1027	4380	7730	1077	4421	7762	1100
16	4154	7530	0904	4275	7642	1007	4369	7727	1083	4436	7786	1133	4477	7818	1156
17	4210	7587	0960	4331	7698	1063	4425	7783	1139	4492	7842	1188	4532	7873	1211
18	4266	7643	1016	4387	7754	1119	4481	7839	1195	4548	7897	1244	4588	7929	1267
19	4323	7699	1073	4443	7811	1175	4537	7895	1251	4603	7953	1300	4644	7985	1322
20	4379	7755	1129	4499	7867	1231	4593	7951	1307	4659	8009	1356	4699	8040	1378
21	4435	7812	1185	4555	7923	1287	4649	8007	1363	4715	8065	1411	4755	8096	1434
22	4492	7868	1241	4612	7979	1343	4705	8063	1418	4771	8121	1467	4811	8151	1489
23	4548	7924	1297	4668	8035	1399	4761	8119	1474	4827	8176	1523	4866	8207	1545
24	4604	7980	1354	4724	8091	1455	4817	8175	1530	4883	8232	1579	4922	8263	1600
25	4661	8037	1410	4780	8147	1511	4873	8231	1586	4939	8288	1634	4978	8318	1656
26	4717	8093	1466	4836	8203	1567	4929	8287	1642	4994	8344	1690	5034	8374	1712
27	4773	8149	1522	4892	8259	1623	4985	8343	1698	5050	8400	1746	5089	8430	1767
28	4829	8205	1578	4948	8315	1680	5041	8399	1754	5106	8455	1802	5145	8485	1823
29	4886	8262	1635	5005	8372	1736	5097	8455	1810	5162	8511	1857	5201	8541	1878
30	4942	8318	1691	5061	8428	1792	5153	8511	1866	5218	8567	1913	5256	8597	1934
31	4998	8374	1747	5117	8484	1848	5209	8567	1922	5274	8623	1969	5312	8652	1990
32	5055	8430	1803	5173	8540	1904	5265	8622	1977	5329	8679	2025	5368	8708	2045
33	5111	8487	1859	5229	8596	1960	5321	8678	2033	5385	8734	2080	5423	8764	2101
34	5167	8543	1916	5285	8652	2016	5377	8734	2089	5441	8790	2136	5479	8819	2156
35	5223	8599	1972	5341	8708	2072	5433	8790	2145	5497	8846	2192	5535	8875	2212
36	5280	8655	2028	5398	8764	2128	5489	8846	2201	5553	8902	2248	5591	8931	2268
37	5336	8712	2084	5454	8820	2184	5545	8902	2257	5609	8957	2303	5646	8986	2323
38	5392	8768	2140	5510	8876	2240	5600	8958	2313	5664	9013	2359	5702	9042	2379
39	5449	8824	2196	5566	8932	2296	5656	9014	2369	5720	9069	2415	5758	9097	2434
40	5505	8880	2253	5622	8989	2352	5712	9070	2425	5776	9125	2471	5813	9153	2490
41	5561	8936	2309	5678	9045	2408	5768	9126	2480	5832	9181	2526	5869	9209	2546
42	5617	8993	2365	5734	9101	2464	5824	9182	2536	5888	9236	2582	5925	9264	2601
43	5674	9049	2421	5790	9157	2520	5880	9238	2592	5944	9292	2638	5980	9320	2657
44	5730	9105	2477	5847	9213	2576	5936	9294	2648	5999	9348	2693	6036	9376	2712
45	5786	9161	2534	5903	9269	2632	5992	9350	2704	6055	9404	2749	6092	9431	2768
46	5843	9218	2590	5959	9325	2688	6048	9406	2760	6111	9460	2805	6147	9487	2824
47	5899	9274	2646	6015	9381	2744	6104	9462	2816	6167	9515	2861	6203	9543	2879
48	5955	9330	2702	6071	9437	2800	6160	9517	2872	6223	9571	2916	6259	9598	2935
49	6011	9386	2758	6127	9493	2856	6216	9573	2927	6279	9627	2972	6314	9654	2990
50	6068	9443	2814	6183	9549	2912	6272	9629	2983	6334	9683	3028	6370	9709	3046
51	6124	9499	2871	6239	9605	2968	6328	9685	3039	6390	9738	3084	6426	9765	3101
52	6180	9555	2927	6296	9661	3024	6384	9741	3095	6446	9794	3139	6481	9821	3157
53	6236	9611	2983	6352	9718	3080	6440	9797	3151	6502	9850	3195	6537	9876	3213
54	6293	9667	3039	6408	9774	3136	6496	9853	3207	6558	9906	3251	6593	9932	3268
55	6349	9724	3095	6464	9830	3192	6552	9909	3263	6614	9962	3306	6649	9988	3324
56	6405	9780	3151	6520	9886	3248	6608	9965	3319	6669	0017	3362	6704	0043	3379
57	6462	9836	3208	6576	9942	3304	6664	0021	3374	6725	0073	3418	6760	0099	3435
58	6518	9892	3264	6632	9998	3360	6720	0077	3430	6781	0129	3474	6816	0155	3491
59	6574	9949	3320	6688	0054	3416	6776	0133	3486	6837	0185	3529	6871	0210	3546
60	6630	0005	3376	6745	0110	3472	6832	0189	3542	6893	0240	3585	6927	0266	3602
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

″	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9. 971	9. 971	9. 971	9. 971	9. 971	9. 971	9. 971	9. 971	9. 971	9. 971	9. 971	9. 971	9. 971	9. 970	9. 970
0	5876	5404	4931	4457	3984	3509	3035	2560	2084	1608	1132	0655	0178	9701	9223
1	5868	5396	4923	4449	3976	3501	3027	2552	2076	1600	1124	0647	0170	9693	9215
2	5861	5388	4915	4442	3968	3494	3019	2544	2068	1592	1116	0639	0162	9685	9207
3	5853	5380	4907	4434	3960	3486	3011	2536	2060	1584	1108	0631	0154	9677	9199
4	5845	5372	4899	4426	3952	3478	3003	2528	2052	1577	1100	0623	0146	9669	9191
5	5837	5364	4891	4418	3944	3470	2995	2520	2045	1569	1092	0615	0138	9661	9183
6	5829	5356	4883	4410	3936	3462	2987	2512	2037	1561	1084	0608	0130	9653	9175
7	5821	5349	4876	4402	3928	3454	2979	2504	2029	1553	1076	0600	0122	9645	9167
8	5813	5341	4868	4394	3920	3446	2971	2496	2021	1545	1068	0592	0114	9637	9159
9	5805	5333	4860	4386	3912	3438	2963	2488	2013	1537	1060	0584	0106	9629	9151
10	5798	5325	4852	4378	3905	3430	2956	2480	2005	1529	1053	0576	0099	9621	9143
11	5790	5317	4844	4371	3897	3422	2948	2473	1997	1521	1045	0568	0091	9613	9135
12	5782	5309	4836	4363	3889	3414	2940	2465	1989	1513	1037	0560	0083	9605	9127
13	5774	5301	4828	4355	3881	3407	2932	2457	1981	1505	1029	0552	0075	9597	9119
14	5766	5293	4820	4347	3873	3399	2924	2449	1973	1497	1021	0544	0067	9589	9111
15	5758	5286	4812	4339	3865	3391	2916	2441	1965	1489	1013	0536	0059	9581	9103
16	5750	5278	4805	4331	3857	3383	2908	2433	1957	1481	1005	0528	0051	9573	9095
17	5742	5270	4797	4323	3849	3375	2900	2425	1949	1473	0997	0520	0043	9565	9087
18	5735	5262	4789	4315	3841	3367	2892	2417	1941	1465	0989	0512	0035	9557	9079
19	5727	5254	4781	4307	3833	3359	2884	2409	1934	1457	0981	0504	0027	9549	9071
20	5719	5246	4773	4299	3826	3351	2876	2401	1926	1450	0973	0496	0019	9541	9063
21	5711	5238	4765	4292	3818	3343	2868	2393	1918	1442	0965	0488	0011	9533	9055
22	5703	5230	4757	4284	3810	3335	2861	2385	1910	1434	0957	0480	0003	9525	9047
23	5695	5222	4749	4276	3802	3327	2853	2377	1902	1426	0949	0472	9995	9517	9039
24	5687	5215	4741	4268	3794	3320	2845	2370	1894	1418	0941	0464	9987	9509	9031
25	5679	5207	4734	4260	3786	3312	2837	2362	1886	1410	0933	0456	9979	9501	9023
26	5672	5199	4726	4252	3778	3304	2829	2354	1878	1402	0925	0449	9971	9493	9015
27	5664	5191	4718	4244	3770	3296	2821	2346	1870	1394	0917	0441	9963	9485	9007
28	5656	5183	4710	4236	3762	3288	2813	2338	1862	1386	0910	0433	9955	9477	8999
29	5648	5175	4702	4228	3754	3280	2805	2330	1854	1378	0902	0425	9947	9470	8991
30	5640	5167	4694	4221	3747	3272	2797	2322	1846	1370	0894	0417	9939	9462	8983
31	5632	5159	4686	4213	3739	3264	2789	2314	1838	1362	0886	0409	9931	9454	8975
32	5624	5152	4678	4205	3731	3256	2781	2306	1830	1354	0878	0401	9923	9446	8967
33	5616	5144	4670	4197	3723	3248	2773	2298	1822	1346	0870	0393	9915	9438	8959
34	5609	5136	4663	4189	3715	3240	2766	2290	1815	1338	0862	0385	9908	9430	8951
35	5601	5128	4655	4181	3707	3233	2758	2282	1807	1330	0854	0377	9900	9422	8943
36	5593	5120	4647	4173	3699	3225	2750	2274	1799	1323	0846	0369	9892	9414	8936
37	5585	5112	4639	4165	3691	3217	2742	2266	1791	1315	0838	0361	9884	9406	8928
38	5577	5104	4631	4157	3683	3209	2734	2259	1783	1307	0830	0353	9876	9398	8920
39	5569	5096	4623	4149	3675	3201	2726	2251	1775	1299	0822	0345	9868	9390	8912
40	5561	5088	4615	4142	3667	3193	2718	2243	1767	1291	0814	0337	9860	9382	8904
41	5553	5081	4607	4134	3660	3185	2710	2235	1759	1283	0806	0329	9852	9374	8896
42	5546	5073	4599	4126	3652	3177	2702	2227	1751	1275	0798	0321	9844	9366	8888
43	5538	5065	4592	4118	3644	3169	2694	2219	1743	1267	0790	0313	9836	9358	8880
44	5530	5057	4584	4110	3636	3161	2686	2211	1735	1259	0782	0305	9828	9350	8872
45	5522	5049	4576	4102	3628	3153	2678	2203	1727	1251	0774	0297	9820	9342	8864
46	5514	5041	4568	4094	3620	3146	2671	2195	1719	1243	0767	0289	9812	9334	8856
47	5506	5033	4560	4086	3612	3138	2663	2187	1711	1235	0759	0281	9804	9326	8848
48	5498	5025	4552	4078	3604	3130	2655	2179	1704	1227	0751	0274	9796	9318	8840
49	5490	5017	4544	4070	3596	3122	2647	2171	1696	1219	0743	0266	9788	9310	8832
50	5483	5010	4536	4063	3588	3114	2639	2163	1688	1211	0735	0258	9780	9302	8824
51	5475	5002	4528	4055	3581	3106	2631	2156	1680	1203	0727	0250	9772	9294	8816
52	5467	4994	4521	4047	3573	3098	2623	2148	1672	1196	0719	0242	9764	9286	8808
53	5459	4986	4513	4039	3565	3090	2615	2140	1664	1188	0711	0234	9756	9278	8800
54	5451	4978	4505	4031	3557	3082	2607	2132	1656	1180	0703	0226	9748	9270	8792
55	5443	4970	4497	4023	3549	3074	2599	2124	1648	1172	0695	0218	9740	9262	8784
56	5435	4962	4489	4015	3541	3066	2591	2116	1640	1164	0687	0210	9732	9254	8776
57	5427	4954	4481	4007	3533	3058	2583	2108	1632	1156	0679	0202	9724	9246	8768
58	5419	4947	4473	3999	3525	3051	2576	2100	1624	1148	0671	0194	9716	9238	8760
59	5412	4939	4465	3991	3517	3043	2568	2092	1616	1140	0663	0186	9708	9230	8752
60	5404	4931	4457	3984	3509	3035	2560	2084	1608	1132	0655	0178	9701	9223	8744
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 572	9. 573	9. 573	9. 573	9. 574	9. 574	9. 575	9. 575	9. 575	9. 576	9. 576	9. 576	9. 577	9. 577	9. 578
0	7377	1227	5074	8919	2761	6601	0438	4272	8104	1934	5761	9585	3407	7226	1043
1	7441	1291	5138	8983	2825	6665	0502	4336	8168	1998	5824	9649	3471	7290	1107
2	7505	1355	5202	9047	2889	6729	0566	4400	8232	2061	5888	9713	3534	7354	1170
3	7569	1419	5266	9111	2953	6793	0630	4464	8296	2125	5952	9776	3598	7417	1234
4	7633	1483	5330	9175	3017	6857	0693	4528	8360	2189	6016	9840	3662	7481	1298
5	7698	1547	5394	9239	3081	6920	0757	4592	8424	2253	6080	9904	3725	7545	1361
6	7762	1611	5459	9303	3145	6984	0821	4656	8487	2317	6143	9967	3789	7608	1425
7	7826	1676	5523	9367	3209	7048	0885	4720	8551	2380	6207	0031	3853	7672	1488
8	7890	1740	5587	9431	3273	7112	0949	4783	8615	2444	6271	0095	3916	7735	1552
9	7954	1804	5651	9495	3337	7176	1013	4847	8679	2508	6335	0159	3980	7799	1616
10	8019	1868	5715	9559	3401	7240	1077	4911	8743	2572	6398	0222	4044	7863	1679
11	8083	1932	5779	9623	3465	7304	1141	4975	8807	2636	6462	0286	4107	7926	1743
12	8147	1996	5843	9687	3529	7368	1205	5039	8870	2699	6526	0350	4171	7990	1806
13	8211	2060	5907	9751	3593	7432	1269	5103	8934	2763	6590	0413	4235	8054	1870
14	8275	2125	5971	9816	3657	7496	1333	5167	8998	2827	6653	0477	4298	8117	1933
15	8339	2189	6035	9880	3721	7560	1397	5231	9062	2891	6717	0541	4362	8181	1997
16	8404	2253	6099	9944	3785	7624	1461	5294	9126	2955	6781	0605	4426	8244	2061
17	8468	2317	6164	0008	3849	7688	1524	5358	9190	3018	6845	0668	4489	8308	2124
18	8532	2381	6228	0072	3913	7752	1588	5422	9253	3082	6908	0732	4553	8372	2188
19	8596	2445	6292	0136	3977	7816	1652	5486	9317	3146	6972	0796	4617	8435	2251
20	8660	2509	6356	0200	4041	7880	1716	5550	9381	3210	7036	0859	4680	8499	2315
21	8724	2573	6420	0264	4105	7944	1780	5614	9445	3274	7100	0923	4744	8563	2379
22	8789	2638	6484	0328	4169	8008	1844	5678	9509	3337	7163	0987	4808	8626	2442
23	8853	2702	6548	0392	4233	8072	1908	5742	9573	3401	7227	1051	4871	8690	2506
24	8917	2766	6612	0456	4297	8136	1972	5805	9636	3465	7291	1114	4935	8753	2569
25	8981	2830	6676	0520	4361	8200	2036	5869	9700	3529	7355	1178	4999	8817	2633
26	9045	2894	6740	0584	4425	8264	2100	5933	9764	3592	7418	1242	5062	8881	2696
27	9109	2958	6804	0648	4489	8328	2164	5997	9828	3656	7482	1305	5126	8944	2760
28	9174	3022	6869	0712	4553	8392	2228	6061	9892	3720	7546	1369	5190	9008	2824
29	9238	3086	6933	0776	4617	8456	2291	6125	9956	3784	7610	1433	5253	9072	2887
30	9302	3151	6997	0840	4681	8520	2355	6189	0019	3848	7673	1496	5317	9135	2951
31	9366	3215	7061	0904	4745	8583	2419	6252	0083	3911	7737	1560	5381	9199	3014
32	9430	3279	7125	0968	4809	8647	2483	6316	0147	3975	7801	1624	5444	9262	3078
33	9494	3343	7189	1032	4873	8711	2547	6380	0211	4039	7864	1687	5508	9326	3141
34	9559	3407	7253	1096	4937	8775	2611	6444	0275	4103	7928	1751	5572	9390	3205
35	9623	3471	7317	1160	5001	8839	2675	6508	0338	4166	7992	1815	5635	9453	3269
36	9687	3535	7381	1224	5065	8903	2739	6572	0402	4230	8056	1879	5699	9517	3332
37	9751	3599	7445	1288	5129	8967	2803	6636	0466	4294	8119	1942	5763	9580	3396
38	9815	3664	7509	1352	5193	9031	2867	6700	0530	4358	8183	2006	5826	9644	3459
39	9879	3728	7573	1416	5257	9095	2931	6763	0594	4422	8247	2070	5890	9708	3523
40	9944	3792	7637	1481	5321	9159	2994	6827	0658	4485	8311	2133	5954	9771	3586
41	0008	3856	7702	1545	5385	9223	3058	6891	0721	4549	8374	2197	6017	9835	3650
42	0072	3920	7766	1609	5449	9287	3122	6955	0785	4613	8438	2261	6081	9898	3714
43	0136	3984	7830	1673	5513	9351	3186	7019	0849	4677	8502	2324	6144	9962	3777
44	0200	4048	7894	1737	5577	9415	3250	7083	0913	4740	8566	2388	6208	0026	3841
45	0264	4112	7958	1801	5641	9479	3314	7147	0977	4804	8629	2452	6272	0089	3904
46	0329	4176	8022	1865	5705	9543	3378	7210	1040	4868	8693	2515	6335	0153	3968
47	0393	4241	8086	1929	5769	9607	3442	7274	1104	4932	8757	2579	6399	0216	4031
48	0457	4305	8150	1993	5833	9671	3506	7338	1168	4996	8820	2643	6463	0280	4095
49	0521	4369	8214	2057	5897	9734	3569	7402	1232	5059	8884	2707	6526	0344	4158
50	0585	4433	8278	2121	5961	9798	3633	7466	1296	5123	8948	2770	6590	0407	4222
51	0649	4497	8342	2185	6025	9862	3697	7530	1360	5187	9012	2834	6654	0471	4286
52	0713	4561	8406	2249	6089	9926	3761	7594	1423	5251	9075	2898	6717	0534	4349
53	0778	4625	8470	2313	6153	9990	3825	7657	1487	5314	9139	2961	6781	0598	4413
54	0842	4689	8534	2377	6217	0054	3889	7721	1551	5378	9203	3025	6845	0662	4476
55	0906	4753	8598	2441	6281	0118	3953	7785	1615	5442	9267	3089	6908	0725	4540
56	0970	4818	8663	2505	6345	0182	4017	7849	1679	5506	9330	3152	6972	0789	4603
57	1034	4882	8727	2569	6409	0246	4081	7913	1742	5569	9394	3216	7035	0852	4667
58	1098	4946	8791	2633	6473	0310	4145	7977	1806	5633	9458	3280	7099	0916	4730
59	1162	5010	8855	2697	6537	0374	4208	8040	1870	5697	9521	3343	7163	0980	4794
60	1227	5074	8919	2761	6601	0438	4272	8104	1934	5761	9585	3407	7226	1043	4858
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
	10. 427	10. 426	10. 426	10. 426	10. 425	10. 425	10. 424	10. 424	10. 424	10. 423	10. 423	10. 423	10. 422	10. 422	10. 421	″
	2623	8773	4926	1081	7239	3399	9562	5728	1896	8066	4239	0415	6593	2774	8957	60
	2559	8709	4862	1017	7175	3335	9498	5664	1832	8002	4176	0351	6529	2710	8893	59
	2495	8645	4798	0953	7111	3271	9434	5600	1768	7939	4112	0287	6466	2646	8830	58
	2431	8581	4734	0889	7047	3207	9370	5536	1704	7875	4048	0224	6402	2583	8766	57
	2367	8517	4670	0825	6983	3143	9307	5472	1640	7811	3984	0160	6338	2519	8702	56
	2302	8453	4606	0761	6919	3080	9243	5408	1576	7747	3920	0096	6275	2455	8639	55
	2238	8389	4541	0697	6855	3016	9179	5344	1513	7683	3857	0033	6211	2392	8575	54
	2174	8324	4477	0633	6791	2952	9115	5280	1449	7620	3793	9969	6147	2328	8512	53
	2110	8260	4413	0569	6727	2888	9051	5217	1385	7556	3729	9905	6084	2265	8448	52
	2046	8196	4349	0505	6663	2824	8987	5153	1321	7492	3665	9841	6020	2201	8384	51
	1981	8132	4285	0441	6599	2760	8923	5089	1257	7428	3602	9778	5956	2137	8321	50
	1917	8068	4221	0377	6535	2696	8859	5025	1193	7364	3538	9714	5893	2074	8257	49
	1853	8004	4157	0313	6471	2632	8795	4961	1130	7301	3474	9650	5829	2010	8194	48
	1789	7940	4093	0249	6407	2568	8731	4897	1066	7237	3410	9587	5765	1946	8130	47
	1725	7875	4029	0184	6343	2504	8667	4833	1002	7173	3347	9523	5702	1883	8067	46
	1661	7811	3965	0120	6279	2440	8603	4769	0938	7109	3283	9459	5638	1819	8003	45
	1596	7747	3901	0056	6215	2376	8539	4706	0874	7045	3219	9395	5574	1756	7939	44
	1532	7683	3836	9992	6151	2312	8476	4642	0810	6982	3155	9332	5511	1692	7876	43
	1468	7619	3772	9928	6087	2248	8412	4578	0747	6918	3092	9268	5447	1628	7812	42
	1404	7555	3708	9864	6023	2184	8348	4514	0683	6854	3028	9204	5383	1565	7749	41
	1340	7491	3644	9800	5959	2120	8284	4450	0619	6790	2964	9141	5320	1501	7685	40
	1276	7427	3580	9736	5895	2056	8220	4386	0555	6726	2900	9077	5256	1437	7621	39
	1211	7362	3516	9672	5831	1992	8156	4322	0491	6663	2837	9013	5192	1374	7558	38
	1147	7298	3452	9608	5767	1928	8092	4258	0427	6599	2773	8949	5129	1310	7494	37
	1083	7234	3388	9544	5703	1864	8028	4195	0364	6535	2709	8886	5065	1247	7431	36
	1019	7170	3324	9480	5639	1800	7964	4131	0300	6471	2645	8822	5001	1183	7367	35
	0955	7106	3260	9416	5575	1736	7900	4067	0236	6408	2582	8758	4938	1119	7304	34
	0891	7042	3196	9352	5511	1672	7836	4003	0172	6344	2518	8695	4874	1056	7240	33
	0826	6978	3131	9288	5447	1608	7772	3939	0108	6280	2454	8631	4810	0992	7176	32
	0762	6914	3067	9224	5383	1544	7709	3875	0044	6216	2390	8567	4747	0928	7113	31
	0698	6849	3003	9160	5319	1480	7645	3811	9981	6152	2327	8504	4683	0865	7049	30
	0634	6785	2939	9096	5255	1417	7581	3748	9917	6089	2263	8440	4619	0801	6986	29
	0570	6721	2875	9032	5191	1353	7517	3684	9853	6025	2199	8376	4556	0738	6922	28
	0506	6657	2811	8968	5127	1289	7453	3620	9789	5961	2136	8313	4492	0674	6859	27
	0441	6593	2747	8904	5063	1225	7389	3556	9725	5897	2072	8249	4428	0610	6795	26
	0377	6529	2683	8840	4999	1161	7325	3492	9662	5834	2008	8185	4365	0547	6731	25
	0313	6465	2619	8776	4935	1097	7261	3428	9598	5770	1944	8121	4301	0483	6668	24
	0249	6401	2555	8712	4871	1033	7197	3364	9534	5706	1881	8058	4237	0420	6604	23
	0185	6336	2491	8648	4807	0969	7133	3300	9470	5642	1817	7994	4174	0356	6541	22
	0121	6272	2427	8584	4743	0905	7096	3237	9406	5578	1753	7930	4110	0292	6477	21
	0056	6208	2363	8519	4679	0841	7006	3173	9342	5515	1689	7867	4046	0229	6414	20
	9992	6144	2298	8455	4615	0777	6942	3109	9279	5451	1626	7803	3983	0165	6350	19
	9928	6080	2234	8391	4551	0713	6878	3045	9215	5387	1562	7739	3919	0102	6286	18
	9864	6016	2170	8327	4487	0649	6814	2981	9151	5323	1498	7676	3856	0038	6223	17
	9800	5952	2106	8263	4423	0585	6750	2917	9087	5260	1434	7612	3792	9974	6159	16
	9736	5888	2042	8199	4359	0521	6686	2853	9023	5196	1371	7548	3728	9911	6096	15
	9671	5824	1978	8135	4295	0457	6622	2790	8960	5132	1307	7485	3665	9847	6032	14
	9607	5759	1914	8071	4231	0393	6558	2726	8896	5068	1243	7421	3601	9784	5969	13
	9543	5695	1850	8007	4167	0329	6494	2662	8832	5004	1180	7357	3537	9720	5905	12
	9479	5631	1786	7943	4103	0266	6431	2598	8768	4941	1116	7293	3474	9656	5842	11
	9415	5567	1722	7879	4039	0202	6367	2534	8704	4877	1052	7230	3410	9593	5778	10
	9351	5593	1658	7815	3975	0138	6303	2470	8640	4813	0988	7166	3346	9529	5714	9
	9287	5439	1594	7751	3911	0074	6239	2406	8577	4749	0925	7102	3283	9466	5651	8
	9222	5375	1530	7687	3847	0010	6175	2343	8513	4686	0861	7039	3219	9402	5587	7
	9158	5311	1466	7623	3783	9946	6111	2279	8449	4622	0797	6975	3155	9338	5524	6
	9094	5247	1402	7559	3719	9882	6047	2215	8385	4558	0733	6911	3092	9275	5460	5
	9030	5182	1337	7495	3655	9818	5983	2151	8321	4494	0670	6848	3028	9211	5397	4
	8966	5118	1273	7431	3591	9754	5919	2087	8258	4431	0606	6784	2965	9148	5333	3
	8902	5054	1209	7367	3527	9690	5855	2023	8194	4367	0542	6720	2901	9084	5270	2
	8838	4990	1145	7303	3463	9626	5792	1960	8130	4303	0479	6657	2837	9020	5206	1
	8773	4926	1081	7239	3399	9562	5728	1896	8066	4239	0415	6593	2774	8957	5142	0
	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
″	9. 549	9. 549	9. 550	9. 550	9. 550	9. 551	9. 551	9. 551	9. 552	9. 552	9. 552	9. 553	9. 553	9. 553	9. 553	9. 970	9. 970	9. 970	9. 970	9. 970	9. 970	9. 970	9. 970	9. 970	9. 970	9. 970	9. 970	9. 970	9. 970	9. 970	″
0	3602	6935	0265	3592	6916	0237	3556	6871	0184	3494	6801	0105	3406	6704	9999	8744	8265	7786	7306	6826	6346	5865	5383	4902	4419	3937	3454	2970	2486	2002	60
1	3657	6990	0320	3647	6971	0293	3611	6927	0239	3549	6856	0160	3461	6759	0054	8736	8257	7778	7298	6818	6338	5857	5375	4894	4411	3929	3446	2962	2478	1994	59
2	3713	7046	0376	3703	7027	0348	3666	6982	0294	3604	6911	0215	3516	6814	0109	8728	8249	7770	7290	6810	6330	5849	5367	4886	4403	3921	3438	2954	2470	1986	58
3	3768	7101	0431	3758	7082	0403	3722	7037	0350	3659	6966	0270	3571	6869	0164	8720	8241	7762	7282	6802	6322	5841	5359	4878	4395	3913	3430	2946	2462	1978	57
4	3824	7157	0487	3814	7138	0459	3777	7092	0405	3714	7021	0325	3626	6924	0219	8712	8233	7754	7274	6794	6314	5833	5351	4869	4387	3905	3422	2938	2454	1970	56
5	3880	7212	0542	3869	7193	0514	3832	7148	0460	3769	7076	0380	3681	6979	0274	8704	8225	7746	7266	6786	6306	5825	5343	4861	4379	3897	3413	2930	2446	1962	55
6	3935	7268	0598	3924	7248	0569	3888	7203	0515	3825	7131	0435	3736	7033	0329	8696	8217	7738	7258	6778	6298	5817	5335	4853	4371	3889	3405	2922	2438	1954	54
7	3991	7323	0653	3980	7304	0625	3943	7258	0570	3880	7186	0490	3791	7088	0383	8688	8209	7730	7250	6770	6290	5809	5327	4845	4363	3880	3397	2914	2430	1946	53
8	4046	7379	0709	4035	7359	0680	3998	7313	0625	3935	7241	0545	3846	7143	0438	8680	8201	7722	7242	6762	6282	5801	5319	4837	4355	3872	3389	2906	2422	1937	52
9	4102	7434	0764	4091	7414	0735	4053	7368	0681	3990	7296	0600	3901	7198	0493	8672	8193	7714	7234	6754	6274	5793	5311	4829	4347	3864	3381	2898	2414	1929	51
10	4157	7490	0819	4146	7470	0791	4109	7424	0736	4045	7351	0655	3956	7253	0548	8664	8185	7706	7226	6746	6266	5785	5303	4821	4339	3856	3373	2890	2406	1921	50
11	4213	7545	0875	4202	7525	0846	4164	7479	0791	4100	7407	0710	4010	7308	0603	8656	8177	7698	7218	6738	6258	5777	5295	4813	4331	3848	3365	2882	2398	1913	49
12	4268	7601	0930	4257	7581	0901	4219	7534	0846	4155	7462	0765	4065	7363	0658	8648	8169	7690	7210	6730	6250	5769	5287	4805	4323	3840	3357	2874	2390	1905	48
13	4324	7656	0986	4312	7636	0957	4274	7589	0901	4210	7517	0820	4120	7418	0713	8640	8161	7682	7202	6722	6242	5761	5279	4797	4315	3832	3349	2865	2382	1897	47
14	4380	7712	1041	4368	7691	1012	4330	7645	0957	4266	7572	0875	4175	7473	0768	8632	8153	7674	7194	6714	6234	5752	5271	4789	4307	3824	3341	2857	2373	1889	46
15	4435	7767	1097	4423	7747	1067	4385	7700	1012	4321	7627	0930	4230	7528	0823	8624	8145	7666	7186	6706	6226	5744	5263	4781	4299	3816	3333	2849	2365	1881	45
16	4491	7823	1152	4479	7802	1123	4440	7755	1067	4376	7682	0985	4285	7583	0877	8616	8137	7658	7178	6698	6218	5736	5255	4773	4291	3808	3325	2841	2357	1873	44
17	4546	7878	1208	4534	7857	1178	4496	7810	1122	4431	7737	1040	4340	7638	0932	8608	8130	7650	7170	6690	6209	5728	5247	4765	4283	3800	3317	2833	2349	1865	43
18	4602	7934	1263	4589	7913	1233	4551	7865	1177	4486	7792	1095	4395	7693	0987	8600	8122	7642	7162	6682	6201	5720	5239	4757	4275	3792	3309	2825	2341	1857	42
19	4657	7989	1319	4645	7968	1289	4606	7921	1232	4541	7847	1150	4450	7748	1042	8593	8114	7634	7154	6674	6193	5712	5231	4749	4267	3784	3301	2817	2333	1849	41
20	4713	8045	1374	4700	8024	1344	4661	7976	1288	4596	7902	1205	4505	7803	1097	8585	8106	7626	7146	6666	6185	5704	5223	4741	4259	3776	3293	2809	2325	1841	40
21	4769	8101	1430	4756	8079	1399	4717	8031	1343	4651	7957	1260	4560	7858	1152	8577	8098	7618	7138	6658	6177	5696	5215	4733	4251	3768	3285	2801	2317	1832	39
22	4824	8156	1485	4811	8134	1455	4772	8086	1398	4707	8012	1315	4615	7912	1207	8569	8090	7610	7130	6650	6169	5688	5207	4725	4243	3760	3277	2793	2309	1824	38
23	4880	8212	1540	4867	8190	1510	4827	8142	1453	4762	8067	1370	4670	7967	1262	8561	8082	7602	7122	6642	6161	5680	5199	4717	4234	3752	3268	2785	2301	1816	37
24	4935	8267	1596	4922	8245	1565	4882	8197	1508	4817	8122	1425	4725	8022	1316	8553	8074	7594	7114	6634	6153	5672	5191	4709	4226	3744	3260	2777	2293	1808	36
25	4991	8323	1651	4977	8300	1620	4938	8252	1563	4872	8178	1480	4780	8077	1371	8545	8066	7586	7106	6626	6145	5664	5183	4701	4218	3736	3252	2769	2285	1800	35
26	5046	8378	1707	5033	8356	1676	4993	8307	1619	4927	8233	1535	4835	8132	1426	8537	8058	7578	7098	6618	6137	5656	5175	4693	4210	3728	3244	2761	2277	1792	34
27	5102	8434	1762	5088	8411	1731	5048	8362	1674	4982	8288	1590	4890	8187	1481	8529	8050	7570	7090	6610	6129	5648	5167	4685	4202	3719	3236	2753	2269	1784	33
28	5157	8489	1818	5144	8466	1786	5103	8418	1729	5037	8343	1645	4945	8242	1536	8521	8042	7562	7082	6602	6121	5640	5159	4677	4194	3711	3228	2745	2260	1776	32
29	5213	8545	1873	5199	8522	1842	5159	8473	1784	5092	8398	1700	5000	8297	1591	8513	8034	7554	7074	6594	6113	5632	5151	4669	4186	3703	3220	2736	2252	1768	31
30	5269	8600	1929	5254	8577	1897	5214	8528	1839	5148	8453	1755	5055	8352	1646	8505	8026	7546	7066	6586	6105	5624	5143	4661	4178	3695	3212	2728	2244	1760	30
31	5324	8656	1984	5310	8632	1952	5269	8583	1894	5203	8508	1810	5110	8407	1701	8497	8018	7538	7058	6578	6097	5616	5135	4653	4170	3687	3204	2720	2236	1752	29
32	5380	8711	2040	5365	8688	2008	5324	8638	1950	5258	8563	1865	5165	8462	1755	8489	8010	7530	7050	6570	6089	5608	5127	4645	4162	3679	3196	2712	2228	1744	28
33	5435	8767	2095	5421	8743	2063	5380	8694	2005	5313	8618	1920	5220	8517	1810	8481	8002	7522	7042	6562	6081	5600	5118	4636	4154	3671	3188	2704	2220	1736	27
34	5491	8822	2150	5476	8799	2118	5435	8749	2060	5368	8673	1975	5275	8572	1865	8473	7994	7514	7034	6554	6073	5592	5110	4628	4146	3663	3180	2696	2212	1727	26
35	5546	8878	2206	5531	8854	2174	5490	8804	2115	5423	8728	2031	5330	8626	1920	8465	7986	7506	7026	6546	6065	5584	5102	4620	4138	3655	3172	2688	2204	1719	25
36	5602	8933	2261	5587	8909	2229	5546	8859	2170	5478	8783	2086	5385	8681	1975	8457	7978	7498	7018	6538	6057	5576	5094	4612	4130	3647	3164	2680	2196	1711	24
37	5657	8989	2317	5642	8965	2284	5601	8914	2225	5533	8838	2141	5440	8736	2030	8449	7970	7490	7010	6530	6049	5568	5086	4604	4122	3639	3156	2672	2188	1703	23
38	5713	9044	2372	5698	9020	2339	5656	8970	2280	5588	8893	2196	5495	8791	2085	8441	7962	7482	7002	6522	6041	5560	5078	4596	4114	3631	3148	2664	2180	1695	22
39	5768	9100	2428	5753	9075	2395	5711	9025	2336	5643	8948	2251	5550	8846	2140	8433	7954	7474	6994	6514	6033	5552	5070	4588	4106	3623	3140	2656	2172	1687	21
40	5824	9155	2483	5808	9131	2450	5767	9080	2391	5699	9004	2306	5605	8901	2194	8425	7946	7466	6986	6506	6025	5544	5062	4580	4098	3615	3132	2648	2164	1679	20
41	5880	9211	2539	5864	9186	2505	5822	9135	2446	5754	9059	2361	5660	8956	2249	8417	7938	7458	6978	6498	6017	5536	5054	4572	4090	3607	3123	2640	2156	1671	19
42	5935	9266	2594	5919	9241	2561	5877	9191	2501	5809	9114	2416	5715	9011	2304	8409	7930	7450	6970	6490	6009	5528	5046	4564	4082	3599	3115	2632	2147	1663	18
43	5991	9322	2649	5975	9297	2616	5932	9246	2556	5864	9169	2471	5770	9066	2359	8401	7922	7442	6962	6482	6001	5520	5038	4556	4074	3591	3107	2624	2139	1655	17
44	6046	9377	2705	6030	9352	2671	5988	9301	2611	5919	9224	2526	5825	9121	2414	8393	7914	7434	6954	6474	5993	5512	5030	4548	4066	3583	3099	2615	2131	1647	16
45	6102	9432	2760	6085	9407	2727	6043	9356	2667	5974	9279	2581	5880	9176	2469	8385	7906	7426	6946	6466	5985	5504	5022	4540	4058	3575	3091	2607	2123	1639	15
46	6157	9488	2816	6141	9463	2782	6098	9411	2722	6029	9334	2636	5934	9230	2524	8377	7898	7418	6938	6458	5977	5496	5014	4532	4049	3567	3083	2599	2115	1631	14
47	6213	9543	2871	6196	9518	2837	6153	9467	2777	6084	9389	2691	5989	9285	2578	8369	7890	7410	6930	6450	5969	5488	5006	4524	4041	3558	3075	2591	2107	1622	13
48	6268	9599	2927	6251	9573	2892	6208	9522	2832	6139	9444	2746	6044	9340	2633	8361	7882	7402	6922	6442	5961	5480	4998	4516	4033	3550	3067	2583	2099	1614	12
49	6324	9654	2982	6307	9629	2948	6264	9577	2887	6195	9499	2801	6099	9395	2688	8353	7874	7394	6914	6434	5953	5472	4990	4508	4025	3542	3059	2575	2091	1606	11
50	6379	9710	3038	6362	9684	3003	6319	9632	2942	6250	9554	2856	6154	9450	2743	8345	7866	7386	6906	6426	5945	5464	4982	4500	4017	3534	3051	2567	2083	1598	10
51	6435	9765	3093	6418	9739	3058	6374	9687	2997	6305	9609	2911	6209	9505	2798	8337	7858	7378	6898	6418	5937	5456	4974	4492	4009	3526	3043	2559	2075	1590	9
52	6490	9821	3148	6473	9795	3114	6429	9742	3053	6360	9664	2966	6264	9560	2853	8329	7850	7370	6890	6410	5929	5448	4966	4484	4001	3518	3035	2551	2067	1582	8
53	6546	9876	3204	6528	9850	3169	6485	9798	3108	6415	9719	3021	6319	9615	2908	8321	7842	7362	6882	6402	5921	5439	4958	4476	3993	3510	3027	2543	2059	1574	7
54	6601	9932	3259	6584	9905	3224	6540	9853	3163	6470	9774	3076	6374	9670	2962	8313	7834	7354	6874	6394	5913	5431	4950	4468	3985	3502	3019	2535	2051	1566	6
55	6657	9987	3315	6639	9961	3279	6595	9908	3218	6525	9829	3131	6429	9725	3017	8305	7826	7346	6866	6386	5905	5423	4942	4460	3977	3494	3011	2527	2042	1558	5
56	6713	0043	3370	6695	0016	3335	6650	9963	3273	6580	9884	3186	6484	9780	3072	8297	7818	7338	6858	6378	5897	5415	4934	4452	3969	3486	3003	2519	2034	1550	4
57	6768	0098	3426	6750	0071	3390	6706	0018	3328	6635	9939	3241	6539	9834	3127	8289	7810	7330	6850	6370	5889	5407	4926	4444	3961	3478	2994	2511	2026	1542	3
58	6824	0154	3481	6805	0127	3445	6761	0074	3383	6690	9994	3296	6594	9889	3182	8281	7802	7322	6842	6362	5881	5399	4918	4436	3953	3470	2986	2503	2018	1534	2
59	6879	0209	3536	6861	0182	3501	6816	0129	3439	6745	0049	3351	6649	9944	3237	8273	7794	7314	6834	6354	5873	5391	4910	4427	3945	3462	2978	2494	2010	1525	1
60	6935	0265	3592	6916	0237	3556	6871	0184	3494	6801	0105	3406	6704	9999	3292	8265	7786	7306	6826	6346	5865	5383	4902	4419	3937	3454	2970	2486	2002	1517	0
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

"	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9. 578	9. 578	9. 579	9. 579	9. 580	9. 580	9. 580	9. 581	9. 581	9. 581	9. 582	9. 582	9. 583	9. 583	9. 583
0	4858	8669	2479	6286	0090	3892	7691	1488	5282	9074	2864	6651	0435	4217	7997
1	4921	8733	2542	6349	0153	3955	7754	1551	5346	9137	2927	6714	0498	4280	8060
2	4985	8796	2606	6412	0217	4018	7818	1614	5409	9201	2990	6777	0561	4343	8123
3	5048	8860	2669	6476	0280	4082	7881	1678	5472	9264	3053	6840	0624	4406	8186
4	5112	8923	2733	6539	0343	4145	7944	1741	5535	9327	3116	6903	0688	4469	8249
5	5175	8987	2796	6603	0407	4208	8008	1804	5598	9390	3179	6966	0751	4532	8312
6	5239	9050	2860	6666	0470	4272	8071	1868	5662	9453	3243	7029	0814	4595	8375
7	5302	9114	2923	6730	0534	4335	8134	1931	5725	9517	3306	7092	0877	4658	8438
8	5366	9177	2986	6793	0597	4398	8197	1994	5788	9580	3369	7156	0940	4721	8501
9	5430	9241	3050	6856	0660	4462	8261	2057	5851	9643	3432	7219	1003	4785	8564
10	5493	9304	3113	6920	0724	4525	8324	2121	5915	9706	3495	7282	1066	4848	8627
11	5557	9368	3177	6983	0787	4588	8387	2184	5978	9769	3558	7345	1129	4911	8690
12	5620	9431	3240	7047	0850	4652	8451	2247	6041	9832	3621	7408	1192	4974	8753
13	5684	9495	3304	7110	0914	4715	8514	2310	6104	9896	3684	7471	1255	5037	8816
14	5747	9558	3367	7173	0977	4778	8577	2374	6167	9959	3748	7534	1318	5100	8879
15	5811	9622	3431	7237	1041	4842	8641	2437	6231	0022	3811	7597	1381	5163	8942
16	5874	9685	3494	7300	1104	4905	8704	2500	6294	0085	3874	7660	1444	5226	9005
17	5938	9749	3558	7364	1167	4968	8767	2563	6357	0148	3937	7723	1507	5289	9067
18	6001	9812	3621	7427	1231	5032	8830	2627	6420	0211	4000	7786	1570	5352	9130
19	6065	9876	3684	7491	1294	5095	8894	2690	6483	0275	4063	7849	1633	5415	9193
20	6128	9939	3748	7554	1357	5158	8957	2753	6547	0338	4126	7913	1696	5478	9256
21	6192	0003	3811	7617	1421	5222	9020	2816	6610	0401	4189	7976	1759	5541	9319
22	6256	0066	3875	7681	1484	5285	9084	2880	6673	0464	4253	8039	1822	5604	9382
23	6319	0130	3938	7744	1548	5348	9147	2943	6736	0527	4316	8102	1885	5667	9445
24	6383	0193	4002	7808	1611	5412	9210	3006	6799	0590	4379	8165	1948	5730	9508
25	6446	0257	4065	7871	1674	5475	9273	3069	6863	0654	4442	8228	2011	5793	9571
26	6510	0320	4129	7934	1738	5538	9337	3133	6926	0717	4505	8291	2075	5856	9634
27	6573	0384	4192	7998	1801	5602	9400	3196	6989	0780	4568	8354	2138	5919	9697
28	6637	0447	4256	8061	1864	5665	9463	3259	7052	0843	4631	8417	2201	5982	9760
29	6700	0511	4319	8125	1928	5728	9527	3322	7115	0906	4694	8480	2264	6045	9823
30	6764	0574	4382	8188	1991	5792	9590	3385	7179	0969	4758	8543	2327	6108	9886
31	6827	0638	4446	8251	2054	5855	9653	3449	7242	1032	4821	8606	2390	6171	9949
32	6891	0701	4509	8315	2118	5918	9716	3512	7305	1096	4884	8669	2453	6234	0012
33	6954	0765	4573	8378	2181	5982	9780	3575	7368	1159	4947	8733	2516	6297	0075
34	7018	0828	4636	8442	2245	6045	9843	3638	7431	1222	5010	8796	2579	6359	0138
35	7081	0892	4700	8505	2308	6108	9906	3702	7495	1285	5073	8859	2642	6422	0201
36	7145	0955	4763	8568	2371	6172	9970	3765	7558	1348	5136	8922	2705	6485	0264
37	7208	1019	4827	8632	2435	6235	0033	3828	7621	1411	5199	8985	2768	6548	0327
38	7272	1082	4890	8695	2498	6298	0096	3891	7684	1475	5262	9048	2831	6611	0390
39	7336	1146	4953	8759	2561	6362	0159	3955	7747	1538	5326	9111	2894	6674	0452
40	7399	1209	5017	8822	2625	6425	0223	4018	7811	1601	5389	9174	2957	6737	0515
41	7463	1273	5080	8885	2688	6488	0286	4081	7874	1664	5452	9237	3020	6800	0578
42	7526	1336	5144	8949	2751	6552	0349	4144	7937	1727	5515	9300	3083	6863	0641
43	7590	1400	5207	9012	2815	6615	0412	4208	8000	1790	5578	9363	3146	6926	0704
44	7653	1463	5271	9076	2878	6678	0476	4271	8063	1853	5641	9426	3209	6989	0767
45	7717	1527	5334	9139	2941	6741	0539	4334	8127	1917	5704	9489	3272	7052	0830
46	7780	1590	5398	9202	3005	6805	0602	4397	8190	1980	5767	9552	3335	7115	0893
47	7844	1654	5461	9266	3068	6868	0666	4460	8253	2043	5830	9616	3398	7178	0956
48	7907	1717	5524	9329	3132	6931	0729	4524	8316	2106	5894	9679	3461	7241	1019
49	7971	1781	5588	9393	3195	6995	0792	4587	8379	2169	5957	9742	3524	7304	1082
50	8034	1844	5651	9456	3258	7058	0855	4650	8442	2232	6020	9805	3587	7367	1145
51	8098	1907	5715	9519	3322	7121	0919	4713	8506	2295	6083	9868	3650	7430	1208
52	8161	1971	5778	9583	3385	7185	0982	4777	8569	2359	6146	9931	3713	7493	1271
53	8225	2034	5842	9646	3448	7248	1045	4840	8632	2422	6209	9994	3776	7556	1334
54	8288	2098	5905	9710	3512	7311	1108	4903	8695	2485	6272	0057	3839	7619	1397
55	8352	2161	5968	9773	3575	7375	1172	4966	8758	2548	6335	0120	3902	7682	1460
56	8415	2225	6032	9836	3638	7438	1235	5029	8822	2611	6398	0183	3965	7745	1523
57	8479	2288	6095	9900	3702	7501	1298	5093	8885	2674	6461	0246	4028	7808	1585
58	8542	2352	6159	9963	3765	7564	1361	5156	8948	2737	6525	0309	4091	7871	1648
59	8606	2415	6222	0026	3828	7628	1425	5219	9011	2801	6588	0372	4154	7934	1711
60	8669	2479	6286	0090	3892	7691	1488	5282	9074	2864	6651	0435	4217	7997	1774
"	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	"
10. 421	10. 421	10. 420	10. 420	10. 419	10. 419	10. 419	10. 418	10. 418	10. 418	10. 417	10. 417	10. 416	10. 416	10. 416	
5142	1331	7521	3714	9910	6108	2309	8512	4718	0926	7136	3349	9565	5783	2003	60
5079	1267	7458	3651	9847	6045	2246	8449	4654	0863	7073	3286	9502	5720	1940	59
5015	1204	7394	3588	9783	5982	2182	8386	4591	0799	7010	3223	9439	5657	1877	58
4952	1140	7331	3524	9720	5918	2119	8322	4528	0736	6947	3160	9376	5594	1814	57
4888	1077	7267	3461	9657	5855	2056	8259	4465	0673	6884	3097	9312	5531	1751	56
4825	1013	7204	3397	9593	5792	1992	8196	4402	0610	6821	3034	9249	5468	1688	55
4761	0950	7140	3334	9530	5728	1929	8132	4338	0547	6757	2971	9186	5405	1625	54
4698	0886	7077	3270	9466	5665	1866	8069	4275	0483	6694	2908	9123	5342	1562	53
4634	0823	7014	3207	9403	5602	1803	8006	4212	0420	6631	2844	9060	5279	1499	52
4570	0759	6950	3144	9340	5538	1739	7943	4149	0357	6568	2781	8997	5215	1436	51
4507	0696	6887	3080	9276	5475	1676	7879	4085	0294	6505	2718	8934	5152	1373	50
4443	0632	6823	3017	9213	5412	1613	7816	4022	0231	6442	2655	8871	5089	1310	49
4380	0569	6760	2953	9150	5348	1549	7753	3959	0168	6379	2592	8808	5026	1247	48
4316	0505	6696	2890	9086	5285	1486	7690	3896	0104	6316	2529	8745	4963	1184	47
4253	0442	6633	2827	9023	5222	1423	7626	3833	0041	6252	2466	8682	4900	1121	46
4189	0378	6569	2763	8959	5158	1359	7563	3769	9978	6189	2403	8619	4837	1058	45
4126	0315	6506	2700	8896	5095	1296	7500	3706	9915	6126	2340	8556	4774	0995	44
4062	0251	6442	2636	8833	5032	1233	7437	3643	9852	6063	2277	8493	4711	0933	43
3999	0188	6379	2573	8769	4968	1170	7373	3580	9789	6000	2214	8430	4648	0870	42
3935	0124	6316	2509	8706	4905	1106	7310	3517	9725	5937	2151	8367	4585	0807	41
3872	0061	6252	2446	8643	4842	1043	7247	3453	9662	5874	2087	8304	4522	0744	40
3808	9997	6189	2383	8579	4778	0980	7184	3390	9599	5811	2024	8241	4459	0681	39
3744	9934	6125	2319	8516	4715	0916	7120	3327	9536	5747	1961	8178	4396	0618	38
3681	9870	6062	2256	8452	4652	0853	7057	3264	9473	5684	1898	8115	4333	0555	37
3617	9807	5998	2192	8389	4588	0790	6994	3201	9410	5621	1835	8052	4270	0492	36
3554	9743	5935	2129	8326	4525	0727	6931	3137	9346	5558	1772	7989	4207	0429	35
3490	9680	5871	2066	8262	4462	0663	6867	3074	9283	5495	1709	7925	4144	0366	34
3427	9616	5808	2002	8199	4398	0600	6804	3011	9220	5432	1646	7862	4081	0303	33
3363	9553	5744	1939	8136	4335	0537	6741	2948	9157	5369	1583	7799	4018	0240	32
3300	9489	5681	1875	8072	4272	0473	6678	2885	9094	5306	1520	7736	3955	0177	31
3236	9426	5618	1812	8009	4208	0410	6615	2821	9031	5242	1457	7673	3892	0114	30
3173	9362	5554	1749	7946	4145	0347	6551	2758	8968	5179	1394	7610	3829	0051	29
3109	9299	5491	1685	7882	4082	0284	6488	2695	8904	5116	1331	7547	3766	9988	28
3046	9235	5427	1622	7819	4018	0220	6425	2632	8841	5053	1267	7484	3703	9925	27
2982	9172	5364	1558	7755	3955	0157	6362	2569	8778	4990	1204	7421	3641	9862	26
2919	9108	5300	1495	7692	3892	0094	6298	2505	8715	4927	1141	7358	3578	9799	25
2855	9045	5237	1432	7629	3828	0030	6235	2442	8652	4864	1078	7295	3515	9736	24
2792	8981	5173	1368	7565	3765	9967	6172	2379	8589	4801	1015	7232	3452	9673	23
2728	8918	5110	1305	7502	3702	9904	6109	2316	8525	4738	0952	7169	3389	9610	22
2664	8854	5047	1241	7439	3638	9841	6045	2253	8462	4674	0889	7106	3326	9548	21
2601	8791	4983	1178	7375	3575	9777	5982	2189	8399	4611	0826	7043	3263	9485	20
2537	8727	4920	1115	7312	3512	9714	5919	2126	8336	4548	0763	6980	3200	9422	19
2474	8664	4856	1051	7249	3448	9651	5856	2063	8273	4485	0700	6917	3137	9359	18
2410	8600	4793	0988	7185	3385	9588	5792	2000	8210	4422	0637	6854	3074	9296	17
2347	8537	4729	0924	7122	3322	9524	5729	1937	8147	4359	0574	6791	3011	9233	16
2283	8473	4666	0861	7059	3259	9461	5666	1873	8083	4296	0511	6728	2948	9170	15
2220	8410	4602	0798	6995	3195	9398	5603	1810	8020	4233	0448	6665	2885	9107	14
2156	8346	4539	0734	6932	3132	9334	5540	1747	7957	4170	0384	6602	2822	9044	13
2093	8283	4476	0671	6868	3069	9271	5476	1684	7894	4106	0321	6539	2759	8981	12
2029	8219	4412	0607	6805	3005	9208	5413	1621	7831	4043	0258	6476	2696	8918	11
1966	8156	4349	0544	6742	2942	9145	5350	1558	7768	3980	0195	6413	2633	8855	10
1902	8093	4285	0481	6678	2879	9081	5287	1494	7705	3917	0132	6350	2570	8792	9
1839	8029	4222	0417	6615	2815	9018	5223	1431	7641	3854	0069	6287	2507	8729	8
1775	7966	4158	0354	6552	2752	8955	5160	1368	7578	3791	0006	6224	2444	8666	7
1712	7902	4095	0290	6488	2689	8892	5097	1305	7515	3728	9943	6161	2381	8603	6
1648	7839	4032	0227	6425	2625	8828	5034	1242	7452	3665	9880	6098	2318	8540	5
1585	7775	3968	0164	6362	2562	8765	4971	1178	7389	3602	9817	6035	2255	8477	4
1521	7712	3905	0100	6298	2499	8702	4907	1115	7326	3539	9754	5972	2192	8415	3
1458	7648	3841	0037	6235	2436	8639	4844	1052	7263	3475	9691	5909	2129	8352	2
1394	7585	3778	9974	6172	2372	8575	4781	0989	7199	3412	9628	5846	2066	8289	1
1331	7521	3714	9910	6108	2309	8512	4718	0926	7136	3349	9565	5783	2003	8226	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	"

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9. 554	9. 554	9. 554	9. 555	9. 555	9. 555	9. 556	9. 556	9. 556	9. 557	9. 557	9. 557	9. 558	9. 558	9. 558
0	3292	6581	9868	3152	6433	9711	2987	6259	9529	2796	6060	9321	2579	5835	9088
1	3346	6636	9923	3207	6488	9766	3041	6314	9583	2850	6114	9375	2634	5889	9142
2	3401	6691	9977	3261	6542	9820	3096	6368	9638	2904	6168	9430	2688	5943	9196
3	3456	6746	0032	3316	6597	9875	3150	6423	9692	2959	6223	9484	2742	5998	9250
4	3511	6800	0087	3371	6652	9930	3205	6477	9747	3013	6277	9538	2796	6052	9304
5	3566	6855	0142	3425	6706	9984	3259	6532	9801	3068	6332	9593	2851	6106	9359
6	3621	6910	0196	3480	6761	0039	3314	6586	9856	3122	6386	9647	2905	6160	9413
7	3676	6965	0251	3535	6816	0093	3368	6641	9910	3177	6440	9701	2959	6215	9467
8	3730	7020	0306	3590	6870	0148	3423	6695	9964	3231	6495	9756	3014	6269	9521
9	3785	7074	0361	3644	6925	0203	3478	6750	0019	3285	6549	9810	3068	6323	9575
10	3840	7129	0415	3699	6979	0257	3532	6804	0073	3340	6603	9864	3122	6377	9630
11	3895	7184	0470	3754	7034	0312	3587	6859	0128	3394	6658	9918	3176	6431	9684
12	3950	7239	0525	3808	7089	0366	3641	6913	0182	3449	6712	9973	3231	6486	9738
13	4005	7294	0580	3863	7143	0421	3696	6968	0237	3503	6766	0027	3285	6540	9792
14	4059	7348	0634	3918	7198	0476	3750	7022	0291	3557	6821	0081	3339	6594	9846
15	4114	7403	0689	3972	7253	0530	3805	7077	0346	3612	6875	0136	3393	6648	9900
16	4169	7458	0744	4027	7307	0585	3859	7131	0400	3666	6930	0190	3448	6703	9955
17	4224	7513	0799	4082	7362	0639	3914	7186	0455	3721	6984	0244	3502	6757	0009
18	4279	7568	0853	4136	7417	0694	3969	7240	0509	3775	7038	0299	3556	6811	0063
19	4334	7622	0908	4191	7471	0749	4023	7295	0564	3830	7093	0353	3611	6865	0117
20	4388	7677	0963	4246	7526	0803	4078	7349	0618	3884	7147	0407	3665	6919	0171
21	4443	7732	1018	4301	7581	0858	4132	7404	0672	3938	7201	0462	3719	6974	0226
22	4498	7787	1072	4355	7635	0912	4187	7458	0727	3993	7256	0516	3773	7028	0280
23	4553	7841	1127	4410	7690	0967	4241	7513	0781	4047	7310	0570	3828	7082	0334
24	4608	7896	1182	4465	7745	1022	4296	7567	0836	4102	7364	0625	3882	7136	0388
25	4663	7951	1237	4519	7799	1076	4350	7622	0890	4156	7419	0679	3936	7191	0442
26	4717	8006	1291	4574	7854	1131	4405	7676	0945	4210	7473	0733	3990	7245	0496
27	4772	8061	1346	4629	7908	1185	4459	7731	0999	4265	7528	0788	4045	7299	0551
28	4827	8115	1401	4683	7963	1240	4514	7785	1054	4319	7582	0842	4099	7353	0605
29	4882	8170	1456	4738	8018	1295	4569	7840	1108	4374	7636	0896	4153	7407	0659
30	4937	8225	1510	4793	8072	1349	4623	7894	1163	4428	7691	0950	4207	7462	0713
31	4992	8280	1565	4847	8127	1404	4678	7949	1217	4482	7745	1005	4262	7516	0767
32	5046	8335	1620	4902	8182	1458	4732	8003	1271	4537	7799	1059	4316	7570	0821
33	5101	8389	1674	4957	8236	1513	4787	8058	1326	4591	7854	1113	4370	7624	0876
34	5156	8444	1729	5011	8291	1568	4841	8112	1380	4646	7908	1168	4424	7679	0930
35	5211	8499	1784	5066	8346	1622	4896	8167	1435	4700	7962	1222	4479	7733	0984
36	5266	8554	1839	5121	8400	1677	4950	8221	1489	4754	8017	1276	4533	7787	1038
37	5321	8608	1893	5176	8455	1731	5005	8276	1544	4809	8071	1331	4587	7841	1092
38	5375	8663	1948	5230	8509	1786	5059	8330	1598	4863	8125	1385	4642	7895	1146
39	5430	8718	2003	5285	8564	1840	5114	8385	1653	4918	8180	1439	4696	7950	1201
40	5485	8773	2058	5340	8619	1895	5169	8439	1707	4972	8234	1493	4750	8004	1255
41	5540	8827	2112	5394	8673	1950	5223	8494	1761	5026	8288	1548	4804	8058	1309
42	5595	8882	2167	5449	8728	2004	5278	8548	1816	5081	8343	1602	4859	8112	1363
43	5649	8937	2222	5504	8783	2059	5332	8603	1870	5135	8397	1656	4913	8166	1417
44	5704	8992	2276	5558	8837	2113	5387	8657	1925	5190	8451	1711	4967	8221	1471
45	5759	9047	2331	5613	8892	2168	5441	8712	1979	5244	8506	1765	5021	8275	1525
46	5814	9101	2386	5668	8946	2223	5496	8766	2034	5298	8560	1819	5076	8329	1580
47	5869	9156	2441	5722	9001	2277	5550	8821	2088	5353	8615	1874	5130	8383	1634
48	5924	9211	2495	5777	9056	2332	5605	8875	2142	5407	8669	1928	5184	8437	1688
49	5978	9266	2550	5832	9110	2386	5659	8929	2197	5461	8723	1982	5238	8492	1742
50	6033	9320	2605	5886	9165	2441	5714	8984	2251	5516	8778	2036	5293	8546	1796
51	6088	9375	2659	5941	9220	2495	5768	9038	2306	5570	8832	2091	5347	8600	1850
52	6143	9430	2714	5996	9274	2550	5823	9093	2360	5625	8886	2145	5401	8654	1905
53	6198	9485	2769	6050	9329	2605	5877	9147	2415	5679	8941	2199	5455	8708	1959
54	6252	9539	2824	6105	9383	2659	5932	9202	2469	5733	8995	2254	5509	8763	2013
55	6307	9594	2878	6160	9438	2714	5986	9256	2523	5788	9049	2308	5564	8817	2067
56	6362	9649	2933	6214	9493	2768	6041	9311	2578	5842	9104	2362	5618	8871	2121
57	6417	9704	2988	6269	9547	2823	6095	9365	2632	5897	9158	2416	5672	8925	2175
58	6472	9758	3042	6324	9602	2877	6150	9420	2687	5951	9212	2471	5726	8979	2229
59	6526	9813	3097	6378	9657	2932	6205	9474	2741	6005	9267	2525	5781	9034	2284
60	6581	9868	3152	6433	9711	2987	6259	9529	2796	6060	9321	2579	5835	9088	2338
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
	9. 970	9. 970	9. 970	9. 970	9. 969	9. 969	9. 969	9. 969	9. 969	9. 969	9. 969	9. 969	9. 969	9. 969	9. 969
0	1517	1032	0547	0061	9574	9087	8600	8112	7624	7136	6647	6158	5668	5177	4687
1	1509	1024	0539	0053	9566	9079	8592	8104	7616	7128	6639	6149	5660	5169	4679
2	1501	1016	0530	0044	9558	9071	8584	8096	7608	7120	6631	6141	5651	5161	4670
3	1493	1008	0522	0036	9550	9063	8576	8088	7600	7111	6622	6133	5643	5153	4662
4	1485	1000	0514	0028	9542	9055	8568	8080	7592	7103	6614	6125	5635	5145	4654
5	1477	0992	0506	0020	9534	9047	8560	8072	7584	7095	6606	6117	5627	5137	4646
6	1469	0984	0498	0012	9526	9039	8551	8064	7576	7087	6598	6109	5619	5128	4638
7	1461	0976	0490	0004	9517	9031	8543	8056	7567	7079	6590	6100	5611	5120	4630
8	1453	0968	0482	9996	9509	9022	8535	8047	7559	7071	6582	6092	5602	5112	4621
9	1445	0959	0474	9988	9501	9014	8527	8039	7551	7063	6574	6084	5594	5104	4613
10	1437	0951	0466	9980	9493	9006	8519	8031	7543	7054	6565	6076	5586	5096	4605
11	1428	0943	0458	9972	9485	8998	8511	8023	7535	7046	6557	6068	5578	5088	4597
12	1420	0935	0449	9963	9477	8990	8503	8015	7527	7038	6549	6060	5570	5079	4589
13	1412	0927	0441	9955	9469	8982	8495	8007	7519	7030	6541	6051	5562	5071	4580
14	1404	0919	0433	9947	9461	8974	8486	7999	7510	7022	6533	6043	5553	5063	4572
15	1396	0911	0425	9939	9453	8966	8478	7990	7502	7014	6525	6035	5545	5055	4564
16	1388	0903	0417	9931	9444	8958	8470	7982	7494	7005	6516	6027	5537	5047	4556
17	1380	0895	0409	9923	9436	8949	8462	7974	7486	6997	6508	6019	5529	5039	4548
18	1372	0887	0401	9915	9428	8941	8454	7966	7478	6989	6500	6011	5521	5030	4540
19	1364	0879	0393	9907	9420	8933	8446	7958	7470	6981	6492	6002	5513	5022	4531
20	1356	0870	0385	9899	9412	8925	8438	7950	7462	6973	6484	5994	5504	5014	4523
21	1348	0862	0377	9890	9404	8917	8430	7942	7453	6965	6476	5986	5496	5006	4515
22	1340	0854	0369	9882	9396	8909	8421	7934	7445	6957	6467	5978	5488	4998	4507
23	1331	0846	0360	9874	9388	8901	8413	7925	7437	6948	6459	5976	5480	4989	4499
24	1323	0838	0352	9866	9380	8893	8405	7917	7429	6940	6451	5962	5472	4981	4490
25	1315	0830	0344	9858	9371	8884	8397	7909	7421	6932	6443	5953	5464	4973	4482
26	1307	0822	0336	9850	9363	8876	8389	7901	7413	6924	6435	5945	5455	4965	4474
27	1299	0814	0328	9842	9355	8868	8381	7893	7405	6916	6427	5937	5447	4957	4466
28	1291	0806	0320	9834	9347	8860	8373	7885	7396	6908	6419	5929	5439	4949	4458
29	1283	0798	0312	9826	9339	8852	8364	7877	7388	6900	6410	5921	5431	4940	4450
30	1275	0789	0304	9818	9331	8844	8356	7868	7380	6891	6402	5913	5423	4932	4441
31	1267	0781	0296	9809	9323	8836	8348	7860	7372	6883	6394	5905	5414	4924	4433
32	1259	0773	0288	9801	9315	8828	8340	7852	7364	6875	6386	5896	5406	4916	4425
33	1251	0765	0279	9793	9307	8819	8332	7844	7356	6867	6378	5888	5398	4908	4417
34	1243	0757	0271	9785	9298	8811	8324	7836	7348	6859	6370	5880	5390	4900	4409
35	1234	0749	0263	9777	9290	8803	8316	7828	7339	6851	6361	5872	5382	4891	4400
36	1226	0741	0255	9769	9282	8795	8308	7820	7331	6843	6353	5864	5374	4883	4392
37	1218	0733	0247	9761	9274	8787	8299	7812	7323	6834	6345	5856	5365	4875	4384
38	1210	0725	0239	9753	9266	8779	8291	7803	7315	6826	6337	5847	5357	4867	4376
39	1202	0717	0231	9745	9258	8771	8283	7795	7307	6818	6329	5839	5349	4859	4368
40	1194	0709	0223	9736	9250	8763	8275	7787	7299	6810	6321	5831	5341	4850	4360
41	1186	0700	0215	9728	9242	8754	8267	7779	7291	6802	6313	5823	5333	4842	4351
42	1178	0692	0207	9720	9234	8746	8259	7771	7282	6794	6304	5815	5325	4834	4343
43	1170	0684	0198	9712	9225	8738	8251	7763	7274	6785	6296	5807	5316	4826	4335
44	1162	0676	0190	9704	9217	8730	8243	7755	7266	6777	6288	5798	5308	4818	4327
45	1154	0668	0182	9696	9209	8722	8234	7746	7258	6769	6280	5790	5300	4810	4319
46	1145	0660	0174	9688	9201	8714	8226	7738	7250	6761	6272	5782	5292	4801	4310
47	1137	0652	0166	9680	9193	8706	8218	7730	7242	6753	6264	5774	5284	4793	4302
48	1129	0644	0158	9672	9185	8698	8210	7722	7234	6745	6255	5766	5276	4785	4294
49	1121	0636	0150	9663	9177	8690	8202	7714	7225	6737	6247	5758	5267	4777	4286
50	1113	0628	0142	9655	9169	8681	8194	7706	7217	6728	6239	5749	5259	4769	4278
51	1105	0620	0134	9647	9160	8673	8186	7698	7209	6720	6231	5741	5251	4760	4269
52	1097	0611	0125	9639	9152	8665	8178	7689	7201	6712	6223	5733	5243	4752	4261
53	1089	0603	0117	9631	9144	8657	8169	7681	7193	6704	6215	5725	5235	4744	4253
54	1081	0595	0109	9623	9136	8649	8161	7673	7185	6696	6206	5717	5227	4736	4245
55	1073	0587	0101	9615	9128	8641	8153	7665	7177	6688	6198	5709	5218	4728	4237
56	1065	0579	0093	9607	9120	8633	8145	7657	7168	6679	6190	5700	5210	4720	4229
57	1056	0571	0085	9599	9112	8625	8137	7649	7160	6671	6182	5692	5202	4711	4220
58	1048	0563	0077	9590	9104	8616	8129	7641	7152	6663	6174	5684	5194	4703	4212
59	1040	0555	0069	9582	9096	8608	8121	7632	7144	6655	6166	5676	5186	4695	4204
60	1032	0547	0061	9574	9087	8600	8112	7624	7136	6647	6158	5668	5177	4687	4196
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

21 Deg. Tangent

"	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
	9. 584	9. 584	9. 584	9. 585	9. 585	9. 586	9. 586	9. 586	9. 587	9. 587	9. 587	9. 588	9. 588	9. 589	9. 589
0	1774	5549	9321	3091	6859	0624	4386	8147	1904	5660	9413	3163	6912	0657	4401
1	1837	5612	9384	3154	6921	0686	4449	8209	1967	5722	9475	3226	6974	0720	4463
2	1900	5675	9447	3217	6984	0749	4512	8272	2030	5785	9538	3288	7036	0782	4526
3	1963	5738	9510	3280	7047	0812	4574	8335	2092	5847	9600	3351	7099	0845	4588
4	2026	5801	9573	3342	7110	0875	4637	8397	2155	5910	9663	3413	7161	0907	4650
5	2089	5863	9636	3405	7173	0937	4700	8460	2217	5973	9725	3476	7224	0969	4713
6	2152	5926	9698	3468	7235	1000	4762	8522	2280	6035	9788	3538	7286	1032	4775
7	2215	5989	9761	3531	7298	1063	4825	8585	2343	6098	9850	3601	7349	1094	4837
8	2278	6052	9824	3594	7361	1126	4888	8648	2405	6160	9913	3663	7411	1157	4900
9	2341	6115	9887	3656	7424	1188	4951	8710	2468	6223	9976	3726	7474	1219	4962
10	2404	6178	9950	3719	7486	1251	5013	8773	2530	6285	0038	3788	7536	1281	5025
11	2466	6241	0013	3782	7549	1314	5076	8836	2593	6348	0101	3851	7599	1344	5087
12	2529	6304	0075	3845	7612	1376	5139	8898	2656	6411	0163	3913	7661	1406	5149
13	2592	6367	0138	3908	7675	1439	5201	8961	2718	6473	0226	3976	7723	1469	5212
14	2655	6429	0201	3971	7737	1502	5264	9024	2781	6536	0288	4038	7786	1531	5274
15	2718	6492	0264	4033	7800	1565	5327	9086	2843	6598	0351	4101	7848	1593	5336
16	2781	6555	0327	4096	7863	1627	5389	9149	2906	6661	0413	4163	7911	1656	5399
17	2844	6618	0390	4159	7926	1690	5452	9212	2969	6723	0476	4226	7973	1718	5461
18	2907	6681	0453	4222	7988	1753	5515	9274	3031	6786	0538	4288	8036	1781	5523
19	2970	6744	0515	4285	8051	1815	5577	9337	3094	6848	0601	4351	8098	1843	5586
20	3033	6807	0578	4347	8114	1878	5640	9399	3156	6911	0663	4413	8160	1905	5648
21	3096	6870	0641	4410	8177	1941	5703	9462	3219	6974	0726	4476	8223	1968	5710
22	3159	6932	0704	4473	8239	2004	5765	9525	3282	7036	0788	4538	8285	2030	5773
23	3222	6995	0767	4536	8302	2066	5828	9587	3344	7099	0851	4600	8348	2093	5835
24	3284	7058	0830	4598	8365	2129	5891	9650	3407	7161	0913	4663	8410	2155	5898
25	3347	7121	0892	4661	8428	2192	5953	9713	3469	7224	0976	4725	8473	2217	5960
26	3410	7184	0955	4724	8491	2254	6016	9775	3532	7286	1038	4788	8535	2280	6022
27	3473	7247	1018	4787	8553	2317	6079	9838	3595	7349	1101	4850	8598	2342	6085
28	3536	7310	1081	4850	8616	2380	6141	9901	3657	7411	1163	4913	8660	2405	6147
29	3599	7373	1144	4912	8679	2443	6204	9963	3720	7474	1226	4975	8722	2467	6209
30	3662	7435	1207	4975	8742	2505	6267	0026	3782	7537	1288	5038	8785	2529	6272
31	3725	7498	1269	5038	8804	2568	6329	0088	3845	7599	1351	5100	8847	2592	6334
32	3788	7561	1332	5101	8867	2631	6392	0151	3908	7662	1413	5163	8910	2654	6396
33	3851	7624	1395	5164	8930	2693	6455	0214	3970	7724	1476	5225	8972	2717	6459
34	3914	7687	1458	5226	8993	2756	6517	0276	4033	7787	1538	5288	9035	2779	6521
35	3976	7750	1521	5289	9055	2819	6580	0339	4095	7849	1601	5350	9097	2841	6583
36	4039	7813	1584	5352	9118	2882	6643	0402	4158	7912	1663	5413	9159	2904	6646
37	4102	7876	1646	5415	9181	2944	6705	0464	4220	7974	1726	5475	9222	2966	6708
38	4165	7938	1709	5478	9243	3007	6768	0527	4283	8037	1788	5538	9284	3029	6770
39	4228	8001	1772	5540	9306	3070	6831	0589	4346	8099	1851	5600	9347	3091	6833
40	4291	8064	1835	5603	9369	3132	6893	0652	4408	8162	1913	5662	9409	3153	6895
41	4354	8127	1898	5666	9432	3195	6956	0715	4471	8225	1976	5725	9471	3216	6958
42	4417	8190	1961	5729	9494	3258	7019	0777	4533	8286	2038	5787	9534	3278	7020
43	4480	8253	2023	5791	9557	3321	7081	0840	4596	8349	2101	5850	9596	3340	7082
44	4543	8316	2086	5854	9620	3383	7144	0903	4659	8411	2163	5912	9659	3403	7145
45	4606	8378	2149	5917	9683	3446	7207	0965	4721	8474	2226	5975	9721	3465	7207
46	4668	8441	2212	5980	9745	3509	7269	1028	4784	8536	2288	6037	9784	3528	7269
47	4731	8504	2275	6043	9808	3571	7332	1090	4846	8599	2351	6100	9846	3590	7332
48	4794	8567	2337	6105	9871	3634	7395	1153	4909	8661	2413	6162	9908	3652	7394
49	4857	8630	2400	6168	9934	3697	7457	1216	4971	8724	2476	6225	9971	3715	7456
50	4920	8693	2463	6231	9996	3759	7520	1278	5034	8787	2538	6287	0033	3777	7519
51	4983	8756	2526	6294	0059	3822	7583	1341	5097	8850	2601	6350	0096	3839	7581
52	5046	8818	2589	6356	0122	3885	7645	1403	5159	8913	2663	6412	0158	3902	7643
53	5109	8881	2652	6419	0185	3948	7708	1466	5222	8975	2726	6474	0221	3964	7706
54	5172	8944	2714	6482	0247	4010	7771	1529	5284	9038	2788	6537	0283	4027	7768
55	5235	9007	2777	6545	0310	4073	7833	1591	5347	9100	2851	6599	0345	4089	7830
56	5297	9070	2840	6608	0373	4136	7896	1654	5409	9163	2913	6662	0408	4151	7893
57	5360	9133	2903	6670	0436	4198	7959	1717	5472	9225	2976	6724	0470	4214	7955
58	5423	9196	2966	6733	0498	4261	8021	1779	5535	9288	3038	6787	0533	4276	8017
59	5486	9258	3028	6796	0561	4324	8084	1842	5597	9350	3101	6849	0595	4338	8080
60	5549	9321	3091	6859	0624	4386	8147	1904	5660	9413	3163	6912	0657	4401	8142
"	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Tangent Deg. 68

21 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13	14′	"
10. 415	10. 415	10. 415	10. 414	10. 414	10. 413	10. 413	10. 413	10. 412	10. 412	10. 412	10. 411	10. 411	10. 410	10. 410	
8226	4451	0679	6909	3141	9376	5614	1853	8096	4340	0587	6837	3088	9343	5599	60
8163	4388	0616	6846	3079	9314	5551	1791	8033	4278	0525	6774	3026	9280	5537	59
8100	4325	0553	6783	3016	9251	5488	1728	7970	4215	0462	6712	2964	9218	5474	58
8037	4262	0490	6720	2953	9188	5426	1665	7908	4153	0400	6649	2901	9155	5412	57
7974	4199	0427	6658	2890	9125	5363	1603	7845	4090	0337	6587	2839	9093	5350	56
7911	4137	0364	6595	2827	9063	5300	1540	7783	4027	0275	6524	2776	9031	5287	55
7848	4074	0302	6532	2765	9000	5238	1478	7720	3965	0212	6462	2714	8968	5225	54
7785	4011	0239	6469	2702	8937	5175	1415	7657	3902	0150	6399	2651	8906	5163	53
7722	3948	0176	6406	2639	8874	5112	1352	7595	3840	0087	6337	2589	8843	5100	52
7659	3885	0113	6344	2576	8812	5049	1290	7532	3777	0024	6274	2526	8781	5038	51
7596	3822	0050	6281	2514	8749	4987	1227	7470	3715	9962	6212	2464	8719	4975	50
7534	3759	9987	6218	2451	8686	4924	1164	7407	3652	9899	6149	2401	8656	4913	49
7471	3696	9925	6155	2388	8624	4861	1102	7344	3589	9837	6087	2339	8594	4851	48
7408	3633	9862	6092	2325	8561	4799	1039	7282	3527	9774	6024	2277	8531	4788	47
7345	3571	9799	6029	2263	8498	4736	0976	7219	3464	9712	6062	2214	8469	4726	46
7282	3508	9736	5967	2200	8435	4673	0914	7157	3402	9649	5899	2152	8407	4664	45
7219	3445	9673	5904	2137	8373	4611	0851	7094	3339	9587	5837	2089	8344	4601	44
7156	3382	9610	5841	2074	8310	4548	0788	7031	3277	9524	5774	2027	8282	4539	43
7093	3319	9547	5778	2012	8247	4485	0726	6969	3214	9462	5712	1964	8219	4477	42
7030	3256	9485	5715	1949	8185	4423	0663	6906	3152	9399	5649	1902	8157	4414	41
6967	3193	9422	5653	1886	8122	4360	0601	6844	3089	9337	5587	1840	8095	4352	40
6904	3130	9359	5590	1823	8059	4297	0538	6781	3026	9274	5524	1777	8032	4290	39
6841	3068	9296	5527	1761	7996	4235	0475	6718	2964	9212	5462	1715	7970	4227	38
6778	3005	9233	5464	1698	7934	4172	0413	6656	2901	9149	5400	1652	7907	4165	37
6716	2942	9170	5402	1635	7871	4109	0350	6593	2839	9087	5337	1590	7845	4102	36
6653	2879	9108	5339	1572	7808	4047	0287	6531	2776	9024	5275	1527	7783	4040	35
6590	2816	9045	5276	1509	7746	3984	0225	6468	2714	8962	5212	1465	7720	3978	34
6527	2753	8982	5213	1447	7683	3921	0162	6405	2651	8899	5150	1402	7658	3915	33
6464	2690	8919	5150	1384	7620	3859	0099	6343	2589	8837	5087	1340	7595	3853	32
6401	2627	8856	5088	1321	7557	3796	0037	6280	2526	8774	5025	1278	7533	3791	31
6338	2565	8793	5025	1258	7495	3733	9974	6218	2463	8712	4962	1215	7471	3728	30
6275	2502	8731	4962	1196	7432	3671	9912	6155	2401	8649	4900	1153	7408	3666	29
6212	2439	8668	4899	1133	7369	3608	9849	6092	2338	8587	4837	1090	7346	3604	28
6149	2376	8605	4836	1070	7307	3545	9786	6030	2276	8524	4775	1028	7283	3541	27
6086	2313	8542	4774	1007	7244	3483	9724	5967	2213	8462	4712	0965	7221	3479	26
6024	2250	8479	4711	0945	7181	3420	9661	5905	2151	8399	4650	0903	7159	3417	25
5961	2187	8416	4648	0882	7118	3357	9598	5842	2088	8337	4587	0841	7096	3354	24
5898	2124	8354	4585	0819	7056	3295	9536	5780	2026	8274	4525	0778	7034	3292	23
5835	2062	8291	4522	0757	6993	3232	9473	5717	1963	8212	4462	0716	6971	3230	22
5772	1999	8228	4460	0694	6930	3169	9411	5654	1901	8149	4400	0653	6909	3167	21
5709	1936	8165	4397	0631	6868	3107	9348	5592	1838	8087	4338	0591	6847	3105	20
5646	1873	8102	4334	0568	6805	3044	9285	5529	1775	8024	4275	0529	6784	3042	19
5583	1810	8039	4271	0506	6742	2981	9223	5467	1714	7962	4213	0466	6722	2980	18
5520	1747	7977	4209	0443	6679	2919	9160	5404	1651	7899	4150	0404	6660	2918	17
5457	1684	7914	4146	0380	6617	2856	9097	5341	1589	7837	4088	0341	6597	2855	16
5394	1622	7851	4083	0317	6554	2793	9035	5279	1526	7774	4025	0279	6535	2793	15
5332	1559	7788	4020	0255	6491	2731	8972	5216	1464	7712	3963	0216	6472	2731	14
5269	1496	7725	3957	0192	6429	2668	8910	5154	1401	7649	3900	0154	6410	2668	13
5206	1433	7663	3895	0129	6366	2605	8847	5091	1339	7587	3838	0092	6348	2606	12
5143	1370	7600	3832	0066	6303	2543	8784	5029	1276	7524	3775	0029	6285	2544	11
5080	1307	7537	3769	0004	6241	2480	8722	4966	1213	7462	3713	9967	6223	2481	10
5017	1244	7474	3706	9941	6178	2417	8659	4903	1150	7399	3650	9904	6161	2419	9
4954	1182	7411	3644	9878	6115	2355	8597	4841	1087	7337	3588	9842	6098	2357	8
4891	1119	7348	3581	9815	6052	2292	8534	4778	1025	7274	3526	9779	6036	2294	7
4828	1056	7286	3518	9753	5990	2229	8471	4716	0962	7212	3463	9717	5973	2232	6
4765	0993	7223	3455	9690	5927	2167	8409	4653	0900	7149	3401	9655	5911	2170	5
4703	0930	7160	3392	9627	5864	2104	8346	4591	0837	7087	3338	9592	5849	2107	4
4640	0867	7097	3330	9564	5802	2041	8283	4528	0775	7024	3276	9530	5786	2045	3
4577	0804	7034	3267	9502	5739	1979	8221	4465	0712	6962	3213	9467	5724	1983	2
4514	0742	6972	3204	9439	5676	1916	8158	4403	0650	6899	3151	9405	5662	1920	1
4451	0679	6909	3141	9376	5614	1853	8096	4340	0587	6837	3088	9343	5599	1858	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	"

Tangent Deg. 68

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 559	9. 559	9. 559	9. 560	9. 560	9. 560	9. 561	9. 561	9. 561	9. 562	9. 562	9. 562	9. 563	9. 563	9. 563
0	2338	5585	8829	2071	5310	8546	1779	5010	8237	1462	4685	7904	1121	4335	7546
1	2392	5639	8883	2125	5364	8600	1833	5063	8291	1516	4738	7958	1174	4388	7599
2	2446	5693	8937	2179	5418	8654	1887	5117	8345	1570	4792	8011	1228	4442	7653
3	2500	5747	8991	2233	5472	8708	1941	5171	8399	1623	4846	8065	1281	4495	7706
4	2554	5801	9046	2287	5526	8761	1995	5225	8452	1677	4899	8119	1335	4549	7760
5	2608	5855	9100	2341	5580	8815	2048	5279	8506	1731	4953	8172	1389	4602	7813
6	2663	5909	9154	2395	5634	8869	2102	5333	8560	1785	5007	8226	1442	4656	7867
7	2717	5964	9208	2449	5687	8923	2156	5386	8614	1838	5060	8279	1496	4709	7920
8	2771	6018	9262	2503	5741	8977	2210	5440	8668	1892	5114	8333	1549	4763	7974
9	2825	6072	9316	2557	5795	9031	2264	5494	8721	1946	5168	8387	1603	4816	8027
10	2879	6126	9370	2611	5849	9085	2318	5548	8775	2000	5221	8440	1657	4870	8081
11	2933	6180	9424	2665	5903	9139	2372	5602	8829	2053	5275	8494	1710	4924	8134
12	2987	6234	9478	2719	5957	9193	2425	5655	8883	2107	5329	8548	1764	4977	8188
13	3042	6288	9532	2773	6011	9247	2479	5709	8936	2161	5382	8601	1817	5031	8241
14	3096	6342	9586	2827	6065	9301	2533	5763	8990	2214	5436	8655	1871	5084	8295
15	3150	6396	9640	2881	6119	9354	2587	5817	9044	2268	5490	8708	1924	5138	8348
16	3204	6450	9694	2935	6173	9408	2641	5871	9098	2322	5543	8762	1978	5191	8402
17	3258	6504	9748	2989	6227	9462	2695	5924	9151	2376	5597	8816	2032	5245	8455
18	3312	6559	9802	3043	6281	9516	2749	5978	9205	2429	5651	8869	2085	5298	8509
19	3366	6613	9856	3097	6335	9570	2802	6032	9259	2483	5704	8923	2139	5352	8562
20	3420	6667	9910	3151	6389	9624	2856	6086	9313	2537	5758	8977	2192	5405	8616
21	3475	6721	9964	3205	6443	9678	2910	6140	9366	2590	5812	9030	2246	5459	8669
22	3529	6775	0018	3259	6497	9732	2964	6193	9420	2644	5865	9084	2299	5512	8723
23	3583	6829	0072	3313	6551	9786	3018	6247	9474	2698	5919	9137	2353	5566	8776
24	3637	6883	0126	3367	6605	9839	3072	6301	9528	2752	5973	9191	2407	5619	8830
25	3691	6937	0180	3421	6658	9893	3125	6355	9581	2805	6026	9245	2460	5673	8883
26	3745	6991	0234	3475	6712	9947	3179	6409	9635	2859	6080	9298	2514	5727	8937
27	3799	7045	0288	3529	6766	0001	3233	6462	9689	2913	6134	9352	2567	5780	8990
28	3853	7099	0342	3583	6820	0055	3287	6516	9743	2966	6187	9405	2621	5834	9043
29	3908	7153	0396	3637	6874	0109	3341	6570	9796	3020	6241	9459	2674	5887	9097
30	3962	7207	0450	3691	6928	0163	3395	6624	9850	3074	6295	9513	2728	5941	9150
31	4016	7262	0505	3745	6982	0217	3449	6678	9904	3127	6348	9566	2782	5994	9204
32	4070	7316	0559	3799	7036	0271	3502	6731	9958	3181	6402	9620	2835	6048	9257
33	4124	7370	0613	3853	7090	0324	3556	6785	0011	3235	6456	9674	2889	6101	9311
34	4178	7424	0667	3907	7144	0378	3610	6839	0065	3289	6509	9727	2942	6155	9364
35	4232	7478	0721	3961	7198	0432	3664	6893	0119	3342	6563	9781	2996	6208	9418
36	4286	7532	0775	4015	7252	0486	3718	6947	0173	3396	6617	9834	3049	6262	9471
37	4340	7586	0829	4069	7306	0540	3772	7000	0226	3450	6670	9888	3103	6315	9525
38	4395	7640	0883	4123	7360	0594	3825	7054	0280	3503	6724	9942	3157	6369	9578
39	4449	7694	0937	4177	7414	0648	3879	7108	0334	3557	6777	9995	3210	6422	9632
40	4503	7748	0991	4230	7467	0702	3933	7162	0388	3611	6831	0049	3264	6476	9685
41	4557	7802	1045	4284	7521	0756	3987	7216	0441	3664	6885	0102	3317	6529	9739
42	4611	7856	1099	4338	7575	0809	4041	7269	0495	3718	6938	0156	3371	6583	9792
43	4665	7910	1153	4392	7629	0863	4095	7323	0549	3772	6992	0210	3424	6636	9846
44	4719	7964	1207	4446	7683	0917	4148	7377	0603	3826	7046	0263	3478	6690	9899
45	4773	8018	1261	4500	7737	0971	4202	7431	0656	3879	7099	0317	3531	6743	9952
46	4827	8073	1315	4554	7791	1025	4256	7484	0710	3933	7153	0370	3585	6797	0006
47	4882	8127	1369	4608	7845	1079	4310	7538	0764	3987	7207	0424	3639	6850	0059
48	4936	8181	1423	4662	7899	1133	4364	7592	0818	4040	7260	0478	3692	6904	0113
49	4990	8235	1477	4716	7953	1187	4418	7646	0871	4094	7314	0531	3746	6957	0166
50	5044	8289	1531	4770	8007	1240	4471	7700	0925	4148	7368	0585	3799	7011	0220
51	5098	8343	1585	4824	8061	1294	4525	7753	0979	4201	7421	0638	3853	7064	0273
52	5152	8397	1639	4878	8115	1348	4579	7807	1032	4255	7475	0692	3906	7118	0327
53	5206	8451	1693	4932	8168	1402	4633	7861	1086	4309	7529	0746	3960	7171	0380
54	5260	8505	1747	4986	8222	1456	4687	7915	1140	4362	7582	0799	4013	7225	0434
55	5314	8559	1801	5040	8276	1510	4741	7968	1194	4416	7636	0853	4067	7278	0487
56	5369	8613	1855	5094	8330	1564	4794	8022	1247	4470	7689	0906	4120	7332	0541
57	5423	8667	1909	5148	8384	1618	4848	8076	1301	4523	7743	0960	4174	7385	0594
58	5477	8721	1963	5202	8438	1671	4902	8130	1355	4577	7797	1014	4228	7439	0647
59	5531	8775	2017	5256	8492	1725	4956	8184	1409	4631	7850	1067	4281	7492	0701
60	5585	8829	2071	5310	8546	1779	5010	8237	1462	4685	7904	1121	4335	7546	0754
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 969	9. 969	9. 969	9. 969	9. 969	9. 969	9. 969	9. 969	9. 969	9. 968	9. 968	9. 968	9. 968	9. 968	9. 968
60	4196	3704	3212	2720	2227	1734	1241	0746	0252	9757	9262	8766	8270	7773	7276
59	4188	3696	3204	2712	2219	1726	1232	0738	0244	9749	9254	8758	8262	7765	7268
58	4179	3688	3196	2704	2211	1718	1224	0730	0236	9741	9245	8750	8253	7757	7260
57	4171	3680	3188	2695	2203	1709	1216	0722	0227	9732	9237	8741	8245	7749	7252
56	4163	3672	3180	2687	2194	1701	1208	0714	0219	9724	9229	8733	8237	7740	7243
55	4155	3663	3171	2679	2186	1693	1199	0705	0211	9716	9221	8725	8229	7732	7235
54	4147	3655	3163	2671	2178	1685	1191	0697	0203	9708	9212	8717	8220	7724	7227
53	4138	3647	3155	2663	2170	1677	1183	0689	0194	9699	9204	8708	8212	7715	7218
52	4130	3639	3147	2654	2162	1668	1175	0681	0186	9691	9196	8700	8204	7707	7210
51	4122	3631	3139	2646	2153	1660	1166	0672	0178	9683	9188	8692	8196	7699	7202
50	4114	3622	3130	2638	2145	1652	1158	0664	0170	9675	9179	8683	8187	7691	7194
49	4106	3614	3122	2630	2137	1644	1150	0656	0161	9666	9171	8675	8179	7682	7185
48	4098	3606	3114	2622	2129	1635	1142	0648	0153	9658	9163	8667	8171	7674	7177
47	4089	3598	3106	2613	2120	1627	1134	0639	0145	9650	9155	8659	8162	7666	7169
46	4081	3590	3098	2605	2112	1619	1125	0631	0137	9642	9146	8650	8154	7658	7160
45	4073	3581	3089	2597	2104	1611	1117	0623	0128	9633	9138	8642	8146	7649	7152
44	4065	3573	3081	2589	2096	1603	1109	0615	0120	9625	9130	8634	8138	7641	7144
43	4057	3565	3073	2580	2088	1594	1101	0606	0112	9617	9121	8626	8129	7633	7136
42	4048	3557	3065	2572	2079	1586	1092	0598	0104	9609	9113	8617	8121	7624	7127
41	4040	3549	3057	2564	2071	1578	1084	0590	0095	9600	9105	8609	8113	7615	7119
40	4032	3540	3048	2556	2063	1570	1076	0582	0087	9592	9097	8601	8105	7608	7111
39	4024	3532	3040	2548	2055	1561	1068	0573	0079	9584	9088	8593	8096	7600	7102
38	4016	3524	3032	2539	2047	1553	1059	0565	0071	9576	9080	8584	8088	7591	7094
37	4007	3516	3024	2531	2038	1545	1051	0557	0062	9567	9072	8576	8080	7583	7086
36	3999	3508	3016	2523	2030	1537	1043	0549	0054	9559	9064	8568	8071	7575	7078
35	3991	3499	3007	2515	2022	1529	1035	0541	0046	9551	9055	8559	8063	7566	7069
34	3983	3491	2999	2507	2014	1520	1026	0532	0038	9543	9047	8551	8055	7558	7061
33	3975	3483	2991	2498	2005	1512	1018	0524	0029	9534	9039	8543	8047	7550	7053
32	3966	3475	2983	2490	1997	1504	1010	0516	0021	9526	9031	8535	8038	7542	7044
31	3958	3467	2974	2482	1989	1496	1002	0508	0013	9518	9022	8526	8030	7533	7036
30	3950	3458	2966	2474	1981	1487	0994	0499	0005	9510	9014	8518	8022	7525	7028
29	3942	3450	2958	2466	1973	1479	0985	0491	9996	9501	9006	8510	8013	7517	7019
28	3934	3442	2950	2457	1964	1471	0977	0483	9988	9493	8998	8502	8005	7508	7011
27	3926	3434	2942	2449	1956	1463	0969	0475	9980	9485	8989	8493	7997	7500	7003
26	3917	3426	2933	2441	1948	1454	0961	0466	9972	9477	8981	8485	7989	7492	6995
25	3909	3417	2925	2433	1940	1446	0952	0458	9963	9468	8973	8477	7980	7484	6986
24	3901	3409	2917	2424	1931	1438	0944	0450	9955	9460	8964	8469	7972	7475	6978
23	3893	3401	2909	2416	1923	1430	0936	0442	9947	9452	8956	8460	7964	7467	6970
22	3885	3393	2901	2408	1915	1422	0928	0433	9939	9444	8948	8452	7956	7459	6961
21	3876	3385	2892	2400	1907	1413	0919	0425	9930	9435	8940	8444	7947	7450	6953
20	3868	3376	2884	2392	1899	1405	0911	0417	9922	9427	8931	8435	7939	7442	6945
19	3860	3368	2876	2383	1890	1397	0903	0409	9914	9419	8923	8427	7931	7434	6937
18	3852	3360	2868	2375	1882	1389	0895	0400	9906	9411	8915	8419	7922	7426	6928
17	3844	3352	2860	2367	1874	1380	0887	0392	9897	9402	8907	8411	7914	7417	6920
16	3835	3344	2851	2359	1866	1372	0878	0384	9889	9394	8898	8402	7906	7409	6912
15	3827	3335	2843	2351	1857	1364	0870	0376	9881	9386	8890	8394	7898	7401	6903
14	3819	3327	2835	2342	1849	1356	0862	0367	9873	9377	8882	8386	7889	7392	6895
13	3811	3319	2827	2334	1841	1348	0854	0359	9864	9369	8874	8378	7881	7384	6887
12	3803	3311	2819	2326	1833	1339	0845	0351	9856	9361	8865	8369	7873	7376	6879
11	3794	3303	2810	2318	1825	1331	0837	0343	9848	9353	8857	8361	7865	7368	6870
10	3786	3294	2802	2309	1816	1323	0829	0334	9840	9344	8849	8353	7856	7359	6862
9	3778	3286	2794	2301	1808	1315	0821	0326	9831	9336	8841	8344	7848	7351	6854
8	3770	3278	2786	2293	1800	1306	0812	0318	9823	9328	8832	8336	7840	7343	6845
7	3762	3270	2778	2285	1792	1298	0804	0310	9815	9320	8824	8328	7831	7334	6837
6	3753	3262	2769	2277	1783	1290	0796	0302	9807	9311	8816	8320	7823	7326	6829
5	3745	3253	2761	2268	1775	1282	0788	0293	9798	9303	8807	8311	7815	7318	6820
4	3737	3245	2753	2260	1767	1273	0779	0285	9790	9295	8799	8303	7807	7310	6812
3	3729	3237	2745	2252	1759	1265	0771	0277	9782	9287	8791	8295	7798	7301	6804
2	3721	3229	2736	2244	1751	1257	0763	0269	9774	9278	8783	8287	7790	7293	6796
1	3713	3221	2728	2236	1742	1249	0755	0260	9765	9270	8774	8278	7782	7285	6787
0	3704	3212	2720	2227	1734	1241	0746	0252	9757	9262	8766	8270	7773	7276	6779
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

″	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9.589	9.590	9.590	9.590	9.591	9.591	9.592	9.592	9.592	9.593	9.593	9.593	9.594	9.594	9.595
0	8142	1881	5617	9351	3082	6812	0539	4263	7985	1705	5423	9138	2851	6561	0269
1	8204	1943	5679	9413	3145	6874	0601	4325	8047	1767	5485	9200	2913	6623	0331
2	8267	2005	5741	9475	3207	6936	0663	4387	8109	1829	5547	9262	2974	6685	0393
3	8329	2067	5804	9538	3269	6998	0725	4449	8171	1891	5608	9324	3036	6747	0455
4	8391	2130	5866	9600	3331	7060	0787	4511	8233	1953	5670	9385	3098	6808	0517
5	8454	2192	5928	9662	3393	7122	0849	4573	8295	2015	5732	9447	3160	6870	0578
6	8516	2254	5990	9724	3455	7184	0911	4635	8357	2077	5794	9509	3222	6932	0640
7	8578	2317	6053	9786	3518	7247	0973	4697	8419	2139	5856	9571	3284	6994	0702
8	8641	2379	6115	9849	3580	7309	1035	4760	8481	2201	5918	9633	3346	7056	0764
9	8703	2441	6177	9911	3642	7371	1097	4822	8543	2263	5980	9695	3407	7118	0825
10	8765	2503	6239	9973	3704	7433	1159	4884	8605	2325	6042	9757	3469	7179	0887
11	8828	2566	6302	0035	3766	7495	1222	4946	8667	2387	6104	9819	3531	7241	0949
12	8890	2628	6364	0097	3829	7557	1284	5008	8729	2449	6166	9881	3593	7303	1011
13	8952	2690	6426	0160	3891	7619	1346	5070	8791	2511	6228	9942	3655	7365	1073
14	9014	2753	6488	0222	3953	7682	1408	5132	8853	2573	6290	0004	3717	7427	1134
15	9077	2815	6551	0284	4015	7744	1470	5194	8915	2635	6352	0066	3779	7488	1196
16	9139	2877	6613	0346	4077	7806	1532	5256	8977	2697	6414	0128	3840	7550	1258
17	9201	2939	6675	0408	4139	7868	1594	5318	9039	2759	6476	0190	3902	7612	1320
18	9264	3002	6737	0471	4201	7930	1656	5380	9102	2821	6537	0252	3964	7674	1381
19	9326	3064	6800	0533	4264	7992	1718	5442	9164	2883	6599	0314	4026	7736	1443
20	9388	3126	6862	0595	4326	8054	1780	5504	9226	2945	6661	0376	4088	7798	1505
21	9451	3189	6924	0657	4388	8116	1842	5566	9288	3007	6723	0438	4150	7859	1567
22	9513	3251	6986	0719	4450	8178	1905	5628	9350	3069	6785	0499	4211	7921	1629
23	9575	3313	7049	0782	4512	8241	1967	5690	9412	3130	6847	0561	4273	7983	1690
24	9638	3375	7111	0844	4574	8303	2029	5752	9474	3192	6909	0623	4335	8045	1752
25	9700	3438	7173	0906	4637	8365	2091	5814	9536	3254	6971	0685	4397	8107	1814
26	9762	3500	7235	0968	4699	8427	2153	5876	9598	3316	7033	0747	4459	8168	1876
27	9825	3562	7297	1030	4761	8489	2215	5938	9660	3378	7095	0809	4521	8230	1937
28	9887	3625	7360	1093	4823	8551	2277	6000	9722	3440	7157	0871	4583	8292	1999
29	9949	3687	7422	1155	4885	8613	2339	6062	9784	3502	7219	0933	4644	8354	2061
30	0012	3749	7484	1217	4947	8675	2401	6124	9846	3564	7281	0995	4706	8416	2123
31	0074	3811	7546	1279	5010	8738	2463	6187	9908	3626	7342	1056	4768	8477	2184
32	0136	3874	7609	1341	5072	8800	2525	6249	9970	3688	7404	1118	4830	8539	2246
33	0198	3936	7671	1404	5134	8862	2587	6311	0032	3750	7466	1180	4892	8601	2308
34	0261	3998	7733	1466	5196	8924	2649	6373	0094	3812	7528	1242	4954	8663	2370
35	0323	4060	7795	1528	5258	8986	2712	6435	0155	3874	7590	1304	5015	8725	2431
36	0385	4123	7858	1590	5320	9048	2774	6497	0217	3936	7652	1366	5077	8786	2493
37	0448	4185	7920	1652	5382	9110	2836	6559	0279	3998	7714	1428	5139	8848	2555
38	0510	4247	7982	1714	5445	9172	2898	6621	0341	4060	7776	1490	5201	8910	2617
39	0572	4309	8044	1777	5507	9234	2960	6683	0403	4122	7838	1551	5263	8972	2679
40	0635	4372	8106	1839	5569	9297	3022	6745	0465	4184	7900	1613	5325	9034	2740
41	0697	4434	8169	1901	5631	9359	3084	6807	0527	4246	7962	1675	5386	9095	2802
42	0759	4496	8231	1963	5693	9421	3146	6869	0589	4308	8024	1737	5448	9157	2864
43	0822	4559	8293	2025	5755	9483	3208	6931	0651	4370	8085	1799	5510	9219	2926
44	0884	4621	8355	2088	5817	9545	3270	6993	0713	4432	8147	1861	5572	9281	2987
45	0946	4683	8418	2150	5880	9607	3332	7055	0775	4493	8209	1923	5634	9343	3049
46	1008	4745	8480	2212	5942	9669	3394	7117	0837	4555	8271	1985	5696	9404	3111
47	1071	4808	8542	2274	6004	9731	3456	7179	0899	4617	8333	2046	5757	9466	3173
48	1133	4870	8604	2336	6066	9793	3518	7241	0961	4679	8395	2108	5819	9528	3234
49	1195	4932	8666	2399	6128	9855	3580	7303	1023	4741	8457	2170	5881	9590	3296
50	1258	4994	8729	2461	6190	9918	3643	7365	1085	4803	8519	2232	5943	9652	3358
51	1320	5057	8791	2523	6252	9980	3705	7427	1147	4865	8581	2294	6005	9713	3420
52	1382	5119	8853	2585	6315	0042	3767	7489	1209	4927	8643	2356	6067	9775	3481
53	1445	5181	8915	2647	6377	0104	3829	7551	1271	4989	8705	2418	6128	9837	3543
54	1507	5243	8978	2709	6439	0166	3891	7613	1333	5051	8766	2479	6190	9899	3605
55	1569	5306	9040	2772	6501	0228	3953	7675	1395	5113	8828	2541	6252	9960	3667
56	1631	5368	9102	2834	6563	0290	4015	7737	1457	5175	8890	2603	6314	0022	3728
57	1694	5430	9164	2896	6625	0352	4077	7799	1519	5237	8952	2665	6376	0084	3790
58	1756	5492	9226	2958	6687	0414	4139	7861	1581	5299	9014	2727	6438	0146	3852
59	1818	5555	9289	3020	6750	0476	4201	7923	1643	5361	9076	2789	6499	0208	3914
60	1881	5617	9351	3082	6812	0539	4263	7985	1705	5423	9138	2851	6561	0269	3975
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	″
10.410	10.409	10.409	10.409	10.408	10.408	10.407	10.407	10.407	10.406	10.406	10.406	10.405	10.405	10.404	
1858	8119	4383	0649	6918	3188	9461	5737	2015	8295	4577	0862	7149	3439	9731	60
1796	8057	4321	0587	6855	3126	9399	5675	1953	8233	4515	0800	7087	3377	9669	59
1733	7995	4259	0525	6793	3064	9337	5613	1891	8171	4453	0738	7026	3315	9607	58
1671	7933	4196	0462	6731	3002	9275	5551	1829	8109	4392	0676	6964	3253	9545	57
1609	7870	4134	0400	6669	2940	9213	5489	1767	8047	4330	0615	6902	3192	9483	56
1546	7808	4072	0338	6607	2878	9151	5427	1705	7985	4268	0553	6840	3130	9422	55
1484	7746	4010	0276	6545	2816	9089	5365	1643	7923	4206	0491	6778	3068	9360	54
1422	7683	3947	0214	6482	2753	9027	5303	1581	7861	4144	0429	6716	3006	9298	53
1359	7621	3885	0151	6420	2691	8965	5240	1519	7799	4082	0367	6654	2944	9236	52
1297	7559	3823	0089	6358	2629	8903	5178	1457	7737	4020	0305	6593	2882	9175	51
1235	7497	3761	0027	6296	2567	8841	5116	1395	7675	3958	0243	6531	2821	9113	50
1172	7434	3698	9965	6234	2505	8778	5054	1333	7613	3896	0181	6469	2759	9051	49
1110	7372	3636	9903	6171	2443	8716	4992	1271	7551	3834	0119	6407	2697	8989	48
1048	7310	3574	9840	6109	2381	8654	4930	1209	7489	3772	0058	6345	2635	8927	47
0986	7247	3512	9778	6047	2318	8592	4868	1147	7427	3710	9996	6283	2573	8866	46
0923	7185	3449	9716	5985	2256	8530	4806	1085	7365	3648	9934	6221	2512	8804	45
0861	7123	3387	9654	5923	2194	8468	4744	1023	7303	3586	9872	6160	2450	8742	44
0799	7061	3325	9592	5861	2132	8406	4682	0961	7241	3524	9810	6098	2388	8680	43
0736	6998	3263	9529	5799	2070	8344	4620	0898	7179	3463	9748	6036	2326	8619	42
0674	6936	3200	9467	5736	2008	8282	4558	0836	7117	3401	9686	5974	2264	8557	41
0612	6874	3138	9405	5674	1946	8220	4496	0774	7055	3339	9624	5912	2202	8495	40
0549	6811	3076	9343	5612	1884	8158	4434	0712	6993	3277	9562	5850	2141	8433	39
0487	6749	3014	9281	5550	1822	8095	4372	0650	6931	3215	9501	5789	2079	8371	38
0425	6687	2951	9218	5488	1759	8033	4310	0588	6870	3153	9439	5727	2017	8310	37
0362	6625	2889	9156	5426	1697	7971	4248	0526	6808	3091	9377	5665	1955	8248	36
0300	6562	2827	9094	5363	1635	7909	4186	0464	6746	3029	9315	5603	1893	8186	35
0238	6500	2765	9032	5301	1573	7847	4124	0402	6684	2967	9253	5541	1832	8124	34
0175	6438	2703	8970	5239	1511	7785	4062	0340	6622	2905	9191	5479	1770	8063	33
0113	6375	2640	8907	5177	1449	7723	4000	0278	6560	2843	9129	5417	1708	8001	32
0051	6313	2578	8845	5115	1387	7661	3938	0216	6498	2781	9067	5356	1646	7939	31
9988	6251	2516	8783	5053	1325	7599	3876	0154	6436	2719	9005	5294	1584	7877	30
9926	6189	2454	8721	4990	1262	7537	3813	0092	6374	2658	8944	5232	1523	7816	29
9864	6126	2391	8659	4928	1200	7475	3751	0030	6312	2596	8882	5170	1461	7754	28
9802	6064	2329	8596	4866	1138	7413	3689	9968	6250	2534	8820	5108	1399	7692	27
9739	6002	2267	8534	4804	1076	7351	3627	9906	6188	2472	8758	5046	1337	7630	26
9677	5940	2205	8472	4742	1014	7288	3565	9845	6126	2410	8696	4985	1275	7569	25
9615	5877	2142	8410	4680	0952	7226	3503	9783	6064	2348	8634	4923	1214	7507	24
9552	5815	2080	8348	4618	0890	7164	3441	9721	6002	2286	8572	4861	1152	7445	23
9490	5753	2018	8286	4555	0828	7102	3379	9659	5940	2224	8510	4799	1090	7383	22
9428	5691	1956	8223	4493	0766	7040	3317	9597	5878	2162	8449	4737	1028	7321	21
9365	5628	1894	8161	4431	0703	6978	3255	9535	5816	2100	8387	4675	0966	7260	20
9303	5566	1831	8099	4369	0641	6916	3193	9473	5754	2038	8325	4614	0905	7198	19
9241	5504	1769	8037	4307	0579	6854	3131	9411	5692	1976	8263	4552	0843	7136	18
9178	5441	1707	7975	4245	0517	6792	3069	9349	5630	1915	8201	4490	0781	7074	17
9116	5379	1645	7912	4183	0455	6730	3007	9287	5568	1853	8139	4428	0719	7013	16
9054	5317	1582	7850	4120	0393	6668	2945	9225	5507	1791	8077	4366	0657	6951	15
8992	5255	1520	7788	4058	0331	6606	2883	9163	5445	1729	8015	4304	0596	6889	14
8929	5192	1458	7726	3996	0269	6544	2821	9101	5383	1667	7954	4243	0534	6827	13
8867	5130	1396	7664	3934	0207	6482	2759	9039	5321	1605	7892	4181	0472	6766	12
8805	5068	1334	7601	3872	0145	6420	2697	8977	5259	1543	7830	4119	0410	6704	11
8742	5006	1271	7539	3810	0082	6357	2635	8915	5197	1481	7768	4057	0348	6642	10
8680	4943	1209	7477	3748	0020	6295	2573	8853	5135	1419	7706	3995	0287	6580	9
8618	4881	1147	7415	3685	9958	6233	2511	8791	5073	1357	7644	3933	0225	6519	8
8555	4819	1085	7353	3623	9896	6171	2449	8729	5011	1295	7582	3872	0163	6457	7
8493	4757	1022	7291	3561	9834	6109	2387	8667	4949	1234	7521	3810	0101	6395	6
8431	4694	0960	7228	3499	9772	6047	2325	8605	4887	1172	7459	3748	0040	6333	5
8369	4632	0898	7166	3437	9710	5985	2263	8543	4825	1110	7397	3686	9978	6272	4
8306	4570	0836	7104	3375	9648	5923	2201	8481	4763	1048	7335	3624	9916	6210	3
8244	4508	0774	7042	3313	9586	5861	2139	8419	4701	0986	7273	3562	9854	6148	2
8182	4445	0711	6980	3250	9524	5799	2077	8357	4639	0924	7211	3501	9792	6086	1
8119	4383	0649	6918	3188	9461	5737	2015	8295	4577	0862	7149	3439	9731	6025	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
″	9.564	9.564	9.564	9.565	9.565	9.565	9.565	9.566	9.566	9.566	9.567	9.567	9.567	9.568	9.568	9.968	9.968	9.968	9.968	9.968	9.968	9.968	9.968	9.968	9.968	9.968	9.968	9.968	9.968	9.967	″
0	0754	3960	7163	0363	3561	6756	9948	3137	6324	9508	2689	5868	9044	2217	5387	6779	6281	5783	5284	4785	4286	3786	3285	2784	2283	1781	1279	0777	0274	9771	60
1	0808	4013	7216	0417	3614	6809	0001	3190	6377	9561	2742	5921	9097	2270	5440	6771	6273	5775	5276	4777	4277	3777	3277	2776	2275	1773	1271	0768	0266	9762	59
2	0861	4067	7270	0470	3667	6862	0054	3244	6430	9614	2795	5974	9150	2323	5493	6762	6265	5766	5268	4768	4269	3769	3269	2768	2266	1765	1263	0760	0257	9754	58
3	0915	4120	7323	0523	3721	6915	0107	3297	6483	9667	2848	6027	9202	2376	5546	6754	6256	5758	5259	4760	4261	3761	3260	2759	2258	1756	1254	0752	0249	9745	57
4	0968	4174	7377	0577	3774	6969	0161	3350	6536	9720	2901	6080	9255	2428	5599	6746	6248	5750	5251	4752	4252	3752	3252	2751	2250	1748	1246	0743	0240	9737	56
5	1022	4227	7430	0630	3827	7022	0214	3403	6589	9773	2954	6133	9308	2481	5652	6738	6240	5741	5243	4743	4244	3744	3243	2743	2241	1740	1238	0735	0232	9729	55
6	1075	4280	7483	0683	3880	7075	0267	3456	6642	9826	3007	6186	9361	2534	5704	6729	6231	5733	5234	4735	4236	3736	3235	2734	2233	1731	1229	0727	0224	9720	54
7	1128	4334	7537	0737	3934	7128	0320	3509	6696	9879	3060	6238	9414	2587	5757	6721	6223	5725	5226	4727	4227	3727	3227	2726	2225	1723	1221	0718	0215	9712	53
8	1182	4387	7590	0790	3987	7181	0373	3562	6749	9932	3113	6291	9467	2640	5810	6713	6215	5716	5218	4719	4219	3719	3218	2718	2216	1715	1212	0710	0207	9703	52
9	1235	4441	7643	0843	4040	7235	0426	3615	6802	9985	3166	6344	9520	2693	5863	6704	6206	5708	5209	4710	4211	3711	3210	2709	2208	1706	1204	0701	0198	9695	51
10	1289	4494	7697	0896	4094	7288	0480	3669	6855	0038	3219	6397	9573	2746	5916	6696	6198	5700	5201	4702	4202	3702	3202	2701	2200	1698	1196	0693	0190	9687	50
11	1342	4547	7750	0950	4147	7341	0533	3722	6908	0091	3272	6450	9626	2798	5968	6688	6190	5692	5193	4694	4194	3694	3193	2693	2191	1689	1187	0685	0182	9678	49
12	1396	4601	7803	1003	4200	7394	0586	3775	6961	0144	3325	6503	9679	2851	6021	6679	6182	5683	5184	4685	4186	3686	3185	2684	2183	1681	1179	0676	0173	9670	48
13	1449	4654	7857	1056	4253	7448	0639	3828	7014	0197	3378	6556	9731	2904	6074	6671	6173	5675	5176	4677	4177	3677	3177	2676	2174	1673	1171	0668	0165	9661	47
14	1503	4708	7910	1110	4307	7501	0692	3881	7067	0250	3431	6609	9784	2957	6127	6663	6165	5667	5168	4669	4169	3669	3168	2667	2166	1664	1162	0660	0156	9653	46
15	1556	4761	7963	1163	4360	7554	0745	3934	7120	0304	3484	6662	9837	3010	6180	6655	6157	5658	5159	4660	4161	3661	3160	2659	2158	1656	1154	0651	0148	9645	45
16	1609	4814	8017	1216	4413	7607	0799	3987	7173	0357	3537	6715	9890	3063	6233	6646	6148	5650	5151	4652	4152	3652	3152	2651	2149	1648	1145	0643	0140	9636	44
17	1663	4868	8070	1270	4466	7660	0852	4040	7226	0410	3590	6768	9943	3116	6285	6638	6140	5642	5143	4644	4144	3644	3143	2642	2141	1639	1137	0634	0131	9628	43
18	1716	4921	8123	1323	4520	7714	0905	4094	7279	0463	3643	6821	9996	3168	6338	6630	6132	5633	5135	4635	4136	3636	3135	2634	2133	1631	1129	0626	0123	9619	42
19	1770	4975	8177	1376	4573	7767	0958	4147	7333	0516	3696	6874	0049	3221	6391	6621	6123	5625	5126	4627	4127	3627	3127	2626	2124	1623	1120	0618	0115	9611	41
20	1823	5028	8230	1429	4626	7820	1011	4200	7386	0569	3749	6927	0102	3274	6444	6613	6115	5617	5118	4619	4119	3619	3118	2617	2116	1614	1112	0609	0106	9603	40
21	1877	5081	8283	1483	4679	7873	1064	4253	7439	0622	3802	6980	0155	3327	6497	6605	6107	5608	5110	4610	4111	3610	3110	2609	2108	1606	1104	0601	0098	9594	39
22	1930	5135	8337	1536	4733	7926	1118	4306	7492	0675	3855	7033	0208	3380	6549	6597	6099	5600	5101	4602	4102	3602	3102	2601	2099	1597	1095	0592	0089	9586	38
23	1984	5188	8390	1589	4786	7980	1171	4359	7545	0728	3908	7086	0260	3433	6602	6588	6090	5592	5093	4594	4094	3594	3093	2592	2091	1589	1087	0584	0081	9577	37
24	2037	5242	8444	1643	4839	8033	1224	4412	7598	0781	3961	7139	0313	3485	6655	6580	6082	5583	5085	4585	4086	3585	3085	2584	2083	1581	1078	0576	0073	9569	36
25	2090	5295	8497	1696	4892	8086	1277	4465	7651	0834	4014	7191	0366	3538	6708	6572	6074	5575	5076	4577	4077	3577	3077	2576	2074	1572	1070	0567	0064	9561	35
26	2144	5348	8550	1749	4946	8139	1330	4518	7704	0887	4067	7244	0419	3591	6761	6563	6065	5567	5068	4569	4069	3569	3068	2567	2066	1564	1062	0559	0056	9552	34
27	2197	5402	8604	1803	4999	8193	1383	4572	7757	0940	4120	7297	0472	3644	6813	6555	6057	5559	5060	4560	4061	3560	3060	2559	2057	1556	1053	0551	0047	9544	33
28	2251	5455	8657	1856	5052	8246	1437	4625	7810	0993	4173	7350	0525	3697	6866	6547	6049	5550	5051	4552	4052	3552	3052	2551	2049	1547	1045	0542	0039	9535	32
29	2304	5509	8710	1909	5105	8299	1490	4678	7863	1046	4226	7403	0578	3750	6919	6538	6040	5542	5043	4544	4044	3544	3043	2542	2041	1539	1037	0534	0031	9527	31
30	2358	5562	8764	1962	5159	8352	1543	4731	7916	1099	4279	7456	0631	3803	6972	6530	6032	5534	5035	4535	4036	3535	3035	2534	2032	1530	1028	0525	0022	9519	30
31	2411	5615	8817	2016	5212	8405	1596	4784	7969	1152	4332	7509	0684	3855	7025	6522	6024	5525	5026	4527	4027	3527	3026	2525	2024	1522	1020	0517	0014	9510	29
32	2464	5669	8870	2069	5265	8459	1649	4837	8022	1205	4385	7562	0736	3908	7077	6514	6015	5517	5018	4519	4019	3519	3018	2517	2016	1514	1011	0509	0005	9502	28
33	2518	5722	8924	2122	5318	8512	1702	4890	8075	1258	4438	7615	0789	3961	7130	6505	6007	5509	5010	4510	4011	3510	3010	2509	2007	1505	1003	0500	9997	9493	27
34	2571	5775	8977	2176	5372	8565	1756	4943	8129	1311	4491	7668	0842	4014	7183	6497	5999	5500	5001	4502	4002	3502	3001	2500	1999	1497	0995	0492	9989	9485	26
35	2625	5829	9030	2229	5425	8618	1809	4996	8182	1364	4544	7721	0895	4067	7236	6489	5991	5492	4993	4494	3994	3494	2993	2492	1991	1489	0986	0484	9980	9477	25
36	2678	5882	9084	2282	5478	8671	1862	5050	8235	1417	4597	7774	0948	4120	7289	6480	5982	5484	4985	4485	3986	3485	2985	2484	1982	1480	0978	0475	9972	9468	24
37	2732	5936	9137	2335	5531	8725	1915	5103	8288	1470	4650	7827	1001	4172	7341	6472	5974	5475	4976	4477	3977	3477	2976	2475	1974	1472	0970	0467	9964	9460	23
38	2785	5989	9190	2389	5585	8778	1968	5156	8341	1523	4703	7880	1054	4225	7394	6464	5966	5467	4968	4469	3969	3469	2968	2467	1965	1464	0961	0458	9955	9452	22
39	2838	6042	9244	2442	5638	8831	2021	5209	8394	1576	4756	7932	1107	4278	7447	6455	5957	5459	4960	4460	3961	3460	2960	2459	1957	1455	0953	0450	9947	9443	21
40	2892	6096	9297	2495	5691	8884	2074	5262	8447	1629	4809	7985	1160	4331	7500	6447	5949	5450	4952	4452	3952	3452	2951	2450	1949	1447	0944	0442	9938	9435	20
41	2945	6149	9350	2549	5744	8937	2128	5315	8500	1682	4862	8038	1212	4384	7552	6439	5941	5442	4943	4444	3944	3444	2943	2442	1940	1438	0936	0433	9930	9426	19
42	2999	6202	9404	2602	5798	8990	2181	5368	8553	1735	4915	8091	1265	4437	7605	6431	5932	5434	4935	4435	3936	3435	2935	2434	1932	1430	0928	0425	9922	9418	18
43	3052	6256	9457	2655	5851	9044	2234	5421	8606	1788	4968	8144	1318	4489	7658	6422	5924	5426	4927	4427	3927	3427	2926	2425	1924	1422	0919	0416	9913	9410	17
44	3105	6309	9510	2708	5904	9097	2287	5474	8659	1841	5020	8197	1371	4542	7711	6414	5916	5417	4918	4419	3919	3419	2918	2417	1915	1413	0911	0408	9905	9401	16
45	3159	6363	9564	2762	5957	9150	2340	5528	8712	1894	5073	8250	1424	4595	7764	6406	5908	5409	4910	4410	3911	3410	2910	2408	1907	1405	0903	0400	9896	9393	15
46	3212	6416	9617	2815	6011	9203	2393	5581	8765	1947	5126	8303	1477	4648	7816	6397	5899	5401	4902	4402	3902	3402	2901	2400	1899	1397	0894	0391	9888	9384	14
47	3266	6469	9670	2868	6064	9256	2446	5634	8818	2000	5179	8356	1530	4701	7869	6389	5891	5392	4893	4394	3894	3394	2893	2392	1890	1388	0886	0383	9880	9376	13
48	3319	6523	9724	2922	6117	9310	2500	5687	8871	2053	5232	8409	1583	4754	7922	6381	5883	5384	4885	4385	3886	3385	2885	2383	1882	1380	0877	0375	9871	9368	12
49	3373	6576	9777	2975	6170	9363	2553	5740	8924	2106	5285	8462	1635	4806	7975	6372	5874	5376	4877	4377	3877	3377	2876	2375	1873	1371	0869	0366	9863	9359	11
50	3426	6629	9830	3028	6223	9416	2606	5793	8977	2159	5338	8515	1688	4859	8028	6364	5866	5367	4868	4369	3869	3369	2868	2367	1865	1363	0861	0358	9854	9351	10
51	3479	6683	9883	3081	6277	9469	2659	5846	9031	2212	5391	8568	1741	4912	8080	6356	5858	5359	4860	4361	3861	3360	2860	2358	1857	1355	0852	0349	9846	9342	9
52	3533	6736	9937	3135	6330	9522	2712	5899	9084	2265	5444	8620	1794	4965	8133	6348	5849	5351	4852	4352	3852	3352	2851	2350	1848	1346	0844	0341	9838	9334	8
53	3586	6790	9990	3188	6383	9576	2765	5952	9137	2318	5497	8673	1847	5018	8186	6339	5841	5342	4843	4344	3844	3344	2843	2342	1840	1338	0835	0333	9829	9326	7
54	3640	6843	0043	3241	6436	9629	2818	6005	9190	2371	5550	8726	1900	5071	8239	6331	5833	5334	4835	4336	3836	3335	2834	2333	1832	1330	0827	0324	9821	9317	6
55	3693	6896	0097	3295	6490	9682	2872	6058	9243	2424	5603	8779	1953	5123	8291	6323	5824	5326	4827	4327	3827	3327	2826	2325	1823	1321	0819	0316	9812	9309	5
56	3746	6950	0150	3348	6543	9735	2925	6112	9296	2477	5656	8832	2005	5176	8344	6314	5816	5317	4818	4319	3819	3319	2818	2317	1815	1313	0810	0307	9804	9300	4
57	3800	7003	0203	3401	6596	9788	2978	6165	9349	2530	5709	8885	2058	5229	8397	6306	5808	5309	4810	4311	3811	3310	2809	2308	1807	1304	0802	0299	9796	9292	3
58	3853	7056	0257	3454	6649	9841	3031	6218	9402	2583	5762	8938	2111	5282	8450	6298	5800	5301	4802	4302	3802	3302	2801	2300	1798	1296	0794	0291	9787	9284	2
59	3907	7110	0310	3508	6703	9895	3084	6271	9455	2636	5815	8991	2164	5335	8503	6289	5791	5293	4793	4294	3794	3294	2793	2291	1790	1288	0785	0282	9779	9275	1
60	3960	7163	0363	3561	6756	9948	3137	6324	9508	2689	5868	9044	2217	5387	8555	6281	5783	5284	4785	4286	3786	3285	2784	2283	1781	1279	0777	0274	9771	9267	0
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

"	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9. 595	9. 595	9. 596	9. 596	9. 596	9. 597	9. 597	9. 597	9. 598	9. 598	9. 599	9. 599	9. 599	9. 600	9. 600
0	3975	7679	1380	5079	8776	2470	6162	9852	3540	7225	0908	4588	8267	1943	5617
1	4037	7741	1442	5141	8837	2532	6224	9914	3601	7286	0969	4650	8328	2004	5678
2	4099	7802	1503	5202	8899	2593	6285	9975	3662	7348	1030	4711	8389	2066	5739
3	4161	7864	1565	5264	8961	2655	6347	0036	3724	7409	1092	4772	8451	2127	5801
4	4222	7926	1627	5326	9022	2716	6408	0098	3785	7470	1153	4834	8512	2188	5862
5	4284	7987	1688	5387	9084	2778	6470	0159	3847	7532	1215	4895	8573	2249	5923
6	4346	8049	1750	5449	9145	2839	6531	0221	3908	7593	1276	4956	8635	2311	5984
7	4408	8111	1812	5511	9207	2901	6593	0282	3970	7655	1337	5018	8696	2372	6045
8	4469	8173	1873	5572	9269	2963	6654	0344	4031	7716	1399	5079	8757	2433	6107
9	4531	8234	1935	5634	9330	3024	6716	0405	4093	7777	1460	5140	8818	2494	6168
10	4593	8296	1997	5695	9392	3086	6777	0467	4154	7839	1521	5202	8880	2556	6229
11	4654	8358	2058	5757	9453	3147	6839	0528	4215	7900	1583	5263	8941	2617	6290
12	4716	8419	2120	5819	9515	3209	6900	0590	4277	7962	1644	5324	9002	2678	6351
13	4778	8481	2182	5880	9576	3270	6962	0651	4338	8023	1705	5386	9064	2739	6413
14	4840	8543	2243	5942	9638	3332	7023	0713	4400	8084	1767	5447	9125	2800	6474
15	4901	8604	2305	6004	9700	3393	7085	0774	4461	8146	1828	5508	9186	2862	6535
16	4963	8666	2367	6065	9761	3455	7146	0836	4523	8207	1890	5570	9247	2923	6596
17	5025	8728	2428	6127	9823	3516	7208	0897	4584	8269	1951	5631	9309	2984	6657
18	5087	8790	2490	6188	9884	3578	7269	0959	4645	8330	2012	5692	9370	3045	6719
19	5148	8851	2552	6250	9946	3640	7331	1020	4707	8391	2074	5754	9431	3107	6780
20	5210	8913	2613	6312	0008	3701	7392	1081	4768	8453	2135	5815	9493	3168	6841
21	5272	8975	2675	6373	0069	3763	7454	1143	4830	8514	2196	5876	9554	3229	6902
22	5334	9036	2737	6435	0131	3824	7515	1204	4891	8575	2258	5937	9615	3290	6963
23	5395	9098	2798	6496	0192	3886	7577	1266	4953	8637	2319	5999	9676	3352	7025
24	5457	9160	2860	6558	0254	3947	7638	1327	5014	8698	2380	6060	9738	3413	7086
25	5519	9221	2922	6620	0315	4009	7700	1389	5075	8760	2442	6121	9799	3474	7147
26	5580	9283	2983	6681	0377	4070	7761	1450	5137	8821	2503	6183	9860	3535	7208
27	5642	9345	3045	6743	0439	4132	7823	1512	5198	8882	2564	6244	9921	3597	7269
28	5704	9406	3107	6805	0500	4193	7884	1573	5260	8944	2626	6305	9983	3658	7331
29	5766	9468	3168	6866	0562	4255	7946	1635	5321	9005	2687	6367	0044	3719	7392
30	5827	9530	3230	6928	0623	4317	8007	1696	5382	9067	2748	6428	0105	3780	7453
31	5889	9591	3292	6989	0685	4378	8069	1758	5444	9128	2810	6489	0167	3842	7514
32	5951	9653	3353	7051	0746	4440	8130	1819	5505	9189	2871	6551	0228	3903	7575
33	6013	9715	3415	7113	0808	4501	8192	1880	5567	9251	2932	6612	0289	3964	7637
34	6074	9777	3477	7174	0870	4563	8253	1942	5628	9312	2994	6673	0350	4025	7698
35	6136	9838	3538	7236	0931	4624	8315	2003	5690	9373	3055	6734	0412	4086	7759
36	6198	9900	3600	7297	0993	4686	8376	2065	5751	9435	3116	6796	0473	4148	7820
37	6259	9962	3661	7359	1054	4747	8438	2126	5812	9496	3178	6857	0534	4209	7881
38	6321	0023	3723	7421	1116	4809	8499	2188	5874	9558	3239	6918	0595	4270	7943
39	6383	0085	3785	7482	1177	4870	8561	2249	5935	9619	3300	6980	0657	4331	8004
40	6445	0147	3846	7544	1239	4932	8622	2311	5997	9680	3362	7041	0718	4393	8065
41	6506	0208	3908	7605	1301	4993	8684	2372	6058	9742	3423	7102	0779	4454	8126
42	6568	0270	3970	7667	1362	5055	8745	2434	6119	9803	3484	7164	0840	4515	8187
43	6630	0332	4031	7729	1424	5116	8807	2495	6181	9864	3546	7225	0902	4576	8249
44	6691	0393	4093	7790	1485	5178	8868	2556	6242	9926	3607	7286	0963	4637	8310
45	6753	0455	4155	7852	1547	5239	8930	2618	6304	9987	3669	7347	1024	4699	8371
46	6815	0517	4216	7913	1608	5301	8991	2679	6365	0049	3730	7409	1085	4760	8432
47	6877	0578	4278	7975	1670	5363	9053	2741	6427	0110	3791	7470	1147	4821	8493
48	6938	0640	4340	8037	1731	5424	9114	2802	6488	0171	3853	7531	1208	4882	8554
49	7000	0702	4401	8098	1793	5486	9176	2864	6549	0233	3914	7593	1269	4944	8616
50	7062	0763	4463	8160	1855	5547	9237	2925	6611	0294	3975	7654	1331	5005	8677
51	7123	0825	4524	8221	1916	5609	9299	2987	6672	0355	4037	7715	1392	5066	8738
52	7185	0887	4586	8283	1978	5670	9360	3048	6734	0417	4098	7777	1453	5127	8799
53	7247	0948	4648	8345	2039	5732	9422	3109	6795	0478	4159	7838	1514	5188	8860
54	7309	1010	4709	8406	2101	5793	9483	3171	6856	0540	4220	7899	1576	5250	8922
55	7370	1072	4771	8468	2162	5855	9545	3232	6918	0601	4282	7960	1637	5311	8983
56	7432	1133	4833	8529	2224	5916	9606	3294	6979	0662	4343	8022	1698	5372	9044
57	7494	1195	4894	8591	2286	5978	9668	3355	7041	0724	4404	8083	1759	5433	9105
58	7555	1257	4956	8653	2347	6039	9729	3417	7102	0785	4466	8144	1821	5495	9166
59	7617	1318	5017	8714	2409	6101	9791	3478	7163	0846	4527	8206	1882	5556	9227
60	7679	1380	5079	8776	2470	6162	9852	3540	7225	0908	4588	8267	1943	5617	9289
"	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	"
10. 404	10. 404	10. 403	10. 403	10. 403	10. 402	10. 402	10. 402	10. 401	10. 401	10. 400	10. 400	10. 400	10. 399	10. 399	
6025	2321	8620	4921	1224	7530	3838	0148	6460	2775	9092	5412	1733	8057	4383	60
5963	2259	8558	4859	1163	7468	3776	0086	6399	2714	9031	5350	1672	7996	4322	59
5901	2198	8497	4798	1101	7407	3715	0025	6338	2652	8970	5289	1611	7934	4261	58
5839	2136	8435	4736	1039	7345	3653	9964	6276	2591	8908	5228	1549	7873	4199	57
5778	2074	8373	4674	0978	7284	3592	9902	6215	2530	8847	5166	1488	7812	4138	56
5716	2013	8312	4613	0916	7222	3530	9841	6153	2468	8785	5105	1427	7751	4077	55
5654	1951	8250	4551	0855	7161	3469	9779	6092	2407	8724	5044	1365	7689	4016	54
5592	1889	8188	4489	0793	7099	3407	9718	6030	2345	8663	4982	1304	7628	3955	53
5531	1827	8127	4428	0731	7037	3346	9656	5969	2284	8601	4921	1243	7567	3893	52
5469	1766	8065	4366	0670	6976	3284	9595	5907	2223	8540	4860	1182	7506	3832	51
5407	1704	8003	4305	0608	6914	3223	9533	5846	2161	8479	4798	1120	7444	3771	50
5346	1642	7942	4243	0547	6853	3161	9472	5785	2100	8417	4737	1059	7383	3710	49
5284	1581	7880	4181	0485	6791	3100	9410	5723	2038	8356	4676	0998	7322	3649	48
5222	1519	7818	4120	0424	6730	3038	9349	5662	1977	8295	4614	0936	7261	3587	47
5160	1457	7757	4058	0362	6668	2977	9287	5600	1916	8233	4553	0875	7200	3526	46
5099	1396	7695	3996	0300	6607	2915	9226	5539	1854	8172	4492	0814	7138	3465	45
5037	1334	7633	3935	0239	6545	2854	9164	5477	1793	8110	4430	0753	7077	3404	44
4975	1272	7572	3873	0177	6484	2792	9103	5416	1731	8049	4369	0691	7016	3343	43
4913	1210	7510	3812	0116	6422	2731	9041	5355	1670	7988	4308	0630	6955	3281	42
4852	1149	7448	3750	0054	6360	2669	8980	5293	1609	7926	4246	0569	6893	3220	41
4790	1087	7387	3688	9992	6299	2608	8919	5232	1547	7865	4185	0507	6832	3159	40
4728	1025	7325	3627	9931	6237	2546	8857	5170	1486	7804	4124	0446	6771	3098	39
4666	0964	7263	3565	9869	6176	2485	8796	5109	1425	7742	4063	0385	6710	3037	38
4605	0902	7202	3504	9808	6114	2423	8734	5047	1363	7681	4001	0324	6648	2975	37
4543	0840	7140	3442	9746	6053	2362	8673	4986	1302	7620	3940	0262	6587	2914	36
4481	0779	7078	3380	9685	5991	2300	8611	4925	1240	7558	3879	0201	6526	2853	35
4420	0717	7017	3319	9623	5930	2239	8550	4863	1179	7497	3817	0140	6465	2792	34
4358	0655	6955	3257	9561	5868	2177	8488	4802	1118	7436	3756	0079	6403	2731	33
4296	0594	6893	3195	9500	5807	2116	8427	4740	1056	7374	3695	0017	6342	2669	32
4234	0532	6832	3134	9438	5745	2054	8365	4679	0995	7313	3633	9956	6281	2608	31
4173	0470	6770	3072	9377	5683	1993	8304	4618	0933	7252	3572	9895	6220	2547	30
4111	0409	6708	3011	9315	5622	1931	8242	4556	0872	7190	3511	9833	6158	2486	29
4049	0347	6647	2949	9254	5560	1870	8181	4495	0811	7129	3449	9772	6097	2425	28
3987	0285	6585	2887	9192	5499	1808	8120	4433	0749	7068	3388	9711	6036	2363	27
3926	0223	6523	2826	9130	5437	1747	8058	4372	0688	7006	3327	9650	5975	2302	26
3864	0162	6462	2764	9069	5376	1685	7997	4310	0627	6945	3266	9588	5914	2241	25
3802	0100	6400	2703	9007	5314	1624	7935	4249	0565	6884	3204	9527	5852	2180	24
3741	0038	6339	2641	8946	5253	1562	7874	4188	0504	6822	3143	9466	5791	2119	23
3679	9977	6277	2579	8884	5191	1501	7812	4126	0442	6761	3082	9405	5730	2057	22
3617	9915	6215	2518	8823	5130	1439	7751	4065	0381	6700	3020	9343	5669	1996	21
3555	9853	6154	2456	8761	5068	1378	7689	4003	0320	6638	2959	9282	5607	1935	20
3494	9792	6092	2395	8699	5007	1316	7628	3942	0258	6577	2898	9221	5546	1874	19
3432	9730	6030	2333	8638	4945	1255	7566	3881	0197	6516	2836	9160	5485	1813	18
3370	9668	5969	2271	8576	4884	1193	7505	3819	0136	6454	2775	9098	5424	1751	17
3309	9607	5907	2210	8515	4822	1132	7444	3758	0074	6393	2714	9037	5363	1690	16
3247	9545	5845	2148	8453	4761	1070	7382	3696	0013	6331	2653	8976	5301	1629	15
3185	9483	5784	2087	8392	4699	1009	7321	3635	9951	6270	2591	8915	5240	1568	14
3123	9422	5722	2025	8330	4637	0947	7259	3573	9890	6209	2530	8853	5179	1507	13
3062	9360	5660	1963	8269	4576	0886	7198	3512	9829	6147	2469	8792	5118	1446	12
3000	9298	5599	1902	8207	4514	0824	7136	3451	9767	6086	2407	8731	5056	1384	11
2938	9237	5537	1840	8145	4453	0763	7075	3389	9706	6025	2346	8669	4995	1323	10
2877	9175	5476	1779	8084	4391	0701	7013	3328	9645	5963	2285	8608	4934	1262	9
2815	9113	5414	1717	8022	4330	0640	6952	3266	9583	5902	2223	8547	4873	1201	8
2753	9052	5352	1655	7961	4268	0578	6891	3205	9522	5841	2162	8486	4812	1140	7
2691	8990	5291	1594	7899	4207	0517	6829	3144	9460	5780	2101	8424	4750	1078	6
2630	8928	5229	1532	7838	4145	0455	6768	3082	9399	5718	2040	8363	4689	1017	5
2568	8867	5167	1471	7776	4084	0394	6706	3021	9338	5657	1978	8302	4628	0956	4
2506	8805	5106	1409	7714	4022	0332	6645	2959	9276	5596	1917	8241	4567	0895	3
2445	8743	5044	1347	7653	3961	0271	6583	2898	9215	5534	1856	8179	4505	0834	2
2383	8682	4983	1286	7591	3899	0209	6522	2837	9154	5473	1794	8118	4444	0773	1
2321	8620	4921	1224	7530	3838	0148	6460	2775	9092	5412	1733	8057	4383	0711	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	"

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	9. 568	9. 569	9. 569	9. 569	9. 570	9. 570	9. 570	9. 571	9. 571	9. 571	9. 572	9. 572	9. 572	9. 572	9. 573
0	8555	1721	4883	8043	1200	4355	7506	0656	3802	6946	0087	3226	6362	9495	2626
1	8608	1773	4936	8096	1253	4407	7559	0708	3855	6998	0140	3278	6414	9548	2678
2	8661	1826	4988	8148	1305	4460	7611	0761	3907	7051	0192	3331	6466	9600	2730
3	8714	1879	5041	8201	1358	4512	7664	0813	3959	7103	0244	3383	6519	9652	2783
4	8766	1931	5094	8253	1410	4565	7716	0865	4012	7156	0297	3435	6571	9704	2835
5	8819	1984	5146	8306	1463	4617	7769	0918	4064	7208	0349	3487	6623	9756	2887
6	8872	2037	5199	8359	1516	4670	7821	0970	4117	7260	0401	3540	6675	9809	2939
7	8925	2090	5252	8411	1568	4722	7874	1023	4169	7313	0454	3592	6728	9861	2991
8	8978	2142	5304	8464	1621	4775	7926	1075	4221	7365	0506	3644	6780	9913	3043
9	9030	2195	5357	8517	1673	4827	7979	1128	4274	7417	0558	3697	6832	9965	3095
10	9083	2248	5410	8569	1726	4880	8031	1180	4326	7470	0611	3749	6884	0017	3148
11	9136	2301	5463	8622	1779	4933	8084	1233	4379	7522	0663	3801	6937	0069	3200
12	9189	2353	5515	8675	1831	4985	8136	1285	4431	7575	0715	3853	6989	0122	3252
13	9241	2406	5568	8727	1884	5038	8189	1338	4484	7627	0768	3906	7041	0174	3304
14	9294	2459	5621	8780	1936	5090	8241	1390	4536	7679	0820	3958	7093	0226	3356
15	9347	2511	5673	8832	1989	5143	8294	1442	4588	7732	0872	4010	7146	0278	3408
16	9400	2564	5726	8885	2042	5195	8346	1495	4641	7784	0925	4062	7198	0330	3460
17	9452	2617	5779	8938	2094	5248	8399	1547	4693	7836	0977	4115	7250	0383	3513
18	9505	2670	5831	8990	2147	5300	8451	1600	4746	7889	1029	4167	7302	0435	3565
19	9558	2722	5884	9043	2199	5353	8504	1652	4798	7941	1082	4219	7354	0487	3617
20	9611	2775	5937	9096	2252	5405	8556	1705	4850	7993	1134	4272	7407	0539	3669
21	9663	2828	5989	9148	2304	5458	8609	1757	4903	8046	1186	4324	7459	0591	3721
22	9716	2880	6042	9201	2357	5511	8661	1810	4955	8098	1238	4376	7511	0644	3773
23	9769	2933	6095	9253	2410	5563	8714	1862	5008	8151	1291	4428	7563	0696	3825
24	9822	2986	6147	9306	2462	5616	8766	1915	5069	8203	1343	4481	7616	0748	3878
25	9874	3039	6200	9359	2515	5668	8819	1967	5112	8255	1395	4533	7668	0800	3930
26	9927	3091	6253	9411	2567	5721	8871	2019	5165	8308	1448	4585	7720	0852	3982
27	9980	3144	6305	9464	2620	5773	8924	2072	5217	8360	1500	4637	7772	0904	4034
28	0033	3197	6358	9517	2672	5826	8976	2124	5270	8412	1552	4690	7825	0957	4086
29	0086	3249	6411	9569	2725	5878	9029	2177	5322	8465	1605	4742	7877	1009	4138
30	0138	3302	6463	9622	2778	5931	9081	2229	5374	8517	1657	4794	7929	1061	4190
31	0191	3355	6516	9674	2830	5983	9134	2282	5427	8569	1709	4847	7981	1113	4243
32	0244	3408	6569	9727	2883	6036	9186	2334	5479	8622	1762	4899	8033	1165	4295
33	0297	3460	6621	9780	2935	6088	9239	2387	5532	8674	1814	4951	8086	1218	4347
34	0349	3513	6674	9832	2988	6141	9291	2439	5584	8726	1866	5003	8138	1270	4399
35	0402	3566	6727	9885	3040	6193	9344	2491	5636	8779	1919	5056	8190	1322	4451
36	0455	3618	6779	9937	3093	6246	9396	2544	5689	8831	1971	5108	8242	1374	4503
37	0508	3671	6832	9990	3146	6299	9449	2596	5741	8883	2023	5160	8295	1426	4555
38	0560	3724	6885	0043	3198	6351	9501	2649	5794	8936	2075	5212	8347	1478	4607
39	0613	3776	6937	0095	3251	6404	9554	2701	5846	8988	2128	5265	8399	1531	4660
40	0666	3829	6990	0148	3303	6456	9606	2754	5898	9041	2180	5317	8451	1583	4712
41	0719	3882	7043	0201	3356	6509	9659	2806	5951	9093	2232	5369	8503	1635	4764
42	0771	3935	7095	0253	3408	6561	9711	2858	6003	9145	2285	5421	8556	1687	4816
43	0824	3987	7148	0306	3461	6614	9764	2911	6056	9198	2337	5474	8608	1739	4868
44	0877	4040	7200	0358	3514	6666	9816	2963	6108	9250	2389	5526	8660	1791	4920
45	0929	4093	7253	0411	3566	6719	9869	3016	6160	9302	2442	5578	8712	1844	4972
46	0982	4145	7306	0464	3619	6771	9921	3068	6213	9355	2494	5630	8764	1896	5025
47	1035	4198	7358	0516	3671	6824	9974	3121	6265	9407	2546	5683	8817	1948	5077
48	1088	4251	7411	0569	3724	6876	0026	3173	6317	9459	2598	5735	8869	2000	5129
49	1140	4303	7464	0621	3776	6929	0078	3225	6370	9512	2651	5787	8921	2052	5181
50	1193	4356	7516	0674	3829	6981	0131	3278	6422	9564	2703	5839	8973	2104	5233
51	1246	4409	7569	0727	3882	7034	0183	3330	6475	9616	2755	5892	9025	2157	5285
52	1299	4462	7622	0779	3934	7086	0236	3383	6527	9669	2808	5944	9078	2209	5337
53	1351	4514	7674	0832	3987	7139	0288	3435	6579	9721	2860	5996	9130	2261	5389
54	1404	4567	7727	0884	4039	7191	0341	3488	6632	9773	2912	6048	9182	2313	5441
55	1457	4620	7780	0937	4092	7244	0393	3540	6684	9826	2965	6101	9234	2365	5494
56	1510	4672	7832	0990	4144	7296	0446	3592	6737	9878	3017	6153	9287	2417	5546
57	1562	4725	7885	1042	4197	7349	0498	3645	6789	9930	3069	6205	9339	2470	5598
58	1615	4778	7938	1095	4249	7401	0551	3697	6841	9983	3121	6257	9391	2522	5650
59	1668	4830	7990	1147	4302	7454	0603	3750	6894	0035	3174	6310	9443	2574	5702
60	1721	4883	8043	1200	4355	7506	0656	3802	6946	0087	3226	6362	9495	2626	5754
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
	9. 967	9. 967	9. 967	9. 967	9. 967	9. 967	9. 967	9. 967	9. 967	9. 967	9. 967	9. 967	9. 967	9. 967	9. 967	″
	9267	8763	8258	7753	7247	6741	6235	5728	5221	4713	4205	3697	3188	2679	2169	60
	9258	8754	8249	7744	7239	6733	6227	5720	5213	4705	4197	3688	3179	2670	2160	59
	9250	8746	8241	7736	7230	6724	6218	5711	5204	4696	4188	3680	3171	2662	2152	58
	9242	8737	8233	7728	7222	6716	6210	5703	5196	4688	4180	3671	3162	2653	2143	57
	9233	8729	8224	7719	7214	6708	6201	5694	5187	4680	4171	3663	3154	2645	2135	56
	9225	8720	8216	7711	7205	6699	6193	5686	5179	4671	4163	3654	3145	2636	2126	55
	9216	8712	8207	7702	7197	6691	6184	5678	5170	4663	4154	3646	3137	2628	2118	54
	9208	8704	8199	7694	7188	6682	6176	5669	5162	4654	4146	3637	3129	2619	2109	53
	9200	8695	8191	7685	7180	6674	6167	5661	5153	4646	4138	3629	3120	2611	2101	52
	9191	8687	8182	7677	7171	6665	6159	5652	5145	4637	4129	3621	3112	2602	2092	51
	9183	8678	8174	7669	7163	6657	6151	5644	5136	4629	4121	3612	3103	2594	2084	50
	9174	8670	8165	7660	7155	6649	6142	5635	5128	4620	4112	3604	3095	2585	2075	49
	9166	8662	8157	7652	7146	6640	6134	5627	5120	4612	4104	3595	3086	2577	2067	48
	9158	8653	8148	7643	7138	6632	6125	5618	5111	4603	4095	3587	3078	2568	2058	47
	9149	8645	8140	7635	7129	6623	6117	5610	5103	4595	4087	3578	3069	2560	2050	46
	9141	8636	8132	7626	7121	6615	6108	5601	5094	4586	4078	3570	3061	2551	2041	45
	9132	8628	8123	7618	7112	6606	6100	5593	5086	4578	4070	3561	3052	2543	2033	44
	9124	8620	8115	7610	7104	6598	6091	5585	5077	4569	4061	3553	3044	2534	2024	43
	9116	8611	8106	7601	7096	6589	6083	5576	5069	4561	4053	3544	3035	2526	2016	42
	9107	8603	8098	7593	7087	6581	6075	5568	5060	4553	4044	3536	3027	2517	2007	41
	9099	8594	8090	7584	7079	6573	6066	5559	5052	4544	4036	3527	3018	2509	1999	40
	9090	8586	8081	7576	7070	6564	6058	5551	5043	4536	4027	3519	3010	2500	1990	39
	9082	8578	8073	7567	7062	6556	6049	5542	5035	4527	4019	3510	3001	2492	1982	38
	9073	8569	8064	7559	7053	6547	6041	5534	5026	4519	4010	3502	2993	2483	1973	37
	9065	8561	8056	7551	7045	6539	6032	5525	5018	4510	4002	3493	2984	2475	1965	36
	9057	8552	8047	7542	7037	6530	6024	5517	5010	4502	3994	3485	2976	2466	1956	35
	9048	8544	8039	7534	7028	6522	6015	5508	5001	4493	3985	3476	2967	2458	1948	34
	9040	8535	8031	7525	7020	6514	6007	5500	4993	4485	3977	3468	2959	2449	1939	33
	9031	8527	8022	7517	7011	6505	5999	5492	4984	4476	3968	3459	2950	2441	1931	32
	9023	8519	8014	7509	7003	6497	5990	5483	4976	4468	3960	3451	2942	2432	1922	31
	9015	8510	8005	7500	6994	6488	5982	5475	4967	4459	3951	3442	2933	2424	1914	30
	9006	8502	7997	7492	6986	6480	5973	5466	4959	4451	3943	3434	2925	2415	1905	29
	8998	8493	7989	7483	6978	6471	5965	5458	4950	4442	3934	3425	2916	2407	1897	28
	8989	8485	7980	7475	6969	6463	5956	5449	4942	4434	3926	3417	2908	2398	1888	27
	8981	8477	7972	7466	6961	6454	5948	5441	4933	4426	3917	3408	2899	2390	1880	26
	8973	8468	7963	7458	6952	6446	5939	5432	4925	4417	3909	3400	2891	2381	1871	25
	8964	8460	7955	7450	6944	6438	5931	5424	4916	4409	3900	3392	2882	2373	1863	24
	8956	8451	7946	7441	6935	6429	5923	5415	4908	4400	3892	3383	2874	2364	1854	23
	8947	8443	7938	7433	6927	6421	5914	5407	4900	4392	3883	3375	2865	2356	1846	22
	8939	8435	7930	7424	6918	6412	5906	5399	4891	4383	3875	3366	2857	2347	1837	21
	8931	8426	7921	7416	6910	6404	5897	5390	4883	4375	3866	3358	2848	2339	1829	20
	8922	8418	7913	7407	6902	6395	5889	5382	4874	4366	3858	3349	2840	2330	1820	19
	8914	8409	7904	7399	6893	6387	5880	5373	4866	4358	3849	3341	2831	2322	1812	18
	8905	8401	7896	7391	6885	6379	5872	5365	4857	4349	3841	3332	2823	2313	1803	17
	8897	8392	7888	7382	6876	6370	5863	5356	4849	4341	3832	3324	2814	2305	1795	16
	8889	8384	7879	7374	6868	6362	5855	5348	4840	4332	3824	3315	2806	2296	1786	15
	8880	8376	7871	7365	6859	6353	5847	5339	4832	4324	3816	3307	2797	2288	1778	14
	8872	8367	7862	7357	6851	6345	5838	5331	4823	4315	3807	3298	2789	2279	1769	13
	8863	8359	7854	7348	6843	6336	5830	5322	4815	4307	3799	3290	2780	2271	1761	12
	8855	8350	7845	7340	6834	6328	5821	5314	4806	4298	3790	3281	2772	2262	1752	11
	8847	8342	7837	7332	6826	6319	5813	5306	4798	4290	3782	3273	2763	2254	1744	10
	8838	8334	7829	7323	6817	6311	5804	5297	4790	4282	3773	3264	2755	2245	1735	9
	8830	8325	7820	7315	6809	6303	5796	5289	4781	4273	3765	3256	2747	2237	1727	8
	8821	8317	7812	7306	6800	6294	5787	5280	4773	4265	3756	3247	2738	2228	1718	7
	8813	8308	7803	7298	6792	6286	5779	5272	4764	4256	3748	3239	2730	2220	1710	6
	8805	8300	7795	7289	6784	6277	5770	5263	4756	4248	3739	3230	2721	2211	1701	5
	8796	8292	7786	7281	6775	6269	5762	5255	4747	4239	3731	3222	2713	2203	1693	4
	8788	8283	7778	7273	6767	6260	5754	5246	4739	4231	3722	3213	2704	2194	1684	3
	8779	8275	7770	7264	6758	6252	5745	5238	4730	4222	3714	3205	2696	2186	1676	2
	8771	8266	7761	7256	6750	6243	5737	5229	4722	4214	3705	3196	2687	2177	1667	1
	8763	8258	7753	7247	6741	6235	5728	5221	4713	4205	3697	3188	2679	2169	1659	0
	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

″	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9. 600	9. 601	9. 601	9. 602	9. 602	9. 602	9. 603	9. 603	9. 603	9. 604	9. 604	9. 604	9. 605	9. 605	9. 606
0	9289	2958	6625	0290	3953	7613	1271	4927	8581	2233	5882	9529	3174	6817	0457
1	9350	3019	6686	0351	4014	7674	1332	4988	8642	2294	5943	9590	3235	6877	0518
2	9411	3080	6747	0412	4075	7735	1393	5049	8703	2354	6004	9651	3295	6938	0579
3	9472	3141	6808	0473	4136	7796	1454	5110	8764	2415	6064	9711	3356	6999	0639
4	9533	3203	6870	0534	4197	7857	1515	5171	8825	2476	6125	9772	3417	7060	0700
5	9594	3264	6931	0595	4258	7918	1576	5232	8886	2537	6186	9833	3478	7120	0761
6	9656	3325	6992	0656	4319	7979	1637	5293	8946	2598	6247	9894	3538	7181	0821
7	9717	3386	7053	0718	4380	8040	1698	5354	9007	2659	6308	9954	3599	7242	0882
8	9778	3447	7114	0779	4441	8101	1759	5415	9068	2719	6368	0015	3660	7302	0942
9	9839	3508	7175	0840	4502	8162	1820	5476	9129	2780	6429	0076	3721	7363	1003
10	9900	3569	7236	0901	4563	8223	1881	5536	9190	2841	6490	0137	3781	7424	1064
11	9962	3630	7297	0962	4624	8284	1942	5597	9251	2902	6551	0198	3842	7484	1124
12	0023	3692	7358	1023	4685	8345	2003	5658	9312	2963	6612	0258	3903	7545	1185
13	0084	3753	7419	1084	4746	8406	2064	5719	9372	3024	6672	0319	3963	7606	1246
14	0145	3814	7481	1145	4807	8467	2125	5780	9433	3084	6733	0380	4024	7666	1306
15	0206	3875	7542	1206	4868	8528	2186	5841	9494	3145	6794	0441	4085	7727	1367
16	0267	3936	7603	1267	4929	8589	2247	5902	9555	3206	6855	0501	4146	7788	1428
17	0329	3997	7664	1328	4990	8650	2307	5963	9616	3267	6916	0562	4206	7848	1488
18	0390	4058	7725	1389	5051	8711	2368	6024	9677	3328	6976	0623	4267	7909	1549
19	0451	4120	7786	1450	5112	8772	2429	6085	9738	3389	7037	0684	4328	7970	1610
20	0512	4181	7847	1511	5173	8833	2490	6146	9799	3449	7098	0744	4389	8030	1670
21	0573	4242	7908	1572	5234	8894	2551	6206	9859	3510	7159	0805	4449	8091	1731
22	0634	4303	7969	1633	5295	8955	2612	6267	9920	3571	7220	0866	4510	8152	1792
23	0695	4364	8030	1694	5356	9016	2673	6328	9981	3632	7280	0927	4571	8213	1852
24	0757	4425	8091	1755	5417	9077	2734	6389	0042	3693	7341	0987	4631	8273	1913
25	0818	4486	8152	1816	5478	9138	2795	6450	0103	3754	7402	1048	4692	8334	1973
26	0879	4547	8214	1878	5539	9199	2856	6511	0164	3814	7463	1109	4753	8395	2034
27	0940	4609	8275	1939	5600	9260	2917	6572	0225	3875	7523	1170	4814	8455	2095
28	1001	4670	8336	2000	5661	9321	2978	6633	0285	3936	7584	1230	4874	8516	2155
29	1062	4731	8397	2061	5722	9382	3039	6694	0346	3997	7645	1291	4935	8577	2216
30	1124	4792	8458	2122	5783	9443	3100	6755	0407	4058	7706	1352	4996	8637	2277
31	1185	4853	8519	2183	5844	9504	3161	6815	0468	4118	7767	1413	5056	8698	2337
32	1246	4914	8580	2244	5905	9565	3222	6876	0529	4179	7827	1473	5117	8759	2398
33	1307	4975	8641	2305	5966	9625	3282	6937	0590	4240	7888	1534	5178	8819	2459
34	1368	5036	8702	2366	6027	9686	3343	6998	0651	4301	7949	1595	5239	8880	2519
35	1429	5097	8763	2427	6088	9747	3404	7059	0711	4362	8010	1656	5299	8941	2580
36	1491	5159	8824	2488	6149	9808	3465	7120	0772	4423	8071	1716	5360	9001	2641
37	1552	5220	8885	2549	6210	9869	3526	7181	0833	4483	8131	1777	5421	9062	2701
38	1613	5281	8947	2610	6271	9930	3587	7242	0894	4544	8192	1838	5481	9123	2762
39	1674	5342	9008	2671	6332	9991	3648	7303	0955	4605	8253	1899	5542	9183	2822
40	1735	5403	9069	2732	6393	0052	3709	7363	1016	4666	8314	1959	5603	9244	2883
41	1796	5464	9130	2793	6454	0113	3770	7424	1077	4727	8374	2020	5663	9305	2944
42	1857	5525	9191	2854	6515	0174	3831	7485	1137	4787	8435	2081	5724	9365	3004
43	1919	5586	9252	2915	6576	0235	3892	7546	1198	4848	8496	2142	5785	9426	3065
44	1980	5647	9313	2976	6637	0296	3953	7607	1259	4909	8557	2202	5846	9487	3126
45	2041	5709	9374	3037	6698	0357	4014	7668	1320	4970	8618	2263	5906	9547	3186
46	2102	5770	9435	3098	6759	0418	4075	7729	1381	5031	8678	2324	5967	9608	3247
47	2163	5831	9496	3159	6820	0479	4135	7790	1442	5092	8739	2384	6028	9669	3307
48	2224	5892	9557	3220	6881	0540	4196	7851	1503	5152	8800	2445	6088	9729	3368
49	2285	5953	9618	3281	6942	0601	4257	7911	1563	5213	8861	2506	6149	9790	3429
50	2347	6014	9679	3342	7003	0662	4318	7972	1624	5274	8921	2567	6210	9851	3489
51	2408	6075	9740	3403	7064	0723	4379	8033	1685	5335	8982	2627	6270	9911	3550
52	2469	6136	9802	3465	7125	0784	4440	8094	1746	5396	9043	2688	6331	9972	3611
53	2530	6197	9863	3526	7186	0845	4501	8155	1807	5456	9104	2749	6392	0033	3671
54	2591	6259	9924	3587	7247	0906	4562	8216	1868	5517	9165	2810	6453	0093	3732
55	2652	6320	9985	3648	7308	0967	4623	8277	1928	5578	9225	2870	6513	0154	3792
56	2713	6381	0046	3709	7369	1028	4684	8338	1989	5639	9286	2931	6574	0215	3853
57	2775	6442	0107	3770	7430	1089	4745	8399	2050	5700	9347	2992	6635	0275	3914
58	2836	6503	0168	3831	7491	1149	4806	8459	2111	5760	9408	3053	6695	0336	3974
59	2897	6564	0229	3892	7552	1210	4866	8520	2172	5821	9468	3113	6756	0397	4035
60	2958	6625	0290	3953	7613	1271	4927	8581	2233	5882	9529	3174	6817	0457	4096
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	″
10. 399	10. 398	10. 398	10. 397	10. 397	10. 397	10. 396	10. 396	10. 396	10. 395	10. 395	10. 395	10. 394	10. 394	10. 393	
0711	7042	3375	9710	6047	2387	8729	5073	1419	7767	4118	0471	6826	3183	9543	60
0650	6981	3314	9649	5986	2326	8668	5012	1358	7706	4057	0410	6765	3123	9482	59
0589	6920	3253	9588	5925	2265	8607	4951	1297	7646	3996	0349	6705	3062	9421	58
0528	6859	3192	9527	5864	2204	8546	4890	1236	7585	3936	0289	6644	3001	9361	57
0467	6797	3130	9466	5803	2143	8485	4829	1175	7524	3875	0228	6583	2940	9300	56
0406	6736	3069	9405	5742	2082	8424	4768	1114	7463	3814	0167	6522	2880	9239	55
0344	6675	3008	9344	5681	2021	8363	4707	1054	7402	3753	0106	6462	2819	9179	54
0283	6614	2947	9282	5620	1960	8302	4646	0993	7341	3692	0046	6401	2758	9118	53
0222	6553	2886	9221	5559	1899	8241	4585	0932	7281	3632	9985	6340	2698	9058	52
0161	6492	2825	9160	5498	1838	8180	4524	0871	7220	3571	9924	6279	2637	8997	51
0100	6431	2764	9099	5437	1777	8119	4464	0810	7159	3510	9863	6219	2576	8936	50
0038	6370	2703	9038	5376	1716	8058	4403	0749	7098	3449	9802	6158	2516	8876	49
9977	6308	2642	8977	5315	1655	7997	4342	0688	7037	3388	9742	6097	2455	8815	48
9916	6247	2581	8916	5254	1594	7936	4281	0628	6976	3328	9681	6037	2394	8754	47
9855	6186	2519	8855	5193	1533	7875	4220	0567	6916	3267	9620	5976	2334	8694	46
9794	6125	2458	8794	5132	1472	7814	4159	0506	6855	3206	9559	5915	2273	8633	45
9733	6064	2397	8733	5071	1411	7753	4098	0445	6794	3145	9499	5854	2212	8572	44
9671	6003	2336	8672	5010	1350	7693	4037	0384	6733	3084	9438	5794	2152	8512	43
9610	5942	2275	8611	4949	1289	7632	3976	0323	6672	3024	9377	5733	2091	8451	42
9549	5880	2214	8550	4888	1228	7571	3915	0262	6611	2963	9316	5672	2030	8390	41
9488	5819	2153	8489	4827	1167	7510	3854	0201	6551	2902	9256	5611	1970	8330	40
9427	5758	2092	8428	4766	1106	7449	3794	0141	6490	2841	9195	5551	1909	8269	39
9366	5697	2031	8367	4705	1045	7388	3733	0080	6429	2780	9134	5490	1848	8208	38
9305	5636	1970	8306	4644	0984	7327	3672	0019	6368	2720	9073	5429	1787	8148	37
9243	5575	1909	8245	4583	0923	7266	3611	9958	6307	2659	9013	5369	1727	8087	36
9182	5514	1848	8184	4522	0862	7205	3550	9897	6246	2598	8952	5308	1666	8027	35
9121	5453	1786	8122	4461	0801	7144	3489	9836	6186	2537	8891	5247	1605	7966	34
9060	5391	1725	8061	4400	0740	7083	3428	9775	6125	2477	8830	5186	1545	7905	33
8999	5330	1664	8000	4339	0679	7022	3367	9715	6064	2416	8770	5126	1484	7845	32
8938	5269	1603	7939	4278	0618	6961	3306	9654	6003	2355	8709	5065	1423	7784	31
8876	5208	1542	7878	4217	0557	6900	3245	9593	5942	2294	8648	5004	1363	7723	30
8815	5147	1481	7817	4156	0496	6839	3185	9532	5882	2233	8587	4944	1302	7663	29
8754	5086	1420	7756	4095	0435	6778	3124	9471	5821	2173	8527	4883	1241	7602	28
8693	5025	1359	7695	4034	0375	6718	3063	9410	5760	2112	8466	4822	1181	7541	27
8632	4964	1298	7634	3973	0314	6657	3002	9349	5699	2051	8405	4761	1120	7481	26
8571	4903	1237	7573	3912	0253	6596	2941	9289	5638	1990	8344	4701	1059	7420	25
8509	4841	1176	7512	3851	0192	6535	2880	9228	5577	1929	8284	4640	0999	7359	24
8448	4780	1115	7451	3790	0131	6474	2819	9167	5517	1869	8223	4579	0938	7299	23
8387	4719	1053	7390	3729	0070	6413	2758	9106	5456	1808	8162	4519	0877	7238	22
8326	4658	0992	7329	3668	0009	6352	2697	9045	5395	1747	8101	4458	0817	7178	21
8265	4597	0931	7268	3607	9948	6291	2637	8984	5334	1686	8041	4397	0756	7117	20
8204	4536	0870	7207	3546	9887	6230	2576	8923	5273	1626	7980	4337	0695	7056	19
8143	4475	0809	7146	3485	9826	6169	2515	8863	5213	1565	7919	4276	0635	6996	18
8081	4414	0748	7085	3424	9765	6108	2454	8802	5152	1504	7858	4215	0574	6935	17
8020	4353	0687	7024	3363	9704	6047	2393	8741	5091	1443	7798	4154	0513	6874	16
7959	4291	0626	6963	3302	9643	5986	2332	8680	5030	1382	7737	4094	0453	6814	15
7898	4230	0565	6902	3241	9582	5925	2271	8619	4969	1322	7676	4033	0392	6753	14
7837	4169	0504	6841	3180	9521	5865	2210	8558	4908	1261	7616	3972	0331	6693	13
7776	4108	0443	6780	3119	9460	5804	2149	8497	4848	1200	7555	3912	0271	6632	12
7715	4047	0382	6719	3058	9399	5743	2089	8437	4787	1139	7494	3851	0210	6571	11
7653	3986	0321	6658	2997	9338	5682	2028	8376	4726	1079	7433	3790	0149	6511	10
7592	3925	0260	6597	2936	9277	5621	1967	8315	4665	1018	7373	3730	0089	6450	9
7531	3864	0198	6535	2875	9216	5560	1906	8254	4604	0957	7312	3669	0028	6389	8
7470	3803	0137	6474	2814	9155	5499	1845	8193	4544	0896	7251	3608	9967	6329	7
7409	3741	0076	6413	2753	9094	5438	1784	8132	4483	0835	7190	3547	9907	6268	6
7348	3680	0015	6352	2692	9033	5377	1723	8072	4422	0775	7130	3487	9846	6208	5
7287	3619	9954	6291	2631	8972	5316	1662	8011	4361	0714	7069	3426	9785	6147	4
7225	3558	9893	6230	2570	8911	5255	1601	7950	4300	0653	7008	3365	9725	6086	3
7164	3497	9832	6169	2509	8851	5194	1541	7889	4240	0592	6947	3305	9664	6026	2
7103	3436	9771	6108	2448	8790	5134	1480	7828	4179	0532	6887	3244	9603	5965	1
7042	3375	9710	6047	2387	8729	5073	1419	7767	4118	0471	6826	3183	9543	5904	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

22 Deg. Sine

"	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
	9.573	9.573	9.574	9.574	9.574	9.575	9.575	9.575	9.576	9.576	9.576	9.576	9.577	9.577	9.577
0	5754	8880	2003	5123	8240	1356	4468	7578	0685	3790	6892	9991	3088	6183	9275
1	5806	8932	2055	5175	8292	1407	4520	7630	0737	3842	6944	0043	3140	6234	9326
2	5858	8984	2107	5227	8344	1459	4572	7681	0789	3893	6995	0095	3192	6286	9378
3	5911	9036	2159	5279	8396	1511	4624	7733	0840	3945	7047	0146	3243	6337	9429
4	5963	9088	2211	5331	8448	1563	4675	7785	0892	3997	7099	0198	3295	6389	9481
5	6015	9140	2263	5383	8500	1615	4727	7837	0944	4048	7150	0250	3346	6440	9532
6	6067	9192	2315	5435	8552	1667	4779	7889	0996	4100	7202	0301	3398	6492	9584
7	6119	9244	2367	5487	8604	1719	4831	7941	1047	4152	7254	0353	3450	6544	9635
8	6171	9296	2419	5539	8656	1771	4883	7992	1099	4204	7305	0405	3501	6595	9687
9	6223	9348	2471	5591	8708	1823	4935	8044	1151	4255	7357	0456	3553	6647	9738
10	6275	9400	2523	5643	8760	1874	4986	8096	1203	4307	7409	0508	3604	6698	9790
11	6327	9452	2575	5695	8812	1926	5038	8148	1255	4359	7460	0559	3656	6750	9841
12	6379	9504	2627	5747	8864	1978	5090	8200	1306	4410	7512	0611	3707	6801	9893
13	6432	9557	2679	5799	8916	2030	5142	8251	1358	4462	7564	0663	3759	6853	9944
14	6484	9609	2731	5851	8968	2082	5194	8303	1410	4514	7615	0714	3811	6904	9996
15	6536	9661	2783	5902	9019	2134	5246	8355	1462	4566	7667	0766	3862	6956	0047
16	6588	9713	2835	5954	9071	2186	5298	8407	1513	4617	7719	0818	3914	7007	0099
17	6640	9765	2887	6006	9123	2238	5349	8459	1565	4669	7770	0869	3965	7059	0150
18	6692	9817	2939	6058	9175	2290	5401	8510	1617	4721	7822	0921	4017	7111	0202
19	6744	9869	2991	6110	9227	2341	5453	8562	1669	4772	7874	0972	4069	7162	0253
20	6796	9921	3043	6162	9279	2393	5505	8614	1720	4824	7925	1024	4120	7214	0305
21	6848	9973	3095	6214	9331	2445	5557	8666	1772	4876	7977	1076	4172	7265	0356
22	6900	0025	3147	6266	9383	2497	5609	8717	1824	4928	8029	1127	4223	7317	0408
23	6953	0077	3199	6318	9435	2549	5660	8769	1876	4979	8080	1179	4275	7368	0459
24	7005	0129	3251	6370	9487	2601	5712	8821	1927	5031	8132	1231	4326	7420	0511
25	7057	0181	3303	6422	9539	2653	5764	8873	1979	5083	8184	1282	4378	7471	0562
26	7109	0233	3355	6474	9591	2705	5816	8925	2031	5134	8235	1334	4430	7523	0614
27	7161	0285	3407	6526	9643	2756	5868	8976	2083	5186	8287	1385	4481	7574	0665
28	7213	0337	3459	6578	9695	2808	5920	9028	2134	5238	8339	1437	4533	7626	0716
29	7265	0389	3511	6630	9746	2860	5971	9080	2186	5289	8390	1489	4584	7677	0768
30	7317	0441	3563	6682	9798	2912	6023	9132	2238	5341	8442	1540	4636	7729	0819
31	7369	0493	3615	6734	9850	2964	6075	9184	2290	5393	8494	1592	4687	7780	0871
32	7421	0546	3667	6786	9902	3016	6127	9235	2341	5445	8545	1643	4739	7832	0922
33	7474	0598	3719	6838	9954	3068	6179	9287	2393	5496	8597	1695	4791	7884	0974
34	7526	0650	3771	6890	0006	3120	6231	9339	2445	5548	8649	1747	4842	7935	1025
35	7578	0702	3823	6942	0058	3171	6282	9391	2497	5600	8700	1798	4894	7987	1077
36	7630	0754	3875	6994	0110	3223	6334	9443	2548	5651	8752	1850	4945	8038	1128
37	7682	0806	3927	7046	0162	3275	6386	9494	2600	5703	8804	1902	4997	8090	1180
38	7734	0858	3979	7098	0214	3327	6438	9546	2652	5755	8855	1953	5048	8141	1231
39	7786	0910	4031	7150	0266	3379	6490	9598	2703	5806	8907	2005	5100	8193	1283
40	7838	0962	4083	7202	0317	3431	6542	9650	2755	5858	8959	2056	5152	8244	1334
41	7890	1014	4135	7254	0369	3483	6593	9701	2807	5910	9010	2108	5203	8296	1386
42	7942	1066	4187	7305	0421	3535	6645	9753	2859	5962	9062	2160	5255	8347	1437
43	7994	1118	4239	7357	0473	3586	6697	9805	2910	6013	9113	2211	5306	8399	1489
44	8046	1170	4291	7409	0525	3638	6749	9857	2962	6065	9165	2263	5358	8450	1540
45	8099	1222	4343	7461	0577	3690	6801	9909	3014	6117	9217	2314	5409	8502	1592
46	8151	1274	4395	7513	0629	3742	6852	9960	3066	6168	9268	2366	5461	8553	1643
47	8203	1326	4447	7565	0681	3794	6904	0012	3117	6220	9320	2418	5513	8605	1695
48	8255	1378	4499	7617	0733	3846	6956	0064	3169	6272	9372	2469	5564	8656	1746
49	8307	1430	4551	7669	0785	3898	7008	0116	3221	6323	9423	2521	5616	8708	1798
50	8359	1482	4603	7721	0837	3949	7060	0167	3273	6375	9475	2572	5667	8759	1849
51	8411	1534	4655	7773	0888	4001	7112	0219	3324	6427	9527	2624	5719	8811	1901
52	8463	1586	4707	7825	0940	4053	7163	0271	3376	6478	9578	2676	5770	8862	1952
53	8515	1638	4759	7877	0992	4105	7215	0323	3428	6530	9630	2727	5822	8914	2003
54	8567	1690	4811	7929	1044	4157	7267	0375	3479	6582	9682	2779	5873	8965	2055
55	8619	1742	4863	7981	1096	4209	7319	0426	3531	6634	9733	2830	5925	9017	2106
56	8671	1794	4915	8033	1148	4261	7371	0478	3583	6685	9785	2882	5977	9068	2158
57	8723	1846	4967	8085	1200	4312	7422	0530	3635	6737	9837	2934	6028	9120	2209
58	8776	1898	5019	8137	1252	4364	7474	0582	3686	6789	9888	2985	6080	9172	2261
59	8828	1951	5071	8189	1304	4416	7526	0633	3738	6840	9940	3037	6131	9223	2312
60	8880	2003	5123	8240	1356	4468	7578	0685	3790	6892	9991	3088	6183	9275	2364
"	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Sine Deg. 67

22 Deg. Co-Sine

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	"
9.967	9.967	9.967	9.967	9.966	9.966	9.966	9.966	9.966	9.966	9.966	9.966	9.966	9.966	9.966	
1659	1148	0637	0125	9614	9101	8588	8075	7562	7048	6533	6018	5503	4987	4471	60
1650	1139	0628	0117	9605	9093	8580	8067	7553	7039	6525	6010	5494	4979	4462	59
1642	1131	0620	0108	9596	9084	8571	8058	7545	7030	6516	6001	5486	4970	4454	58
1633	1122	0611	0100	9588	9076	8563	8050	7536	7022	6507	5992	5477	4961	4445	57
1625	1114	0603	0091	9579	9067	8554	8041	7527	7013	6499	5984	5468	4953	4436	56
1616	1105	0594	0083	9571	9058	8546	8032	7519	7005	6490	5975	5460	4944	4428	55
1608	1097	0586	0074	9562	9050	8537	8024	7510	6996	6482	5967	5451	4936	4419	54
1599	1088	0577	0066	9554	9041	8529	8015	7502	6988	6473	5958	5443	4927	4411	53
1591	1080	0569	0057	9545	9033	8520	8007	7493	6979	6464	5950	5434	4918	4402	52
1582	1071	0560	0049	9537	9024	8511	7998	7485	6970	6456	5941	5426	4910	4393	51
1574	1063	0552	0040	9528	9016	8503	7990	7476	6962	6447	5932	5417	4901	4385	50
1565	1054	0543	0032	9520	9007	8494	7981	7467	6953	6439	5924	5408	4893	4376	49
1557	1046	0535	0023	9511	8999	8486	7973	7459	6945	6430	5915	5400	4884	4368	48
1548	1037	0526	0015	9503	8990	8477	7964	7450	6936	6422	5907	5391	4875	4359	47
1539	1029	0518	0006	9494	8982	8469	7955	7442	6928	6413	5898	5383	4867	4350	46
1531	1020	0509	9998	9485	8973	8460	7947	7433	6919	6404	5889	5374	4858	4342	45
1522	1012	0501	9989	9477	8965	8452	7938	7425	6910	6396	5881	5365	4849	4333	44
1514	1003	0492	9980	9468	8956	8443	7930	7416	6902	6387	5872	5357	4841	4325	43
1505	0995	0484	9972	9460	8947	8435	7921	7407	6893	6379	5864	5348	4832	4316	42
1497	0986	0475	9963	9451	8939	8426	7913	7399	6885	6370	5855	5340	4824	4307	41
1488	0978	0466	9955	9443	8930	8417	7904	7390	6876	6362	5846	5331	4815	4299	40
1480	0969	0458	9946	9434	8922	8409	7896	7382	6868	6353	5838	5322	4806	4290	39
1471	0961	0449	9938	9426	8913	8400	7887	7373	6859	6344	5829	5314	4798	4282	38
1463	0952	0441	9929	9417	8905	8392	7878	7365	6850	6336	5821	5305	4789	4273	37
1454	0944	0432	9921	9409	8896	8383	7870	7356	6842	6327	5812	5297	4781	4264	36
1446	0935	0424	9912	9400	8888	8375	7861	7347	6833	6319	5804	5288	4772	4256	35
1437	0927	0415	9904	9392	8879	8366	7853	7339	6825	6310	5795	5279	4763	4247	34
1429	0918	0407	9895	9383	8871	8358	7844	7330	6816	6301	5786	5271	4755	4238	33
1420	0910	0398	9887	9375	8862	8349	7836	7322	6808	6293	5778	5262	4746	4230	32
1412	0901	0390	9878	9366	8853	8340	7827	7313	6799	6284	5769	5254	4738	4221	31
1403	0893	0381	9870	9357	8845	8332	7818	7305	6790	6276	5761	5245	4729	4213	30
1395	0884	0373	9861	9349	8836	8323	7810	7296	6782	6267	5752	5236	4720	4204	29
1386	0875	0364	9852	9340	8828	8315	7801	7288	6773	6259	5743	5228	4712	4195	28
1378	0867	0356	9844	9332	8819	8306	7793	7279	6765	6250	5735	5219	4703	4187	27
1369	0858	0347	9835	9323	8811	8298	7784	7270	6756	6241	5726	5211	4695	4178	26
1361	0850	0339	9827	9315	8802	8289	7776	7262	6748	6233	5718	5202	4686	4170	25
1352	0841	0330	9818	9306	8794	8281	7767	7253	6739	6224	5709	5193	4677	4161	24
1344	0833	0322	9810	9298	8785	8272	7759	7245	6730	6216	5700	5185	4669	4152	23
1335	0824	0313	9801	9289	8777	8263	7750	7236	6722	6207	5692	5176	4660	4144	22
1327	0816	0305	9793	9281	8768	8255	7741	7228	6713	6198	5683	5168	4652	4135	21
1318	0807	0296	9784	9272	8759	8246	7733	7219	6705	6190	5675	5159	4643	4127	20
1310	0799	0287	9776	9263	8751	8238	7724	7210	6696	6181	5666	5150	4634	4118	19
1301	0790	0279	9767	9255	8742	8229	7716	7202	6687	6173	5658	5142	4626	4109	18
1293	0782	0270	9759	9246	8734	8221	7707	7193	6679	6164	5649	5133	4617	4101	17
1284	0773	0262	9750	9238	8725	8212	7699	7185	6670	6156	5640	5125	4609	4092	16
1276	0765	0253	9742	9229	8717	8204	7690	7176	6662	6147	5632	5116	4600	4083	15
1267	0756	0245	9733	9221	8708	8195	7682	7168	6653	6138	5623	5107	4591	4075	14
1259	0748	0236	9724	9212	8700	8186	7673	7159	6645	6130	5615	5099	4583	4066	13
1250	0739	0228	9716	9204	8691	8178	7664	7150	6636	6121	5606	5090	4574	4058	12
1242	0731	0219	9707	9195	8682	8169	7656	7142	6627	6113	5597	5082	4566	4049	11
1233	0722	0211	9699	9187	8674	8161	7647	7133	6619	6104	5589	5073	4557	4040	10
1225	0714	0202	9690	9178	8665	8152	7639	7125	6610	6095	5580	5064	4548	4032	9
1216	0705	0194	9682	9170	8657	8144	7630	7116	6602	6087	5572	5056	4540	4023	8
1208	0697	0185	9673	9161	8648	8135	7622	7108	6593	6078	5563	5047	4531	4015	7
1199	0688	0177	9665	9152	8640	8127	7613	7099	6585	6070	5554	5039	4523	4006	6
1191	0680	0168	9656	9144	8631	8118	7604	7090	6576	6061	5546	5030	4514	3997	5
1182	0671	0160	9648	9135	8623	8109	7596	7082	6567	6053	5537	5022	4505	3989	4
1174	0662	0151	9639	9127	8614	8101	7587	7073	6559	6044	5529	5013	4497	3980	3
1165	0654	0143	9631	9118	8606	8092	7579	7065	6550	6035	5520	5004	4488	3972	2
1156	0645	0134	9622	9110	8597	8084	7570	7056	6542	6027	5511	4996	4480	3963	1
1148	0637	0125	9614	9101	8588	8075	7562	7048	6533	6018	5503	4987	4471	3954	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	"

Sine Deg. 67

22 Deg. Tangent — 22 Deg. Co-Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
″	9. 606	9. 606	9. 607	9. 607	9. 607	9. 608	9. 608	9. 608	9. 609	9. 609	9. 610	9. 610	9. 610	9. 611	9. 611	10. 393	10. 393	10. 392	10. 392	10. 392	10. 391	10. 391	10. 391	10. 390	10. 390	10. 389	10. 389	10. 389	10. 388	10. 388	″
0	4096	7732	1366	4997	8627	2254	5880	9503	3124	6742	0359	3973	7586	1196	4804	5904	2268	8634	5003	1373	7746	4120	0497	6876	3258	9641	6027	2414	8804	5196	60
1	4156	7792	1426	5058	8687	2315	5940	9563	3184	6803	0419	4033	7646	1256	4864	5844	2208	8574	4942	1313	7685	4060	0437	6816	3197	9581	5967	2354	8744	5136	59
2	4217	7853	1487	5118	8748	2375	6000	9623	3244	6863	0479	4094	7706	1316	4924	5783	2147	8513	4882	1252	7625	4000	0377	6756	3137	9521	5906	2294	8684	5076	58
3	4277	7913	1547	5179	8808	2436	6061	9684	3304	6923	0540	4154	7766	1376	4984	5723	2087	8453	4821	1192	7564	3939	0316	6696	3077	9460	5846	2234	8624	5016	57
4	4338	7974	1608	5239	8869	2496	6121	9744	3365	6983	0600	4214	7826	1436	5044	5662	2026	8392	4761	1131	7504	3879	0256	6635	3017	9400	5786	2174	8564	4956	56
5	4399	8035	1668	5300	8929	2557	6182	9804	3425	7044	0660	4274	7886	1496	5104	5601	1965	8332	4700	1071	7443	3818	0196	6575	2956	9340	5726	2114	8504	4896	55
6	4459	8095	1729	5360	8990	2617	6242	9865	3485	7104	0720	4335	7947	1557	5164	5541	1905	8271	4640	1010	7383	3758	0135	6515	2896	9280	5665	2053	8443	4836	54
7	4520	8156	1789	5421	9050	2677	6302	9925	3546	7164	0781	4395	8007	1617	5224	5480	1844	8211	4579	0950	7323	3698	0075	6454	2836	9219	5605	1993	8383	4776	53
8	4581	8216	1850	5481	9111	2738	6363	9986	3606	7225	0841	4455	8067	1677	5285	5419	1784	8150	4519	0889	7262	3637	0014	6394	2775	9159	5545	1933	8323	4715	52
9	4641	8277	1911	5542	9171	2798	6423	0046	3666	7285	0901	4515	8127	1737	5345	5359	1723	8089	4458	0829	7202	3577	9954	6334	2715	9099	5485	1873	8263	4655	51
10	4702	8337	1971	5602	9232	2859	6484	0106	3727	7345	0961	4575	8187	1797	5405	5298	1663	8029	4398	0768	7141	3516	9894	6273	2655	9039	5425	1813	8203	4595	50
11	4762	8398	2032	5663	9292	2919	6544	0167	3787	7405	1022	4636	8248	1857	5465	5238	1602	7968	4337	0708	7081	3456	9833	6213	2595	8978	5364	1752	8143	4535	49
12	4823	8459	2092	5723	9353	2980	6604	0227	3847	7466	1082	4696	8308	1917	5525	5177	1541	7908	4277	0647	7020	3396	9773	6153	2534	8918	5304	1692	8083	4475	48
13	4884	8519	2153	5784	9413	3040	6665	0287	3908	7526	1142	4756	8368	1978	5585	5116	1481	7847	4216	0587	6960	3335	9713	6092	2474	8858	5244	1632	8022	4415	47
14	4944	8580	2213	5844	9474	3100	6725	0348	3968	7586	1202	4816	8428	2038	5645	5056	1420	7787	4156	0526	6900	3275	9652	6032	2414	8798	5184	1572	7962	4355	46
15	5005	8640	2274	5905	9534	3161	6786	0408	4028	7647	1263	4876	8488	2098	5705	4995	1360	7726	4095	0466	6839	3214	9592	5972	2353	8737	5124	1512	7902	4295	45
16	5065	8701	2334	5965	9594	3221	6846	0468	4089	7707	1323	4937	8548	2158	5765	4935	1299	7666	4035	0406	6779	3154	9532	5911	2293	8677	5063	1452	7842	4235	44
17	5126	8762	2395	6026	9655	3282	6906	0529	4149	7767	1383	4997	8609	2218	5825	4874	1238	7605	3974	0345	6718	3094	9471	5851	2233	8617	5003	1391	7782	4175	43
18	5187	8822	2455	6086	9715	3342	6967	0589	4209	7827	1443	5057	8669	2278	5886	4813	1178	7545	3914	0285	6658	3033	9411	5791	2173	8557	4943	1331	7722	4114	42
19	5247	8883	2516	6147	9776	3403	7027	0649	4270	7888	1504	5117	8729	2338	5946	4753	1117	7484	3853	0224	6597	2973	9351	5730	2112	8496	4883	1271	7662	4054	41
20	5308	8943	2576	6207	9836	3463	7087	0710	4330	7948	1564	5178	8789	2399	6006	4692	1057	7424	3793	0164	6537	2913	9290	5670	2052	8436	4822	1211	7601	3994	40
21	5368	9004	2637	6268	9897	3523	7148	0770	4390	8008	1624	5238	8849	2459	6066	4632	0996	7363	3732	0103	6477	2852	9230	5610	1992	8376	4762	1151	7541	3934	39
22	5429	9064	2698	6328	9957	3584	7208	0831	4451	8069	1684	5298	8909	2519	6126	4571	0936	7302	3672	0043	6416	2792	9169	5549	1931	8316	4702	1091	7481	3874	38
23	5490	9125	2758	6389	0018	3644	7269	0891	4511	8129	1745	5358	8970	2579	6186	4510	0875	7242	3611	9982	6356	2731	9109	5489	1871	8255	4642	1030	7421	3814	37
24	5550	9186	2819	6449	0078	3705	7329	0951	4571	8189	1805	5418	9030	2639	6246	4450	0814	7181	3551	9922	6295	2671	9049	5429	1811	8195	4582	0970	7361	3754	36
25	5611	9246	2879	6510	0139	3765	7389	1012	4632	8249	1865	5479	9090	2699	6306	4389	0754	7121	3490	9861	6235	2611	8988	5368	1751	8135	4521	0910	7301	3694	35
26	5671	9307	2940	6570	0199	3826	7450	1072	4692	8310	1925	5539	9150	2759	6366	4329	0693	7060	3430	9801	6174	2550	8928	5308	1690	8075	4461	0850	7241	3634	34
27	5732	9367	3000	6631	0260	3886	7510	1132	4752	8370	1986	5599	9210	2819	6427	4268	0633	7000	3369	9740	6114	2490	8868	5248	1630	8014	4401	0790	7181	3573	33
28	5793	9428	3061	6691	0320	3946	7571	1193	4813	8430	2046	5659	9270	2880	6487	4207	0572	6939	3309	9680	6054	2429	8807	5187	1570	7954	4341	0730	7120	3513	32
29	5853	9488	3121	6752	0380	4007	7631	1253	4873	8491	2106	5719	9331	2940	6547	4147	0512	6879	3248	9620	5993	2369	8747	5127	1509	7894	4281	0669	7060	3453	31
30	5914	9549	3182	6812	0441	4067	7691	1313	4933	8551	2166	5780	9391	3000	6607	4086	0451	6818	3188	9559	5933	2309	8687	5067	1449	7834	4220	0609	7000	3393	30
31	5975	9609	3242	6873	0501	4128	7752	1374	4993	8611	2227	5840	9451	3060	6667	4025	0391	6758	3127	9499	5872	2248	8626	5007	1389	7773	4160	0549	6940	3333	29
32	6035	9670	3303	6933	0562	4188	7812	1434	5054	8671	2287	5900	9511	3120	6727	3965	0330	6697	3067	9438	5812	2188	8566	4946	1329	7713	4100	0489	6880	3273	28
33	6096	9731	3363	6994	0622	4248	7873	1494	5114	8732	2347	5960	9571	3180	6787	3904	0269	6637	3006	9378	5752	2127	8506	4886	1268	7653	4040	0429	6820	3213	27
34	6156	9791	3424	7054	0683	4309	7933	1555	5174	8792	2407	6020	9632	3240	6847	3844	0209	6576	2946	9317	5691	2067	8445	4826	1208	7593	3980	0368	6760	3153	26
35	6217	9852	3484	7115	0743	4369	7993	1615	5235	8852	2467	6081	9692	3301	6907	3783	0148	6516	2885	9257	5631	2007	8385	4765	1148	7533	3919	0308	6699	3093	25
36	6278	9912	3545	7175	0804	4430	8054	1675	5295	8912	2528	6141	9752	3361	6967	3722	0088	6455	2825	9196	5570	1946	8325	4705	1088	7472	3859	0248	6639	3033	24
37	6338	9973	3605	7236	0864	4490	8114	1736	5355	8973	2588	6201	9812	3421	7027	3662	0027	6395	2764	9136	5510	1886	8264	4645	1027	7412	3799	0188	6579	2973	23
38	6399	0033	3666	7296	0925	4551	8174	1796	5416	9033	2648	6261	9872	3481	7088	3601	9967	6334	2704	9075	5449	1826	8204	4584	0967	7352	3739	0128	6519	2912	22
39	6459	0094	3727	7357	0985	4611	8235	1856	5476	9093	2708	6321	9932	3541	7148	3541	9906	6273	2643	9015	5389	1765	8144	4524	0907	7292	3679	0068	6459	2852	21
40	6520	0155	3787	7417	1045	4671	8295	1917	5536	9154	2769	6382	9992	3601	7208	3480	9845	6213	2583	8955	5329	1705	8083	4464	0846	7231	3618	0008	6399	2792	20
41	6580	0215	3848	7478	1106	4732	8356	1977	5597	9214	2829	6442	0053	3661	7268	3420	9785	6152	2522	8894	5268	1644	8023	4403	0786	7171	3558	9947	6339	2732	19
42	6641	0276	3908	7538	1166	4792	8416	2037	5657	9274	2889	6502	0113	3721	7328	3359	9724	6092	2462	8834	5208	1584	7963	4343	0726	7111	3498	9887	6279	2672	18
43	6702	0336	3969	7599	1227	4853	8476	2098	5717	9334	2949	6562	0173	3782	7388	3298	9664	6031	2401	8773	5147	1524	7902	4283	0666	7051	3438	9827	6218	2612	17
44	6762	0397	4029	7659	1287	4913	8537	2158	5777	9395	3010	6622	0233	3842	7448	3238	9603	5971	2341	8713	5087	1463	7842	4223	0605	6990	3378	9767	6158	2552	16
45	6823	0457	4090	7720	1348	4973	8597	2218	5838	9455	3070	6683	0293	3902	7508	3177	9543	5910	2280	8652	5027	1403	7782	4162	0545	6930	3317	9707	6098	2492	15
46	6883	0518	4150	7780	1408	5034	8657	2279	5898	9515	3130	6743	0353	3962	7568	3117	9482	5850	2220	8592	4966	1343	7721	4102	0485	6870	3257	9647	6038	2432	14
47	6944	0578	4211	7841	1469	5094	8718	2339	5958	9575	3190	6803	0414	4022	7628	3056	9422	5789	2159	8531	4906	1282	7661	4042	0425	6810	3197	9586	5978	2372	13
48	7005	0639	4271	7901	1529	5155	8778	2400	6019	9636	3251	6863	0474	4082	7688	2995	9361	5729	2099	8471	4843	1222	7600	3981	0364	6749	3137	9526	5918	2312	12
49	7065	0700	4332	7962	1589	5215	8839	2460	6079	9696	3311	6923	0534	4142	7749	2935	9300	5668	2038	8411	4785	1161	7540	3921	0304	6689	3077	9466	5858	2251	11
50	7126	0760	4392	8022	1650	5276	8899	2520	6139	9756	3371	6984	0594	4202	7809	2874	9240	5608	1978	8350	4724	1101	7480	3861	0244	6629	3016	9406	5798	2191	10
51	7186	0821	4453	8083	1710	5336	8959	2581	6200	9816	3431	7044	0654	4263	7869	2814	9179	5547	1917	8290	4664	1041	7419	3800	0184	6569	2956	9346	5737	2131	9
52	7247	0881	4513	8143	1771	5396	9020	2641	6260	9877	3491	7104	0714	4323	7929	2753	9119	5487	1857	8229	4604	0980	7359	3740	0123	6509	2896	9286	5677	2071	8
53	7308	0942	4574	8204	1831	5457	9080	2701	6320	9937	3552	7164	0775	4383	7989	2692	9058	5426	1796	8169	4543	0920	7299	3680	0063	6448	2836	9225	5617	2011	7
54	7368	1002	4634	8264	1892	5517	9140	2762	6380	9997	3612	7224	0835	4443	8049	2632	8998	5366	1736	8108	4483	0860	7238	3620	0003	6388	2776	9165	5557	1951	6
55	7429	1063	4695	8325	1952	5578	9201	2822	6441	0058	3672	7285	0895	4503	8109	2571	8937	5305	1675	8048	4422	0799	7178	3559	9942	6328	2715	9105	5497	1891	5
56	7489	1123	4755	8385	2013	5638	9261	2882	6501	0118	3732	7345	0955	4563	8169	2511	8877	5245	1615	7987	4362	0739	7118	3499	9882	6268	2655	9045	5437	1831	4
57	7550	1184	4816	8446	2073	5698	9322	2943	6561	0178	3793	7405	1015	4623	8229	2450	8816	5184	1554	7927	4302	0678	7057	3439	9822	6207	2595	8985	5377	1771	3
58	7611	1245	4876	8506	2133	5759	9382	3003	6622	0238	3853	7465	1075	4683	8289	2389	8755	5124	1494	7867	4241	0618	6997	3378	9762	6147	2535	8925	5317	1711	2
59	7671	1305	4937	8566	2194	5819	9442	3063	6682	0299	3913	7525	1135	4743	8349	2329	8695	5063	1434	7806	4181	0558	6937	3318	9701	6087	2475	8865	5257	1651	1
60	7732	1366	4997	8627	2254	5880	9503	3124	6742	0359	3973	7586	1196	4804	8409	2268	8634	5003	1373	7746	4120	0497	6876	3258	9641	6027	2414	8804	5196	1591	0
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Co-Tangent Deg. 67 — Tangent Deg. 67

22 Deg. Sine

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9.578	9.578	9.578	9.579	9.579	9.579	9.580	9.580	9.580	9.581	9.581	9.581	9.581	9.582	9.582
0	2364	5450	8535	1616	4695	7772	0845	3917	6986	0052	3116	6177	9236	2292	5345
1	2415	5502	8586	1667	4746	7823	0897	3968	7037	0103	3167	6228	9287	2343	5396
2	2467	5553	8637	1719	4798	7874	0948	4019	7088	0154	3218	6279	9338	2394	5447
3	2518	5605	8689	1770	4849	7925	0999	4070	7139	0205	3269	6330	9388	2445	5498
4	2570	5656	8740	1821	4900	7977	1050	4121	7190	0256	3320	6381	9439	2495	5549
5	2621	5708	8791	1873	4952	8028	1101	4173	7241	0307	3371	6432	9490	2546	5600
6	2673	5759	8843	1924	5003	8079	1153	4224	7292	0358	3422	6483	9541	2597	5651
7	2724	5810	8894	1975	5054	8130	1204	4275	7343	0409	3473	6534	9592	2648	5702
8	2775	5862	8946	2027	5105	8182	1255	4326	7395	0461	3524	6585	9643	2699	5752
9	2827	5913	8997	2078	5157	8233	1306	4377	7446	0512	3575	6636	9694	2750	5803
10	2878	5965	9048	2129	5208	8284	1357	4428	7497	0563	3626	6687	9745	2801	5854
11	2930	6016	9100	2181	5259	8335	1409	4480	7548	0614	3677	6738	9796	2852	5905
12	2981	6067	9151	2232	5311	8386	1460	4531	7599	0665	3728	6789	9847	2903	5956
13	3033	6119	9202	2283	5362	8438	1511	4582	7650	0716	3779	6840	9898	2954	6007
14	3084	6170	9254	2335	5413	8489	1562	4633	7701	0767	3830	6891	9949	3005	6058
15	3136	6222	9305	2386	5464	8540	1613	4684	7752	0818	3881	6942	0000	3055	6108
16	3187	6273	9357	2437	5516	8591	1665	4735	7804	0869	3932	6993	0051	3106	6159
17	3239	6325	9408	2489	5567	8643	1716	4787	7855	0920	3983	7044	0102	3157	6210
18	3290	6376	9459	2540	5618	8694	1767	4838	7906	0971	4034	7095	0153	3208	6261
19	3341	6427	9511	2591	5670	8745	1818	4889	7957	1022	4085	7146	0204	3259	6312
20	3393	6479	9562	2643	5721	8796	1869	4940	8008	1073	4136	7197	0255	3310	6363
21	3444	6530	9613	2694	5772	8848	1921	4991	8059	1124	4187	7248	0306	3361	6414
22	3496	6582	9665	2745	5823	8899	1972	5042	8110	1176	4238	7299	0356	3412	6464
23	3547	6633	9716	2797	5875	8950	2023	5093	8161	1227	4289	7350	0407	3463	6515
24	3599	6684	9767	2848	5926	9001	2074	5145	8212	1278	4340	7401	0458	3514	6566
25	3650	6736	9819	2899	5977	9053	2125	5196	8264	1329	4391	7452	0509	3564	6617
26	3702	6787	9870	2951	6029	9104	2177	5247	8315	1380	4442	7503	0560	3615	6668
27	3753	6839	9922	3002	6080	9155	2228	5298	8366	1431	4494	7554	0611	3666	6719
28	3805	6890	9973	3053	6131	9206	2279	5349	8417	1482	4545	7605	0662	3717	6770
29	3856	6941	0024	3105	6182	9258	2330	5400	8468	1533	4596	7656	0713	3768	6820
30	3907	6993	0076	3156	6234	9309	2381	5452	8519	1584	4647	7707	0764	3819	6871
31	3959	7044	0127	3207	6285	9360	2433	5503	8570	1635	4698	7758	0815	3870	6922
32	4010	7096	0178	3259	6336	9411	2484	5554	8621	1686	4749	7809	0866	3921	6973
33	4062	7147	0230	3310	6387	9462	2535	5605	8672	1737	4800	7859	0917	3972	7024
34	4113	7198	0281	3361	6439	9514	2586	5656	8723	1788	4851	7910	0968	4022	7075
35	4165	7250	0332	3412	6490	9565	2637	5707	8775	1839	4902	7961	1019	4073	7126
36	4216	7301	0384	3464	6541	9616	2689	5758	8826	1890	4953	8012	1070	4124	7176
37	4267	7353	0435	3515	6593	9667	2740	5810	8877	1942	5004	8063	1121	4175	7227
38	4319	7404	0486	3566	6644	9719	2791	5861	8928	1993	5055	8114	1171	4226	7278
39	4370	7455	0538	3618	6695	9770	2842	5912	8979	2044	5106	8165	1222	4277	7329
40	4422	7507	0589	3669	6746	9821	2893	5963	9030	2095	5157	8216	1273	4328	7380
41	4473	7558	0641	3720	6798	9872	2944	6014	9081	2146	5208	8267	1324	4379	7431
42	4525	7610	0692	3772	6849	9924	2996	6065	9132	2197	5259	8318	1375	4430	7482
43	4576	7661	0743	3823	6900	9975	3047	6116	9183	2248	5310	8369	1426	4480	7532
44	4628	7712	0795	3874	6951	0026	3098	6167	9234	2299	5361	8420	1477	4531	7583
45	4679	7764	0846	3926	7003	0077	3149	6219	9286	2350	5412	8471	1528	4582	7634
46	4730	7815	0897	3977	7054	0128	3200	6270	9337	2401	5463	8522	1579	4633	7685
47	4782	7867	0949	4028	7105	0180	3252	6321	9388	2452	5514	8573	1630	4684	7736
48	4833	7918	1000	4079	7156	0231	3303	6372	9439	2503	5565	8624	1681	4735	7787
49	4885	7969	1051	4131	7208	0282	3354	6423	9490	2554	5616	8675	1732	4786	7837
50	4936	8021	1103	4182	7259	0333	3405	6474	9541	2605	5667	8726	1783	4837	7888
51	4988	8072	1154	4233	7310	0384	3456	6525	9592	2656	5718	8777	1834	4888	7939
52	5039	8123	1205	4285	7361	0436	3507	6577	9643	2707	5769	8828	1884	4938	7990
53	5090	8175	1257	4336	7413	0487	3559	6628	9694	2758	5820	8879	1935	4989	8041
54	5142	8226	1308	4387	7464	0538	3610	6679	9745	2809	5871	8930	1986	5040	8092
55	5193	8278	1359	4439	7515	0589	3661	6730	9796	2860	5922	8981	2037	5091	8142
56	5245	8329	1411	4490	7566	0641	3712	6781	9848	2911	5973	9032	2088	5142	8193
57	5296	8380	1462	4541	7618	0692	3763	6832	9899	2963	6024	9083	2139	5193	8244
58	5348	8432	1513	4592	7669	0743	3814	6883	9950	3014	6075	9134	2190	5244	8295
59	5399	8483	1565	4644	7720	0794	3866	6934	0001	3065	6126	9185	2241	5295	8346
60	5450	8535	1616	4695	7772	0845	3917	6986	0052	3116	6177	9236	2292	5345	8397
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Sine Deg. 67

22 Deg. Co-Sine

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
	9.966	9.966	9.966	9.966	9.966	9.966	9.966	9.966	9.965	9.965	9.965	9.965	9.965	9.965	9.965	″
0	3954	3437	2920	2402	1884	1365	0846	0326	9806	9285	8764	8243	7721	7199	6677	60
1	3946	3429	2911	2393	1875	1356	0837	0317	9797	9277	8756	8234	7713	7190	6668	59
2	3937	3420	2903	2385	1866	1347	0828	0309	9789	9268	8747	8226	7704	7182	6659	58
3	3928	3411	2894	2376	1858	1339	0820	0300	9780	9259	8738	8217	7695	7173	6650	57
4	3920	3403	2885	2367	1849	1330	0811	0291	9771	9251	8730	8208	7687	7164	6642	56
5	3911	3394	2877	2359	1840	1322	0802	0283	9763	9242	8721	8200	7678	7156	6633	55
6	3903	3386	2868	2350	1832	1313	0794	0274	9754	9233	8712	8191	7669	7147	6624	54
7	3894	3377	2859	2341	1823	1304	0785	0265	9745	9225	8704	8182	7660	7138	6616	53
8	3885	3368	2851	2333	1814	1296	0776	0257	9737	9216	8695	8174	7652	7130	6607	52
9	3877	3360	2842	2324	1806	1287	0768	0248	9728	9207	8686	8165	7643	7121	6598	51
10	3868	3351	2833	2315	1797	1278	0759	0239	9719	9199	8678	8156	7634	7112	6589	50
11	3860	3342	2825	2307	1788	1270	0750	0231	9710	9190	8669	8148	7626	7103	6581	49
12	3851	3334	2816	2298	1780	1261	0742	0222	9702	9181	8660	8139	7617	7095	6572	48
13	3842	3325	2808	2290	1771	1252	0733	0213	9693	9173	8652	8130	7608	7086	6563	47
14	3834	3317	2799	2281	1763	1244	0724	0205	9684	9164	8643	8121	7600	7077	6555	46
15	3825	3308	2790	2272	1754	1235	0716	0196	9676	9155	8634	8113	7591	7069	6546	45
16	3816	3299	2782	2264	1745	1226	0707	0187	9667	9147	8626	8104	7582	7060	6537	44
17	3808	3291	2773	2255	1737	1218	0698	0179	9658	9138	8617	8095	7573	7051	6528	43
18	3799	3282	2764	2246	1728	1209	0690	0170	9650	9129	8608	8087	7565	7042	6520	42
19	3791	3273	2756	2238	1719	1200	0681	0161	9641	9120	8599	8078	7556	7034	6511	41
20	3782	3265	2747	2229	1711	1192	0672	0153	9632	9112	8591	8069	7547	7025	6502	40
21	3773	3256	2739	2220	1702	1183	0664	0144	9624	9103	8582	8061	7539	7016	6494	39
22	3765	3248	2730	2212	1693	1174	0655	0135	9615	9094	8573	8052	7530	7008	6485	38
23	3756	3239	2721	2203	1685	1166	0646	0127	9606	9086	8565	8043	7521	6999	6476	37
24	3748	3230	2713	2195	1676	1157	0638	0118	9598	9077	8556	8034	7513	6990	6467	36
25	3739	3222	2704	2186	1667	1148	0629	0109	9589	9068	8547	8026	7504	6981	6459	35
26	3730	3213	2695	2177	1659	1140	0620	0101	9580	9060	8539	8017	7495	6973	6450	34
27	3722	3204	2687	2169	1650	1131	0612	0092	9572	9051	8530	8008	7486	6964	6441	33
28	3713	3196	2678	2160	1641	1123	0603	0083	9563	9042	8521	8000	7478	6955	6432	32
29	3704	3187	2669	2151	1633	1114	0594	0075	9554	9034	8513	7991	7469	6947	6424	31
30	3696	3179	2661	2143	1624	1105	0586	0066	9546	9025	8504	7982	7460	6938	6415	30
31	3687	3170	2652	2134	1616	1097	0577	0057	9537	9016	8495	7974	7452	6929	6406	29
32	3679	3161	2644	2125	1607	1088	0568	0049	9528	9008	8486	7965	7443	6920	6398	28
33	3670	3153	2635	2117	1598	1079	0560	0040	9520	8999	8478	7956	7434	6912	6389	27
34	3661	3144	2626	2108	1590	1071	0551	0031	9511	8990	8469	7948	7426	6903	6380	26
35	3653	3135	2618	2100	1581	1062	0542	0023	9502	8982	8460	7939	7417	6894	6371	25
36	3644	3127	2609	2091	1572	1053	0534	0014	9494	8973	8452	7930	7408	6886	6363	24
37	3635	3118	2600	2082	1564	1045	0525	0005	9485	8964	8443	7921	7399	6877	6354	23
38	3627	3110	2592	2074	1555	1036	0517	9997	9476	8956	8434	7913	7391	6868	6345	22
39	3618	3101	2583	2065	1546	1027	0508	9988	9468	8947	8426	7904	7382	6859	6337	21
40	3610	3092	2575	2056	1538	1019	0499	9979	9459	8938	8417	7895	7373	6851	6328	20
41	3601	3084	2566	2048	1529	1010	0491	9971	9450	8929	8408	7887	7365	6842	6319	19
42	3592	3075	2557	2039	1520	1001	0482	9962	9442	8921	8400	7878	7356	6833	6310	18
43	3584	3066	2549	2030	1512	0993	0473	9953	9433	8912	8391	7869	7347	6825	6302	17
44	3575	3058	2540	2022	1503	0984	0465	9945	9424	8903	8382	7861	7338	6816	6293	16
45	3567	3049	2531	2013	1494	0975	0456	9936	9416	8895	8374	7852	7330	6807	6284	15
46	3558	3041	2523	2005	1486	0967	0447	9927	9407	8886	8365	7843	7321	6799	6276	14
47	3549	3032	2514	1996	1477	0958	0439	9919	9398	8877	8356	7834	7312	6790	6267	13
48	3541	3023	2505	1987	1469	0949	0430	9910	9390	8869	8347	7826	7304	6781	6258	12
49	3532	3015	2497	1979	1460	0941	0421	9901	9381	8860	8339	7817	7295	6772	6249	11
50	3523	3006	2488	1970	1451	0932	0413	9893	9372	8851	8330	7808	7286	6764	6241	10
51	3515	2997	2480	1961	1443	0923	0404	9884	9363	8843	8321	7800	7278	6755	6232	9
52	3506	2989	2471	1953	1434	0915	0395	9875	9355	8834	8313	7791	7269	6746	6223	8
53	3498	2980	2462	1944	1425	0906	0387	9867	9346	8825	8304	7782	7260	6738	6215	7
54	3489	2972	2454	1935	1417	0898	0378	9858	9337	8817	8295	7774	7251	6729	6206	6
55	3480	2963	2445	1927	1408	0889	0369	9849	9329	8808	8287	7765	7243	6720	6197	5
56	3472	2954	2436	1918	1399	0880	0361	9841	9320	8799	8278	7756	7234	6711	6188	4
57	3463	2946	2428	1909	1391	0872	0352	9832	9311	8791	8269	7747	7225	6703	6180	3
58	3454	2937	2419	1901	1382	0863	0343	9823	9303	8782	8261	7739	7217	6694	6171	2
59	3446	2928	2410	1892	1373	0854	0335	9815	9294	8773	8252	7730	7208	6685	6162	1
60	3437	2920	2402	1884	1365	0846	0326	9806	9285	8764	8243	7721	7199	6677	6153	0
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Sine Deg. 67

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9.611	9.612	9.612	9.612	9.613	9.613	9.614	9.614	9.614	9.615	9.615	9.615	9.616	9.616	9.616
0	8409	2013	5615	9214	2812	6407	0000	3591	7180	0766	4351	7934	1514	5093	8669
1	8470	2073	5675	9274	2871	6467	0060	3651	7240	0826	4411	7993	1574	5152	8729
2	8530	2133	5735	9334	2931	6527	0120	3711	7299	0886	4471	8053	1634	5212	8788
3	8590	2193	5795	9394	2991	6586	0179	3770	7359	0946	4530	8113	1693	5271	8848
4	8650	2253	5855	9454	3051	6646	0239	3830	7419	1006	4590	8173	1753	5331	8907
5	8710	2313	5915	9514	3111	6706	0299	3890	7479	1065	4650	8232	1813	5391	8967
6	8770	2373	5975	9574	3171	6766	0359	3950	7538	1125	4710	8292	1872	5450	9026
7	8830	2433	6035	9634	3231	6826	0419	4010	7598	1185	4769	8352	1932	5510	9086
8	8890	2494	6095	9694	3291	6886	0479	4069	7658	1245	4829	8411	1991	5570	9146
9	8950	2554	6155	9754	3351	6946	0539	4129	7718	1304	4889	8471	2051	5629	9205
10	9010	2614	6215	9814	3411	7006	0598	4189	7778	1364	4948	8531	2111	5689	9265
11	9070	2674	6275	9874	3471	7066	0658	4249	7837	1424	5008	8590	2170	5748	9324
12	9130	2734	6335	9934	3531	7126	0718	4309	7897	1484	5068	8650	2230	5808	9384
13	9190	2794	6395	9994	3591	7185	0778	4369	7957	1543	5128	8710	2290	5868	9444
14	9251	2854	6455	0054	3651	7245	0838	4428	8017	1603	5187	8769	2349	5927	9503
15	9311	2914	6515	0114	3711	7305	0898	4488	8077	1663	5247	8829	2409	5987	9563
16	9371	2974	6575	0174	3770	7365	0958	4548	8136	1723	5307	8889	2469	6046	9622
17	9431	3034	6635	0234	3830	7425	1018	4608	8196	1782	5366	8948	2528	6106	9682
18	9491	3094	6695	0294	3890	7485	1077	4668	8256	1842	5426	9008	2588	6166	9741
19	9551	3154	6755	0354	3950	7545	1137	4728	8316	1902	5486	9068	2648	6225	9801
20	9611	3214	6815	0414	4010	7605	1197	4787	8376	1962	5546	9127	2707	6285	9861
21	9671	3274	6875	0474	4070	7665	1257	4847	8435	2021	5605	9187	2767	6345	9920
22	9731	3334	6935	0533	4130	7724	1317	4907	8495	2081	5665	9247	2827	6404	9980
23	9791	3394	6995	0593	4190	7784	1377	4967	8555	2141	5725	9307	2886	6464	0039
24	9851	3454	7055	0653	4250	7844	1436	5027	8615	2201	5784	9366	2946	6523	0099
25	9911	3514	7115	0713	4310	7904	1496	5086	8674	2260	5844	9426	3005	6583	0158
26	9971	3574	7175	0773	4370	7964	1556	5146	8734	2320	5904	9486	3065	6643	0218
27	0031	3634	7235	0833	4430	8024	1616	5206	8794	2380	5964	9545	3125	6702	0278
28	0091	3694	7295	0893	4490	8084	1676	5266	8854	2440	6023	9605	3184	6762	0337
29	0152	3754	7355	0953	4549	8144	1736	5326	8914	2499	6083	9665	3244	6821	0397
30	0212	3814	7415	1013	4609	8204	1796	5386	8973	2559	6143	9724	3304	6881	0456
31	0272	3874	7475	1073	4669	8263	1855	5445	9033	2619	6202	9784	3363	6941	0516
32	0332	3934	7535	1133	4729	8323	1915	5505	9093	2679	6262	9844	3423	7000	0575
33	0392	3994	7595	1193	4789	8383	1975	5565	9153	2738	6322	9903	3483	7060	0635
34	0452	4054	7655	1253	4849	8443	2035	5625	9212	2798	6382	9963	3542	7119	0695
35	0512	4114	7715	1313	4909	8503	2095	5685	9272	2858	6441	0023	3602	7179	0754
36	0572	4174	7775	1373	4969	8563	2155	5744	9332	2918	6501	0082	3662	7239	0814
37	0632	4234	7835	1433	5029	8623	2215	5804	9392	2977	6561	0142	3721	7298	0873
38	0692	4294	7895	1493	5089	8683	2274	5864	9452	3037	6620	0202	3781	7358	0933
39	0752	4354	7955	1553	5149	8743	2334	5924	9511	3097	6680	0261	3840	7417	0992
40	0812	4414	8015	1613	5209	8802	2394	5984	9571	3157	6740	0321	3900	7477	1052
41	0872	4474	8075	1673	5268	8862	2454	6043	9631	3216	6799	0381	3960	7537	1112
42	0932	4535	8135	1733	5328	8922	2514	6103	9691	3276	6859	0440	4019	7596	1171
43	0992	4595	8195	1793	5388	8982	2574	6163	9750	3336	6919	0500	4079	7656	1231
44	1052	4655	8255	1852	5448	9042	2633	6223	9810	3395	6979	0560	4139	7715	1290
45	1112	4715	8315	1912	5508	9102	2693	6283	9870	3455	7038	0619	4198	7775	1350
46	1172	4775	8375	1972	5568	9162	2753	6342	9930	3515	7098	0679	4258	7835	1409
47	1233	4835	8435	2032	5628	9222	2813	6402	9990	3575	7158	0739	4317	7894	1469
48	1293	4895	8494	2092	5688	9281	2873	6462	0049	3634	7217	0798	4377	7954	1528
49	1353	4955	8554	2152	5748	9341	2933	6522	0109	3694	7277	0858	4437	8013	1588
50	1413	5015	8614	2212	5808	9401	2992	6582	0169	3754	7337	0918	4496	8073	1648
51	1473	5075	8674	2272	5868	9461	3052	6642	0229	3814	7396	0977	4556	8133	1707
52	1533	5135	8734	2332	5928	9521	3112	6701	0288	3873	7456	1037	4616	8192	1767
53	1593	5195	8794	2392	5987	9581	3172	6761	0348	3933	7516	1097	4675	8252	1826
54	1653	5255	8854	2452	6047	9641	3232	6821	0408	3993	7576	1156	4735	8311	1886
55	1713	5315	8914	2512	6107	9701	3292	6881	0468	4053	7635	1216	4794	8371	1945
56	1773	5375	8974	2572	6167	9760	3352	6941	0527	4112	7695	1276	4854	8431	2005
57	1833	5435	9034	2632	6227	9820	3411	7000	0587	4172	7755	1335	4914	8490	2064
58	1893	5495	9094	2692	6287	9880	3471	7060	0647	4232	7814	1395	4973	8550	2124
59	1953	5555	9154	2752	6347	9940	3531	7120	0707	4291	7874	1455	5033	8609	2184
60	2013	5615	9214	2812	6407	0000	3591	7180	0766	4351	7934	1514	5093	8669	2243
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
″	10.388	10.387	10.387	10.387	10.386	10.386	10.386	10.385	10.385	10.384	10.384	10.384	10.383	10.383	10.383	″
0	1591	7987	4385	0786	7188	3593	0000	6409	2820	9234	5649	2066	8486	4907	1331	60
1	1530	7927	4325	0726	7129	3533	9940	6349	2760	9174	5589	2007	8426	4848	1271	59
2	1470	7867	4265	0666	7069	3473	9880	6289	2701	9114	5529	1947	8366	4788	1212	58
3	1410	7807	4205	0606	7009	3414	9821	6230	2641	9054	5470	1887	8307	4729	1152	57
4	1350	7747	4145	0546	6949	3354	9761	6170	2581	8994	5410	1827	8247	4669	1093	56
5	1290	7687	4085	0486	6889	3294	9701	6110	2521	8935	5350	1768	8187	4609	1033	55
6	1230	7627	4025	0426	6829	3234	9641	6050	2462	8875	5290	1708	8128	4550	0974	54
7	1170	7567	3965	0366	6769	3174	9581	5990	2402	8815	5231	1648	8068	4490	0914	53
8	1110	7506	3905	0306	6709	3114	9521	5931	2342	8755	5171	1589	8009	4430	0854	52
9	1050	7446	3845	0246	6649	3054	9461	5871	2282	8696	5111	1529	7949	4371	0795	51
10	0990	7386	3785	0186	6589	2994	9402	5811	2222	8636	5052	1469	7889	4311	0735	50
11	0930	7326	3725	0126	6529	2934	9342	5751	2163	8576	4992	1410	7830	4252	0676	49
12	0870	7266	3665	0066	6469	2874	9282	5691	2103	8516	4932	1350	7770	4192	0616	48
13	0810	7206	3605	0006	6409	2815	9222	5631	2043	8457	4872	1290	7710	4132	0556	47
14	0749	7146	3545	9946	6349	2755	9162	5572	1983	8397	4813	1231	7651	4073	0497	46
15	0689	7086	3485	9886	6289	2695	9102	5512	1923	8337	4753	1171	7591	4013	0437	45
16	0629	7026	3425	9826	6230	2635	9042	5452	1864	8277	4693	1111	7531	3954	0378	44
17	0569	6966	3365	9766	6170	2575	8982	5392	1804	8218	4634	1052	7472	3894	0318	43
18	0509	6906	3305	9706	6110	2515	8923	5332	1744	8158	4574	0992	7412	3834	0259	42
19	0449	6846	3245	9646	6050	2455	8863	5272	1684	8098	4514	0932	7352	3775	0199	41
20	0389	6786	3185	9586	5990	2395	8803	5213	1624	8038	4454	0873	7293	3715	0139	40
21	0329	6726	3125	9526	5930	2335	8743	5153	1565	7979	4395	0813	7233	3655	0080	39
22	0269	6666	3065	9467	5870	2276	8683	5093	1505	7919	4335	0753	7173	3596	0020	38
23	0209	6606	3005	9407	5810	2216	8623	5033	1445	7859	4275	0693	7114	3536	9961	37
24	0149	6546	2945	9347	5750	2156	8564	4973	1385	7799	4216	0634	7054	3477	9901	36
25	0089	6486	2885	9287	5690	2096	8504	4914	1326	7740	4156	0574	6995	3417	9842	35
26	0029	6426	2825	9227	5630	2036	8444	4854	1266	7680	4096	0514	6935	3357	9782	34
27	9969	6366	2765	9167	5570	1976	8384	4794	1206	7620	4036	0455	6875	3298	9722	33
28	9909	6306	2705	9107	5510	1916	8324	4734	1146	7560	3977	0395	6816	3238	9663	32
29	9848	6246	2645	9047	5451	1856	8264	4674	1086	7501	3917	0335	6756	3179	9603	31
30	9788	6186	2585	8987	5391	1796	8204	4614	1027	7441	3857	0276	6696	3119	9544	30
31	9728	6126	2525	8927	5331	1737	8145	4555	0967	7381	3798	0216	6637	3059	9484	29
32	9668	6066	2465	8867	5271	1677	8085	4495	0907	7321	3738	0156	6577	3000	9425	28
33	9608	6006	2405	8807	5211	1617	8025	4435	0847	7262	3678	0097	6517	2940	9365	27
34	9548	5946	2345	8747	5151	1557	7965	4375	0788	7202	3618	0037	6458	2881	9305	26
35	9488	5886	2285	8687	5091	1497	7905	4315	0728	7142	3559	9977	6398	2821	9246	25
36	9428	5826	2225	8627	5031	1437	7845	4256	0668	7082	3499	9918	6338	2761	9186	24
37	9368	5766	2165	8567	4971	1377	7785	4196	0608	7023	3439	9858	6279	2702	9127	23
38	9308	5706	2105	8507	4911	1317	7726	4136	0548	6963	3380	9798	6219	2642	9067	22
39	9248	5646	2045	8447	4851	1257	7666	4076	0489	6903	3320	9739	6160	2583	9008	21
40	9188	5586	1985	8387	4791	1198	7606	4016	0429	6843	3260	9679	6100	2523	8948	20
41	9128	5526	1925	8327	4732	1138	7546	3957	0369	6784	3201	9619	6040	2463	8888	19
42	9068	5465	1865	8267	4672	1078	7486	3897	0309	6724	3141	9560	5981	2404	8829	18
43	9008	5405	1805	8207	4612	1018	7426	3837	0250	6664	3081	9500	5921	2344	8769	17
44	8948	5345	1745	8148	4552	0958	7367	3777	0190	6605	3021	9440	5861	2285	8710	16
45	8888	5285	1685	8088	4492	0898	7307	3717	0130	6545	2962	9381	5802	2225	8650	15
46	8828	5225	1625	8028	4432	0838	7247	3658	0070	6485	2902	9321	5742	2165	8591	14
47	8767	5165	1565	7968	4372	0778	7187	3598	0010	6425	2842	9261	5683	2106	8531	13
48	8707	5105	1506	7908	4312	0719	7127	3538	9951	6366	2783	9202	5623	2046	8472	12
49	8647	5045	1446	7848	4252	0659	7067	3478	9891	6306	2723	9142	5563	1987	8412	11
50	8587	4985	1386	7788	4192	0599	7008	3418	9831	6246	2663	9082	5504	1927	8352	10
51	8527	4925	1326	7728	4132	0539	6948	3358	9771	6186	2604	9023	5444	1867	8293	9
52	8467	4865	1266	7668	4072	0479	6888	3299	9712	6127	2544	8963	5384	1808	8233	8
53	8407	4805	1206	7608	4013	0419	6828	3239	9652	6067	2484	8903	5325	1748	8174	7
54	8347	4745	1146	7548	3953	0359	6768	3179	9592	6007	2424	8844	5265	1689	8114	6
55	8287	4685	1086	7488	3893	0299	6708	3119	9532	5947	2365	8784	5206	1629	8055	5
56	8227	4625	1026	7428	3833	0240	6648	3059	9473	5888	2305	8724	5146	1569	7995	4
57	8167	4565	0966	7368	3773	0180	6589	3000	9413	5828	2245	8665	5086	1510	7936	3
58	8107	4505	0906	7308	3713	0120	6529	2940	9353	5768	2186	8605	5027	1450	7876	2
59	8047	4445	0846	7248	3653	0060	6469	2880	9293	5709	2126	8545	4967	1391	7816	1
60	7987	4385	0786	7188	3593	0000	6409	2820	9234	5649	2066	8486	4907	1331	7757	0
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
″	9. 582	9. 583	9. 583	9. 583	9. 584	9. 584	9. 584	9. 584	9. 585	9. 585	9. 585	9. 586	9. 586	9. 586	9. 587	9. 965	9. 965	9. 965	9. 965	9. 965	9. 965	9. 965	9. 965	9. 965	9. 965	9. 965	9. 965	9. 964	9. 964	9. 964	″
0	8397	1445	4491	7535	0576	3615	6651	9685	2716	5745	8771	1795	4816	7835	0851	6153	5630	5106	4582	4057	3532	3006	2480	1953	1426	0899	0371	9843	9314	8785	60
1	8447	1496	4542	7586	0627	3665	6702	9735	2766	5795	8821	1845	4866	7885	0901	6145	5621	5097	4573	4048	3523	2997	2471	1945	1418	0890	0363	9834	9306	8776	59
2	8498	1547	4593	7636	0678	3716	6752	9786	2817	5845	8872	1895	4916	7935	0951	6136	5613	5089	4564	4039	3514	2988	2462	1936	1409	0882	0354	9825	9297	8768	58
3	8549	1598	4644	7687	0728	3767	6803	9836	2867	5896	8922	1946	4967	7985	1002	6127	5604	5080	4555	4031	3505	2980	2454	1927	1400	0873	0345	9817	9288	8759	57
4	8600	1648	4694	7738	0779	3817	6853	9887	2918	5946	8972	1996	5017	8036	1052	6119	5595	5071	4547	4022	3497	2971	2445	1918	1391	0864	0336	9808	9279	8750	56
5	8651	1699	4745	7789	0829	3868	6904	9937	2968	5997	9023	2046	5067	8086	1102	6110	5586	5062	4538	4013	3488	2962	2436	1910	1383	0855	0327	9799	9270	8741	55
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7	8752	1801	4847	7890	0931	3969	7005	0038	3069	6098	9124	2147	5168	8187	1203	6092	5569	5045	4520	3996	3470	2945	2419	1892	1365	0838	0310	9781	9253	8724	53
8	8803	1852	4897	7941	0981	4020	7056	0089	3120	6148	9174	2197	5218	8237	1253	6084	5560	5036	4512	3987	3462	2936	2410	1883	1356	0829	0301	9773	9244	8715	52
9	8854	1902	4948	7991	1032	4070	7106	0139	3170	6199	9224	2248	5269	8287	1303	6075	5551	5027	4503	3978	3453	2927	2401	1874	1347	0820	0292	9764	9235	8706	51
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12	9007	2055	5100	8143	1184	4222	7258	0291	3322	6350	9376	2399	5420	8438	1454	6049	5525	5001	4477	3952	3427	2901	2375	1848	1321	0794	0266	9737	9209	8679	48
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14	9108	2156	5202	8245	1285	4323	7359	0392	3423	6451	9477	2500	5520	8539	1554	6031	5508	4984	4459	3934	3409	2883	2357	1831	1303	0776	0248	9720	9191	8662	46
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17	9261	2309	5354	8397	1437	4475	7511	0544	3574	6602	9628	2651	5671	8689	1705	6005	5482	4958	4433	3908	3383	2857	2331	1804	1277	0750	0222	9693	9165	8635	43
18	9311	2359	5405	8448	1488	4526	7561	0594	3625	6653	9678	2701	5722	8740	1755	5996	5473	4949	4424	3899	3374	2848	2322	1795	1268	0741	0213	9685	9156	8626	42
19	9362	2410	5455	8498	1539	4577	7612	0645	3675	6703	9729	2752	5772	8790	1806	5988	5464	4940	4416	3891	3365	2839	2313	1787	1260	0732	0204	9676	9147	8618	41
20	9413	2461	5506	8549	1589	4627	7662	0695	3726	6754	9779	2802	5822	8840	1856	5979	5455	4931	4407	3882	3357	2831	2304	1778	1251	0723	0195	9667	9138	8609	40
21	9464	2512	5557	8600	1640	4678	7713	0746	3776	6804	9829	2852	5873	8891	1906	5970	5447	4923	4398	3873	3348	2822	2296	1769	1242	0714	0186	9658	9129	8600	39
22	9515	2562	5608	8650	1691	4728	7764	0796	3827	6854	9880	2903	5923	8941	1956	5962	5438	4914	4389	3864	3339	2813	2287	1760	1233	0706	0178	9649	9120	8591	38
23	9566	2613	5658	8701	1741	4779	7814	0847	3877	6905	9930	2953	5973	8991	2007	5953	5429	4905	4381	3856	3330	2804	2278	1751	1224	0697	0169	9640	9112	8582	37
24	9616	2664	5709	8752	1792	4830	7865	0897	3928	6955	9981	3003	6024	9041	2057	5944	5420	4896	4372	3847	3321	2796	2269	1743	1216	0688	0160	9632	9103	8574	36
25	9667	2715	5760	8802	1843	4880	7915	0948	3978	7006	0031	3054	6074	9092	2107	5935	5412	4888	4363	3838	3313	2787	2261	1734	1207	0679	0151	9623	9094	8565	35
26	9718	2766	5811	8853	1893	4931	7966	0998	4029	7056	0081	3104	6124	9142	2157	5927	5403	4879	4354	3829	3304	2778	2252	1725	1198	0670	0142	9614	9085	8556	34
27	9769	2816	5861	8904	1944	4981	8016	1049	4079	7107	0132	3154	6175	9192	2207	5918	5394	4870	4346	3821	3295	2769	2243	1716	1189	0662	0134	9605	9076	8547	33
28	9820	2867	5912	8955	1995	5032	8067	1100	4130	7157	0182	3205	6225	9243	2258	5909	5386	4861	4337	3812	3286	2761	2234	1708	1180	0653	0125	9596	9068	8538	32
29	9870	2918	5963	9005	2045	5083	8118	1150	4180	7208	0233	3255	6275	9293	2308	5900	5377	4853	4328	3803	3278	2752	2226	1699	1172	0644	0116	9588	9059	8529	31
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31	9972	3019	6064	9107	2146	5184	8219	1251	4281	7308	0333	3356	6376	9393	2408	5883	5359	4835	4311	3786	3260	2734	2208	1681	1154	0626	0098	9570	9041	8512	29
32	0023	3070	6115	9157	2197	5234	8269	1302	4331	7359	0384	3406	6426	9444	2459	5874	5351	4826	4302	3777	3251	2725	2199	1672	1145	0618	0090	9561	9032	8503	28
33	0074	3121	6166	9208	2248	5285	8320	1352	4382	7409	0434	3457	6476	9494	2509	5866	5342	4818	4293	3768	3243	2717	2190	1664	1136	0609	0081	9552	9023	8494	27
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35	0175	3222	6267	9309	2349	5386	8421	1453	4483	7510	0535	3557	6577	9594	2609	5848	5324	4800	4276	3751	3225	2699	2173	1646	1119	0591	0063	9535	9006	8476	25
36	0226	3273	6318	9360	2400	5437	8471	1504	4533	7561	0585	3608	6627	9645	2660	5839	5316	4791	4267	3742	3216	2690	2164	1637	1110	0582	0054	9526	8997	8468	24
37	0277	3324	6369	9411	2450	5487	8522	1554	4584	7611	0636	3658	6678	9695	2710	5831	5307	4783	4258	3733	3208	2682	2155	1629	1101	0574	0046	9517	8988	8459	23
38	0328	3375	6419	9461	2501	5538	8573	1605	4634	7661	0686	3708	6728	9745	2760	5822	5298	4774	4249	3724	3199	2673	2147	1620	1093	0565	0037	9508	8979	8450	22
39	0379	3426	6470	9512	2552	5589	8623	1655	4685	7712	0736	3759	6778	9796	2810	5813	5289	4765	4241	3716	3190	2664	2138	1611	1084	0556	0028	9499	8971	8441	21
40	0429	3476	6521	9563	2602	5639	8674	1706	4735	7762	0787	3809	6829	9846	2860	5805	5281	4757	4232	3707	3181	2655	2129	1602	1075	0547	0019	9491	8962	8432	20
41	0480	3527	6571	9613	2653	5690	8724	1756	4786	7813	0837	3859	6879	9896	2911	5796	5272	4748	4223	3698	3173	2647	2120	1593	1066	0538	0010	9482	8953	8423	19
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43	0582	3629	6673	9715	2754	5791	8825	1857	4887	7914	0938	3960	6980	9997	3011	5778	5255	4730	4206	3681	3155	2629	2103	1576	1049	0521	9993	9464	8935	8406	17
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45	0683	3730	6774	9816	2855	5892	8926	1958	4988	8014	1039	4061	7080	0097	3112	5761	5237	4713	4188	3663	3137	2612	2085	1558	1031	0503	9975	9447	8918	8388	15
46	0734	3781	6825	9867	2906	5943	8977	2009	5038	8065	1089	4111	7130	0147	3162	5752	5228	4704	4179	3654	3129	2603	2076	1549	1022	0494	9966	9438	8909	8379	14
47	0785	3832	6876	9917	2957	5993	9028	2059	5089	8115	1140	4161	7181	0198	3212	5743	5220	4695	4171	3646	3120	2594	2068	1541	1013	0486	9958	9429	8900	8371	13
48	0836	3882	6927	9968	3007	6044	9078	2110	5139	8166	1190	4212	7231	0248	3262	5735	5211	4687	4162	3637	3111	2585	2059	1532	1005	0477	9949	9420	8891	8362	12
49	0887	3933	6977	0019	3058	6095	9129	2160	5189	8216	1240	4262	7281	0298	3312	5726	5202	4678	4153	3628	3102	2576	2050	1523	0996	0468	9940	9411	8882	8353	11
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51	0988	4035	7079	0120	3159	6196	9230	2261	5290	8317	1341	4363	7382	0399	3413	5709	5185	4660	4136	3610	3085	2559	2032	1506	0978	0450	9922	9394	8865	8335	9
52	1039	4085	7129	0171	3210	6246	9280	2312	5341	8367	1391	4413	7432	0449	3463	5700	5176	4652	4127	3602	3076	2550	2024	1497	0969	0442	9914	9385	8856	8326	8
53	1090	4136	7180	0222	3260	6297	9331	2362	5391	8418	1442	4463	7483	0499	3513	5691	5167	4643	4118	3593	3067	2541	2015	1488	0961	0433	9905	9376	8847	8318	7
54	1141	4187	7231	0272	3311	6347	9381	2413	5442	8468	1492	4514	7533	0549	3564	5682	5158	4634	4109	3584	3059	2533	2006	1479	0952	0424	9896	9367	8838	8309	6
55	1191	4238	7281	0323	3362	6398	9432	2463	5492	8519	1543	4564	7583	0600	3614	5674	5150	4625	4101	3575	3050	2524	1997	1470	0943	0415	9887	9358	8829	8300	5
56	1242	4288	7332	0374	3412	6449	9482	2514	5543	8569	1593	4614	7633	0650	3664	5665	5141	4617	4092	3567	3041	2515	1989	1462	0934	0407	9878	9350	8821	8291	4
57	1293	4339	7383	0424	3463	6499	9533	2564	5593	8620	1643	4665	7684	0700	3714	5656	5132	4608	4083	3558	3032	2506	1980	1453	0925	0398	9869	9341	8812	8282	3
58	1344	4390	7434	0475	3514	6550	9584	2615	5644	8670	1694	4715	7734	0750	3764	5647	5124	4599	4074	3549	3024	2497	1971	1444	0917	0389	9861	9332	8803	8273	2
59	1394	4441	7484	0526	3564	6600	9634	2665	5694	8720	1744	4765	7784	0801	3815	5639	5115	4590	4066	3540	3015	2489	1962	1435	0908	0380	9852	9323	8794	8265	1
60	1445	4491	7535	0576	3615	6651	9685	2716	5745	8771	1795	4816	7835	0851	3865	5630	5106	4582	4057	3532	3006	2480	1953	1426	0899	0371	9843	9314	8785	8256	0
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

22 Deg. Tangent — 22 Deg. Co-Tangent

″	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9. 617	9. 617	9. 617	9. 618	9. 618	9. 619	9. 619	9. 619	9. 620	9. 620	9. 620	9. 621	9. 621	9. 621	9. 622
0	2243	5815	9385	2953	6519	0083	3645	7205	0762	4318	7872	1423	4973	8520	2066
1	2303	5875	9445	3013	6579	0143	3704	7264	0822	4377	7931	1482	5032	8579	2125
2	2362	5934	9504	3072	6638	0202	3764	7323	0881	4437	7990	1542	5091	8638	2184
3	2422	5994	9564	3132	6698	0261	3823	7383	0940	4496	8049	1601	5150	8698	2243
4	2481	6053	9623	3191	6757	0321	3882	7442	1000	4555	8108	1660	5209	8757	2302
5	2541	6113	9683	3251	6816	0380	3942	7501	1059	4614	8168	1719	5268	8816	2361
6	2600	6172	9742	3310	6876	0439	4001	7561	1118	4674	8227	1778	5328	8875	2420
7	2660	6232	9802	3369	6935	0499	4060	7620	1177	4733	8286	1837	5387	8934	2479
8	2720	6291	9861	3429	6995	0558	4120	7679	1237	4792	8345	1897	5446	8993	2538
9	2779	6351	9921	3488	7054	0618	4179	7739	1296	4851	8405	1956	5505	9052	2597
10	2839	6410	9980	3548	7113	0677	4238	7798	1355	4910	8464	2015	5564	9111	2656
11	2898	6470	0040	3607	7173	0736	4298	7857	1414	4970	8523	2074	5623	9170	2715
12	2958	6529	0099	3667	7232	0796	4357	7916	1474	5029	8582	2133	5682	9229	2774
13	3017	6589	0159	3726	7292	0855	4416	7976	1533	5088	8641	2192	5742	9289	2834
14	3077	6648	0218	3786	7351	0914	4476	8035	1592	5147	8701	2252	5801	9348	2893
15	3136	6708	0278	3845	7410	0974	4535	8094	1652	5207	8760	2311	5860	9407	2952
16	3196	6768	0337	3904	7470	1033	4594	8154	1711	5266	8819	2370	5919	9466	3011
17	3255	6827	0397	3964	7529	1093	4654	8213	1770	5325	8878	2429	5978	9525	3070
18	3315	6887	0456	4023	7589	1152	4713	8272	1829	5384	8937	2488	6037	9584	3129
19	3375	6946	0515	4083	7648	1211	4772	8332	1889	5444	8997	2547	6096	9643	3188
20	3434	7006	0575	4142	7707	1271	4832	8391	1948	5503	9056	2607	6155	9702	3247
21	3494	7065	0634	4202	7767	1330	4891	8450	2007	5562	9115	2666	6215	9761	3306
22	3553	7125	0694	4261	7826	1389	4950	8509	2066	5621	9174	2725	6274	9820	3365
23	3613	7184	0753	4321	7886	1449	5010	8569	2126	5681	9233	2784	6333	9880	3424
24	3672	7244	0813	4380	7945	1508	5069	8628	2185	5740	9293	2843	6392	9939	3483
25	3732	7303	0872	4439	8004	1567	5128	8687	2244	5799	9352	2902	6451	9998	3542
26	3791	7363	0932	4499	8064	1627	5188	8747	2303	5858	9411	2962	6510	0057	3601
27	3851	7422	0991	4558	8123	1686	5247	8806	2363	5917	9470	3021	6569	0116	3660
28	3910	7482	1051	4618	8183	1746	5306	8865	2422	5977	9529	3080	6628	0175	3719
29	3970	7541	1110	4677	8242	1805	5366	8925	2481	6036	9588	3139	6688	0234	3779
30	4029	7601	1170	4737	8301	1864	5425	8984	2540	6095	9648	3198	6747	0293	3838
31	4089	7660	1229	4796	8361	1924	5484	9043	2600	6154	9707	3257	6806	0352	3897
32	4149	7720	1289	4855	8420	1983	5544	9102	2659	6214	9766	3317	6865	0411	3956
33	4208	7779	1348	4915	8480	2042	5603	9162	2718	6273	9825	3376	6924	0470	4015
34	4268	7839	1407	4974	8539	2102	5662	9221	2778	6332	9884	3435	6983	0530	4074
35	4327	7898	1467	5034	8598	2161	5722	9280	2837	6391	9944	3494	7042	0589	4133
36	4387	7958	1526	5093	8658	2220	5781	9340	2896	6450	0003	3553	7101	0648	4192
37	4446	8017	1586	5153	8717	2280	5840	9399	2955	6510	0062	3612	7161	0707	4251
38	4506	8077	1645	5212	8777	2339	5909	9458	3015	6569	0121	3671	7220	0766	4310
39	4565	8136	1705	5271	8836	2399	5959	9517	3074	6628	0180	3731	7279	0825	4369
40	4625	8196	1764	5331	8895	2458	6018	9577	3133	6687	0240	3790	7338	0884	4428
41	4684	8255	1824	5390	8955	2517	6078	9636	3192	6747	0299	3849	7397	0943	4487
42	4744	8315	1883	5450	9014	2577	6137	9695	3252	6806	0358	3908	7456	1002	4546
43	4803	8374	1943	5509	9074	2636	6196	9755	3311	6865	0417	3967	7515	1061	4605
44	4863	8434	2002	5569	9133	2695	6256	9814	3370	6924	0476	4026	7574	1120	4664
45	4922	8493	2062	5628	9192	2755	6315	9873	3429	6983	0536	4086	7634	1179	4723
46	4982	8553	2121	5687	9252	2814	6374	9932	3489	7043	0595	4145	7693	1239	4782
47	5042	8612	2180	5747	9311	2873	6434	9992	3548	7102	0654	4204	7752	1298	4842
48	5101	8672	2240	5806	9371	2933	6493	0051	3607	7161	0713	4263	7811	1357	4901
49	5161	8731	2299	5866	9430	2992	6552	0110	3666	7220	0772	4322	7870	1416	4960
50	5220	8790	2359	5925	9489	3051	6612	0170	3726	7280	0831	4381	7929	1475	5019
51	5280	8850	2418	5985	9549	3111	6671	0229	3785	7339	0891	4440	7988	1534	5078
52	5339	8909	2478	6044	9608	3170	6730	0288	3844	7398	0950	4500	8047	1593	5137
53	5399	8969	2537	6103	9667	3230	6790	0347	3903	7457	1009	4559	8106	1652	5196
54	5458	9028	2597	6163	9727	3289	6849	0407	3963	7516	1068	4618	8166	1711	5255
55	5518	9088	2656	6222	9786	3348	6908	0466	4022	7576	1127	4677	8225	1770	5314
56	5577	9147	2716	6282	9846	3408	6967	0525	4081	7635	1187	4736	8284	1829	5373
57	5637	9207	2775	6341	9905	3467	7027	0585	4140	7694	1246	4795	8343	1888	5432
58	5696	9266	2834	6400	9964	3526	7086	0644	4200	7753	1305	4854	8402	1948	5491
59	5756	9326	2894	6460	0024	3586	7145	0703	4259	7812	1364	4914	8461	2007	5550
60	5815	9385	2953	6519	0083	3645	7205	0762	4318	7872	1423	4973	8520	2066	5609
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	″
10. 382	10. 382	10. 382	10. 381	10. 381	10. 380	10. 380	10. 380	10. 379	10. 379	10. 379	10. 378	10. 378	10. 378	10. 377	
7757	4185	0615	7047	3481	9917	6355	2795	9238	5682	2128	8577	5027	1480	7934	60
7697	4125	0555	6987	3421	9857	6296	2736	9178	5623	2069	8518	4968	1421	7875	59
7638	4066	0496	6928	3362	9798	6236	2677	9119	5563	2010	8458	4909	1362	7816	58
7578	4006	0436	6868	3302	9739	6177	2617	9060	5504	1951	8399	4850	1302	7757	57
7519	3947	0377	6809	3243	9679	6118	2558	9000	5445	1892	8340	4791	1243	7698	56
7459	3887	0317	6749	3184	9620	6058	2499	8941	5386	1832	8281	4732	1184	7639	55
7400	3828	0258	6690	3124	9561	5999	2439	8882	5326	1773	8222	4672	1125	7580	54
7340	3768	0198	6631	3065	9501	5940	2380	8823	5267	1714	8163	4613	1066	7521	53
7280	3709	0139	6571	3005	9442	5880	2321	8763	5208	1655	8103	4554	1007	7462	52
7221	3649	0079	6512	2946	9382	5821	2261	8704	5149	1595	8044	4495	0948	7403	51
7161	3590	0020	6452	2887	9323	5762	2202	8645	5090	1536	7985	4436	0889	7344	50
7102	3530	9960	6393	2827	9264	5702	2143	8586	5030	1477	7926	4377	0830	7285	49
7042	3471	9901	6333	2768	9204	5643	2084	8526	4971	1418	7867	4318	0771	7226	48
6983	3411	9841	6274	2708	9145	5584	2024	8467	4912	1359	7808	4258	0711	7166	47
6923	3352	9782	6214	2649	9086	5524	1965	8408	4853	1299	7748	4199	0652	7107	46
6864	3292	9722	6155	2590	9026	5465	1906	8348	4793	1240	7689	4140	0593	7048	45
6804	3232	9663	6096	2530	8967	5406	1846	8289	4734	1181	7630	4081	0534	6989	44
6745	3173	9603	6036	2471	8907	5346	1787	8230	4675	1122	7571	4022	0475	6930	43
6685	3113	9544	5977	2411	8848	5287	1728	8171	4616	1063	7512	3963	0416	6871	42
6625	3054	9485	5917	2352	8789	5228	1668	8111	4556	1003	7453	3904	0357	6812	41
6566	2994	9425	5858	2293	8729	5168	1609	8052	4497	0944	7393	3845	0298	6753	40
6506	2935	9366	5798	2233	8670	5109	1550	7993	4438	0885	7334	3785	0239	6694	39
6447	2875	9306	5739	2174	8611	5050	1491	7934	4379	0826	7275	3726	0180	6635	38
6387	2816	9247	5679	2114	8551	4990	1431	7874	4319	0767	7216	3667	0120	6576	37
6328	2756	9187	5620	2055	8492	4931	1372	7815	4260	0707	7157	3608	0061	6517	36
6268	2697	9128	5561	1996	8433	4872	1313	7756	4201	0648	7098	3549	0002	6458	35
6209	2637	9068	5501	1936	8373	4812	1253	7697	4142	0589	7038	3490	9943	6399	34
6149	2578	9009	5442	1877	8314	4753	1194	7637	4083	0530	6979	3431	9884	6340	33
6090	2518	8949	5382	1817	8254	4694	1135	7578	4023	0471	6920	3372	9825	6281	32
6030	2459	8890	5323	1758	8195	4634	1075	7519	3964	0412	6861	3312	9766	6221	31
5971	2399	8830	5263	1699	8136	4575	1016	7460	3905	0352	6802	3253	9707	6162	30
5911	2340	8771	5204	1639	8076	4516	0957	7400	3846	0293	6743	3194	9648	6103	29
5851	2280	8711	5145	1580	8017	4456	0898	7341	3786	0234	6683	3135	9589	6044	28
5792	2221	8652	5085	1520	7958	4397	0838	7282	3727	0175	6624	3076	9530	5985	27
5732	2161	8593	5026	1461	7898	4338	0779	7222	3668	0116	6565	3017	9470	5926	26
5673	2102	8533	4966	1402	7839	4278	0720	7163	3609	0056	6506	2958	9411	5867	25
5613	2042	8474	4907	1342	7780	4219	0660	7104	3550	9997	6447	2899	9352	5808	24
5554	1983	8414	4847	1283	7720	4160	0601	7045	3490	9938	6388	2839	9293	5749	23
5494	1923	8355	4788	1223	7661	4100	0542	6985	3431	9879	6329	2780	9234	5690	22
5435	1864	8295	4729	1164	7601	4041	0483	6926	3372	9820	6269	2721	9175	5631	21
5375	1804	8236	4669	1105	7542	3982	0423	6867	3313	9760	6210	2662	9116	5572	20
5316	1745	8176	4610	1045	7483	3922	0364	6808	3253	9701	6151	2603	9057	5513	19
5256	1685	8117	4550	0986	7423	3863	0305	6748	3194	9642	6092	2544	8998	5454	18
5197	1626	8057	4491	0926	7364	3804	0245	6689	3135	9583	6033	2485	8939	5395	17
5137	1566	7998	4431	0867	7305	3744	0186	6630	3076	9524	5974	2426	8880	5336	16
5078	1507	7938	4372	0808	7245	3685	0127	6571	3017	9464	5914	2366	8821	5277	15
5018	1447	7879	4313	0748	7186	3626	0068	6511	2957	9405	5855	2307	8761	5218	14
4958	1388	7820	4253	0689	7127	3566	0008	6452	2898	9346	5796	2248	8702	5158	13
4899	1328	7760	4194	0629	7067	3507	9949	6393	2839	9287	5737	2189	8643	5099	12
4839	1269	7701	4134	0570	7008	3448	9890	6334	2780	9228	5678	2130	8584	5040	11
4780	1210	7641	4075	0511	6949	3388	9830	6274	2720	9169	5619	2071	8525	4981	10
4720	1150	7582	4015	0451	6889	3329	9771	6215	2661	9109	5560	2012	8466	4922	9
4661	1091	7522	3956	0392	6830	3270	9712	6156	2602	9050	5500	1953	8407	4863	8
4601	1031	7463	3897	0333	6770	3210	9653	6097	2543	8991	5441	1894	8348	4804	7
4542	0972	7403	3837	0273	6711	3151	9593	6037	2484	8932	5382	1834	8289	4745	6
4482	0912	7344	3778	0214	6652	3092	9534	5978	2424	8873	5323	1775	8230	4686	5
4423	0853	7284	3718	0154	6592	3033	9475	5919	2365	8813	5264	1716	8171	4627	4
4363	0793	7225	3659	0095	6533	2973	9415	5860	2306	8754	5205	1657	8112	4568	3
4304	0734	7166	3600	0036	6474	2914	9356	5800	2247	8695	5146	1598	8052	4509	2
4244	0674	7106	3540	9976	6414	2855	9297	5741	2188	8636	5086	1539	7993	4450	1
4185	0615	7047	3481	9917	6355	2795	9238	5682	2128	8577	5027	1480	7934	4391	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Co-Tangent Deg. 67 — Tangent Deg. 67

22 Deg. Sine

″	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9.587	9.587	9.587	9.588	9.588	9.588	9.589	9.589	9.589	9.590	9.590	9.590	9.590	9.591	9.591
0	3865	6876	9885	2892	5896	8897	1897	4893	7888	0880	3869	6856	9841	2823	5803
1	3915	6926	9935	2942	5946	8947	1947	4943	7938	0929	3919	6906	9890	2873	5852
2	3965	6977	9985	2992	5996	8997	1997	4993	7987	0979	3969	6956	9940	2922	5902
3	4015	7027	0036	3042	6046	9047	2047	5043	8037	1029	4018	7005	9990	2972	5952
4	4066	7077	0086	3092	6096	9097	2097	5093	8087	1079	4068	7055	0040	3022	6001
5	4116	7127	0136	3142	6146	9147	2146	5143	8137	1129	4118	7105	0089	3071	6051
6	4166	7177	0186	3192	6196	9197	2196	5193	8187	1179	4168	7155	0139	3121	6101
7	4216	7227	0236	3242	6246	9247	2246	5243	8237	1229	4218	7204	0189	3171	6150
8	4266	7278	0286	3292	6296	9297	2296	5293	8287	1278	4267	7254	0239	3220	6200
9	4317	7328	0336	3343	6346	9347	2346	5343	8337	1328	4317	7304	0288	3270	6249
10	4367	7378	0386	3393	6396	9397	2396	5393	8387	1378	4367	7354	0338	3320	6299
11	4417	7428	0437	3443	6446	9447	2446	5443	8436	1428	4417	7403	0388	3369	6349
12	4467	7478	0487	3493	6496	9497	2496	5492	8486	1478	4467	7453	0437	3419	6398
13	4518	7528	0537	3543	6546	9547	2546	5542	8536	1528	4516	7503	0487	3469	6448
14	4568	7579	0587	3593	6596	9597	2596	5592	8586	1577	4566	7553	0537	3518	6498
15	4618	7629	0637	3643	6646	9647	2646	5642	8636	1627	4616	7603	0587	3568	6547
16	4668	7679	0687	3693	6697	9697	2696	5692	8686	1677	4666	7652	0636	3618	6597
17	4718	7729	0737	3743	6747	9747	2746	5742	8736	1727	4716	7702	0686	3667	6647
18	4769	7779	0787	3793	6797	9797	2796	5792	8786	1777	4765	7752	0736	3717	6696
19	4819	7829	0838	3843	6847	9847	2846	5842	8835	1827	4815	7802	0785	3767	6746
20	4869	7880	0888	3893	6897	9897	2896	5892	8885	1876	4865	7851	0835	3816	6795
21	4919	7930	0938	3943	6947	9947	2946	5942	8935	1926	4915	7901	0885	3866	6845
22	4969	7980	0988	3994	6997	9997	2996	5992	8985	1976	4965	7951	0935	3916	6895
23	5019	8030	1038	4044	7047	0047	3046	6042	9035	2026	5014	8001	0984	3965	6944
24	5070	8080	1088	4094	7097	0097	3096	6091	9085	2076	5064	8050	1034	4015	6994
25	5120	8130	1138	4144	7147	0147	3146	6141	9135	2126	5114	8100	1084	4065	7044
26	5170	8180	1188	4194	7197	0197	3196	6191	9185	2175	5164	8150	1133	4114	7093
27	5220	8231	1238	4244	7247	0247	3245	6241	9234	2225	5214	8200	1183	4164	7143
28	5270	8281	1289	4294	7297	0297	3295	6291	9284	2275	5263	8249	1233	4214	7192
29	5321	8331	1339	4344	7347	0347	3345	6341	9334	2325	5313	8299	1282	4263	7242
30	5371	8381	1389	4394	7397	0397	3395	6391	9384	2375	5363	8349	1332	4313	7292
31	5421	8431	1439	4444	7447	0447	3445	6441	9434	2424	5413	8398	1382	4363	7341
32	5471	8481	1489	4494	7497	0497	3495	6491	9484	2474	5462	8448	1432	4412	7391
33	5521	8531	1539	4544	7547	0547	3545	6541	9534	2524	5512	8498	1481	4462	7441
34	5572	8582	1589	4594	7597	0597	3595	6590	9583	2574	5562	8548	1531	4512	7490
35	5622	8632	1639	4644	7647	0647	3645	6640	9633	2624	5612	8597	1581	4561	7540
36	5672	8682	1689	4694	7697	0697	3695	6690	9683	2674	5662	8647	1630	4611	7589
37	5722	8732	1740	4745	7747	0747	3745	6740	9733	2723	5711	8697	1680	4661	7639
38	5772	8782	1790	4795	7797	0797	3795	6790	9783	2773	5761	8747	1730	4710	7689
39	5823	8832	1840	4845	7847	0847	3845	6840	9833	2823	5811	8796	1779	4760	7738
40	5873	8883	1890	4895	7897	0897	3895	6890	9883	2873	5861	8846	1829	4810	7788
41	5923	8933	1940	4945	7947	0947	3945	6940	9932	2923	5910	8896	1879	4859	7838
42	5973	8983	1990	4995	7997	0997	3995	6990	9982	2972	5960	8946	1929	4909	7887
43	6023	9033	2040	5045	8047	1047	4045	7040	0032	3022	6010	8995	1978	4959	7937
44	6073	9083	2090	5095	8097	1097	4095	7089	0082	3072	6060	9045	2028	5008	7986
45	6124	9133	2140	5145	8147	1147	4144	7139	0132	3122	6110	9095	2078	5058	8036
46	6174	9183	2190	5195	8197	1197	4194	7189	0182	3172	6159	9145	2127	5108	8086
47	6224	9233	2241	5245	8247	1247	4244	7239	0232	3222	6209	9194	2177	5157	8135
48	6274	9284	2291	5295	8297	1297	4294	7289	0281	3271	6259	9244	2227	5207	8185
49	6324	9334	2341	5345	8347	1347	4344	7339	0331	3321	6309	9294	2276	5257	8234
50	6375	9384	2391	5395	8397	1397	4394	7389	0381	3371	6358	9343	2326	5306	8284
51	6425	9434	2441	5445	8447	1447	4444	7439	0431	3421	6408	9393	2376	5356	8334
52	6475	9484	2491	5495	8497	1497	4494	7489	0481	3471	6458	9443	2425	5406	8383
53	6525	9534	2541	5545	8547	1547	4544	7539	0531	3520	6508	9493	2475	5455	8433
54	6575	9584	2591	5596	8597	1597	4594	7588	0581	3570	6558	9542	2525	5505	8482
55	6625	9635	2641	5646	8647	1647	4644	7638	0630	3620	6607	9592	2575	5555	8532
56	6676	9685	2691	5696	8697	1697	4694	7688	0680	3670	6657	9642	2624	5604	8582
57	6726	9735	2741	5746	8747	1747	4744	7738	0730	3720	6707	9692	2674	5654	8631
58	6776	9785	2792	5796	8797	1797	4794	7788	0780	3769	6757	9741	2724	5703	8681
59	6826	9835	2842	5846	8847	1847	4843	7838	0830	3819	6806	9791	2773	5753	8731
60	6876	9885	2892	5896	8897	1897	4893	7888	0880	3869	6856	9841	2823	5803	8780
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Sine Deg. 67

22 Deg. Co-Sine

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	″
9.964	9.964	9.964	9.964	9.964	9.964	9.964	9.964	9.964	9.964	9.964	9.964	9.964	9.964	9.964	
8256	7726	7195	6665	6133	5602	5069	4537	4004	3470	2937	2402	1868	1332	0797	60
8247	7717	7187	6656	6124	5593	5061	4528	3995	3462	2928	2393	1859	1324	0788	59
8238	7708	7178	6647	6116	5584	5052	4519	3986	3453	2919	2385	1850	1315	0779	58
8229	7699	7169	6638	6107	5575	5043	4510	3977	3444	2910	2376	1841	1306	0770	57
8220	7690	7160	6629	6098	5566	5034	4501	3968	3435	2901	2367	1832	1297	0761	56
8212	7682	7151	6620	6089	5557	5025	4493	3959	3426	2892	2358	1823	1288	0752	55
8203	7673	7142	6611	6080	5548	5016	4484	3951	3417	2883	2349	1814	1279	0743	54
8194	7664	7133	6603	6071	5540	5007	4475	3942	3408	2874	2340	1805	1270	0734	53
8185	7655	7125	6594	6062	5531	4998	4466	3933	3399	2865	2331	1796	1261	0725	52
8176	7646	7116	6585	6054	5522	4990	4457	3924	3390	2857	2322	1787	1252	0716	51
8167	7637	7107	6576	6045	5513	4981	4448	3915	3382	2848	2313	1778	1243	0708	50
8159	7629	7098	6567	6036	5504	4972	4439	3906	3373	2839	2304	1770	1234	0699	49
8150	7620	7089	6558	6027	5495	4963	4430	3897	3364	2830	2295	1761	1225	0690	48
8141	7611	7080	6549	6018	5486	4954	4421	3888	3355	2821	2287	1752	1216	0681	47
8132	7602	7072	6541	6009	5477	4945	4413	3879	3346	2812	2278	1743	1208	0672	46
8123	7593	7063	6532	6000	5469	4936	4404	3871	3337	2803	2269	1734	1199	0663	45
8114	7584	7054	6523	5992	5460	4927	4395	3862	3328	2794	2260	1725	1190	0654	44
8106	7576	7045	6514	5983	5451	4919	4386	3853	3319	2785	2251	1716	1181	0645	43
8097	7567	7036	6505	5974	5442	4910	4377	3844	3310	2776	2242	1707	1172	0636	42
8088	7558	7027	6496	5965	5433	4901	4368	3835	3301	2767	2233	1698	1163	0627	41
8079	7549	7018	6488	5956	5424	4892	4359	3826	3293	2759	2224	1689	1154	0618	40
8070	7540	7010	6479	5947	5415	4883	4350	3817	3284	2750	2215	1680	1145	0609	39
8061	7531	7001	6470	5938	5407	4874	4342	3808	3275	2741	2206	1671	1136	0600	38
8053	7523	6992	6461	5930	5398	4865	4333	3799	3266	2732	2197	1663	1127	0591	37
8044	7514	6983	6452	5921	5389	4856	4324	3791	3257	2723	2188	1654	1118	0582	36
8035	7505	6974	6443	5912	5380	4848	4315	3782	3248	2714	2180	1645	1109	0574	35
8026	7496	6965	6434	5903	5371	4839	4306	3773	3239	2705	2171	1636	1100	0565	34
8017	7487	6957	6426	5894	5362	4830	4297	3764	3230	2696	2162	1627	1091	0556	33
8008	7478	6948	6417	5885	5353	4821	4288	3755	3221	2687	2153	1618	1083	0547	32
8000	7469	6939	6408	5876	5344	4812	4279	3746	3213	2678	2144	1609	1074	0538	31
7991	7461	6930	6399	5868	5336	4803	4270	3737	3204	2670	2135	1600	1065	0529	30
7982	7452	6921	6390	5859	5327	4794	4262	3728	3195	2661	2126	1591	1056	0520	29
7973	7443	6912	6381	5850	5318	4785	4253	3719	3186	2652	2117	1582	1047	0511	28
7964	7434	6903	6372	5841	5309	4777	4244	3711	3177	2643	2108	1573	1038	0502	27
7955	7425	6895	6364	5832	5300	4768	4235	3702	3168	2634	2099	1564	1029	0493	26
7947	7416	6886	6355	5823	5291	4759	4226	3693	3159	2625	2090	1555	1020	0484	25
7938	7408	6877	6346	5814	5282	4750	4217	3684	3150	2616	2082	1547	1011	0475	24
7929	7399	6868	6337	5805	5274	4741	4208	3675	3141	2607	2073	1538	1002	0466	23
7920	7390	6859	6328	5797	5265	4732	4199	3666	3132	2598	2064	1529	0993	0457	22
7911	7381	6850	6319	5788	5256	4723	4191	3657	3124	2589	2055	1520	0984	0448	21
7902	7372	6842	6310	5779	5247	4714	4182	3648	3115	2580	2046	1511	0975	0440	20
7894	7363	6833	6302	5770	5238	4706	4173	3639	3106	2572	2037	1502	0967	0431	19
7885	7355	6824	6293	5761	5229	4697	4164	3631	3097	2563	2028	1493	0958	0422	18
7876	7346	6815	6284	5752	5220	4688	4155	3622	3088	2554	2019	1484	0949	0413	17
7867	7337	6806	6275	5743	5211	4679	4146	3613	3079	2545	2010	1475	0940	0404	16
7858	7328	6797	6266	5735	5203	4670	4137	3604	3070	2536	2001	1466	0931	0395	15
7849	7319	6788	6257	5726	5194	4661	4128	3595	3061	2527	1992	1457	0922	0386	14
7841	7310	6780	6248	5717	5185	4652	4119	3586	3052	2518	1984	1448	0913	0377	13
7832	7302	6771	6240	5708	5176	4643	4111	3577	3043	2509	1975	1440	0904	0368	12
7823	7293	6762	6231	5699	5167	4635	4102	3568	3035	2500	1966	1431	0895	0359	11
7814	7284	6753	6222	5690	5158	4626	4093	3559	3026	2491	1957	1422	0886	0350	10
7805	7275	6744	6213	5681	5149	4617	4084	3551	3017	2483	1948	1413	0877	0341	9
7796	7266	6735	6204	5673	5140	4608	4075	3542	3008	2474	1939	1404	0868	0332	8
7788	7257	6727	6195	5664	5132	4599	4066	3533	2999	2465	1930	1395	0859	0323	7
7779	7248	6718	6186	5655	5123	4590	4057	3524	2990	2456	1921	1386	0850	0314	6
7770	7240	6709	6178	5646	5114	4581	4048	3515	2981	2447	1912	1377	0842	0306	5
7761	7231	6700	6169	5637	5105	4572	4039	3506	2972	2438	1903	1368	0833	0297	4
7752	7222	6691	6160	5628	5096	4564	4031	3497	2963	2429	1894	1359	0824	0288	3
7743	7213	6682	6151	5619	5087	4555	4022	3488	2954	2420	1885	1350	0815	0279	2
7735	7204	6673	6142	5610	5078	4546	4013	3479	2946	2411	1877	1341	0806	0270	1
7726	7195	6665	6133	5602	5069	4537	4004	3470	2937	2402	1868	1332	0797	0261	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Sine Deg. 67

22 Deg. Tangent — 22 Deg. Co-Tangent

"	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	"
	9.622	9.622	9.623	9.623	9.623	9.624	9.624	9.625	9.625	9.625	9.626	9.626	9.626	9.627	9.627	10.377	10.377	10.376	10.376	10.376	10.375	10.375	10.374	10.374	10.374	10.373	10.373	10.373	10.372	10.372	
0	5609	9150	2690	6227	9763	3296	6827	0356	3884	7409	0932	4454	7973	1491	5006	4391	0850	7310	3773	0237	6704	3173	9644	6116	2591	9068	5546	2027	8509	4994	60
1	5668	9209	2749	6286	9821	3355	6886	0415	3943	7468	0991	4512	8032	1549	5064	4332	0791	7251	3714	0179	6645	3114	9585	6057	2532	9009	5488	1968	8451	4936	59
2	5727	9268	2808	6345	9880	3414	6945	0474	4001	7527	1050	4571	8090	1608	5123	4273	0732	7192	3655	0120	6586	3055	9526	5999	2473	8950	5429	1910	8392	4877	58
3	5786	9327	2867	6404	9939	3472	7004	0533	4060	7585	1109	4630	8149	1666	5182	4214	0673	7133	3596	0061	6528	2996	9467	5940	2415	8891	5370	1851	8334	4818	57
4	5845	9386	2926	6463	9998	3531	7063	0592	4119	7644	1167	4688	8208	1725	5240	4155	0614	7074	3537	0002	6469	2937	9408	5881	2356	8833	5312	1792	8275	4760	56
5	5904	9445	2985	6522	0057	3590	7121	0651	4178	7703	1226	4747	8266	1784	5299	4096	0555	7015	3478	9943	6410	2879	9349	5822	2297	8774	5253	1734	8216	4701	55
6	5963	9504	3044	6581	0116	3649	7180	0709	4236	7762	1285	4806	8325	1842	5357	4037	0496	6956	3419	9884	6351	2820	9291	5764	2238	8715	5194	1675	8158	4643	54
7	6022	9563	3103	6640	0175	3708	7239	0768	4295	7820	1343	4864	8384	1901	5416	3978	0437	6897	3360	9825	6292	2761	9232	5705	2180	8657	5136	1616	8099	4584	53
8	6081	9622	3162	6699	0234	3767	7298	0827	4354	7879	1402	4923	8442	1959	5474	3919	0378	6838	3301	9766	6233	2702	9173	5646	2121	8598	5077	1558	8041	4526	52
9	6140	9682	3221	6758	0293	3826	7357	0886	4413	7938	1461	4982	8501	2018	5533	3860	0318	6779	3242	9707	6174	2643	9114	5587	2062	8539	5018	1499	7982	4467	51
10	6199	9741	3280	6817	0352	3885	7416	0945	4472	7996	1519	5040	8560	2077	5592	3801	0259	6720	3183	9648	6115	2584	9055	5528	2004	8481	4960	1440	7923	4408	50
11	6258	9800	3339	6875	0410	3943	7474	1003	4530	8055	1578	5099	8618	2135	5650	3742	0200	6661	3125	9590	6057	2526	8997	5470	1945	8422	4901	1382	7865	4350	49
12	6318	9859	3397	6934	0469	4002	7533	1062	4589	8114	1637	5158	8677	2194	5709	3682	0141	6603	3066	9531	5998	2467	8938	5411	1886	8363	4842	1323	7806	4291	48
13	6377	9918	3456	6993	0528	4061	7592	1121	4648	8173	1696	5216	8735	2252	5767	3623	0082	6544	3007	9472	5939	2408	8879	5352	1827	8304	4784	1265	7748	4233	47
14	6436	9977	3515	7052	0587	4120	7651	1180	4707	8231	1754	5275	8794	2311	5826	3564	0023	6485	2948	9413	5880	2349	8820	5293	1769	8246	4725	1206	7689	4174	46
15	6495	0035	3574	7111	0646	4179	7710	1239	4765	8290	1813	5334	8853	2370	5884	3505	9965	6426	2889	9354	5821	2290	8761	5235	1710	8187	4666	1147	7630	4116	45
16	6554	0094	3633	7170	0705	4238	7769	1297	4824	8349	1872	5392	8911	2428	5943	3446	9906	6367	2830	9295	5762	2231	8703	5176	1651	8128	4608	1089	7572	4057	44
17	6613	0153	3692	7229	0764	4297	7827	1356	4883	8408	1930	5451	8970	2487	6002	3387	9847	6308	2771	9236	5703	2173	8644	5117	1592	8070	4549	1030	7513	3998	43
18	6672	0212	3751	7288	0823	4355	7886	1415	4942	8466	1989	5510	9029	2545	6060	3328	9788	6249	2712	9177	5645	2114	8585	5058	1534	8011	4490	0971	7455	3940	42
19	6731	0271	3810	7347	0882	4414	7945	1474	5000	8525	2048	5568	9087	2604	6119	3269	9729	6190	2653	9118	5586	2055	8526	5000	1475	7952	4432	0913	7396	3881	41
20	6790	0330	3869	7406	0941	4473	8004	1532	5059	8584	2106	5627	9146	2663	6177	3210	9670	6131	2594	9059	5527	1996	8468	4941	1416	7894	4373	0854	7337	3823	40
21	6849	0389	3928	7465	0999	4532	8063	1591	5118	8643	2165	5686	9204	2721	6236	3151	9611	6072	2535	9001	5468	1937	8409	4882	1357	7835	4314	0796	7279	3764	39
22	6908	0448	3987	7524	1058	4591	8121	1650	5177	8701	2224	5744	9263	2780	6294	3092	9552	6013	2476	8942	5409	1879	8350	4823	1299	7776	4256	0737	7220	3706	38
23	6967	0507	4046	7583	1117	4650	8180	1709	5235	8760	2283	5803	9322	2838	6353	3033	9493	5954	2417	8883	5350	1820	8291	4765	1240	7717	4197	0678	7162	3647	37
24	7026	0566	4105	7642	1176	4709	8239	1768	5294	8819	2341	5862	9380	2897	6411	2974	9434	5895	2358	8824	5291	1761	8232	4706	1181	7659	4138	0620	7103	3589	36
25	7085	0625	4164	7700	1235	4767	8298	1826	5353	8877	2400	5920	9439	2955	6470	2915	9375	5836	2300	8765	5233	1702	8174	4647	1123	7600	4080	0561	7045	3530	35
26	7144	0684	4223	7759	1294	4826	8357	1885	5412	8936	2459	5979	9498	3014	6529	2856	9316	5777	2241	8706	5174	1643	8115	4588	1064	7541	4021	0502	6986	3471	34
27	7203	0743	4282	7818	1353	4885	8416	1944	5470	8995	2517	6038	9556	3073	6587	2797	9257	5718	2182	8647	5115	1584	8056	4530	1005	7483	3962	0444	6927	3413	33
28	7262	0802	4341	7877	1412	4944	8474	2003	5529	9054	2576	6096	9615	3131	6646	2738	9198	5659	2123	8588	5056	1526	7997	4471	0946	7424	3904	0385	6869	3354	32
29	7321	0861	4400	7936	1471	5003	8533	2062	5588	9112	2635	6155	9673	3190	6704	2679	9139	5600	2064	8529	4997	1467	7938	4412	0888	7365	3845	0327	6810	3296	31
30	7380	0920	4459	7995	1529	5062	8592	2120	5647	9171	2693	6214	9732	3248	6763	2620	9080	5541	2005	8471	4938	1408	7880	4353	0829	7307	3786	0268	6752	3237	30
31	7439	0979	4518	8054	1588	5121	8651	2179	5705	9230	2752	6272	9791	3307	6821	2561	9021	5482	1946	8412	4879	1349	7821	4295	0770	7248	3728	0209	6693	3179	29
32	7498	1038	4577	8113	1647	5179	8710	2238	5764	9288	2811	6331	9849	3366	6880	2502	8962	5423	1887	8353	4821	1290	7762	4236	0712	7189	3669	0151	6634	3120	28
33	7557	1097	4636	8172	1706	5238	8769	2297	5823	9347	2869	6390	9908	3424	6939	2443	8903	5364	1828	8294	4762	1231	7703	4177	0653	7131	3610	0092	6576	3061	27
34	7616	1156	4695	8231	1765	5297	8827	2356	5882	9406	2928	6448	9967	3483	6997	2384	8844	5305	1769	8235	4703	1173	7644	4118	0594	7072	3552	0033	6517	3003	26
35	7675	1215	4754	8290	1824	5356	8886	2414	5940	9465	2987	6507	0025	3541	7056	2325	8785	5246	1710	8176	4644	1114	7586	4060	0535	7013	3493	9975	6459	2944	25
36	7734	1274	4812	8349	1883	5415	8945	2473	5999	9523	3045	6566	0084	3600	7114	2266	8726	5188	1651	8117	4585	1055	7527	4001	0477	6955	3434	9916	6400	2886	24
37	7793	1333	4871	8408	1942	5474	9004	2532	6058	9582	3104	6624	0142	3659	7173	2207	8667	5129	1592	8058	4526	0996	7468	3942	0418	6896	3376	9858	6341	2827	23
38	7852	1392	4930	8466	2001	5533	9063	2591	6117	9641	3163	6683	0201	3717	7231	2148	8608	5070	1534	7999	4467	0937	7409	3883	0359	6837	3317	9799	6283	2769	22
39	7911	1451	4989	8525	2059	5591	9121	2649	6175	9700	3222	6742	0260	3776	7290	2089	8549	5011	1475	7941	4409	0879	7351	3825	0300	6778	3258	9740	6224	2710	21
40	7970	1510	5048	8584	2118	5650	9180	2708	6234	9758	3280	6800	0318	3834	7348	2030	8490	4952	1416	7882	4350	0820	7292	3766	0242	6720	3200	9682	6166	2652	20
41	8029	1569	5107	8643	2177	5709	9239	2767	6293	9817	3339	6859	0377	3893	7407	1971	8431	4893	1357	7823	4291	0761	7233	3707	0183	6661	3141	9623	6107	2593	19
42	8088	1628	5166	8702	2236	5768	9298	2826	6352	9876	3398	6918	0436	3951	7465	1912	8372	4834	1298	7764	4232	0702	7174	3648	0124	6602	3082	9564	6049	2535	18
43	8147	1687	5225	8761	2295	5827	9357	2885	6410	9934	3456	6976	0494	4010	7524	1853	8313	4775	1239	7705	4173	0643	7115	3590	0066	6544	3024	9506	5990	2476	17
44	8206	1746	5284	8820	2354	5886	9416	2943	6469	9993	3515	7035	0553	4069	7583	1794	8254	4716	1180	7646	4114	0584	7057	3531	0007	6485	2965	9447	5931	2417	16
45	8265	1805	5343	8879	2413	5945	9474	3002	6528	0052	3574	7093	0611	4127	7641	1735	8195	4657	1121	7587	4055	0526	6998	3472	9948	6426	2907	9389	5873	2359	15
46	8324	1864	5402	8938	2472	6003	9533	3061	6587	0111	3632	7152	0670	4186	7700	1676	8136	4598	1062	7528	3997	0467	6939	3413	9889	6368	2848	9330	5814	2300	14
47	8383	1923	5461	8997	2530	6062	9592	3120	6645	0169	3691	7211	0729	4244	7758	1617	8077	4539	1003	7470	3938	0408	6880	3355	9831	6309	2789	9271	5756	2242	13
48	8442	1982	5520	9056	2589	6121	9651	3179	6704	0228	3750	7269	0787	4303	7817	1558	8018	4480	0944	7411	3879	0349	6821	3296	9772	6250	2731	9213	5697	2183	12
49	8501	2041	5579	9115	2648	6180	9710	3237	6763	0287	3808	7328	0846	4362	7875	1499	7959	4421	0885	7352	3820	0290	6763	3237	9713	6192	2672	9154	5638	2125	11
50	8560	2100	5638	9173	2707	6239	9768	3296	6822	0345	3867	7387	0904	4420	7934	1440	7900	4362	0827	7293	3761	0232	6704	3178	9655	6133	2613	9096	5580	2066	10
51	8619	2159	5697	9232	2766	6298	9827	3355	6880	0404	3926	7445	0963	4479	7992	1381	7841	4303	0768	7234	3702	0173	6645	3120	9596	6074	2555	9037	5521	2008	9
52	8678	2218	5756	9291	2825	6356	9886	3414	6939	0463	3984	7504	1022	4537	8051	1322	7782	4244	0709	7175	3644	0114	6586	3061	9537	6016	2496	8978	5463	1949	8
53	8737	2277	5815	9350	2884	6415	9945	3472	6998	0522	4043	7563	1080	4596	8109	1263	7723	4185	0650	7116	3585	0055	6528	3002	9478	5957	2437	8920	5404	1891	7
54	8796	2336	5874	9409	2943	6474	0004	3531	7057	0580	4102	7621	1139	4654	8168	1204	7664	4126	0591	7057	3526	9996	6469	2943	9420	5898	2379	8861	5346	1832	6
55	8855	2395	5932	9468	3001	6533	0062	3590	7115	0639	4160	7680	1197	4713	8227	1145	7605	4068	0532	6999	3467	9938	6410	2885	9361	5840	2320	8803	5287	1773	5
56	8914	2454	5991	9527	3060	6592	0121	3649	7174	0698	4219	7739	1256	4772	8285	1086	7546	4009	0473	6940	3408	9879	6351	2826	9302	5781	2261	8744	5228	1715	4
57	8973	2513	6050	9586	3119	6651	0180	3707	7233	0756	4278	7797	1315	4830	8344	1027	7487	3950	0414	6881	3349	9820	6293	2767	9244	5722	2203	8685	5170	1656	3
58	9032	2572	6109	9645	3178	6710	0239	3766	7292	0815	4336	7856	1373	4889	8402	0968	7428	3891	0355	6822	3290	9761	6234	2708	9185	5664	2144	8627	5111	1598	2
59	9091	2631	6168	9704	3237	6768	0298	3825	7350	0874	4395	7914	1432	4947	8461	0909	7369	3832	0296	6763	3232	9702	6175	2650	9126	5605	2086	8568	5053	1539	1
60	9150	2690	6227	9763	3296	6827	0356	3884	7409	0932	4454	7973	1491	5006	8519	0850	7310	3773	0237	6704	3173	9644	6116	2591	9068	5546	2027	8509	4994	1481	0
"	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	"

Co-Tangent Deg. 67 — Tangent Deg. 67

23 Deg. Sine

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9. 591	9. 592	9. 592	9. 592	9. 593	9. 593	9. 593	9. 593	9. 594	9. 594	9. 594	9. 595	9. 595	9. 595	9. 596
0	8780	1755	4728	7698	0666	3631	6594	9555	2513	5469	8422	1373	4322	7268	0212
1	8830	1805	4777	7747	0715	3680	6643	9604	2562	5518	8471	1422	4371	7317	0261
2	8879	1854	4827	7797	0764	3730	6693	9653	2611	5567	8520	1471	4420	7366	0310
3	8929	1904	4876	7846	0814	3779	6742	9703	2661	5616	8570	1521	4469	7415	0359
4	8979	1953	4926	7896	0863	3829	6791	9752	2710	5666	8619	1570	4518	7465	0408
5	9028	2003	4975	7945	0913	3878	6841	9801	2759	5715	8668	1619	4567	7514	0457
6	9078	2052	5025	7995	0962	3927	6890	9850	2808	5764	8717	1668	4617	7563	0506
7	9127	2102	5074	8044	1012	3977	6939	9900	2858	5813	8766	1717	4666	7612	0555
8	9177	2152	5124	8094	1061	4026	6989	9949	2907	5863	8816	1766	4715	7661	0605
9	9227	2201	5173	8143	1111	4076	7038	9998	2956	5912	8865	1816	4764	7710	0654
10	9276	2251	5223	8193	1160	4125	7088	0048	3006	5961	8914	1865	4813	7759	0703
11	9326	2300	5272	8242	1209	4174	7137	0097	3055	6010	8963	1914	4862	7808	0752
12	9375	2350	5322	8292	1259	4224	7186	0146	3104	6059	9012	1963	4911	7857	0801
13	9425	2399	5371	8341	1308	4273	7236	0196	3153	6109	9062	2012	4960	7906	0850
14	9474	2449	5421	8391	1358	4323	7285	0245	3203	6158	9111	2061	5010	7955	0899
15	9524	2498	5470	8440	1407	4372	7334	0294	3252	6207	9160	2111	5059	8004	0948
16	9574	2548	5520	8489	1457	4421	7384	0344	3301	6256	9209	2160	5108	8053	0997
17	9623	2598	5569	8539	1506	4471	7433	0393	3351	6306	9258	2209	5157	8103	1046
18	9673	2647	5619	8588	1555	4520	7482	0442	3400	6355	9308	2258	5206	8152	1095
19	9722	2697	5668	8638	1605	4570	7532	0492	3449	6404	9357	2307	5255	8201	1144
20	9772	2746	5718	8687	1654	4619	7581	0541	3498	6453	9406	2356	5304	8250	1193
21	9822	2796	5767	8737	1704	4668	7630	0590	3548	6503	9455	2405	5353	8299	1242
22	9871	2845	5817	8786	1753	4718	7680	0640	3597	6552	9504	2455	5402	8348	1291
23	9921	2895	5867	8836	1803	4767	7729	0689	3646	6601	9554	2504	5452	8397	1340
24	9970	2944	5916	8885	1852	4816	7778	0738	3695	6650	9603	2553	5501	8446	1389
25	0020	2994	5966	8935	1901	4866	7828	0787	3745	6700	9652	2602	5550	8495	1438
26	0070	3043	6015	8984	1951	4915	7877	0837	3794	6749	9701	2651	5599	8544	1487
27	0119	3093	6065	9034	2000	4965	7927	0886	3843	6798	9750	2700	5648	8593	1536
28	0169	3143	6114	9083	2050	5014	7976	0935	3892	6847	9800	2750	5697	8642	1585
29	0218	3192	6164	9133	2099	5063	8025	0985	3942	6896	9849	2799	5746	8691	1634
30	0268	3242	6213	9182	2149	5113	8075	1034	3991	6946	9898	2848	5795	8740	1683
31	0317	3291	6263	9231	2198	5162	8124	1083	4040	6995	9947	2897	5844	8790	1732
32	0367	3341	6312	9281	2247	5212	8173	1133	4090	7044	9996	2946	5894	8839	1781
33	0417	3390	6362	9330	2297	5261	8223	1182	4139	7093	0045	2995	5943	8888	1830
34	0466	3440	6411	9380	2346	5310	8272	1231	4188	7143	0095	3044	5992	8937	1879
35	0516	3489	6461	9429	2396	5360	8321	1280	4237	7192	0144	3094	6041	8986	1928
36	0565	3539	6510	9479	2445	5409	8371	1330	4287	7241	0193	3143	6090	9035	1977
37	0615	3588	6560	9528	2495	5458	8420	1379	4336	7290	0242	3192	6139	9084	2026
38	0665	3638	6609	9578	2544	5508	8469	1428	4385	7339	0291	3241	6188	9133	2075
39	0714	3688	6659	9627	2593	5557	8519	1478	4434	7389	0341	3290	6237	9182	2124
40	0764	3737	6708	9677	2643	5607	8568	1527	4484	7438	0390	3339	6286	9231	2174
41	0813	3787	6758	9726	2692	5656	8617	1576	4533	7487	0439	3388	6335	9280	2223
42	0863	3836	6807	9776	2742	5705	8667	1626	4582	7536	0488	3437	6385	9329	2272
43	0912	3886	6857	9825	2791	5755	8716	1675	4631	7585	0537	3487	6434	9378	2321
44	0962	3935	6906	9874	2840	5804	8765	1724	4681	7635	0586	3536	6483	9427	2370
45	1012	3985	6956	9924	2890	5853	8815	1773	4730	7684	0636	3585	6532	9476	2419
46	1061	4034	7005	9973	2939	5903	8864	1823	4779	7733	0685	3634	6581	9525	2468
47	1111	4084	7054	0023	2989	5952	8913	1872	4828	7782	0734	3683	6630	9575	2517
48	1160	4133	7104	0072	3038	6002	8963	1921	4878	7832	0783	3732	6679	9624	2566
49	1210	4183	7153	0122	3087	6051	9012	1971	4927	7881	0832	3781	6728	9673	2615
50	1259	4232	7203	0171	3137	6100	9061	2020	4976	7930	0881	3831	6777	9722	2664
51	1309	4282	7252	0221	3186	6150	9111	2069	5025	7979	0931	3880	6826	9771	2713
52	1359	4331	7302	0270	3236	6199	9160	2118	5075	8028	0980	3929	6875	9820	2762
53	1408	4381	7351	0319	3285	6248	9209	2168	5124	8078	1029	3978	6925	9869	2811
54	1458	4431	7401	0369	3335	6298	9259	2217	5173	8127	1078	4027	6974	9918	2860
55	1507	4480	7450	0418	3384	6347	9308	2266	5222	8176	1127	4076	7023	9967	2909
56	1557	4530	7500	0468	3433	6397	9357	2316	5272	8225	1176	4125	7072	0016	2958
57	1606	4579	7549	0517	3483	6446	9407	2365	5321	8274	1226	4174	7121	0065	3007
58	1656	4629	7599	0567	3532	6495	9456	2414	5370	8324	1275	4224	7170	0114	3056
59	1706	4678	7648	0616	3582	6545	9505	2463	5419	8373	1324	4273	7219	0163	3105
60	1755	4728	7698	0666	3631	6594	9555	2513	5469	8422	1373	4322	7268	0212	3154
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Sine Deg. 66

23 Deg. Co-Sine

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
9. 964	9. 963	9. 963	9. 963	9. 963	9. 963	9. 963	9. 963	9. 963	9. 963	9. 963	9. 963	9. 963	9. 963	9. 963	″
0261	9724	9187	8650	8112	7574	7036	6496	5957	5417	4877	4336	3795	3253	2711	60
0252	9715	9179	8641	8103	7565	7027	6487	5948	5408	4868	4327	3786	3244	2702	59
0243	9706	9170	8632	8094	7556	7018	6479	5939	5399	4859	4318	3777	3235	2693	58
0234	9698	9161	8623	8085	7547	7009	6470	5930	5390	4850	4309	3768	3226	2684	57
0225	9689	9152	8614	8077	7538	7000	6461	5921	5381	4841	4300	3759	3217	2675	56
0216	9680	9143	8605	8068	7529	6991	6452	5912	5372	4832	4291	3750	3208	2666	55
0207	9671	9134	8596	8059	7520	6982	6443	5903	5363	4823	4282	3740	3199	2657	54
0198	9662	9125	8587	8050	7511	6973	6434	5894	5354	4814	4273	3731	3190	2648	53
0189	9653	9116	8578	8041	7502	6964	6425	5885	5345	4805	4264	3722	3181	2639	52
0180	9644	9107	8570	8032	7493	6955	6416	5876	5336	4796	4255	3713	3172	2630	51
0171	9635	9098	8561	8023	7484	6946	6407	5867	5327	4787	4246	3704	3163	2620	50
0163	9626	9089	8552	8014	7475	6937	6398	5858	5318	4778	4237	3695	3154	2611	49
0154	9617	9080	8543	8005	7466	6928	6389	5849	5309	4769	4228	3686	3145	2602	48
0145	9608	9071	8534	7996	7458	6919	6380	5840	5300	4760	4219	3677	3136	2593	47
0136	9599	9062	8525	7987	7449	6910	6371	5831	5291	4751	4210	3668	3127	2584	46
0127	9590	9053	8516	7978	7440	6901	6362	5822	5282	4742	4201	3659	3117	2575	45
0118	9581	9044	8507	7969	7431	6892	6353	5813	5273	4733	4192	3650	3108	2566	44
0109	9572	9035	8498	7960	7422	6883	6344	5804	5264	4724	4183	3641	3099	2557	43
0100	9563	9026	8489	7951	7413	6874	6335	5795	5255	4714	4174	3632	3090	2548	42
0091	9554	9017	8480	7942	7404	6865	6326	5786	5246	4705	4165	3623	3081	2539	41
0082	9545	9008	8471	7933	7395	6856	6317	5777	5237	4696	4156	3614	3072	2530	40
0073	9537	8999	8462	7924	7386	6847	6308	5768	5228	4687	4146	3605	3063	2521	39
0064	9528	8991	8453	7915	7377	6838	6299	5759	5219	4678	4137	3596	3054	2512	38
0055	9519	8982	8444	7906	7368	6829	6290	5750	5210	4669	4128	3587	3045	2503	37
0046	9510	8973	8435	7897	7359	6820	6281	5741	5201	4660	4119	3578	3036	2494	36
0037	9501	8964	8426	7888	7350	6811	6272	5732	5192	4651	4110	3569	3027	2485	35
0028	9492	8955	8417	7879	7341	6802	6263	5723	5183	4642	4101	3560	3018	2476	34
0019	9483	8946	8408	7870	7332	6793	6254	5714	5174	4633	4092	3551	3009	2467	33
0011	9474	8937	8399	7861	7323	6784	6245	5705	5165	4624	4083	3542	3000	2458	32
0002	9465	8928	8390	7852	7314	6775	6236	5696	5156	4615	4074	3533	2991	2449	31
9993	9456	8919	8381	7843	7305	6766	6227	5687	5147	4606	4065	3524	2982	2440	30
9984	9447	8910	8372	7834	7296	6757	6218	5678	5138	4597	4056	3515	2973	2431	29
9975	9438	8901	8363	7825	7287	6748	6209	5669	5129	4588	4047	3506	2964	2422	28
9966	9429	8892	8354	7816	7278	6739	6200	5660	5120	4579	4038	3497	2955	2413	27
9957	9420	8883	8345	7807	7269	6730	6191	5651	5111	4570	4029	3488	2946	2403	26
9948	9411	8874	8337	7798	7260	6721	6182	5642	5102	4561	4020	3479	2937	2394	25
9939	9402	8865	8328	7790	7251	6712	6173	5633	5093	4552	4011	3470	2928	2385	24
9930	9393	8856	8319	7781	7242	6703	6164	5624	5084	4543	4002	3461	2919	2376	23
9921	9384	8847	8310	7772	7233	6694	6155	5615	5075	4534	3993	3452	2910	2367	22
9912	9375	8838	8301	7763	7224	6685	6146	5606	5066	4525	3984	3443	2901	2358	21
9903	9366	8829	8292	7754	7215	6676	6137	5597	5057	4516	3975	3434	2892	2349	20
9894	9358	8820	8283	7745	7206	6667	6128	5588	5048	4507	3966	3425	2883	2340	19
9885	9349	8811	8274	7736	7197	6658	6119	5579	5039	4498	3957	3416	2874	2331	18
9876	9340	8802	8265	7727	7188	6649	6110	5570	5030	4489	3948	3406	2865	2322	17
9867	9331	8793	8256	7718	7179	6640	6101	5561	5021	4480	3939	3397	2855	2313	16
9859	9322	8785	8247	7709	7170	6631	6092	5552	5012	4471	3930	3388	2846	2304	15
9850	9313	8776	8238	7700	7161	6622	6083	5543	5003	4462	3921	3379	2837	2295	14
9841	9304	8767	8229	7691	7152	6613	6074	5534	4994	4453	3912	3370	2828	2286	13
9832	9295	8758	8220	7682	7143	6604	6065	5525	4985	4444	3903	3361	2819	2277	12
9823	9286	8749	8211	7673	7134	6595	6056	5516	4976	4435	3894	3352	2810	2268	11
9814	9277	8740	8202	7664	7125	6586	6047	5507	4967	4426	3885	3343	2801	2259	10
9805	9268	8731	8193	7655	7116	6577	6038	5498	4958	4417	3876	3334	2792	2250	9
9796	9259	8722	8184	7646	7107	6568	6029	5489	4949	4408	3867	3325	2783	2241	8
9787	9250	8713	8175	7637	7098	6559	6020	5480	4940	4399	3858	3316	2774	2232	7
9778	9241	8704	8166	7628	7089	6550	6011	5471	4931	4390	3849	3307	2765	2223	6
9769	9232	8695	8157	7619	7080	6541	6002	5462	4922	4381	3840	3298	2756	2214	5
9760	9223	8686	8148	7610	7071	6532	5993	5453	4913	4372	3831	3289	2747	2205	4
9751	9214	8677	8139	7601	7062	6523	5984	5444	4904	4363	3822	3280	2738	2195	3
9742	9205	8668	8130	7592	7054	6514	5975	5435	4895	4354	3813	3271	2729	2186	2
9733	9196	8659	8121	7583	7045	6505	5966	5426	4886	4345	3804	3262	2720	2177	1
9724	9187	8650	8112	7574	7036	6496	5957	5417	4877	4336	3795	3253	2711	2168	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Sine Deg. 66

23 Deg. Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.627	9.628	9.628	9.628	9.629	9.629	9.629	9.630	9.630	9.631	9.631	9.631	9.632	9.632	9.632
0	8519	2031	5540	9048	2553	6057	9558	3058	6556	0052	3545	7037	0527	4015	7501
1	8578	2089	5599	9106	2612	6115	9617	3116	6614	0110	3604	7095	0585	4073	7559
2	8636	2148	5657	9165	2670	6174	9675	3175	6672	0168	3662	7154	0644	4131	7617
3	8695	2206	5716	9223	2728	6232	9733	3233	6731	0226	3720	7212	0702	4190	7676
4	8753	2265	5774	9281	2787	6290	9792	3291	6789	0285	3778	7270	0760	4248	7734
5	8812	2323	5833	9340	2845	6349	9850	3350	6847	0343	3836	7328	0818	4306	7792
6	8871	2382	5891	9398	2904	6407	9908	3408	6905	0401	3895	7386	0876	4364	7850
7	8929	2440	5949	9457	2962	6465	9967	3466	6964	0459	3953	7445	0934	4422	7908
8	8988	2499	6008	9515	3020	6524	0025	3525	7022	0518	4011	7503	0992	4480	7966
9	9046	2557	6066	9574	3079	6582	0083	3583	7080	0576	4069	7561	1051	4538	8024
10	9105	2616	6125	9632	3137	6641	0142	3641	7139	0634	4127	7619	1109	4596	8082
11	9163	2674	6183	9691	3196	6699	0200	3699	7197	0692	4186	7677	1167	4654	8140
12	9222	2733	6242	9749	3254	6757	0258	3758	7255	0750	4244	7735	1225	4713	8198
13	9280	2791	6300	9807	3312	6816	0317	3816	7313	0809	4302	7794	1283	4771	8256
14	9339	2850	6359	9866	3371	6874	0375	3874	7372	0867	4360	7852	1341	4829	8314
15	9397	2908	6417	9924	3429	6932	0434	3933	7430	0925	4419	7910	1399	4887	8373
16	9456	2967	6476	9983	3488	6991	0492	3991	7488	0983	4477	7968	1458	4945	8431
17	9514	3025	6534	0041	3546	7049	0550	4049	7546	1042	4535	8026	1516	5003	8489
18	9573	3084	6593	0100	3604	7107	0609	4108	7605	1100	4593	8084	1574	5061	8547
19	9631	3142	6651	0158	3663	7166	0667	4166	7663	1158	4651	8143	1632	5119	8605
20	9690	3201	6710	0216	3721	7224	0725	4224	7721	1216	4710	8201	1690	5177	8663
21	9749	3259	6768	0275	3780	7283	0784	4282	7780	1275	4768	8259	1748	5236	8721
22	9807	3318	6826	0333	3838	7341	0842	4341	7838	1333	4826	8317	1806	5294	8779
23	9866	3376	6885	0392	3896	7399	0900	4399	7896	1391	4884	8375	1865	5352	8837
24	9924	3435	6943	0450	3955	7458	0959	4457	7954	1449	4942	8433	1923	5410	8895
25	9983	3493	7002	0509	4013	7516	1017	4516	8013	1508	5001	8492	1981	5468	8953
26	0041	3552	7060	0567	4072	7574	1075	4574	8071	1566	5059	8550	2039	5526	9011
27	0100	3610	7119	0625	4130	7633	1133	4632	8129	1624	5117	8608	2097	5584	9069
28	0158	3669	7177	0684	4188	7691	1192	4691	8187	1682	5175	8666	2155	5642	9127
29	0217	3727	7236	0742	4247	7749	1250	4749	8246	1740	5233	8724	2213	5700	9186
30	0275	3786	7294	0801	4305	7808	1308	4807	8304	1799	5292	8782	2271	5759	9244
31	0334	3844	7353	0859	4364	7866	1367	4865	8362	1857	5350	8841	2330	5817	9302
32	0392	3903	7411	0918	4422	7925	1425	4924	8420	1915	5408	8899	2388	5875	9360
33	0451	3961	7470	0976	4480	7983	1483	4982	8479	1973	5466	8957	2446	5933	9418
34	0509	4020	7528	1034	4539	8041	1542	5040	8537	2032	5524	9015	2504	5991	9476
35	0568	4078	7586	1093	4597	8100	1600	5099	8595	2090	5583	9073	2562	6049	9534
36	0626	4137	7645	1151	4656	8158	1658	5157	8653	2148	5641	9131	2620	6107	9592
37	0685	4195	7703	1210	4714	8216	1717	5215	8712	2206	5699	9190	2678	6165	9650
38	0743	4254	7762	1268	4772	8275	1775	5274	8770	2265	5757	9248	2737	6223	9708
39	0802	4312	7820	1327	4831	8333	1833	5332	8828	2323	5815	9306	2795	6281	9766
40	0860	4371	7879	1385	4889	8391	1892	5390	8887	2381	5874	9364	2853	6340	9824
41	0919	4429	7937	1443	4948	8450	1950	5448	8945	2439	5932	9422	2911	6398	9882
42	0977	4488	7996	1502	5006	8508	2008	5507	9003	2497	5990	9480	2969	6456	9940
43	1036	4546	8054	1560	5064	8566	2067	5565	9061	2556	6048	9539	3027	6514	9998
44	1095	4605	8113	1619	5123	8625	2125	5623	9120	2614	6106	9597	3085	6572	0057
45	1153	4663	8171	1677	5181	8683	2183	5682	9178	2672	6164	9655	3143	6630	0115
46	1212	4721	8229	1735	5239	8742	2242	5740	9236	2730	6223	9713	3202	6688	0173
47	1270	4780	8288	1794	5298	8800	2300	5798	9294	2789	6281	9771	3260	6746	0231
48	1329	4838	8346	1852	5356	8858	2358	5856	9353	2847	6339	9829	3318	6804	0289
49	1387	4897	8405	1911	5415	8917	2417	5915	9411	2905	6397	9888	3376	6862	0347
50	1446	4955	8463	1969	5473	8975	2475	5973	9469	2963	6455	9946	3434	6920	0405
51	1504	5014	8522	2028	5531	9033	2533	6031	9527	3021	6514	0004	3492	6979	0463
52	1563	5072	8580	2086	5590	9092	2592	6090	9586	3080	6572	0062	3550	7037	0521
53	1621	5131	8639	2144	5648	9150	2650	6148	9644	3138	6630	0120	3608	7095	0579
54	1680	5189	8697	2203	5707	9208	2708	6206	9702	3196	6688	0178	3667	7153	0637
55	1738	5248	8755	2261	5765	9267	2767	6264	9760	3254	6746	0236	3725	7211	0695
56	1797	5306	8814	2320	5823	9325	2825	6323	9819	3313	6805	0295	3783	7269	0753
57	1855	5365	8872	2378	5882	9383	2883	6381	9877	3371	6863	0353	3841	7327	0811
58	1914	5423	8931	2436	5940	9442	2941	6439	9935	3429	6921	0411	3899	7385	0869
59	1972	5482	8989	2495	5998	9500	3000	6498	9993	3487	6979	0469	3957	7443	0927
60	2031	5540	9048	2553	6057	9558	3058	6556	0052	3545	7037	0527	4015	7501	0985
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Tangent Deg. 66

23 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
10.372	10.371	10.371	10.371	10.370	10.370	10.370	10.369	10.369	10.368	10.368	10.368	10.367	10.367	10.367	″
1481	7969	4460	0952	7447	3943	0442	6942	3444	9948	6455	2963	9473	5985	2499	60
1422	7911	4401	0894	7388	3885	0383	6884	3386	9890	6396	2905	9415	5927	2441	59
1364	7852	4343	0835	7330	3826	0325	6825	3328	9832	6338	2846	9356	5869	2383	58
1305	7794	4284	0777	7272	3768	0267	6767	3269	9774	6280	2788	9298	5810	2324	57
1247	7735	4226	0719	7213	3710	0208	6709	3211	9715	6222	2730	9240	5752	2266	56
1188	7677	4167	0660	7155	3651	0150	6650	3153	9657	6164	2672	9182	5694	2208	55
1129	7618	4109	0602	7096	3593	0092	6592	3095	9599	6105	2614	9124	5636	2150	54
1071	7560	4051	0543	7038	3535	0033	6534	3036	9541	6047	2555	9066	5578	2092	53
1012	7501	3992	0485	6980	3476	9975	6475	2978	9482	5989	2497	9008	5520	2034	52
0954	7443	3934	0426	6921	3418	9917	6417	2920	9424	5931	2439	8949	5462	1976	51
0895	7384	3875	0368	6863	3359	9858	6359	2861	9366	5873	2381	8891	5404	1918	50
0837	7326	3817	0309	6804	3301	9800	6301	2803	9308	5814	2323	8833	5346	1860	49
0778	7267	3758	0251	6746	3243	9742	6242	2745	9250	5756	2265	8775	5287	1802	48
0720	7209	3700	0193	6688	3184	9683	6184	2687	9191	5698	2206	8717	5229	1744	47
0661	7150	3641	0134	6629	3126	9625	6126	2628	9133	5640	2148	8659	5171	1686	46
0603	7092	3583	0076	6571	3068	9566	6067	2570	9075	5581	2090	8601	5113	1627	45
0544	7033	3524	0017	6512	3009	9508	6009	2512	9017	5523	2032	8542	5055	1569	44
0486	6975	3466	9959	6454	2951	9450	5951	2454	8958	5465	1974	8484	4997	1511	43
0427	6916	3407	9900	6396	2893	9391	5892	2395	8900	5407	1916	8426	4939	1453	42
0369	6858	3349	9842	6337	2834	9333	5834	2337	8842	5349	1857	8368	4881	1395	41
0310	6799	3290	9784	6279	2776	9275	5776	2279	8784	5290	1799	8310	4823	1337	40
0251	6741	3232	9725	6220	2717	9216	5718	2220	8725	5232	1741	8252	4764	1279	39
0193	6682	3174	9667	6162	2659	9158	5659	2162	8667	5174	1683	8194	4706	1221	38
0134	6624	3115	9608	6104	2601	9100	5601	2104	8609	5116	1625	8135	4648	1163	37
0076	6565	3057	9550	6045	2542	9041	5543	2046	8551	5058	1567	8077	4590	1105	36
0017	6507	2998	9491	5987	2484	8983	5484	1987	8492	4999	1508	8019	4532	1047	35
9959	6448	2940	9433	5928	2426	8925	5426	1929	8434	4941	1450	7961	4474	0989	34
9900	6390	2881	9375	5870	2367	8867	5368	1871	8376	4883	1392	7903	4416	0931	33
9842	6331	2823	9316	5812	2309	8808	5309	1813	8318	4825	1334	7845	4358	0873	32
9783	6273	2764	9258	5753	2251	8750	5251	1754	8260	4767	1276	7787	4300	0814	31
9725	6214	2706	9199	5695	2192	8692	5193	1696	8201	4708	1218	7729	4241	0756	30
9666	6156	2647	9141	5636	2134	8633	5135	1638	8143	4650	1159	7670	4183	0698	29
9608	6097	2589	9082	5578	2075	8575	5076	1580	8085	4592	1101	7612	4125	0640	28
9549	6039	2530	9024	5520	2017	8517	5018	1521	8027	4534	1043	7554	4067	0582	27
9491	5980	2472	8966	5461	1959	8458	4960	1463	7968	4476	0985	7496	4009	0524	26
9432	5922	2414	8907	5403	1900	8400	4901	1405	7910	4417	0927	7438	3951	0466	25
9374	5863	2355	8849	5344	1842	8342	4843	1347	7852	4359	0869	7380	3893	0408	24
9315	5805	2297	8790	5286	1784	8283	4785	1288	7794	4301	0810	7322	3835	0350	23
9257	5746	2238	8732	5228	1725	8225	4726	1230	7735	4243	0752	7263	3777	0292	22
9198	5688	2180	8673	5169	1667	8167	4668	1172	7677	4185	0694	7205	3719	0234	21
9140	5629	2121	8615	5111	1609	8108	4610	1113	7619	4126	0636	7147	3660	0176	20
9081	5571	2063	8557	5052	1550	8050	4552	1055	7561	4068	0578	7089	3602	0118	19
9023	5512	2004	8498	4994	1492	7992	4493	0997	7503	4010	0520	7031	3544	0060	18
8964	5454	1946	8440	4936	1434	7933	4435	0939	7444	3952	0461	6973	3486	0002	17
8905	5395	1887	8381	4877	1375	7875	4377	0880	7386	3894	0403	6915	3428	9943	16
8847	5337	1829	8323	4819	1317	7817	4318	0822	7328	3836	0345	6857	3370	9885	15
8788	5279	1771	8265	4761	1258	7758	4260	0764	7270	3777	0287	6798	3312	9827	14
8730	5220	1712	8206	4702	1200	7700	4202	0706	7211	3719	0229	6740	3254	9769	13
8671	5162	1654	8148	4644	1142	7642	4144	0647	7153	3661	0171	6682	3196	9711	12
8613	5103	1595	8089	4585	1083	7583	4085	0589	7095	3603	0112	6624	3138	9653	11
8554	5045	1537	8031	4527	1025	7525	4027	0531	7037	3545	0054	6566	3080	9595	10
8496	4986	1478	7972	4469	0967	7467	3969	0473	6979	3486	9996	6508	3021	9537	9
8437	4928	1420	7914	4410	0908	7408	3910	0414	6920	3428	9938	6450	2963	9479	8
8379	4869	1361	7856	4352	0850	7350	3852	0356	6862	3370	9880	6392	2905	9421	7
8320	4811	1303	7797	4293	0792	7292	3794	0298	6804	3312	9822	6333	2847	9363	6
8262	4752	1245	7739	4235	0733	7233	3736	0240	6746	3254	9764	6275	2789	9305	5
8203	4694	1186	7680	4177	0675	7175	3677	0181	6687	3195	9705	6217	2731	9247	4
8145	4635	1128	7622	4118	0617	7117	3619	0123	6629	3137	9647	6159	2673	9189	3
8086	4577	1069	7564	4060	0558	7059	3561	0065	6571	3079	9589	6101	2615	9131	2
8028	4518	1011	7505	4002	0500	7000	3502	0007	6513	3021	9531	6043	2557	9073	1
7969	4460	0952	7447	3943	0442	6942	3444	9948	6455	2963	9473	5985	2499	9015	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Tangent Deg. 66

23 Deg. Sine

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 596	9. 596	9. 596	9. 597	9. 597	9. 597	9. 598	9. 598	9. 598	9. 598	9. 599	9. 599	9. 599	9. 600	9. 600
0	3154	6093	9030	1965	4897	7827	0754	3679	6602	9523	2441	5357	8270	1181	4090
1	3203	6142	9079	2013	4946	7875	0803	3728	6651	9571	2489	5405	8319	1230	4139
2	3252	6191	9128	2062	4994	7924	0852	3777	6699	9620	2538	5454	8367	1278	4187
3	3301	6240	9177	2111	5043	7973	0900	3825	6748	9669	2587	5502	8416	1327	4236
4	3350	6289	9226	2160	5092	8022	0949	3874	6797	9717	2635	5551	8464	1375	4284
5	3399	6338	9275	2209	5141	8071	0998	3923	6846	9766	2684	5600	8513	1424	4333
6	3448	6387	9324	2258	5190	8119	1047	3972	6894	9815	2732	5648	8561	1472	4381
7	3497	6436	9372	2307	5239	8168	1095	4020	6943	9863	2781	5697	8610	1521	4429
8	3546	6485	9421	2356	5287	8217	1144	4069	6992	9912	2830	5745	8658	1569	4478
9	3595	6534	9470	2404	5336	8266	1193	4118	7040	9960	2878	5794	8707	1618	4526
10	3644	6583	9519	2453	5385	8315	1242	4167	7089	0009	2927	5842	8756	1666	4575
11	3693	6632	9568	2502	5434	8363	1291	4215	7138	0058	2976	5891	8804	1715	4623
12	3742	6681	9617	2551	5483	8412	1339	4264	7186	0106	3024	5940	8853	1763	4672
13	3791	6730	9666	2600	5532	8461	1388	4313	7235	0155	3073	5988	8901	1812	4720
14	3840	6779	9715	2649	5581	8510	1437	4361	7284	0204	3121	6037	8950	1860	4769
15	3889	6828	9764	2698	5629	8559	1486	4410	7332	0252	3170	6085	8998	1909	4817
16	3938	6876	9813	2747	5678	8607	1534	4459	7381	0301	3219	6134	9047	1957	4866
17	3987	6925	9862	2796	5727	8656	1583	4508	7430	0350	3267	6182	9095	2006	4914
18	4036	6974	9911	2844	5776	8705	1632	4556	7478	0398	3316	6231	9144	2054	4962
19	4085	7023	9959	2893	5825	8754	1681	4605	7527	0447	3364	6279	9192	2103	5011
20	4134	7072	0008	2942	5874	8803	1729	4654	7576	0496	3413	6328	9241	2151	5059
21	4183	7121	0057	2991	5922	8851	1778	4703	7625	0544	3462	6377	9289	2200	5108
22	4232	7170	0106	3040	5971	8900	1827	4751	7673	0593	3510	6425	9338	2248	5156
23	4281	7219	0155	3089	6020	8949	1876	4800	7722	0642	3559	6474	9386	2297	5205
24	4330	7268	0204	3138	6069	8998	1924	4849	7771	0690	3607	6522	9435	2345	5253
25	4379	7317	0253	3187	6118	9047	1973	4897	7819	0739	3656	6571	9483	2394	5302
26	4428	7366	0302	3235	6167	9095	2022	4946	7868	0787	3705	6619	9532	2442	5350
27	4477	7415	0351	3284	6215	9144	2071	4995	7917	0836	3753	6668	9580	2491	5398
28	4526	7464	0400	3333	6264	9193	2119	5044	7965	0885	3802	6717	9629	2539	5447
29	4575	7513	0449	3382	6313	9242	2168	5092	8014	0933	3850	6765	9678	2588	5495
30	4624	7562	0498	3431	6362	9291	2217	5141	8063	0982	3899	6814	9726	2636	5544
31	4673	7611	0546	3480	6411	9339	2266	5190	8111	1031	3948	6862	9775	2685	5592
32	4722	7660	0595	3529	6460	9388	2314	5238	8160	1079	3996	6911	9823	2733	5641
33	4771	7709	0644	3578	6508	9437	2363	5287	8209	1128	4045	6959	9872	2782	5689
34	4820	7758	0693	3626	6557	9486	2412	5336	8257	1177	4093	7008	9920	2830	5738
35	4869	7807	0742	3675	6606	9535	2461	5385	8306	1225	4142	7056	9969	2878	5786
36	4918	7855	0791	3724	6655	9583	2509	5433	8355	1274	4191	7105	0017	2927	5834
37	4967	7904	0840	3773	6704	9632	2558	5482	8403	1322	4239	7154	0066	2975	5883
38	5016	7953	0889	3822	6753	9681	2607	5531	8452	1371	4288	7202	0114	3024	5931
39	5065	8002	0938	3871	6801	9730	2656	5579	8501	1420	4336	7251	0163	3072	5980
40	5114	8051	0987	3920	6850	9779	2704	5628	8549	1468	4385	7299	0211	3121	6028
41	5163	8100	1035	3968	6899	9827	2753	5677	8598	1517	4434	7348	0260	3169	6077
42	5212	8149	1084	4017	6948	9876	2802	5725	8647	1566	4482	7396	0308	3218	6125
43	5261	8198	1133	4066	6997	9925	2851	5774	8695	1614	4531	7445	0357	3266	6174
44	5309	8247	1182	4115	7046	9974	2899	5823	8744	1663	4579	7493	0405	3315	6222
45	5358	8296	1231	4164	7094	0022	2948	5872	8793	1711	4628	7542	0454	3363	6270
46	5407	8345	1280	4213	7143	0071	2997	5920	8841	1760	4676	7591	0502	3412	6319
47	5456	8394	1329	4262	7192	0120	3046	5969	8890	1809	4725	7639	0551	3460	6367
48	5505	8443	1378	4310	7241	0169	3094	6018	8939	1857	4774	7688	0599	3509	6416
49	5554	8492	1427	4359	7290	0218	3143	6066	8987	1906	4822	7736	0648	3557	6464
50	5603	8541	1476	4408	7338	0266	3192	6115	9036	1955	4871	7785	0696	3606	6513
51	5652	8590	1524	4457	7387	0315	3241	6164	9085	2003	4919	7833	0745	3654	6561
52	5701	8639	1573	4506	7436	0364	3289	6213	9133	2052	4968	7882	0793	3703	6609
53	5750	8687	1622	4555	7485	0413	3338	6261	9182	2100	5017	7930	0842	3751	6658
54	5799	8736	1671	4604	7534	0461	3387	6310	9231	2149	5065	7979	0890	3799	6706
55	5848	8785	1720	4652	7583	0510	3436	6359	9279	2198	5114	8027	0939	3848	6755
56	5897	8834	1769	4701	7631	0559	3484	6407	9328	2246	5162	8076	0987	3896	6803
57	5946	8883	1818	4750	7680	0608	3533	6456	9377	2295	5211	8125	1036	3945	6852
58	5995	8932	1867	4799	7729	0657	3582	6505	9425	2344	5259	8173	1084	3993	6900
59	6044	8981	1916	4848	7778	0705	3631	6553	9474	2392	5308	8222	1133	4042	6948
60	6093	9030	1965	4897	7827	0754	3679	6602	9523	2441	5357	8270	1181	4090	6997
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Sine Deg. 66

23 Deg. Co-Sine

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
	9. 963	9. 963	9. 963	9. 963	9. 962	9. 962	9. 962	9. 962	9. 962	9. 962	9. 962	9. 962	9. 962	9. 962	9. 962	″
0	2168	1625	1082	0538	9994	9449	8904	8358	7812	7266	6719	6172	5624	5076	4527	60
1	2159	1616	1073	0529	9985	9440	8895	8349	7803	7257	6710	6162	5615	5066	4518	59
2	2150	1607	1064	0520	9976	9431	8886	8340	7794	7248	6701	6153	5606	5057	4509	58
3	2141	1598	1055	0511	9967	9422	8877	8331	7785	7238	6692	6144	5596	5048	4500	57
4	2132	1589	1046	0502	9957	9413	8868	8322	7776	7229	6682	6135	5587	5039	4490	56
5	2123	1580	1037	0493	9948	9404	8858	8313	7767	7220	6673	6126	5578	5030	4481	55
6	2114	1571	1028	0484	9939	9395	8849	8304	7758	7211	6664	6117	5569	5021	4472	54
7	2105	1562	1018	0475	9930	9385	8840	8295	7749	7202	6655	6108	5560	5012	4463	53
8	2096	1553	1009	0466	9921	9376	8831	8286	7739	7193	6646	6099	5551	5002	4454	52
9	2087	1544	1000	0456	9912	9367	8822	8276	7730	7184	6637	6089	5542	4993	4445	51
10	2078	1535	0991	0447	9903	9358	8813	8267	7721	7175	6628	6080	5532	4984	4435	50
11	2069	1526	0982	0438	9894	9349	8804	8258	7712	7166	6619	6071	5523	4975	4426	49
12	2060	1517	0973	0429	9885	9340	8795	8249	7703	7156	6609	6062	5514	4966	4417	48
13	2051	1508	0964	0420	9876	9331	8786	8240	7694	7147	6600	6053	5505	4957	4408	47
14	2042	1499	0955	0411	9867	9322	8777	8231	7685	7138	6591	6044	5496	4948	4399	46
15	2033	1490	0946	0402	9858	9313	8768	8222	7676	7129	6582	6035	5487	4938	4390	45
16	2024	1480	0937	0393	9849	9304	8758	8213	7667	7120	6573	6026	5478	4929	4381	44
17	2015	1471	0928	0384	9839	9295	8749	8204	7657	7111	6564	6016	5469	4920	4371	43
18	2005	1462	0919	0375	9830	9286	8740	8195	7648	7102	6555	6007	5459	4911	4362	42
19	1996	1453	0910	0366	9821	9276	8731	8185	7639	7093	6546	5998	5450	4902	4353	41
20	1987	1444	0901	0357	9812	9267	8722	8176	7630	7084	6537	5989	5441	4893	4344	40
21	1978	1435	0892	0348	9803	9258	8713	8167	7621	7074	6527	5980	5432	4884	4335	39
22	1969	1426	0883	0339	9794	9249	8704	8158	7612	7065	6518	5971	5423	4874	4326	38
23	1960	1417	0874	0329	9785	9240	8695	8149	7603	7056	6509	5962	5414	4865	4317	37
24	1951	1408	0864	0320	9776	9231	8686	8140	7594	7047	6500	5953	5405	4856	4307	36
25	1942	1399	0855	0311	9767	9222	8677	8131	7585	7038	6491	5943	5395	4847	4298	35
26	1933	1390	0846	0302	9758	9213	8668	8122	7576	7029	6482	5934	5386	4838	4289	34
27	1924	1381	0837	0293	9749	9204	8658	8113	7566	7020	6473	5925	5377	4829	4280	33
28	1915	1372	0828	0284	9740	9195	8649	8104	7557	7011	6464	5916	5368	4820	4271	32
29	1906	1363	0819	0275	9731	9186	8640	8094	7548	7002	6454	5907	5359	4810	4262	31
30	1897	1354	0810	0266	9721	9177	8631	8085	7539	6992	6445	5898	5350	4801	4252	30
31	1888	1345	0801	0257	9712	9167	8622	8076	7530	6983	6436	5889	5341	4792	4243	29
32	1879	1336	0792	0248	9703	9158	8613	8067	7521	6974	6427	5879	5331	4783	4234	28
33	1870	1327	0783	0239	9694	9149	8604	8058	7512	6965	6418	5870	5322	4774	4225	27
34	1861	1317	0774	0230	9685	9140	8595	8049	7503	6956	6409	5861	5313	4765	4216	26
35	1852	1308	0765	0221	9676	9131	8586	8040	7494	6947	6400	5852	5304	4756	4207	25
36	1843	1299	0756	0212	9667	9122	8577	8031	7484	6938	6391	5843	5295	4746	4198	24
37	1834	1290	0747	0202	9658	9113	8568	8022	7475	6929	6381	5834	5286	4737	4188	23
38	1824	1281	0738	0193	9649	9104	8558	8013	7466	6920	6372	5825	5277	4728	4179	22
39	1815	1272	0728	0184	9640	9095	8549	8003	7457	6910	6363	5816	5268	4719	4170	21
40	1806	1263	0719	0175	9631	9086	8540	7994	7448	6901	6354	5806	5258	4710	4161	20
41	1797	1254	0710	0166	9622	9077	8531	7985	7439	6892	6345	5797	5249	4701	4152	19
42	1788	1245	0701	0157	9613	9068	8522	7976	7430	6883	6336	5788	5240	4692	4143	18
43	1779	1236	0692	0148	9603	9058	8513	7967	7421	6874	6327	5779	5231	4682	4133	17
44	1770	1227	0683	0139	9594	9049	8504	7958	7412	6865	6318	5770	5222	4673	4124	16
45	1761	1218	0674	0130	9585	9040	8495	7949	7402	6856	6308	5761	5213	4664	4115	15
46	1752	1209	0665	0121	9576	9031	8486	7940	7393	6847	6299	5752	5204	4655	4106	14
47	1743	1200	0656	0112	9567	9022	8477	7931	7384	6837	6290	5743	5194	4646	4097	13
48	1734	1191	0647	0103	9558	9013	8467	7922	7375	6828	6281	5733	5185	4637	4088	12
49	1725	1182	0638	0094	9549	9004	8458	7912	7366	6819	6272	5724	5176	4628	4079	11
50	1716	1173	0629	0085	9540	8995	8449	7903	7357	6810	6263	5715	5167	4618	4069	10
51	1707	1163	0620	0075	9531	8986	8440	7894	7348	6801	6254	5706	5158	4609	4060	9
52	1698	1154	0611	0066	9522	8977	8431	7885	7339	6792	6245	5697	5149	4600	4051	8
53	1689	1145	0602	0057	9513	8968	8422	7876	7330	6783	6235	5688	5140	4591	4042	7
54	1680	1136	0592	0048	9504	8958	8413	7867	7320	6774	6226	5679	5130	4582	4033	6
55	1671	1127	0583	0039	9494	8949	8404	7858	7311	6764	6217	5669	5121	4573	4024	5
56	1662	1118	0574	0030	9485	8940	8395	7849	7302	6755	6208	5660	5112	4564	4014	4
57	1652	1109	0565	0021	9476	8931	8386	7840	7293	6746	6199	5651	5103	4554	4005	3
58	1643	1100	0556	0012	9467	8922	8377	7830	7284	6737	6190	5642	5094	4545	3996	2
59	1634	1091	0547	0003	9458	8913	8367	7821	7275	6728	6181	5633	5085	4536	3987	1
60	1625	1082	0538	9994	9449	8904	8358	7812	7266	6719	6172	5624	5076	4527	3978	0
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Sine Deg. 66

23 Deg. Tangent

"	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9. 633	9. 633	9. 633	9. 634	9. 634	9. 634	9. 635	9. 635	9. 635	9. 636	9. 636	9. 636	9. 637	9. 637	9. 637
0	0985	4468	7948	1426	4903	8378	1850	5321	8790	2257	5722	9185	2646	6106	9563
1	1044	4526	8006	1484	4961	8435	1908	5379	8848	2315	5780	9243	2704	6163	9621
2	1102	4584	8064	1542	5019	8493	1966	5437	8905	2372	5837	9300	2762	6221	9679
3	1160	4642	8122	1600	5077	8551	2024	5494	8963	2430	5895	9358	2819	6279	9736
4	1218	4700	8180	1658	5135	8609	2082	5552	9021	2488	5953	9416	2877	6336	9794
5	1276	4758	8238	1716	5193	8667	2139	5610	9079	2546	6011	9474	2935	6394	9851
6	1334	4816	8296	1774	5250	8725	219,	5668	9137	2603	6068	9531	2992	6452	9909
7	1392	4874	8354	1832	5308	8783	2255	5726	9194	2661	6126	9589	3050	6509	9967
8	1450	4932	8412	1890	5366	8841	2313	5784	9252	2719	6184	9647	3108	6567	0024
9	1508	4990	8470	1948	5424	8899	2371	5841	9310	2777	6241	9704	3165	6625	0082
10	1566	5048	8528	2006	5482	8956	2429	5899	9368	2834	6299	9762	3223	6682	0139
11	1624	5106	8586	2064	5540	9014	2487	5957	9426	2892	6357	9820	3281	6740	0197
12	1682	5164	8644	2122	5598	9072	2544	6015	9483	2950	6415	9877	3338	6797	0255
13	1740	5222	8702	2180	5656	9130	2602	6073	9541	3008	6472	9935	3396	6855	0312
14	1798	5280	8760	2238	5714	9188	2660	6131	9599	3065	6530	9993	3454	6913	0370
15	1856	5338	8818	2296	5772	9246	2718	6188	9657	3123	6588	0051	3511	6970	0427
16	1914	5396	8876	2354	5830	9304	2776	6246	9715	3181	6646	0108	3569	7028	0485
17	1972	5454	8934	2412	5888	9362	2834	6304	9772	3239	6703	0166	3627	7086	0543
18	2030	5512	8992	2470	5945	9420	2892	6362	9830	3297	6761	0224	3684	7143	0600
19	2088	5570	9050	2528	6003	9477	2949	6420	9888	3354	6819	0281	3742	7201	0658
20	2146	5628	9108	2585	6061	9535	3007	6477	9946	3412	6876	0339	3800	7258	0715
21	2204	5686	9166	2643	6119	9593	3065	6535	0003	3470	6934	0397	3857	7316	0773
22	2263	5744	9224	2701	6177	9651	3123	6593	0061	3528	6992	0454	3915	7374	0831
23	2321	5802	9282	2759	6235	9709	3181	6651	0119	3585	7050	0512	3973	7431	0888
24	2379	5860	9340	2817	6293	9767	3239	6709	0177	3643	7107	0570	4030	7489	0946
25	2437	5918	9398	2875	6351	9825	3297	6767	0235	3701	7165	0627	4088	7547	1003
26	2495	5976	9456	2933	6409	9883	3354	6824	0292	3759	7223	0685	4146	7604	1061
27	2553	6034	9514	2991	6467	9940	3412	6882	0350	3816	7281	0743	4203	7662	1119
28	2611	6092	9572	3049	6525	9998	3470	6940	0408	3874	7338	0801	4261	7720	1176
29	2669	6150	9629	3107	6583	0056	3528	6998	0466	3932	7396	0858	4319	7777	1234
30	2727	6208	9687	3165	6640	0114	3586	7056	0524	3990	7454	0916	4376	7835	1291
31	2785	6266	9745	3223	6698	0172	3644	7113	0581	4047	7511	0974	4434	7892	1349
32	2843	6324	9803	3281	6756	0230	3701	7171	0639	4105	7569	1031	4492	7950	1407
33	2901	6382	9861	3339	6814	0288	3759	7229	0697	4163	7627	1089	4549	8008	1464
34	2959	6440	9919	3397	6872	0346	3817	7287	0755	4221	7685	1147	4607	8065	1522
35	3017	6498	9977	3455	6930	0403	3875	7345	0812	4278	7742	1204	4665	8123	1579
36	3075	6556	0035	3513	6988	0461	3933	7402	0870	4336	7800	1262	4722	8181	1637
37	3133	6614	0093	3570	7046	0519	3991	7460	0928	4394	7858	1320	4780	8238	1695
38	3191	6672	0151	3628	7104	0577	4049	7518	0986	4452	7915	1377	4838	8296	1752
39	3249	6730	0209	3686	7162	0635	4106	7576	1044	4509	7973	1435	4895	8353	1810
40	3307	6788	0267	3744	7220	0693	4164	7634	1101	4567	8031	1493	4953	8411	1867
41	3365	6846	0325	3802	7277	0751	4222	7692	1159	4625	8089	1550	5010	8469	1925
42	3423	6904	0383	3860	7335	0809	4280	7749	1217	4683	8146	1608	5068	8526	1982
43	3481	6962	0441	3918	7393	0866	4338	7807	1275	4740	8204	1666	5126	8584	2040
44	3539	7020	0499	3976	7451	0924	4396	7865	1332	4798	8262	1724	5183	8641	2098
45	3597	7078	0557	4034	7509	0982	4453	7923	1390	4856	8319	1781	5241	8699	2155
46	3655	7136	0615	4092	7567	1040	4511	7981	1448	4914	8377	1839	5299	8757	2213
47	3713	7194	0673	4150	7625	1098	4569	8038	1506	4971	8435	1897	5356	8814	2270
48	3771	7252	0731	4208	7683	1156	4627	8096	1564	5029	8493	1954	5414	8872	2328
49	3829	7310	0789	4266	7741	1214	4685	8154	1621	5087	8550	2012	5472	8930	2386
50	3887	7368	0847	4324	7799	1272	4743	8212	1679	5144	8608	2070	5529	8987	2443
51	3946	7426	0905	4382	7856	1329	4800	8270	1737	5202	8666	2127	5587	9045	2501
52	4004	7484	0963	4439	7914	1387	4858	8327	1795	5260	8723	2185	5645	9102	2558
53	4062	7542	1021	4497	7972	1445	4916	8385	1852	5318	8781	2243	5702	9160	2616
54	4120	7600	1079	4555	8030	1503	4974	8443	1910	5375	8839	2300	5760	9218	2673
55	4178	7658	1137	4613	8088	1561	5032	8501	1968	5433	8897	2358	5818	9275	2731
56	4236	7716	1195	4671	8146	1619	5090	8559	2026	5491	8954	2416	5875	9333	2789
57	4294	7774	1253	4729	8204	1677	5147	8616	2083	5549	9012	2473	5933	9390	2846
58	4352	7832	1311	4787	8262	1734	5205	8674	2141	5606	9070	2531	5990	9448	2904
59	4410	7890	1368	4845	8320	1792	5263	8732	2199	5664	9127	2589	6048	9506	2961
60	4468	7948	1426	4903	8378	1850	5321	8790	2257	5722	9185	2646	6106	9563	3019
"	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Tangent Deg. 66

23 Deg. Co-Tangent

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	"
10. 366	10. 366	10. 366	10. 365	10. 365	10. 365	10. 364	10. 364	10. 364	10. 363	10. 363	10. 363	10. 362	10. 362	10. 362	
9015	5532	2052	8574	5097	1622	8150	4679	1210	7743	4278	0815	7354	3894	0437	60
8956	5474	1994	8516	5039	1565	8092	4621	1152	7685	4220	0757	7296	3837	0379	59
8898	5416	1936	8458	4981	1507	8034	4563	1095	7628	4163	0700	7238	3779	0321	58
8840	5358	1878	8400	4923	1449	7976	4506	1037	7570	4105	0642	7181	3721	0264	57
8782	5300	1820	8342	4865	1391	7918	4448	0979	7512	4047	0584	7123	3664	0206	56
8724	5242	1762	8284	4807	1333	7861	4390	0921	7454	3989	0526	7065	3606	0149	55
8666	5184	1704	8226	4750	1275	7803	4332	0863	7397	3932	0469	7008	3548	0091	54
8608	5126	1646	8168	4692	1217	7745	4274	0806	7339	3874	0411	6950	3491	0033	53
8550	5068	1588	8110	4634	1159	7687	4216	0748	7281	3816	0353	6892	3433	9976	52
8492	5010	1530	8052	4576	1101	7629	4159	0690	7223	3759	0296	6835	3375	9918	51
8434	4952	1472	7994	4518	1044	7571	4101	0632	7166	3701	0238	6777	3318	9861	50
8376	4894	1414	7936	4460	0986	7513	4043	0574	7108	3643	0180	6719	3260	9803	49
8318	4836	1356	7878	4402	0928	7456	3985	0517	7050	3585	0123	6662	3203	9745	48
8260	4778	1298	7820	4344	0870	7398	3927	0459	6992	3528	0065	6604	3145	9688	47
8202	4720	1240	7762	4286	0812	7340	3869	0401	6935	3470	0007	6546	3087	9630	46
8144	4662	1182	7704	4228	0754	7282	3812	0343	6877	3412	9949	6489	3030	9573	45
8086	4604	1124	7646	4170	0696	7224	3754	0285	6819	3354	9892	6431	2972	9515	44
8028	4546	1066	7588	4112	0638	7166	3696	0228	6761	3297	9834	6373	2914	9457	43
7970	4488	1008	7530	4055	0580	7108	3638	0170	6703	3239	9776	6316	2857	9400	42
7912	4430	0950	7472	3997	0523	7051	3580	0112	6646	3181	9719	6258	2799	9342	41
7854	4372	0892	7415	3939	0465	6993	3523	0054	6588	3124	9661	6200	2742	9285	40
7796	4314	0834	7357	3881	0407	6935	3465	9997	6530	3066	9603	6143	2684	9227	39
7737	4256	0776	7299	3823	0349	6877	3407	9939	6472	3008	9546	6085	2626	9169	38
7679	4198	0718	7241	3765	0291	6819	3349	9881	6415	2950	9488	6027	2569	9112	37
7621	4140	0660	7183	3707	0233	6761	3291	9823	6357	2893	9430	5970	2511	9054	36
7563	4082	0602	7125	3649	0175	6703	3233	9765	6299	2835	9373	5912	2453	8997	35
7505	4024	0544	7067	3591	0117	6646	3176	9708	6241	2777	9315	5854	2396	8939	34
7447	3966	0486	7009	3533	0060	6588	3118	9650	6184	2719	9257	5797	2338	8881	33
7389	3908	0428	6951	3475	0002	6530	3060	9592	6126	2662	9199	5739	2280	8824	32
7331	3850	0371	6893	3417	9944	6472	3002	9534	6068	2604	9142	5681	2223	8766	31
7273	3792	0313	6835	3360	9886	6414	2944	9476	6010	2546	9084	5624	2165	8709	30
7215	3734	0255	6777	3302	9828	6356	2887	9419	5953	2489	9026	5566	2108	8651	29
7157	3676	0197	6719	3244	9770	6299	2829	9361	5895	2431	8969	5508	2050	8593	28
7099	3618	0139	6661	3186	9712	6241	2771	9303	5837	2373	8911	5451	1992	8536	27
7041	3560	0081	6603	3128	9654	6183	2713	9245	5779	2315	8853	5393	1935	8478	26
6983	3502	0023	6545	3070	9597	6125	2655	9188	5722	2258	8796	5335	1877	8421	25
6925	3444	9965	6487	3012	9539	6067	2598	9130	5664	2200	8738	5278	1819	8363	24
6867	3386	9907	6430	2954	9481	6009	2540	9072	5606	2142	8680	5220	1762	8305	23
6809	3328	9849	6372	2896	9423	5951	2482	9014	5548	2085	8623	5162	1704	8248	22
6751	3270	9791	6314	2838	9365	5894	2424	8956	5491	2027	8565	5105	1647	8190	21
6693	3212	9733	6256	2780	9307	5836	2366	8899	5433	1969	8507	5047	1589	8133	20
6635	3154	9675	6198	2723	9249	5778	2308	8841	5375	1911	8450	4990	1531	8075	19
6577	3096	9617	6140	2665	9191	5720	2251	8783	5317	1854	8392	4932	1474	8018	18
6519	3038	9559	6082	2607	9134	5662	2193	8725	5260	1796	8334	4874	1416	7960	17
6461	2980	9501	6024	2549	9076	5604	2135	8668	5202	1738	8276	4817	1359	7902	16
6403	2922	9443	5966	2491	9018	5547	2077	8610	5144	1681	8219	4759	1301	7845	15
6345	2864	9385	5908	2433	8960	5489	2019	8552	5086	1623	8161	4701	1243	7787	14
6287	2806	9327	5850	2375	8902	5431	1962	8494	5029	1565	8103	4644	1186	7730	13
6229	2748	9269	5792	2317	8844	5373	1904	8436	4971	1507	8046	4586	1128	7672	12
6171	2690	9211	5734	2259	8786	5315	1846	8379	4913	1450	7988	4528	1070	7614	11
6113	2632	9153	5676	2201	8728	5257	1788	8321	4856	1392	7930	4471	1013	7557	10
6054	2574	9095	5618	2144	8671	5200	1730	8263	4798	1334	7873	4413	0955	7499	9
5996	2516	9037	5561	2086	8613	5142	1673	8205	4740	1277	7815	4355	0898	7442	8
5938	2458	8979	5503	2028	8555	5084	1615	8148	4682	1219	7757	4298	0840	7384	7
5880	2400	8921	5445	1970	8497	5026	1557	8090	4625	1161	7700	4240	0782	7327	6
5822	2342	8863	5387	1912	8439	4968	1499	8032	4567	1103	7642	4182	0725	7269	5
5764	2284	8805	5329	1854	8381	4910	1441	7974	4509	1046	7584	4125	0667	7211	4
5706	2226	8747	5271	1796	8323	4853	1384	7917	4451	0988	7527	4067	0610	7154	3
5648	2168	8689	5213	1738	8266	4795	1326	7859	4394	0930	7469	4010	0552	7096	2
5590	2110	8632	5155	1680	8208	4737	1268	7801	4336	0873	7411	3952	0494	7039	1
5532	2052	8574	5097	1622	8150	4679	1210	7743	4278	0815	7354	3894	0437	6981	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	"

Tangent Deg. 66

23 Deg. Sine

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9.600	9.600	9.601	9.601	9.601	9.602	9.602	9.602	9.603	9.603	9.603	9.603	9.604	9.604	9.604
0	6997	9901	2803	5703	8600	1495	4388	7278	0166	3052	5936	8817	1696	4573	7448
1	7045	9949	2851	5751	8648	1543	4436	7326	0215	3100	5984	8865	1744	4621	7495
2	7094	9998	2900	5799	8697	1592	4484	7375	0263	3149	6032	8913	1792	4669	7543
3	7142	0046	2948	5848	8745	1640	4532	7423	0311	3197	6080	8961	1840	4717	7591
4	7191	0095	2996	5896	8793	1688	4581	7471	0359	3245	6128	9009	1888	4765	7639
5	7239	0143	3045	5944	8841	1736	4629	7519	0407	3293	6176	9057	1936	4813	7687
6	7287	0191	3093	5993	8890	1784	4677	7567	0455	3341	6224	9105	1984	4861	7735
7	7336	0240	3141	6041	8938	1833	4725	7615	0503	3389	6272	9153	2032	4909	7783
8	7384	0288	3190	6089	8986	1881	4773	7664	0551	3437	6320	9201	2080	4956	7831
9	7433	0337	3238	6137	9034	1929	4822	7712	0599	3485	6368	9249	2128	5004	7879
10	7481	0385	3286	6186	9083	1977	4870	7760	0648	3533	6416	9297	2176	5052	7926
11	7529	0433	3335	6234	9131	2026	4918	7808	0696	3581	6464	9345	2224	5100	7974
12	7578	0482	3383	6282	9179	2074	4966	7856	0744	3629	6512	9393	2272	5148	8022
13	7626	0530	3431	6331	9227	2122	5014	7904	0792	3677	6560	9441	2320	5196	8070
14	7675	0578	3480	6379	9276	2170	5062	7952	0840	3725	6608	9489	2368	5244	8118
15	7723	0627	3528	6427	9324	2218	5111	8001	0888	3773	6656	9537	2416	5292	8166
16	7772	0675	3577	6476	9372	2267	5159	8049	0936	3822	6705	9585	2464	5340	8214
17	7820	0724	3625	6524	9421	2315	5207	8097	0984	3870	6753	9633	2512	5388	8262
18	7868	0772	3673	6572	9469	2363	5255	8145	1032	3918	6801	9681	2560	5436	8309
19	7917	0820	3722	6620	9517	2411	5303	8193	1081	3966	6849	9729	2608	5484	8357
20	7965	0869	3770	6669	9565	2460	5352	8241	1129	4014	6897	9777	2655	5531	8405
21	8014	0917	3818	6717	9614	2508	5400	8289	1177	4062	6945	9825	2703	5579	8453
22	8062	0965	3867	6765	9662	2556	5448	8338	1225	4110	6993	9873	2751	5627	8501
23	8110	1014	3915	6814	9710	2604	5496	8386	1273	4158	7041	9921	2799	5675	8549
24	8159	1062	3963	6862	9758	2652	5544	8434	1321	4206	7089	9969	2847	5723	8597
25	8207	1111	4012	6910	9807	2701	5592	8482	1369	4254	7137	0017	2895	5771	8645
26	8256	1159	4060	6958	9855	2749	5641	8530	1417	4302	7185	0065	2943	5819	8692
27	8304	1207	4108	7007	9903	2797	5689	8578	1465	4350	7233	0113	2991	5867	8740
28	8352	1256	4156	7055	9951	2845	5737	8626	1514	4398	7281	0161	3039	5915	8788
29	8401	1304	4205	7103	0000	2894	5785	8675	1562	4446	7329	0209	3087	5963	8836
30	8449	1352	4253	7152	0048	2942	5833	8723	1610	4494	7377	0257	3135	6011	8884
31	8498	1401	4301	7200	0096	2990	5882	8771	1658	4542	7425	0305	3183	6059	8932
32	8546	1449	4350	7248	0144	3038	5930	8819	1706	4591	7473	0353	3231	6106	8980
33	8594	1497	4398	7297	0193	3086	5978	8867	1754	4639	7521	0401	3279	6154	9028
34	8643	1546	4446	7345	0241	3135	6026	8915	1802	4687	7569	0449	3327	6202	9075
35	8691	1594	4495	7393	0289	3183	6074	8963	1850	4735	7617	0497	3375	6250	9123
36	8740	1643	4543	7441	0337	3231	6122	9011	1898	4783	7665	0545	3423	6298	9171
37	8788	1691	4591	7490	0386	3279	6171	9060	1946	4831	7713	0593	3471	6346	9219
38	8836	1739	4640	7538	0434	3327	6219	9108	1994	4879	7761	0641	3519	6394	9267
39	8885	1788	4688	7586	0482	3376	6267	9156	2043	4927	7809	0689	3566	6442	9315
40	8933	1836	4736	7635	0530	3424	6315	9204	2091	4975	7857	0737	3614	6490	9363
41	8982	1884	4785	7683	0579	3472	6363	9252	2139	5023	7905	0785	3662	6538	9411
42	9030	1933	4833	7731	0627	3520	6411	9300	2187	5071	7953	0833	3710	6585	9458
43	9078	1981	4881	7779	0675	3568	6460	9348	2235	5119	8001	0881	3758	6633	9506
44	9127	2029	4930	7828	0723	3617	6508	9397	2283	5167	8049	0929	3806	6681	9554
45	9175	2078	4978	7876	0772	3665	6556	9445	2331	5215	8097	0977	3854	6729	9602
46	9224	2126	5026	7924	0820	3713	6604	9493	2379	5263	8145	1025	3902	6777	9650
47	9272	2174	5075	7972	0868	3761	6652	9541	2427	5311	8193	1073	3950	6825	9698
48	9320	2223	5123	8021	0916	3809	6700	9589	2475	5359	8241	1121	3998	6873	9746
49	9369	2271	5171	8069	0964	3858	6749	9637	2523	5407	8289	1169	4046	6921	9793
50	9417	2320	5220	8117	1013	3906	6797	9685	2572	5456	8337	1217	4094	6969	9841
51	9466	2368	5268	8166	1061	3954	6845	9733	2620	5504	8385	1265	4142	7017	9889
52	9514	2416	5316	8214	1109	4002	6893	9782	2668	5552	8433	1313	4190	7064	9937
53	9562	2465	5365	8262	1157	4050	6941	9830	2716	5600	8481	1361	4238	7112	9985
54	9611	2513	5413	8310	1206	4099	6989	9878	2764	5648	8529	1409	4285	7160	0033
55	9659	2561	5461	8359	1254	4147	7038	9926	2812	5696	8577	1456	4333	7208	0081
56	9708	2610	5509	8407	1302	4195	7086	9974	2860	5744	8625	1504	4381	7256	0128
57	9756	2658	5558	8455	1350	4243	7134	0022	2908	5792	8673	1552	4429	7304	0176
58	9804	2706	5606	8503	1399	4291	7182	0070	2956	5840	8721	1600	4477	7352	0224
59	9853	2755	5654	8552	1447	4340	7230	0118	3004	5888	8769	1648	4525	7400	0272
60	9901	2803	5703	8600	1495	4388	7278	0166	3052	5936	8817	1696	4573	7448	0320
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

23 Deg. Co-Sine

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	′
	9.962	9.962	9.962	9.962	9.962	9.962	9.962	9.962	9.961	9.961	9.961	9.961	9.961	9.961	9.961	″
0	3978	3428	2878	2328	1777	1226	0674	0122	9569	9016	8463	7909	7355	6800	6245	60
1	3969	3419	2869	2319	1768	1217	0665	0113	9560	9007	8454	7900	7345	6791	6235	59
2	3960	3410	2860	2310	1759	1207	0656	0104	9551	8998	8445	7891	7336	6781	6226	58
3	3950	3401	2851	2300	1750	1198	0647	0094	9542	8989	8435	7881	7327	6772	6217	57
4	3941	3392	2842	2291	1740	1189	0637	0085	9533	8980	8426	7872	7318	6763	6208	56
5	3932	3383	2833	2282	1731	1180	0628	0076	9523	8970	8417	7863	7309	6754	6198	55
6	3923	3373	2823	2273	1722	1171	0619	0067	9514	8961	8408	7854	7299	6744	6189	54
7	3914	3364	2814	2264	1713	1162	0610	0058	9505	8952	8398	7844	7290	6735	6180	53
8	3905	3355	2805	2255	1704	1152	0601	0048	9496	8943	8389	7835	7281	6726	6171	52
9	3895	3346	2796	2245	1694	1143	0591	0039	9487	8933	8380	7826	7272	6717	6161	51
10	3886	3337	2787	2236	1685	1134	0582	0030	9477	8924	8371	7817	7262	6707	6152	50
11	3877	3328	2778	2227	1676	1125	0573	0021	9468	8915	8361	7807	7253	6698	6143	49
12	3868	3318	2768	2218	1667	1116	0564	0012	9459	8906	8352	7798	7244	6689	6134	48
13	3859	3309	2759	2209	1658	1106	0555	0002	9450	8897	8343	7789	7235	6680	6124	47
14	3850	3300	2750	2199	1649	1097	0545	9993	9440	8887	8334	7780	7225	6670	6115	46
15	3841	3291	2741	2190	1639	1088	0536	9984	9431	8878	8325	7771	7216	6661	6106	45
16	3831	3282	2732	2181	1630	1079	0527	9975	9422	8869	8315	7761	7207	6652	6097	44
17	3822	3273	2722	2172	1621	1070	0518	9966	9413	8860	8306	7752	7198	6643	6087	43
18	3813	3263	2713	2163	1612	1060	0509	9956	9404	8850	8297	7743	7188	6633	6078	42
19	3804	3254	2704	2154	1603	1051	0499	9947	9394	8841	8288	7734	7179	6624	6069	41
20	3795	3245	2695	2144	1593	1042	0490	9938	9385	8832	8278	7724	7170	6615	6060	40
21	3786	3236	2686	2135	1584	1033	0481	9929	9376	8823	8269	7715	7161	6606	6050	39
22	3776	3227	2677	2126	1575	1024	0472	9919	9367	8814	8260	7706	7151	6596	6041	38
23	3767	3218	2667	2117	1566	1014	0463	9910	9358	8804	8251	7697	7142	6587	6032	37
24	3758	3208	2658	2108	1557	1005	0453	9901	9348	8795	8241	7687	7133	6578	6023	36
25	3749	3199	2649	2099	1548	0996	0444	9892	9339	8786	8232	7678	7124	6569	6013	35
26	3740	3190	2640	2089	1538	0987	0435	9883	9330	8777	8223	7669	7114	6559	6004	34
27	3731	3181	2631	2080	1529	0978	0426	9873	9321	8767	8214	7660	7105	6550	5995	33
28	3721	3172	2622	2071	1520	0968	0417	9864	9311	8758	8205	7650	7096	6541	5985	32
29	3712	3163	2612	2062	1511	0959	0407	9855	9302	8749	8195	7641	7087	6532	5976	31
30	3703	3153	2603	2053	1502	0950	0398	9846	9293	8740	8186	7632	7077	6522	5967	30
31	3694	3144	2594	2043	1492	0941	0389	9837	9284	8731	8177	7623	7068	6513	5958	29
32	3685	3135	2585	2034	1483	0932	0380	9827	9275	8721	8168	7613	7059	6504	5948	28
33	3676	3126	2576	2025	1474	0922	0371	9818	9265	8712	8158	7604	7050	6495	5939	27
34	3667	3117	2567	2016	1465	0913	0361	9809	9256	8703	8149	7595	7040	6485	5930	26
35	3657	3108	2557	2007	1456	0904	0352	9800	9247	8694	8140	7586	7031	6476	5921	25
36	3648	3098	2548	1998	1446	0895	0343	9791	9238	8684	8131	7577	7022	6467	5911	24
37	3639	3089	2539	1988	1437	0886	0334	9781	9228	8675	8121	7567	7013	6458	5902	23
38	3630	3080	2530	1979	1428	0877	0325	9772	9219	8666	8112	7558	7003	6448	5893	22
39	3621	3071	2521	1970	1419	0867	0315	9763	9210	8657	8103	7549	6994	6439	5884	21
40	3612	3062	2511	1961	1410	0858	0306	9754	9201	8647	8094	7540	6985	6430	5874	20
41	3602	3053	2502	1952	1400	0849	0297	9744	9192	8638	8085	7530	6976	6421	5865	19
42	3593	3043	2493	1942	1391	0840	0288	9735	9182	8629	8075	7521	6966	6411	5856	18
43	3584	3034	2484	1933	1382	0831	0279	9726	9173	8620	8066	7512	6957	6402	5847	17
44	3575	3025	2475	1924	1373	0821	0269	9717	9164	8611	8057	7503	6948	6393	5837	16
45	3566	3016	2466	1915	1364	0812	0260	9708	9155	8601	8048	7493	6939	6384	5828	15
46	3557	3007	2456	1906	1355	0803	0251	9698	9145	8592	8038	7484	6929	6374	5819	14
47	3547	2998	2447	1897	1345	0794	0242	9689	9136	8583	8029	7475	6920	6365	5810	13
48	3538	2988	2438	1887	1336	0785	0232	9680	9127	8574	8020	7466	6911	6356	5800	12
49	3529	2979	2429	1878	1327	0775	0223	9671	9118	8564	8011	7456	6902	6347	5791	11
50	3520	2970	2420	1869	1318	0766	0214	9662	9109	8555	8001	7447	6892	6337	5782	10
51	3511	2961	2411	1860	1309	0757	0205	9652	9099	8546	7992	7438	6883	6328	5772	9
52	3502	2952	2401	1851	1299	0748	0196	9643	9090	8537	7983	7429	6874	6319	5763	8
53	3492	2943	2392	1841	1290	0739	0186	9634	9081	8528	7974	7419	6865	6310	5754	7
54	3483	2933	2383	1832	1281	0729	0177	9625	9072	8518	7964	7410	6855	6300	5745	6
55	3474	2924	2374	1823	1272	0720	0168	9616	9063	8509	7955	7401	6846	6291	5735	5
56	3465	2915	2365	1814	1263	0711	0159	9606	9053	8500	7946	7392	6837	6282	5726	4
57	3456	2906	2356	1805	1253	0702	0150	9597	9044	8491	7937	7382	6828	6273	5717	3
58	3447	2897	2346	1796	1244	0693	0140	9588	9035	8481	7928	7373	6818	6263	5708	2
59	3438	2888	2337	1786	1235	0683	0131	9579	9026	8472	7918	7364	6809	6254	5698	1
60	3428	2878	2328	1777	1226	0674	0122	9569	9016	8463	7909	7355	6800	6245	5689	0
	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Co-Sine Deg. 66 Sine Deg. 66

23 Deg. Tangent

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 638	9. 638	9. 638	9. 639	9. 639	9. 640	9. 640	9. 640	9. 641	9. 641	9. 641	9. 642	9. 642	9. 642	9. 643
0	3019	6473	9925	3375	6823	0269	3714	7156	0597	4036	7473	0908	4342	7773	1203
1	3077	6530	9982	3432	6880	0327	3771	7214	0654	4093	7530	0965	4399	7830	1260
2	3134	6588	0040	3490	6938	0384	3828	7271	0712	4151	7588	1023	4456	7887	1317
3	3192	6645	0097	3547	6995	0441	3886	7328	0769	4208	7645	1080	4513	7945	1374
4	3249	6703	0155	3605	7053	0499	3943	7386	0826	4265	7702	1137	4570	8002	1431
5	3307	6760	0212	3662	7110	0556	4001	7443	0884	4322	7759	1194	4628	8059	1489
6	3364	6818	0270	3720	7168	0614	4058	7500	0941	4380	7817	1252	4685	8116	1546
7	3422	6876	0327	3777	7225	0671	4115	7558	0998	4437	7874	1309	4742	8173	1603
8	3480	6933	0385	3835	7282	0729	4173	7615	1056	4494	7931	1366	4799	8231	1660
9	3537	6991	0442	3892	7340	0786	4230	7672	1113	4552	7988	1423	4856	8288	1717
10	3595	7048	0500	3950	7397	0843	4288	7730	1170	4609	8046	1481	4914	8345	1774
11	3652	7106	0557	4007	7455	0901	4345	7787	1228	4666	8103	1538	4971	8402	1831
12	3710	7163	0615	4064	7512	0958	4402	7845	1285	4723	8160	1595	5028	8459	1889
13	3767	7221	0672	4122	7579	1016	4460	7902	1342	4781	8217	1652	5085	8516	1946
14	3825	7278	0730	4179	7627	1073	4517	7959	1400	4838	8275	1709	5142	8574	2003
15	3883	7336	0787	4237	7685	1130	4574	8017	1457	4895	8332	1767	5200	8631	2060
16	3940	7393	0845	4294	7742	1188	4632	8074	1514	4953	8389	1824	5257	8688	2117
17	3998	7451	0902	4352	7800	1245	4689	8131	1572	5010	8446	1881	5314	8745	2174
18	4055	7509	0960	4409	7857	1303	4747	8189	1629	5067	8504	1938	5371	8802	2231
19	4113	7566	1017	4467	7914	1360	4804	8246	1686	5125	8561	1996	5428	8859	2289
20	4170	7624	1075	4524	7972	1418	4861	8303	1744	5182	8618	2053	5486	8917	2346
21	4228	7681	1132	4582	8029	1475	4919	8361	1801	5239	8676	2110	5543	8974	2403
22	4286	7739	1190	4639	8087	1532	4976	8418	1858	5296	8733	2167	5600	9031	2460
23	4343	7796	1247	4697	8144	1590	5034	8475	1915	5354	8790	2225	5657	9088	2517
24	4401	7854	1305	4754	8202	1647	5091	8533	1973	5411	8847	2282	5714	9145	2574
25	4458	7911	1362	4812	8259	1705	5148	8590	2030	5468	8905	2339	5772	9202	2631
26	4516	7969	1420	4869	8317	1762	5206	8647	2087	5526	8962	2396	5829	9260	2688
27	4573	8026	1477	4927	8374	1819	5263	8705	2145	5583	9019	2453	5886	9317	2746
28	4631	8084	1535	4984	8431	1877	5320	8762	2202	5640	9076	2511	5943	9374	2803
29	4689	8141	1592	5042	8489	1934	5378	8820	2259	5697	9134	2568	6000	9431	2860
30	4746	8199	1650	5099	8546	1992	5435	8877	2317	5755	9191	2625	6058	9488	2917
31	4804	8256	1707	5156	8604	2049	5493	8934	2374	5812	9248	2682	6115	9545	2974
32	4861	8314	1765	5214	8661	2106	5550	8992	2431	5869	9305	2740	6172	9603	3031
33	4919	8372	1822	5271	8719	2164	5607	9049	2489	5927	9363	2797	6229	9660	3088
34	4976	8429	1880	5329	8776	2221	5665	9106	2546	5984	9420	2854	6286	9717	3146
35	5034	8487	1937	5386	8833	2279	5722	9164	2603	6041	9477	2911	6344	9774	3203
36	5091	8544	1995	5444	8891	2336	5779	9221	2661	6098	9534	2968	6401	9831	3260
37	5149	8602	2052	5501	8948	2394	5837	9278	2718	6156	9592	3026	6458	9888	3317
38	5207	8659	2110	5559	9006	2451	5894	9336	2775	6213	9649	3083	6515	9945	3374
39	5264	8717	2167	5616	9063	2508	5952	9393	2833	6270	9706	3140	6572	0003	3431
40	5322	8774	2225	5674	9121	2566	6009	9450	2890	6328	9763	3197	6629	0060	3488
41	5379	8832	2282	5731	9178	2623	6066	9508	2947	6385	9821	3255	6687	0117	3545
42	5437	8889	2340	5789	9236	2681	6124	9565	3004	6442	9878	3312	6744	0174	3603
43	5494	8947	2397	5846	9293	2738	6181	9622	3062	6499	9935	3369	6801	0231	3660
44	5552	9004	2455	5904	9350	2795	6238	9680	3119	6557	9992	3426	6858	0288	3717
45	5609	9062	2512	5961	9408	2853	6296	9737	3176	6614	0050	3483	6915	0346	3774
46	5667	9119	2570	6018	9465	2910	6353	9794	3234	6671	0107	3541	6973	0403	3831
47	5725	9177	2627	6076	9523	2968	6411	9852	3291	6728	0164	3598	7030	0460	3888
48	5782	9234	2685	6133	9580	3025	6468	9909	3348	6786	0221	3655	7087	0517	3945
49	5840	9292	2742	6191	9638	3082	6525	9966	3406	6843	0279	3712	7144	0574	4002
50	5897	9349	2800	6248	9695	3140	6583	0024	3463	6900	0336	3769	7201	0631	4060
51	5955	9407	2857	6306	9752	3197	6640	0081	3520	6958	0393	3827	7259	0688	4117
52	6012	9465	2915	6363	9810	3255	6697	0138	3578	7015	0450	3884	7316	0746	4174
53	6070	9522	2972	6421	9867	3312	6755	0196	3635	7072	0508	3941	7373	0803	4231
54	6127	9580	3030	6478	9925	3369	6812	0253	3692	7129	0565	3998	7430	0860	4288
55	6185	9637	3087	6536	9982	3427	6869	0310	3749	7187	0622	4056	7487	0917	4345
56	6243	9695	3145	6593	0040	3484	6927	0368	3807	7244	0679	4113	7544	0974	4402
57	6300	9752	3202	6651	0097	3541	6984	0425	3864	7301	0736	4170	7602	1031	4459
58	6358	9810	3260	6708	0154	3599	7042	0482	3921	7358	0794	4227	7659	1089	4516
59	6415	9867	3317	6765	0212	3656	7099	0540	3979	7416	0851	4284	7716	1146	4574
60	6473	9925	3375	6823	0269	3714	7156	0597	4036	7473	0908	4342	7773	1203	4631
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Tangent Deg. 66

23 Deg. Co-Tangent

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
10. 361	10. 361	10. 361	10. 360	10. 360	10. 359	10. 359	10. 359	10. 358	10. 358	10. 358	10. 357	10. 357	10. 357	10. 356	″
6981	3527	0075	6625	3177	9731	6286	2844	9403	5964	2527	9092	5658	2227	8797	60
6923	3470	0018	6568	3120	9673	6229	2786	9346	5907	2470	9035	5601	2170	8740	59
6866	3412	9960	6510	3062	9616	6172	2729	9288	5849	2412	8977	5544	2113	8683	58
6808	3355	9903	6453	3005	9559	6114	2672	9231	5792	2355	8920	5487	2055	8626	57
6751	3297	9845	6395	2947	9501	6057	2614	9174	5735	2298	8863	5430	1998	8569	56
6693	3240	9788	6338	2890	9444	5999	2557	9116	5678	2241	8806	5372	1941	8511	55
6636	3182	9730	6280	2832	9386	5942	2500	9059	5620	2183	8748	5315	1884	8454	54
6578	3124	9673	6223	2775	9329	5885	2442	9002	5563	2126	8691	5258	1827	8397	53
6520	3067	9615	6165	2718	9271	5827	2385	8944	5506	2069	8634	5201	1769	8340	52
6463	3009	9558	6108	2660	9214	5770	2328	8887	5448	2012	8577	5144	1712	8283	51
6405	2952	9500	6050	2603	9157	5712	2270	8830	5391	1954	8519	5086	1655	8226	50
6348	2894	9443	5993	2545	9099	5655	2213	8772	5334	1897	8462	5029	1598	8169	49
6290	2837	9385	5936	2488	9042	5598	2155	8715	5277	1840	8405	4972	1541	8111	48
6233	2779	9328	5878	2430	8984	5540	2098	8658	5219	1783	8348	4915	1484	8054	47
6175	2722	9270	5821	2373	8927	5483	2041	8600	5162	1725	8291	4858	1426	7997	46
6117	2664	9213	5763	2315	8870	5426	1983	8543	5105	1668	8233	4800	1369	7940	45
6060	2607	9155	5706	2258	8812	5368	1926	8486	5047	1611	8176	4743	1312	7883	44
6002	2549	9098	5648	2200	8755	5311	1869	8428	4990	1554	8119	4686	1255	7826	43
5945	2491	9040	5591	2143	8697	5253	1811	8371	4933	1496	8062	4629	1198	7769	42
5887	2434	8983	5533	2086	8640	5196	1754	8314	4875	1439	8004	4572	1141	7711	41
5830	2376	8925	5476	2028	8582	5139	1697	8256	4818	1382	7947	4514	1083	7654	40
5772	2319	8868	5418	1971	8525	5081	1639	8199	4761	1324	7890	4457	1026	7597	39
5714	2261	8810	5361	1913	8468	5024	1582	8142	4704	1267	7833	4400	0969	7540	38
5657	2204	8753	5303	1856	8410	4966	1525	8085	4646	1210	7775	4343	0912	7483	37
5599	2146	8695	5246	1798	8353	4909	1467	8027	4589	1153	7718	4286	0855	7426	36
5542	2089	8638	5188	1741	8295	4852	1410	7970	4532	1095	7661	4228	0798	7369	35
5484	2031	8580	5131	1683	8238	4794	1353	7913	4474	1038	7604	4171	0740	7312	34
5427	1974	8523	5073	1626	8181	4737	1295	7855	4417	0981	7547	4114	0683	7254	33
5369	1916	8465	5016	1569	8123	4680	1238	7798	4360	0924	7489	4057	0626	7197	32
5311	1859	8408	4958	1511	8066	4622	1180	7741	4303	0866	7432	4000	0569	7140	31
5254	1801	8350	4901	1454	8008	4565	1123	7683	4245	0809	7375	3942	0512	7083	30
5196	1744	8293	4844	1396	7951	4507	1066	7626	4188	0752	7318	3885	0455	7026	29
5139	1686	8235	4786	1339	7894	4450	1008	7569	4131	0695	7260	3828	0397	6969	28
5081	1628	8178	4729	1281	7836	4393	0951	7511	4073	0637	7203	3771	0340	6912	27
5024	1571	8120	4671	1224	7779	4335	0894	7454	4016	0580	7146	3714	0283	6854	26
4966	1513	8063	4614	1167	7721	4278	0836	7397	3959	0523	7089	3656	0226	6797	25
4909	1456	8005	4556	1109	7664	4221	0779	7339	3902	0466	7032	3599	0169	6740	24
4851	1398	7948	4499	1052	7606	4163	0722	7282	3844	0408	6974	3542	0112	6683	23
4793	1341	7890	4441	0994	7549	4106	0664	7225	3787	0351	6917	3485	0055	6626	22
4736	1283	7833	4384	0937	7492	4048	0607	7167	3730	0294	6860	3428	9997	6569	21
4678	1226	7775	4326	0879	7434	3991	0550	7110	3672	0237	6803	3371	9940	6512	20
4621	1168	7718	4269	0822	7377	3934	0492	7053	3615	0179	6745	3313	9883	6455	19
4563	1111	7660	4211	0764	7319	3876	0435	6996	3558	0122	6688	3256	9826	6397	18
4506	1053	7603	4154	0707	7262	3819	0378	6938	3501	0065	6631	3199	9769	6340	17
4448	0996	7545	4096	0650	7205	3762	0320	6881	3443	0008	6574	3142	9712	6283	16
4391	0938	7488	4039	0592	7147	3704	0263	6824	3386	9950	6517	3085	9654	6226	15
4333	0881	7430	3982	0535	7090	3647	0206	6766	3329	9893	6459	3027	9597	6169	14
4275	0823	7373	3924	0477	7032	3589	0148	6709	3272	9836	6402	2970	9540	6112	13
4218	0766	7315	3867	0420	6975	3532	0091	6652	3214	9779	6345	2913	9483	6055	12
4160	0708	7258	3809	0362	6918	3475	0034	6594	3157	9721	6288	2856	9426	5998	11
4103	0651	7200	3752	0305	6860	3417	9976	6537	3100	9664	6231	2799	9369	5940	10
4045	0593	7143	3694	0248	6803	3360	9919	6480	3042	9607	6173	2741	9312	5883	9
3988	0535	7085	3637	0190	6745	3303	9862	6422	2985	9550	6116	2684	9254	5826	8
3930	0478	7028	3579	0133	6688	3245	9804	6365	2928	9492	6059	2627	9197	5769	7
3873	0420	6970	3522	0075	6631	3188	9747	6308	2871	9435	6002	2570	9140	5712	6
3815	0363	6913	3464	0018	6573	3131	9690	6251	2813	9378	5944	2513	9083	5655	5
3757	0305	6855	3407	9960	6516	3073	9632	6193	2756	9321	5887	2456	9026	5598	4
3700	0248	6798	3349	9903	6459	3016	9575	6136	2699	9264	5830	2398	8969	5541	3
3642	0190	6740	3292	9846	6401	2958	9518	6079	2642	9206	5773	2341	8911	5484	2
3585	0133	6683	3235	9788	6344	2901	9460	6021	2584	9149	5716	2284	8854	5426	1
3527	0075	6625	3177	9731	6286	2844	9403	5964	2527	9092	5658	2227	8797	5369	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Tangent Deg. 66

23 Deg. Sine

"	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9. 605	9. 605	9. 605	9. 605	9. 606	9. 606	9. 606	9. 607	9. 607	9. 607	9. 607	9. 608	9. 608	9. 608	9. 609
0	0320	3190	6057	8923	1786	4647	7506	0362	3216	6068	8918	1765	4611	7454	0294
1	0368	3238	6105	8971	1834	4695	7553	0410	3264	6116	8965	1813	4658	7501	0342
2	0415	3285	6153	9018	1881	4742	7601	0457	3311	6163	9013	1860	4705	7548	0389
3	0463	3333	6201	9066	1929	4790	7649	0505	3359	6211	9060	1908	4753	7596	0436
4	0511	3381	6249	9114	1977	4838	7696	0552	3407	6258	9108	1955	4800	7643	0484
5	0559	3429	6296	9162	2025	4885	7744	0600	3454	6306	9155	2003	4848	7690	0531
6	0607	3477	6344	9209	2072	4933	7791	0648	3502	6353	9203	2050	4895	7738	0578
7	0655	3524	6392	9257	2120	4981	7839	0695	3549	6401	9250	2097	4942	7785	0626
8	0703	3572	6440	9305	2168	5028	7887	0743	3597	6448	9298	2145	4990	7833	0673
9	0750	3620	6487	9353	2215	5076	7934	0790	3644	6496	9345	2192	5037	7880	0720
10	0798	3668	6535	9400	2263	5124	7982	0838	3692	6543	9393	2240	5085	7927	0768
11	0846	3716	6583	9448	2311	5171	8030	0886	3739	6591	9440	2287	5132	7975	0815
12	0894	3763	6631	9496	2358	5219	8077	0933	3787	6638	9488	2335	5179	8022	0862
13	0942	3811	6678	9543	2406	5267	8125	0981	3834	6686	9535	2382	5227	8069	0910
14	0990	3859	6726	9591	2454	5314	8172	1028	3882	6733	9583	2430	5274	8117	0957
15	1037	3907	6774	9639	2502	5362	8220	1076	3929	6781	9630	2477	5322	8164	1004
16	1085	3955	6822	9687	2549	5410	8268	1123	3977	6828	9677	2524	5369	8211	1052
17	1133	4003	6870	9734	2597	5457	8315	1171	4025	6876	9725	2572	5416	8259	1099
18	1181	4050	6917	9782	2645	5505	8363	1219	4072	6923	9772	2619	5464	8306	1146
19	1229	4098	6965	9830	2692	5552	8410	1266	4120	6971	9820	2667	5511	8353	1194
20	1277	4146	7013	9878	2740	5600	8458	1314	4167	7018	9867	2714	5559	8401	1241
21	1325	4194	7061	9925	2788	5648	8506	1361	4215	7066	9915	2762	5606	8448	1288
22	1372	4242	7108	9973	2835	5695	8553	1409	4262	7113	9962	2809	5653	8496	1336
23	1420	4289	7156	0021	2883	5743	8601	1456	4310	7161	0010	2856	5701	8543	1383
24	1468	4337	7204	0068	2931	5791	8649	1504	4357	7208	0057	2904	5748	8590	1430
25	1516	4385	7252	0116	2978	5838	8696	1552	4405	7256	0105	2951	5796	8638	1477
26	1564	4433	7299	0164	3026	5886	8744	1599	4452	7303	0152	2999	5843	8685	1525
27	1612	4481	7347	0212	3074	5934	8791	1647	4500	7351	0200	3046	5890	8732	1572
28	1659	4528	7395	0259	3121	5981	8839	1694	4547	7398	0247	3093	5938	8780	1619
29	1707	4576	7443	0307	3169	6029	8887	1742	4595	7446	0295	3141	5985	8827	1667
30	1755	4624	7490	0355	3217	6077	8934	1789	4643	7493	0342	3188	6032	8874	1714
31	1803	4672	7538	0402	3265	6124	8982	1837	4690	7541	0389	3236	6080	8922	1761
32	1851	4719	7586	0450	3312	6172	9029	1885	4738	7588	0437	3283	6127	8969	1809
33	1899	4767	7634	0498	3360	6220	9077	1932	4785	7636	0484	3331	6175	9016	1856
34	1946	4815	7681	0546	3408	6267	9125	1980	4833	7683	0532	3378	6222	9064	1903
35	1994	4863	7729	0593	3455	6315	9172	2027	4880	7731	0579	3425	6269	9111	1951
36	2042	4911	7777	0641	3503	6362	9220	2075	4928	7778	0627	3473	6317	9158	1998
37	2090	4958	7825	0689	3551	6410	9267	2122	4975	7826	0674	3520	6364	9206	2045
38	2138	5006	7872	0737	3598	6458	9315	2170	5023	7873	0722	3568	6411	9253	2092
39	2186	5054	7920	0784	3646	6505	9363	2218	5070	7921	0769	3615	6459	9300	2140
40	2233	5102	7968	0832	3694	6553	9410	2265	5118	7968	0817	3662	6506	9348	2187
41	2281	5150	8016	0880	3741	6601	9458	2313	5165	8016	0864	3710	6554	9395	2234
42	2329	5197	8064	0927	3789	6648	9505	2360	5213	8063	0911	3757	6601	9442	2282
43	2377	5245	8111	0975	3837	6696	9553	2408	5260	8111	0959	3805	6648	9490	2329
44	2425	5293	8159	1023	3884	6744	9601	2455	5308	8158	1006	3852	6696	9537	2376
45	2472	5341	8207	1070	3932	6791	9648	2503	5355	8206	1054	3900	6743	9584	2424
46	2520	5389	8254	1118	3980	6839	9696	2551	5403	8253	1101	3947	6790	9632	2471
47	2568	5436	8302	1166	4027	6886	9743	2598	5451	8301	1149	3994	6838	9679	2518
48	2616	5484	8350	1214	4075	6934	9791	2646	5498	8348	1196	4042	6885	9726	2565
49	2664	5532	8398	1261	4123	6982	9839	2693	5546	8396	1244	4089	6933	9774	2613
50	2712	5580	8445	1309	4170	7029	9886	2741	5593	8443	1291	4137	6980	9821	2660
51	2759	5627	8493	1357	4218	7077	9934	2788	5641	8491	1338	4184	7027	9868	2707
52	2807	5675	8541	1404	4266	7125	9981	2836	5688	8538	1386	4231	7075	9916	2755
53	2855	5723	8589	1452	4313	7172	0029	2883	5736	8586	1433	4279	7122	9963	2802
54	2903	5771	8636	1500	4361	7220	0077	2931	5783	8633	1481	4326	7169	0010	2849
55	2951	5819	8684	1548	4409	7268	0124	2979	5831	8681	1528	4374	7217	0058	2897
56	2998	5866	8732	1595	4456	7315	0172	3026	5878	8728	1576	4421	7264	0105	2944
57	3046	5914	8780	1643	4504	7363	0219	3074	5926	8776	1623	4468	7312	0152	2991
58	3094	5962	8827	1691	4552	7410	0267	3121	5973	8823	1671	4516	7359	0200	3038
59	3142	6010	8875	1738	4599	7458	0315	3169	6021	8870	1718	4563	7406	0247	3086
60	3190	6057	8923	1786	4647	7506	0362	3216	6068	8918	1765	4611	7454	0294	3133
"	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Sine Deg. 66

23 Deg. Co-Sine

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	"
9. 961	9. 961	9. 961	9. 961	9. 961	9. 961	9. 961	9. 961	9. 961	9. 961	9. 961	9. 960	9. 960	9. 960	9. 960	
5689	5133	4576	4020	3462	2904	2346	1787	1228	0668	0108	9548	8987	8426	7864	60
5680	5124	4567	4010	3453	2895	2337	1778	1219	0659	0099	9539	8978	8416	7854	59
5671	5114	4558	4001	3444	2886	2327	1769	1209	0650	0090	9529	8968	8407	7845	58
5661	5105	4549	3992	3434	2876	2318	1759	1200	0640	0080	9520	8959	8398	7836	57
5652	5096	4539	3982	3425	2867	2309	1750	1191	0631	0071	9511	8950	8388	7826	56
5643	5087	4530	3973	3416	2858	2299	1741	1181	0622	0062	9501	8940	8379	7817	55
5634	5077	4521	3964	3406	2848	2290	1731	1172	0612	0052	9492	8931	8370	7808	54
5624	5068	4512	3954	3397	2839	2281	1722	1163	0603	0043	9483	8922	8360	7798	53
5615	5059	4502	3945	3388	2830	2271	1713	1153	0594	0034	9473	8912	8351	7789	52
5606	5050	4493	3936	3378	2821	2262	1703	1144	0584	0024	9464	8903	8341	7780	51
5596	5040	4484	3927	3369	2811	2253	1694	1135	0575	0015	9454	8894	8332	7770	50
5587	5031	4474	3917	3360	2802	2244	1685	1126	0566	0006	9445	8884	8323	7761	49
5578	5022	4465	3908	3351	2793	2234	1675	1116	0557	9996	9436	8875	8313	7751	48
5569	5012	4456	3899	3341	2783	2225	1666	1107	0547	9987	9426	8865	8304	7742	47
5559	5003	4447	3889	3332	2774	2216	1657	1098	0538	9978	9417	8856	8295	7733	46
5550	4994	4437	3880	3323	2765	2206	1647	1088	0529	9968	9408	8847	8285	7723	45
5541	4985	4428	3871	3313	2755	2197	1638	1079	0519	9959	9398	8837	8276	7714	44
5532	4975	4419	3862	3304	2746	2188	1629	1070	0510	9950	9389	8828	8267	7705	43
5522	4966	4409	3852	3295	2737	2178	1620	1060	0501	9940	9380	8819	8257	7695	42
5513	4957	4400	3843	3285	2728	2169	1610	1051	0491	9931	9370	8809	8248	7686	41
5504	4948	4391	3834	3276	2718	2160	1601	1042	0482	9922	9361	8800	8238	7677	40
5495	4938	4382	3824	3267	2709	2150	1592	1032	0473	9912	9352	8791	8229	7667	39
5485	4929	4372	3815	3258	2700	2141	1582	1023	0463	9903	9342	8781	8220	7658	38
5476	4920	4363	3806	3248	2690	2132	1573	1014	0454	9894	9333	8772	8210	7648	37
5467	4910	4354	3797	3239	2681	2123	1564	1004	0445	9884	9324	8763	8201	7639	36
5457	4901	4344	3787	3230	2672	2113	1554	0995	0435	9875	9314	8753	8192	7630	35
5448	4892	4335	3778	3220	2662	2104	1545	0986	0426	9866	9305	8744	8182	7620	34
5439	4883	4326	3769	3211	2653	2095	1536	0976	0417	9856	9296	8734	8173	7611	33
5430	4873	4317	3759	3202	2644	2085	1526	0967	0407	9847	9286	8725	8164	7602	32
5420	4864	4307	3750	3193	2634	2076	1517	0958	0398	9838	9277	8716	8154	7592	31
5411	4855	4298	3741	3183	2625	2067	1508	0948	0389	9828	9268	8706	8145	7583	30
5402	4846	4289	3732	3174	2616	2057	1498	0939	0379	9819	9258	8697	8135	7573	29
5393	4836	4279	3722	3165	2607	2048	1489	0930	0370	9810	9249	8688	8126	7564	28
5383	4827	4270	3713	3155	2597	2039	1480	0920	0361	9800	9240	8678	8117	7555	27
5374	4818	4261	3704	3146	2588	2029	1470	0911	0351	9791	9230	8669	8107	7545	26
5365	4808	4252	3694	3137	2579	2020	1461	0902	0342	9782	9221	8660	8098	7536	25
5355	4799	4242	3685	3127	2569	2011	1452	0892	0333	9772	9211	8650	8089	7527	24
5346	4790	4233	3676	3118	2560	2001	1442	0883	0323	9763	9202	8641	8079	7517	23
5337	4781	4224	3667	3109	2551	1992	1433	0874	0314	9754	9193	8632	8070	7508	22
5328	4771	4214	3657	3100	2541	1983	1424	0864	0305	9744	9183	8622	8061	7498	21
5318	4762	4205	3648	3090	2532	1974	1415	0855	0295	9735	9174	8613	8051	7489	20
5309	4753	4196	3639	3081	2523	1964	1405	0846	0286	9725	9165	8603	8042	7480	19
5300	4743	4187	3629	3072	2513	1955	1396	0836	0276	9716	9155	8594	8032	7470	18
5291	4734	4177	3620	3062	2504	1946	1387	0827	0267	9707	9146	8585	8023	7461	17
5281	4725	4168	3611	3053	2495	1936	1377	0818	0258	9697	9137	8575	8014	7452	16
5272	4716	4159	3601	3044	2486	1927	1368	0808	0248	9688	9127	8566	8004	7442	15
5263	4706	4150	3592	3034	2476	1918	1359	0799	0239	9679	9118	8557	7995	7433	14
5254	4697	4140	3583	3025	2467	1908	1349	0790	0230	9669	9109	8547	7986	7423	13
5244	4688	4131	3574	3016	2458	1899	1340	0780	0220	9660	9099	8538	7976	7414	12
5235	4679	4122	3564	3007	2448	1890	1331	0771	0211	9651	9090	8529	7967	7405	11
5226	4669	4112	3555	2997	2439	1880	1321	0762	0202	9641	9081	8519	7958	7395	10
5216	4660	4103	3546	2988	2430	1871	1312	0752	0192	9632	9071	8510	7948	7386	9
5207	4651	4094	3536	2979	2420	1862	1303	0743	0183	9623	9062	8501	7939	7377	8
5198	4641	4085	3527	2969	2411	1852	1293	0734	0174	9613	9052	8491	7929	7367	7
5189	4632	4075	3518	2960	2402	1843	1284	0724	0164	9604	9043	8482	7920	7358	6
5179	4623	4066	3509	2951	2393	1834	1275	0715	0155	9595	9034	8472	7911	7348	5
5170	4614	4057	3499	2941	2383	1825	1265	0706	0146	9585	9024	8463	7901	7339	4
5161	4604	4047	3490	2932	2374	1815	1256	0696	0136	9576	9015	8454	7892	7330	3
5152	4595	4038	3481	2923	2365	1806	1247	0687	0127	9567	9006	8444	7883	7320	2
5142	4586	4029	3471	2914	2355	1797	1237	0678	0118	9557	8996	8435	7873	7311	1
5133	4576	4020	3462	2904	2346	1787	1228	0668	0108	9548	8987	8426	7864	7302	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	"

Sine Deg. 66

23 Deg. Tangent

″	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9.643	9.643	9.644	9.644	9.644	9.645	9.645	9.645	9.646	9.646	9.646	9.647	9.647	9.647	9.648
0	4631	8057	1481	4903	8324	1743	5160	8575	1988	5400	8810	2217	5624	9028	2431
1	4688	8114	1538	4960	8381	1800	5217	8632	2045	5457	8866	2274	5680	9085	2487
2	4745	8171	1595	5017	8438	1857	5274	8689	2102	5513	8923	2331	5737	9141	2544
3	4802	8228	1652	5074	8495	1914	5331	8746	2159	5570	8980	2388	5794	9198	2601
4	4859	8285	1709	5131	8552	1971	5387	8802	2216	5627	9037	2445	5851	9255	2657
5	4916	8342	1766	5189	8609	2028	5444	8859	2273	5684	9094	2501	5907	9312	2714
6	4973	8399	1823	5246	8666	2085	5501	8916	2329	5741	9150	2558	5964	9368	2771
7	5031	8456	1880	5303	8723	2141	5558	8973	2386	5798	9207	2615	6021	9425	2827
8	5088	8513	1937	5360	8780	2198	5615	9030	2443	5855	9264	2672	6078	9482	2884
9	5145	8571	1994	5417	8837	2255	5672	9087	2500	5911	9321	2729	6134	9538	2941
10	5202	8628	2052	5474	8894	2312	5729	9144	2557	5968	9378	2785	6191	9595	2997
11	5259	8685	2109	5531	8951	2369	5786	9201	2614	6025	9434	2842	6248	9652	3054
12	5316	8742	2166	5588	9008	2426	5843	9258	2671	6082	9491	2899	6305	9709	3111
13	5373	8799	2223	5645	9065	2483	5900	9315	2728	6139	9548	2956	6361	9765	3168
14	5430	8856	2280	5702	9122	2540	5957	9371	2784	6196	9605	3012	6418	9822	3224
15	5487	8913	2337	5759	9179	2597	6014	9428	2841	6252	9662	3069	6475	9879	3281
16	5544	8970	2394	5816	9236	2654	6071	9485	2898	6309	9718	3126	6532	9936	3338
17	5602	9027	2451	5873	9293	2711	6128	9542	2955	6366	9775	3183	6588	9992	3394
18	5659	9084	2508	5930	9350	2768	6184	9599	3012	6423	9832	3240	6645	0049	3451
19	5716	9141	2565	6087	9407	2825	6241	9656	3069	6480	9889	3296	6702	0106	3508
20	5773	9198	2622	6044	9464	2882	6298	9713	3126	6537	9946	3353	6759	0162	3564
21	5830	9255	2679	6101	9521	2939	6355	9770	3182	6593	0003	3410	6815	0219	3621
22	5887	9313	2736	6158	9578	2996	6412	9827	3239	6650	0059	3467	6872	0276	3678
23	5944	9370	2793	6215	9635	3053	6469	9884	3296	6707	0116	3523	6929	0333	3734
24	6001	9427	2850	6272	9692	3110	6526	9940	3353	6764	0173	3580	6986	0389	3791
25	6058	9484	2907	6329	9749	3167	6583	9997	3410	6821	0230	3637	7042	0446	3848
26	6116	9541	2964	6386	9806	3224	6640	0054	3467	6878	0287	3694	7099	0503	3904
27	6173	9598	3021	6443	9863	3281	6697	0111	3524	6934	0343	3750	7156	0559	3961
28	6230	9655	3078	6500	9920	3338	6754	0168	3581	6991	0400	3807	7213	0616	4018
29	6287	9712	3135	6557	9977	3395	6811	0225	3637	7048	0457	3864	7269	0673	4075
30	6344	9769	3192	6614	0034	3451	6868	0282	3694	7105	0514	3921	7326	0730	4131
31	6401	9826	3249	6671	0091	3508	6924	0339	3751	7162	0571	3978	7383	0786	4188
32	6458	9883	3306	6728	0148	3565	6981	0396	3808	7219	0627	4034	7440	0843	4245
33	6515	9940	3364	6785	0205	3622	7038	0452	3865	7275	0684	4091	7496	0900	4301
34	6572	9997	3421	6842	0262	3679	7095	0509	3922	7332	0741	4148	7553	0956	4358
35	6629	0054	3478	6899	0318	3736	7152	0566	3979	7389	0798	4205	7610	1013	4415
36	6687	0112	3535	6956	0375	3793	7209	0623	4035	7446	0855	4261	7666	1070	4471
37	6744	0169	3592	7013	0432	3850	7266	0680	4092	7503	0911	4318	7723	1126	4528
38	6801	0226	3649	7070	0489	3907	7323	0737	4149	7559	0968	4375	7780	1183	4585
39	6858	0283	3706	7127	0546	3964	7380	0794	4206	7616	1025	4432	7837	1240	4641
40	6915	0340	3763	7184	0603	4021	7437	0851	4263	7673	1082	4488	7893	1297	4698
41	6972	0397	3820	7241	0660	4078	7494	0908	4320	7730	1138	4545	7950	1353	4755
42	7029	0454	3877	7298	0717	4135	7551	0964	4376	7787	1195	4602	8007	1410	4811
43	7086	0511	3934	7355	0774	4192	7607	1021	4433	7844	1252	4659	8064	1467	4868
44	7143	0568	3991	7412	0831	4249	7664	1078	4490	7900	1309	4715	8120	1523	4925
45	7200	0625	4048	7469	0888	4306	7721	1135	4547	7957	1366	4772	8177	1580	4981
46	7258	0682	4105	7526	0945	4363	7778	1192	4604	8014	1422	4829	8234	1637	5038
47	7315	0739	4162	7583	1002	4420	7835	1249	4661	8071	1479	4886	8291	1694	5095
48	7372	0796	4219	7640	1059	4476	7892	1306	4718	8128	1536	4943	8347	1750	5151
49	7429	0853	4276	7697	1116	4533	7949	1363	4774	8185	1593	4999	8404	1807	5208
50	7486	0910	4333	7754	1173	4590	8006	1419	4831	8241	1650	5056	8461	1864	5265
51	7543	0967	4390	7811	1230	4647	8063	1476	4888	8298	1706	5113	8517	1920	5321
52	7600	1025	4447	7868	1287	4704	8120	1533	4945	8355	1763	5170	8574	1977	5378
53	7657	1082	4504	7925	1344	4761	8177	1590	5002	8412	1820	5226	8631	2034	5435
54	7714	1139	4561	7982	1401	4818	8233	1647	5059	8469	1877	5283	8688	2090	5491
55	7771	1196	4618	8039	1458	4875	8290	1704	5116	8525	1934	5340	8744	2147	5548
56	7828	1253	4675	8096	1515	4932	8347	1761	5172	8582	1990	5397	8801	2204	5605
57	7885	1310	4732	8153	1572	4989	8404	1818	5229	8639	2047	5453	8858	2260	5661
58	7943	1367	4789	8210	1629	5046	8461	1874	5286	8696	2104	5510	8915	2317	5718
59	8000	1424	4846	8267	1686	5103	8518	1931	5343	8753	2161	5567	8971	2374	5775
60	8057	1481	4903	8324	1743	5160	8575	1988	5400	8810	2217	5624	9028	2431	5831
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Tangent Deg. 66

23 Deg. Co-Tangent

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
″	10.356	10.356	10.355	10.355	10.355	10.354	10.354	10.354	10.353	10.353	10.353	10.352	10.352	10.352	10.351	″
0	5369	1943	8519	5097	1676	8257	4840	1425	8012	4600	1190	7783	4376	9972	7569	60
1	5312	1886	8462	5040	1619	8200	4783	1368	7955	4543	1134	7726	4320	0915	7513	59
2	5255	1829	8405	4983	1562	8143	4726	1311	7898	4487	1077	7669	4263	0859	7456	58
3	5198	1772	8348	4926	1505	8086	4669	1254	7841	4430	1020	7612	4206	0802	7399	57
4	5141	1715	8291	4869	1448	8029	4613	1198	7784	4373	0963	7555	4149	0745	7343	56
5	5084	1658	8234	4811	1391	7972	4556	1141	7727	4316	0906	7499	4093	0688	7286	55
6	5027	1601	8177	4754	1334	7915	4499	1084	7671	4259	0850	7442	4036	0632	7229	54
7	4969	1544	8120	4697	1277	7859	4442	1027	7614	4202	0793	7385	3979	0575	7173	53
8	4912	1487	8063	4640	1220	7802	4385	0970	7557	4145	0736	7328	3922	0518	7116	52
9	4855	1429	8006	4583	1163	7745	4328	0913	7500	4089	0679	7271	3866	0462	7059	51
10	4798	1372	7948	4526	1106	7688	4271	0856	7443	4032	0622	7215	3809	0405	7003	50
11	4741	1315	7891	4469	1049	7631	4214	0799	7386	3975	0566	7158	3752	0348	6946	49
12	4684	1258	7834	4412	0992	7574	4157	0742	7329	3918	0509	7101	3695	0291	6889	48
13	4627	1201	7777	4355	0935	7517	4100	0685	7272	3861	0452	7044	3639	0235	6832	47
14	4570	1144	7720	4298	0878	7460	4043	0629	7216	3804	0395	6988	3582	0178	6776	46
15	4513	1087	7663	4241	0821	7403	3986	0572	7159	3748	0338	6931	3525	0121	6719	45
16	4456	1030	7606	4184	0764	7346	3929	0515	7102	3691	0282	6874	3468	0064	6662	44
17	4398	0973	7549	4127	0707	7289	3872	0458	7045	3634	0225	6817	3412	0008	6606	43
18	4341	0916	7492	4070	0650	7232	3816	0401	6988	3577	0168	6760	3355	9951	6549	42
19	4284	0859	7435	4013	0593	7175	3759	0344	6931	3520	0111	6704	3298	9894	6492	41
20	4227	0802	7378	3956	0536	7118	3702	0287	6874	3463	0054	6647	3241	9838	6436	40
21	4170	0745	7321	3899	0479	7061	3645	0230	6818	3407	9997	6590	3185	9781	6379	39
22	4113	0687	7264	3842	0422	7004	3588	0173	6761	3350	9941	6533	3128	9724	6322	38
23	4056	0630	7207	3785	0365	6947	3531	0116	6704	3293	9884	6477	3071	9667	6266	37
24	3999	0573	7150	3728	0308	6890	3474	0060	6647	3236	9827	6420	3014	9611	6209	36
25	3942	0516	7093	3671	0251	6833	3417	0003	6590	3179	9770	6363	2958	9554	6152	35
26	3884	0459	7036	3614	0194	6776	3360	9946	6533	3122	9713	6306	2901	9497	6096	34
27	3827	0402	6979	3557	0137	6719	3303	9889	6476	3066	9657	6250	2844	9441	6039	33
28	3770	0345	6922	3500	0080	6662	3246	9832	6419	3009	9600	6193	2787	9384	5982	32
29	3713	0288	6865	3443	0023	6605	3189	9775	6363	2952	9543	6136	2731	9327	5925	31
30	3656	0231	6808	3386	9966	6549	3132	9718	6306	2895	9486	6079	2674	9270	5869	30
31	3599	0174	6751	3329	9909	6492	3076	9661	6249	2838	9429	6022	2617	9214	5812	29
32	3542	0117	6694	3272	9852	6435	3019	9604	6192	2781	9373	5966	2560	9157	5755	28
33	3485	0060	6636	3215	9795	6378	2962	9548	6135	2725	9316	5909	2504	9100	5699	27
34	3428	0003	6579	3158	9738	6321	2905	9491	6078	2668	9259	5852	2447	9044	5642	26
35	3371	9946	6522	3101	9682	6264	2848	9434	6021	2611	9202	5795	2390	8987	5585	25
36	3313	9888	6465	3044	9625	6207	2791	9377	5965	2554	9145	5739	2334	8930	5529	24
37	3256	9831	6408	2987	9568	6150	2734	9320	5908	2497	9089	5682	2277	8874	5472	23
38	3199	9774	6351	2930	9511	6093	2677	9263	5851	2441	9032	5625	2220	8817	5415	22
39	3142	9717	6294	2873	9454	6036	2620	9206	5794	2384	8975	5568	2163	8760	5359	21
40	3085	9660	6237	2816	9397	5979	2563	9149	5737	2327	8918	5512	2107	8703	5302	20
41	3028	9603	6180	2759	9340	5922	2506	9092	5680	2270	8862	5455	2050	8647	5245	19
42	2971	9546	6123	2702	9283	5865	2449	9036	5624	2213	8805	5398	1993	8590	5189	18
43	2914	9489	6066	2645	9226	5808	2393	8979	5567	2156	8748	5341	1936	8533	5132	17
44	2857	9432	6009	2588	9169	5751	2336	8922	5510	2100	8691	5285	1880	8477	5075	16
45	2800	9375	5952	2531	9112	5694	2279	8865	5453	2043	8634	5228	1823	8420	5019	15
46	2742	9318	5895	2474	9055	5637	2222	8808	5396	1986	8578	5171	1766	8363	4962	14
47	2685	9261	5838	2417	8998	5580	2165	8751	5339	1929	8521	5114	1709	8306	4905	13
48	2628	9204	5781	2360	8941	5524	2108	8694	5282	1872	8464	5057	1653	8250	4849	12
49	2571	9147	5724	2303	8884	5467	2051	8637	5226	1815	8407	5001	1596	8193	4792	11
50	2514	9090	5667	2246	8827	5410	1994	8581	5169	1759	8350	4944	1539	8136	4735	10
51	2457	9033	5610	2189	8770	5353	1937	8524	5112	1702	8294	4887	1483	8080	4679	9
52	2400	8975	5553	2132	8713	5296	1880	8467	5055	1645	8237	4830	1426	8023	4622	8
53	2343	8918	5496	2075	8656	5239	1823	8410	4998	1588	8180	4774	1369	7966	4565	7
54	2286	8861	5439	2018	8599	5182	1767	8353	4941	1531	8123	4717	1312	7910	4509	6
55	2229	8804	5382	1961	8542	5125	1710	8296	4884	1475	8066	4660	1256	7853	4452	5
56	2172	8747	5325	1904	8485	5068	1653	8239	4828	1418	8010	4603	1199	7796	4395	4
57	2115	8690	5268	1847	8428	5011	1596	8182	4771	1361	7953	4547	1142	7740	4339	3
58	2057	8633	5211	1790	8371	4954	1539	8126	4714	1304	7896	4490	1085	7683	4282	2
59	2000	8576	5154	1733	8314	4897	1482	8069	4657	1247	7839	4433	1029	7626	4225	1
60	1943	8519	5097	1676	8257	4840	1425	8012	4600	1190	7783	4376	0972	7569	4169	0
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Tangent Deg. 66

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
″	9.609	9.609	9.609	9.610	9.610	9.610	9.611	9.611	9.611	9.611	9.612	9.612	9.612	9.612	9.613	9.960	9.960	9.960	9.960	9.960	9.960	9.960	9.960	9.960	9.960	9.960	9.960	9.960	9.959	9.959	″
0	3133	5969	8803	1635	4465	7293	0118	2941	5762	8580	1397	4211	7023	9833	2641	7302	6739	6176	5612	5048	4484	3919	3354	2788	2222	1655	1088	0520	9952	9384	60
1	3180	6017	8851	1683	4512	7340	0165	2988	5809	8627	1444	4258	7070	9880	2688	7292	6730	6166	5603	5039	4474	3910	3344	2778	2212	1646	1078	0511	9943	9374	59
2	3228	6064	8898	1730	4559	7387	0212	3035	5856	8674	1491	4305	7117	9927	2734	7283	6720	6157	5593	5029	4465	3900	3335	2769	2203	1636	1069	0501	9933	9365	58
3	3275	6111	8945	1777	4606	7434	0259	3082	5903	8721	1538	4352	7164	9974	2781	7274	6711	6148	5584	5020	4456	3891	3325	2760	2193	1627	1060	0492	9924	9356	57
4	3322	6158	8992	1824	4654	7481	0306	3129	5950	8768	1585	4399	7211	0020	2828	7264	6701	6138	5575	5011	4446	3881	3316	2750	2184	1617	1050	0482	9914	9346	56
5	3369	6206	9040	1871	4701	7528	0353	3176	5997	8815	1631	4446	7257	0067	2875	7255	6692	6129	5565	5001	4437	3872	3306	2741	2174	1608	1041	0473	9905	9337	55
6	3417	6253	9087	1918	4748	7575	0400	3223	6044	8862	1678	4492	7304	0114	2921	7245	6683	6119	5556	4992	4427	3862	3297	2731	2165	1598	1031	0464	9896	9327	54
7	3464	6300	9134	1966	4795	7622	0447	3270	6091	8909	1725	4539	7351	0161	2968	7236	6673	6110	5546	4982	4418	3853	3288	2722	2156	1589	1022	0454	9886	9318	53
8	3511	6347	9181	2013	4842	7669	0494	3317	6138	8956	1772	4586	7398	0208	3015	7227	6664	6101	5537	4973	4409	3844	3278	2712	2146	1579	1012	0445	9877	9308	52
9	3559	6395	9228	2060	4889	7716	0541	3364	6185	9003	1819	4633	7445	0254	3062	7217	6655	6091	5528	4964	4399	3834	3269	2703	2137	1570	1003	0435	9867	9299	51
10	3606	6442	9276	2107	4936	7764	0588	3411	6232	9050	1866	4680	7492	0301	3109	7208	6645	6082	5518	4954	4390	3825	3259	2693	2127	1560	0993	0426	9858	9289	50
11	3653	6489	9323	2154	4984	7811	0636	3458	6279	9097	1913	4727	7539	0348	3155	7198	6636	6073	5509	4945	4380	3815	3250	2684	2118	1551	0984	0416	9848	9280	49
12	3700	6536	9370	2201	5031	7858	0683	3505	6326	9144	1960	4774	7585	0395	3202	7189	6626	6063	5499	4935	4371	3806	3240	2675	2108	1542	0974	0407	9839	9270	48
13	3748	6584	9417	2249	5078	7905	0730	3552	6373	9191	2007	4821	7632	0442	3249	7180	6617	6054	5490	4926	4361	3796	3231	2665	2099	1532	0965	0397	9829	9261	47
14	3795	6631	9464	2296	5125	7952	0777	3599	6420	9238	2054	4867	7679	0488	3296	7170	6608	6044	5481	4917	4352	3787	3222	2656	2089	1523	0955	0388	9820	9251	46
15	3842	6678	9512	2343	5172	7999	0824	3646	6467	9285	2101	4914	7726	0535	3342	7161	6598	6035	5471	4907	4343	3778	3212	2646	2080	1513	0946	0378	9810	9242	45
16	3890	6725	9559	2390	5219	8046	0871	3693	6514	9332	2148	4961	7773	0582	3389	7152	6589	6026	5462	4898	4333	3768	3203	2637	2071	1504	0937	0369	9801	9232	44
17	3937	6773	9606	2437	5266	8093	0918	3740	6561	9379	2194	5008	7820	0629	3436	7142	6579	6016	5452	4888	4324	3759	3193	2627	2061	1494	0927	0359	9791	9223	43
18	3984	6820	9653	2484	5314	8140	0965	3787	6608	9426	2241	5055	7866	0676	3483	7133	6570	6007	5443	4879	4314	3749	3184	2618	2052	1485	0918	0350	9782	9213	42
19	4031	6867	9700	2532	5361	8187	1012	3834	6655	9473	2288	5102	7913	0722	3529	7123	6561	5997	5434	4870	4305	3740	3174	2609	2042	1475	0908	0341	9772	9204	41
20	4079	6914	9748	2579	5408	8235	1059	3881	6702	9519	2335	5149	7960	0769	3576	7114	6551	5988	5424	4860	4296	3731	3165	2599	2033	1466	0899	0331	9763	9194	40
21	4126	6962	9795	2626	5455	8282	1106	3928	6748	9566	2382	5196	8007	0816	3623	7105	6542	5979	5415	4851	4286	3721	3156	2590	2023	1457	0889	0322	9753	9185	39
22	4173	7009	9842	2673	5502	8329	1153	3975	6795	9613	2429	5242	8054	0863	3670	7095	6533	5969	5406	4841	4277	3712	3146	2580	2014	1447	0880	0312	9744	9175	38
23	4221	7056	9889	2720	5549	8376	1200	4022	6842	9660	2476	5289	8101	0910	3717	7086	6523	5960	5396	4832	4267	3702	3137	2571	2004	1438	0870	0303	9735	9166	37
24	4268	7103	9936	2767	5596	8423	1247	4069	6889	9707	2523	5336	8147	0956	3763	7077	6514	5950	5387	4823	4258	3693	3127	2561	1995	1428	0861	0293	9725	9156	36
25	4315	7150	9984	2815	5643	8470	1294	4116	6936	9754	2570	5383	8194	1003	3810	7067	6504	5941	5377	4813	4248	3683	3118	2552	1986	1419	0851	0284	9716	9147	35
26	4362	7198	0031	2862	5691	8517	1341	4163	6983	9801	2617	5430	8241	1050	3857	7058	6495	5932	5368	4804	4239	3674	3108	2543	1976	1409	0842	0274	9706	9137	34
27	4410	7245	0078	2909	5738	8564	1388	4211	7030	9848	2664	5477	8288	1097	3904	7048	6486	5922	5359	4794	4230	3665	3099	2533	1967	1400	0833	0265	9697	9128	33
28	4457	7292	0125	2956	5785	8611	1435	4258	7077	9895	2710	5524	8335	1144	3950	7039	6476	5913	5349	4785	4220	3655	3090	2524	1957	1390	0823	0255	9687	9119	32
29	4504	7339	0172	3003	5832	8658	1483	4305	7124	9942	2757	5571	8382	1190	3997	7030	6467	5903	5340	4775	4211	3646	3080	2514	1948	1381	0814	0246	9678	9109	31
30	4551	7387	0220	3050	5879	8705	1530	4352	7171	9989	2804	5617	8428	1237	4044	7020	6457	5894	5330	4766	4201	3636	3071	2505	1938	1371	0804	0236	9668	9100	30
31	4599	7434	0267	3098	5926	8753	1577	4399	7218	0036	2851	5664	8475	1284	4091	7011	6448	5885	5321	4757	4192	3627	3061	2495	1929	1362	0795	0227	9659	9090	29
32	4646	7481	0314	3145	5973	8800	1624	4446	7265	0083	2898	5711	8522	1331	4137	7002	6439	5875	5312	4747	4183	3617	3052	2486	1919	1353	0785	0217	9649	9081	28
33	4693	7528	0361	3192	6020	8847	1671	4493	7312	0130	2945	5758	8569	1378	4184	6992	6429	5866	5302	4738	4173	3608	3042	2476	1910	1343	0776	0208	9640	9071	27
34	4741	7576	0408	3239	6068	8894	1718	4540	7359	0177	2992	5805	8616	1424	4231	6983	6420	5857	5293	4728	4164	3599	3033	2467	1901	1334	0766	0199	9630	9062	26
35	4788	7623	0456	3286	6115	8941	1765	4587	7406	0224	3039	5852	8663	1471	4278	6973	6411	5847	5283	4719	4154	3589	3024	2458	1891	1324	0757	0189	9621	9052	25
36	4835	7670	0503	3333	6162	8988	1812	4634	7453	0271	3086	5899	8709	1518	4324	6964	6401	5838	5274	4710	4145	3580	3014	2448	1882	1315	0747	0180	9611	9043	24
37	4882	7717	0550	3381	6209	9035	1859	4681	7500	0317	3133	5946	8756	1565	4371	6955	6392	5828	5265	4700	4136	3570	3005	2439	1872	1305	0738	0170	9602	9033	23
38	4930	7765	0597	3428	6256	9082	1906	4728	7547	0364	3179	5992	8803	1612	4418	6945	6382	5819	5255	4691	4126	3561	2995	2429	1863	1296	0728	0161	9592	9024	22
39	4977	7812	0644	3475	6303	9129	1953	4775	7594	0411	3226	6039	8850	1658	4465	6936	6373	5810	5246	4681	4117	3552	2986	2420	1853	1286	0719	0151	9583	9014	21
40	5024	7859	0692	3522	6350	9176	2000	4822	7641	0458	3273	6086	8897	1705	4511	6927	6364	5800	5236	4672	4107	3542	2976	2410	1844	1277	0710	0142	9573	9005	20
41	5071	7906	0739	3569	6397	9223	2047	4869	7688	0505	3320	6133	8944	1752	4558	6917	6354	5791	5227	4663	4098	3533	2967	2401	1834	1268	0700	0132	9564	8995	19
42	5119	7953	0786	3616	6445	9270	2094	4916	7735	0552	3367	6180	8990	1799	4605	6908	6345	5781	5217	4653	4088	3523	2958	2392	1825	1258	0691	0123	9555	8986	18
43	5166	8001	0833	3664	6492	9318	2141	4963	7782	0599	3414	6227	9037	1846	4652	6898	6335	5772	5208	4644	4079	3514	2948	2382	1816	1249	0681	0113	9545	8976	17
44	5213	8048	0880	3711	6539	9365	2188	5010	7829	0646	3461	6274	9084	1892	4698	6889	6326	5763	5199	4634	4070	3504	2939	2373	1806	1239	0672	0104	9536	8967	16
45	5260	8095	0928	3758	6586	9412	2235	5057	7876	0693	3508	6320	9131	1939	4745	6880	6317	5753	5189	4625	4060	3495	2929	2363	1797	1230	0662	0094	9526	8957	15
46	5308	8142	0975	3805	6633	9459	2282	5104	7923	0740	3555	6367	9178	1986	4792	6870	6307	5744	5180	4616	4051	3486	2920	2354	1787	1220	0653	0085	9517	8948	14
47	5355	8190	1022	3852	6680	9506	2329	5151	7970	0787	3602	6414	9224	2033	4839	6861	6298	5734	5170	4606	4041	3476	2910	2344	1778	1211	0643	0075	9507	8938	13
48	5402	8237	1069	3899	6727	9553	2376	5198	8017	0834	3648	6461	9271	2079	4885	6852	6288	5725	5161	4597	4032	3467	2901	2335	1768	1201	0634	0066	9498	8929	12
49	5450	8284	1116	3946	6774	9600	2423	5245	8064	0881	3695	6508	9318	2126	4932	6842	6279	5716	5152	4587	4023	3457	2892	2325	1759	1192	0624	0057	9488	8919	11
50	5497	8331	1164	3994	6821	9647	2470	5292	8111	0928	3742	6555	9365	2173	4979	6833	6270	5706	5142	4578	4013	3448	2882	2316	1749	1182	0615	0047	9479	8910	10
51	5544	8378	1211	4041	6869	9694	2518	5339	8158	0975	3789	6602	9412	2220	5026	6823	6260	5697	5133	4569	4004	3438	2873	2307	1740	1173	0605	0038	9469	8900	9
52	5591	8426	1258	4088	6916	9741	2565	5386	8205	1021	3836	6648	9459	2267	5072	6814	6251	5687	5123	4559	3994	3429	2863	2297	1731	1164	0596	0028	9460	8891	8
53	5639	8473	1305	4135	6963	9788	2612	5433	8252	1068	3883	6695	9505	2313	5119	6805	6242	5678	5114	4550	3985	3420	2854	2288	1721	1154	0587	0019	9450	8881	7
54	5686	8520	1352	4182	7010	9835	2659	5480	8299	1115	3930	6742	9552	2360	5166	6795	6232	5669	5105	4540	3975	3410	2844	2278	1712	1145	0577	0009	9441	8872	6
55	5733	8567	1399	4229	7057	9882	2706	5527	8346	1162	3977	6789	9599	2407	5213	6786	6223	5659	5095	4531	3966	3401	2835	2269	1702	1135	0568	0000	9431	8863	5
56	5780	8615	1447	4276	7104	9929	2753	5574	8393	1209	4024	6836	9646	2454	5259	6776	6213	5650	5086	4521	3957	3391	2826	2259	1693	1126	0558	9990	9422	8853	4
57	5828	8662	1494	4324	7151	9977	2800	5621	8440	1256	4070	6883	9693	2501	5306	6767	6204	5640	5076	4512	3947	3382	2816	2250	1683	1116	0549	9981	9412	8844	3
58	5875	8709	1541	4371	7198	0024	2847	5668	8486	1303	4117	6930	9739	2547	5353	6758	6195	5631	5067	4503	3938	3372	2807	2240	1674	1107	0539	9971	9403	8834	2
59	5922	8756	1588	4418	7245	0071	2894	5715	8533	1350	4164	6976	9786	2594	5400	6748	6185	5622	5058	4493	3928	3363	2797	2231	1664	1097	0530	9962	9393	8825	1
60	5969	8803	1635	4465	7293	0118	2941	5762	8580	1397	4211	7023	9833	2641	5446	6739	6176	5612	5048	4484	3919	3354	2788	2222	1655	1088	0520	9952	9384	8815	0
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

24 Deg. Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9. 648	9. 648	9. 649	9. 649	9. 649	9. 650	9. 650	9. 650	9. 651	9. 651	9. 651	9. 652	9. 652	9. 652	9. 653
0	5831	9230	2628	6023	9417	2809	6199	9587	2974	6359	9742	3123	6503	9881	3257
1	5888	9287	2684	6080	9473	2865	6255	9644	3030	6415	9798	3180	6559	9937	3313
2	5945	9344	2741	6136	9530	2922	6312	9700	3087	6472	9855	3236	6616	9993	3369
3	6001	9400	2797	6193	9586	2978	6368	9757	3143	6528	9911	3292	6672	0050	3426
4	6058	9457	2854	6249	9643	3035	6425	9813	3200	6584	9967	3349	6728	0106	3482
5	6115	9514	2911	6306	9700	3091	6481	9870	3256	6641	0024	3405	6784	0162	3538
6	6171	9570	2967	6363	9756	3148	6538	9926	3312	6697	0080	3461	6841	0218	3594
7	6228	9627	3024	6419	9813	3204	6594	9982	3369	6754	0136	3518	6897	0275	3651
8	6285	9683	3080	6476	9869	3261	6651	0039	3425	6810	0193	3574	6953	0331	3707
9	6341	9740	3137	6532	9926	3317	6707	0095	3482	6866	0249	3630	7010	0387	3763
10	6398	9797	3194	6589	9982	3374	6764	0152	3538	6923	0306	3687	7066	0444	3819
11	6455	9853	3250	6645	0039	3430	6820	0208	3595	6979	0362	3743	7122	0500	3876
12	6511	9910	3307	6702	0095	3487	6877	0265	3651	7036	0418	3799	7179	0556	3932
13	6568	9967	3363	6759	0152	3543	6933	0321	3707	7092	0475	3856	7235	0612	3988
14	6625	0023	3420	6815	0208	3600	6990	0378	3764	7148	0531	3912	7291	0669	4044
15	6681	0080	3477	6872	0265	3656	7046	0434	3820	7205	0587	3968	7348	0725	4101
16	6738	0136	3533	6928	0321	3713	7103	0491	3877	7261	0644	4025	7404	0781	4157
17	6795	0193	3590	6985	0378	3769	7159	0547	3933	7317	0700	4081	7460	0838	4213
18	6851	0250	3646	7041	0435	3826	7216	0603	3990	7374	0756	4137	7516	0894	4269
19	6908	0306	3703	7098	0491	3882	7272	0660	4046	7430	0813	4194	7573	0950	4326
20	6965	0363	3760	7155	0548	3939	7329	0716	4102	7487	0869	4250	7629	1006	4382
21	7021	0420	3816	7211	0604	3995	7385	0773	4159	7543	0926	4306	7685	1063	4438
22	7078	0476	3873	7268	0661	4052	7441	0829	4215	7599	0982	4363	7742	1119	4494
23	7135	0533	3929	7324	0717	4108	7498	0886	4272	7656	1038	4419	7798	1175	4551
24	7191	0589	3986	7381	0774	4165	7554	0942	4328	7712	1095	4475	7854	1231	4607
25	7248	0646	4043	7437	0830	4221	7611	0999	4384	7769	1151	4532	7911	1288	4663
26	7304	0703	4099	7494	0887	4278	7667	1055	4441	7825	1207	4588	7967	1344	4719
27	7361	0759	4156	7550	0943	4334	7724	1111	4497	7881	1264	4644	8023	1400	4776
28	7418	0816	4212	7607	1000	4391	7780	1168	4554	7938	1320	4701	8079	1457	4832
29	7474	0873	4269	7664	1056	4448	7837	1224	4610	7994	1376	4757	8136	1513	4888
30	7531	0929	4326	7720	1113	4504	7893	1281	4667	8051	1433	4813	8192	1569	4944
31	7588	0986	4382	7777	1169	4561	7950	1337	4723	8107	1489	4870	8248	1625	5001
32	7644	1042	4439	7833	1226	4617	8006	1394	4779	8163	1546	4926	8305	1682	5057
33	7701	1099	4495	7890	1283	4674	8063	1450	4836	8220	1602	4982	8361	1738	5113
34	7758	1156	4552	7946	1339	4730	8119	1507	4892	8276	1658	5039	8417	1794	5169
35	7814	1212	4609	8003	1396	4787	8176	1563	4949	8332	1715	5095	8474	1850	5226
36	7871	1269	4665	8060	1452	4843	8232	1619	5005	8389	1771	5151	8530	1907	5282
37	7928	1326	4722	8116	1509	4900	8289	1676	5061	8445	1827	5208	8586	1963	5338
38	7984	1382	4778	8173	1565	4956	8345	1732	5118	8502	1884	5264	8642	2019	5394
39	8041	1439	4835	8229	1622	5013	8402	1789	5174	8558	1940	5320	8699	2075	5450
40	8098	1495	4891	8286	1678	5069	8458	1845	5231	8614	1996	5377	8755	2132	5507
41	8154	1552	4948	8342	1735	5126	8514	1902	5287	8671	2053	5433	8811	2188	5563
42	8211	1609	5005	8399	1791	5182	8571	1958	5343	8727	2109	5489	8868	2244	5619
43	8268	1665	5061	8455	1848	5238	8627	2015	5400	8784	2165	5546	8924	2301	5675
44	8324	1722	5118	8512	1904	5295	8684	2071	5456	8840	2222	5602	8980	2357	5732
45	8381	1778	5174	8569	1961	5351	8740	2127	5513	8896	2278	5658	9036	2413	5788
46	8437	1835	5231	8625	2017	5408	8797	2184	5569	8953	2334	5714	9093	2469	5844
47	8494	1892	5288	8682	2074	5464	8853	2240	5626	9009	2391	5771	9149	2526	5900
48	8551	1948	5344	8738	2130	5521	8910	2297	5682	9065	2447	5827	9205	2582	5957
49	8607	2005	5401	8795	2187	5577	8966	2353	5738	9122	2503	5883	9262	2638	6013
50	8664	2062	5457	8851	2244	5634	9023	2410	5795	9178	2560	5940	9318	2694	6069
51	8721	2118	5514	8908	2300	5690	9079	2466	5851	9235	2616	5996	9374	2751	6125
52	8777	2175	5570	8964	2357	5747	9136	2522	5908	9291	2673	6052	9430	2807	6181
53	8834	2231	5627	9021	2413	5803	9192	2579	5964	9347	2729	6109	9487	2863	6238
54	8891	2288	5684	9077	2470	5860	9248	2635	6020	9404	2785	6165	9543	2919	6294
55	8947	2345	5740	9134	2526	5916	9305	2692	6077	9460	2842	6221	9599	2976	6350
56	9004	2401	5797	9191	2583	5973	9361	2748	6133	9516	2898	6278	9656	3032	6406
57	9060	2458	5853	9247	2639	6029	9418	2805	6190	9573	2954	6334	9712	3088	6463
58	9117	2514	5910	9304	2696	6086	9474	2861	6246	9629	3011	6390	9768	3144	6519
59	9174	2571	5967	9360	2752	6142	9531	2917	6302	9686	3067	6447	9824	3201	6575
60	9230	2628	6023	9417	2809	6199	9587	2974	6359	9742	3123	6503	9881	3257	6631
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Tangent Deg. 65

24 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	″
10. 351	10. 351	10. 350	10. 350	10. 350	10. 349	10. 349	10. 349	10. 348	10. 348	10. 348	10. 347	10. 347	10. 347	10. 346	″
4169	0770	7372	3977	0583	7191	3801	0413	7026	3641	0258	6877	3497	0119	6743	60
4112	0713	7316	3920	0527	7135	3745	0356	6970	3585	0202	6820	3441	0063	6687	59
4055	0656	7259	3864	0470	7078	3688	0300	6913	3528	0145	6764	3384	0007	6631	58
3999	0600	7203	3807	0414	7022	3632	0243	6857	3472	0089	6708	3328	9950	6574	57
3942	0543	7146	3751	0357	6965	3575	0187	6800	3416	0033	6651	3272	9894	6518	56
3885	0486	7089	3694	0300	6909	3519	0130	6744	3359	9976	6595	3216	9838	6462	55
3829	0430	7033	3637	0244	6852	3462	0074	6688	3303	9920	6539	3159	9782	6406	54
3772	0373	6976	3581	0187	6796	3406	0018	6631	3246	9864	6482	3103	9725	6349	53
3715	0317	6920	3524	0131	6739	3349	9961	6575	3190	9807	6426	3047	9669	6293	52
3659	0260	6863	3468	0074	6683	3293	9905	6518	3134	9751	6370	2990	9613	6237	51
3602	0203	6806	3411	0018	6626	3236	9848	6462	3077	9694	6313	2934	9556	6181	50
3545	0147	6750	3355	9961	6570	3180	9792	6405	3021	9638	6257	2878	9500	6124	49
3489	0090	6693	3298	9905	6513	3123	9735	6349	2964	9582	6201	2821	9444	6068	48
3432	0033	6637	3241	9848	6457	3067	9679	6293	2908	9525	6144	2765	9388	6012	47
3375	9977	6580	3185	9792	6400	3010	9622	6236	2852	9469	6088	2709	9331	5956	46
3319	9920	6523	3128	9735	6344	2954	9566	6180	2795	9413	6032	2652	9275	5899	45
3262	9864	6467	3072	9679	6287	2897	9509	6123	2739	9356	5975	2596	9219	5843	44
3205	9807	6410	3015	9622	6231	2841	9453	6067	2683	9300	5919	2540	9162	5787	43
3149	9750	6354	2959	9565	6174	2784	9397	6010	2626	9244	5863	2484	9106	5731	42
3092	9694	6297	2902	9509	6118	2728	9340	5954	2570	9187	5806	2427	9050	5674	41
3035	9637	6240	2845	9452	6061	2671	9284	5898	2513	9131	5750	2371	8994	5618	40
2979	9580	6184	2789	9396	6005	2615	9227	5841	2457	9074	5694	2315	8937	5562	39
2922	9524	6127	2732	9339	5948	2559	9171	5785	2401	9018	5637	2258	8881	5506	38
2865	9467	6071	2676	9283	5892	2502	9114	5728	2344	8962	5581	2202	8825	5449	37
2809	9411	6014	2619	9226	5835	2446	9058	5672	2288	8905	5525	2146	8769	5393	36
2752	9354	5957	2563	9170	5779	2389	9001	5616	2231	8849	5468	2089	8712	5337	35
2696	9297	5901	2506	9113	5722	2332	8945	5559	2175	8793	5412	2033	8656	5281	34
2639	9241	5844	2450	9057	5666	2276	8889	5503	2119	8736	5356	1977	8600	5224	33
2582	9184	5788	2393	9000	5609	2220	8832	5446	2062	8680	5299	1921	8543	5168	32
2526	9127	5731	2336	8944	5552	2163	8776	5390	2006	8624	5243	1864	8487	5112	31
2469	9071	5674	2280	8887	5496	2107	8719	5333	1949	8567	5187	1808	8431	5056	30
2412	9014	5618	2223	8831	5439	2050	8663	5277	1893	8511	5130	1752	8375	4999	29
2356	8958	5561	2167	8774	5383	1994	8606	5221	1837	8454	5074	1695	8318	4943	28
2299	8901	5505	2110	8717	5326	1937	8550	5164	1780	8398	5018	1639	8262	4887	27
2242	8844	5448	2054	8661	5270	1881	8493	5108	1724	8342	4961	1583	8206	4831	26
2186	8788	5391	1997	8604	5213	1824	8437	5051	1668	8285	4905	1526	8150	4774	25
2129	8731	5335	1940	8548	5157	1768	8381	4995	1611	8229	4849	1470	8093	4718	24
2072	8674	5278	1884	8491	5100	1711	8324	4939	1555	8173	4792	1414	8037	4662	23
2016	8618	5222	1827	8435	5044	1655	8268	4882	1498	8116	4736	1358	7981	4606	22
1959	8561	5165	1771	8378	4987	1598	8211	4826	1442	8060	4680	1301	7925	4550	21
1902	8505	5109	1714	8322	4931	1542	8155	4769	1386	8004	4623	1245	7868	4493	20
1846	8448	5052	1658	8265	4874	1486	8098	4713	1329	7947	4567	1189	7812	4437	19
1789	8391	4995	1601	8209	4818	1429	8042	4657	1273	7891	4511	1132	7756	4381	18
1732	8335	4939	1545	8152	4762	1373	7985	4600	1216	7835	4454	1076	7699	4325	17
1676	8278	4882	1488	8096	4705	1316	7929	4544	1160	7778	4398	1020	7643	4268	16
1619	8222	4826	1431	8039	4649	1260	7873	4487	1104	7722	4342	0964	7587	4212	15
1563	8165	4769	1375	7983	4592	1203	7816	4431	1047	7666	4286	0907	7531	4156	14
1506	8108	4712	1318	7926	4536	1147	7760	4374	0991	7609	4229	0851	7474	4100	13
1449	8052	4656	1262	7870	4479	1090	7703	4318	0935	7553	4173	0795	7418	4043	12
1393	7995	4599	1205	7813	4423	1034	7647	4262	0878	7497	4117	0738	7362	3987	11
1336	7938	4543	1149	7756	4366	0977	7590	4205	0822	7440	4060	0682	7306	3931	10
1279	7882	4486	1092	7700	4310	0921	7534	4149	0765	7384	4004	0626	7249	3875	9
1223	7825	4430	1036	7643	4253	0864	7478	4092	0709	7327	3948	0570	7193	3819	8
1166	7769	4373	0979	7587	4197	0808	7421	4036	0653	7271	3891	0513	7137	3762	7
1109	7712	4316	0923	7530	4140	0752	7365	3980	0596	7215	3835	0457	7081	3706	6
1053	7655	4260	0866	7474	4084	0695	7308	3923	0540	7158	3779	0401	7024	3650	5
0996	7599	4203	0809	7417	4027	0639	7252	3867	0484	7102	3722	0344	6968	3594	4
0940	7542	4147	0753	7361	3971	0582	7195	3810	0427	7046	3666	0288	6912	3537	3
0883	7486	4090	0696	7304	3914	0526	7139	3754	0371	6989	3610	0232	6856	3481	2
0826	7429	4033	0640	7248	3858	0469	7083	3698	0314	6933	3553	0176	6799	3425	1
0770	7372	3977	0583	7191	3801	0413	7026	3641	0258	6877	3497	0119	6743	3369	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Tangent Deg. 65

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9.613	9.613	9.614	9.614	9.614	9.614	9.615	9.615	9.615	9.616	9.616	9.616	9.616	9.617	9.617
0	5446	8250	1051	3850	6647	9441	2234	5024	7812	0599	3382	6164	8944	1721	4496
1	5493	8296	1098	3897	6693	9488	2280	5071	7859	0645	3429	6210	8990	1767	4543
2	5540	8343	1144	3943	6740	9535	2327	5117	7905	0691	3475	6257	9036	1814	4589
3	5587	8390	1191	3990	6787	9581	2374	5164	7952	0738	3522	6303	9083	1860	4635
4	5633	8437	1238	4036	6833	9628	2420	5210	7998	0784	3568	6349	9129	1906	4681
5	5680	8483	1284	4083	6880	9674	2467	5257	8045	0831	3614	6396	9175	1952	4728
6	5727	8530	1331	4130	6926	9721	2513	5303	8091	0877	3661	6442	9222	1999	4774
7	5774	8577	1378	4176	6973	9767	2560	5350	8138	0923	3707	6489	9268	2045	4820
8	5820	8623	1424	4223	7020	9814	2606	5396	8184	0970	3753	6535	9314	2091	4866
9	5867	8670	1471	4270	7066	9860	2653	5443	8231	1016	3800	6581	9360	2138	4913
10	5914	8717	1518	4316	7113	9907	2699	5489	8277	1063	3846	6628	9407	2184	4959
11	5960	8763	1564	4363	7159	9954	2746	5536	8323	1109	3893	6674	9453	2230	5005
12	6007	8810	1611	4409	7206	0000	2792	5582	8370	1155	3939	6720	9499	2276	5051
13	6054	8857	1658	4456	7252	0047	2839	5629	8416	1202	3985	6767	9546	2323	5097
14	6101	8904	1704	4503	7299	0093	2885	5675	8463	1248	4032	6813	9592	2369	5144
15	6147	8950	1751	4549	7346	0140	2932	5722	8509	1295	4078	6859	9638	2415	5190
16	6194	8997	1798	4596	7392	0186	2978	5768	8556	1341	4124	6906	9685	2461	5236
17	6241	9044	1844	4643	7439	0233	3025	5815	8602	1388	4171	6952	9731	2508	5282
18	6288	9090	1891	4689	7485	0279	3071	5861	8649	1434	4217	6998	9777	2554	5329
19	6334	9137	1938	4736	7532	0326	3118	5907	8695	1480	4264	7045	9823	2600	5375
20	6381	9184	1984	4782	7579	0373	3164	5954	8741	1527	4310	7091	9870	2646	5421
21	6428	9230	2031	4829	7625	0419	3211	6000	8788	1573	4356	7137	9916	2693	5467
22	6475	9277	2077	4876	7672	0466	3257	6047	8834	1620	4403	7184	9962	2739	5514
23	6521	9324	2124	4922	7718	0512	3304	6093	8881	1666	4449	7230	0009	2785	5560
24	6568	9370	2171	4969	7765	0559	3350	6140	8927	1712	4495	7276	0055	2832	5606
25	6615	9417	2217	5016	7811	0605	3397	6186	8974	1759	4542	7323	0101	2878	5652
26	6661	9464	2264	5062	7858	0652	3443	6233	9020	1805	4588	7369	0148	2924	5698
27	6708	9511	2311	5109	7905	0698	3490	6279	9066	1852	4634	7415	0194	2970	5745
28	6755	9557	2357	5155	7951	0745	3536	6326	9113	1898	4681	7462	0240	3017	5791
29	6802	9604	2404	5202	7998	0791	3583	6372	9159	1944	4727	7508	0286	3063	5837
30	6848	9651	2451	5249	8044	0838	3629	6419	9206	1991	4774	7554	0333	3109	5883
31	6895	9697	2497	5295	8091	0885	3676	6465	9252	2037	4820	7601	0379	3155	5929
32	6942	9744	2544	5342	8138	0931	3722	6512	9299	2084	4866	7647	0425	3202	5976
33	6988	9791	2591	5388	8184	0978	3769	6558	9345	2130	4913	7693	0472	3248	6022
34	7035	9837	2637	5435	8231	1024	3815	6605	9392	2176	4959	7739	0518	3294	6068
35	7082	9884	2684	5482	8277	1071	3862	6651	9438	2223	5005	7786	0564	3340	6114
36	7129	9931	2731	5528	8324	1117	3908	6697	9484	2269	5052	7832	0610	3387	6161
37	7175	9977	2777	5575	8379	1164	3955	6744	9531	2316	5098	7878	0657	3433	6207
38	7222	0024	2824	5622	8417	1210	4001	6790	9577	2362	5144	7925	0703	3479	6253
39	7269	0071	2871	5668	8464	1257	4048	6837	9624	2408	5191	7971	0749	3525	6299
40	7316	0117	2917	5715	8510	1303	4094	6883	9670	2455	5237	8017	0796	3572	6345
41	7362	0164	2964	5761	8557	1350	4141	6930	9717	2501	5283	8064	0842	3618	6392
42	7409	0211	3010	5808	8603	1396	4187	6976	9763	2547	5330	8110	0888	3664	0438
43	7456	0257	3057	5855	8650	1443	4234	7023	9809	2594	5376	8156	0934	3710	0484
44	7502	0304	3104	5901	8696	1489	4280	7069	9856	2640	5423	8203	0981	3757	6530
45	7549	0351	3150	5948	8743	1536	4327	7116	9902	2687	5469	8249	1027	3803	6576
46	7596	0398	3197	5994	8790	1583	4373	7162	9949	2733	5515	8295	1073	3849	6623
47	7643	0444	3244	6041	8836	1629	4420	7209	9995	2779	5562	8342	1120	3895	6669
48	7689	0491	3290	6088	8883	1676	4466	7255	0041	2826	5608	8388	1166	3942	6715
49	7736	0538	3337	6134	8929	1722	4513	7301	0088	2872	5654	8434	1212	3988	6761
50	7783	0584	3384	6181	8976	1769	4559	7348	0134	2919	5701	8481	1258	4034	6808
51	7829	0631	3430	6227	9022	1815	4606	7394	0181	2965	5747	8527	1305	4080	6854
52	7876	0678	3477	6274	9069	1862	4652	7441	0227	3011	5793	8573	1351	4127	6900
53	7923	0724	3523	6321	9116	1908	4699	7487	0274	3058	5840	8620	1397	4173	6946
54	7970	0771	3570	6367	9162	1955	4745	7534	0320	3104	5886	8666	1443	4219	6992
55	8016	0818	3617	6414	9209	2001	4792	7580	0366	3150	5932	8712	1490	4265	7039
56	8063	0864	3663	6460	9255	2048	4838	7627	0413	3197	5979	8758	1536	4311	7085
57	8110	0911	3710	6507	9302	2094	4885	7673	0459	3243	6025	8805	1582	4358	7131
58	8156	0958	3757	6554	9348	2141	4931	7720	0506	3290	6071	8851	1629	4404	7177
59	8203	1004	3803	6600	9395	2187	4978	7766	0552	3336	6118	8897	1675	4450	7223
60	8250	1051	3850	6647	9441	2234	5024	7812	0599	3382	6164	8944	1721	4496	7270
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
9.959	9.959	9.959	9.959	9.959	9.959	9.959	9.959	9.959	9.959	9.959	9.959	9.959	9.959	9.959	″
8815	8246	7676	7106	6535	5964	5393	4821	4248	3675	3102	2528	1954	1380	0805	60
8806	8236	7667	7096	6526	5955	5383	4811	4239	3666	3093	2519	1945	1370	0795	59
8796	8227	7657	7087	6516	5945	5374	4802	4229	3656	3083	2509	1935	1360	0785	58
8787	8217	7648	7077	6507	5936	5364	4792	4220	3647	3073	2500	1926	1351	0776	57
8777	8208	7638	7068	6497	5926	5355	4783	4210	3637	3064	2490	1916	1341	0766	56
8768	8198	7629	7058	6488	5917	5345	4773	4201	3628	3054	2481	1906	1332	0757	55
8758	8189	7619	7049	6478	5907	5335	4763	4191	3618	3045	2471	1897	1322	0747	54
8749	8179	7610	7039	6469	5898	5326	4754	4181	3609	3035	2461	1887	1313	0737	53
8739	8170	7600	7030	6459	5888	5316	4744	4172	3599	3026	2452	1878	1303	0728	52
8730	8160	7591	7020	6450	5878	5307	4735	4162	3589	3016	2442	1868	1293	0718	51
8720	8151	7581	7011	6440	5869	5297	4725	4153	3580	3007	2433	1859	1284	0709	50
8711	8141	7572	7001	6431	5859	5288	4716	4143	3570	2997	2423	1849	1274	0699	49
8701	8132	7562	6992	6421	5850	5278	4706	4134	3561	2987	2414	1839	1265	0690	48
8692	8122	7553	6982	6412	5840	5269	4697	4124	3551	2978	2404	1830	1255	0680	47
8682	8113	7543	6973	6402	5831	5259	4687	4115	3542	2968	2394	1820	1246	0670	46
8673	8103	7534	6963	6393	5821	5250	4678	4105	3532	2959	2385	1811	1236	0661	45
8663	8094	7524	6954	6383	5812	5240	4668	4096	3523	2949	2375	1801	1226	0651	44
8654	8084	7515	6944	6373	5802	5231	4659	4086	3513	2940	2366	1791	1217	0642	43
8644	8075	7505	6935	6364	5793	5221	4649	4076	3504	2930	2356	1782	1207	0632	42
8635	8065	7496	6925	6354	5783	5212	4639	4067	3494	2921	2347	1772	1198	0622	41
8625	8056	7486	6916	6345	5774	5202	4630	4057	3484	2911	2337	1763	1188	0613	40
8616	8046	7477	6906	6335	5764	5193	4620	4048	3475	2901	2328	1753	1178	0603	39
8606	8037	7467	6897	6326	5755	5183	4611	4038	3465	2892	2318	1744	1169	0594	38
8597	8027	7458	6887	6316	5745	5173	4601	4029	3456	2882	2308	1734	1159	0584	37
8587	8018	7448	6878	6307	5736	5164	4592	4019	3446	2873	2299	1724	1150	0574	36
8578	8008	7439	6868	6297	5726	5154	4582	4010	3437	2863	2289	1715	1140	0565	35
8568	7999	7429	6859	6288	5717	5145	4573	4000	3427	2854	2280	1705	1131	0555	34
8559	7989	7420	6849	6278	5707	5135	4563	3991	3418	2844	2270	1696	1121	0546	33
8549	7980	7410	6840	6269	5698	5126	4554	3981	3408	2834	2261	1686	1111	0536	32
8540	7970	7401	6830	6259	5688	5116	4544	3971	3398	2825	2251	1677	1102	0526	31
8530	7961	7391	6821	6250	5678	5107	4535	3962	3389	2815	2241	1667	1092	0517	30
8521	7951	7382	6811	6240	5669	5097	4525	3952	3379	2806	2232	1657	1083	0507	29
8512	7942	7372	6802	6231	5659	5088	4515	3943	3370	2796	2222	1648	1073	0498	28
8502	7932	7362	6792	6221	5650	5078	4506	3933	3360	2787	2213	1638	1063	0488	27
8493	7923	7353	6783	6212	5640	5069	4496	3924	3351	2777	2203	1629	1054	0479	26
8483	7913	7343	6773	6202	5631	5059	4487	3914	3341	2768	2194	1619	1044	0469	25
8474	7904	7334	6764	6193	5621	5050	4477	3905	3332	2758	2184	1610	1035	0459	24
8464	7894	7324	6754	6183	5612	5040	4468	3895	3322	2748	2174	1600	1025	0450	23
8455	7885	7315	6745	6174	5602	5030	4458	3886	3312	2739	2165	1590	1015	0440	22
8445	7876	7305	6735	6164	5593	5021	4449	3876	3303	2729	2155	1581	1006	0431	21
8436	7866	7296	6725	6155	5583	5011	4439	3866	3293	2720	2146	1571	0996	0421	20
8426	7857	7286	6716	6145	5574	5002	4430	3857	3284	2710	2136	1562	0987	0411	19
8417	7847	7277	6706	6136	5564	4992	4420	3847	3274	2701	2127	1552	0977	0402	18
8407	7838	7267	6697	6126	5555	4983	4411	3838	3265	2691	2117	1542	0968	0392	17
8398	7828	7258	6687	6116	5545	4973	4401	3828	3255	2681	2107	1533	0958	0383	16
8388	7819	7248	6678	6107	5536	4964	4391	3819	3246	2672	2098	1523	0948	0373	15
8379	7809	7239	6668	6097	5526	4954	4382	3809	3236	2662	2088	1514	0939	0363	14
8369	7800	7229	6659	6088	5517	4945	4372	3800	3226	2653	2079	1504	0929	0354	13
8360	7790	7220	6649	6078	5507	4935	4363	3790	3217	2643	2069	1495	0920	0344	12
8350	7781	7210	6640	6069	5497	4926	4353	3781	3207	2634	2060	1485	0910	0335	11
8341	7771	7201	6630	6059	5488	4916	4344	3771	3198	2624	2050	1475	0900	0325	10
8331	7762	7191	6621	6050	5478	4907	4334	3761	3188	2615	2040	1466	0891	0315	9
8322	7752	7182	6611	6040	5469	4897	4325	3752	3179	2605	2031	1456	0881	0306	8
8312	7743	7172	6602	6031	5459	4887	4315	3742	3169	2595	2021	1447	0872	0296	7
8303	7733	7163	6592	6021	5450	4878	4306	3733	3160	2586	2012	1437	0862	0287	6
8293	7724	7153	6583	6012	5440	4868	4296	3723	3150	2576	2002	1428	0853	0277	5
8284	7714	7144	6573	6002	5431	4859	4286	3714	3140	2567	1993	1418	0843	0267	4
8274	7705	7134	6564	5993	5421	4849	4277	3704	3131	2557	1983	1408	0833	0258	3
8265	7695	7125	6554	5983	5412	4840	4267	3695	3121	2548	1973	1399	0824	0248	2
8255	7686	7115	6545	5974	5402	4830	4258	3685	3112	2538	1964	1389	0814	0239	1
8246	7676	7106	6535	5964	5393	4821	4248	3675	3102	2528	1954	1380	0805	0229	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

24 Deg. Tangent

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9.653	9.654	9.654	9.654	9.655	9.655	9.655	9.656	9.656	9.656	9.657	9.657	9.657	9.658	9.658
0	6631	0004	3375	6744	0112	3477	6841	0204	3564	6923	0280	3636	6989	0341	3692
1	6688	0060	3431	6800	0168	3533	6897	0260	3620	6979	0336	3692	7045	0397	3748
2	6744	0116	3487	6856	0224	3589	6953	0316	3676	7035	0392	3748	7101	0453	3803
3	6800	0173	3543	6912	0280	3646	7009	0372	3732	7091	0448	3803	7157	0509	3859
4	6856	0229	3600	6969	0336	3702	7066	0428	3788	7147	0504	3859	7213	0565	3915
5	6912	0285	3656	7025	0392	3758	7122	0484	3844	7203	0560	3915	7269	0621	3971
6	6969	0341	3712	7081	0448	3814	7178	0540	3900	7259	0616	3971	7325	0677	4027
7	7025	0397	3768	7137	0504	3870	7234	0596	3956	7315	0672	4027	7381	0732	4083
8	7081	0454	3824	7193	0560	3926	7290	0652	4012	7371	0728	4083	7436	0788	4138
9	7137	0510	3880	7249	0617	3982	7346	0708	4068	7427	0784	4139	7492	0844	4194
10	7194	0566	3937	7305	0673	4038	7402	0764	4124	7483	0840	4195	7548	0900	4250
11	7250	0622	3993	7362	0729	4094	7458	0820	4180	7539	0896	4251	7604	0956	4306
12	7306	0678	4049	7418	0785	4150	7514	0876	4236	7595	0951	4307	7660	1012	4362
13	7362	0734	4105	7474	0841	4206	7570	0932	4292	7651	1007	4362	7716	1068	4418
14	7418	0791	4161	7530	0897	4262	7626	0988	4348	7707	1063	4418	7772	1123	4473
15	7475	0847	4217	7586	0953	4318	7682	1044	4404	7763	1119	4474	7828	1179	4529
16	7531	0903	4274	7642	1009	4375	7738	1100	4460	7818	1175	4530	7883	1235	4585
17	7587	0959	4330	7698	1065	4431	7794	1156	4516	7874	1231	4586	7939	1291	4641
18	7643	1015	4386	7754	1121	4487	7850	1212	4572	7930	1287	4642	7995	1347	4697
19	7699	1072	4442	7811	1178	4543	7906	1268	4628	7986	1343	4698	8051	1403	4752
20	7756	1128	4498	7867	1234	4599	7962	1324	4684	8042	1399	4754	8107	1458	4808
21	7812	1184	4554	7923	1290	4655	8018	1380	4740	8098	1455	4810	8163	1514	4864
22	7868	1240	4610	7979	1346	4711	8074	1436	4796	8154	1511	4866	8219	1570	4920
23	7924	1296	4667	8035	1402	4767	8130	1492	4852	8210	1567	4921	8275	1626	4976
24	7981	1353	4723	8091	1458	4823	8186	1548	4908	8266	1623	4977	8330	1682	5032
25	8037	1409	4779	8147	1514	4879	8242	1604	4964	8322	1679	5033	8386	1738	5087
26	8093	1465	4835	8204	1570	4935	8299	1660	5020	8378	1734	5089	8442	1794	5143
27	8149	1521	4891	8260	1626	4991	8355	1716	5076	8434	1790	5145	8498	1849	5199
28	8205	1577	4947	8316	1682	5047	8411	1772	5132	8490	1846	5201	8554	1905	5255
29	8262	1633	5004	8372	1739	5103	8467	1828	5188	8546	1902	5257	8610	1961	5311
30	8318	1690	5060	8428	1795	5160	8523	1884	5244	8602	1958	5313	8666	2017	5366
31	8374	1746	5116	8484	1851	5216	8579	1940	5300	8658	2014	5369	8722	2073	5422
32	8430	1802	5172	8540	1907	5272	8635	1996	5356	8714	2070	5425	8777	2129	5478
33	8486	1858	5228	8596	1963	5328	8691	2052	5412	8770	2126	5480	8833	2184	5534
34	8543	1914	5284	8653	2019	5384	8747	2108	5468	8826	2182	5536	8889	2240	5590
35	8599	1971	5340	8709	2075	5440	8803	2164	5524	8882	2238	5592	8945	2296	5645
36	8655	2027	5397	8765	2131	5496	8859	2220	5580	8938	2294	5648	9001	2352	5701
37	8711	2083	5453	8821	2187	5552	8915	2276	5636	8994	2350	5704	9057	2408	5757
38	8768	2139	5509	8877	2243	5608	8971	2332	5692	9049	2406	5760	9113	2464	5813
39	8824	2195	5565	8933	2299	5664	9027	2388	5748	9105	2461	5816	9168	2519	5869
40	8880	2251	5621	8989	2356	5720	9083	2444	5804	9161	2517	5872	9224	2575	5924
41	8936	2308	5677	9045	2412	5776	9139	2500	5860	9217	2573	5928	9280	2631	5980
42	8992	2364	5733	9101	2468	5832	9195	2556	5916	9273	2629	5983	9336	2687	6036
43	9049	2420	5790	9158	2524	5888	9251	2612	5972	9329	2685	6039	9392	2743	6092
44	9105	2476	5846	9214	2580	5944	9307	2668	6028	9385	2741	6095	9448	2799	6148
45	9161	2532	5902	9270	2636	6000	9363	2724	6084	9441	2797	6151	9504	2854	6203
46	9217	2588	5958	9326	2692	6057	9419	2780	6139	9497	2853	6207	9560	2910	6259
47	9273	2645	6014	9382	2748	6113	9475	2836	6195	9553	2909	6263	9615	2966	6315
48	9330	2701	6070	9438	2804	6169	9531	2892	6251	9609	2965	6319	9671	3022	6371
49	9386	2757	6127	9494	2860	6225	9587	2948	6307	9665	3021	6375	9727	3078	6427
50	9442	2813	6183	9550	2916	6281	9643	3004	6363	9721	3077	6431	9783	3134	6483
51	9498	2869	6239	9607	2973	6337	9699	3060	6419	9777	3132	6486	9839	3189	6538
52	9554	2926	6295	9663	3029	6393	9755	3116	6475	9833	3188	6542	9895	3245	6594
53	9611	2982	6351	9719	3085	6449	9811	3172	6531	9889	3244	6598	9951	3301	6650
54	9667	3038	6407	9775	3141	6505	9867	3228	6587	9945	3300	6654	0006	3357	6706
55	9723	3094	6463	9831	3197	6561	9923	3284	6643	0001	3356	6710	0062	3413	6762
56	9779	3150	6520	9887	3253	6617	9980	3340	6699	0056	3412	6766	0118	3469	6817
57	9835	3206	6576	9943	3309	6673	0036	3396	6755	0112	3468	6822	0174	3524	6873
58	9892	3263	6632	9999	3365	6729	0092	3452	6811	0168	3524	6878	0230	3580	6929
59	9948	3319	6688	0055	3421	6785	0148	3508	6867	0224	3580	6934	0286	3636	6985
60	0004	3375	6744	0112	3477	6841	0204	3564	6923	0280	3636	6989	0341	3692	7041
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Tangent Deg. 65

24 Deg. Co-Tangent

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
10.346	10.345	10.345	10.345	10.344	10.344	10.344	10.343	10.343	10.343	10.342	10.342	10.342	10.341	10.341	″
3369	9996	6625	3256	9888	6523	3159	9796	6436	3077	9720	6364	3011	9659	6308	60
3312	9940	6569	3200	9832	6467	3103	9740	6380	3021	9664	6308	2955	9603	6252	59
3256	9884	6513	3144	9776	6411	3047	9684	6324	2965	9608	6252	2899	9547	6197	58
3200	9827	6457	3088	9720	6354	2991	9628	6268	2909	9552	6197	2843	9491	6141	57
3144	9771	6400	3031	9664	6298	2934	9572	6212	2853	9496	6141	2787	9435	6085	56
3088	9715	6344	2975	9608	6242	2878	9516	6156	2797	9440	6085	2731	9379	6029	55
3031	9659	6288	2919	9552	6186	2822	9460	6100	2741	9384	6029	2675	9323	5973	54
2975	9603	6232	2863	9496	6130	2766	9404	6044	2685	9328	5973	2619	9268	5917	53
2919	9546	6176	2807	9440	6074	2710	9348	5988	2629	9272	5917	2564	9212	5862	52
2863	9490	6120	2751	9383	6018	2654	9292	5932	2573	9216	5861	2508	9156	5806	51
2806	9434	6063	2695	9327	5962	2598	9236	5876	2517	9160	5805	2452	9100	5750	50
2750	9378	6007	2638	9271	5906	2542	9180	5820	2461	9104	5749	2396	9044	5694	49
2694	9322	5951	2582	9215	5850	2486	9124	5764	2405	9049	5693	2340	8988	5638	48
2638	9266	5895	2526	9159	5794	2430	9068	5708	2349	8993	5638	2284	8932	5582	47
2582	9209	5839	2470	9103	5738	2374	9012	5652	2293	8937	5582	2228	8877	5527	46
2525	9153	5783	2414	9047	5682	2318	8956	5596	2237	8881	5526	2172	8821	5471	45
2469	9097	5726	2358	8991	5625	2262	8900	5540	2182	8825	5470	2117	8765	5415	44
2413	9041	5670	2302	8935	5569	2206	8844	5484	2126	8769	5414	2061	8709	5359	43
2357	8985	5614	2246	8879	5513	2150	8788	5428	2070	8713	5358	2005	8653	5303	42
2301	8928	5558	2189	8822	5457	2094	8732	5372	2014	8657	5302	1949	8597	5248	41
2244	8872	5502	2133	8766	5401	2038	8676	5316	1958	8601	5246	1893	8542	5192	40
2188	8816	5446	2077	8710	5345	1982	8620	5260	1902	8545	5190	1837	8486	5136	39
2132	8760	5390	2021	8654	5289	1926	8564	5204	1846	8489	5134	1781	8430	5080	38
2076	8704	5333	1965	8598	5233	1870	8508	5148	1790	8433	5079	1725	8374	5024	37
2019	8647	5277	1909	8542	5177	1814	8452	5092	1734	8377	5023	1670	8318	4968	36
1963	8591	5221	1853	8486	5121	1758	8396	5036	1678	8321	4967	1614	8262	4913	35
1907	8535	5165	1796	8430	5065	1701	8340	4980	1622	8266	4911	1558	8206	4857	34
1851	8479	5109	1740	8374	5009	1645	8284	4924	1566	8210	4855	1502	8151	4801	33
1795	8423	5053	1684	8318	4953	1589	8228	4868	1510	8154	4799	1446	8095	4745	32
1738	8367	4996	1628	8261	4897	1533	8172	4812	1454	8098	4743	1390	8039	4689	31
1682	8310	4940	1572	8205	4840	1477	8116	4756	1398	8042	4687	1334	7983	4634	30
1626	8254	4884	1516	8149	4784	1421	8060	4700	1342	7986	4631	1278	7927	4578	29
1570	8198	4828	1460	8093	4728	1365	8004	4644	1286	7930	4575	1223	7871	4522	28
1514	8142	4772	1404	8037	4672	1309	7948	4588	1230	7874	4520	1167	7816	4466	27
1457	8086	4716	1347	7981	4616	1253	7892	4532	1174	7818	4464	1111	7760	4410	26
1401	8029	4660	1291	7925	4560	1197	7836	4476	1118	7762	4408	1055	7704	4355	25
1345	7973	4603	1235	7869	4504	1141	7780	4420	1062	7706	4352	0999	7648	4299	24
1289	7917	4547	1179	7813	4448	1085	7724	4364	1006	765	4296	0943	7592	4243	23
1232	7861	4491	1123	7757	4392	1029	7668	4308	0951	7594	4240	0887	7536	4187	22
1176	7805	4435	1067	7701	4336	0973	7612	4252	0895	7539	4184	0832	7481	4131	21
1120	7749	4379	1011	7644	4280	0917	7556	4196	0839	7483	4128	0776	7425	4076	20
1064	7692	4323	0955	7588	4224	0861	7500	4140	0783	7427	4072	0720	7369	4020	19
1008	7636	4267	0899	7532	4168	0805	7444	4084	0727	7371	4017	0664	7313	3964	18
0951	7580	4210	0842	7476	4112	0749	7388	4028	0671	7315	3961	0608	7257	3908	17
0895	7524	4154	0786	7420	4056	0693	7332	3972	0615	7259	3905	0552	7201	3852	16
0839	7468	4098	0730	7364	4000	0637	7276	3916	0559	7203	3849	0496	7146	3797	15
0783	7412	4042	0674	7308	3943	0581	7220	3861	0503	7147	3793	0440	7090	3741	14
0727	7355	3986	0618	7252	3887	0525	7164	3805	0447	7091	3737	0385	7034	3685	13
0670	7299	3930	0562	7196	3831	0469	7108	3749	0391	7035	3681	0329	6978	3629	12
0614	7243	3873	0506	7140	3775	0413	7052	3693	0335	6979	3625	0273	6922	3573	11
0558	7187	3817	0450	7084	3719	0357	6996	3637	0279	6923	3569	0217	6866	3517	10
0502	7131	3761	0393	7027	3663	0301	6940	3581	0223	6868	3514	0161	6811	3462	9
0446	7074	3705	0337	6971	3607	0245	6884	3525	0167	6812	3458	0105	6755	3406	8
0389	7018	3649	0281	6915	3551	0189	6828	3469	0111	6756	3402	0049	6699	3350	7
0333	6962	3593	0225	6859	3495	0133	6772	3413	0055	6700	3346	9994	6643	3294	6
0277	6906	3537	0169	6803	3439	0077	6716	3357	9999	6644	3290	9938	6587	3238	5
0221	6850	3480	0113	6747	3383	0020	6660	3301	9944	6588	3234	9882	6531	3183	4
0165	6794	3424	0057	6691	3327	9964	6604	3245	9888	6532	3178	9826	6476	3127	3
0108	6737	3368	0001	6635	3271	9908	6548	3189	9832	6476	3122	9770	6420	3071	2
0052	6681	3312	9945	6579	3215	9852	6492	3133	9776	6420	3066	9714	6364	3015	1
9996	6625	3256	9888	6523	3159	9796	6436	3077	9720	6364	3011	9659	6308	2959	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Tangent Deg. 65

24 Deg. Sine

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 617	9. 618	9. 618	9. 618	9. 618	9. 619	9. 619	9. 619	9. 619	9. 620	9. 620	9. 620	9. 621	9. 621	9. 621
0	7270	0041	2809	5576	8341	1103	3864	6622	9378	2132	4884	7634	0382	3127	5871
1	7316	0087	2856	5622	8387	1149	3910	6668	9424	2178	4930	7680	0427	3173	5916
2	7362	0133	2902	5668	8433	1195	3956	6714	9470	2224	4976	7725	0473	3219	5962
3	7408	0179	2948	5715	8479	1241	4002	6760	9516	2270	5022	7771	0519	3264	6008
4	7454	0225	2994	5761	8525	1287	4048	6806	9562	2316	5067	7817	0565	3310	6053
5	7501	0271	3040	5807	8571	1333	4094	6852	9608	2362	5113	7863	0610	3356	6099
6	7547	0318	3086	5853	8617	1379	4140	6898	9654	2407	5159	7909	0656	3402	6145
7	7593	0364	3132	5899	8663	1426	4186	6944	9700	2453	5205	7955	0702	3447	6191
8	7639	0410	3179	5945	8709	1472	4232	6990	9745	2499	5251	8000	0748	3493	6236
9	7685	0456	3225	5991	8755	1518	4278	7036	9791	2545	5297	8046	0793	3539	6282
10	7732	0502	3271	6037	8801	1564	4324	7081	9837	2591	5342	8092	0839	3584	6328
11	7778	0548	3317	6083	8847	1610	4370	7127	9883	2637	5388	8138	0885	3630	6373
12	7824	0595	3363	6129	8894	1656	4416	7173	9929	2683	5434	8184	0931	3676	6419
13	7870	0641	3409	6175	8940	1702	4462	7219	9975	2729	5480	8229	0977	3722	6465
14	7916	0687	3455	6222	8986	1748	4508	7265	0021	2774	5526	8275	1022	3767	6510
15	7963	0733	3501	6268	9032	1794	4553	7311	0067	2820	5572	8321	1068	3813	6556
16	8009	0779	3547	6314	9078	1840	4599	7357	0113	2866	5618	8367	1114	3859	6602
17	8055	0825	3594	6360	9124	1886	4645	7403	0159	2912	5663	8413	1160	3905	6648
18	8101	0871	3640	6406	9170	1932	4691	7449	0205	2958	5709	8458	1205	3950	6693
19	8147	0918	3686	6452	9216	1978	4737	7495	0250	3004	5755	8504	1251	3996	6739
20	8193	0964	3732	6498	9262	2024	4783	7541	0296	3050	5801	8550	1297	4042	6785
21	8240	1010	3778	6544	9308	2070	4829	7587	0342	3096	5847	8596	1343	4088	6830
22	8286	1056	3824	6590	9354	2116	4875	7633	0388	3141	5893	8642	1388	4133	6876
23	8332	1102	3870	6636	9400	2162	4921	7679	0434	3187	5938	8687	1434	4179	6922
24	8378	1148	3916	6682	9446	2208	4967	7725	0480	3233	5984	8733	1480	4225	6967
25	8424	1195	3963	6728	9492	2254	5013	7771	0526	3279	6030	8779	1526	4270	7013
26	8471	1241	4009	6774	9538	2300	5059	7817	0572	3325	6076	8825	1572	4316	7059
27	8517	1287	4055	6821	9584	2346	5105	7862	0618	3371	6122	8871	1617	4362	7104
28	8563	1333	4101	6867	9630	2392	5151	7908	0664	3417	6168	8916	1663	4408	7150
29	8609	1379	4147	6913	9676	2438	5197	7954	0709	3462	6213	8962	1709	4453	7196
30	8655	1425	4193	6959	9722	2484	5243	8000	0755	3508	6259	9008	1755	4499	7242
31	8702	1471	4239	7005	9768	2530	5289	8046	0801	3554	6305	9054	1800	4545	7287
32	8748	1518	4285	7051	9814	2576	5335	8092	0847	3600	6351	9100	1846	4591	7333
33	8794	1564	4331	7097	9860	2622	5381	8138	0893	3646	6397	9145	1892	4636	7379
34	8840	1610	4378	7143	9907	2668	5427	8184	0939	3692	6442	9191	1938	4682	7424
35	8886	1656	4424	7189	9953	2714	5473	8230	0985	3738	6488	9237	1983	4728	7470
36	8932	1702	4470	7235	9999	2760	5519	8276	1031	3784	6534	9283	2029	4773	7516
37	8979	1748	4516	7281	0045	2806	5565	8322	1077	3829	6580	9328	2075	4819	7561
38	9025	1794	4562	7327	0091	2852	5611	8368	1123	3875	6626	9374	2121	4865	7607
39	9071	1841	4608	7373	0137	2898	5657	8414	1168	3921	6672	9420	2166	4911	7653
40	9117	1887	4654	7420	0183	2944	5703	8460	1214	3967	6717	9466	2212	4956	7698
41	9163	1933	4700	7466	0229	2990	5749	8506	1260	4013	6763	9512	2258	5002	7744
42	9210	1979	4746	7512	0275	3036	5795	8551	1306	4059	6809	9557	2304	5048	7790
43	9256	2025	4793	7558	0321	3082	5841	8597	1352	4105	6855	9603	2349	5093	7835
44	9302	2071	4839	7604	0367	3128	5887	8643	1398	4150	6901	9649	2395	5139	7881
45	9348	2117	4885	7650	0413	3174	5933	8689	1444	4196	6947	9695	2441	5185	7927
46	9394	2164	4931	7696	0459	3220	5979	8735	1490	4242	6992	9741	2487	5231	7973
47	9440	2210	4977	7742	0505	3266	6025	8781	1536	4288	7038	9786	2532	5276	8018
48	9487	2256	5023	7788	0551	3312	6070	8827	1581	4334	7084	9832	2578	5322	8064
49	9533	2302	5069	7834	0597	3358	6116	8873	1627	4380	7130	9878	2624	5368	8110
50	9579	2348	5115	7880	0643	3404	6162	8919	1673	4426	7176	9924	2670	5413	8155
51	9625	2394	5161	7926	0689	3450	6208	8965	1719	4471	7221	9969	2715	5459	8201
52	9671	2440	5207	7972	0735	3496	6254	9011	1765	4517	7267	0015	2761	5505	8247
53	9717	2487	5254	8018	0781	3542	6300	9057	1811	4563	7313	0061	2807	5551	8292
54	9764	2533	5300	8064	0827	3588	6346	9103	1857	4609	7359	0107	2853	5596	8338
55	9810	2579	5346	8111	0873	3634	6392	9149	1903	4655	7405	0153	2898	5642	8384
56	9856	2625	5392	8157	0919	3680	6438	9194	1949	4701	7451	0198	2944	5688	8429
57	9902	2671	5438	8203	0965	3726	6484	9240	1994	4746	7496	0244	2990	5733	8475
58	9948	2717	5484	8249	1011	3772	6530	9286	2040	4792	7542	0290	3036	5779	8521
59	9994	2763	5530	8295	1057	3818	6576	9332	2086	4838	7588	0336	3081	5825	8566
60	0041	2809	5576	8341	1103	3864	6622	9378	2132	4884	7634	0382	3127	5871	8612
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Sine Deg. 65

24 Deg. Co-Sine

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
9. 959	9. 958	9. 958	9. 958	9. 958	9. 958	9. 958	9. 958	9. 958	9. 958	9. 958	9. 958	9. 958	9. 958	9. 958	″
0229	9653	9077	8500	7923	7345	6767	6188	5609	5030	4450	3869	3288	2707	2125	60
0219	9644	9067	8490	7913	7335	6757	6178	5599	5020	4440	3860	3279	2697	2116	59
0210	9634	9058	8481	7903	7326	6747	6169	5590	5010	4430	3850	3269	2688	2106	58
0200	9624	9048	8471	7894	7316	6738	6159	5580	5001	4421	3840	3259	2678	2096	57
0191	9615	9038	8461	7884	7306	6728	6150	5570	4991	4411	3831	3250	2668	2087	56
0181	9605	9029	8452	7875	7297	6719	6140	5561	4981	4401	3821	3240	2659	2077	55
0172	9596	9019	8442	7865	7287	6709	6130	5551	4972	4392	3811	3230	2649	2067	54
0162	9586	9009	8433	7855	7277	6699	6121	5541	4962	4382	3802	3221	2639	2058	53
0152	9576	9000	8423	7846	7268	6690	6111	5532	4952	4372	3792	3211	2630	2048	52
0143	9567	8990	8413	7836	7258	6680	6101	5522	4943	4363	3782	3201	2620	2038	51
0133	9557	8981	8404	7826	7249	6670	6092	5513	4933	4353	3772	3192	2610	2028	50
0124	9548	8971	8394	7817	7239	6661	6082	5503	4923	4343	3763	3182	2601	2019	49
0114	9538	8961	8384	7807	7229	6651	6072	5493	4914	4334	3753	3172	2591	2009	48
0104	9528	8952	8375	7798	7220	6641	6063	5484	4904	4324	3743	3163	2581	1999	47
0095	9519	8942	8365	7788	7210	6632	6053	5474	4894	4314	3734	3153	2571	1990	46
0085	9509	8933	8356	7778	7200	6622	6043	5464	4885	4305	3724	3143	2562	1980	45
0076	9499	8923	8346	7769	7191	6612	6034	5455	4875	4295	3714	3133	2552	1970	44
0066	9490	8913	8336	7759	7181	6603	6024	5445	4865	4285	3705	3124	2542	1960	43
0056	9480	8904	8327	7749	7172	6593	6014	5435	4856	4276	3695	3114	2533	1951	42
0047	9471	8894	8317	7740	7162	6584	6005	5426	4846	4266	3685	3104	2523	1941	41
0037	9461	8885	8308	7730	7152	6574	5995	5416	4836	4256	3676	3095	2513	1931	40
0028	9451	8875	8298	7720	7143	6564	5986	5406	4827	4247	3666	3085	2504	1922	39
0018	9442	8865	8288	7711	7133	6555	5976	5397	4817	4237	3656	3075	2494	1912	38
0008	9432	8856	8279	7701	7123	6545	5966	5387	4807	4227	3647	3066	2484	1902	37
9999	9423	8846	8269	7692	7114	6535	5957	5377	4798	4218	3637	3056	2474	1893	36
9989	9413	8836	8259	7682	7104	6526	5947	5368	4788	4208	3627	3046	2465	1883	35
9980	9403	8827	8250	7672	7094	6516	5937	5358	4778	4198	3618	3037	2455	1873	34
9970	9394	8817	8240	7663	7085	6506	5928	5348	4769	4189	3608	3027	2445	1863	33
9960	9384	8808	8231	7653	7075	6497	5918	5339	4759	4179	3598	3017	2436	1854	32
9951	9375	8798	8221	7643	7066	6487	5908	5329	4749	4169	3589	3008	2426	1844	31
9941	9365	8788	8211	7634	7056	6477	5899	5319	4740	4159	3579	2998	2416	1834	30
9932	9355	8779	8202	7624	7046	6468	5889	5310	4730	4150	3569	2988	2407	1825	29
9922	9346	8769	8192	7615	7037	6458	5879	5300	4720	4140	3560	2978	2397	1815	28
9912	9336	8760	8182	7605	7027	6449	5870	5290	4711	4130	3550	2969	2387	1805	27
9903	9327	8750	8173	7595	7017	6439	5860	5281	4701	4121	3540	2959	2378	1796	26
9893	9317	8740	8163	7586	7008	6429	5850	5271	4691	4111	3530	2949	2368	1786	25
9884	9307	8731	8154	7576	6998	6420	5841	5261	4682	4101	3521	2940	2358	1776	24
9874	9298	8721	8144	7566	6988	6410	5831	5252	4672	4092	3511	2930	2348	1766	23
9864	9288	8711	8134	7557	6979	6400	5821	5242	4662	4082	3501	2920	2339	1757	22
9855	9279	8702	8125	7547	6969	6391	5812	5232	4653	4072	3492	2911	2329	1747	21
9845	9269	8692	8115	7538	6960	6381	5802	5223	4643	4063	3482	2901	2319	1737	20
9836	9259	8683	8105	7528	6950	6371	5792	5213	4633	4053	3472	2891	2310	1728	19
9826	9250	8673	8096	7518	6940	6362	5783	5203	4624	4043	3463	2882	2300	1718	18
9816	9240	8663	8086	7509	6931	6352	5773	5194	4614	4034	3453	2872	2290	1708	17
9807	9230	8654	8077	7499	6921	6342	5764	5184	4604	4024	3443	2862	2281	1699	16
9797	9221	8644	8067	7489	6911	6333	5754	5174	4595	4014	3434	2852	2271	1689	15
9788	9211	8635	8057	7480	6902	6323	5744	5165	4585	4005	3424	2843	2261	1679	14
9778	9202	8625	8048	7470	6892	6314	5735	5155	4575	3995	3414	2833	2251	1669	13
9768	9192	8615	8038	7460	6882	6304	5725	5146	4566	3985	3405	2823	2242	1660	12
9759	9182	8606	8029	7451	6873	6294	5715	5136	4556	3976	3395	2814	2232	1650	11
9749	9173	8596	8019	7441	6863	6285	5706	5126	4546	3966	3385	2804	2222	1640	10
9740	9163	8586	8009	7432	6854	6275	5696	5117	4537	3956	3376	2794	2213	1631	9
9730	9154	8577	8000	7422	6844	6265	5686	5107	4527	3947	3366	2785	2203	1621	8
9720	9144	8567	7990	7412	6834	6256	5677	5097	4517	3937	3356	2775	2193	1611	7
9711	9134	8558	7980	7403	6825	6246	5667	5088	4508	3927	3347	2765	2184	1601	6
9701	9125	8548	7971	7393	6815	6236	5657	5078	4498	3918	3337	2756	2174	1592	5
9692	9115	8538	7961	7383	6805	6227	5648	5068	4488	3908	3327	2746	2164	1582	4
9682	9106	8529	7952	7374	6796	6217	5638	5059	4479	3898	3317	2736	2154	1572	3
9672	9096	8519	7942	7364	6786	6207	5628	5049	4469	3889	3308	2727	2145	1563	2
9663	9086	8510	7932	7355	6776	6198	5619	5039	4459	3879	3298	2717	2135	1553	1
9653	9077	8500	7923	7345	6767	6188	5609	5030	4450	3869	3288	2707	2125	1543	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Sine Deg. 65

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 658	9. 659	9. 659	9. 659	9. 660	9. 660	9. 660	9. 661	9. 661	9. 661	9. 662	9. 662	9. 662	9. 663	9. 663
0	7041	0387	3733	7076	0418	3758	7097	0434	3769	7103	0434	3765	7093	0420	3745
1	7096	0443	3788	7132	0474	3814	7153	0489	3825	7158	0490	3820	7149	0475	3801
2	7152	0499	3844	7188	0530	3870	7208	0545	3880	7214	0545	3876	7204	0531	3856
3	7208	0555	3900	7243	0585	3925	7264	0601	3936	7269	0601	3931	7259	0586	3911
4	7264	0611	3956	7299	0641	3981	7319	0656	3991	7325	0656	3987	7315	0642	3967
5	7319	0666	4011	7355	0697	4037	7375	0712	4047	7380	0712	4042	7370	0697	4022
6	7375	0722	4067	7411	0752	4092	7431	0767	4102	7436	0767	4098	7426	0753	4078
7	7431	0778	4123	7466	0808	4148	7486	0823	4158	7491	0823	4153	7481	0808	4133
8	7487	0834	4179	7522	0864	4204	7542	0879	4214	7547	0879	4208	7537	0863	4188
9	7543	0889	4234	7578	0919	4259	7598	0934	4269	7602	0934	4264	7592	0919	4244
10	7598	0945	4290	7633	0975	4315	7653	0990	4325	7658	0990	4319	7648	0974	4299
11	7654	1001	4346	7689	1031	4371	7709	1045	4380	7714	1045	4375	7703	1030	4355
12	7710	1057	4402	7745	1086	4426	7764	1101	4436	7769	1101	4430	7759	1085	4410
13	7766	1112	4457	7801	1142	4482	7820	1157	4491	7825	1156	4486	7814	1141	4465
14	7822	1168	4513	7856	1198	4538	7876	1212	4547	7880	1212	4541	7870	1196	4521
15	7877	1224	4569	7912	1253	4593	7931	1268	4603	7936	1267	4597	7925	1251	4576
16	7933	1280	4625	7968	1309	4649	7987	1323	4658	7991	1323	4652	7980	1307	4632
17	7989	1335	4680	8023	1365	4705	8043	1379	4714	8047	1378	4708	8036	1362	4687
18	8045	1391	4736	8079	1420	4760	8098	1435	4769	8102	1434	4763	8091	1418	4742
19	8101	1447	4792	8135	1476	4816	8154	1490	4825	8158	1489	4819	8147	1473	4798
20	8156	1503	4847	8190	1532	4871	8209	1546	4880	8213	1545	4874	8202	1529	4853
21	8212	1558	4903	8246	1587	4927	8265	1601	4936	8269	1600	4930	8258	1584	4909
22	8268	1614	4959	8302	1643	4983	8321	1657	4992	8324	1656	4985	8313	1639	4964
23	8324	1670	5015	8358	1699	5038	8376	1713	5047	8380	1711	5041	8369	1695	5019
24	8379	1726	5070	8413	1755	5094	8432	1768	5103	8435	1767	5096	8424	1750	5075
25	8435	1782	5126	8469	1810	5150	8488	1824	5158	8491	1822	5152	8480	1806	5130
26	8491	1837	5182	8525	1866	5205	8543	1879	5214	8547	1878	5207	8535	1861	5186
27	8547	1893	5238	8580	1922	5261	8599	1935	5269	8602	1933	5263	8590	1917	5241
28	8603	1949	5293	8636	1977	5317	8654	1990	5325	8658	1989	5318	8646	1972	5296
29	8658	2005	5349	8692	2033	5372	8710	2046	5380	8713	2044	5374	8701	2027	5352
30	8714	2060	5405	8747	2089	5428	8766	2102	5436	8769	2100	5429	8757	2083	5407
31	8770	2116	5460	8803	2144	5484	8821	2157	5492	8824	2155	5485	8812	2138	5463
32	8826	2172	5516	8859	2200	5539	8877	2213	5547	8880	2211	5540	8868	2194	5518
33	8882	2228	5572	8915	2256	5595	8932	2268	5603	8935	2266	5595	8923	2249	5573
34	8937	2283	5628	8970	2311	5650	8988	2324	5658	8991	2322	5651	8979	2304	5629
35	8993	2339	5683	9026	2367	5706	9044	2380	5714	9046	2377	5706	9034	2360	5684
36	9049	2395	5739	9082	2423	5762	9099	2435	5769	9102	2433	5762	9089	2415	5740
37	9105	2451	5795	9137	2478	5817	9155	2491	5825	9157	2488	5817	9145	2471	5795
38	9160	2506	5851	9193	2534	5873	9211	2546	5880	9213	2544	5873	9200	2526	5850
39	9216	2562	5906	9249	2590	5929	9266	2602	5936	9268	2599	5928	9256	2582	5906
40	9272	2618	5962	9304	2645	5984	9322	2657	5992	9324	2655	5984	9311	2637	5961
41	9328	2674	6018	9360	2701	6040	9377	2713	6047	9379	2710	6039	9367	2692	6016
42	9384	2729	6073	9416	2757	6096	9433	2769	6103	9435	2766	6095	9422	2748	6072
43	9439	2785	6129	9472	2812	6151	9489	2824	6158	9491	2821	6150	9478	2803	6127
44	9495	2841	6185	9527	2868	6207	9544	2880	6214	9546	2877	6206	9533	2859	6183
45	9551	2897	6241	9583	2924	6262	9600	2935	6269	9602	2932	6261	9588	2914	6238
46	9607	2952	6296	9639	2979	6318	9655	2991	6325	9657	2988	6317	9644	2969	6293
47	9662	3008	6352	9694	3035	6374	9711	3047	6380	9713	3043	6372	9699	3025	6349
48	9718	3064	6408	9750	3091	6429	9767	3102	6436	9768	3099	6428	9755	3080	6404
49	9774	3120	6463	9806	3146	6485	9822	3158	6492	9824	3154	6483	9810	3136	6460
50	9830	3175	6519	9861	3202	6541	9878	3213	6547	9879	3210	6538	9866	3191	6515
51	9886	3231	6575	9917	3258	6596	9933	3269	6603	9935	3265	6594	9921	3247	6570
52	9941	3287	6631	9973	3313	6652	9989	3324	6658	9990	3321	6649	9976	3302	6626
53	9997	3343	6686	0028	3369	6708	0045	3380	6714	0046	3376	6705	0032	3357	6681
54	0053	3398	6742	0084	3424	6763	0100	3436	6769	0101	3432	6760	0087	3413	6736
55	0109	3454	6798	0140	3480	6819	0156	3491	6825	0157	3487	6816	0143	3468	6792
56	0164	3510	6853	0195	3536	6874	0211	3547	6880	0212	3543	6871	0198	3524	6847
57	0220	3566	6909	0251	3591	6930	0267	3602	6936	0268	3598	6927	0254	3579	6903
58	0276	3621	6965	0307	3647	6986	0323	3658	6991	0323	3654	6982	0309	3634	6958
59	0332	3677	7021	0363	3703	7041	0378	3713	7047	0379	3709	7038	0365	3690	7013
60	0387	3733	7076	0418	3758	7097	0434	3769	7103	0434	3765	7093	0420	3745	7069
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
	10. 341	10. 340	10. 340	10. 340	10. 339	10. 339	10. 339	10. 338	10. 338	10. 338	10. 337	10. 337	10. 337	10. 336	10. 336	″
0	2959	9613	6267	2924	9582	6242	2903	9566	6231	2897	9566	6235	2907	9580	6255	60
1	2904	9557	6212	2868	9526	6186	2847	9511	6175	2842	9510	6180	2851	9525	6199	59
2	2848	9501	6156	2812	9470	6130	2792	9455	6120	2786	9455	6124	2796	9469	6144	58
3	2792	9445	6100	2757	9415	6075	2736	9399	6064	2731	9399	6069	2741	9414	6089	57
4	2736	9389	6044	2701	9359	6019	2681	9344	6009	2675	9344	6013	2685	9358	6033	56
5	2681	9334	5989	2645	9303	5963	2625	9288	5953	2620	9288	5958	2630	9303	5978	55
6	2625	9278	5933	2589	9248	5908	2569	9233	5898	2564	9233	5902	2574	9247	5922	54
7	2569	9222	5877	2534	9192	5852	2514	9177	5842	2509	9177	5847	2519	9192	5867	53
8	2513	9166	5821	2478	9136	5796	2458	9121	5786	2453	9121	5792	2463	9137	5812	52
9	2457	9111	5766	2422	9081	5741	2402	9066	5731	2398	9066	5736	2408	9081	5756	51
10	2402	9055	5710	2367	9025	5685	2347	9010	5675	2342	9010	5681	2352	9026	5701	50
11	2346	8999	5654	2311	8969	5629	2291	8955	5620	2286	8955	5625	2297	8970	5645	49
12	2290	8943	5598	2255	8914	5574	2236	8899	5564	2231	8899	5570	2241	8915	5590	48
13	2234	8888	5543	2199	8858	5518	2180	8843	5509	2175	8844	5514	2186	8859	5535	47
14	2178	8832	5487	2144	8802	5462	2124	8788	5453	2120	8788	5459	2130	8804	5479	46
15	2123	8776	5431	2088	8747	5407	2069	8732	5397	2064	8733	5403	2075	8749	5424	45
16	2067	8720	5375	2032	8691	5351	2013	8677	5342	2009	8677	5348	2020	8693	5368	44
17	2011	8665	5320	1977	8635	5295	1957	8621	5286	1953	8622	5292	1964	8638	5313	43
18	1955	8609	5264	1921	8580	5240	1902	8565	5231	1898	8566	5237	1909	8582	5258	42
19	1899	8553	5208	1865	8524	5184	1846	8510	5175	1842	8511	5181	1853	8527	5202	41
20	1844	8497	5153	1810	8468	5129	1791	8454	5120	1787	8455	5126	1798	8471	5147	40
21	1788	8442	5097	1754	8413	5073	1735	8399	5064	1731	8400	5070	1742	8416	5091	39
22	1732	8386	5041	1698	8357	5017	1679	8343	5008	1676	8344	5015	1687	8361	5036	38
23	1676	8330	4985	1642	8301	4962	1624	8287	4953	1620	8289	4959	1631	8305	4981	37
24	1621	8274	4930	1587	8245	4906	1568	8232	4897	1565	8233	4904	1576	8250	4925	36
25	1565	8218	4874	1531	8190	4850	1512	8176	4842	1509	8178	4848	1520	8194	4870	35
26	1509	8163	4818	1475	8134	4795	1457	8121	4786	1453	8122	4793	1465	8139	4814	34
27	1453	8107	4762	1420	8078	4739	1401	8065	4731	1398	8067	4737	1410	8083	4759	33
28	1397	8051	4707	1364	8023	4683	1346	8010	4675	1342	8011	4682	1354	8028	4704	32
29	1342	7995	4651	1308	7967	4628	1290	7954	4620	1287	7956	4626	1299	7973	4648	31
30	1286	7940	4595	1253	7911	4572	1234	7898	4564	1231	7900	4571	1243	7917	4593	30
31	1230	7884	4540	1197	7856	4516	1179	7843	4508	1176	7845	4515	1188	7862	4537	29
32	1174	7828	4484	1141	7800	4461	1123	7787	4453	1120	7789	4460	1132	7806	4482	28
33	1118	7772	4428	1085	7744	4405	1068	7732	4397	1065	7734	4405	1077	7751	4427	27
34	1063	7717	4372	1030	7689	4350	1012	7676	4342	1009	7678	4349	1021	7696	4371	26
35	1007	7661	4317	0974	7633	4294	0956	7620	4286	0954	7623	4294	0966	7640	4316	25
36	0951	7605	4261	0918	7577	4238	0901	7565	4231	0898	7567	4238	0911	7585	4260	24
37	0895	7549	4205	0863	7522	4183	0845	7509	4175	0843	7512	4183	0855	7529	4205	23
38	0840	7494	4149	0807	7466	4127	0789	7454	4120	0787	7456	4127	0800	7474	4150	22
39	0784	7438	4094	0751	7410	4071	0734	7398	4064	0732	7401	4072	0744	7418	4094	21
40	0728	7382	4038	0696	7355	4016	0678	7343	4008	0676	7345	4016	0689	7363	4039	20
41	0672	7326	3982	0640	7299	3960	0623	7287	3953	0621	7290	3961	0633	7308	3984	19
42	0616	7271	3927	0584	7243	3904	0567	7231	3897	0565	7234	3905	0578	7252	3928	18
43	0561	7215	3871	0528	7188	3849	0511	7176	3842	0509	7179	3850	0522	7197	3873	17
44	0505	7159	3815	0473	7132	3793	0456	7120	3786	0454	7123	3794	0467	7141	3817	16
45	0449	7103	3759	0417	7076	3738	0400	7065	3731	0398	7068	3739	0412	7086	3762	15
46	0393	7048	3704	0361	7021	3682	0345	7009	3675	0343	7012	3683	0356	7031	3707	14
47	0338	6992	3648	0306	6965	3626	0289	6953	3620	0287	6957	3628	0301	6975	3651	13
48	0282	6936	3592	0250	6909	3571	0233	6898	3564	0232	6901	3572	0245	6920	3596	12
49	0226	6880	3537	0194	6854	3515	0178	6842	3508	0176	6846	3517	0190	6864	3540	11
50	0170	6825	3481	0139	6798	3459	0122	6787	3453	0121	6790	3462	0134	6809	3485	10
51	0114	6769	3425	0083	6742	3404	0067	6731	3397	0065	6735	3406	0079	6753	3430	9
52	0059	6713	3369	0027	6687	3348	0011	6676	3342	0010	6679	3351	0024	6698	3374	8
53	0003	6657	3314	9972	6631	3292	9955	6620	3286	9954	6624	3295	9968	6643	3319	7
54	9947	6602	3258	9916	6576	3237	9900	6564	3231	9899	6568	3240	9913	6587	3264	6
55	9891	6546	3202	9860	6520	3181	9844	6509	3175	9843	6513	3184	9857	6532	3208	5
56	9836	6490	3147	9805	6464	3126	9789	6453	3120	9788	6457	3129	9802	6476	3153	4
57	9780	6434	3091	9749	6409	3070	9733	6398	3064	9732	6402	3073	9746	6421	3097	3
58	9724	6379	3035	9693	6353	3014	9677	6342	3009	9677	6346	3018	9691	6366	3042	2
59	9668	6323	2979	9637	6297	2959	9622	6287	2953	9621	6291	2962	9635	6310	2987	1
60	9613	6267	2924	9582	6242	2903	9566	6231	2897	9566	6235	2907	9580	6255	2931	0
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

′	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	9. 621	9. 622	9. 622	9. 622	9. 622	9. 623	9. 623	9. 623	9. 624	9. 624	9. 624	9. 624	9. 625	9. 625	9. 625
0	8612	1351	4088	6824	9557	2287	5016	7743	0468	3190	5911	8629	1346	4060	6772
1	8658	1397	4134	6869	9602	2333	5062	7789	0513	3236	5956	8675	1391	4105	6818
2	8703	1443	4180	6915	9648	2378	5107	7834	0559	3281	6002	8720	1436	4151	6863
3	8749	1488	4225	6960	9693	2424	5153	7879	0604	3326	6047	8765	1482	4196	6908
4	8795	1534	4271	7006	9739	2469	5198	7925	0649	3372	6092	8811	1527	4241	6953
5	8840	1579	4316	7051	9784	2515	5244	7970	0695	3417	6138	8856	1572	4286	6998
6	8886	1625	4362	7097	9830	2560	5289	8016	0740	3463	6183	8901	1617	4331	7043
7	8932	1671	4408	7143	9875	2606	5335	8061	0786	3508	6228	8946	1663	4377	7089
8	8977	1716	4453	7188	9921	2651	5380	8107	0831	3553	6274	8992	1708	4422	7134
9	9023	1762	4499	7234	9966	2697	5425	8152	0876	3599	6319	9037	1753	4467	7179
10	9069	1808	4544	7279	0012	2742	5471	8197	0922	3644	6364	9082	1798	4512	7224
11	9114	1853	4590	7325	0057	2788	5516	8243	0967	3689	6409	9128	1844	4558	7269
12	9160	1899	4636	7370	0103	2833	5562	8288	1012	3735	6455	9173	1889	4603	7315
13	9206	1944	4681	7416	0148	2879	5607	8334	1058	3780	6500	9218	1934	4648	7360
14	9251	1990	4727	7461	0194	2924	5653	8379	1103	3825	6545	9263	1979	4693	7405
15	9297	2036	4772	7507	0239	2970	5698	8424	1149	3871	6591	9309	2025	4738	7450
16	9343	2081	4818	7553	0285	3015	5744	8470	1194	3916	6636	9354	2070	4784	7495
17	9388	2127	4864	7598	0331	3061	5789	8515	1239	3961	6681	9399	2115	4829	7540
18	9434	2173	4909	7644	0376	3106	5835	8561	1285	4007	6727	9445	2160	4874	7586
19	9480	2218	4955	7689	0422	3152	5880	8606	1330	4052	6772	9490	2206	4919	7631
20	9525	2264	5000	7735	0467	3197	5925	8652	1376	4097	6817	9535	2251	4964	7676
21	9571	2310	5046	7780	0513	3243	5971	8697	1421	4143	6863	9580	2296	5010	7721
22	9617	2355	5092	7826	0558	3288	6016	8742	1466	4188	6908	9626	2341	5055	7766
23	9662	2401	5137	7871	0604	3334	6062	8788	1512	4234	6953	9671	2387	5100	7812
24	9708	2446	5183	7917	0649	3379	6107	8833	1557	4279	6999	9716	2432	5145	7857
25	9754	2492	5228	7963	0695	3425	6153	8879	1602	4324	7044	9761	2477	5190	7902
26	9799	2538	5274	8008	0740	3470	6198	8924	1648	4370	7089	9807	2522	5236	7947
27	9845	2583	5320	8054	0786	3516	6244	8969	1693	4415	7134	9852	2567	5281	7992
28	9891	2629	5365	8099	0831	3561	6289	9015	1739	4460	7180	9897	2613	5326	8037
29	9936	2674	5411	8145	0877	3607	6335	9060	1784	4506	7225	9943	2658	5371	8083
30	9982	2720	5456	8190	0922	3652	6380	9106	1829	4551	7270	9988	2703	5417	8128
31	0028	2766	5502	8236	0968	3698	6425	9151	1875	4596	7316	0033	2748	5462	8173
32	0073	2811	5547	8281	1013	3743	6471	9197	1920	4642	7361	0078	2794	5507	8218
33	0119	2857	5593	8327	1059	3789	6516	9242	1965	4687	7406	0124	2839	5552	8263
34	0164	2903	5639	8373	1104	3834	6562	9287	2011	4732	7452	0169	2884	5597	8308
35	0210	2948	5684	8418	1150	3880	6607	9333	2056	4778	7497	0214	2929	5643	8354
36	0256	2994	5730	8464	1195	3925	6653	9378	2102	4823	7542	0259	2975	5688	8399
37	0301	3039	5775	8509	1241	3971	6698	9424	2147	4868	7588	0305	3020	5733	8444
38	0347	3085	5821	8555	1286	4016	6744	9469	2192	4914	7633	0350	3065	5778	8489
39	0393	3131	5867	8600	1332	4061	6789	9514	2238	4959	7678	0395	3110	5823	8534
40	0438	3176	5912	8646	1377	4107	6834	9560	2283	5004	7723	0441	3156	5869	8579
41	0484	3222	5958	8691	1423	4152	6880	9605	2328	5050	7769	0486	3201	5914	8625
42	0530	3268	6003	8737	1468	4198	6925	9651	2374	5095	7814	0531	3246	5959	8670
43	0575	3313	6049	8782	1514	4243	6971	9696	2419	5140	7859	0576	3291	6004	8715
44	0621	3359	6094	8828	1559	4289	7016	9741	2465	5186	7905	0622	3336	6049	8760
45	0667	3404	6140	8874	1605	4334	7062	9787	2510	5231	7950	0667	3382	6095	8805
46	0712	3450	6186	8919	1650	4380	7107	9832	2555	5276	7995	0712	3427	6140	8850
47	0758	3496	6231	8965	1696	4425	7152	9878	2601	5322	8041	0757	3472	6185	8896
48	0804	3541	6277	9010	1741	4471	7198	9923	2646	5367	8086	0803	3517	6230	8941
49	0849	3587	6322	9056	1787	4516	7243	9968	2691	5412	8131	0848	3563	6275	8986
50	0895	3632	6368	9101	1832	4562	7289	0014	2737	5458	8176	0893	3608	6320	9031
51	0940	3678	6413	9147	1878	4607	7334	0059	2782	5503	8222	0938	3653	6366	9076
52	0986	3724	6459	9192	1923	4653	7380	0105	2827	5548	8267	0984	3698	6411	9121
53	1032	3769	6505	9238	1969	4698	7425	0150	2873	5594	8312	1029	3744	6456	9167
54	1077	3815	6550	9283	2014	4744	7471	0195	2918	5639	8358	1074	3789	6501	9212
55	1123	3860	6596	9329	2060	4789	7516	0241	2964	5684	8403	1119	3834	6546	9257
56	1169	3906	6641	9374	2105	4834	7561	0286	3009	5730	8448	1165	3879	6592	9302
57	1214	3952	6687	9420	2151	4880	7607	0332	3054	5775	8494	1210	3924	6637	9347
58	1260	3997	6732	9465	2196	4925	7652	0377	3100	5820	8539	1255	3970	6682	9392
59	1306	4043	6778	9511	2242	4971	7698	0422	3145	5866	8584	1301	4015	6727	9437
60	1351	4088	6824	9557	2287	5016	7743	0468	3190	5911	8629	1346	4060	6772	9483
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	″
9. 958	9. 958	9. 958	9. 957	9. 957	9. 957	9. 957	9. 957	9. 957	9. 957	9. 957	9. 957	9. 957	9. 957	9. 957	
1543	0961	0378	9794	9210	8626	8041	7456	6870	6284	5697	5110	4522	3934	3346	60
1534	0951	0368	9784	9200	8616	8031	7446	6860	6274	5687	5100	4513	3925	3336	59
1524	0941	0358	9775	9191	8606	8021	7436	6850	6264	5677	5090	4503	3915	3326	58
1514	0931	0348	9765	9181	8596	8012	7426	6841	6254	5668	5081	4493	3905	3317	57
1504	0922	0339	9755	9171	8587	8002	7417	6831	6245	5658	5071	4483	3895	3307	56
1495	0912	0329	9745	9161	8577	7992	7407	6821	6235	5648	5061	4473	3885	3297	55
1485	0902	0319	9736	9152	8567	7982	7397	6811	6225	5638	5051	4464	3876	3287	54
1475	0893	0309	9726	9142	8557	7973	7387	6801	6215	5629	5041	4454	3866	3277	53
1466	0883	0300	9716	9132	8548	7963	7377	6792	6205	5619	5032	4444	3856	3267	52
1456	0873	0290	9706	9122	8538	7953	7368	6782	6196	5609	5022	4434	3846	3258	51
1446	0863	0280	9697	9113	8528	7943	7358	6772	6186	5599	5012	4424	3836	3248	50
1436	0854	0271	9687	9103	8518	7934	7348	6762	6176	5589	5002	4415	3827	3238	49
1427	0844	0261	9677	9093	8509	7924	7338	6753	6166	5580	4992	4405	3817	3228	48
1417	0834	0251	9668	9084	8499	7914	7329	6743	6157	5570	4983	4395	3807	3218	47
1407	0825	0241	9658	9074	8489	7904	7319	6733	6147	5560	4973	4385	3797	3209	46
1398	0815	0232	9648	9064	8480	7895	7309	6723	6137	5550	4963	4375	3787	3199	45
1388	0805	0222	9638	9054	8470	7885	7299	6714	6127	5540	4953	4366	3778	3189	44
1378	0795	0212	9629	9045	8460	7875	7290	6704	6117	5531	4943	4356	3768	3179	43
1368	0786	0203	9619	9035	8450	7865	7280	6694	6108	5521	4934	4346	3758	3169	42
1359	0776	0193	9609	9025	8441	7856	7270	6684	6098	5511	4924	4336	3748	3160	41
1349	0766	0183	9599	9015	8431	7846	7260	6674	6088	5501	4914	4326	3738	3150	40
1339	0757	0173	9590	9006	8421	7836	7251	6665	6078	5492	4904	4317	3729	3140	39
1330	0747	0164	9580	8996	8411	7826	7241	6655	6069	5482	4895	4307	3719	3130	38
1320	0737	0154	9570	8986	8402	7817	7231	6645	6059	5472	4885	4297	3709	3120	37
1310	0727	0144	9561	8976	8392	7807	7221	6635	6049	5462	4875	4287	3699	3110	36
1301	0718	0134	9551	8967	8382	7797	7212	6626	6039	5452	4865	4277	3689	3101	35
1291	0708	0125	9541	8957	8372	7787	7202	6616	6029	5443	4855	4268	3679	3091	34
1281	0698	0115	9531	8947	8363	7778	7192	6606	6020	5433	4846	4258	3670	3081	33
1271	0689	0105	9522	8937	8353	7768	7182	6596	6010	5423	4836	4248	3660	3071	32
1262	0679	0096	9512	8928	8343	7758	7172	6587	6000	5413	4826	4238	3650	3061	31
1252	0669	0086	9502	8918	8333	7748	7163	6577	5990	5403	4816	4228	3640	3052	30
1242	0659	0076	9492	8908	8324	7738	7153	6567	5981	5394	4806	4219	3630	3042	29
1233	0650	0066	9483	8898	8314	7729	7143	6557	5971	5384	4797	4209	3621	3032	28
1223	0640	0057	9473	8889	8304	7719	7133	6547	5961	5374	4787	4199	3611	3022	27
1213	0630	0047	9463	8879	8294	7709	7124	6538	5951	5364	4777	4189	3601	3012	26
1203	0621	0037	9453	8869	8285	7699	7114	6528	5941	5355	4767	4179	3591	3003	25
1194	0611	0027	9444	8859	8275	7690	7104	6518	5932	5345	4757	4170	3581	2993	24
1184	0601	0018	9434	8850	8265	7680	7094	6508	5922	5335	4748	4160	3572	2983	23
1174	0591	0008	9424	8840	8255	7670	7085	6499	5912	5325	4738	4150	3562	2973	22
1165	0582	9998	9415	8830	8246	7660	7075	6489	5902	5315	4728	4140	3552	2963	21
1155	0572	9989	9405	8821	8236	7651	7065	6479	5893	5306	4718	4130	3542	2953	20
1145	0562	9979	9395	8811	8226	7641	7055	6469	5883	5296	4708	4121	3532	2944	19
1135	0553	9969	9385	8801	8216	7631	7046	6460	5873	5286	4699	4111	3523	2934	18
1126	0543	9959	9376	8791	8207	7621	7036	6450	5863	5276	4689	4101	3513	2924	17
1116	0533	9950	9366	8782	8197	7612	7026	6440	5853	5267	4679	4091	3503	2914	16
1106	0523	9940	9356	8772	8187	7602	7016	6430	5844	5257	4669	4081	3493	2904	15
1097	0514	9930	9346	8762	8177	7592	7007	6420	5834	5247	4660	4072	3483	2895	14
1087	0504	9921	9337	8752	8168	7582	6997	6411	5824	5237	4650	4062	3474	2885	13
1077	0494	9911	9327	8743	8158	7573	6987	6401	5814	5227	4640	4052	3464	2875	12
1067	0484	9901	9317	8733	8148	7563	6977	6391	5805	5218	4630	4042	3454	2865	11
1058	0475	9891	9307	8723	8138	7553	6967	6381	5795	5208	4620	4032	3444	2855	10
1048	0465	9882	9298	8713	8129	7543	6958	6372	5785	5198	4611	4023	3434	2845	9
1038	0455	9872	9288	8704	8119	7534	6948	6362	5775	5188	4601	4013	3424	2836	8
1029	0446	9862	9278	8694	8109	7524	6938	6352	5765	5178	4591	4003	3415	2826	7
1019	0436	9852	9268	8684	8099	7514	6928	6342	5756	5169	4581	3993	3405	2816	6
1009	0426	9843	9259	8674	8090	7504	6919	6332	5746	5159	4571	3983	3395	2806	5
0999	0416	9833	9249	8665	8080	7495	6909	6323	5736	5149	4562	3974	3385	2796	4
0990	0407	9823	9239	8655	8070	7485	6899	6313	5726	5139	4552	3964	3375	2787	3
0980	0397	9813	9230	8645	8060	7475	6889	6303	5717	5129	4542	3954	3366	2777	2
0970	0387	9804	9220	8635	8051	7465	6880	6293	5707	5120	4532	3944	3356	2767	1
0961	0378	9794	9210	8626	8041	7456	6870	6284	5697	5110	4522	3934	3346	2757	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	9. 663	9. 664	9. 664	9. 664	9. 665	9. 665	9. 665	9. 666	9. 666	9. 666	9. 667	9. 667	9. 667	9. 668	9. 668
0	7069	0391	3711	7030	0346	3662	6975	0288	3598	6907	0214	3519	6823	0126	3426
1	7124	0446	3766	7085	0402	3717	7031	0343	3653	6962	0269	3575	6878	0181	3481
2	7179	0501	3822	7140	0457	3772	7086	0398	3708	7017	0324	3630	6934	0236	3536
3	7235	0557	3877	7195	0512	3828	7141	0453	3763	7072	0379	3685	6989	0291	3591
4	7290	0612	3932	7251	0568	3883	7196	0508	3819	7127	0434	3740	7044	0346	3646
5	7346	0667	3988	7306	0623	3938	7252	0563	3874	7182	0489	3795	7099	0401	3701
6	7401	0723	4043	7361	0678	3993	7307	0619	3929	7238	0545	3850	7154	0456	3756
7	7456	0778	4098	7417	0733	4048	7362	0674	3984	7293	0600	3905	7209	0511	3811
8	7512	0833	4153	7472	0789	4104	7417	0729	4039	7348	0655	3960	7264	0566	3866
9	7567	0889	4209	7527	0844	4159	7472	0784	4094	7403	0710	4015	7319	0621	3921
10	7623	0944	4264	7582	0899	4214	7528	0839	4150	7458	0765	4070	7374	0676	3976
11	7678	0999	4319	7638	0954	4269	7583	0895	4205	7513	0820	4125	7429	0731	4031
12	7733	1055	4375	7693	1010	4325	7638	0950	4260	7568	0875	4180	7484	0786	4086
13	7789	1110	4430	7748	1065	4380	7693	1005	4315	7623	0930	4235	7539	0841	4141
14	7844	1166	4485	7804	1120	4435	7748	1060	4370	7679	0985	4291	7594	0896	4196
15	7899	1221	4541	7859	1175	4490	7804	1115	4425	7734	1040	4346	7649	0951	4251
16	7955	1276	4596	7914	1231	4546	7859	1170	4480	7789	1096	4401	7704	1006	4306
17	8010	1332	4651	7969	1286	4601	7914	1226	4536	7844	1151	4456	7759	1061	4361
18	8065	1387	4707	8025	1341	4656	7969	1281	4591	7899	1206	4511	7814	1116	4416
19	8121	1442	4762	8080	1397	4711	8024	1336	4646	7954	1261	4566	7869	1171	4471
20	8176	1498	4817	8135	1452	4767	8080	1391	4701	8009	1316	4621	7924	1226	4526
21	8232	1553	4873	8191	1507	4822	8135	1446	4756	8064	1371	4676	7979	1281	4581
22	8287	1608	4928	8246	1562	4877	8190	1502	4811	8120	1426	4731	8034	1336	4636
23	8342	1664	4983	8301	1618	4932	8245	1557	4867	8175	1481	4786	8089	1391	4691
24	8398	1719	5039	8356	1673	4987	8301	1612	4922	8230	1536	4841	8145	1446	4746
25	8453	1774	5094	8412	1728	5043	8356	1667	4977	8285	1591	4896	8200	1501	4801
26	8508	1830	5149	8467	1783	5098	8411	1722	5032	8340	1647	4951	8255	1556	4856
27	8564	1885	5204	8522	1839	5153	8466	1777	5087	8395	1702	5006	8310	1611	4911
28	8619	1940	5260	8578	1894	5208	8521	1833	5142	8450	1757	5062	8365	1666	4966
29	8675	1996	5315	8633	1949	5264	8577	1888	5197	8505	1812	5117	8420	1721	5021
30	8730	2051	5370	8688	2004	5319	8632	1943	5253	8561	1867	5172	8475	1776	5076
31	8785	2106	5426	8743	2060	5374	8687	1998	5308	8616	1922	5227	8530	1831	5131
32	8841	2162	5481	8799	2115	5429	8742	2053	5363	8671	1977	5282	8585	1886	5186
33	8896	2217	5536	8854	2170	5485	8797	2108	5418	8726	2032	5337	8640	1941	5241
34	8951	2272	5592	8909	2225	5540	8853	2164	5473	8781	2087	5392	8695	1996	5296
35	9007	2328	5647	8965	2281	5595	8908	2219	5528	8836	2142	5447	8750	2051	5351
36	9062	2383	5702	9020	2336	5650	8963	2274	5583	8891	2197	5502	8805	2106	5406
37	9117	2438	5758	9075	2391	5705	9018	2329	5639	8946	2253	5557	8860	2161	5461
38	9173	2494	5813	9130	2446	5761	9073	2384	5694	9001	2308	5612	8915	2216	5516
39	9228	2549	5868	9186	2502	5816	9129	2440	5749	9057	2363	5667	8970	2271	5571
40	9284	2604	5923	9241	2557	5871	9184	2495	5804	9112	2418	5722	9025	2326	5626
41	9339	2660	5979	9296	2612	5926	9239	2550	5859	9167	2473	5777	9080	2381	5681
42	9394	2715	6034	9352	2667	5982	9294	2605	5914	9222	2528	5832	9135	2436	5736
43	9450	2770	6089	9407	2723	6037	9349	2660	5969	9277	2583	5887	9190	2491	5791
44	9505	2826	6145	9462	2778	6092	9404	2715	6025	9332	2638	5943	9245	2546	5846
45	9560	2881	6200	9517	2833	6147	9460	2771	6080	9387	2693	5998	9300	2601	5901
46	9616	2936	6255	9573	2888	6202	9515	2826	6135	9442	2748	6053	9355	2656	5956
47	9671	2992	6311	9628	2944	6258	9570	2881	6190	9498	2803	6108	9410	2711	6011
48	9726	3047	6366	9683	2999	6313	9625	2936	6245	9553	2859	6163	9465	2766	6066
49	9782	3102	6421	9738	3054	6368	9680	2991	6300	9608	2914	6218	9520	2821	6121
50	9837	3158	6477	9794	3109	6423	9736	3046	6355	9663	2969	6273	9575	2876	6176
51	9892	3213	6532	9849	3165	6479	9791	3102	6411	9718	3024	6328	9630	2931	6231
52	9948	3268	6587	9904	3220	6534	9846	3157	6466	9773	3079	6383	9685	2986	6286
53	0003	3324	6642	9960	3275	6589	9901	3212	6521	9828	3134	6438	9741	3041	6341
54	0059	3379	6698	0015	3330	6644	9956	3267	6576	9883	3189	6493	9796	3096	6396
55	0114	3434	6753	0070	3386	6699	0012	3322	6631	9938	3244	6548	9851	3151	6451
56	0169	3490	6808	0125	3441	6755	0067	3377	6686	9994	3299	6603	9906	3206	6506
57	0225	3545	6864	0181	3496	6810	0122	3432	6741	0049	3354	6658	9961	3261	6561
58	0280	3600	6919	0236	3551	6865	0177	3488	6796	0104	3409	6713	0016	3316	6616
59	0335	3656	6974	0291	3607	6920	0232	3543	6852	0159	3464	6768	0071	3371	6671
60	0391	3711	7030	0346	3662	6975	0288	3598	6907	0214	3519	6823	0126	3426	6725
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
10. 336	10. 335	10. 335	10. 335	10. 334	10. 334	10. 334	10. 333	10. 333	10. 333	10. 332	10. 332	10. 332	10. 331	10. 331	″
2931	9609	6289	2970	9654	6338	3025	9712	6402	3093	9786	6481	3177	9874	6574	60
2876	9554	6234	2915	9598	6283	2969	9657	6347	3038	9731	6425	3122	9819	6519	59
2821	9499	6178	2860	9543	6228	2914	9602	6292	2983	9676	6370	3066	9764	6464	58
2765	9443	6123	2805	9488	6172	2859	9547	6237	2928	9621	6315	3011	9709	6409	57
2710	9388	6068	2749	9432	6117	2804	9492	6181	2873	9566	6260	2956	9654	6354	56
2654	9333	6012	2694	9377	6062	2748	9437	6126	2818	9511	6205	2901	9599	6299	55
2599	9277	5957	2639	9322	6007	2693	9381	6071	2762	9455	6150	2846	9544	6244	54
2544	9222	5902	2583	9267	5952	2638	9326	6016	2707	9400	6095	2791	9489	6189	53
2488	9167	5847	2528	9211	5896	2583	9271	5961	2652	9345	6040	2736	9434	6134	52
2433	9111	5791	2473	9156	5841	2528	9216	5906	2597	9290	5985	2681	9379	6079	51
2377	9056	5736	2418	9101	5786	2472	9161	5850	2542	9235	5930	2626	9324	6024	50
2322	9001	5681	2362	9046	5731	2417	9105	5795	2487	9180	5875	2571	9269	5969	49
2267	8945	5625	2307	8990	5675	2362	9050	5740	2432	9125	5820	2516	9214	5914	48
2211	8890	5570	2252	8935	5620	2307	8995	5685	2377	9070	5765	2461	9159	5859	47
2156	8834	5515	2196	8880	5565	2252	8940	5630	2321	9015	5709	2406	9104	5804	46
2101	8779	5459	2141	8825	5510	2196	8885	5575	2266	8960	5654	2351	9049	5749	45
2045	8724	5404	2086	8769	5454	2141	8830	5520	2211	8904	5599	2296	8994	5694	44
1990	8668	5349	2031	8714	5399	2086	8774	5464	2156	8849	5544	2241	8939	5639	43
1935	8613	5293	1975	8659	5344	2031	8719	5409	2101	8794	5489	2186	8884	5584	42
1879	8558	5238	1920	8603	5289	1976	8664	5354	2046	8739	5434	2131	8829	5529	41
1824	8502	5183	1865	8548	5233	1920	8609	5299	1991	8684	5379	2076	8774	5474	40
1768	8447	5127	1809	8493	5178	1865	8554	5244	1936	8629	5324	2021	8719	5419	39
1713	8392	5072	1754	8438	5123	1810	8498	5189	1880	8574	5269	1966	8664	5364	38
1658	8336	5017	1699	8382	5068	1755	8443	5133	1825	8519	5214	1911	8609	5309	37
1602	8281	4961	1644	8327	5013	1699	8388	5078	1770	8464	5159	1855	8554	5254	36
1547	8226	4906	1588	8272	4957	1644	8333	5023	1715	8409	5104	1800	8499	5199	35
1492	8170	4851	1533	8217	4902	1589	8278	4968	1660	8353	5049	1745	8444	5144	34
1436	8115	4796	1478	8161	4847	1534	8223	4913	1605	8298	4994	1690	8389	5089	33
1381	8060	4740	1422	8106	4792	1479	8167	4858	1550	8243	4938	1635	8334	5034	32
1325	8004	4685	1367	8051	4736	1423	8112	4803	1495	8188	4883	1580	8279	4979	31
1270	7949	4630	1312	7996	4681	1368	8057	4747	1439	8133	4828	1525	8224	4924	30
1215	7894	4574	1257	7940	4626	1313	8002	4692	1384	8078	4773	1470	8169	4869	29
1159	7838	4519	1201	7885	4571	1258	7947	4637	1329	8023	4718	1415	8114	4814	28
1104	7783	4464	1146	7830	4515	1203	7892	4582	1274	7968	4663	1360	8059	4759	27
1049	7728	4408	1091	7775	4460	1147	7836	4527	1219	7913	4608	1305	8004	4704	26
0993	7672	4353	1035	7719	4405	1092	7781	4472	1164	7858	4553	1250	7949	4649	25
0938	7617	4298	0980	7664	4350	1037	7726	4417	1109	7803	4498	1195	7894	4594	24
0883	7562	4242	0925	7609	4295	0982	7671	4361	1054	7747	4443	1140	7839	4539	23
0827	7506	4187	0870	7554	4239	0927	7616	4306	0999	7692	4388	1085	7784	4484	22
0772	7451	4132	0814	7498	4184	0871	7560	4251	0943	7637	4333	1030	7729	4429	21
0716	7396	4077	0759	7443	4129	0816	7505	4196	0888	7582	4278	0975	7674	4374	20
0661	7340	4021	0704	7388	4074	0761	7450	4141	0833	7527	4223	0920	7619	4319	19
0606	7285	3966	0648	7333	4018	0706	7395	4086	0778	7472	4168	0865	7564	4264	18
0550	7230	3911	0593	7277	3963	0651	7340	4031	0723	7417	4113	0810	7509	4209	17
0495	7174	3855	0538	7222	3908	0596	7285	3975	0668	7362	4057	0755	7454	4154	16
0440	7119	3800	0483	7167	3853	0540	7229	3920	0613	7307	4002	0700	7399	4099	15
0384	7064	3745	0427	7112	3798	0485	7174	3865	0558	7252	3947	0645	7344	4044	14
0329	7008	3689	0372	7056	3742	0430	7119	3810	0502	7197	3892	0590	7289	3989	13
0274	6953	3634	0317	7001	3687	0375	7064	3755	0447	7141	3837	0535	7234	3934	12
0218	6898	3579	0262	6946	3632	0320	7009	3700	0392	7086	3782	0480	7179	3879	11
0163	6842	3523	0206	6891	3577	0264	6954	3645	0337	7031	3727	0425	7124	3824	10
0108	6787	3468	0151	6835	3521	0209	6898	3589	0282	6976	3672	0370	7069	3769	9
0052	6732	3413	0096	6780	3466	0154	6843	3534	0227	6921	3617	0315	7014	3714	8
9997	6676	3358	0040	6725	3411	0099	6788	3479	0172	6866	3562	0259	6959	3659	7
9941	6621	3302	9985	6670	3356	0044	6733	3424	0117	6811	3507	0204	6904	3604	6
9886	6566	3247	9930	6614	3301	9988	6678	3369	0062	6756	3452	0149	6849	3549	5
9831	6510	3192	9875	6559	3245	9933	6623	3314	0006	6701	3397	0094	6794	3494	4
9775	6455	3136	9819	6504	3190	9878	6568	3259	9951	6646	3342	0039	6739	3439	3
9720	6400	3081	9764	6449	3135	9823	6512	3204	9896	6591	3287	9984	6684	3384	2
9665	6344	3026	9709	6393	3080	9768	6457	3148	9841	6536	3232	9929	6629	3329	1
9609	6289	2970	9654	6338	3025	9712	6402	3093	9786	6481	3177	9874	6574	3275	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

25 Deg. Sine

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9. 625	9. 626	9. 626	9. 626	9. 627	9. 627	9. 627	9. 627	9. 628	9. 628	9. 628	9. 628	9. 629	9. 629	9. 629
0	9483	2191	4897	7601	0303	3003	5701	8397	1090	3782	6472	9160	1845	4529	7211
1	9528	2236	4942	7646	0348	3048	5746	8442	1135	3827	6517	9204	1890	4574	7255
2	9573	2281	4987	7691	0393	3093	5791	8486	1180	3872	6562	9249	1935	4618	7300
3	9618	2326	5032	7736	0438	3138	5836	8531	1225	3917	6606	9294	1980	4663	7345
4	9663	2371	5077	7781	0483	3173	5881	8576	1270	3962	6651	9339	2024	4708	7389
5	9708	2416	5122	7826	0528	3218	5925	8621	1315	4006	6696	9384	2069	4753	7434
6	9754	2461	5167	7871	0573	3263	5970	8666	1360	4051	6741	9428	2114	4797	7479
7	9799	2507	5212	7916	0618	3308	6015	8711	1405	4096	6786	9473	2159	4842	7523
8	9844	2552	5257	7961	0663	3353	6060	8756	1449	4141	6830	9518	2203	4887	7568
9	9889	2597	5303	8006	0708	3398	6105	8801	1494	4186	6875	9563	2248	4931	7613
10	9934	2642	5348	8051	0753	3453	6150	8846	1539	4231	6920	9607	2293	4976	7657
11	9979	2687	5393	8096	0798	3498	6195	8891	1584	4275	6965	9652	2338	5021	7702
12	0024	2732	5438	8141	0843	3543	6240	8936	1629	4320	7010	9697	2382	5065	7747
13	0070	2777	5483	8186	0888	3588	6285	8980	1674	4365	7054	9742	2427	5110	7791
14	0115	2822	5528	8232	0933	3633	6330	9025	1719	4410	7099	9787	2472	5155	7836
15	0160	2867	5573	8277	0978	3677	6375	9070	1764	4455	7144	9831	2516	5200	7881
16	0205	2913	5618	8322	1023	3722	6420	9115	1808	4500	7189	9876	2561	5244	7925
17	0250	2958	5663	8367	1068	3767	6465	9160	1853	4544	7234	9921	2606	5289	7970
18	0295	3003	5708	8412	1113	3812	6510	9205	1898	4589	7278	9966	2651	5334	8015
19	0340	3048	5753	8457	1158	3857	6555	9250	1943	4634	7323	0010	2695	5378	8059
20	0386	3093	5798	8502	1203	3902	6600	9295	1988	4679	7368	0055	2740	5423	8104
21	0431	3138	5843	8547	1248	3947	6645	9340	2033	4724	7413	0100	2785	5468	8149
22	0476	3183	5889	8592	1293	3992	6689	9385	2078	4769	7458	0145	2830	5513	8193
23	0521	3228	5934	8637	1338	4037	6734	9429	2123	4814	7502	0189	2874	5557	8238
24	0566	3273	5979	8682	1383	4082	6779	9474	2167	4858	7547	0234	2919	5602	8283
25	0611	3319	6024	8727	1428	4127	6824	9519	2212	4903	7592	0279	2964	5647	8327
26	0656	3364	6069	8772	1473	4172	6869	9564	2257	4948	7637	0324	3009	5691	8372
27	0702	3409	6114	8817	1518	4217	6914	9609	2302	4993	7682	0368	3053	5736	8417
28	0747	3454	6159	8862	1563	4262	6959	9654	2347	5038	7726	0413	3098	5781	8461
29	0792	3499	6204	8907	1608	4307	7004	9699	2392	5082	7771	0458	3143	5825	8506
30	0837	3544	6249	8952	1653	4352	7049	9744	2437	5127	7816	0503	3187	5870	8551
31	0882	3589	6294	8997	1698	4397	7094	9789	2481	5172	7861	0548	3232	5915	8595
32	0927	3634	6339	9042	1743	4442	7139	9834	2526	5217	7906	0592	3277	5959	8640
33	0972	3679	6384	9087	1788	4487	7184	9878	2571	5262	7950	0637	3322	6004	8685
34	1017	3724	6429	9132	1833	4532	7229	9923	2616	5307	7995	0682	3366	6049	8729
35	1063	3770	6474	9177	1878	4577	7274	9968	2661	5351	8040	0727	3411	6094	8774
36	1108	3815	6520	9222	1923	4622	7318	0013	2706	5396	8085	0771	3456	6138	8819
37	1153	3860	6565	9267	1968	4667	7363	0058	2751	5441	8130	0816	3501	6183	8863
38	1198	3905	6610	9312	2013	4712	7408	0103	2795	5486	8174	0861	3545	6228	8908
39	1243	3950	6655	9357	2058	4757	7453	0148	2840	5531	8219	0906	3590	6272	8953
40	1288	3995	6700	9402	2103	4802	7498	0193	2885	5576	8264	0950	3635	6317	8997
41	1333	4040	6745	9447	2148	4847	7543	0238	2930	5620	8309	0995	3679	6362	9042
42	1379	4085	6790	9492	2193	4892	7588	0282	2975	5665	8354	1040	3724	6406	9087
43	1424	4130	6835	9538	2238	4937	7633	0327	3020	5710	8398	1085	3769	6451	9131
44	1469	4175	6880	9583	2283	4981	7678	0372	3065	5755	8443	1129	3814	6496	9176
45	1514	4221	6925	9628	2328	5026	7723	0417	3109	5800	8488	1174	3858	6540	9221
46	1559	4266	6970	9673	2373	5071	7768	0462	3154	5845	8533	1219	3903	6585	9265
47	1604	4311	7015	9718	2418	5116	7813	0507	3199	5889	8577	1264	3948	6630	9310
48	1649	4356	7060	9763	2463	5161	7858	0552	3244	5934	8622	1308	3992	6674	9354
49	1694	4401	7105	9808	2508	5206	7903	0597	3289	5979	8667	1353	4037	6719	9399
50	1740	4446	7150	9853	2553	5251	7947	0642	3334	6024	8712	1398	4082	6764	9444
51	1785	4491	7195	9898	2598	5296	7992	0686	3379	6069	8757	1443	4127	6809	9488
52	1830	4536	7240	9943	2643	5341	8037	0731	3423	6113	8801	1487	4171	6853	9533
53	1875	4581	7286	9988	2688	5386	8082	0776	3468	6158	8846	1532	4216	6898	9578
54	1920	4626	7331	0033	2733	5431	8127	0821	3513	6203	8891	1577	4261	6943	9622
55	1965	4671	7376	0078	2778	5476	8172	0866	3558	6248	8936	1622	4305	6987	9667
56	2010	4716	7421	0123	2823	5521	8217	0911	3603	6293	8981	1666	4350	7032	9712
57	2055	4762	7466	0168	2868	5566	8262	0956	3648	6338	9025	1711	4395	7077	9756
58	2101	4807	7511	0213	2913	5611	8307	1001	3693	6382	9070	1756	4440	7121	9801
59	2146	4852	7556	0258	2958	5656	8352	1046	3737	6427	9115	1801	4484	7166	9846
60	2191	4897	7601	0303	3003	5701	8397	1090	3782	6472	9160	1845	4529	7211	9890
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Sine Deg. 64

25 Deg. Co-Sine

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
9. 957	9. 957	9. 957	9. 957	9. 957	9. 956	9. 956	9. 956	9. 956	9. 956	9. 956	9. 956	9. 956	9. 956	9. 956	″
2757	2168	1578	0988	0397	9806	9215	8623	8030	7437	6844	6250	5656	5061	4466	60
2747	2158	1568	0978	0387	9796	9205	8613	8020	7427	6834	6240	5646	5051	4456	59
2737	2148	1558	0968	0377	9786	9195	8603	8010	7417	6824	6230	5636	5041	4446	58
2728	2138	1549	0958	0368	9776	9185	8593	8000	7407	6814	6220	5626	5031	4436	57
2718	2128	1539	0948	0358	9767	9175	8583	7991	7398	6804	6210	5616	5021	4426	56
2708	2119	1529	0939	0348	9757	9165	8573	7981	7388	6794	6201	5606	5011	4416	55
2698	2109	1519	0929	0338	9747	9155	8563	7971	7378	6784	6191	5596	5002	4406	54
2688	2099	1509	0919	0328	9737	9145	8553	7961	7368	6775	6181	5586	4992	4396	53
2679	2089	1499	0909	0318	9727	9136	8544	7951	7358	6765	6171	5576	4982	4387	52
2669	2079	1490	0899	0309	9717	9126	8534	7941	7348	6755	6161	5567	4972	4377	51
2659	2070	1480	0889	0299	9707	9116	8524	7931	7338	6745	6151	5557	4962	4367	50
2649	2060	1470	0880	0289	9698	9106	8514	7921	7328	6735	6141	5547	4952	4357	49
2639	2050	1460	0870	0279	9688	9096	8504	7912	7319	6725	6131	5537	4942	4347	48
2629	2040	1450	0860	0269	9678	9086	8494	7902	7309	6715	6121	5527	4932	4337	47
2620	2030	1440	0850	0259	9668	9076	8484	7892	7299	6705	6111	5517	4922	4327	46
2610	2020	1431	0840	0249	9658	9067	8474	7882	7289	6695	6101	5507	4912	4317	45
2600	2011	1421	0830	0240	9648	9057	8465	7872	7279	6686	6092	5497	4902	4307	44
2590	2001	1411	0821	0230	9638	9047	8455	7862	7269	6676	6082	5487	4892	4297	43
2580	1991	1401	0811	0220	9629	9037	8445	7852	7259	6666	6072	5477	4883	4287	42
2571	1981	1391	0801	0210	9619	9027	8435	7842	7249	6656	6062	5467	4873	4277	41
2561	1971	1381	0791	0200	9609	9017	8425	7832	7239	6646	6052	5458	4863	4267	40
2551	1961	1372	0781	0190	9599	9007	8415	7823	7230	6636	6042	5448	4853	4258	39
2541	1952	1362	0771	0180	9589	8997	8405	7813	7220	6626	6032	5438	4843	4248	38
2531	1942	1352	0761	0171	9579	8988	8395	7803	7210	6616	6022	5428	4833	4238	37
2521	1932	1342	0752	0161	9569	8978	8386	7793	7200	6606	6012	5418	4823	4228	36
2512	1922	1332	0742	0151	9560	8968	8376	7783	7190	6596	6002	5408	4813	4218	35
2502	1912	1322	0732	0141	9550	8958	8366	7773	7180	6587	5993	5398	4803	4208	34
2492	1902	1312	0722	0131	9540	8948	8356	7763	7170	6577	5983	5388	4793	4198	33
2482	1893	1303	0712	0121	9530	8938	8346	7753	7160	6567	5973	5378	4783	4188	32
2472	1883	1293	0702	0112	9520	8928	8336	7744	7150	6557	5963	5368	4773	4178	31
2463	1873	1283	0693	0102	9510	8919	8326	7734	7141	6547	5953	5358	4764	4168	30
2453	1863	1273	0683	0092	9500	8909	8316	7724	7131	6537	5943	5349	4754	4158	29
2443	1853	1263	0673	0082	9491	8899	8307	7714	7121	6527	5933	5339	4744	4148	28
2433	1843	1253	0663	0072	9481	8889	8297	7704	7111	6517	5923	5329	4734	4138	27
2423	1834	1244	0653	0062	9471	8879	8287	7694	7101	6507	5913	5319	4724	4128	26
2413	1824	1234	0643	0052	9461	8869	8277	7684	7091	6497	5903	5309	4714	4119	25
2404	1814	1224	0633	0043	9451	8859	8267	7674	7081	6488	5894	5299	4704	4109	24
2394	1804	1214	0624	0033	9441	8849	8257	7664	7071	6478	5884	5289	4694	4099	23
2384	1794	1204	0614	0023	9431	8840	8247	7655	7061	6468	5874	5279	4684	4089	22
2374	1785	1194	0604	0013	9422	8830	8237	7645	7052	6458	5864	5269	4674	4079	21
2364	1775	1185	0594	0003	9412	8820	8228	7635	7042	6448	5854	5259	4664	4069	20
2354	1765	1175	0584	9993	9402	8810	8218	7625	7032	6438	5844	5249	4654	4059	19
2345	1755	1165	0574	9983	9392	8800	8208	7615	7022	6428	5834	5240	4645	4049	18
2335	1745	1155	0565	9974	9382	8790	8198	7605	7012	6418	5824	5230	4635	4039	17
2325	1735	1145	0555	9964	9372	8780	8188	7595	7002	6408	5814	5220	4625	4029	16
2315	1726	1135	0545	9954	9362	8771	8178	7585	6992	6399	5804	5210	4615	4019	15
2305	1716	1126	0535	9944	9353	8761	8168	7576	6982	6389	5794	5200	4605	4009	14
2296	1706	1116	0525	9934	9343	8751	8158	7566	6972	6379	5785	5190	4595	3999	13
2286	1696	1106	0515	9924	9333	8741	8149	7556	6963	6369	5775	5180	4585	3989	12
2276	1686	1096	0505	9914	9323	8731	8139	7546	6953	6359	5765	5170	4575	3980	11
2266	1676	1086	0496	9905	9313	8721	8129	7536	6943	6349	5755	5160	4565	3970	10
2256	1667	1076	0486	9895	9303	8711	8119	7526	6933	6339	5745	5150	4555	3960	9
2246	1657	1067	0476	9885	9293	8701	8109	7516	6923	6329	5735	5140	4545	3950	8
2237	1647	1057	0466	9875	9284	8692	8099	7506	6913	6319	5725	5130	4535	3940	7
2227	1637	1047	0456	9865	9274	8682	8089	7496	6903	6309	5715	5121	4525	3930	6
2217	1627	1037	0446	9855	9264	8672	8079	7487	6893	6300	5705	5111	4516	3920	5
2207	1617	1027	0437	9845	9254	8662	8070	7477	6883	6290	5695	5101	4506	3910	4
2197	1608	1017	0427	9836	9244	8652	8060	7467	6873	6280	5685	5091	4496	3900	3
2187	1598	1008	0417	9826	9234	8642	8050	7457	6864	6270	5676	5081	4486	3890	2
2178	1588	0998	0407	9816	9224	8632	8040	7447	6854	6260	5666	5071	4476	3880	1
2168	1578	0988	0397	9806	9215	8623	8030	7437	6844	6250	5656	5061	4466	3870	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Sine Deg. 64

25 Deg. Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.668	9.669	9.669	9.669	9.669	9.670	9.670	9.670	9.671	9.671	9.671	9.672	9.672	9.672	9.673
0	6725	0023	3319	6613	9906	3197	6486	9774	3060	6345	9628	2910	6190	9468	2745
1	6780	0078	3374	6668	9961	3252	6541	9829	3115	6400	9683	2964	6244	9523	2799
2	6835	0133	3429	6723	0015	3306	6596	9884	3170	6455	9738	3019	6299	9577	2854
3	6890	0188	3484	6778	0070	3361	6651	9938	3225	6509	9792	3074	6354	9632	2909
4	6945	0243	3538	6833	0125	3416	6705	9993	3279	6564	9847	3128	6408	9686	2963
5	7000	0298	3593	6888	0180	3471	6760	0048	3334	6619	9902	3183	6463	9741	3018
6	7055	0353	3648	6942	0235	3526	6815	0103	3389	6673	9956	3238	6517	9796	3072
7	7110	0408	3703	6997	0290	3581	6870	0158	3444	6728	0011	3292	6572	9850	3127
8	7165	0462	3758	7052	0345	3635	6925	0212	3498	6783	0066	3347	6627	9905	3182
9	7220	0517	3813	7107	0399	3690	6980	0267	3553	6838	0120	3402	6681	9960	3236
10	7275	0572	3868	7162	0454	3745	7034	0322	3608	6892	0175	3456	6736	0014	3291
11	7330	0627	3923	7217	0509	3800	7089	0377	3663	6947	0230	3511	6791	0069	3345
12	7385	0682	3978	7272	0564	3855	7144	0431	3717	7002	0285	3566	6845	0123	3400
13	7440	0737	4033	7327	0619	3910	7199	0486	3772	7057	0339	3620	6900	0178	3454
14	7495	0792	4088	7381	0674	3964	7254	0541	3827	7111	0394	3675	6955	0233	3509
15	7550	0847	4143	7436	0729	4019	7308	0596	3882	7166	0449	3730	7009	0287	3564
16	7605	0902	4197	7491	0783	4074	7363	0651	3936	7221	0503	3784	7064	0342	3618
17	7660	0957	4252	7546	0838	4129	7418	0705	3991	7275	0558	3839	7119	0397	3673
18	7715	1012	4307	7601	0893	4184	7473	0760	4046	7330	0613	3894	7173	0451	3727
19	7770	1067	4362	7656	0948	4239	7528	0815	4101	7385	0667	3948	7228	0506	3782
20	7825	1122	4417	7711	1003	4293	7582	0870	4155	7440	0722	4003	7283	0560	3837
21	7880	1177	4472	7766	1058	4348	7637	0924	4210	7494	0777	4058	7337	0615	3891
22	7935	1232	4527	7821	1113	4403	7692	0979	4265	7549	0832	4112	7392	0670	3946
23	7990	1287	4582	7875	1167	4458	7747	1034	4320	7604	0886	4167	7446	0724	4000
24	8045	1341	4637	7930	1222	4513	7802	1089	4374	7658	0941	4222	7501	0779	4055
25	8100	1396	4692	7985	1277	4568	7856	1144	4429	7713	0996	4276	7556	0833	4110
26	8155	1451	4747	8040	1332	4622	7911	1198	4484	7768	1050	4331	7610	0888	4164
27	8210	1506	4801	8095	1387	4677	7966	1253	4539	7823	1105	4386	7665	0943	4219
28	8264	1561	4856	8150	1442	4732	8021	1308	4593	7877	1160	4440	7720	0997	4273
29	8319	1616	4911	8205	1497	4787	8076	1363	4648	7932	1214	4495	7774	1052	4328
30	8374	1671	4966	8260	1551	4842	8130	1417	4703	7987	1269	4550	7829	1107	4383
31	8429	1726	5021	8314	1606	4897	8185	1472	4758	8042	1324	4604	7884	1161	4437
32	8484	1781	5076	8369	1661	4951	8240	1527	4812	8096	1378	4659	7938	1216	4492
33	8539	1836	5131	8424	1716	5006	8295	1582	4867	8151	1433	4714	7993	1270	4546
34	8594	1891	5186	8479	1771	5061	8350	1637	4922	8206	1488	4768	8048	1325	4601
35	8649	1946	5241	8534	1826	5116	8404	1691	4977	8260	1543	4823	8102	1380	4655
36	8704	2001	5296	8589	1881	5171	8459	1746	5031	8315	1597	4878	8157	1434	4710
37	8759	2056	5350	8644	1935	5225	8514	1801	5086	8370	1652	4932	8211	1489	4765
38	8814	2111	5405	8699	1990	5280	8569	1856	5141	8425	1707	4987	8266	1543	4819
39	8869	2165	5460	8753	2045	5335	8624	1910	5196	8479	1761	5042	8321	1598	4874
40	8924	2220	5515	8808	2100	5390	8678	1965	5250	8534	1816	5096	8375	1653	4928
41	8979	2275	5570	8863	2155	5445	8733	2020	5305	8589	1871	5151	8430	1707	4983
42	9034	2330	5625	8918	2210	5500	8788	2075	5360	8643	1925	5206	8485	1762	5038
43	9089	2385	5680	8973	2264	5554	8843	2129	5415	8698	1980	5260	8539	1816	5092
44	9144	2440	5735	9028	2319	5609	8897	2184	5469	8753	2035	5315	8594	1871	5147
45	9199	2495	5790	9083	2374	5664	8952	2239	5524	8808	2089	5370	8648	1926	5201
46	9254	2550	5845	9138	2429	5719	9007	2294	5579	8862	2144	5424	8703	1980	5256
47	9309	2605	5899	9192	2484	5774	9062	2348	5633	8917	2199	5479	8758	2035	5310
48	9364	2660	5954	9247	2539	5828	9117	2403	5688	8972	2253	5534	8812	2089	5365
49	9419	2715	6009	9302	2594	5883	9171	2458	5743	9026	2308	5588	8867	2144	5420
50	9473	2770	6064	9357	2648	5938	9226	2513	5798	9081	2363	5643	8922	2199	5474
51	9528	2825	6119	9412	2703	5993	9281	2568	5852	9136	2418	5698	8976	2253	5529
52	9583	2879	6174	9467	2758	6048	9336	2622	5907	9190	2472	5752	9031	2308	5583
53	9638	2934	6229	9522	2813	6103	9391	2677	5962	9245	2527	5807	9086	2363	5638
54	9693	2989	6284	9577	2868	6157	9445	2732	6017	9300	2582	5862	9140	2417	5692
55	9748	3044	6339	9631	2923	6212	9500	2787	6071	9355	2636	5916	9195	2472	5747
56	9803	3099	6393	9686	2977	6267	9555	2841	6126	9409	2691	5971	9249	2526	5802
57	9858	3154	6448	9741	3032	6322	9610	2896	6181	9464	2746	6026	9304	2581	5856
58	9913	3209	6503	9796	3087	6377	9665	2951	6236	9519	2800	6080	9359	2636	5911
59	9968	3264	6558	9851	3142	6431	9719	3006	6290	9573	2855	6135	9413	2690	5965
60	0023	3319	6613	9906	3197	6486	9774	3060	6345	9628	2910	6190	9468	2745	6020
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Tangent Deg. 64

25 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
10.331	10.330	10.330	10.330	10.330	10.329	10.329	10.329	10.328	10.328	10.328	10.327	10.327	10.327	10.326	″
3275	9977	6681	3387	0094	6803	3514	0226	6940	3655	0372	7090	3810	0532	7255	60
3220	9922	6626	3332	0039	6748	3459	0171	6885	3600	0317	7036	3756	0477	7201	59
3165	9867	6571	3277	9985	6694	3404	0116	6830	3545	0262	6981	3701	0423	7146	58
3110	9812	6516	3222	9930	6639	3349	0062	6775	3491	0208	6926	3646	0368	7091	57
3055	9757	6462	3167	9875	6584	3295	0007	6721	3436	0153	6872	3592	0314	7037	56
3000	9702	6407	3112	9820	6529	3240	9952	6666	3381	0098	6817	3537	0259	6982	55
2945	9647	6352	3058	9765	6474	3185	9897	6611	3327	0044	6762	3483	0204	6928	54
2890	9592	6297	3003	9710	6419	3130	9842	6556	3272	9989	6708	3428	0150	6873	53
2835	9538	6242	2948	9655	6365	3075	9788	6502	3217	9934	6653	3373	0095	6818	52
2780	9483	6187	2893	9601	6310	3020	9733	6447	3162	9880	6598	3319	0040	6764	51
2725	9428	6132	2838	9546	6255	2966	9678	6392	3108	9825	6544	3264	9986	6709	50
2670	9373	6077	2783	9491	6200	2911	9623	6337	3053	9770	6489	3209	9931	6655	49
2615	9318	6022	2728	9436	6145	2856	9569	6283	2998	9715	6434	3155	9877	6600	48
2560	9263	5967	2673	9381	6090	2801	9514	6228	2943	9661	6380	3100	9822	6546	47
2505	9208	5912	2619	9326	6036	2746	9459	6173	2889	9606	6325	3045	9767	6491	46
2450	9153	5857	2564	9271	5981	2692	9404	6118	2834	9551	6270	2991	9713	6436	45
2395	9098	5803	2509	9217	5926	2637	9349	6064	2779	9497	6216	2936	9658	6382	44
2340	9043	5748	2454	9162	5871	2582	9295	6009	2725	9442	6161	2881	9603	6327	43
2285	8988	5693	2399	9107	5816	2527	9240	5954	2670	9387	6106	2827	9549	6273	42
2230	8933	5638	2344	9052	5761	2472	9185	5899	2615	9333	6052	2772	9494	6218	41
2175	8878	5583	2289	8997	5707	2418	9130	5845	2560	9278	5997	2717	9440	6163	40
2120	8823	5528	2234	8942	5652	2363	9076	5790	2506	9223	5942	2663	9385	6109	39
2065	8768	5473	2179	8887	5597	2308	9021	5735	2451	9168	5888	2608	9330	6054	38
2010	8713	5418	2125	8833	5542	2253	8966	5680	2396	9114	5833	2554	9276	6000	37
1955	8659	5363	2070	8778	5487	2198	8911	5626	2342	9059	5778	2499	9221	5945	36
1900	8604	5308	2015	8723	5432	2144	8856	5571	2287	9004	5724	2444	9167	5890	35
1845	8549	5253	1960	8668	5378	2089	8802	5516	2232	8950	5669	2390	9112	5836	34
1790	8494	5199	1905	8613	5323	2034	8747	5461	2177	8895	5614	2335	9057	5781	33
1736	8439	5144	1850	8558	5268	1979	8692	5407	2123	8840	5560	2280	9003	5727	32
1681	8384	5089	1795	8503	5213	1924	8637	5352	2068	8786	5505	2226	8948	5672	31
1626	8329	5034	1740	8449	5158	1870	8583	5297	2013	8731	5450	2171	8893	5617	30
1571	8274	4979	1686	8394	5103	1815	8528	5242	1958	8676	5396	2116	8839	5563	29
1516	8219	4924	1631	8339	5049	1760	8473	5188	1904	8622	5341	2062	8784	5508	28
1461	8164	4869	1576	8284	4994	1705	8418	5133	1849	8567	5286	2007	8730	5454	27
1406	8109	4814	1521	8229	4939	1650	8363	5078	1794	8512	5232	1952	8675	5399	26
1351	8054	4759	1466	8174	4884	1596	8309	5023	1740	8457	5177	1898	8620	5345	25
1296	7999	4704	1411	8119	4829	1541	8254	4969	1685	8403	5122	1843	8566	5290	24
1241	7944	4650	1356	8065	4775	1486	8199	4914	1630	8348	5068	1789	8511	5235	23
1186	7889	4595	1301	8010	4720	1431	8144	4859	1575	8293	5013	1734	8457	5181	22
1131	7835	4540	1247	7955	4665	1376	8090	4804	1521	8239	4958	1679	8402	5126	21
1076	7780	4485	1192	7900	4610	1322	8035	4750	1466	8184	4904	1625	8347	5072	20
1021	7725	4430	1137	7845	4555	1267	7980	4695	1411	8129	4849	1570	8293	5017	19
0966	7670	4375	1082	7790	4500	1212	7925	4640	1357	8075	4794	1515	8238	4962	18
0911	7615	4320	1027	7736	4446	1157	7871	4585	1302	8020	4740	1461	8184	4908	17
0856	7560	4265	0972	7681	4391	1103	7816	4531	1247	7965	4685	1406	8129	4853	16
0801	7505	4210	0917	7626	4336	1048	7761	4476	1192	7911	4630	1352	8074	4799	15
0746	7450	4155	0862	7571	4281	0993	7706	4421	1138	7856	4576	1297	8020	4744	14
0691	7395	4101	0808	7516	4226	0938	7652	4367	1083	7801	4521	1242	7965	4690	13
0636	7340	4046	0753	7461	4172	0883	7597	4312	1028	7747	4466	1188	7911	4635	12
0581	7285	3991	0698	7406	4117	0829	7542	4257	0974	7692	4412	1133	7856	4580	11
0527	7230	3936	0643	7352	4062	0774	7487	4202	0919	7637	4357	1078	7801	4526	10
0472	7175	3881	0588	7297	4007	0719	7432	4148	0864	7582	4302	1024	7747	4471	9
0417	7121	3826	0533	7242	3952	0664	7378	4093	0810	7528	4248	0969	7692	4417	8
0362	7066	3771	0478	7187	3897	0609	7323	4038	0755	7473	4193	0914	7637	4362	7
0307	7011	3716	0423	7132	3843	0555	7268	3983	0700	7418	4138	0860	7583	4308	6
0252	6956	3661	0369	7077	3788	0500	7213	3929	0645	7364	4084	0805	7528	4253	5
0197	6901	3607	0314	7023	3733	0445	7159	3874	0591	7309	4029	0751	7474	4198	4
0142	6846	3552	0259	6968	3678	0390	7104	3819	0536	7254	3974	0696	7419	4144	3
0087	6791	3497	0204	6913	3623	0335	7049	3764	0481	7200	3920	0641	7364	4089	2
0032	6736	3442	0149	6858	3569	0281	6994	3710	0427	7145	3865	0587	7310	4035	1
9977	6681	3387	0094	6803	3514	0226	6940	3655	0372	7090	3810	0532	7255	3980	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Tangent Deg. 64

25 Deg. Sine

″	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9.629	9.630	9.630	9.630	9.631	9.631	9.631	9.631	9.632	9.632	9.632	9.632	9.633	9.633	9.633
0	9890	2568	5243	7917	0589	3258	5926	8591	1255	3916	6576	9233	1889	4542	7194
1	9935	2612	5288	7962	0633	3303	5970	8636	1299	3961	6620	9278	1933	4587	7238
2	9980	2657	5333	8006	0678	3347	6015	8680	1343	4005	6664	9322	1977	4631	7282
3	0024	2702	5377	8051	0722	3392	6059	8724	1388	4049	6709	9366	2022	4675	7326
4	0069	2746	5422	8095	0767	3436	6103	8769	1432	4094	6753	9410	2066	4719	7371
5	0113	2791	5466	8140	0811	3480	6148	8813	1477	4138	6797	9455	2110	4763	7415
6	0158	2836	5511	8184	0856	3525	6192	8858	1521	4182	6842	9499	2154	4808	7459
7	0203	2880	5555	8229	0900	3569	6237	8902	1565	4227	6886	9543	2198	4852	7503
8	0247	2925	5600	8273	0945	3614	6281	8946	1610	4271	6930	9587	2243	4896	7547
9	0292	2969	5645	8318	0989	3658	6326	8991	1654	4315	6974	9632	2287	4940	7591
10	0337	3014	5689	8362	1034	3703	6370	9035	1698	4360	7019	9676	2331	4984	7636
11	0381	3059	5734	8407	1078	3747	6414	9080	1743	4404	7063	9720	2375	5029	7680
12	0426	3103	5778	8451	1123	3792	6459	9124	1787	4448	7107	9765	2420	5073	7724
13	0471	3148	5823	8496	1167	3836	6503	9168	1832	4493	7152	9809	2464	5117	7768
14	0515	3192	5867	8541	1212	3881	6548	9213	1876	4537	7196	9853	2508	5161	7812
15	0560	3237	5912	8585	1256	3925	6592	9257	1920	4581	7240	9897	2552	5205	7857
16	0604	3282	5957	8630	1301	3970	6637	9302	1965	4626	7285	9942	2597	5250	7901
17	0649	3326	6001	8674	1345	4014	6681	9346	2009	4670	7329	9986	2641	5294	7945
18	0694	3371	6046	8719	1390	4059	6725	9390	2053	4714	7373	0030	2685	5338	7989
19	0738	3415	6090	8763	1434	4103	6770	9435	2098	4759	7417	0074	2729	5382	8033
20	0783	3460	6135	8808	1479	4147	6814	9479	2142	4803	7462	0119	2774	5426	8077
21	0828	3505	6179	8852	1523	4192	6859	9524	2186	4847	7506	0163	2818	5471	8122
22	0872	3549	6224	8897	1568	4236	6903	9568	2231	4892	7550	0207	2862	5515	8166
23	0917	3594	6269	8941	1612	4281	6948	9612	2275	4936	7595	0251	2906	5559	8210
24	0962	3638	6313	8986	1657	4325	6992	9657	2320	4980	7639	0296	2950	5603	8254
25	1006	3683	6358	9030	1701	4370	7036	9701	2364	5025	7683	0340	2995	5647	8298
26	1051	3728	6402	9075	1746	4414	7081	9746	2408	5069	7728	0384	3039	5692	8342
27	1095	3772	6447	9119	1790	4459	7125	9790	2453	5113	7772	0429	3083	5736	8386
28	1140	3817	6491	9164	1835	4503	7170	9834	2497	5158	7816	0473	3127	5780	8431
29	1185	3861	6536	9208	1879	4548	7214	9879	2541	5202	7860	0517	3172	5824	8475
30	1229	3906	6580	9253	1924	4592	7259	9923	2586	5246	7905	0561	3216	5868	8519
31	1274	3950	6625	9298	1968	4637	7303	9968	2630	5291	7949	0606	3260	5913	8563
32	1319	3995	6670	9342	2013	4681	7347	0012	2674	5335	7993	0650	3304	5957	8607
33	1363	4040	6714	9387	2057	4725	7392	0056	2719	5379	8038	0694	3349	6001	8651
34	1408	4084	6759	9431	2102	4770	7436	0101	2763	5424	8082	0738	3393	6045	8696
35	1452	4129	6803	9476	2146	4814	7481	0145	2807	5468	8126	0783	3437	6089	8740
36	1497	4173	6848	9520	2191	4859	7525	0190	2852	5512	8170	0827	3481	6134	8784
37	1542	4218	6892	9565	2235	4903	7570	0234	2896	5556	8215	0871	3525	6178	8828
38	1586	4263	6937	9609	2279	4948	7614	0278	2941	5601	8259	0915	3570	6222	8872
39	1631	4307	6981	9654	2324	4992	7658	0323	2985	5645	8303	0960	3614	6266	8916
40	1676	4352	7026	9698	2368	5037	7703	0367	3029	5689	8348	1004	3658	6310	8961
41	1720	4396	7071	9743	2413	5081	7747	0411	3074	5734	8392	1048	3702	6354	9005
42	1765	4441	7115	9787	2457	5126	7792	0456	3118	5778	8436	1092	3747	6399	9049
43	1809	4486	7160	9832	2502	5170	7836	0500	3162	5822	8480	1137	3791	6443	9093
44	1854	4530	7204	9876	2546	5214	7881	0545	3207	5867	8525	1181	3835	6487	9137
45	1899	4575	7249	9921	2591	5259	7925	0589	3251	5911	8569	1225	3879	6531	9181
46	1943	4619	7293	9965	2635	5303	7969	0633	3295	5955	8613	1269	3923	6575	9225
47	1988	4664	7338	0010	2680	5348	8014	0678	3340	6000	8658	1314	3968	6620	9270
48	2032	4708	7382	0054	2724	5392	8058	0722	3384	6044	8702	1358	4012	6664	9314
49	2077	4753	7427	0099	2769	5437	8103	0767	3428	6088	8746	1402	4056	6708	9358
50	2122	4798	7472	0143	2813	5481	8147	0811	3473	6133	8790	1446	4100	6752	9402
51	2166	4842	7516	0188	2858	5526	8191	0855	3517	6177	8835	1491	4144	6796	9446
52	2211	4887	7561	0232	2902	5570	8236	0900	3561	6221	8879	1535	4189	6840	9490
53	2256	4931	7605	0277	2947	5615	8280	0944	3606	6266	8923	1579	4233	6885	9534
54	2300	4976	7650	0321	2991	5659	8325	0988	3650	6310	8968	1623	4277	6929	9579
55	2345	5021	7694	0366	3036	5703	8369	1033	3694	6354	9012	1668	4321	6973	9623
56	2389	5065	7739	0411	3080	5748	8414	1077	3739	6398	9056	1712	4366	7017	9667
57	2434	5110	7783	0455	3125	5792	8458	1122	3783	6443	9100	1756	4410	7061	9711
58	2479	5154	7828	0500	3169	5837	8502	1166	3828	6487	9145	1800	4454	7106	9755
59	2523	5199	7872	0544	3214	5881	8547	1210	3872	6531	9189	1845	4498	7150	9799
60	2568	5243	7917	0589	3258	5926	8591	1255	3916	6576	9233	1889	4542	7194	9844
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Sine Deg. 64

25 Deg. Co-Sine

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	″
9.956	9.956	9.956	9.956	9.956	9.956	9.956	9.955	9.955	9.955	9.955	9.955	9.955	9.955	9.955	
3870	3274	2678	2081	1483	0886	0287	9689	9089	8490	7890	7289	6688	6087	5485	60
3860	3264	2668	2071	1474	0876	0277	9679	9079	8480	7880	7279	6678	6077	5475	59
3850	3254	2658	2061	1464	0866	0267	9669	9069	8470	7870	7269	6668	6067	5465	58
3841	3244	2648	2051	1454	0856	0257	9659	9059	8460	7860	7259	6658	6057	5455	57
3831	3235	2638	2041	1444	0846	0247	9649	9049	8450	7850	7249	6648	6047	5445	56
3821	3225	2628	2031	1434	0836	0237	9639	9039	8440	7840	7239	6638	6037	5435	55
3811	3215	2618	2021	1424	0826	0227	9629	9029	8430	7830	7229	6628	6027	5425	54
3801	3205	2608	2011	1414	0816	0218	9619	9019	8420	7820	7219	6618	6017	5415	53
3791	3195	2598	2001	1404	0806	0208	9609	9009	8410	7810	7209	6608	6006	5405	52
3781	3185	2588	1991	1394	0796	0198	9599	9000	8400	7800	7199	6598	5996	5395	51
3771	3175	2578	1981	1384	0786	0188	9589	8990	8390	7790	7189	6588	5986	5384	50
3761	3165	2568	1971	1374	0776	0178	9579	8980	8380	7780	7179	6578	5976	5374	49
3751	3155	2558	1961	1364	0766	0168	9569	8970	8370	7770	7169	6568	5966	5364	48
3741	3145	2549	1951	1354	0756	0158	9559	8960	8360	7760	7159	6558	5956	5354	47
3731	3135	2539	1942	1344	0746	0148	9549	8950	8350	7750	7149	6548	5946	5344	46
3721	3125	2529	1932	1334	0736	0138	9539	8940	8340	7740	7139	6538	5936	5334	45
3711	3115	2519	1922	1324	0726	0128	9529	8930	8330	7730	7129	6528	5926	5324	44
3702	3105	2509	1912	1314	0716	0118	9519	8920	8320	7720	7119	6518	5916	5314	43
3692	3095	2499	1902	1304	0706	0108	9509	8910	8310	7710	7109	6508	5906	5304	42
3682	3085	2489	1892	1294	0696	0098	9499	8900	8300	7700	7099	6498	5896	5294	41
3672	3076	2479	1882	1284	0686	0088	9489	8890	8290	7690	7089	6488	5886	5284	40
3662	3066	2469	1872	1274	0676	0078	9479	8880	8280	7680	7079	6478	5876	5274	39
3652	3056	2459	1862	1264	0666	0068	9469	8870	8270	7670	7069	6468	5866	5264	38
3642	3046	2449	1852	1254	0656	0058	9459	8860	8260	7660	7059	6458	5856	5254	37
3632	3036	2439	1842	1244	0646	0048	9449	8850	8250	7650	7049	6448	5846	5244	36
3622	3026	2429	1832	1234	0636	0038	9439	8840	8240	7640	7039	6438	5836	5234	35
3612	3016	2419	1822	1224	0626	0028	9429	8830	8230	7630	7029	6428	5826	5224	34
3602	3006	2409	1812	1215	0616	0018	9419	8820	8220	7620	7019	6418	5816	5214	33
3592	2996	2399	1802	1205	0606	0008	9409	8810	8210	7609	7009	6408	5806	5204	32
3582	2986	2389	1792	1195	0597	9998	9399	8800	8200	7599	6999	6398	5796	5194	31
3572	2976	2379	1782	1185	0587	9988	9389	8790	8190	7589	6989	6387	5786	5184	30
3562	2966	2369	1772	1175	0577	9978	9379	8780	8180	7579	6979	6377	5776	5174	29
3553	2956	2359	1762	1165	0567	9968	9369	8770	8170	7569	6969	6367	5766	5164	28
3543	2946	2350	1752	1155	0557	9958	9359	8760	8160	7559	6959	6357	5756	5154	27
3533	2936	2340	1742	1145	0547	9948	9349	8750	8150	7549	6949	6347	5746	5144	26
3523	2926	2330	1732	1135	0537	9938	9339	8740	8140	7539	6939	6337	5736	5134	25
3513	2916	2320	1722	1125	0527	9928	9329	8730	8130	7529	6929	6327	5726	5123	24
3503	2907	2310	1713	1115	0517	9918	9319	8720	8120	7519	6919	6317	5716	5113	23
3493	2897	2300	1703	1105	0507	9908	9309	8710	8110	7509	6909	6307	5706	5103	22
3483	2887	2290	1693	1095	0497	9898	9299	8700	8100	7499	6899	6297	5696	5093	21
3473	2877	2280	1683	1085	0487	9888	9289	8690	8090	7489	6889	6287	5686	5083	20
3463	2867	2270	1673	1075	0477	9878	9279	8680	8080	7479	6879	6277	5675	5073	19
3453	2857	2260	1663	1065	0467	9868	9269	8670	8070	7469	6869	6267	5665	5063	18
3443	2847	2250	1653	1055	0457	9858	9259	8660	8060	7459	6858	6257	5655	5053	17
3433	2837	2240	1643	1045	0447	9848	9249	8650	8050	7449	6848	6247	5645	5043	16
3423	2827	2230	1633	1035	0437	9838	9239	8640	8040	7439	6838	6237	5635	5033	15
3413	2817	2220	1623	1025	0427	9828	9229	8630	8030	7429	6828	6227	5625	5023	14
3403	2807	2210	1613	1015	0417	9818	9219	8620	8020	7419	6818	6217	5615	5013	13
3394	2797	2200	1603	1005	0407	9808	9209	8610	8010	7409	6808	6207	5605	5003	12
3384	2787	2190	1593	0995	0397	9798	9199	8600	8000	7399	6798	6197	5595	4993	11
3374	2777	2180	1583	0985	0387	9788	9189	8590	7990	7389	6788	6187	5585	4983	10
3364	2767	2170	1573	0975	0377	9778	9179	8580	7980	7379	6778	6177	5575	4973	9
3354	2757	2160	1563	0965	0367	9768	9169	8570	7970	7369	6768	6167	5565	4963	8
3344	2747	2151	1553	0955	0357	9758	9159	8560	7960	7359	6758	6157	5555	4953	7
3334	2737	2141	1543	0945	0347	9749	9149	8550	7950	7349	6748	6147	5545	4943	6
3324	2728	2131	1533	0935	0337	9739	9139	8540	7940	7339	6738	6137	5535	4933	5
3314	2718	2121	1523	0926	0327	9729	9129	8530	7930	7329	6728	6127	5525	4923	4
3304	2708	2111	1513	0916	0317	9719	9119	8520	7920	7319	6718	6117	5515	4913	3
3294	2698	2101	1503	0906	0307	9709	9109	8510	7910	7309	6708	6107	5505	4903	2
3284	2688	2091	1493	0896	0297	9699	9099	8500	7900	7299	6698	6097	5495	4893	1
3274	2678	2081	1483	0886	0287	9689	9089	8490	7890	7289	6688	6087	5485	4882	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Sine Deg. 64

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 673	9. 673	9. 674	9. 674	9. 674	9. 675	9. 675	9. 675	9. 676	9. 676	9. 676	9. 677	9. 677	9. 677	9. 678
0	6020	9294	2566	5836	9105	2372	5638	8903	2165	5426	8686	1944	5201	8456	1709
1	6074	9348	2620	5891	9160	2427	5693	8957	2220	5481	8740	1998	5255	8510	1763
2	6129	9403	2675	5945	9214	2481	5747	9011	2274	5535	8795	2053	5309	8564	1818
3	6184	9457	2729	6000	9268	2536	5802	9066	2328	5589	8849	2107	5363	8618	1872
4	6238	9512	2784	6054	9323	2590	5856	9120	2383	5644	8903	2161	5418	8673	1926
5	6293	9566	2838	6109	9377	2645	5910	9174	2437	5698	8958	2216	5472	8727	1980
6	6347	9621	2893	6163	9432	2699	5965	9229	2491	5752	9012	2270	5526	8781	2034
7	6402	9675	2947	6218	9486	2754	6019	9283	2546	5807	9066	2324	5580	8835	2089
8	6456	9730	3002	6272	9541	2808	6074	9338	2600	5861	9121	2378	5635	8890	2143
9	6511	9784	3056	6327	9595	2862	6128	9392	2655	5915	9175	2433	5689	8944	2197
10	6566	9839	3111	6381	9650	2917	6182	9446	2709	5970	9229	2487	5743	8998	2251
11	6620	9894	3165	6436	9704	2971	6237	9501	2763	6024	9283	2541	5798	9052	2305
12	6675	9948	3220	6490	9759	3026	6291	9555	2818	6078	9338	2596	5852	9106	2360
13	6729	0003	3274	6545	9813	3080	6346	9610	2872	6133	9392	2650	5906	9161	2414
14	6784	0057	3329	6599	9868	3135	6400	9664	2926	6187	9446	2704	5960	9215	2468
15	6838	0112	3383	6654	9922	3189	6454	9718	2981	6241	9501	2758	6015	9269	2522
16	6893	0166	3438	6708	9977	3243	6509	9773	3035	6296	9555	2813	6069	9323	2576
17	6948	0221	3492	6762	0031	3298	6563	9827	3089	6350	9609	2867	6123	9378	2631
18	7002	0275	3547	6817	0085	3352	6618	9882	3144	6404	9664	2921	6177	9432	2685
19	7057	0330	3601	6871	0140	3407	6672	9936	3198	6459	9718	2976	6232	9486	2739
20	7111	0384	3656	6926	0194	3461	6727	9990	3252	6513	9772	3030	6286	9540	2793
21	7166	0439	3710	6980	0249	3516	6781	0045	3307	6567	9827	3084	6340	9595	2847
22	7220	0493	3765	7035	0303	3570	6835	0099	3361	6622	9881	3138	6394	9649	2902
23	7275	0548	3820	7089	0358	3625	6890	0153	3416	6676	9935	3193	6449	9703	2956
24	7330	0603	3874	7144	0412	3679	6944	0208	3470	6730	9989	3247	6503	9757	3010
25	7384	0657	3929	7198	0467	3733	6999	0262	3524	6785	0044	3301	6557	9811	3064
26	7439	0712	3983	7253	0521	3788	7053	0317	3579	6839	0098	3355	6611	9866	3118
27	7493	0766	4038	7307	0576	3842	7107	0371	3633	6893	0152	3410	6666	9920	3173
28	7548	0821	4092	7362	0630	3897	7162	0425	3687	6948	0207	3464	6720	9974	3227
29	7602	0875	4147	7416	0684	3951	7216	0480	3742	7002	0261	3518	6774	0028	3281
30	7657	0930	4201	7471	0739	4006	7271	0534	3796	7056	0315	3573	6828	0083	3335
31	7711	0984	4256	7525	0793	4060	7325	0588	3850	7111	0370	3627	6883	0137	3389
32	7766	1039	4310	7580	0848	4114	7379	0643	3905	7165	0424	3681	6937	0191	3444
33	7821	1093	4365	7634	0902	4169	7434	0697	3959	7219	0478	3735	6991	0245	3498
34	7875	1148	4419	7689	0957	4223	7488	0752	4013	7274	0532	3790	7045	0299	3552
35	7930	1202	4474	7743	1011	4278	7543	0806	4068	7328	0587	3844	7100	0354	3606
36	7984	1257	4528	7798	1066	4332	7597	0860	4122	7382	0641	3898	7154	0408	3660
37	8039	1312	4583	7852	1120	4387	7651	0915	4176	7437	0695	3952	7208	0462	3715
38	8093	1366	4637	7907	1175	4441	7706	0969	4231	7491	0750	4007	7262	0516	3769
39	8148	1421	4692	7961	1229	4495	7760	1023	4285	7545	0804	4061	7317	0571	3823
40	8203	1475	4746	8016	1283	4550	7815	1078	4340	7600	0858	4115	7371	0625	3877
41	8257	1530	4801	8070	1338	4604	7869	1132	4394	7654	0913	4170	7425	0679	3931
42	8312	1584	4855	8125	1392	4659	7923	1187	4448	7708	0967	4224	7479	0733	3986
43	8366	1639	4910	8179	1447	4713	7978	1241	4503	7763	1021	4278	7534	0787	4040
44	8421	1693	4964	8234	1501	4768	8032	1295	4557	7817	1075	4332	7588	0842	4094
45	8475	1748	5019	8288	1556	4822	8087	1350	4611	7871	1130	4387	7642	0896	4148
46	8530	1802	5073	8342	1610	4876	8141	1404	4666	7926	1184	4441	7696	0950	4202
47	8584	1857	5128	8397	1665	4931	8195	1458	4720	7980	1238	4495	7751	1004	4257
48	8639	1911	5182	8451	1719	4985	8250	1513	4774	8034	1293	4549	7805	1059	4311
49	8694	1966	5237	8506	1774	5040	8304	1567	4829	8089	1347	4604	7859	1113	4365
50	8748	2020	5291	8560	1828	5094	8359	1622	4883	8143	1401	4658	7913	1167	4419
51	8803	2075	5346	8615	1882	5148	8413	1676	4937	8197	1455	4712	7967	1221	4473
52	8857	2129	5400	8669	1937	5203	8467	1730	4992	8252	1510	4767	8022	1275	4528
53	8912	2184	5455	8724	1991	5257	8522	1785	5046	8306	1564	4821	8076	1330	4582
54	8966	2238	5509	8778	2046	5312	8576	1839	5100	8360	1618	4875	8130	1384	4636
55	9021	2293	5564	8833	2100	5366	8631	1893	5155	8414	1673	4929	8184	1438	4690
56	9075	2348	5618	8887	2155	5421	8685	1948	5209	8469	1727	4984	8239	1492	4744
57	9130	2402	5673	8942	2209	5475	8739	2002	5263	8523	1781	5038	8293	1546	4798
58	9184	2457	5727	8996	2264	5529	8794	2057	5318	8577	1836	5092	8347	1601	4853
59	9239	2511	5782	9051	2318	5584	8848	2111	5372	8632	1890	5146	8401	1655	4907
60	9294	2566	5836	9105	2372	5638	8903	2165	5426	8686	1944	5201	8456	1709	4961
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
	10. 326	10. 326	10. 325	10. 325	10. 325	10. 324	10. 324	10. 324	10. 323	10. 323	10. 323	10. 322	10. 322	10. 322	10. 321	″
0	3980	0706	7434	4164	0895	7628	4362	1097	7835	4574	1314	8056	4799	1544	8291	60
1	3926	0652	7380	4109	0840	7573	4307	1043	7780	4519	1260	8002	4745	1490	8237	59
2	3871	0597	7325	4055	0786	7519	4253	0989	7726	4465	1205	7947	4691	1436	8182	58
3	3816	0543	7271	4000	0732	7464	4198	0934	7672	4411	1151	7893	4637	1382	8128	57
4	3762	0488	7216	3946	0677	7410	4144	0880	7617	4356	1097	7839	4582	1327	8074	56
5	3707	0434	7162	3891	0623	7355	4090	0826	7563	4302	1042	7784	4528	1273	8020	55
6	3653	0379	7107	3837	0568	7301	4035	0771	7509	4248	0988	7730	4474	1219	7966	54
7	3598	0325	7053	3782	0514	7246	3981	0717	7454	4193	0934	7676	4420	1165	7911	53
8	3544	0270	6998	3728	0459	7192	3926	0662	7400	4139	0879	7622	4365	1110	7857	52
9	3489	0216	6944	3673	0405	7138	3872	0608	7345	4085	0825	7567	4311	1056	7803	51
10	3434	0161	6889	3619	0350	7083	3818	0554	7291	4030	0771	7513	4257	1002	7749	50
11	3380	0106	6835	3564	0296	7029	3763	0499	7237	3976	0717	7459	4202	0948	7695	49
12	3325	0052	6780	3510	0241	6974	3709	0445	7182	3922	0662	7404	4148	0894	7640	48
13	3271	9997	6726	3455	0187	6920	3654	0390	7128	3867	0608	7350	4094	0839	7586	47
14	3216	9943	6671	3401	0132	6865	3600	0336	7074	3813	0554	7296	4040	0785	7532	46
15	3162	9888	6617	3346	0078	6811	3546	0282	7019	3759	0499	7242	3985	0731	7478	45
16	3107	9834	6562	3292	0023	6757	3491	0227	6965	3704	0445	7187	3931	0677	7424	44
17	3052	9779	6508	3238	9969	6702	3437	0173	6911	3650	0391	7133	3877	0622	7369	43
18	2998	9725	6453	3183	9915	6648	3382	0118	6856	3596	0336	7079	3823	0568	7315	42
19	2943	9670	6399	3129	9860	6593	3328	0064	6802	3541	0282	7024	3768	0514	7261	41
20	2889	9616	6344	3074	9806	6539	3273	0010	6748	3487	0228	6970	3714	0460	7207	40
21	2834	9561	6290	3020	9751	6484	3219	9955	6693	3433	0173	6916	3660	0405	7153	39
22	2780	9507	6235	2965	9697	6430	3165	9901	6639	3378	0119	6862	3606	0351	7098	38
23	2725	9452	6180	2911	9642	6375	3110	9847	6584	3324	0065	6807	3551	0297	7044	37
24	2670	9397	6126	2856	9588	6321	3056	9792	6530	3270	0011	6753	3497	0243	6990	36
25	2616	9343	6071	2802	9533	6267	3001	9738	6476	3215	9956	6699	3443	0189	6936	35
26	2561	9288	6017	2747	9479	6212	2947	9683	6421	3161	9902	6645	3389	0134	6882	34
27	2507	9234	5962	2693	9424	6158	2893	9629	6367	3107	9848	6590	3334	0080	6827	33
28	2452	9179	5908	2638	9370	6103	2838	9575	6313	3052	9793	6536	3280	0026	6773	32
29	2398	9125	5853	2584	9316	6049	2784	9520	6258	2998	9739	6482	3226	9972	6719	31
30	2343	9070	5799	2529	9261	5994	2729	9466	6204	2944	9685	6427	3172	9917	6665	30
31	2289	9016	5744	2475	9207	5940	2675	9412	6150	2889	9630	6373	3117	9863	6611	29
32	2234	8961	5690	2420	9152	5886	2621	9357	6095	2835	9576	6319	3063	9809	6556	28
33	2179	8907	5635	2366	9098	5831	2566	9303	6041	2781	9522	6265	3009	9755	6502	27
34	2125	8852	5581	2311	9043	5777	2512	9248	5987	2726	9468	6210	2955	9701	6448	26
35	2070	8798	5526	2257	8989	5722	2457	9194	5932	2672	9413	6156	2900	9646	6394	25
36	2016	8743	5472	2202	8934	5668	2403	9140	5878	2618	9359	6102	2846	9592	6340	24
37	1961	8688	5417	2148	8880	5613	2349	9085	5824	2563	9305	6048	2792	9538	6285	23
38	1907	8634	5363	2093	8825	5559	2294	9031	5769	2509	9250	5993	2738	9484	6231	22
39	1852	8579	5308	2039	8771	5505	2240	8977	5715	2455	9196	5939	2683	9429	6177	21
40	1797	8525	5254	1984	8717	5450	2185	8922	5660	2400	9142	5885	2629	9375	6123	20
41	1743	8470	5199	1930	8662	5396	2131	8868	5606	2346	9087	5830	2575	9321	6069	19
42	1688	8416	5145	1875	8608	5341	2077	8813	5552	2292	9033	5776	2521	9267	6014	18
43	1634	8361	5090	1821	8553	5287	2022	8759	5497	2237	8979	5722	2466	9213	5960	17
44	1579	8307	5036	1766	8499	5232	1968	8705	5443	2183	8925	5668	2412	9158	5906	16
45	1525	8252	4981	1712	8444	5178	1913	8650	5389	2129	8870	5613	2358	9104	5852	15
46	1470	8198	4927	1658	8390	5124	1859	8596	5334	2074	8816	5559	2304	9050	5798	14
47	1416	8143	4872	1603	8335	5069	1805	8542	5280	2020	8762	5505	2249	8996	5743	13
48	1361	8089	4818	1549	8281	5015	1750	8487	5226	1966	8707	5451	2195	8941	5689	12
49	1306	8034	4763	1494	8226	4960	1696	8433	5171	1911	8653	5396	2141	8887	5635	11
50	1252	7980	4709	1440	8172	4906	1641	8378	5117	1857	8599	5342	2087	8833	5581	10
51	1197	7925	4654	1385	8118	4852	1587	8324	5063	1803	8545	5288	2033	8779	5527	9
52	1143	7871	4600	1331	8063	4797	1533	8270	5008	1748	8490	5233	1978	8725	5472	8
53	1088	7816	4545	1276	8009	4743	1478	8215	4954	1694	8436	5179	1924	8670	5418	7
54	1034	7762	4491	1222	7954	4688	1424	8161	4900	1640	8382	5125	1870	8616	5364	6
55	0979	7707	4436	1167	7900	4634	1369	8107	4845	1586	8327	5071	1816	8562	5310	5
56	0925	7652	4382	1113	7845	4579	1315	8052	4791	1531	8273	5016	1761	8508	5256	4
57	0870	7598	4327	1058	7791	4525	1261	7998	4737	1477	8219	4962	1707	8454	5202	3
58	0816	7543	4273	1004	7736	4471	1206	7943	4682	1423	8164	4908	1653	8399	5147	2
59	0761	7489	4218	0949	7682	4416	1152	7889	4628	1368	8110	4854	1599	8345	5093	1
60	0706	7434	4164	0895	7628	4362	1097	7835	4574	1314	8056	4799	1544	8291	5039	0
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

25 Deg. Sine

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 633	9. 634	9. 634	9. 634	9. 635	9. 635	9. 635	9. 635	9. 636	9. 636	9. 636	9. 636	9. 637	9. 637	9. 637
0	9844	2491	5137	7780	0422	3062	5699	8335	0969	3601	6231	8859	1484	4108	6731
1	9888	2535	5181	7824	0466	3106	5743	8379	1013	3645	6274	8902	1528	4152	6774
2	9932	2579	5225	7868	0510	3150	5787	8423	1057	3688	6318	8946	1572	4196	6818
3	9976	2623	5269	7912	0554	3194	5831	8467	1101	3732	6362	8990	1616	4240	6862
4	0020	2668	5313	7957	0598	3238	5875	8511	1144	3776	6406	9034	1659	4283	6905
5	0064	2712	5357	8001	0642	3282	5919	8555	1188	3820	6450	9077	1703	4327	6949
6	0108	2756	5401	8045	0686	3326	5963	8599	1232	3864	6494	9121	1747	4371	6993
7	0152	2800	5445	8089	0730	3370	6007	8643	1276	3908	6537	9165	1791	4414	7036
8	0197	2844	5489	8133	0774	3414	6051	8686	1320	3952	6581	9209	1834	4458	7080
9	0241	2888	5533	8177	0818	3457	6095	8730	1364	3995	6625	9253	1878	4502	7124
10	0285	2932	5577	8221	0862	3501	6139	8774	1408	4039	6669	9296	1922	4546	7167
11	0329	2976	5622	8265	0906	3545	6183	8818	1452	4083	6713	9340	1966	4589	7211
12	0373	3020	5666	8309	0950	3589	6227	8862	1495	4127	6756	9384	2009	4633	7255
13	0417	3064	5710	8353	0994	3633	6271	8906	1539	4171	6800	9428	2053	4677	7298
14	0461	3109	5754	8397	1038	3677	6315	8950	1583	4215	6844	9471	2097	4720	7342
15	0506	3153	5798	8441	1082	3721	6359	8994	1627	4258	6888	9515	2141	4764	7386
16	0550	3197	5842	8485	1126	3765	6402	9038	1671	4302	6932	9559	2184	4808	7429
17	0594	3241	5886	8529	1170	3809	6446	9082	1715	4346	6975	9603	2228	4852	7473
18	0638	3285	5930	8573	1214	3853	6490	9126	1759	4390	7019	9647	2272	4895	7517
19	0682	3329	5974	8617	1258	3897	6534	9169	1803	4434	7063	9690	2316	4939	7560
20	0726	3373	6018	8661	1302	3941	6578	9213	1846	4478	7107	9734	2359	4983	7604
21	0770	3417	6062	8705	1346	3985	6622	9257	1890	4521	7151	9778	2403	5026	7648
22	0815	3461	6106	8749	1390	4029	6666	9301	1934	4565	7194	9822	2447	5070	7691
23	0859	3505	6150	8793	1434	4073	6710	9345	1978	4609	7238	9865	2491	5114	7735
24	0903	3550	6194	8837	1478	4117	6754	9389	2022	4653	7282	9909	2534	5158	7779
25	0947	3594	6238	8881	1522	4161	6798	9433	2066	4697	7326	9953	2578	5201	7822
26	0991	3638	6283	8925	1566	4205	6842	9477	2110	4741	7370	9997	2622	5245	7866
27	1035	3682	6327	8969	1610	4249	6886	9521	2154	4784	7413	0040	2666	5289	7910
28	1079	3726	6371	9013	1654	4293	6930	9565	2197	4828	7457	0084	2709	5332	7953
29	1123	3770	6415	9057	1698	4337	6974	9608	2241	4872	7501	0128	2753	5376	7997
30	1168	3814	6459	9101	1742	4381	7018	9652	2285	4916	7545	0172	2797	5420	8041
31	1212	3858	6503	9145	1786	4425	7061	9696	2329	4960	7589	0216	2840	5463	8084
32	1256	3902	6547	9189	1830	4469	7105	9740	2373	5004	7632	0259	2884	5507	8128
33	1300	3946	6591	9234	1874	4513	7149	9784	2417	5047	7676	0303	2928	5551	8172
34	1344	3991	6635	9278	1918	4557	7193	9828	2461	5091	7720	0347	2972	5595	8215
35	1388	4035	6679	9322	1962	4601	7237	9872	2504	5135	7764	0391	3015	5638	8259
36	1432	4079	6723	9366	2006	4645	7281	9916	2548	5179	7808	0434	3059	5682	8303
37	1476	4123	6767	9410	2050	4689	7325	9960	2592	5223	7851	0478	3103	5726	8346
38	1521	4167	6811	9454	2094	4732	7369	0003	2636	5267	7895	0522	3147	5769	8390
39	1565	4211	6855	9498	2138	4776	7413	0047	2680	5310	7939	0566	3190	5813	8434
40	1609	4255	6899	9542	2182	4820	7457	0091	2724	5354	7983	0609	3234	5857	8477
41	1653	4299	6943	9586	2226	4864	7501	0135	2768	5398	8027	0653	3278	5900	8521
42	1697	4343	6987	9630	2270	4908	7545	0179	2811	5442	8070	0697	3321	5944	8565
43	1741	4387	7032	9674	2314	4952	7589	0223	2855	5486	8114	0741	3365	5988	8608
44	1785	4431	7076	9718	2358	4996	7633	0267	2899	5530	8158	0784	3409	6031	8652
45	1829	4475	7120	9762	2402	5040	7676	0311	2943	5573	8202	0828	3453	6075	8696
46	1874	4520	7164	9806	2446	5084	7720	0355	2987	5617	8246	0872	3496	6119	8739
47	1918	4564	7208	9850	2490	5128	7764	0398	3031	5661	8289	0916	3540	6163	8783
48	1962	4608	7252	9894	2534	5172	7808	0442	3075	5705	8333	0959	3584	6206	8827
49	2006	4652	7296	9938	2578	5216	7852	0486	3118	5749	8377	1003	3628	6250	8870
50	2050	4696	7340	9982	2622	5260	7896	0530	3162	5792	8421	1047	3671	6294	8914
51	2094	4740	7384	0026	2666	5304	7940	0574	3206	5836	8464	1091	3715	6337	8958
52	2138	4784	7428	0070	2710	5348	7984	0618	3250	5880	8508	1134	3759	6381	9001
53	2182	4828	7472	0114	2754	5392	8028	0662	3294	5924	8552	1178	3802	6425	9045
54	2226	4872	7516	0158	2798	5436	8072	0706	3338	5968	8596	1222	3846	6468	9089
55	2271	4916	7560	0202	2842	5480	8116	0750	3382	6012	8640	1266	3890	6512	9132
56	2315	4960	7604	0246	2886	5524	8160	0793	3425	6055	8683	1309	3934	6556	9176
57	2359	5004	7648	0290	2930	5568	8203	0837	3469	6099	8727	1353	3977	6599	9220
58	2403	5049	7692	0334	2974	5612	8247	0881	3513	6143	8771	1397	4021	6643	9263
59	2447	5093	7736	0378	3018	5655	8291	0925	3557	6187	8815	1441	4065	6687	9307
60	2491	5137	7780	0422	3062	5699	8335	0969	3601	6231	8859	1484	4108	6731	9351
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Sine Deg. 64

25 Deg. Co-Sine

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
9. 955	9. 955	9. 955	9. 955	9. 955	9. 955	9. 955	9. 955	9. 955	9. 954	9. 954	9. 954	9. 954	9. 954	9. 954	″
4882	4280	3676	3073	2469	1864	1259	0653	0047	9441	8834	8227	7619	7011	6402	60
4872	4270	3666	3063	2459	1854	1249	0643	0037	9431	8824	8217	7609	7001	6392	59
4862	4260	3656	3053	2448	1844	1239	0633	0027	9421	8814	8207	7599	6991	6382	58
4852	4250	3646	3043	2438	1834	1229	0623	0017	9411	8804	8197	7589	6981	6372	57
4842	4239	3636	3032	2428	1824	1219	0613	0007	9401	8794	8186	7579	6970	6362	56
4832	4229	3626	3022	2418	1814	1209	0603	9997	9391	8784	8176	7568	6960	6352	55
4822	4219	3616	3012	2408	1804	1198	0593	9987	9380	8774	8166	7558	6950	6341	54
4812	4209	3606	3002	2398	1793	1188	0583	9977	9370	8763	8156	7548	6940	6331	53
4802	4199	3596	2992	2388	1783	1178	0573	9967	9360	8753	8146	7538	6930	6321	52
4792	4189	3586	2982	2378	1773	1168	0563	9957	9350	8743	8136	7528	6920	6311	51
4782	4179	3576	2972	2368	1763	1158	0552	9946	9340	8733	8126	7518	6910	6301	50
4772	4169	3566	2962	2358	1753	1148	0542	9936	9330	8723	8116	7508	6899	6291	49
4762	4159	3556	2952	2348	1743	1138	0532	9926	9320	8713	8105	7498	6889	6280	48
4752	4149	3546	2942	2338	1733	1128	0522	9916	9310	8703	8095	7487	6879	6270	47
4742	4139	3536	2932	2328	1723	1118	0512	9906	9300	8693	8085	7477	6869	6260	46
4732	4129	3526	2922	2317	1713	1108	0502	9896	9289	8682	8075	7467	6859	6250	45
4722	4119	3516	2912	2307	1703	1098	0492	9886	9279	8672	8065	7457	6849	6240	44
4712	4109	3505	2902	2297	1693	1087	0482	9876	9269	8662	8055	7447	6839	6230	43
4702	4099	3495	2892	2287	1683	1077	0472	9866	9259	8652	8045	7437	6828	6220	42
4692	4089	3485	2881	2277	1672	1067	0462	9856	9249	8642	8035	7427	6818	6209	41
4682	4079	3475	2871	2267	1662	1057	0452	9845	9239	8632	8024	7416	6808	6199	40
4672	4069	3465	2861	2257	1652	1047	0441	9835	9229	8622	8014	7406	6798	6189	39
4662	4059	3455	2851	2247	1642	1037	0431	9825	9219	8612	8004	7396	6788	6179	38
4651	4049	3445	2841	2237	1632	1027	0421	9815	9209	8601	7994	7386	6778	6169	37
4641	4038	3435	2831	2227	1622	1017	0411	9805	9198	8591	7984	7376	6768	6159	36
4631	4028	3425	2821	2217	1612	1007	0401	9795	9188	8581	7974	7366	6757	6149	35
4621	4018	3415	2811	2207	1602	0997	0391	9785	9178	8571	7964	7356	6747	6138	34
4611	4008	3405	2801	2197	1592	0987	0381	9775	9168	8561	7953	7346	6737	6128	33
4601	3998	3395	2791	2187	1582	0976	0371	9765	9158	8551	7943	7335	6727	6118	32
4591	3988	3385	2781	2176	1572	0966	0361	9754	9148	8541	7933	7325	6717	6108	31
4581	3978	3375	2771	2166	1562	0956	0351	9744	9138	8531	7923	7315	6707	6098	30
4571	3968	3365	2761	2156	1551	0946	0340	9734	9128	8521	7913	7305	6697	6088	29
4561	3958	3355	2751	2146	1541	0936	0330	9724	9117	8510	7903	7295	6686	6077	28
4551	3948	3344	2741	2136	1531	0926	0320	9714	9107	8500	7893	7285	6676	6067	27
4541	3938	3334	2730	2126	1521	0916	0310	9704	9097	8490	7883	7275	6666	6057	26
4531	3928	3324	2720	2116	1511	0906	0300	9694	9087	8480	7872	7264	6656	6047	25
4521	3918	3314	2710	2106	1501	0896	0290	9684	9077	8470	7862	7254	6646	6037	24
4511	3908	3304	2700	2096	1491	0886	0280	9674	9067	8460	7852	7244	6636	6027	23
4501	3898	3294	2690	2086	1481	0876	0270	9663	9057	8450	7842	7234	6625	6017	22
4491	3888	3284	2680	2076	1471	0865	0260	9653	9047	8440	7832	7224	6615	6006	21
4481	3878	3274	2670	2066	1461	0855	0250	9643	9037	8429	7822	7214	6605	5996	20
4471	3868	3264	2660	2056	1451	0845	0239	9633	9026	8419	7812	7204	6595	5986	19
4461	3857	3254	2650	2045	1441	0835	0229	9623	9016	8409	7802	7193	6585	5976	18
4451	3847	3244	2640	2035	1430	0825	0219	9613	9006	8399	7791	7183	6575	5966	17
4440	3837	3234	2630	2025	1420	0815	0209	9603	8996	8389	7781	7173	6565	5956	16
4430	3827	3224	2620	2015	1410	0805	0199	9593	8986	8379	7771	7163	6554	5945	15
4420	3817	3214	2610	2005	1400	0795	0189	9583	8976	8369	7761	7153	6544	5935	14
4410	3807	3204	2600	1995	1390	0785	0179	9573	8966	8359	7751	7143	6534	5925	13
4400	3797	3194	2589	1985	1380	0775	0169	9562	8956	8348	7741	7133	6524	5915	12
4390	3787	3183	2579	1975	1370	0764	0159	9552	8946	8338	7731	7122	6514	5905	11
4380	3777	3173	2569	1965	1360	0754	0149	9542	8935	8328	7720	7112	6504	5895	10
4370	3767	3163	2559	1955	1350	0744	0138	9532	8925	8318	7710	7102	6494	5885	9
4360	3757	3153	2549	1945	1340	0734	0128	9522	8915	8308	7700	7092	6483	5874	8
4350	3747	3143	2539	1935	1330	0724	0118	9512	8905	8298	7690	7082	6473	5864	7
4340	3737	3133	2529	1924	1319	0714	0108	9502	8895	8288	7680	7072	6463	5854	6
4330	3727	3123	2519	1914	1309	0704	0098	9492	8885	8278	7670	7062	6453	5844	5
4320	3717	3113	2509	1904	1299	0694	0088	9482	8875	8267	7660	7051	6443	5834	4
4310	3707	3103	2499	1894	1289	0684	0078	9471	8865	8257	7650	7041	6433	5824	3
4300	3697	3093	2489	1884	1279	0674	0068	9461	8854	8247	7639	7031	6423	5813	2
4290	3687	3083	2479	1874	1269	0664	0058	9451	8844	8237	7629	7021	6412	5803	1
4280	3676	3073	2469	1864	1259	0653	0047	9441	8834	8227	7619	7011	6402	5793	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Sine Deg. 64

25 Deg. Tangent

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 678	9. 678	9. 679	9. 679	9. 679	9. 680	9. 680	9. 680	9. 681	9. 681	9. 681	9. 682	9. 682	9. 682	9. 683
0	4961	8211	1460	4708	7953	1198	4440	7682	0921	4160	7396	0632	3865	7098	0328
1	5015	8266	1514	4762	8008	1252	4495	7736	0975	4214	7450	0686	3919	7151	0382
2	5069	8320	1569	4816	8062	1306	4549	7790	1029	4268	7504	0739	3973	7205	0436
3	5124	8374	1623	4870	8116	1360	4603	7844	1083	4322	7558	0793	4027	7259	0490
4	5178	8428	1677	4924	8170	1414	4657	7898	1137	4376	7612	0847	4081	7313	0544
5	5232	8482	1731	4978	8224	1468	4711	7952	1191	4429	7666	0901	4135	7367	0597
6	5286	8536	1785	5032	8278	1522	4765	8006	1245	4483	7720	0955	4189	7421	0651
7	5340	8591	1839	5086	8332	1576	4819	8060	1299	4537	7774	1009	4243	7475	0705
8	5394	8645	1893	5140	8386	1630	4873	8114	1353	4591	7828	1063	4296	7528	0759
9	5449	8699	1947	5195	8440	1684	4927	8168	1407	4645	7882	1117	4350	7582	0813
10	5503	8753	2002	5249	8494	1738	4981	8222	1461	4699	7936	1171	4404	7636	0867
11	5557	8807	2056	5303	8548	1792	5035	8276	1515	4753	7990	1225	4458	7690	0920
12	5611	8861	2110	5357	8602	1846	5089	8330	1569	4807	8044	1278	4512	7744	0974
13	5665	8915	2164	5411	8656	1900	5143	8384	1623	4861	8098	1332	4566	7798	1028
14	5720	8970	2218	5465	8711	1954	5197	8438	1677	4915	8151	1386	4620	7852	1082
15	5774	9024	2272	5519	8765	2009	5251	8492	1731	4969	8205	1440	4674	7905	1136
16	5828	9078	2326	5573	8819	2063	5305	8546	1785	5023	8259	1494	4727	7959	1190
17	5882	9132	2381	5627	8873	2117	5359	8600	1839	5077	8313	1548	4781	8013	1243
18	5936	9186	2435	5682	8927	2171	5413	8654	1893	5131	8367	1602	4835	8067	1297
19	5990	9240	2489	5736	8981	2225	5467	8708	1947	5185	8421	1656	4889	8121	1351
20	6045	9295	2543	5790	9035	2279	5521	8762	2001	5239	8475	1710	4943	8175	1405
21	6099	9349	2597	5844	9089	2333	5575	8816	2055	5293	8529	1764	4997	8228	1459
22	6153	9403	2651	5898	9143	2387	5629	8870	2109	5347	8583	1817	5051	8282	1512
23	6207	9457	2705	5952	9197	2441	5683	8924	2163	5401	8637	1871	5105	8336	1566
24	6261	9511	2759	6006	9251	2495	5737	8978	2217	5455	8691	1925	5158	8390	1620
25	6316	9565	2814	6060	9305	2549	5791	9032	2271	5509	8745	1979	5212	8444	1674
26	6370	9619	2868	6114	9359	2603	5845	9086	2325	5562	8799	2033	5266	8498	1728
27	6424	9674	2922	6168	9414	2657	5899	9140	2379	5616	8852	2087	5320	8552	1782
28	6478	9728	2976	6223	9468	2711	5953	9194	2433	5670	8906	2141	5374	8605	1835
29	6532	9782	3030	6277	9522	2765	6007	9248	2487	5724	8960	2195	5428	8659	1889
30	6586	9836	3084	6331	9576	2819	6061	9302	2541	5778	9014	2249	5482	8713	1943
31	6641	9890	3138	6385	9630	2873	6115	9356	2595	5832	9068	2303	5536	8767	1997
32	6695	9944	3192	6439	9684	2927	6169	9410	2649	5886	9122	2356	5589	8821	2051
33	6749	9998	3246	6493	9738	2981	6223	9464	2703	5940	9176	2410	5643	8875	2105
34	6803	0053	3301	6547	9792	3035	6277	9518	2757	5994	9230	2464	5697	8928	2158
35	6857	0107	3355	6601	9846	3090	6331	9572	2811	6048	9284	2518	5751	8982	2212
36	6911	0161	3409	6655	9900	3144	6385	9626	2865	6102	9338	2572	5805	9036	2266
37	6966	0215	3463	6709	9954	3198	6439	9680	2919	6156	9392	2626	5859	9090	2320
38	7020	0269	3517	6763	0008	3252	6493	9734	2973	6210	9446	2680	5913	9144	2374
39	7074	0323	3571	6818	0062	3306	6547	9788	3026	6264	9499	2734	5966	9198	2427
40	7128	0377	3625	6872	0116	3360	6601	9842	3080	6318	9553	2788	6020	9252	2481
41	7182	0432	3679	6926	0171	3414	6655	9896	3134	6372	9607	2841	6074	9305	2535
42	7236	0486	3734	6980	0225	3468	6710	9950	3188	6426	9661	2895	6128	9359	2589
43	7291	0540	3788	7034	0279	3522	6764	0004	3242	6479	9715	2949	6182	9413	2643
44	7345	0594	3842	7088	0333	3576	6818	0058	3296	6533	9769	3003	6236	9467	2696
45	7399	0648	3896	7142	0387	3630	6872	0112	3350	6587	9823	3057	6290	9521	2750
46	7453	0702	3950	7196	0441	3684	6926	0166	3404	6641	9877	3111	6344	9575	2804
47	7507	0756	4004	7250	0495	3738	6980	0220	3458	6695	9931	3165	6397	9628	2858
48	7561	0811	4058	7304	0549	3792	7034	0274	3512	6749	9985	3219	6451	9682	2912
49	7616	0865	4112	7358	0603	3846	7088	0328	3566	6803	0039	3273	6505	9736	2966
50	7670	0919	4166	7413	0657	3900	7142	0382	3620	6857	0093	3326	6559	9790	3019
51	7724	0973	4221	7467	0711	3954	7196	0436	3674	6911	0146	3380	6613	9844	3073
52	7778	1027	4275	7521	0765	4008	7250	0490	3728	6965	0200	3434	6667	9898	3127
53	7832	1081	4329	7575	0819	4062	7304	0544	3782	7019	0254	3488	6721	9951	3181
54	7886	1135	4383	7629	0873	4116	7358	0598	3836	7073	0308	3542	6774	0005	3235
55	7941	1190	4437	7683	0927	4170	7412	0652	3890	7127	0362	3596	6828	0059	3288
56	7995	1244	4491	7737	0981	4224	7466	0706	3944	7181	0416	3650	6882	0113	3342
57	8049	1298	4545	7791	1036	4278	7520	0760	3998	7235	0470	3704	6936	0167	3396
58	8103	1352	4599	7845	1090	4332	7574	0814	4052	7289	0524	3758	6990	0221	3450
59	8157	1406	4653	7899	1144	4386	7628	0867	4106	7342	0578	3811	7044	0274	3504
60	8211	1460	4708	7953	1198	4440	7682	0921	4160	7396	0632	3865	7098	0328	3557
″	29′	28′	27′	26′	25′	24′	23′	22	21′	20	19′	18′	17′	16′	15′

Co-Tangent Deg. 64

25 Deg. Co-Tangent

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
10. 321	10. 321	10. 320	10. 320	10. 320	10. 319	10. 319	10. 319	10. 318	10. 318	10. 318	10. 317	10. 317	10. 317	10. 316	″
5039	1789	8540	5292	2047	8802	5560	2318	9079	5840	2604	9368	6135	2902	9672	60
4985	1734	8486	5238	1992	8748	5505	2264	9025	5786	2550	9314	6081	2849	9618	59
4931	1680	8431	5184	1938	8694	5451	2210	8971	5732	2496	9261	6027	2795	9564	58
4876	1626	8377	5130	1884	8640	5397	2156	8917	5678	2442	9207	5973	2741	9510	57
4822	1572	8323	5076	1830	8586	5343	2102	8863	5624	2388	9153	5919	2687	9456	56
4768	1518	8269	5022	1776	8532	5289	2048	8809	5571	2334	9099	5865	2633	9403	55
4714	1464	8215	4968	1722	8478	5235	1994	8755	5517	2280	9045	5811	2579	9349	54
4660	1409	8161	4914	1668	8424	5181	1940	8701	5463	2226	8991	5757	2525	9295	53
4606	1355	8107	4860	1614	8370	5127	1886	8647	5409	2172	8937	5704	2472	9241	52
4551	1301	8053	4805	1560	8316	5073	1832	8593	5355	2118	8883	5650	2418	9187	51
4497	1247	7998	4751	1506	8262	5019	1778	8539	5301	2064	8829	5596	2364	9133	50
4443	1193	7944	4697	1452	8208	4965	1724	8485	5247	2010	8775	5542	2310	9080	49
4389	1139	7890	4643	1398	8154	4911	1670	8431	5193	1956	8722	5488	2256	9026	48
4335	1085	7836	4589	1344	8100	4857	1616	8377	5139	1902	8668	5434	2202	8972	47
4280	1030	7782	4535	1289	8046	4803	1562	8323	5085	1849	8614	5380	2148	8918	46
4226	0976	7728	4481	1235	7991	4749	1508	8269	5031	1795	8560	5326	2095	8864	45
4172	0922	7674	4427	1181	7937	4695	1454	8215	4977	1741	8506	5273	2041	8810	44
4118	0868	7620	4373	1127	7883	4641	1400	8161	4923	1687	8452	5219	1987	8757	43
4064	0814	7565	4318	1073	7829	4587	1346	8107	4869	1633	8398	5165	1933	8703	42
4010	0760	7511	4264	1019	7775	4533	1292	8053	4815	1579	8344	5111	1879	8649	41
3955	0705	7457	4210	0965	7721	4479	1238	7999	4761	1525	8290	5057	1825	8595	40
3901	0651	7403	4156	0911	7667	4425	1184	7945	4707	1471	8236	5003	1772	8541	39
3847	0597	7349	4102	0857	7613	4371	1130	7891	4653	1417	8183	4949	1718	8488	38
3793	0543	7295	4048	0803	7559	4317	1076	7837	4599	1363	8129	4895	1664	8434	37
3739	0489	7241	3994	0749	7505	4263	1022	7783	4545	1309	8075	4842	1610	8380	36
3684	0435	7186	3940	0695	7451	4209	0968	7729	4491	1255	8021	4788	1556	8326	35
3630	0381	7132	3886	0641	7397	4155	0914	7675	4438	1201	7967	4734	1502	8272	34
3576	0326	7078	3832	0586	7343	4101	0860	7621	4384	1148	7913	4680	1448	8218	33
3522	0272	7024	3777	0532	7289	4047	0806	7567	4330	1094	7859	4626	1395	8165	32
3468	0218	6970	3723	0478	7235	3993	0752	7513	4276	1040	7805	4572	1341	8111	31
3414	0164	6916	3669	0424	7181	3939	0698	7459	4222	0986	7751	4518	1287	8057	30
3359	0110	6862	3615	0370	7127	3885	0644	7405	4168	0932	7697	4464	1233	8003	29
3305	0056	6808	3561	0316	7073	3831	0590	7351	4114	0878	7644	4411	1179	7949	28
3251	0002	6754	3507	0262	7019	3777	0536	7297	4060	0824	7590	4357	1125	7895	27
3197	9947	6699	3453	0208	6965	3723	0482	7243	4006	0770	7536	4303	1072	7842	26
3143	9893	6645	3399	0154	6910	3669	0428	7189	3952	0716	7482	4249	1018	7788	25
3089	9839	6591	3345	0100	6856	3615	0374	7135	3898	0662	7428	4195	0964	7734	24
3034	9785	6537	3291	0046	6802	3561	0320	7081	3844	0608	7374	4141	0910	7680	23
2980	9731	6483	3237	9992	6748	3507	0266	7027	3790	0554	7320	4087	0856	7626	22
2926	9677	6429	3182	9938	6694	3453	0212	6974	3736	0501	7266	4034	0802	7573	21
2872	9623	6375	3128	9884	6640	3399	0158	6920	3682	0447	7212	3980	0748	7519	20
2818	9568	6321	3074	9829	6586	3345	0104	6866	3628	0393	7159	3926	0695	7465	19
2764	9514	6266	3020	9775	6532	3290	0050	6812	3574	0339	7105	3872	0641	7411	18
2709	9460	6212	2966	9721	6478	3236	9996	6758	3521	0285	7051	3818	0587	7357	17
2655	9406	6158	2912	9667	6424	3182	9942	6704	3467	0231	6997	3764	0533	7304	16
2601	9352	6104	2858	9613	6370	3128	9888	6650	3413	0177	6943	3710	0479	7250	15
2547	9298	6050	2804	9559	6316	3074	9834	6596	3359	0123	6889	3656	0425	7196	14
2493	9244	5996	2750	9505	6262	3020	9780	6542	3305	0069	6835	3603	0372	7142	13
2439	9189	5942	2696	9451	6208	2966	9726	6488	3251	0015	6781	3549	0318	7088	12
2384	9135	5888	2642	9397	6154	2912	9672	6434	3197	9961	6727	3495	0264	7034	11
2330	9081	5834	2587	9343	6100	2858	9618	6380	3143	9907	6674	3441	0210	6981	10
2276	9027	5779	2533	9289	6046	2804	9564	6326	3089	9854	6620	3387	0156	6927	9
2222	8973	5725	2479	9235	5992	2750	9510	6272	3035	9800	6566	3333	0102	6873	8
2168	8919	5671	2425	9181	5938	2696	9456	6218	2981	9746	6512	3279	0049	6819	7
2114	8865	5617	2371	9127	5884	2642	9402	6164	2927	9692	6458	3226	9995	6765	6
2059	8810	5563	2317	9073	5830	2588	9348	6110	2873	9638	6404	3172	9941	6712	5
2005	8756	5509	2263	9019	5776	2534	9294	6056	2819	9584	6350	3118	9887	6658	4
1951	8702	5455	2209	8964	5722	2480	9240	6002	2765	9530	6296	3064	9833	6604	3
1897	8648	5401	2155	8910	5668	2426	9186	5948	2711	9476	6242	3010	9779	6550	2
1843	8594	5347	2101	8856	5614	2372	9133	5894	2658	9422	6189	2956	9726	6496	1
1789	8540	5292	2047	8802	5560	2318	9079	5840	2604	9368	6135	2902	9672	6443	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Tangent Deg. 64

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	9. 637	9. 638	9. 638	9. 638	9. 638	9. 639	9. 639	9. 639	9. 640	9. 640	9. 640	9. 640	9. 641	9. 641	9. 641
0	9351	1969	4585	7199	9812	2422	5030	7637	0241	2844	5445	8044	0640	3235	5828
1	9394	2012	4629	7243	9855	2465	5074	7680	0285	2887	5488	8087	0684	3279	5872
2	9438	2056	4672	7286	9899	2509	5117	7724	0328	2931	5531	8130	0727	3322	5915
3	9482	2100	4716	7330	9942	2552	5161	7767	0372	2974	5575	8173	0770	3365	5958
4	9525	2143	4759	7373	9986	2596	5204	7811	0415	3018	5618	8217	0814	3408	6001
5	9569	2187	4803	7417	0029	2639	5248	7854	0458	3061	5661	8260	0857	3452	6044
6	9613	2230	4846	7461	0073	2683	5291	7897	0502	3104	5705	8303	0900	3495	6088
7	9656	2274	4890	7504	0116	2726	5335	7941	0545	3148	5748	8347	0943	3538	6131
8	9700	2318	4934	7548	0160	2770	5378	7984	0589	3191	5791	8390	0987	3581	6174
9	9743	2361	4977	7591	0203	2813	5421	8028	0632	3234	5835	8433	1030	3625	6217
10	9787	2405	5021	7635	0247	2857	5465	8071	0675	3278	5878	8477	1073	3668	6260
11	9831	2449	5064	7678	0290	2900	5508	8114	0719	3321	5921	8520	1116	3711	6304
12	9874	2492	5108	7722	0334	2944	5552	8158	0762	3364	5965	8563	1160	3754	6347
13	9918	2536	5152	7765	0377	2987	5595	8201	0805	3408	6008	8606	1203	3797	6390
14	9962	2579	5195	7809	0421	3031	5639	8245	0849	3451	6051	8650	1246	3841	6433
15	0005	2623	5239	7852	0464	3074	5682	8288	0892	3494	6095	8693	1289	3884	6476
16	0049	2667	5282	7896	0508	3118	5726	8332	0936	3538	6138	8736	1333	3927	6520
17	0093	2710	5326	7940	0551	3161	5769	8375	0979	3581	6181	8780	1376	3970	6563
18	0136	2754	5369	7983	0595	3205	5812	8418	1022	3624	6225	8823	1419	4014	6606
19	0180	2797	5413	8027	0638	3248	5856	8462	1066	3668	6268	8866	1462	4057	6649
20	0224	2841	5457	8070	0682	3292	5899	8505	1109	3711	6311	8909	1506	4100	6692
21	0267	2885	5500	8114	0725	3335	5943	8549	1153	3755	6355	8953	1549	4143	6736
22	0311	2928	5544	8157	0769	3379	5986	8592	1196	3798	6398	8996	1592	4186	6779
23	0354	2972	5587	8201	0812	3422	6030	8635	1239	3841	6441	9039	1635	4230	6822
24	0398	3015	5631	8244	0856	3466	6073	8679	1283	3885	6485	9083	1679	4273	6865
25	0442	3059	5674	8288	0899	3509	6117	8722	1326	3928	6528	9126	1722	4316	6908
26	0485	3103	5718	8331	0943	3552	6160	8766	1369	3971	6571	9169	1765	4359	6952
27	0529	3146	5762	8375	0986	3596	6204	8809	1413	4015	6615	9212	1808	4403	6995
28	0573	3190	5805	8419	1030	3639	6247	8853	1456	4058	6658	9256	1852	4446	7038
29	0616	3233	5849	8462	1073	3683	6290	8896	1500	4101	6701	9299	1895	4489	7081
30	0660	3277	5892	8506	1117	3726	6334	8939	1543	4145	6744	9342	1938	4532	7124
31	0704	3321	5936	8549	1160	3770	6377	8983	1586	4188	6788	9386	1981	4575	7167
32	0747	3364	5979	8593	1204	3813	6421	9026	1630	4231	6831	9429	2025	4619	7211
33	0791	3408	6023	8636	1247	3857	6464	9070	1673	4275	6874	9472	2068	4662	7254
34	0834	3451	6067	8680	1291	3900	6508	9113	1716	4318	6918	9515	2111	4705	7297
35	0878	349	6110	8723	1334	3944	6551	9156	1760	4361	6961	9559	2154	4748	7340
36	0922	3539	6154	8767	1378	3987	6594	9200	1803	4405	7004	9602	2198	4791	7383
37	0965	3582	6197	8810	1421	4031	6638	9243	1847	4448	7048	9645	2241	4835	7427
38	1009	3626	6241	8854	1465	4074	6681	9287	1890	4491	7091	9689	2284	4878	7470
39	1053	3669	6284	8897	1508	4118	6725	9330	1933	4535	7134	9732	2327	4921	7513
40	1096	3713	6328	8941	1552	4161	6768	9373	1977	4578	7178	9775	2371	4964	7556
41	1140	3757	6372	8984	1595	4205	6812	9417	2020	4621	7221	9818	2414	5008	7599
42	1184	3800	6415	9028	1639	4248	6855	9460	2063	4665	7264	9862	2457	5051	7642
43	1227	3844	6459	9072	1682	4291	6899	9504	2107	4708	7307	9905	2500	5094	7686
44	1271	3887	6502	9115	1726	4335	6942	9547	2150	4751	7351	9948	2544	5137	7729
45	1314	3931	6546	9159	1769	4378	6985	9590	2194	4795	7394	9991	2587	5180	7772
46	1358	3975	6589	9202	1813	4422	7029	9634	2237	4838	7437	0035	2630	5224	7815
47	1402	4018	6633	9246	1856	4465	7072	9677	2280	4881	7481	0078	2673	5267	7858
48	1445	4062	6677	9289	1900	4509	7116	9721	2324	4925	7524	0121	2717	5310	7902
49	1489	4105	6720	9333	1943	4552	7159	9764	2367	4968	7567	0165	2760	5353	7945
50	1533	4149	6764	9376	1987	4596	7203	9807	2410	5011	7611	0208	2803	5396	7988
51	1576	4193	6807	9420	2030	4639	7246	9851	2454	5055	7654	0251	2846	5440	8031
52	1620	4236	6851	9463	2074	4683	7289	9894	2497	5098	7697	0294	2890	5483	8074
53	1663	4280	6894	9507	2117	4726	7333	9938	2541	5141	7741	0338	2933	5526	8117
54	1707	4323	6938	9550	2161	4770	7376	9981	2584	5185	7784	0381	2976	5569	8161
55	1751	4367	6981	9594	2204	4813	7420	0024	2627	5228	7827	0424	3019	5612	8204
56	1794	4411	7025	9637	2248	4857	7463	0068	2671	5271	7870	0467	3063	5656	8247
57	1838	4454	7069	9681	2291	4900	7507	0111	2714	5315	7914	0511	3106	5699	8290
58	1882	4498	7112	9724	2335	4943	7550	0155	2757	5358	7957	0554	3149	5742	8333
59	1925	4541	7156	9768	2378	4987	7593	0198	2801	5401	8000	0597	3192	5785	8376
60	1969	4585	7199	9812	2422	5030	7637	0241	2844	5445	8044	0640	3235	5828	8420
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
	9. 954	9. 954	9. 954	9. 954	9. 954	9. 954	9. 954	9. 954	9. 954	9. 954	9. 953	9. 953	9. 953	9. 953	9. 953	″
0	5793	5184	4574	3963	3352	2741	2129	1517	0904	0291	9677	9063	8448	7833	7218	60
1	5783	5173	4563	3953	3342	2731	2119	1506	0894	0280	9667	9053	8438	7823	7208	59
2	5773	5163	4553	3943	3332	2720	2108	1496	0883	0270	9657	9042	8428	7813	7197	58
3	5763	5153	4543	3933	3322	2710	2098	1486	0873	0260	9646	9032	8418	7803	7187	57
4	5753	5143	4533	3922	3311	2700	2088	1476	0863	0250	9636	9022	8407	7792	7177	56
5	5742	5133	4523	3912	3301	2690	2078	1466	0853	0240	9626	9012	8397	7782	7166	55
6	5732	5123	4513	3902	3291	2680	2068	1455	0843	0229	9616	9001	8387	7772	7156	54
7	5722	5112	4502	3892	3281	2669	2057	1445	0832	0219	9605	8991	8377	7761	7146	53
8	5712	5102	4492	3882	3271	2659	2047	1435	0822	0209	9595	8981	8366	7751	7136	52
9	5702	5092	4482	3871	3260	2649	2037	1425	0812	0199	9585	8971	8356	7741	7125	51
10	5692	5082	4472	3861	3250	2639	2027	1414	0802	0188	9575	8960	8346	7731	7115	50
11	5681	5072	4462	3851	3240	2629	2017	1404	0791	0178	9564	8950	8336	7720	7105	49
12	5671	5062	4451	3841	3230	2618	2006	1394	0781	0168	9554	8940	8325	7710	7095	48
13	5661	5051	4441	3831	3220	2608	1996	1384	0771	0158	9544	8930	8315	7700	7084	47
14	5651	5041	4431	3821	3209	2598	1986	1374	0761	0147	9534	8920	8305	7690	7074	46
15	5641	5031	4421	3810	3199	2588	1976	1363	0751	0137	9523	8909	8295	7679	7064	45
16	5631	5021	4411	3800	3189	2578	1966	1353	0740	0127	9513	8899	8284	7669	7054	44
17	5620	5011	4401	3790	3179	2567	1955	1343	0730	0117	9503	8889	8274	7659	7043	43
18	5610	5001	4390	3780	3169	2557	1945	1333	0720	0107	9493	8879	8264	7649	7033	42
19	5600	4990	4380	3770	3159	2547	1935	1323	0710	0096	9483	8868	8254	7638	7023	41
20	5590	4980	4370	3759	3148	2537	1925	1312	0699	0086	9472	8858	8243	7628	7013	40
21	5580	4970	4360	3749	3138	2527	1915	1302	0689	0076	9462	8848	8233	7618	7002	39
22	5570	4960	4350	3739	3128	2516	1904	1292	0679	0066	9452	8838	8223	7608	6992	38
23	5560	4950	4340	3729	3118	2506	1894	1282	0669	0055	9442	8827	8213	7597	6982	37
24	5549	4940	4329	3719	3108	2496	1884	1272	0659	0045	9431	8817	8202	7587	6971	36
25	5539	4929	4319	3709	3097	2486	1874	1261	0648	0035	9421	8807	8192	7577	6961	35
26	5529	4919	4309	3698	3087	2476	1864	1251	0638	0025	9411	8797	8182	7567	6951	34
27	5519	4909	4299	3688	3077	2465	1853	1241	0628	0015	9401	8786	8172	7556	6941	33
28	5509	4899	4289	3678	3067	2455	1843	1231	0618	0004	9390	8776	8161	7546	6930	32
29	5499	4889	4279	3668	3057	2445	1833	1220	0608	9994	9380	8766	8151	7536	6920	31
30	5488	4879	4268	3658	3046	2435	1823	1210	0597	9984	9370	8756	8141	7526	6910	30
31	5478	4868	4258	3647	3036	2425	1813	1200	0587	9974	9360	8745	8131	7515	6900	29
32	5468	4858	4248	3637	3026	2414	1802	1190	0577	9963	9350	8735	8120	7505	6889	28
33	5458	4848	4238	3627	3016	2404	1792	1180	0567	9953	9339	8725	8110	7495	6879	27
34	5448	4838	4228	3617	3006	2394	1782	1169	0556	9943	9329	8715	8100	7485	6869	26
35	5438	4828	4217	3607	2996	2384	1772	1159	0546	9933	9319	8704	8090	7474	6859	25
36	5427	4818	4207	3597	2985	2374	1762	1149	0536	9922	9309	8694	8079	7464	6848	24
37	5417	4807	4197	3586	2975	2363	1751	1139	0526	9912	9298	8684	8069	7454	6838	23
38	5407	4797	4187	3576	2965	2353	1741	1129	0516	9902	9288	8674	8059	7444	6828	22
39	5397	4787	4177	3566	2955	2343	1731	1118	0505	9892	9278	8663	8049	7433	6817	21
40	5387	4777	4167	3556	2945	2333	1721	1108	0495	9882	9268	8653	8038	7423	6807	20
41	5377	4767	4156	3546	2934	2323	1711	1098	0485	9871	9257	8643	8028	7413	6797	19
42	5366	4757	4146	3535	2924	2312	1700	1088	0475	9861	9247	8633	8018	7402	6787	18
43	5356	4746	4136	3525	2914	2302	1690	1077	0464	9851	9237	8622	8008	7392	6776	17
44	5346	4736	4126	3515	2904	2292	1680	1067	0454	9841	9227	8612	7997	7382	6766	16
45	5336	4726	4116	3505	2894	2282	1670	1057	0444	9830	9216	8602	7987	7372	6756	15
46	5326	4716	4106	3495	2883	2272	1659	1047	0434	9820	9206	8592	7977	7361	6746	14
47	5316	4706	4095	3485	2873	2261	1649	1037	0424	9810	9196	8581	7967	7351	6735	13
48	5306	4696	4085	3474	2863	2251	1639	1026	0413	9800	9186	8571	7956	7341	6725	12
49	5295	4685	4075	3464	2853	2241	1629	1016	0403	9790	9175	8561	7946	7331	6715	11
50	5285	4675	4065	3454	2843	2231	1619	1006	0393	9779	9165	8551	7936	7320	6705	10
51	5275	4665	4055	3444	2832	2221	1608	0996	0383	9769	9155	8541	7926	7310	6694	9
52	5265	4655	4044	3434	2822	2210	1598	0986	0372	9759	9145	8530	7915	7300	6684	8
53	5255	4645	4034	3423	2812	2200	1588	0975	0362	9749	9135	8520	7905	7290	6674	7
54	5245	4635	4024	3413	2802	2190	1578	0965	0352	9738	9124	8510	7895	7279	6663	6
55	5234	4624	4014	3403	2792	2180	1568	0955	0342	9728	9114	8500	7885	7269	6653	5
56	5224	4614	4004	3393	2782	2170	1557	0945	0332	9718	9104	8489	7874	7259	6643	4
57	5214	4604	3994	3383	2771	2159	1547	0934	0321	9708	9094	8479	7864	7249	6633	3
58	5204	4594	3983	3372	2761	2149	1537	0924	0311	9697	9083	8469	7854	7238	6622	2
59	5194	4584	3973	3362	2751	2139	1527	0914	0301	9687	9073	8459	7844	7228	6612	1
60	5184	4574	3963	3352	2741	2129	1517	0904	0291	9677	9063	8448	7833	7218	6602	0
″	14′	13	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

25 Deg. Tangent

″	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9.683	9.683	9.684	9.684	9.684	9.684	9.685	9.685	9.685	9.686	9.686	9.686	9.687	9.687	9.687
0	3557	6785	0011	3236	6459	9681	2901	6120	9338	2553	5768	8981	2192	5402	8611
1	3611	6839	0065	3290	6513	9735	2955	6174	9391	2607	5821	9034	2246	5456	8664
2	3665	6893	0119	3344	6567	9789	3009	6228	9445	2661	5875	9088	2299	5509	8718
3	3719	6947	0173	3397	6621	9842	3062	6281	9498	2714	5929	9141	2353	5563	8771
4	3773	7000	0226	3451	6674	9896	3116	6335	9552	2768	5982	9195	2406	5616	8825
5	3827	7054	0280	3505	6728	9950	3170	6388	9606	2821	6036	9248	2460	5670	8878
6	3880	7108	0334	3559	6782	0003	3223	6442	9659	2875	6089	9302	2513	5723	8931
7	3934	7162	0388	3612	6835	0057	3277	6496	9713	2929	6143	9355	2567	5777	8985
8	3988	7215	0441	3666	6889	0111	3331	6549	9766	2982	6196	9409	2620	5830	9038
9	4042	7269	0495	3720	6943	0164	3384	6603	9820	3036	6250	9463	2674	5884	9092
10	4096	7323	0549	3773	6996	0218	3438	6657	9874	3089	6303	9516	2727	5937	9145
11	4149	7377	0603	3827	7050	0272	3492	6710	9927	3143	6357	9570	2781	5991	9199
12	4203	7431	0656	3881	7104	0325	3545	6764	9981	3196	6411	9623	2834	6044	9252
13	4257	7484	0710	3935	7158	0379	3599	6817	0034	3250	6464	9677	2888	6097	9306
14	4311	7538	0764	3988	7211	0433	3653	6871	0088	3304	6518	9730	2941	6151	9359
15	4365	7592	0818	4042	7265	0486	3706	6925	0142	3357	6571	9784	2995	6204	9413
16	4418	7646	0871	4096	7319	0540	3760	6978	0195	3411	6625	9837	3048	6258	9466
17	4472	7699	0925	4150	7372	0594	3814	7032	0249	3464	6678	9891	3102	6311	9520
18	4526	7753	0979	4203	7426	0647	3867	7086	0302	3518	6732	9944	3155	6365	9573
19	4580	7807	1033	4257	7480	0701	3921	7139	0356	3571	6785	9998	3209	6418	9626
20	4634	7861	1086	4311	7533	0755	3975	7193	0410	3625	6839	0051	3262	6472	9680
21	4687	7915	1140	4364	7587	0808	4028	7246	0463	3679	6893	0105	3316	6525	9733
22	4741	7968	1194	4418	7641	0862	4082	7300	0517	3732	6946	0158	3369	6579	9787
23	4795	8022	1248	4472	7695	0916	4136	7354	0571	3786	7000	0212	3423	6632	9840
24	4849	8076	1301	4526	7748	0969	4189	7407	0624	3839	7053	0265	3476	6686	9894
25	4903	8130	1355	4579	7802	1023	4243	7461	0678	3893	7107	0319	3530	6739	9947
26	4956	8183	1409	4633	7856	1077	4296	7515	0731	3947	7160	0373	3583	6793	0001
27	5010	8237	1463	4687	7909	1130	4350	7568	0785	4000	7214	0426	3637	6846	0054
28	5064	8291	1516	4741	7963	1184	4404	7622	0839	4054	7267	0480	3690	6900	0107
29	5118	8345	1570	4794	8017	1238	4457	7675	0892	4107	7321	0533	3744	6953	0161
30	5172	8398	1624	4848	8070	1291	4511	7729	0946	4161	7374	0587	3797	7007	0214
31	5225	8452	1678	4902	8124	1345	4565	7783	0999	4214	7428	0640	3851	7060	0268
32	5279	8506	1731	4955	8178	1399	4618	7836	1053	4268	7482	0694	3904	7114	0321
33	5333	8560	1785	5009	8232	1453	4672	7890	1106	4322	7535	0747	3958	7167	0375
34	5387	8614	1839	5063	8285	1506	4726	7944	1160	4375	7589	0801	4011	7221	0428
35	5440	8667	1893	5117	8339	1560	4779	7997	1214	4429	7642	0854	4065	7274	0482
36	5494	8721	1946	5170	8393	1614	4833	8051	1267	4482	7696	0908	4118	7327	0535
37	5548	8775	2000	5224	8446	1667	4887	8104	1321	4536	7749	0961	4172	7381	0589
38	5602	8829	2054	5278	8500	1721	4940	8158	1374	4589	7803	1015	4225	7434	0642
39	5656	8882	2108	5331	8554	1775	4994	8212	1428	4643	7856	1068	4279	7488	0695
40	5709	8936	2161	5385	8607	1828	5047	8265	1482	4697	7910	1122	4332	7541	0749
41	5763	8990	2215	5439	8661	1882	5101	8319	1535	4750	7963	1175	4386	7595	0802
42	5817	9044	2269	5493	8715	1936	5155	8373	1589	4804	8017	1229	4439	7648	0856
43	5871	9097	2323	5546	8768	1989	5208	8426	1642	4857	8071	1282	4493	7702	0909
44	5925	9151	2376	5600	8822	2043	5262	8480	1696	4911	8124	1336	4546	7755	0963
45	5978	9205	2430	5654	8876	2097	5316	8533	1750	4964	8178	1389	4600	7809	1016
46	6032	9259	2484	5707	8930	2150	5369	8587	1803	5018	8231	1443	4653	7862	1070
47	6086	9313	2538	5761	8983	2204	5423	8641	1857	5072	8285	1496	4707	7916	1123
48	6140	9366	2591	5815	9037	2258	5477	8694	1910	5125	8338	1550	4760	7969	1176
49	6194	9420	2645	5869	9091	2311	5530	8748	1964	5179	8392	1604	4814	8023	1230
50	6247	9474	2699	5922	9144	2365	5584	8801	2018	5232	8445	1657	4867	8076	1283
51	6301	9528	2753	5976	9198	2419	5638	8855	2071	5286	8499	1711	4921	8130	1337
52	6355	9581	2806	6030	9252	2472	5691	8909	2125	5339	8552	1764	4974	8183	1390
53	6409	9635	2860	6083	9305	2526	5745	8962	2178	5393	8606	1818	5028	8236	1444
54	6462	9689	2914	6137	9359	2579	5798	9016	2232	5446	8660	1871	5081	8290	1497
55	6516	9743	2967	6191	9413	2633	5852	9070	2286	5500	8713	1925	5135	8343	1551
56	6570	9796	3021	6245	9466	2687	5906	9123	2339	5554	8767	1978	5188	8397	1604
57	6624	9850	3075	6298	9520	2740	5959	9177	2393	5607	8820	2032	5242	8450	1657
58	6678	9904	3129	6352	9574	2794	6013	9230	2446	5661	8874	2085	5295	8504	1711
59	6731	9958	3182	6406	9627	2848	6067	9284	2500	5714	8927	2139	5349	8557	1764
60	6785	0011	3236	6459	9681	2901	6120	9338	2553	5768	8981	2192	5402	8611	1818
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

25 Deg. Co-Tangent

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	″
10.316	10.316	10.315	10.315	10.315	10.315	10.314	10.314	10.314	10.313	10.313	10.313	10.312	10.312	10.312	
6443	3215	9989	6764	3541	0319	7099	3880	0662	7447	4232	1019	7808	4598	1389	60
6389	3161	9935	6710	3487	0265	7045	3826	0609	7393	4179	0966	7754	4544	1336	59
6335	3107	9881	6656	3433	0211	6991	3772	0555	7339	4125	0912	7701	4491	1282	58
6281	3053	9827	6603	3379	0158	6938	3719	0502	7286	4071	0859	7647	4437	1229	57
6227	3000	9774	6549	3326	0104	6884	3665	0448	7232	4018	0805	7594	4384	1175	56
6173	2946	9720	6495	3272	0050	6830	3612	0394	7179	3964	0752	7540	4330	1122	55
6120	2892	9666	6441	3218	9997	6777	3558	0341	7125	3911	0698	7487	4277	1069	54
6066	2838	9612	6388	3165	9943	6723	3504	0287	7071	3857	0645	7433	4223	1015	53
6012	2785	9559	6334	3111	9889	6669	3451	0234	7018	3804	0591	7380	4170	0962	52
5958	2731	9505	6280	3057	9836	6616	3397	0180	6964	3750	0537	7326	4116	0908	51
5904	2677	9451	6227	3004	9782	6562	3343	0126	6911	3697	0484	7273	4063	0855	50
5851	2623	9397	6173	2950	9728	6508	3290	0073	6857	3643	0430	7219	4009	0801	49
5797	2569	9344	6119	2896	9675	6455	3236	0019	6804	3589	0377	7166	3956	0748	48
5743	2516	9290	6065	2842	9621	6401	3183	9966	6750	3536	0323	7112	3903	0694	47
5689	2462	9236	6012	2789	9567	6347	3129	9912	6696	3482	0270	7059	3849	0641	46
5635	2408	9182	5958	2735	9514	6294	3075	9858	6643	3429	0216	7005	3796	0587	45
5582	2354	9129	5904	2681	9460	6240	3022	9805	6589	3375	0163	6952	3742	0534	44
5528	2301	9075	5850	2628	9406	6186	2968	9751	6536	3322	0109	6898	3689	0480	43
5474	2247	9021	5797	2574	9353	6133	2914	9698	6482	3268	0056	6845	3635	0427	42
5420	2193	8967	5743	2520	9299	6079	2861	9644	6429	3215	0002	6791	3582	0374	41
5366	2139	8914	5689	2467	9245	6025	2807	9590	6375	3161	9949	6738	3528	0320	40
5313	2085	8860	5636	2413	9192	5972	2754	9537	6321	3107	9895	6684	3475	0267	39
5259	2032	8806	5582	2359	9138	5918	2700	9483	6268	3054	9842	6631	3421	0213	38
5205	1978	8752	5528	2305	9084	5864	2646	9429	6214	3000	9788	6577	3368	0160	37
5151	1924	8699	5474	2252	9031	5811	2593	9376	6161	2947	9735	6524	3314	0106	36
5097	1870	8645	5421	2198	8977	5757	2539	9322	6107	2893	9681	6470	3261	0053	35
5044	1817	8591	5367	2144	8923	5704	2485	9269	6053	2840	9627	6417	3207	9999	34
4990	1763	8537	5313	2091	8870	5650	2432	9215	6000	2786	9574	6363	3154	9946	33
4936	1709	8484	5259	2037	8816	5596	2378	9161	5946	2733	9520	6310	3100	9893	32
4882	1655	8430	5206	1983	8762	5543	2325	9108	5893	2679	9467	6256	3047	9839	31
4828	1602	8376	5152	1930	8709	5489	2271	9054	5839	2626	9413	6203	2993	9786	30
4775	1548	8322	5098	1876	8655	5435	2217	9001	5786	2572	9360	6149	2940	9732	29
4721	1494	8269	5045	1822	8601	5382	2164	8947	5732	2518	9306	6096	2886	9679	28
4667	1440	8215	4991	1768	8547	5328	2110	8894	5678	2465	9253	6042	2833	9625	27
4613	1386	8161	4937	1715	8494	5274	2056	8840	5625	2411	9199	5989	2779	9572	26
4560	1333	8107	4883	1661	8440	5221	2003	8786	5571	2358	9146	5935	2726	9518	25
4506	1279	8054	4830	1607	8386	5167	1949	8733	5518	2304	9092	5882	2673	9465	24
4452	1225	8000	4776	1554	8333	5113	1896	8679	5464	2251	9039	5828	2619	9411	23
4398	1171	7946	4722	1500	8279	5060	1842	8626	5411	2197	8985	5775	2566	9358	22
4344	1118	7892	4669	1446	8225	5006	1788	8572	5357	2144	8932	5721	2512	9305	21
4291	1064	7839	4615	1393	8172	4953	1735	8518	5303	2090	8878	5668	2459	9251	20
4237	1010	7785	4561	1339	8118	4899	1681	8465	5250	2037	8825	5614	2405	9198	19
4183	0956	7731	4507	1285	8064	4845	1627	8411	5196	1983	8771	5561	2352	9144	18
4129	0903	7677	4454	1232	8011	4792	1574	8358	5143	1929	8718	5507	2298	9091	17
4075	0849	7624	4400	1178	7957	4738	1520	8304	5089	1876	8664	5454	2245	9037	16
4022	0795	7570	4346	1124	7903	4684	1467	8250	5036	1822	8611	5400	2191	8984	15
3968	0741	7516	4293	1070	7850	4631	1413	8197	4982	1769	8557	5347	2138	8930	14
3914	0687	7462	4239	1017	7796	4577	1359	8143	4928	1715	8504	5293	2084	8877	13
3860	0634	7409	4185	0963	7742	4523	1306	8090	4875	1662	8450	5240	2031	8824	12
3806	0580	7355	4131	0909	7689	4470	1252	8036	4821	1608	8396	5186	1977	8770	11
3753	0526	7301	4078	0856	7635	4416	1199	7982	4768	1555	8343	5133	1924	8717	10
3699	0472	7247	4024	0802	7581	4362	1145	7929	4714	1501	8289	5079	1870	8663	9
3645	0419	7194	3970	0748	7528	4309	1091	7875	4661	1448	8236	5026	1817	8610	8
3591	0365	7140	3917	0695	7474	4255	1038	7822	4607	1394	8182	4972	1764	8556	7
3538	0311	7086	3863	0641	7421	4202	0984	7768	4554	1340	8129	4919	1710	8503	6
3484	0257	7033	3809	0587	7367	4148	0930	7714	4500	1287	8075	4865	1657	8449	5
3430	0204	6979	3755	0534	7313	4094	0877	7661	4446	1233	8022	4812	1603	8396	4
3376	0150	6925	3702	0480	7260	4041	0823	7607	4393	1180	7968	4758	1550	8343	3
3322	0096	6871	3648	0426	7206	3987	0770	7554	4339	1126	7915	4705	1496	8289	2
3269	0042	6818	3594	0373	7152	3933	0716	7500	4286	1073	7861	4651	1443	8236	1
3215	9989	6764	3541	0319	7099	3880	0662	7447	4232	1019	7808	4598	1389	8182	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Co-Tangent Deg. 64

Tangent Deg. 64

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9. 641	9. 642	9. 642	9. 642	9. 642	9. 643	9. 643	9. 643	9. 643	9. 644	9. 644	9. 644	9. 644	9. 645	9. 645
0	8420	1009	3596	6182	8765	1347	3926	6504	9080	1654	4226	6796	9365	1931	4496
1	8463	1052	3639	6225	8808	1390	3969	6547	9123	1697	4269	6839	9407	1974	4538
2	8506	1095	3682	6268	8851	1433	4012	6590	9166	1740	4312	6882	9450	2017	4581
3	8549	1138	3725	6311	8894	1476	4055	6633	9209	1783	4355	6925	9493	2059	4624
4	8592	1181	3769	6354	8937	1519	4098	6676	9252	1826	4398	6968	9536	2102	4667
5	8635	1225	3812	6397	8980	1562	4141	6719	9295	1868	4440	7010	9579	2145	4709
6	8679	1268	3855	6440	9023	1605	4184	6762	9337	1911	4483	7053	9621	2188	4752
7	8722	1311	3898	6483	9066	1648	4227	6805	9380	1954	4526	7096	9664	2230	4795
8	8765	1354	3941	6526	9109	1691	4270	6848	9423	1997	4569	7139	9707	2273	4837
9	8808	1397	3984	6569	9152	1734	4313	6891	9466	2040	4612	7182	9750	2316	4880
10	8851	1440	4027	6612	9195	1777	4356	6934	9509	2083	4655	7225	9793	2359	4923
11	8894	1483	4070	6655	9238	1820	4399	6976	9552	2126	4697	7267	9835	2401	4966
12	8938	1526	4113	6698	9282	1863	4442	7019	9595	2169	4740	7310	9878	2444	5008
13	8981	1570	4156	6741	9325	1906	4485	7062	9638	2211	4783	7353	9921	2487	5051
14	9024	1613	4200	6785	9368	1949	4528	7105	9681	2254	4826	7396	9964	2530	5094
15	9067	1656	4243	6828	9411	1992	4571	7148	9724	2297	4869	7439	0006	2572	5137
16	9110	1699	4286	6871	9454	2035	4614	7191	9767	2340	4912	7481	0049	2615	5179
17	9153	1742	4329	6914	9497	2078	4657	7234	9809	2383	4955	7524	0092	2658	5222
18	9197	1785	4372	6957	9540	2121	4700	7277	9852	2426	4997	7567	0135	2701	5265
19	9240	1828	4415	7000	9583	2164	4743	7320	9895	2469	5040	7610	0178	2743	5307
20	9283	1871	4458	7043	9626	2207	4786	7363	9938	2512	5083	7653	0220	2786	5350
21	9326	1915	4501	7086	9669	2250	4829	7406	9981	2554	5126	7695	0263	2829	5393
22	9369	1958	4544	7129	9712	2293	4872	7449	0024	2597	5169	7738	0306	2872	5436
23	9412	2001	4587	7172	9755	2336	4915	7492	0067	2640	5212	7781	0349	2914	5478
24	9456	2044	4631	7215	9798	2379	4958	7535	0110	2683	5254	7824	0391	2957	5521
25	9499	2087	4674	7258	9841	2422	5001	7578	0153	2726	5297	7867	0434	3000	5564
26	9542	2130	4717	7301	9884	2465	5044	7621	0196	2769	5340	7909	0477	3043	5606
27	9585	2173	4760	7344	9927	2508	5087	7663	0239	2812	5383	7952	0520	3085	5649
28	9628	2216	4803	7387	9970	2551	5130	7706	0281	2855	5426	7995	0563	3128	5692
29	9671	2260	4846	7430	0013	2594	5172	7749	0324	2897	5469	8038	0605	3171	5735
30	9714	2303	4889	7474	0056	2637	5215	7792	0367	2940	5511	8081	0648	3214	5777
31	9758	2346	4932	7517	0099	2680	5258	7835	0410	2983	5554	8124	0691	3256	5820
32	9801	2389	4975	7560	0142	2723	5301	7878	0453	3026	5597	8166	0734	3299	5863
33	9844	2432	5018	7603	0185	2766	5344	7921	0496	3069	5640	8209	0776	3342	5905
34	9887	2475	5061	7646	0228	2809	5387	7964	0539	3112	5683	8252	0819	3385	5948
35	9930	2518	5105	7689	0271	2852	5430	8007	0582	3155	5726	8295	0862	3427	5991
36	9973	2561	5148	7732	0314	2895	5473	8050	0625	3197	5768	8338	0905	3470	6033
37	0017	2605	5191	7775	0357	2938	5516	8093	0668	3240	5811	8380	0948	3513	6076
38	0060	2648	5234	7818	0400	2981	5559	8136	0710	3283	5854	8423	0990	3556	6119
39	0103	2691	5277	7861	0443	3024	5602	8179	0753	3326	5897	8466	1033	3598	6162
40	0146	2734	5320	7904	0486	3067	5645	8222	0796	3369	5940	8509	1076	3641	6204
41	0189	2777	5363	7947	0529	3110	5688	8265	0839	3412	5983	8552	1119	3684	6247
42	0232	2820	5406	7990	0572	3153	5731	8307	0882	3455	6025	8594	1161	3726	6290
43	0275	2863	5449	8033	0615	3196	5774	8350	0925	3498	6068	8637	1204	3769	6332
44	0319	2906	5492	8076	0658	3239	5817	8393	0968	3540	6111	8680	1247	3812	6375
45	0362	2949	5535	8119	0701	3282	5860	8436	1011	3583	6154	8723	1290	3855	6418
46	0405	2993	5578	8162	0744	3325	5903	8479	1054	3626	6197	8766	1332	3897	6461
47	0448	3036	5622	8205	0787	3368	5946	8522	1096	3669	6240	8808	1375	3940	6503
48	0491	3079	5665	8248	0830	3411	5989	8565	1139	3712	6282	8851	1418	3983	6546
49	0534	3122	5708	8292	0873	3454	6032	8608	1182	3755	6325	8894	1461	4026	6589
50	0577	3165	5751	8335	0916	3496	6075	8651	1225	3798	6368	8937	1503	4068	6631
51	0621	3208	5794	8378	0960	3539	6118	8694	1268	3840	6411	8980	1546	4111	6674
52	0664	3251	5837	8421	1003	3582	6161	8737	1311	3883	6454	9022	1589	4154	6717
53	0707	3294	5880	8464	1046	3625	6203	8780	1354	3926	6497	9065	1632	4197	6759
54	0750	3337	5923	8507	1089	3668	6246	8822	1397	3969	6539	9108	1675	4239	6802
55	0793	3381	5966	8550	1132	3711	6289	8865	1440	4012	6582	9151	1717	4282	6845
56	0836	3424	6009	8593	1175	3754	6332	8908	1482	4055	6625	9193	1760	4325	6888
57	0879	3467	6052	8636	1218	3797	6375	8951	1525	4098	6668	9236	1803	4367	6930
58	0923	3510	6095	8679	1261	3840	6418	8994	1568	4140	6711	9279	1846	4410	6973
59	0966	3553	6138	8722	1304	3883	6461	9037	1611	4183	6753	9322	1888	4453	7016
60	1009	3596	6182	8765	1347	3926	6504	9080	1654	4226	6796	9365	1931	4496	7058
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
	9. 953	9. 953	9. 953	9. 953	9. 953	9. 953	9. 953	9. 953	9. 953	9. 953	9. 953	9. 952	9. 952	9. 952	9. 952
0	6602	5985	5369	4751	4134	3515	2897	2278	1658	1038	0418	9797	9175	8553	7931
1	6592	5975	5358	4741	4123	3505	2886	2267	1648	1028	0407	9786	9165	8543	7921
2	6581	5965	5348	4731	4113	3495	2876	2257	1637	1017	0397	9776	9154	8533	7910
3	6571	5955	5338	4720	4103	3484	2866	2247	1627	1007	0386	9766	9144	8522	7900
4	6561	5944	5328	4710	4092	3474	2855	2236	1617	0997	0376	9755	9134	8512	7890
5	6551	5934	5317	4700	4082	3464	2845	2226	1606	0986	0366	9745	9123	8501	7879
6	6540	5924	5307	4690	4072	3454	2835	2216	1596	0976	0355	9734	9113	8491	7869
7	6530	5914	5297	4679	4061	3443	2825	2205	1586	0966	0345	9724	9103	8481	7858
8	6520	5903	5286	4669	4051	3433	2814	2195	1575	0955	0335	9714	9092	8470	7848
9	6509	5893	5276	4659	4041	3423	2804	2185	1565	0945	0324	9703	9082	8460	7838
10	6499	5883	5266	4648	4031	3412	2794	2174	1555	0935	0314	9693	9072	8450	7827
11	6489	5872	5256	4638	4020	3402	2783	2164	1544	0924	0304	9683	9061	8439	7817
12	6479	5862	5245	4628	4010	3392	2773	2154	1534	0914	0293	9672	9051	8429	7806
13	6468	5852	5235	4618	4000	3381	2763	2143	1524	0904	0283	9662	9040	8419	7796
14	6458	5842	5225	4607	3989	3371	2752	2133	1513	0893	0273	9652	9030	8408	7786
15	6448	5831	5214	4597	3979	3361	2742	2123	1503	0883	0262	9641	9020	8398	7775
16	6438	5821	5204	4587	3969	3350	2732	2112	1493	0873	0252	9631	9009	8387	7765
17	6427	5811	5194	4576	3958	3340	2721	2102	1482	0862	0242	9621	8999	8377	7755
18	6417	5800	5184	4566	3948	3330	2711	2092	1472	0852	0231	9610	8989	8367	7744
19	6407	5790	5173	4556	3938	3320	2701	2081	1462	0842	0221	9600	8978	8356	7734
20	6396	5780	5163	4545	3928	3309	2690	2071	1451	0831	0211	9589	8968	8346	7723
21	6386	5770	5153	4535	3917	3299	2680	2061	1441	0821	0200	9579	8958	8336	7713
22	6376	5759	5142	4525	3907	3289	2670	2050	1431	0811	0190	9569	8947	8325	7703
23	6366	5749	5132	4515	3897	3278	2659	2040	1420	0800	0180	9558	8937	8315	7692
24	6355	5739	5122	4504	3886	3268	2649	2030	1410	0790	0169	9548	8926	8304	7682
25	6345	5729	5111	4494	3876	3258	2639	2020	1400	0780	0159	9538	8916	8294	7672
26	6335	5718	5101	4484	3866	3247	2628	2009	1389	0769	0149	9527	8906	8284	7661
27	6325	5708	5091	4473	3855	3237	2618	1999	1379	0759	0138	9517	8895	8273	7651
28	6314	5698	5081	4463	3845	3227	2608	1989	1369	0749	0128	9507	8885	8263	7640
29	6304	5687	5070	4453	3835	3216	2598	1978	1358	0738	0117	9496	8875	8253	7630
30	6294	5677	5060	4443	3825	3206	2587	1968	1348	0728	0107	9486	8864	8242	7620
31	6283	5667	5050	4432	3814	3196	2577	1958	1338	0717	0097	9476	8854	8232	7609
32	6273	5657	5039	4422	3804	3185	2567	1947	1327	0707	0086	9465	8844	8221	7599
33	6263	5646	5029	4412	3794	3175	2556	1937	1317	0697	0076	9455	8833	8211	7589
34	6253	5636	5019	4401	3783	3165	2546	1927	1307	0686	0066	9445	8823	8201	7578
35	6242	5626	5009	4391	3773	3155	2536	1916	1296	0676	0055	9434	8812	8190	7568
36	6232	5615	4998	4381	3763	3144	2525	1906	1286	0666	0045	9424	8802	8180	7557
37	6222	5605	4988	4370	3752	3134	2515	1896	1276	0655	0035	9413	8792	8170	7547
38	6212	5595	4978	4360	3742	3124	2505	1885	1265	0645	0024	9403	8781	8159	7537
39	6201	5585	4967	4350	3732	3113	2494	1875	1255	0635	0014	9393	8771	8149	7526
40	6191	5574	4957	4340	3722	3103	2484	1865	1245	0624	0004	9382	8761	8139	7516
41	6181	5564	4947	4329	3711	3093	2474	1854	1234	0614	9993	9372	8750	8128	7506
42	6170	5554	4937	4319	3701	3082	2463	1844	1224	0604	9983	9362	8740	8118	7495
43	6160	5543	4926	4309	3691	3072	2453	1834	1214	0593	9973	9351	8730	8107	7485
44	6150	5533	4916	4298	3680	3062	2443	1823	1203	0583	9962	9341	8719	8097	7474
45	6140	5523	4906	4288	3670	3051	2432	1813	1193	0573	9952	9331	8709	8087	7464
46	6129	5513	4895	4278	3660	3041	2422	1803	1183	0562	9942	9320	8698	8076	7454
47	6119	5502	4885	4267	3649	3031	2412	1792	1172	0552	9931	9310	8688	8066	7443
48	6109	5492	4875	4257	3639	3020	2401	1782	1162	0542	9921	9299	8678	8056	7433
49	6099	5482	4865	4247	3629	3010	2391	1772	1152	0531	9910	9289	8667	8045	7422
50	6088	5471	4854	4237	3618	3000	2381	1761	1141	0521	9900	9279	8657	8035	7412
51	6078	5461	4844	4226	3608	2990	2371	1751	1131	0511	9890	9268	8647	8024	7402
52	6068	5451	4834	4216	3598	2979	2360	1741	1121	0500	9879	9258	8636	8014	7391
53	6057	5441	4823	4206	3588	2969	2350	1730	1110	0490	9869	9248	8626	8004	7381
54	6047	5430	4813	4195	3577	2959	2340	1720	1100	0480	9859	9237	8616	7993	7371
55	6037	5420	4803	4185	3567	2948	2329	1710	1090	0469	9848	9227	8605	7983	7360
56	6027	5410	4793	4175	3557	2938	2319	1699	1079	0459	9838	9217	8595	7973	7350
57	6016	5399	4782	4164	3546	2928	2309	1689	1069	0449	9828	9206	8584	7962	7339
58	6006	5389	4772	4154	3536	2917	2298	1679	1059	0438	9817	9196	8574	7952	7329
59	5996	5379	4762	4144	3526	2907	2288	1668	1048	0428	9807	9186	8564	7941	7319
60	5985	5369	4751	4134	3515	2897	2278	1658	1038	0418	9797	9175	8553	7931	7308
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

26 Deg. Tangent

″	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
	9.688	9.688	9.688	9.689	9.689	9.689	9.690	9.690	9.690	9.691	9.691	9.691	9.692	9.692	9.692
0	1818	5023	8227	1430	4631	7831	1030	4226	7422	0616	3809	7000	0189	3378	6565
1	1871	5077	8281	1484	4685	7885	1083	4280	7475	0669	3862	7053	0243	3431	6618
2	1925	5130	8334	1537	4738	7938	1136	4333	7528	0722	3915	7106	0296	3484	6671
3	1978	5184	8388	1590	4791	7991	1189	4386	7582	0776	3968	7159	0349	3537	6724
4	2031	5237	8441	1644	4845	8045	1243	4440	7635	0829	4021	7212	0402	3590	6777
5	2085	5290	8494	1697	4898	8098	1296	4493	7688	0882	4075	7266	0455	3643	6830
6	2138	5344	8548	1750	4951	8151	1349	4546	7741	0935	4128	7319	0508	3697	6883
7	2192	5397	8601	1804	5005	8204	1403	4599	7795	0989	4181	7372	0562	3750	6936
8	2245	5451	8655	1857	5058	8258	1456	4653	7848	1042	4234	7425	0615	3803	6989
9	2299	5504	8708	1910	5111	8311	1509	4706	7901	1095	4287	7478	0668	3856	7043
10	2352	5557	8761	1964	5165	8364	1563	4759	7954	1148	4341	7531	0721	3909	7096
11	2406	5611	8815	2017	5218	8418	1616	4812	8008	1201	4394	7585	0774	3962	7149
12	2459	5664	8868	2071	5272	8471	1669	4866	8061	1255	4447	7638	0827	4015	7202
13	2512	5718	8922	2124	5325	8524	1722	4919	8114	1308	4500	7691	0880	4068	7255
14	2566	5771	8975	2177	5378	8578	1776	4972	8167	1361	4553	7744	0934	4121	7308
15	2619	5825	9028	2231	5432	8631	1829	5025	8221	1414	4607	7797	0987	4175	7361
16	2673	5878	9082	2284	5485	8684	1882	5079	8274	1467	4660	7850	1040	4228	7414
17	2726	5931	9135	2337	5538	8738	1936	5132	8327	1521	4713	7904	1093	4281	7467
18	2780	5985	9188	2391	5592	8791	1989	5185	8380	1574	4766	7957	1146	4334	7520
19	2833	6038	9242	2444	5645	8844	2042	5239	8434	1627	4819	8010	1199	4387	7574
20	2886	6092	9295	2497	5698	8898	2095	5292	8487	1680	4872	8063	1252	4440	7627
21	2940	6145	9349	2551	5752	8951	2149	5345	8540	1734	4926	8116	1306	4493	7680
22	2993	6198	9402	2604	5805	9004	2202	5398	8593	1787	4979	8169	1359	4546	7733
23	3047	6252	9455	2658	5858	9057	2255	5452	8647	1840	5032	8223	1412	4600	7786
24	3100	6305	9509	2711	5912	9111	2309	5505	8700	1893	5085	8276	1465	4653	7839
25	3154	6359	9562	2764	5965	9164	2362	5558	8753	1946	5138	8329	1518	4706	7892
26	3207	6412	9616	2818	6018	9217	2415	5611	8806	2000	5192	8382	1571	4759	7945
27	3260	6465	9669	2871	6072	9271	2468	5665	8859	2053	5245	8435	1624	4812	7998
28	3314	6519	9722	2924	6125	9324	2522	5718	8913	2106	5298	8488	1678	4865	8051
29	3367	6572	9776	2978	6178	9377	2575	5771	8966	2159	5351	8542	1731	4918	8104
30	3421	6626	9829	3031	6232	9431	2628	5824	9019	2212	5404	8595	1784	4971	8158
31	3474	6679	9882	3084	6285	9484	2681	5878	9072	2266	5458	8648	1837	5024	8211
32	3528	6732	9936	3138	6338	9537	2735	5931	9126	2319	5511	8701	1890	5078	8264
33	3581	6786	9989	3191	6392	9591	2788	5984	9179	2372	5564	8754	1943	5131	8317
34	3634	6839	0043	3244	6445	9644	2841	6037	9232	2425	5617	8807	1996	5184	8370
35	3688	6893	0096	3298	6498	9697	2895	6091	9285	2479	5670	8861	2049	5237	8423
36	3741	6946	0149	3351	6551	9750	2948	6144	9339	2532	5723	8914	2103	5290	8476
37	3795	6999	0203	3404	6605	9804	3001	6197	9392	2585	5777	8967	2156	5343	8529
38	3848	7053	0256	3458	6658	9857	3054	6250	9445	2638	5830	9020	2209	5396	8582
39	3902	7106	0309	3511	6711	9910	3108	6304	9498	2691	5883	9073	2262	5449	8635
40	3955	7160	0363	3565	6765	9964	3161	6357	9551	2745	5936	9126	2315	5503	8688
41	4008	7213	0416	3618	6818	0017	3214	6410	9605	2798	5989	9180	2368	5556	8742
42	4062	7266	0470	3671	6871	0070	3268	6463	9658	2851	6043	9233	2421	5609	8795
43	4115	7320	0523	3725	6925	0124	3321	6517	9711	2904	6096	9286	2475	5662	8848
44	4169	7373	0576	3778	6978	0177	3374	6570	9764	2957	6149	9339	2528	5715	8901
45	4222	7427	0630	3831	7031	0230	3427	6623	9818	3011	6202	9392	2581	5768	8954
46	4276	7480	0683	3885	7085	0283	3481	6676	9871	3064	6255	9445	2634	5821	9007
47	4329	7533	0736	3938	7138	0337	3534	6730	9924	3117	6308	9498	2687	5874	9060
48	4382	7587	0790	3991	7191	0390	3587	6783	9977	3170	6362	9552	2740	5927	9113
49	4436	7640	0843	4045	7245	0443	3640	6836	0031	3223	6415	9605	2793	5980	9166
50	4489	7694	0897	4098	7298	0497	3694	6889	0084	3277	6468	9658	2846	6034	9219
51	4543	7747	0950	4151	7351	0550	3747	6943	0137	3330	6521	9711	2900	6087	9272
52	4596	7800	1003	4205	7405	0603	3800	6996	0190	3383	6574	9764	2953	6140	9325
53	4649	7854	1057	4258	7458	0657	3854	7049	0243	3436	6628	9817	3006	6193	9379
54	4703	7907	1110	4311	7511	0710	3907	7102	0297	3489	6681	9871	3059	6246	9432
55	4756	7961	1163	4365	7565	0763	3960	7156	0350	3543	6734	9924	3112	6299	9485
56	4810	8014	1217	4418	7618	0816	4013	7209	0403	3596	6787	9977	3165	6352	9538
57	4863	8067	1270	4471	7671	0870	4067	7262	0456	3649	6840	0030	3218	6405	9591
58	4917	8121	1323	4525	7725	0923	4120	7315	0510	3702	6893	0083	3272	6458	9644
59	4970	8174	1377	4578	7778	0976	4173	7369	0563	3755	6947	0136	3325	6512	9697
60	5023	8227	1430	4631	7831	1030	4226	7422	0616	3809	7000	0189	3378	6565	9750
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Tangent Deg. 63

26 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	″
10.311	10.311	10.311	10.310	10.310	10.310	10.309	10.309	10.309	10.308	10.308	10.308	10.307	10.307	10.307	
8182	4977	1773	8570	5369	2169	8970	5774	2578	9384	6191	3000	9811	6622	3435	60
8129	4923	1719	8516	5315	2115	8917	5720	2525	9331	6138	2947	9757	6569	3382	59
8075	4870	1666	8463	5262	2062	8864	5667	2472	9278	6085	2894	9704	6516	3329	58
8022	4816	1612	8410	5209	2009	8811	5614	2418	9224	6032	2841	9651	6463	3276	57
7969	4763	1559	8356	5155	1955	8757	5560	2365	9171	5979	2788	9598	6410	3223	56
7915	4710	1506	8303	5102	1902	8704	5507	2312	9118	5925	2734	9545	6357	3170	55
7862	4656	1452	8250	5049	1849	8651	5454	2259	9065	5872	2681	9492	6303	3117	54
7808	4603	1399	8196	4995	1796	8597	5401	2205	9011	5819	2628	9438	6250	3064	53
7755	4549	1345	8143	4942	1742	8544	5347	2152	8958	5766	2575	9385	6197	3011	52
7701	4496	1292	8090	4889	1689	8491	5294	2099	8905	5713	2522	9332	6144	2957	51
7648	4443	1239	8036	4835	1636	8437	5241	2046	8852	5659	2469	9279	6091	2904	50
7594	4389	1185	7983	4782	1582	8384	5188	1992	8799	5606	2415	9226	6038	2851	49
7541	4336	1132	7929	4728	1529	8331	5134	1939	8745	5553	2362	9173	5985	2798	48
7488	4282	1078	7876	4675	1476	8278	5081	1886	8692	5500	2309	9120	5932	2745	47
7434	4229	1025	7823	4622	1422	8224	5028	1833	8639	5447	2256	9066	5879	2692	46
7381	4175	0972	7769	4568	1369	8171	4975	1779	8586	5393	2203	9013	5825	2639	45
7327	4122	0918	7716	4515	1316	8118	4921	1726	8533	5340	2150	8960	5772	2586	44
7274	4069	0865	7663	4462	1262	8064	4868	1673	8479	5287	2096	8907	5719	2533	43
7220	4015	0812	7609	4408	1209	8011	4815	1620	8426	5234	2043	8854	5666	2480	42
7167	3962	0758	7556	4355	1156	7958	4761	1566	8373	5181	1990	8801	5613	2426	41
7114	3908	0705	7503	4302	1102	7905	4708	1513	8320	5128	1937	8748	5560	2373	40
7060	3855	0651	7449	4248	1049	7851	4655	1460	8266	5074	1884	8694	5507	2320	39
7007	3802	0598	7396	4195	0996	7798	4602	1407	8213	5021	1831	8641	5454	2267	38
6953	3748	0545	7342	4142	0943	7745	4548	1353	8160	4968	1777	8588	5400	2214	37
6900	3695	0491	7289	4088	0889	7691	4495	1300	8107	4915	1724	8535	5347	2161	36
6846	3641	0438	7236	4035	0836	7638	4442	1247	8054	4862	1671	8482	5294	2108	35
6793	3588	0384	7182	3982	0783	7585	4389	1194	8000	4808	1618	8429	5241	2055	34
6740	3535	0331	7129	3928	0729	7532	4335	1141	7947	4755	1565	8376	5188	2002	33
6686	3481	0278	7076	3875	0676	7478	4282	1087	7894	4702	1512	8322	5135	1949	32
6633	3428	0224	7022	3822	0623	7425	4229	1034	7841	4649	1458	8269	5082	1896	31
6579	3374	0171	6969	3768	0569	7372	4176	0981	7788	4596	1405	8216	5029	1842	30
6526	3321	0118	6916	3715	0516	7319	4122	0928	7734	4542	1352	8163	4976	1789	29
6472	3268	0064	6862	3662	0463	7265	4069	0874	7681	4489	1299	8110	4922	1736	28
6419	3214	0011	6809	3608	0409	7212	4016	0821	7628	4436	1246	8057	4869	1683	27
6366	3161	9957	6756	3555	0356	7159	3963	0768	7575	4383	1193	8004	4816	1630	26
6312	3107	9904	6702	3502	0303	7105	3909	0715	7521	4330	1139	7951	4763	1577	25
6259	3054	9851	6649	3449	0250	7052	3856	0661	7468	4277	1086	7897	4710	1524	24
6205	3001	9797	6596	3395	0196	6999	3803	0608	7415	4223	1033	7844	4657	1471	23
6152	2947	9744	6542	3342	0143	6946	3750	0555	7362	4170	0980	7791	4604	1418	22
6098	2894	9691	6489	3289	0090	6892	3696	0502	7309	4117	0927	7738	4551	1365	21
6045	2840	9637	6435	3235	0036	6839	3643	0449	7255	4064	0874	7685	4497	1312	20
5992	2787	9584	6382	3182	9983	6786	3590	0395	7202	4011	0820	7632	4444	1258	19
5938	2734	9530	6329	3129	9930	6732	3537	0342	7149	3957	0767	7579	4391	1205	18
5885	2680	9477	6275	3075	9876	6679	3483	0289	7096	3904	0714	7525	4338	1152	17
5831	2627	9424	6222	3022	9823	6626	3430	0236	7043	3851	0661	7472	4285	1099	16
5778	2573	9370	6169	2969	9770	6573	3377	0182	6989	3798	0608	7419	4232	1046	15
5724	2520	9317	6115	2915	9717	6519	3324	0129	6936	3745	0555	7366	4179	0993	14
5671	2467	9264	6062	2862	9663	6466	3270	0076	6883	3692	0502	7313	4126	0940	13
5618	2413	9210	6009	2809	9610	6413	3217	0023	6830	3638	0448	7260	4073	0887	12
5564	2360	9157	5955	2755	9557	6360	3164	9969	6777	3585	0395	7207	4020	0834	11
5511	2306	9103	5902	2702	9503	6306	3111	9916	6723	3532	0342	7154	3966	0781	10
5457	2253	9050	5849	2649	9450	6253	3057	9863	6670	3479	0289	7100	3913	0728	9
5404	2200	8997	5795	2595	9397	6200	3004	9810	6617	3426	0236	7047	3860	0675	8
5351	2146	8943	5742	2542	9343	6146	2951	9757	6564	3372	0183	6994	3807	0621	7
5297	2093	8890	5689	2489	9290	6093	2898	9703	6511	3319	0129	6941	3754	0568	6
5244	2039	8837	5635	2435	9237	6040	2844	9650	6457	3266	0076	6888	3701	0515	5
5190	1986	8783	5582	2382	9184	5987	2791	9597	6404	3213	0023	6835	3648	0462	4
5137	1933	8730	5529	2329	9130	5933	2738	9544	6351	3160	9970	6782	3595	0409	3
5083	1879	8677	5475	2275	9077	5880	2685	9490	6298	3107	9917	6728	3542	0356	2
5030	1826	8623	5422	2222	9024	5827	2631	9437	6245	3053	9864	6675	3488	0303	1
4977	1773	8570	5369	2169	8970	5774	2578	9384	6191	3000	9811	6622	3435	0250	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Tangent Deg. 63

″	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9. 645	9. 645	9. 646	9. 646	9. 646	9. 646	9. 647	9. 647	9. 647	9. 648	9. 648	9. 648	9. 648	9. 649	9. 649
0	7058	9619	2178	4735	7290	9844	2395	4945	7492	0038	2582	5124	7665	0203	2740
1	7101	9662	2221	4778	7333	9886	2438	4987	7535	0081	2625	5167	7707	0245	2782
2	7144	9704	2263	4820	7375	9929	2480	5030	7577	0123	2667	5209	7749	0288	2824
3	7186	9747	2306	4863	7418	9971	2523	5072	7620	0165	2709	5251	7792	0330	2866
4	7229	9790	2349	4906	7461	0014	2565	5115	7662	0208	2752	5294	7834	0372	2909
5	7272	9832	2391	4948	7503	0056	2608	5157	7705	0250	2794	5336	7876	0415	2951
6	7315	9875	2434	4991	7546	0099	2650	5199	7747	0293	2837	5378	7919	0457	2993
7	7357	9918	2476	5033	7588	0141	2693	5242	7789	0335	2879	5421	7961	0499	3035
8	7400	9960	2519	5076	7631	0184	2735	5284	7832	0378	2921	5463	8003	0541	3078
9	7443	0003	2562	5119	7673	0226	2778	5327	7874	0420	2964	5506	8046	0584	3120
10	7485	0046	2604	5161	7716	0269	2820	5369	7917	0462	3006	5548	8088	0626	3162
11	7528	0088	2647	5204	7759	0312	2863	5412	7959	0505	3048	5590	8130	0668	3204
12	7571	0131	2690	5246	7801	0354	2905	5454	8002	0547	3091	5633	8172	0711	3247
13	7613	0174	2732	5289	7844	0397	2948	5497	8044	0590	3133	5675	8215	0753	3289
14	7656	0216	2775	5332	7886	0439	2990	5539	8087	0632	3176	5717	8257	0795	3331
15	7699	0259	2818	5374	7929	0482	3033	5582	8129	0674	3218	5760	8299	0837	3373
16	7741	0302	2860	5417	7971	0524	3075	5624	8171	0717	3260	5802	8342	0880	3416
17	7784	0344	2903	5459	8014	0567	3118	5667	8214	0759	3303	5844	8384	0922	3458
18	7827	0387	2945	5502	8056	0609	3160	5709	8256	0802	3345	5887	8426	0964	3500
19	7869	0430	2988	5544	8099	0652	3203	5752	8299	0844	3387	5929	8469	1007	3543
20	7912	0472	3031	5587	8142	0694	3245	5794	8341	0886	3430	5971	8511	1049	3585
21	7955	0515	3073	5630	8184	0737	3288	5837	8384	0929	3472	6014	8553	1091	3627
22	7998	0558	3116	5672	8227	0779	3330	5879	8426	0971	3515	6056	8596	1133	3669
23	8040	0600	3158	5715	8269	0822	3373	5921	8468	1014	3557	6098	8638	1176	3712
24	8083	0643	3201	5757	8312	0864	3415	5964	8511	1056	3599	6141	8680	1218	3754
25	8126	0686	3244	5800	8354	0907	3458	6006	8553	1098	3642	6183	8723	1260	3796
26	8168	0728	3286	5843	8397	0949	3500	6049	8596	1141	3684	6225	8765	1302	3838
27	8211	0771	3329	5885	8440	0992	3543	6091	8638	1183	3726	6268	8807	1345	3880
28	8254	0814	3372	5928	8482	1035	3585	6134	8681	1226	3769	6310	8849	1387	3923
29	8296	0856	3414	5970	8525	1077	3628	6176	8723	1268	3811	6352	8892	1429	3965
30	8339	0899	3457	6013	8567	1120	3670	6219	8766	1310	3854	6395	8934	1472	4007
31	8382	0941	3499	6056	8610	1162	3713	6261	8808	1353	3896	6437	8976	1514	4049
32	8424	0984	3542	6098	8652	1205	3755	6304	8850	1395	3938	6479	9019	1556	4092
33	8467	1027	3585	6141	8695	1247	3798	6346	8893	1438	3981	6522	9061	1598	4134
34	8510	1069	3627	6183	8737	1290	3840	6389	8935	1480	4023	6564	9103	1641	4176
35	8552	1112	3670	6226	8780	1332	3883	6431	8978	1522	4065	6606	9146	1683	4218
36	8595	1155	3713	6268	8823	1375	3925	6473	9020	1565	4108	6649	9188	1725	4261
37	8638	1197	3755	6311	8865	1417	3968	6516	9063	1607	4150	6691	9230	1768	4303
38	8680	1240	3798	6354	8908	1460	4010	6558	9105	1650	4192	6733	9273	1810	4345
39	8723	1283	3840	6396	8950	1502	4052	6601	9147	1692	4235	6776	9315	1852	4387
40	8766	1325	3883	6439	8993	1545	4095	6643	9190	1734	4277	6818	9357	1894	4430
41	8808	1368	3926	6481	9035	1587	4137	6686	9232	1777	4320	6860	9399	1937	4472
42	8851	1411	3968	6524	9078	1630	4180	6728	9275	1819	4362	6903	9442	1979	4514
43	8894	1453	4011	6567	9120	1672	4222	6771	9317	1862	4404	6945	9484	2021	4556
44	8936	1496	4053	6609	9163	1715	4265	6813	9359	1904	4447	6987	9526	2063	4599
45	8979	1539	4096	6652	9205	1757	4307	6856	9402	1946	4489	7030	9569	2106	4641
46	9022	1581	4139	6694	9248	1800	4350	6898	9444	1989	4531	7072	9611	2148	4683
47	9064	1624	4181	6737	9291	1842	4392	6941	9487	2031	4574	7114	9653	2190	4725
48	9107	1666	4224	6779	9333	1885	4435	6983	9529	2074	4616	7157	9696	2232	4768
49	9150	1709	4266	6822	9376	1927	4477	7025	9572	2116	4658	7199	9738	2275	4810
50	9192	1752	4309	6865	9418	1970	4520	7068	9614	2158	4701	7241	9780	2317	4852
51	9235	1794	4352	6907	9461	2012	4562	7110	9656	2201	4743	7284	9822	2359	4894
52	9278	1837	4394	6950	9503	2055	4605	7153	9699	2243	4785	7326	9865	2402	4937
53	9320	1880	4437	6992	9546	2097	4647	7195	9741	2285	4828	7368	9907	2444	4979
54	9363	1922	4480	7035	9588	2140	4690	7238	9784	2328	4870	7411	9949	2486	5021
55	9406	1965	4522	7077	9631	2183	4732	7280	9826	2370	4913	7453	9992	2528	5063
56	9448	2008	4565	7120	9673	2225	4775	7323	9869	2413	4955	7495	0034	2571	5105
57	9491	2050	4607	7163	9716	2268	4817	7365	9911	2455	4997	7538	0076	2613	5148
58	9534	2093	4650	7205	9759	2310	4860	7407	9953	2497	5040	7580	0118	2655	5190
59	9576	2135	4693	7248	9801	2353	4902	7450	9996	2540	5082	7622	0161	2697	5232
60	9619	2178	4735	7290	9844	2395	4945	7492	0038	2582	5124	7665	0203	2740	5274
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Sine Deg. 63

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	.″
9. 952	9. 952	9. 952	9. 952	9. 952	9. 952	9. 952	9. 952	9. 952	9. 952	9. 952	9. 951	9. 951	9. 951		
7308	6685	6061	5437	4813	4188	3562	2936	2310	1683	1055	0428	9799	9171	8541	60
7298	6675	6051	5427	4802	4177	3552	2926	2299	1672	1045	0417	9789	9160	8531	59
7287	6664	6041	5416	4792	4167	3541	2915	2289	1662	1035	0407	9778	9150	8520	58
7277	6654	6030	5406	4781	4156	3531	2905	2278	1651	1024	0396	9768	9139	8510	57
7267	6643	6020	5396	4771	4146	3520	2894	2268	1641	1014	0386	9757	9129	8500	56
7256	6633	6009	5385	4761	4135	3510	2884	2257	1631	1003	0375	9747	9118	8489	55
7246	6623	5999	5375	4750	4125	3499	2873	2247	1620	0993	0365	9737	9108	8479	54
7236	6612	5989	5364	4740	4115	3489	2863	2237	1610	0982	0354	9726	9097	8468	53
7225	6602	5978	5354	4729	4104	3479	2853	2226	1599	0972	0344	9716	9087	8458	52
7215	6592	5968	5344	4719	4094	3468	2842	2216	1589	0961	0333	9705	9076	8447	51
7204	6581	5957	5333	4708	4083	3458	2832	2205	1578	0951	0323	9695	9066	8437	50
7194	6571	5947	5323	4698	4073	3447	2821	2195	1568	0940	0312	9684	9055	8426	49
7184	6560	5937	5312	4688	4062	3437	2811	2184	1557	0930	0302	9674	9045	8416	48
7173	6550	5926	5302	4677	4052	3426	2800	2174	1547	0919	0292	9663	9034	8405	47
7163	6540	5916	5292	4667	4042	3416	2790	2163	1536	0909	0281	9653	9024	8395	46
7152	6529	5905	5281	4656	4031	3406	2780	2153	1526	0899	0271	9642	9013	8384	45
7142	6519	5895	5271	4646	4021	3395	2769	2143	1516	0888	0260	9632	9003	8374	44
7132	6508	5885	5260	4636	4010	3385	2759	2132	1505	0878	0250	9621	8992	8363	43
7121	6498	5874	5250	4625	4000	3374	2748	2122	1495	0867	0239	9611	8982	8353	42
7111	6488	5864	5239	4615	3990	3364	2738	2111	1484	0857	0229	9600	8971	8342	41
7101	6477	5853	5229	4604	3979	3353	2727	2101	1474	0846	0218	9590	8961	8332	40
7090	6467	5843	5219	4594	3969	3343	2717	2090	1463	0836	0208	9579	8950	8321	39
7080	6456	5833	5208	4583	3958	3333	2706	2080	1453	0825	0197	9569	8940	8311	38
7069	6446	5822	5198	4573	3948	3322	2696	2069	1442	0815	0187	9558	8930	8300	37
7059	6436	5812	5187	4563	3937	3312	2686	2059	1432	0804	0176	9548	8919	8290	36
7049	6425	5801	5177	4552	3927	3301	2675	2049	1421	0794	0166	9537	8909	8279	35
7038	6415	5791	5167	4542	3917	3291	2665	2038	1411	0783	0155	9527	8898	8269	34
7028	6404	5781	5156	4531	3906	3280	2654	2028	1401	0773	0145	9516	8888	8258	33
7017	6394	5770	5146	4521	3896	3270	2644	2017	1390	0763	0134	9506	8877	8248	32
7007	6384	5760	5135	4511	3885	3260	2633	2007	1380	0752	0124	9496	8867	8237	31
6997	6373	5749	5125	4500	3875	3249	2623	1996	1369	0742	0114	9485	8856	8227	30
6986	6363	5739	5115	4490	3864	3239	2612	1986	1359	0731	0103	9475	8846	8216	29
6976	6352	5729	5104	4479	3854	3228	2602	1975	1348	0721	0093	9464	8835	8206	28
6966	6342	5718	5094	4469	3844	3218	2592	1965	1338	0710	0082	9454	8825	8195	27
6955	6332	5708	5083	4458	3833	3207	2581	1954	1327	0700	0072	9443	8814	8185	26
6945	6321	5697	5073	4448	3823	3197	2571	1944	1317	0689	0061	9433	8804	8174	25
6934	6311	5687	5062	4438	3812	3187	2560	1934	1306	0679	0051	9422	8793	8164	24
6924	6300	5677	5052	4427	3802	3176	2550	1923	1296	0668	0040	9412	8783	8153	23
6914	6290	5666	5042	4417	3791	3166	2539	1913	1286	0658	0030	9401	8772	8143	22
6903	6280	5656	5031	4406	3781	3155	2529	1902	1275	0647	0019	9391	8762	8132	21
6893	6269	5645	5021	4396	3771	3145	2519	1892	1265	0637	0009	9380	8751	8122	20
6882	6259	5635	5010	4386	3760	3134	2508	1881	1254	0626	9998	9370	8741	8111	19
6872	6248	5624	5000	4375	3750	3124	2498	1871	1244	0616	9988	9359	8730	8101	18
6862	6238	5614	4990	4365	3739	3113	2487	1860	1233	0606	9977	9349	8720	8090	17
6851	6228	5604	4979	4354	3729	3103	2477	1850	1223	0595	9967	9338	8709	8080	16
6841	6217	5593	4969	4344	3718	3093	2466	1840	1212	0585	9956	9328	8699	8069	15
6830	6207	5583	4958	4333	3708	3082	2456	1829	1202	0574	9946	9317	8688	8059	14
6820	6197	5572	4948	4323	3698	3072	2445	1819	1191	0564	9936	9307	8678	8048	13
6810	6186	5562	4938	4313	3687	3061	2435	1808	1181	0553	9925	9296	8667	8038	12
6799	6176	5552	4927	4302	3677	3051	2425	1798	1170	0543	9915	9286	8657	8027	11
6789	6165	5541	4917	4292	3666	3040	2414	1787	1160	0532	9904	9275	8646	8017	10
6779	6155	5531	4906	4281	3656	3030	2404	1777	1150	0522	9894	9265	8636	8006	9
6768	6145	5520	4896	4271	3645	3020	2393	1766	1139	0511	9883	9254	8625	7996	8
6758	6134	5510	4885	4260	3635	3009	2383	1756	1129	0501	9873	9244	8615	7985	7
6747	6124	5500	4875	4250	3625	2999	2372	1745	1118	0490	9862	9234	8604	7975	6
6737	6113	5489	4865	4240	3614	2988	2362	1735	1108	0480	9852	9223	8594	7964	5
6727	6103	5479	4854	4229	3604	2978	2351	1725	1097	0469	9841	9213	8583	7954	4
6716	6093	5468	4844	4219	3593	2967	2341	1714	1087	0459	9831	9202	8573	7943	3
6706	6082	5458	4833	4208	3583	2957	2331	1704	1076	0449	9820	9192	8562	7933	2
6695	6072	5448	4823	4198	3572	2947	2320	1693	1066	0438	9810	9181	8552	7922	1
6685	6061	5437	4813	4188	3562	2936	2310	1683	1055	0428	9799	9171	8541	7912	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Sine Deg. 63

26 Deg. Tangent

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 692	9. 693	9. 693	9. 693	9. 694	9. 694	9. 694	9. 695	9. 695	9. 695	9. 696	9. 696	9. 696	9. 697	9. 697
0	9750	2934	6117	9298	2478	5656	8833	2009	5183	8355	1527	4697	7865	1032	4198
1	9803	2987	6170	9351	2531	5709	8886	2061	5236	8408	1580	4750	7918	1085	4251
2	9856	3040	6223	9404	2584	5762	8939	2114	5288	8461	1632	4802	7971	1138	4304
3	9909	3093	6276	9457	2637	5815	8992	2167	5341	8514	1685	4855	8024	1191	4356
4	9962	3146	6329	9510	2690	5868	9045	2220	5394	8567	1738	4908	8076	1244	4409
5	0015	3199	6382	9563	2743	5921	9098	2273	5447	8620	1791	4961	8129	1296	4462
6	0069	3252	6435	9616	2796	5974	9151	2326	5500	8673	1844	5014	8182	1349	4515
7	0122	3305	6488	9669	2849	6027	9204	2379	5553	8726	1897	5066	8235	1402	4567
8	0175	3359	6541	9722	2902	6080	9257	2432	5606	8778	1950	5119	8288	1455	4620
9	0228	3412	6594	9775	2955	6133	9309	2485	5659	8831	2002	5172	8340	1507	4673
10	0281	3465	6647	9828	3008	6186	9362	2538	5712	8884	2055	5225	8393	1560	4726
11	0334	3518	6700	9881	3061	6239	9415	2591	5764	8937	2108	5278	8446	1613	4778
12	0387	3571	6753	9934	3113	6292	9468	2644	5817	8990	2161	5331	8499	1666	4831
13	0440	3624	6806	9987	3166	6345	9521	2696	5870	9043	2214	5383	8552	1718	4884
14	0493	3677	6859	0040	3219	6397	9574	2749	5923	9096	2267	5436	8604	1771	4937
15	0546	3730	6912	0093	3272	6450	9627	2802	5976	9148	2319	5489	8657	1824	4989
16	0599	3783	6965	0146	3325	6503	9680	2855	6029	9201	2372	5542	8710	1877	5042
17	0652	3836	7018	0199	3378	6556	9733	2908	6082	9254	2425	5595	8763	1930	5095
18	0705	3889	7071	0252	3431	6609	9786	2961	6135	9307	2478	5647	8816	1982	5148
19	0759	3942	7124	0305	3484	6662	9839	3014	6188	9360	2531	5700	8868	2035	5200
20	0812	3995	7177	0358	3537	6715	9892	3067	6240	9413	2584	5753	8921	2088	5253
21	0865	4048	7230	0411	3590	6768	9945	3120	6293	9466	2636	5806	8974	2141	5306
22	0918	4101	7283	0464	3643	6821	9998	3173	6346	9518	2689	5859	9027	2193	5359
23	0971	4154	7336	0517	3696	6874	0050	3225	6399	9571	2742	5911	9080	2246	5411
24	1024	4207	7389	0570	3749	6927	0103	3278	6452	9624	2795	5964	9132	2299	5464
25	1077	4260	7442	0623	3802	6980	0156	3331	6505	9677	2848	6017	9185	2352	5517
26	1130	4313	7495	0676	3855	7033	0209	3384	6558	9730	2901	6070	9238	2404	5570
27	1183	4366	7548	0729	3908	7086	0262	3437	6611	9783	2953	6123	9291	2457	5622
28	1236	4420	7601	0782	3961	7139	0315	3490	6663	9836	3006	6176	9343	2510	5675
29	1289	4473	7654	0835	4014	7192	0368	3543	6716	9888	3059	6228	9396	2563	5728
30	1342	4526	7708	0888	4067	7245	0421	3596	6769	9941	3112	6281	9449	2615	5781
31	1395	4579	7761	0941	4120	7298	0474	3649	6822	9994	3165	6334	9502	2668	5833
32	1448	4632	7814	0994	4173	7351	0527	3702	6875	0047	3218	6387	9555	2721	5886
33	1501	4685	7867	1047	4226	7404	0580	3755	6928	0100	3270	6440	9607	2774	5939
34	1555	4738	7920	1100	4279	7457	0633	3807	6981	0153	3323	6492	9660	2827	5991
35	1608	4791	7973	1153	4332	7509	0686	3860	7034	0206	3376	6545	9713	2879	6044
36	1661	4844	8026	1206	4385	7562	0739	3913	7087	0258	3429	6598	9766	2932	6097
37	1714	4897	8079	1259	4438	7615	0791	3966	7139	0311	3482	6651	9819	2985	6150
38	1767	4950	8132	1312	4491	7668	0844	4019	7192	0364	3535	6704	9871	3038	6202
39	1820	5003	8185	1365	4544	7721	0897	4072	7245	0417	3587	6756	9924	3090	6255
40	1873	5056	8238	1418	4597	7774	0950	4125	7298	0470	3640	6809	9977	3143	6308
41	1926	5109	8291	1471	4650	7827	1003	4178	7351	0523	3693	6862	0030	3196	6361
42	1979	5162	8344	1524	4703	7880	1056	4231	7404	0576	3746	6915	0082	3249	6413
43	2032	5215	8397	1577	4756	7933	1109	4284	7457	0628	3799	6968	0135	3301	6466
44	2085	5268	8450	1630	4809	7986	1162	4336	7510	0681	3852	7020	0188	3354	6519
45	2138	5321	8503	1683	4862	8039	1215	4389	7562	0734	3904	7073	0241	3407	6572
46	2191	5374	8556	1736	4915	8092	1268	4442	7615	0787	3957	7126	0294	3460	6624
47	2244	5427	8609	1789	4968	8145	1321	4495	7668	0840	4010	7179	0346	3512	6677
48	2297	5480	8662	1842	5021	8198	1374	4548	7721	0893	4063	7232	0399	3565	6730
49	2350	5533	8715	1895	5073	8251	1426	4601	7774	0945	4116	7284	0452	3618	6783
50	2404	5586	8768	1948	5126	8304	1479	4654	7827	0998	4168	7337	0505	3671	6835
51	2457	5639	8821	2001	5179	8357	1532	4707	7880	1051	4221	7390	0557	3723	6888
52	2510	5692	8874	2054	5232	8410	1585	4760	7932	1104	4274	7443	0610	3776	6941
53	2563	5746	8927	2107	5285	8462	1638	4812	7985	1157	4327	7496	0663	3829	6993
54	2616	5799	8980	2160	5338	8515	1691	4865	8038	1210	4380	7548	0716	3882	7046
55	2669	5852	9033	2213	5391	8568	1744	4918	8091	1263	4433	7601	0769	3934	7099
56	2722	5905	9086	2266	5444	8621	1797	4971	8144	1315	4485	7654	0821	3987	7152
57	2775	5958	9139	2319	5497	8674	1850	5024	8197	1368	4538	7707	0874	4040	7204
58	2828	6011	9192	2372	5550	8727	1903	5077	8250	1421	4591	7760	0927	4093	7257
59	2881	6064	9245	2425	5603	8780	1956	5130	8303	1474	4644	7812	0980	4145	7310
60	2934	6117	9298	2478	5656	8833	2009	5183	8355	1527	4697	7865	1032	4198	7363
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Tangent Deg. 63

26 Deg. Co-Tangent

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
	10. 307	10. 306	10. 306	10. 306	10. 305	10. 305	10. 305	10. 304	10. 304	10. 304	10. 303	10. 303	10. 303	10. 302	10. 302	″
	0250	7066	3883	0702	7522	4344	1167	7991	4817	1645	8473	5303	2135	8968	5802	60
	0197	7013	3830	0649	7469	4291	1114	7939	4764	1592	8420	5250	2082	8915	5749	59
	0144	6960	3777	0596	7416	4238	1061	7886	4712	1539	8368	5198	2029	8862	5696	58
	0091	6907	3724	0543	7363	4185	1008	7833	4659	1486	8315	5145	1976	8809	5644	57
	0038	6854	3671	0490	7310	4132	0955	7780	4606	1433	8262	5092	1924	8756	5591	56
	9985	6801	3618	0437	7257	4079	0902	7727	4553	1380	8209	5039	1871	8704	5538	55
	9931	6748	3565	0384	7204	4026	0849	7674	4500	1327	8156	4986	1818	8651	5485	54
	9878	6695	3512	0331	7151	3973	0796	7621	4447	1274	8103	4934	1765	8598	5433	53
	9825	6641	3459	0278	7098	3920	0743	7568	4394	1222	8050	4881	1712	8545	5380	52
	9772	6588	3406	0225	7045	3867	0691	7515	4341	1169	7998	4828	1660	8493	5327	51
	9719	6535	3353	0172	6992	3814	0638	7462	4288	1116	7945	4775	1607	8440	5274	50
	9666	6482	3300	0119	6939	3761	0585	7409	4236	1063	7892	4722	1554	8387	5222	49
	9613	6429	3247	0066	6887	3708	0532	7356	4183	1010	7839	4669	1501	8334	5169	48
	9560	6376	3194	0013	6834	3655	0479	7304	4130	0957	7786	4617	1448	8282	5116	47
	9507	6323	3141	9960	6781	3603	0426	7251	4077	0904	7733	4564	1396	8229	5063	46
	9454	6270	3088	9907	6728	3550	0373	7198	4024	0852	7681	4511	1343	8176	5011	45
	9401	6217	3035	9854	6675	3497	0320	7145	3971	0799	7628	4458	1290	8123	4958	44
	9348	6164	2982	9801	6622	3444	0267	7092	3918	0746	7575	4405	1237	8070	4905	43
	9295	6111	2929	9748	6569	3391	0214	7039	3865	0693	7522	4353	1184	8018	4852	42
	9241	6058	2876	9695	6516	3338	0161	6986	3812	0640	7469	4300	1132	7965	4800	41
	9188	6005	2823	9642	6463	3285	0108	6933	3760	0587	7416	4247	1079	7912	4747	40
	9135	5952	2770	9589	6410	3232	0055	6880	3707	0534	7364	4194	1026	7859	4694	39
	9082	5899	2717	9536	6357	3179	0002	6827	3654	0482	7311	4141	0973	7807	4641	38
	9029	5846	2664	9483	6304	3126	9950	6775	3601	0429	7258	4089	0920	7754	4589	37
	8976	5793	2611	9430	6251	3073	9897	6722	3548	0376	7205	4036	0868	7701	4536	36
	8923	5740	2558	9377	6198	3020	9844	6669	3495	0323	7152	3983	0815	7648	4483	35
	8870	5687	2505	9324	6145	2967	9791	6616	3442	0270	7099	3930	0762	7596	4430	34
	8817	5634	2452	9271	6092	2914	9738	6563	3389	0217	7047	3877	0709	7543	4378	33
	8764	5580	2399	9218	6039	2861	9685	6510	3337	0164	6994	3824	0657	7490	4325	32
	8711	5527	2346	9165	5986	2808	9632	6457	3284	0112	6941	3772	0604	7437	4272	31
	8658	5474	2292	9112	5933	2755	9579	6404	3231	0059	6888	3719	0551	7385	4219	30
	8605	5421	2239	9059	5880	2702	9526	6351	3178	0006	6835	3666	0498	7332	4167	29
	8552	5368	2186	9006	5827	2649	9473	6298	3125	9953	6782	3613	0445	7279	4114	28
	8499	5315	2133	8953	5774	2596	9420	6245	3072	9900	6730	3560	0393	7226	4061	27
	8445	5262	2080	8900	5721	2543	9367	6193	3019	9847	6677	3508	0340	7173	4009	26
	8392	5209	2027	8847	5668	2491	9314	6140	2966	9794	6624	3455	0287	7121	3956	25
	8339	5156	1974	8794	5615	2438	9261	6087	2913	9742	6571	3402	0234	7068	3903	24
	8286	5103	1921	8741	5562	2385	9209	6034	2861	9689	6518	3349	0181	7015	3850	23
	8233	5050	1868	8688	5509	2332	9156	5981	2808	9636	6465	3296	0129	6962	3798	22
	8180	4997	1815	8635	5456	2279	9103	5928	2755	9583	6413	3244	0076	6910	3745	21
	8127	4944	1762	8582	5403	2226	9050	5875	2702	9530	6360	3191	0023	6857	3692	20
	8074	4891	1709	8529	5350	2173	8997	5822	2649	9477	6307	3138	9970	6804	3639	19
	8021	4838	1656	8476	5297	2120	8944	5769	2596	9424	6254	3085	9918	6751	3587	18
	7968	4785	1603	8423	5244	2067	8891	5716	2543	9372	6201	3032	9865	6699	3534	17
	7915	4732	1550	8370	5191	2014	8838	5664	2490	9319	6148	2980	9812	6646	3481	16
	7862	4679	1497	8317	5138	1961	8785	5611	2438	9266	6096	2927	9759	6593	3428	15
	7809	4626	1444	8264	5085	1908	8732	5558	2385	9213	6043	2874	9706	6540	3376	14
	7756	4573	1391	8211	5032	1855	8679	5505	2332	9160	5990	2821	9654	6488	3323	13
	7703	4520	1338	8158	4979	1802	8626	5452	2279	9107	5937	2768	9601	6435	3270	12
	7650	4467	1285	8105	4927	1749	8574	5399	2226	9055	5884	2716	9548	6382	3217	11
	7596	4414	1232	8052	4874	1696	8521	5346	2173	9002	5832	2663	9495	6329	3165	10
	7543	4361	1179	7999	4821	1643	8468	5293	2120	8949	5779	2610	9443	6277	3112	9
	7490	4308	1126	7946	4768	1590	8415	5240	2068	8896	5726	2557	9390	6224	3059	8
	7437	4254	1073	7893	4715	1538	8362	5188	2015	8843	5673	2504	9337	6171	3007	7
	7384	4201	1020	7840	4662	1485	8309	5135	1962	8790	5620	2452	9284	6118	2954	6
	7331	4148	0967	7787	4609	1432	8256	5082	1909	8737	5567	2399	9231	6066	2901	5
	7278	4095	0914	7734	4556	1379	8203	5029	1856	8685	5515	2346	9179	6013	2848	4
	7225	4042	0861	7681	4503	1326	8150	4976	1803	8632	5462	2293	9126	5960	2796	3
	7172	3989	0808	7628	4450	1273	8097	4923	1750	8579	5409	2240	9073	5907	2743	2
	7119	3936	0755	7575	4397	1220	8044	4870	1697	8526	5356	2188	9020	5855	2690	1
	7066	3883	0702	7522	4344	1167	7991	4817	1645	8473	5303	2135	8968	5802	2637	0
	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Tangent Deg. 63

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 649	9. 649	9. 650	9. 650	9. 650	9. 650	9. 651	9. 651	9. 651	9. 651	9. 652	9. 652	9. 652	9. 652	9. 653
0	5274	7807	0338	2868	5395	7920	0444	2966	5486	8004	0521	3035	5548	8059	0568
1	5317	7849	0380	2910	5437	7962	0486	3008	5528	8046	0562	3077	5590	8101	0610
2	5359	7892	0423	2952	5479	8005	0528	3050	5570	8088	0604	3119	5632	8142	0651
3	5401	7934	0465	2994	5521	8047	0570	3092	5612	8130	0646	3161	5673	8184	0693
4	5443	7976	0507	3036	5563	8089	0612	3134	5654	8172	0688	3203	5715	8226	0735
5	5486	8018	0549	3078	5605	8131	0654	3176	5696	8214	0730	3245	5757	8268	0777
6	5528	8060	0591	3120	5648	8173	0696	3218	5738	8256	0772	3286	5799	8310	0819
7	5570	8103	0633	3162	5690	8215	0738	3260	5780	8298	0814	3328	5841	8352	0860
8	5612	8145	0676	3205	5732	8257	0780	3302	5822	8340	0856	3370	5883	8393	0902
9	5654	8187	0718	3247	5774	8299	0822	3344	5864	8382	0898	3412	5925	8435	0944
10	5697	8229	0760	3289	5816	8341	0865	3386	5906	8424	0940	3454	5966	8477	0986
11	5739	8271	0802	3331	5858	8383	0907	3428	5948	8466	0982	3496	6008	8519	1028
12	5781	8314	0844	3373	5900	8425	0949	3470	5990	8508	1024	3538	6050	8561	1069
13	5823	8356	0886	3415	5942	8467	0991	3512	6032	8550	1066	3580	6092	8603	1111
14	5866	8398	0929	3457	5984	8509	1033	3554	6074	8591	1107	3622	6134	8644	1153
15	5908	8440	0971	3500	6026	8551	1075	3596	6116	8633	1149	3663	6176	8686	1195
16	5950	8482	1013	3542	6069	8594	1117	3638	6158	8675	1191	3705	6218	8728	1237
17	5992	8525	1055	3584	6111	8636	1159	3680	6200	8717	1233	3747	6259	8770	1278
18	6034	8567	1097	3626	6153	8678	1201	3722	6242	8759	1275	3789	6301	8812	1320
19	6077	8609	1139	3668	6195	8720	1243	3764	6284	8801	1317	3831	6343	8853	1362
20	6119	8651	1182	3710	6237	8762	1285	3806	6326	8843	1359	3873	6385	8895	1404
21	6161	8693	1224	3752	6279	8804	1327	3848	6368	8885	1401	3915	6427	8937	1446
22	6203	8736	1266	3794	6321	8846	1369	3890	6410	8927	1443	3957	6469	8979	1487
23	6246	8778	1308	3837	6363	8888	1411	3932	6452	8969	1485	3999	6511	9021	1529
24	6288	8820	1350	3879	6405	8930	1453	3974	6493	9011	1527	4040	6552	9063	1571
25	6330	8862	1392	3921	6447	8972	1495	4016	6535	9053	1568	4082	6594	9104	1613
26	6372	8904	1435	3963	6489	9014	1537	4058	6577	9095	1610	4124	6636	9146	1655
27	6414	8946	1477	4005	6532	9056	1579	4100	6619	9137	1652	4166	6678	9188	1696
28	6457	8989	1519	4047	6574	9098	1621	4142	6661	9179	1694	4208	6720	9230	1738
29	6499	9031	1561	4089	6616	9140	1663	4184	6703	9221	1736	4250	6762	9272	1780
30	6541	9073	1603	4131	6658	9182	1705	4226	6745	9263	1778	4292	6804	9313	1822
31	6583	9115	1645	4174	6700	9225	1747	4268	6787	9305	1820	4334	6845	9355	1863
32	6625	9157	1687	4216	6742	9267	1789	4310	6829	9346	1862	4375	6887	9397	1905
33	6668	9200	1730	4258	6784	9309	1831	4352	6871	9388	1904	4417	6929	9439	1947
34	6710	9242	1772	4300	6826	9351	1873	4394	6913	9430	1946	4459	6971	9481	1989
35	6752	9284	1814	4342	6868	9393	1915	4436	6955	9472	1988	4501	7013	9523	2031
36	6794	9326	1856	4384	6910	9435	1957	4478	6997	9514	2029	4543	7055	9564	2072
37	6837	9368	1898	4426	6952	9477	1999	4520	7039	9556	2071	4585	7096	9606	2114
38	6879	9410	1940	4468	6995	9519	2041	4562	7081	9598	2113	4627	7138	9648	2156
39	6921	9453	1982	4511	7037	9561	2084	4604	7123	9640	2155	4669	7180	9690	2198
40	6963	9495	2025	4553	7079	9603	2126	4646	7165	9682	2197	4710	7222	9732	2240
41	7005	9537	2067	4595	7121	9645	2168	4688	7207	9724	2239	4752	7264	9773	2281
42	7048	9579	2109	4637	7163	9687	2210	4730	7249	9766	2281	4794	7306	9815	2323
43	7090	9621	2151	4679	7205	9729	2252	4772	7291	9808	2323	4836	7347	9857	2365
44	7132	9664	2193	4721	7247	9771	2294	4814	7333	9850	2365	4878	7389	9899	2407
45	7174	9706	2235	4763	7289	9813	2336	4856	7375	9892	2407	4920	7431	9941	2448
46	7216	9748	2278	4805	7331	9855	2378	4898	7417	9934	2449	4962	7473	9983	2490
47	7259	9790	2320	4847	7373	9897	2420	4940	7459	9975	2490	5004	7515	0024	2532
48	7301	9832	2362	4890	7415	9940	2462	4982	7501	0017	2532	5045	7557	0066	2574
49	7343	9874	2404	4932	7458	9982	2504	5024	7543	0059	2574	5087	7599	0108	2616
50	7385	9917	2446	4974	7500	0024	2546	5066	7585	0101	2616	5129	7640	0150	2657
51	7427	9959	2488	5016	7542	0066	2588	5108	7627	0143	2658	5171	7682	0192	2699
52	7470	0001	2530	5058	7584	0108	2630	5150	7669	0185	2700	5213	7724	0233	2741
53	7512	0043	2573	5100	7626	0150	2672	5192	7710	0227	2742	5255	7766	0275	2783
54	7554	0085	2615	5142	7668	0192	2714	5234	7752	0269	2784	5297	7808	0317	2824
55	7596	0127	2657	5184	7710	0234	2756	5276	7794	0311	2826	5338	7850	0359	2866
56	7638	0170	2699	5226	7752	0276	2798	5318	7836	0353	2868	5380	7891	0401	2908
57	7681	0212	2741	5269	7794	0318	2840	5360	7878	0395	2909	5422	7933	0442	2950
58	7723	0254	2783	5311	7836	0360	2882	5402	7920	0437	2951	5464	7975	0484	2992
59	7765	0296	2825	5353	7878	0402	2924	5444	7962	0479	2993	5506	8017	0526	3033
60	7807	0338	2868	5395	7920	0444	2966	5486	8004	0521	3035	5548	8059	0568	3075
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
	9. 951	9. 951	9. 951	9. 951	9. 951	9. 951	9. 951	9. 951	9. 951	9. 951	9. 951	9. 951	9. 951	9. 950	9. 950	″
7912	7282	6651	6020	5389	4757	4124	3492	2858	2224	1590	0956	0320	9685	9049		60
7901	7271	6641	6010	5378	4746	4114	3481	2848	2214	1580	0945	0310	9674	9038		59
7891	7261	6630	5999	5368	4736	4103	3470	2837	2203	1569	0934	0299	9664	9028		58
7880	7250	6620	5989	5357	4725	4093	3460	2827	2193	1559	0924	0289	9653	9017		57
7870	7240	6609	5978	5347	4715	4082	3449	2816	2182	1548	0913	0278	9642	9006		56
7859	7229	6599	5968	5336	4704	4072	3439	2805	2172	1537	0903	0267	9632	8996		55
7849	7219	6588	5957	5326	4694	4061	3428	2795	2161	1527	0892	0257	9621	8985		54
7838	7208	6578	5947	5315	4683	4051	3418	2784	2150	1516	0881	0246	9611	8974		53
7828	7198	6567	5936	5304	4672	4040	3407	2774	2140	1506	0871	0236	9600	8964		52
7817	7187	6557	5925	5294	4662	4029	3397	2763	2129	1495	0860	0225	9589	8953		51
7807	7177	6546	5915	5283	4651	4019	3386	2753	2119	1484	0850	0214	9579	8943		50
7796	7166	6536	5904	5273	4641	4008	3375	2742	2108	1474	0839	0204	9568	8932		49
7786	7156	6525	5894	5262	4630	3998	3365	2732	2098	1463	0829	0193	9558	8921		48
7775	7145	6515	5883	5252	4620	3987	3354	2721	2087	1453	0818	0183	9547	8911		47
7765	7135	6504	5873	5241	4609	3977	3344	2710	2077	1442	0807	0172	9536	8900		46
7754	7124	6493	5862	5231	4599	3966	3333	2700	2066	1432	0797	0162	9526	8890		45
7744	7114	6483	5852	5220	4588	3956	3323	2689	2055	1421	0786	0151	9515	8879		44
7733	7103	6472	5841	5210	4578	3945	3312	2679	2045	1410	0776	0140	9505	8868		43
7723	7093	6462	5831	5199	4567	3935	3302	2668	2034	1400	0765	0130	9494	8858		42
7712	7082	6451	5820	5189	4557	3924	3291	2658	2024	1389	0754	0119	9483	8847		41
7702	7072	6441	5810	5178	4546	3913	3280	2647	2013	1379	0744	0109	9473	8837		40
7691	7061	6430	5799	5168	4535	3903	3270	2636	2003	1368	0733	0098	9462	8826		39
7681	7051	6420	5789	5157	4525	3892	3259	2626	1992	1358	0723	0087	9452	8815		38
7670	7040	6409	5778	5147	4514	3882	3249	2615	1981	1347	0712	0077	9441	8805		37
7660	7030	6399	5768	5136	4504	3871	3238	2605	1971	1336	0702	0066	9430	8794		36
7649	7019	6388	5757	5125	4493	3861	3228	2594	1960	1326	0691	0056	9420	8784		35
7639	7009	6378	5747	5115	4483	3850	3217	2584	1950	1315	0680	0045	9409	8773		34
7628	6998	6367	5736	5104	4472	3840	3207	2573	1939	1305	0670	0034	9399	8762		33
7618	6988	6357	5726	5094	4462	3829	3196	2563	1929	1294	0659	0024	9388	8752		32
7607	6977	6346	5715	5083	4451	3819	3185	2552	1918	1284	0649	0013	9377	8741		31
7597	6967	6336	5704	5073	4441	3808	3175	2541	1907	1273	0638	0003	9367	8731		30
7586	6956	6325	5694	5062	4430	3797	3164	2531	1897	1262	0627	9992	9356	8720		29
7576	6946	6315	5683	5052	4420	3787	3154	2520	1886	1252	0617	9981	9346	8709		28
7565	6935	6304	5673	5041	4409	3776	3143	2510	1876	1241	0606	9971	9335	8699		27
7555	6924	6294	5662	5031	4398	3766	3133	2499	1865	1231	0596	9960	9324	8688		26
7544	6914	6283	5652	5020	4388	3755	3122	2489	1855	1220	0585	9950	9314	8677		25
7534	6903	6273	5641	5010	4377	3745	3112	2478	1844	1209	0575	9939	9303	8667		24
7523	6893	6262	5631	4999	4367	3734	3101	2467	1833	1199	0564	9928	9293	8656		23
7513	6882	6252	5620	4989	4356	3724	3090	2457	1823	1188	0553	9918	9282	8646		22
7502	6872	6241	5610	4978	4346	3713	3080	2446	1812	1178	0543	9907	9271	8635		21
7492	6861	6231	5599	4967	4335	3703	3069	2436	1802	1167	0532	9897	9261	8624		20
7481	6851	6220	5589	4957	4325	3692	3059	2425	1791	1157	0522	9886	9250	8614		19
7471	6840	6210	5578	4946	4314	3681	3048	2415	1781	1146	0511	9876	9240	8603		18
7460	6830	6199	5568	4936	4304	3671	3038	2404	1770	1135	0500	9865	9229	8593		17
7450	6819	6188	5557	4925	4293	3660	3027	2394	1759	1125	0490	9854	9218	8582		16
7439	6809	6178	5547	4915	4283	3650	3017	2383	1749	1114	0479	9844	9208	8571		15
7429	6798	6167	5536	4904	4272	3639	3006	2372	1738	1104	0469	9833	9197	8561		14
7418	6788	6157	5526	4894	4261	3629	2995	2362	1728	1093	0458	9823	9187	8550		13
7408	6777	6146	5515	4883	4251	3618	2985	2351	1717	1083	0447	9812	9176	8540		12
7397	6767	6136	5505	4873	4240	3608	2974	2341	1707	1072	0437	9801	9165	8529		11
7387	6756	6125	5494	4862	4230	3597	2964	2330	1696	1061	0426	9791	9155	8518		10
7376	6746	6115	5483	4852	4219	3586	2953	2320	1685	1051	0416	9780	9144	8508		9
7366	6735	6104	5473	4841	4209	3576	2943	2309	1675	1040	0405	9770	9134	8497		8
7355	6725	6094	5462	4831	4198	3565	2932	2298	1664	1030	0395	9759	9123	8486		7
7345	6714	6083	5452	4820	4188	3555	2922	2288	1654	1019	0384	9748	9112	8476		6
7334	6704	6073	5441	4809	4177	3544	2911	2277	1643	1008	0373	9738	9102	8465		5
7324	6693	6062	5431	4799	4167	3534	2900	2267	1633	0998	0363	9727	9091	8455		4
7313	6683	6052	5420	4788	4156	3523	2890	2256	1622	0987	0352	9717	9081	8444		3
7303	6672	6041	5410	4778	4145	3513	2879	2246	1611	0977	0342	9706	9070	8433		2
7292	6662	6031	5399	4767	4135	3502	2869	2235	1601	0966	0331	9695	9059	8423		1
7282	6651	6020	5389	4757	4124	3492	2858	2224	1590	0956	0320	9685	9049	8412		0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′		″

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 697	9. 698	9. 698	9. 698	9. 699	9. 699	9. 699	9. 699	9. 700	9. 700	9. 700	9. 701	9. 701	9. 701	9. 702
0	7363	0526	3687	6847	0006	3164	6320	9474	2628	5780	8930	2080	5227	8374	1519
1	7415	0578	3740	6900	0059	3216	6372	9527	2680	5832	8983	2132	5280	8426	1572
2	7468	0631	3792	6953	0111	3269	6425	9580	2733	5885	9035	2185	5332	8479	1624
3	7521	0684	3845	7005	0164	3321	6477	9632	2785	5937	9088	2237	5385	8531	1676
4	7573	0736	3898	7058	0217	3374	6530	9685	2838	5990	9140	2289	5437	8584	1729
5	7626	0789	3951	7111	0269	3427	6583	9737	2890	6042	9193	2342	5490	8636	1781
6	7679	0842	4003	7163	0322	3479	6635	9790	2943	6095	9245	2394	5542	8689	1834
7	7732	0894	4056	7216	0375	3532	6688	9842	2996	6147	9298	2447	5595	8741	1886
8	7784	0947	4109	7269	0427	3585	6740	9895	3048	6200	9350	2499	5647	8793	1938
9	7837	1000	4161	7321	0480	3637	6793	9948	3101	6252	9403	2552	5699	8846	1991
10	7890	1053	4214	7374	0533	3690	6846	0000	3153	6305	9455	2604	5752	8898	2043
11	7943	1105	4267	7427	0585	3742	6898	0053	3206	6357	9508	2657	5804	8951	2096
12	7995	1158	4319	7479	0638	3795	6951	0105	3258	6410	9560	2709	5857	9003	2148
13	8048	1211	4372	7532	0690	3848	7003	0158	3311	6462	9613	2762	5909	9056	2200
14	8101	1263	4425	7585	0743	3900	7056	0210	3363	6515	9665	2814	5962	9108	2253
15	8153	1316	4477	7637	0796	3953	7109	0263	3416	6567	9718	2867	6014	9160	2305
16	8206	1369	4530	7690	0848	4005	7161	0315	3468	6620	9770	2919	6067	9213	2358
17	8259	1421	4583	7742	0901	4058	7214	0368	3521	6673	9823	2972	6119	9265	2410
18	8312	1474	4635	7795	0954	4111	7266	0421	3573	6725	9875	3024	6172	9318	2462
19	8364	1527	4688	7848	1006	4163	7319	0473	3626	6778	9928	3077	6224	9370	2515
20	8417	1580	4741	7900	1059	4216	7371	0526	3679	6830	9980	3129	6276	9422	2567
21	8470	1632	4793	7953	1111	4268	7424	0578	3731	6883	0033	3181	6329	9475	2620
22	8522	1685	4846	8006	1164	4321	7477	0631	3784	6935	0085	3234	6381	9527	2672
23	8575	1738	4899	8058	1217	4374	7529	0683	3836	6988	0138	3286	6434	9580	2724
24	8628	1790	4951	8111	1269	4426	7582	0736	3889	7040	0190	3339	6486	9632	2777
25	8681	1843	5004	8164	1322	4479	7634	0788	3941	7093	0243	3391	6539	9685	2829
26	8733	1896	5057	8216	1375	4531	7687	0841	3994	7145	0295	3444	6591	9737	2882
27	8786	1948	5109	8269	1427	4584	7739	0894	4046	7198	0348	3496	6644	9789	2934
28	8839	2001	5162	8322	1480	4637	7792	0946	4099	7250	0400	3549	6696	9842	2986
29	8891	2054	5215	8374	1532	4689	7845	0999	4151	7303	0453	3601	6748	9894	3039
30	8944	2106	5267	8427	1585	4742	7897	1051	4204	7355	0505	3654	6801	9947	3091
31	8997	2159	5320	8480	1638	4794	7950	1104	4256	7408	0558	3706	6853	9999	3144
32	9050	2212	5373	8532	1690	4847	8002	1156	4309	7460	0610	3759	6906	0052	3196
33	9102	2265	5425	8585	1743	4900	8055	1209	4362	7513	0663	3811	6958	0104	3248
34	9155	2317	5478	8638	1796	4952	8108	1261	4414	7565	0715	3864	7011	0156	3301
35	9208	2370	5531	8690	1848	5005	8160	1314	4467	7618	0768	3916	7063	0209	3353
36	9260	2423	5583	8743	1901	5057	8213	1367	4519	7670	0820	3968	7116	0261	3406
37	9313	2475	5636	8795	1953	5110	8265	1419	4572	7723	0873	4021	7168	0314	3458
38	9366	2528	5689	8848	2006	5163	8318	1472	4624	7775	0925	4073	7220	0366	3510
39	9419	2581	5741	8901	2059	5215	8370	1524	4677	7828	0977	4126	7273	0418	3563
40	9471	2633	5794	8953	2111	5268	8423	1577	4729	7880	1030	4178	7325	0471	3615
41	9524	2686	5847	9006	2164	5320	8476	1629	4782	7933	1082	4231	7378	0523	3668
42	9577	2739	5899	9059	2217	5373	8528	1682	4834	7985	1135	4283	7430	0576	3720
43	9629	2791	5952	9111	2269	5426	8581	1734	4887	8038	1187	4336	7483	0628	3772
44	9682	2844	6005	9164	2322	5478	8633	1787	4939	8090	1240	4388	7535	0681	3825
45	9735	2897	6057	9217	2374	5531	8686	1840	4992	8143	1292	4441	7587	0733	3877
46	9788	2950	6110	9269	2427	5583	8738	1892	5044	8195	1345	4493	7640	0785	3929
47	9840	3002	6163	9322	2480	5636	8791	1945	5097	8248	1397	4546	7692	0838	3982
48	9893	3055	6215	9375	2532	5689	8844	1997	5149	8300	1450	4598	7745	0890	4034
49	9946	3108	6268	9427	2585	5741	8896	2050	5202	8353	1502	4650	7797	0943	4087
50	9998	3160	6321	9480	2637	5794	8949	2102	5254	8405	1555	4703	7850	0995	4139
51	0051	3213	6373	9532	2690	5846	9001	2155	5307	8458	1607	4755	7902	1047	4191
52	0104	3266	6426	9585	2743	5899	9054	2207	5360	8510	1660	4808	7954	1100	4244
53	0157	3318	6479	9638	2795	5952	9106	2260	5412	8563	1712	4860	8007	1152	4296
54	0209	3371	6531	9690	2848	6004	9159	2312	5465	8615	1765	4913	8059	1205	4349
55	0262	3424	6584	9743	2901	6057	9212	2365	5517	8668	1817	4965	8112	1257	4401
56	0315	3476	6637	9796	2953	6109	9264	2418	5570	8720	1870	5018	8164	1309	4453
57	0367	3529	6689	9848	3006	6162	9317	2470	5622	8773	1922	5070	8217	1362	4506
58	0420	3582	6742	9901	3058	6215	9369	2523	5675	8825	1975	5123	8269	1414	4558
59	0473	3634	6795	9954	3111	6267	9422	2575	5727	8878	2027	5175	8322	1467	4611
60	0526	3687	6847	0006	3164	6320	9474	2628	5780	8930	2080	5227	8374	1519	4663
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
10. 302	10. 301	10. 301	10. 301	10. 300	10. 300	10. 300	10. 300	10. 299	10. 299	10. 299	10. 298	10. 298	10. 298	10. 297	″
2637	9474	6313	3153	9994	6836	3680	0526	7372	4220	1070	7920	4773	1626	8481	60
2585	9422	6260	3100	9941	6784	3628	0473	7320	4168	1017	7868	4720	1574	8428	59
2532	9369	6208	3047	9889	6731	3575	0420	7267	4115	0965	7815	4668	1521	8376	58
2479	9316	6155	2995	9836	6679	3523	0368	7215	4063	0912	7763	4615	1469	8324	57
2427	9264	6102	2942	9783	6626	3470	0315	7162	4010	0860	7711	4563	1416	8271	56
2374	9211	6049	2889	9731	6573	3417	0263	7110	3958	0807	7658	4510	1364	8219	55
2321	9158	5997	2837	9678	6521	3365	0210	7057	3905	0755	7606	4458	1311	8166	54
2268	9106	5944	2784	9625	6468	3312	0158	7004	3853	0702	7553	4405	1259	8114	53
2216	9053	5891	2731	9573	6415	3260	0105	6952	3800	0650	7501	4353	1207	8062	52
2163	9000	5839	2679	9520	6363	3207	0052	6899	3748	0597	7448	4301	1154	8009	51
2110	8947	5786	2626	9467	6310	3154	0000	6847	3695	0545	7396	4248	1102	7957	50
2057	8895	5733	2573	9415	6258	3102	9947	6794	3643	0492	7343	4196	1049	7904	49
2005	8842	5681	2521	9362	6205	3049	9895	6742	3590	0440	7291	4143	0997	7852	48
1952	8789	5628	2468	9310	6152	2997	9842	6689	3538	0387	7238	4091	0944	7800	47
1899	8737	5575	2415	9257	6100	2944	9790	6637	3485	0335	7186	4038	0892	7747	46
1847	8684	5523	2363	9204	6047	2891	9737	6584	3433	0282	7133	3986	0840	7695	45
1794	8631	5470	2310	9152	5995	2839	9685	6532	3380	0230	7081	3933	0787	7642	44
1741	8579	5417	2258	9099	5942	2786	9632	6479	3327	0177	7028	3881	0735	7590	43
1688	8526	5365	2205	9046	5889	2734	9579	6427	3275	0125	6976	3828	0682	7538	42
1636	8473	5312	2152	8994	5837	2681	9527	6374	3222	0072	6923	3776	0630	7485	41
1583	8420	5259	2100	8941	5784	2629	9474	6321	3170	0020	6871	3724	0578	7433	40
1530	8368	5207	2047	8889	5732	2576	9422	6269	3117	9967	6819	3671	0525	7380	39
1478	8315	5154	1994	8836	5679	2523	9369	6216	3065	9915	6766	3619	0473	7328	38
1425	8262	5101	1942	8783	5626	2471	9317	6164	3012	9862	6714	3566	0420	7276	37
1372	8210	5049	1889	8731	5574	2418	9264	6111	2960	9810	6661	3514	0368	7223	36
1319	8157	4996	1836	8678	5521	2366	9212	6059	2907	9757	6609	3461	0315	7171	35
1267	8104	4943	1784	8625	5469	2313	9159	6006	2855	9705	6556	3409	0263	7118	34
1214	8052	4891	1731	8573	5416	2261	9106	5954	2802	9652	6504	3356	0211	7066	33
1161	7999	4838	1678	8520	5363	2208	9054	5901	2750	9600	6451	3304	0158	7014	32
1109	7946	4785	1626	8468	5311	2155	9001	5849	2697	9547	6399	3252	0106	6961	31
1056	7894	4733	1573	8415	5258	2103	8949	5796	2645	9495	6346	3199	0053	6909	30
1003	7841	4680	1520	8362	5206	2050	8896	5744	2592	9442	6294	3147	0001	6856	29
0950	7788	4627	1468	8310	5153	1998	8844	5691	2540	9390	6241	3094	9948	6804	28
0898	7735	4575	1415	8257	5100	1945	8791	5638	2487	9337	6189	3042	9896	6752	27
0845	7683	4522	1362	8204	5048	1892	8739	5586	2435	9285	6136	2989	9844	6699	26
0792	7630	4469	1310	8152	4995	1840	8686	5533	2382	9232	6084	2937	9791	6647	25
0740	7577	4417	1257	8099	4943	1787	8633	5481	2330	9180	6032	2884	9739	6594	24
0687	7525	4364	1205	8047	4890	1735	8581	5428	2277	9127	5979	2832	9686	6542	23
0634	7472	4311	1152	7994	4837	1682	8528	5376	2225	9075	5927	2780	9634	6490	22
0581	7419	4259	1099	7941	4785	1630	8476	5323	2172	9023	5874	2727	9582	6437	21
0529	7367	4206	1047	7889	4732	1577	8423	5271	2120	8970	5822	2675	9529	6385	20
0476	7314	4153	0994	7836	4680	1524	8371	5218	2067	8918	5769	2622	9477	6332	19
0423	7261	4101	0941	7783	4627	1472	8318	5166	2015	8865	5717	2570	9424	6280	18
0371	7209	4048	0889	7731	4574	1419	8266	5113	1962	8813	5664	2517	9372	6228	17
0318	7156	3995	0836	7678	4522	1367	8213	5061	1910	8760	5612	2465	9319	6175	16
0265	7103	3943	0783	7626	4469	1314	8160	5008	1857	8708	5559	2413	9267	6123	15
0212	7050	3890	0731	7573	4417	1262	8108	4956	1805	8655	5507	2360	9215	6071	14
0160	6998	3837	0678	7520	4364	1209	8055	4903	1752	8603	5454	2308	9162	6018	13
0107	6945	3785	0625	7468	4311	1156	8003	4851	1700	8550	5402	2255	9110	5966	12
0054	6892	3732	0573	7415	4259	1104	7950	4798	1647	8498	5350	2203	9057	5913	11
0002	6840	3679	0520	7363	4206	1051	7898	4746	1595	8445	5297	2150	9005	5861	10
9949	6787	3627	0468	7310	4154	0999	7845	4693	1542	8393	5245	2098	8953	5809	9
9896	6734	3574	0415	7257	4101	0946	7793	4640	1490	8340	5192	2046	8900	5756	8
9843	6682	3521	0362	7205	4048	0894	7740	4588	1437	8288	5140	1993	8848	5704	7
9791	6629	3469	0310	7152	3996	0841	7688	4535	1385	8235	5087	1941	8795	5651	6
9738	6576	3416	0257	7099	3943	0788	7635	4483	1332	8183	5035	1888	8743	5599	5
9685	6524	3363	0204	7047	3891	0736	7582	4430	1280	8130	4982	1836	8691	5547	4
9633	6471	3311	0152	6994	3838	0683	7530	4378	1227	8078	4930	1783	8638	5494	3
9580	6418	3258	0099	6942	3785	0631	7477	4325	1175	8025	4877	1731	8586	5442	2
9527	6366	3205	0046	6889	3733	0578	7425	4273	1122	7973	4825	1678	8533	5389	1
9474	6313	3153	9994	6836	3680	0526	7372	4220	1070	7920	4773	1626	8481	5337	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	9. 653	9. 653	9. 653	9. 654	9. 654	9. 654	9. 654	9. 655	9. 655	9. 655	9. 655	9. 656	9. 656	9. 656	9. 656
0	3075	5581	8084	0586	3086	5584	8081	0575	3068	5559	8048	0536	3021	5505	7987
1	3117	5622	8126	0628	3128	5626	8122	0617	3110	5601	8090	0577	3063	5547	8029
2	3159	5664	8168	0669	3169	5668	8164	0658	3151	5642	8131	0619	3104	5588	8070
3	3200	5706	8209	0711	3211	5709	8205	0700	3193	5684	8173	0660	3146	5629	8111
4	3242	5748	8251	0753	3253	5751	8247	0742	3234	5725	8214	0702	3187	5671	8153
5	3284	5789	8293	0794	3294	5792	8289	0783	3276	5767	8256	0743	3229	5712	8194
6	3326	5831	8334	0836	3336	5834	8330	0825	3317	5808	8297	0784	3270	5754	8235
7	3367	5873	8376	0878	3378	5876	8372	0866	3359	5850	8339	0826	3311	5795	8277
8	3409	5914	8418	0919	3419	5917	8413	0908	3400	5891	8380	0867	3353	5836	8318
9	3451	5956	8460	0961	3461	5959	8455	0949	3442	5933	8422	0909	3394	5878	8360
10	3493	5998	8501	1003	3503	6000	8497	0991	3483	5974	8463	0950	3436	5919	8401
11	3535	6040	8543	1044	3544	6042	8538	1032	3525	6016	8505	0992	3477	5960	8442
12	3576	6081	8585	1086	3586	6084	8580	1074	3566	6057	8546	1033	3518	6002	8484
13	3618	6123	8626	1128	3627	6125	8621	1116	3608	6099	8587	1075	3560	6043	8525
14	3660	6165	8668	1170	3669	6167	8663	1157	3650	6140	8629	1116	3601	6085	8566
15	3702	6207	8710	1211	3711	6209	8705	1199	3691	6182	8670	1157	3643	6126	8608
16	3743	6248	8752	1253	3752	6250	8746	1240	3733	6223	8712	1199	3684	6167	8649
17	3785	6290	8793	1295	3794	6292	8788	1282	3774	6265	8753	1240	3725	6209	8690
18	3827	6332	8835	1336	3836	6333	8829	1323	3816	6306	8795	1282	3767	6250	8732
19	3869	6374	8877	1378	3877	6375	8871	1365	3857	6348	8836	1323	3808	6291	8773
20	3910	6415	8918	1420	3919	6417	8912	1406	3899	6389	8878	1365	3850	6333	8814
21	3952	6457	8960	1461	3961	6458	8954	1448	3940	6431	8919	1406	3891	6374	8856
22	3994	6499	9002	1503	4002	6500	8996	1490	3982	6472	8961	1447	3932	6416	8897
23	4036	6540	9043	1545	4044	6541	9037	1531	4023	6514	9002	1489	3974	6457	8938
24	4077	6582	9085	1586	4086	6583	9079	1573	4065	6555	9044	1530	4015	6498	8980
25	4119	6624	9127	1628	4127	6625	9120	1614	4106	6597	9085	1572	4057	6540	9021
26	4161	6666	9169	1670	4169	6666	9162	1656	4148	6638	9126	1613	4098	6581	9062
27	4203	6707	9210	1711	4210	6708	9203	1697	4189	6680	9168	1655	4139	6622	9104
28	4245	6749	9252	1753	4252	6749	9245	1739	4231	6721	9209	1696	4181	6664	9145
29	4286	6791	9294	1795	4294	6791	9287	1780	4272	6763	9251	1737	4222	6705	9186
30	4328	6833	9335	1836	4335	6833	9328	1822	4314	6804	9292	1779	4264	6747	9228
31	4376	6874	9377	1878	4377	6874	9370	1863	4355	6845	9334	1820	4305	6788	9269
32	4412	6916	9419	1920	4419	6916	9411	1905	4397	6887	9375	1862	4346	6829	9310
33	4453	6958	9460	1961	4460	6958	9453	1947	4438	6928	9417	1903	4388	6871	9352
34	4495	6999	9502	2003	4502	6999	9495	1988	4480	6970	9458	1945	4429	6912	9393
35	4537	7041	9544	2045	4544	7041	9536	2030	4521	7011	9500	1986	4471	6953	9434
36	4579	7083	9586	2086	4585	7082	9578	2071	4563	7053	9541	2027	4512	6995	9476
37	4620	7125	9627	2128	4627	7124	9619	2113	4604	7094	9583	2069	4553	7036	9517
38	4662	7166	9669	2170	4668	7166	9661	2154	4646	7136	9624	2110	4595	7077	9558
39	4704	7208	9711	2211	4710	7207	9702	2196	4687	7177	9665	2152	4636	7119	9600
40	4746	7250	9752	2253	4752	7249	9744	2237	4729	7219	9707	2193	4678	7160	9641
41	4787	7292	9794	2295	4793	7290	9786	2279	4771	7260	9748	2235	4719	7202	9682
42	4829	7333	9836	2336	4835	7332	9827	2320	4812	7302	9790	2276	4760	7243	9724
43	4871	7375	9877	2378	4877	7374	9869	2362	4854	7343	9831	2317	4802	7284	9765
44	4913	7417	9919	2420	4918	7415	9910	2404	4895	7385	9873	2359	4843	7326	9806
45	4954	7458	9961	2461	4960	7457	9952	2445	4937	7426	9914	2400	4885	7367	9848
46	4996	7500	0002	2503	5002	7498	9993	2487	4978	7468	9956	2442	4926	7408	9889
47	5038	7542	0044	2545	5043	7540	0035	2528	5020	7509	9997	2483	4967	7450	9930
48	5080	7584	0086	2586	5085	7582	0077	2570	5061	7551	0038	2524	5009	7491	9972
49	5121	7625	0127	2628	5126	7623	0118	2611	5103	7592	0080	2566	5050	7532	0013
50	5163	7667	0169	2670	5168	7665	0160	2653	5144	7634	0121	2607	5091	7574	0054
51	5205	7709	0211	2711	5210	7706	0201	2694	5186	7675	0163	2649	5133	7615	0096
52	5247	7750	0253	2753	5251	7748	0243	2736	5227	7717	0204	2690	5174	7657	0137
53	5288	7792	0294	2794	5293	7790	0284	2777	5269	7758	0246	2732	5216	7698	0178
54	5330	7834	0336	2836	5335	7831	0326	2819	5310	7800	0287	2773	5257	7739	0220
55	5372	7876	0378	2878	5376	7873	0367	2860	5352	7841	0329	2814	5298	7781	0261
56	5414	7917	0419	2919	5418	7914	0409	2902	5393	7882	0370	2856	5340	7822	0302
57	5455	7959	0461	2961	5459	7956	0451	2944	5435	7924	0411	2897	5381	7863	0344
58	5497	8001	0503	3003	5501	7998	0492	2985	5476	7965	0453	2939	5423	7905	0385
59	5539	8042	0544	3044	5543	8039	0534	3027	5518	8007	0494	2980	5464	7946	0426
60	5581	8084	0586	3086	5584	8081	0575	3068	5559	8048	0536	3021	5505	7987	0468
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
	9. 950	9. 950	9. 950	9. 950	9. 950	9. 950	9. 950	9. 950	9. 950	9. 950	9. 950	9. 950	9. 950	9. 950	9. 949	″
	8412	7775	7138	6500	5861	5223	4583	3944	3303	2663	2022	1380	0738	0095	9452	60
	8402	7765	7127	6489	5851	5212	4573	3933	3293	2652	2011	1369	0727	0085	9442	59
	8391	7754	7116	6479	5840	5201	4562	3922	3282	2641	2000	1359	0716	0074	9431	58
	8380	7743	7106	6468	5830	5191	4551	3912	3271	2631	1989	1348	0706	0063	9420	57
	8370	7733	7095	6457	5819	5180	4541	3901	3261	2620	1979	1337	0695	0052	9409	56
	8359	7722	7085	6447	5808	5169	4530	3890	3250	2609	1968	1326	0684	0042	9399	55
	8349	7711	7074	6436	5798	5159	4519	3880	3239	2599	1957	1316	0674	0031	9388	54
	8338	7701	7063	6425	5787	5148	4509	3869	3229	2588	1947	1305	0663	0020	9377	53
	8327	7690	7053	6415	5776	5137	4498	3858	3218	2577	1936	1294	0652	0010	9367	52
	8317	7680	7042	6404	5766	5127	4487	3848	3207	2567	1925	1284	0641	9999	9356	51
	8306	7669	7031	6393	5755	5116	4477	3837	3197	2556	1915	1273	0631	9988	9345	50
	8295	7658	7021	6383	5744	5105	4466	3826	3186	2545	1904	1262	0620	9977	9334	49
	8285	7648	7010	6372	5734	5095	4455	3816	3175	2534	1893	1252	0609	9967	9324	48
	8274	7637	7000	6362	5723	5084	4445	3805	3165	2524	1883	1241	0599	9956	9313	47
	8264	7626	6989	6351	5712	5073	4434	3794	3154	2513	1872	1230	0588	9945	9302	46
	8253	7616	6978	6340	5702	5063	4423	3784	3143	2502	1861	1219	0577	9935	9291	45
	8242	7605	6968	6330	5691	5052	4413	3773	3133	2492	1850	1209	0567	9924	9281	44
	8232	7595	6957	6319	5680	5042	4402	3762	3122	2481	1840	1198	0556	9913	9270	43
	8221	7584	6946	6308	5670	5031	4391	3752	3111	2470	1829	1187	0545	9902	9259	42
	8211	7573	6936	6298	5659	5020	4381	3741	3101	2460	1818	1177	0534	9892	9249	41
	8200	7563	6925	6287	5649	5010	4370	3730	3090	2449	1808	1166	0524	9881	9238	40
	8189	7552	6915	6276	5638	4999	4359	3720	3079	2438	1797	1155	0513	9870	9227	39
	8179	7542	6904	6266	5627	4988	4349	3709	3068	2428	1786	1145	0502	9860	9216	38
	8168	7531	6893	6255	5617	4978	4338	3698	3058	2417	1776	1134	0492	9849	9206	37
	8157	7520	6883	6245	5606	4967	4327	3688	3047	2406	1765	1123	0481	9838	9195	36
	8147	7510	6872	6234	5595	4956	4317	3677	3036	2396	1754	1112	0470	9827	9184	35
	8136	7499	6861	6223	5585	4946	4306	3666	3026	2385	1744	1102	0459	9817	9174	34
	8126	7488	6851	6213	5574	4935	4295	3656	3015	2374	1733	1091	0449	9806	9163	33
	8115	7478	6840	6202	5563	4924	4285	3645	3004	2364	1722	1080	0438	9795	9152	32
	8104	7467	6829	6191	5553	4914	4274	3634	2994	2353	1711	1070	0427	9785	9141	31
	8094	7457	6819	6181	5542	4903	4263	3624	2983	2342	1701	1059	0417	9774	9131	30
	8083	7446	6808	6170	5531	4892	4253	3613	2972	2331	1690	1048	0406	9763	9120	29
	8073	7435	6798	6159	5521	4882	4242	3602	2962	2321	1679	1038	0395	9752	9109	28
	8062	7425	6787	6149	5510	4871	4232	3591	2951	2310	1669	1027	0384	9742	9098	27
	8051	7414	6776	6138	5499	4860	4221	3581	2940	2299	1658	1016	0374	9731	9088	26
	8041	7403	6766	6127	5489	4850	4210	3570	2930	2289	1647	1005	0363	9720	9077	25
	8030	7393	6755	6117	5478	4839	4200	3559	2919	2278	1637	0995	0352	9710	9066	24
	8019	7382	6744	6106	5468	4828	4189	3549	2908	2267	1626	0984	0342	9699	9056	23
	8009	7372	6734	6096	5457	4818	4178	3538	2898	2257	1615	0973	0331	9688	9045	22
	7998	7361	6723	6085	5440	4807	4168	3527	2887	2246	1605	0963	0320	9677	9034	21
	7988	7350	6713	6074	5436	4796	4157	3517	2876	2235	1594	0952	0310	9667	9023	20
	7977	7340	6702	6064	5425	4786	4146	3506	2866	2225	1583	0941	0299	9656	9013	19
	7966	7329	6691	6053	5414	4775	4136	3495	2855	2214	1572	0930	0288	9645	9002	18
	7956	7318	6681	6042	5404	4764	4125	3485	2844	2203	1562	0920	0277	9635	8991	17
	7945	7308	6670	6032	5393	4754	4114	3474	2834	2193	1551	0909	0267	9624	8980	16
	7934	7297	6659	6021	5382	4743	4104	3463	2823	2182	1540	0898	0256	9613	8970	15
	7924	7287	6649	6010	5372	4733	4093	3453	2812	2171	1530	0888	0245	9602	8959	14
	7913	7276	6638	6000	5361	4722	4082	3442	2802	2160	1519	0877	0235	9592	8948	13
	7903	7265	6627	5989	5350	4711	4072	3431	2791	2150	1508	0866	0224	9581	8938	12
	7892	7255	6617	5979	5340	4701	4061	3421	2780	2139	1498	0856	0213	9570	8927	11
	7881	7244	6606	5968	5329	4690	4050	3410	2769	2128	1487	0845	0202	9559	8916	10
	7871	7233	6596	5957	5318	4679	4040	3399	2759	2118	1476	0834	0192	9549	8905	9
	7860	7223	6585	5947	5308	4669	4029	3389	2748	2107	1465	0823	0181	9538	8895	8
	7850	7212	6574	5936	5297	4658	4018	3378	2737	2096	1455	0813	0170	9527	8884	7
	7839	7202	6564	5925	5287	4647	4008	3367	2727	2086	1444	0802	0160	9517	8873	6
	7828	7191	6553	5915	5276	4637	3997	3357	2716	2075	1433	0791	0149	9506	8862	5
	7818	7180	6542	5904	5265	4626	3986	3346	2705	2064	1423	0781	0138	9495	8852	4
	7807	7170	6532	5893	5255	4615	3976	3335	2695	2054	1412	0770	0127	9484	8841	3
	7796	7159	6521	5883	5244	4605	3965	3325	2684	2043	1401	0759	0117	9474	8830	2
	7786	7148	6510	5872	5233	4594	3954	3314	2673	2032	1391	0749	0106	9463	8820	1
	7775	7138	6500	5861	5223	4583	3944	3303	2663	2022	1380	0738	0095	9452	8809	0
	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

"	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9. 702	9. 702	9. 703	9. 703	9. 703	9. 704	9. 704	9. 704	9. 704	9. 705	9. 705	9. 705	9. 706	9. 706	9. 706
0	4663	7805	0946	4086	7225	0362	3497	6632	9765	2897	6027	9156	2284	5410	8535
1	4715	7858	0999	4139	7277	0414	3550	6684	9817	2949	6079	9208	2336	5462	8587
2	4768	7910	1051	4191	7329	0466	3602	6736	9869	3001	6131	9260	2388	5514	8639
3	4820	7962	1103	4243	7381	0518	3654	6788	9921	3053	6183	9312	2440	5566	8691
4	4872	8015	1156	4295	7434	0571	3706	6841	9974	3105	6236	9364	2492	5618	8743
5	4925	8067	1208	4348	7486	0623	3759	6893	0026	3157	6288	9417	2544	5670	8795
6	4977	8120	1260	4400	7538	0675	3811	6945	0078	3210	6340	9469	2596	5723	8848
7	5030	8172	1313	4452	7591	0728	3863	6997	0130	3262	6392	9521	2648	5775	8900
8	5082	8224	1365	4505	7643	0780	3915	7050	0182	3314	6444	9573	2701	5827	8952
9	5134	8277	1418	4557	7695	0832	3968	7102	0235	3366	6496	9625	2753	5879	9004
10	5187	8329	1470	4609	7748	0884	4020	7154	0287	3418	6548	9677	2805	5931	9056
11	5239	8381	1522	4662	7800	0937	4072	7206	0339	3471	6601	9729	2857	5983	9108
12	5292	8434	1575	4714	7852	0989	4124	7258	0391	3523	6653	9782	2909	6035	9160
13	5344	8486	1627	4766	7904	1041	4177	7311	0443	3575	6705	9834	2961	6087	9212
14	5396	8538	1679	4819	7957	1093	4229	7363	0496	3627	6757	9886	3013	6139	9264
15	5449	8591	1732	4871	8009	1146	4281	7415	0548	3679	6809	9938	3065	6191	9316
16	5501	8643	1784	4923	8061	1198	4333	7467	0600	3731	6861	9990	3117	6243	9368
17	5553	8695	1836	4976	8114	1250	4386	7520	0652	3784	6914	0042	3170	6296	9420
18	5606	8748	1889	5028	8166	1303	4438	7572	0704	3836	6966	0094	3222	6348	9472
19	5658	8800	1941	5080	8218	1355	4490	7624	0757	3888	7018	0146	3274	6400	9524
20	5711	8853	1993	5132	8270	1407	4542	7676	0809	3940	7070	0199	3326	6452	9576
21	5763	8905	2046	5185	8323	1459	4595	7728	0861	3992	7122	0251	3378	6504	9629
22	5815	8957	2098	5237	8375	1512	4647	7781	0913	4044	7174	0303	3430	6556	9681
23	5868	9010	2150	5289	8427	1564	4699	7833	0965	4097	7226	0355	3482	6608	9733
24	5920	9062	2203	5342	8480	1616	4751	7885	1018	4149	7279	0407	3534	6660	9785
25	5972	9114	2255	5394	8532	1668	4804	7937	1070	4201	7331	0459	3586	6712	9837
26	6025	9167	2307	5446	8584	1721	4856	7990	1122	4253	7383	0511	3639	6764	9889
27	6077	9219	2360	5499	8636	1773	4908	8042	1174	4305	7435	0564	3691	6816	9941
28	6130	9271	2412	5551	8689	1825	4960	8094	1226	4358	7487	0616	3743	6869	9993
29	6182	9324	2464	5603	8741	1877	5012	8146	1279	4410	7539	0668	3795	6921	0045
30	6234	9376	2516	5656	8793	1930	5065	8198	1331	4462	7592	0720	3847	6973	0097
31	6287	9428	2569	5708	8846	1982	5117	8251	1383	4514	7644	0772	3899	7025	0149
32	6339	9481	2621	5760	8898	2034	5169	8303	1435	4566	7696	0824	3951	7077	0201
33	6391	9533	2673	5812	8950	2086	5221	8355	1487	4618	7748	0876	4003	7129	0253
34	6444	9585	2726	5865	9002	2139	5274	8407	1540	4671	7800	0928	4055	7181	0305
35	6496	9638	2778	5917	9055	2191	5326	8460	1592	4723	7852	0981	4108	7233	0357
36	6549	9690	2830	5969	9107	2243	5378	8512	1644	4775	7904	1033	4160	7285	0409
37	6601	9743	2883	6022	9159	2296	5430	8564	1696	4827	7957	1085	4212	7337	0462
38	6653	9795	2935	6074	9212	2348	5483	8616	1748	4879	8009	1137	4264	7389	0514
39	6706	9847	2987	6126	9264	2400	5535	8668	1801	4931	8061	1189	4316	7441	0566
40	6758	9900	3040	6179	9316	2452	5587	8721	1853	4984	8113	1241	4368	7494	0618
41	6810	9952	3092	6231	9368	2505	5639	8773	1905	5036	8165	1293	4420	7546	0670
42	6863	0004	3144	6283	9421	2557	5692	8825	1957	5088	8217	1345	4472	7598	0722
43	6915	0057	3197	6336	9473	2609	5744	8877	2009	5140	8269	1398	4524	7650	0774
44	6967	0109	3249	6388	9525	2661	5796	8929	2062	5192	8322	1450	4576	7702	0826
45	7020	0161	3301	6440	9578	2714	5848	8982	2114	5244	8374	1502	4629	7754	0878
46	7072	0214	3354	6492	9630	2766	5901	9034	2166	5297	8426	1554	4681	7806	0930
47	7125	0266	3406	6545	9682	2818	5953	9086	2218	5349	8478	1606	4733	7858	0982
48	7177	0318	3458	6597	9734	2870	6005	9138	2270	5401	8530	1658	4785	7910	1034
49	7229	0371	3511	6649	9787	2923	6057	9191	2322	5453	8582	1710	4837	7962	1086
50	7282	0423	3563	6702	9839	2975	6109	9243	2375	5505	8634	1762	4889	8014	1138
51	7334	0475	3615	6754	9891	3027	6162	9295	2427	5557	8687	1815	4941	8066	1190
52	7386	0528	3668	6806	9943	3079	6214	9347	2479	5610	8739	1867	4993	8118	1242
53	7439	0580	3720	6859	9996	3132	6266	9399	2531	5662	8791	1919	5045	8171	1294
54	7491	0632	3772	6911	0048	3184	6318	9452	2583	5714	8843	1971	5097	8223	1346
55	7544	0685	3825	6963	0100	3236	6371	9504	2636	5766	8895	2023	5150	8275	1399
56	7596	0737	3877	7015	0153	3288	6423	9556	2688	5818	8947	2075	5202	8327	1451
57	7648	0789	3929	7068	0205	3341	6475	9608	2740	5870	8999	2127	5254	8379	1503
58	7701	0842	3982	7120	0257	3393	6527	9660	2792	5923	9052	2179	5306	8431	1555
59	7753	0894	4034	7172	0309	3445	6580	9713	2844	5975	9104	2232	5358	8483	1607
60	7805	0946	4086	7225	0362	3497	6632	9765	2897	6027	9156	2284	5410	8535	1659
"	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	"
10. 297	10. 297	10. 296	10. 296	10. 296	10. 295	10. 295	10. 295	10. 295	10. 294	10. 294	10. 294	10. 293	10. 293	10. 293	
5337	2195	9054	5914	2775	9638	6503	3368	0235	7103	3973	0844	7716	4590	1465	60
5285	2142	9001	5861	2723	9586	6450	3316	0183	7051	3921	0792	7664	4538	1413	59
5232	2090	8949	5809	2671	9534	6398	3264	0131	6999	3869	0740	7612	4486	1361	58
5180	2038	8897	5757	2619	9482	6346	3212	0079	6947	3817	0688	7560	4434	1309	57
5128	1985	8844	5705	2566	9429	6294	3159	0026	6895	3764	0636	7508	4382	1257	56
5075	1933	8792	5652	2514	9377	6241	3107	9974	6843	3712	0583	7456	4330	1205	55
5023	1880	8740	5600	2462	9325	6189	3055	9922	6790	3660	0531	7404	4277	1152	54
4970	1828	8687	5548	2409	9272	6137	3003	9870	6738	3608	0479	7352	4225	1100	53
4918	1776	8635	5495	2357	9220	6085	2950	9818	6686	3556	0427	7299	4173	1048	52
4866	1723	8582	5443	2305	9168	6032	2898	9765	6634	3504	0375	7247	4121	0996	51
4813	1671	8530	5391	2252	9116	5980	2846	9713	6582	3452	0323	7195	4069	0944	50
4761	1619	8478	5338	2200	9063	5928	2794	9661	6529	3399	0271	7143	4017	0892	49
4708	1566	8425	5286	2148	9011	5876	2742	9609	6477	3347	0218	7091	3965	0840	48
4656	1514	8373	5234	2096	8959	5823	2689	9557	6425	3295	0166	7039	3913	0788	47
4604	1462	8321	5181	2043	8907	5771	2637	9504	6373	3243	0114	6987	3861	0736	46
4551	1409	8268	5129	1991	8854	5719	2585	9452	6321	3191	0062	6935	3809	0684	45
4499	1357	8216	5077	1939	8802	5667	2533	9400	6269	3139	0010	6883	3757	0632	44
4447	1305	8164	5024	1886	8750	5614	2480	9348	6216	3086	9958	6830	3704	0580	43
4394	1252	8111	4972	1834	8697	5562	2428	9296	6164	3034	9906	6778	3652	0528	42
4342	1200	8059	4920	1782	8645	5510	2376	9243	6112	2982	9854	6726	3600	0476	41
4289	1147	8007	4868	1730	8593	5458	2324	9191	6060	2930	9801	6674	3548	0424	40
4237	1095	7954	4815	1677	8541	5405	2272	9139	6008	2878	9749	6622	3496	0371	39
4185	1043	7902	4763	1625	8488	5353	2219	9087	5956	2826	9697	6570	3444	0319	38
4132	0990	7850	4711	1573	8436	5301	2167	9035	5903	2774	9645	6518	3392	0267	37
4080	0938	7797	4658	1520	8384	5249	2115	8982	5851	2721	9593	6466	3340	0215	36
4028	0886	7745	4606	1468	8332	5196	2063	8930	5799	2669	9541	6414	3288	0163	35
3975	0833	7693	4554	1416	8279	5144	2010	8878	5747	2617	9489	6361	3236	0111	34
3923	0781	7640	4501	1364	8227	5092	1958	8826	5695	2565	9436	6309	3184	0059	33
3870	0729	7588	4449	1311	8175	5040	1906	8774	5642	2513	9384	6257	3131	0007	32
3818	0676	7536	4397	1259	8123	4988	1854	8721	5590	2461	9332	6205	3079	9955	31
3766	0624	7484	4344	1207	8070	4935	1802	8669	5538	2408	9280	6153	3027	9903	30
3713	0572	7431	4292	1154	8018	4883	1749	8617	5486	2356	9228	6101	2975	9851	29
3661	0519	7379	4240	1102	7966	4831	1697	8565	5434	2304	9176	6049	2923	9799	28
3609	0467	7327	4188	1050	7914	4779	1645	8513	5382	2252	9124	5997	2871	9747	27
3556	0415	7274	4135	0998	7861	4726	1593	8460	5329	2200	9072	5945	2819	9695	26
3504	0362	7222	4083	0945	7809	4674	1540	8408	5277	2148	9019	5892	2767	9643	25
3451	0310	7170	4031	0893	7757	4622	1488	8356	5225	2096	8967	5840	2715	9591	24
3399	0257	7117	3978	0841	7704	4570	1436	8304	5173	2043	8915	5788	2663	9538	23
3347	0205	7065	3926	0788	7652	4517	1384	8252	5121	1991	8863	5736	2611	9486	22
3294	0153	7013	3874	0736	7600	4465	1332	8199	5069	1939	8811	5684	2559	9434	21
3242	0100	6960	3821	0684	7548	4413	1279	8147	5016	1887	8759	5632	2506	9382	20
3190	0048	6908	3769	0632	7495	4361	1227	8095	4964	1835	8707	5580	2454	9330	19
3137	9996	6856	3717	0579	7443	4308	1175	8043	4912	1783	8655	5528	2402	9278	18
3085	9943	6803	3664	0527	7391	4256	1123	7991	4860	1731	8602	5476	2350	9226	17
3033	9891	6751	3612	0475	7339	4204	1071	7938	4808	1678	8550	5424	2298	9174	16
2980	9839	6699	3560	0422	7286	4152	1018	7886	4756	1626	8498	5371	2246	9122	15
2928	9786	6646	3508	0370	7234	4099	0966	7834	4703	1574	8446	5319	2194	9070	14
2875	9734	6594	3455	0318	7182	4047	0914	7782	4651	1522	8394	5267	2142	9018	13
2823	9682	6542	3403	0266	7130	3995	0862	7730	4599	1470	8342	5215	2090	8966	12
2771	9629	6489	3351	0213	7077	3943	0809	7678	4547	1418	8290	5163	2038	8914	11
2718	9577	6437	3298	0161	7025	3891	0757	7625	4495	1366	8238	5111	1986	8862	10
2666	9525	6385	3246	0109	6973	3838	0705	7573	4443	1313	8185	5059	1934	8810	9
2614	9472	6332	3194	0057	6921	3786	0653	7521	4390	1261	8133	5007	1882	8758	8
2561	9420	6280	3141	0004	6868	3734	0601	7469	4338	1209	8081	4955	1829	8706	7
2509	9368	6228	3089	9952	6816	3682	0548	7417	4286	1157	8029	4903	1777	8654	6
2456	9315	6175	3037	9900	6764	3629	0496	7364	4234	1105	7977	4850	1725	8601	5
2404	9263	6123	2985	9847	6712	3577	0444	7312	4182	1053	7925	4798	1673	8549	4
2352	9211	6071	2932	9795	6659	3525	0392	7260	4130	1001	7873	4746	1621	8497	3
2299	9158	6018	2880	9743	6607	3473	0340	7208	4077	0948	7821	4694	1569	8445	2
2247	9106	5966	2828	9691	6555	3420	0287	7156	4025	0896	7768	4642	1517	8393	1
2195	9054	5914	2775	9638	6503	3368	0235	7103	3973	0844	7716	4590	1465	8341	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	"

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.657	9.657	9.657	9.657	9.658	9.658	9.658	9.658	9.659	9.659	9.659	9.659	9.660	9.660	9.660
0	0468	2946	5423	7898	0371	2842	5312	7780	0246	2710	5173	7633	0093	2550	5005
1	0509	2987	5464	7939	0412	2884	5353	7821	0287	2751	5214	7674	0133	2591	5046
2	0550	3029	5505	7980	0453	2925	5394	7862	0328	2792	5255	7715	0174	2632	5087
3	0592	3070	5547	8021	0495	2966	5435	7903	0369	2833	5296	7756	0215	2673	5128
4	0633	3111	5588	8063	0536	3007	5477	7944	0410	2874	5337	7797	0256	2714	5169
5	0674	3153	5629	8104	0577	3048	5518	7985	0451	2915	5378	7838	0297	2754	5210
6	0716	3194	5670	8145	0618	3089	5559	8026	0492	2957	5419	7879	0338	2795	5251
7	0757	3235	5712	8186	0659	3131	5600	8068	0533	2998	5460	7920	0379	2836	5292
8	0798	3276	5753	8228	0701	3172	5641	8109	0575	3039	5501	7961	0420	2877	5333
9	0840	3318	5794	8269	0742	3213	5682	8150	0616	3080	5542	8002	0461	2918	5373
10	0881	3359	5835	8310	0783	3254	5723	8191	0657	3121	5583	8043	0502	2959	5414
11	0922	3400	5877	8351	0824	3295	5765	8232	0698	3162	5624	8084	0543	3000	5455
12	0963	3442	5918	8393	0865	3336	5806	8273	0739	3203	5665	8125	0584	3041	5496
13	1005	3483	5959	8434	0907	3378	5847	8314	0780	3244	5706	8166	0625	3082	5537
14	1046	3524	6001	8475	0948	3419	5888	8355	0821	3285	5747	8207	0666	3123	5578
15	1087	3565	6042	8516	0989	3460	5929	8396	0862	3326	5788	8248	0707	3164	5619
16	1129	3607	6083	8557	1030	3501	5970	8438	0903	3367	5829	8289	0748	3205	5660
17	1170	3648	6124	8599	1071	3542	6011	8479	0944	3408	5870	8330	0789	3246	5701
18	1211	3689	6166	8640	1113	3583	6052	8520	0985	3449	5911	8371	0830	3287	5742
19	1253	3731	6207	8681	1154	3625	6094	8561	1026	3490	5952	8412	0871	3328	5782
20	1294	3772	6248	8722	1195	3666	6135	8602	1068	3531	5993	8453	0912	3368	5823
21	1335	3813	6289	8764	1236	3707	6176	8643	1109	3572	6034	8494	0953	3409	5864
22	1377	3854	6331	8805	1277	3748	6217	8684	1150	3613	6075	8535	0994	3450	5905
23	1418	3896	6372	8846	1319	3789	6258	8725	1191	3654	6116	8576	1035	3491	5946
24	1459	3937	6413	8887	1360	3830	6299	8766	1232	3695	6157	8617	1076	3532	5987
25	1501	3978	6454	8928	1401	3872	6340	8808	1273	3736	6198	8658	1117	3573	6028
26	1542	4020	6496	8970	1442	3913	6382	8849	1314	3777	6239	8699	1158	3614	6069
27	1583	4061	6537	9011	1483	3954	6423	8890	1355	3819	6280	8740	1199	3655	6110
28	1625	4102	6578	9052	1524	3995	6464	8931	1396	3860	6321	8781	1239	3696	6151
29	1666	4143	6619	9093	1566	4036	6505	8972	1437	3901	6362	8822	1280	3737	6191
30	1707	4185	6661	9135	1607	4077	6546	9013	1478	3942	6403	8863	1321	3778	6232
31	1748	4226	6702	9176	1648	4119	6587	9054	1519	3983	6444	8904	1362	3819	6273
32	1790	4267	6743	9217	1689	4160	6628	9095	1560	4024	6485	8945	1403	3860	6314
33	1831	4309	6784	9258	1730	4201	6669	9136	1601	4065	6526	8986	1444	3901	6355
34	1872	4350	6826	9299	1772	4242	6711	9177	1643	4106	6567	9027	1485	3941	6396
35	1914	4391	6867	9341	1813	4283	6752	9219	1684	4147	6608	9068	1526	3982	6437
36	1955	4432	6908	9382	1854	4324	6793	9260	1725	4188	6649	9109	1567	4023	6478
37	1996	4474	6949	9423	1895	4365	6834	9301	1766	4229	6690	9150	1608	4064	6519
38	2038	4515	6991	9464	1936	4407	6875	9342	1807	4270	6731	9191	1649	4105	6560
39	2079	4556	7032	9506	1978	4448	6916	9383	1848	4311	6772	9232	1690	4146	6600
40	2120	4597	7073	9547	2019	4489	6957	9424	1889	4352	6813	9273	1731	4187	6641
41	2161	4639	7114	9588	2060	4530	6999	9465	1930	4393	6854	9314	1772	4228	6682
42	2203	4680	7156	9629	2101	4571	7040	9506	1971	4434	6895	9355	1813	4269	6723
43	2244	4721	7197	9670	2142	4612	7081	9547	2012	4475	6936	9396	1854	4310	6764
44	2285	4763	7238	9712	2183	4654	7122	9588	2053	4516	6977	9437	1895	4351	6805
45	2327	4804	7279	9753	2225	4695	7163	9630	2094	4557	7018	9478	1936	4392	6846
46	2368	4845	7320	9794	2266	4736	7204	9671	2135	4598	7059	9519	1977	4432	6887
47	2409	4886	7362	9835	2307	4777	7245	9712	2176	4639	7100	9560	2018	4473	6928
48	2451	4928	7403	9876	2348	4818	7286	9753	2217	4680	7141	9601	2058	4514	6968
49	2492	4969	7444	9918	2389	4859	7327	9794	2259	4721	7182	9642	2099	4555	7009
50	2533	5010	7485	9959	2431	4900	7369	9835	2300	4762	7223	9683	2140	4596	7050
51	2574	5051	7527	0000	2472	4942	7410	9876	2341	4803	7264	9724	2181	4637	7091
52	2616	5093	7568	0041	2513	4983	7451	9917	2382	4844	7305	9765	2222	4678	7132
53	2657	5134	7609	0083	2554	5024	7492	9958	2423	4886	7347	9806	2263	4719	7173
54	2698	5175	7650	0124	2595	5065	7533	9999	2464	4927	7388	9847	2304	4760	7214
55	2740	5217	7692	0165	2636	5106	7574	0040	2505	4968	7429	9888	2345	4801	7255
56	2781	5258	7733	0206	2678	5147	7615	0082	2546	5009	7470	9929	2386	4842	7295
57	2822	5299	7774	0247	2719	5189	7656	0123	2587	5050	7511	9970	2427	4883	7336
58	2864	5340	7815	0289	2760	5230	7698	0164	2628	5091	7552	0011	2468	4923	7377
59	2905	5382	7857	0330	2801	5271	7739	0205	2669	5132	7593	0052	2509	4964	7418
60	2946	5423	7898	0371	2842	5312	7780	0246	2710	5173	7633	0093	2550	5005	7459
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.949	9.949	9.949	9.949	9.949	9.949	9.949	9.949	9.949	9.949	9.949	9.949	9.949	9.949	9.948
60	8809	8165	7521	6876	6230	5585	4938	4292	3645	2997	2349	1700	1051	0402	9752
59	8798	8154	7510	6865	6220	5574	4928	4281	3634	2986	2338	1689	1640	0391	9741
58	8787	8143	7499	6854	6209	5563	4917	4270	3623	2975	2327	1679	1030	0380	9730
57	8777	8133	7488	6843	6198	5552	4906	4259	3612	2964	2316	1668	1019	0369	9719
56	8766	8122	7478	6833	6187	5542	4895	4249	3601	2954	2306	1657	1008	0358	9708
55	8755	8111	7467	6822	6177	5531	4884	4238	3591	2943	2295	1646	0997	0348	9698
54	8744	8101	7456	6811	6166	5520	4874	4227	3580	2932	2284	1635	0986	0337	9687
53	8734	8090	7445	6800	6155	5509	4863	4216	3569	2921	2273	1625	0975	0326	9676
52	8723	8079	7435	6790	6144	5498	4852	4205	3558	2910	2262	1614	0965	0315	9665
51	8712	8068	7424	6779	6134	5488	4841	4195	3547	2900	2252	1603	0954	0304	9654
50	8702	8058	7413	6768	6123	5477	4831	4184	3537	2889	2241	1592	0943	0293	9643
49	8691	8047	7402	6757	6112	5466	4820	4173	3526	2878	2230	1581	0932	0283	9633
48	8680	8036	7392	6747	6101	5455	4809	4162	3515	2867	2219	1570	0921	0272	9622
47	8669	8025	7381	6736	6090	5445	4798	4151	3504	2856	2208	1560	0911	0261	9611
46	8659	8015	7370	6725	6080	5434	4788	4141	3493	2846	2197	1549	0900	0250	9600
45	8648	8004	7359	6714	6069	5423	4777	4130	3483	2835	2187	1538	0889	0239	9589
44	8637	7993	7349	6704	6058	5412	4766	4119	3472	2824	2176	1527	0878	0228	9578
43	8626	7982	7338	6693	6047	5402	4755	4108	3461	2813	2165	1516	0867	0218	9568
42	8616	7972	7327	6682	6037	5391	4744	4098	3450	2802	2154	1506	0856	0207	9557
41	8605	7961	7316	6671	6026	5380	4734	4087	3439	2792	2143	1495	0846	0196	9546
40	8594	7950	7306	6661	6015	5369	4723	4076	3429	2781	2133	1484	0835	0185	9535
39	8584	7939	7295	6650	6004	5358	4712	4065	3418	2770	2122	1473	0824	0174	9524
38	8573	7929	7284	6639	5994	5348	4701	4054	3407	2759	2111	1462	0813	0163	9513
37	8562	7918	7273	6628	5983	5337	4691	4044	3396	2748	2100	1451	0802	0153	9502
36	8551	7907	7263	6618	5972	5326	4680	4033	3386	2738	2089	1441	0791	0142	9492
35	8541	7896	7252	6607	5961	5315	4669	4022	3375	2727	2079	1430	0781	0131	9481
34	8530	7886	7241	6596	5951	5305	4658	4011	3364	2716	2068	1419	0770	0120	9470
33	8519	7875	7230	6585	5940	5294	4647	4000	3353	2705	2057	1408	0759	0109	9459
32	8508	7864	7220	6575	5929	5283	4637	3990	3342	2694	2046	1397	0748	0098	9448
31	8498	7854	7209	6564	5918	5272	4626	3979	3332	2684	2035	1387	0737	0088	9437
30	8487	7843	7198	6553	5908	5262	4615	3968	3321	2673	2025	1376	0727	0077	9427
29	8476	7832	7187	6542	5897	5251	4604	3957	3310	2662	2014	1365	0716	0066	9416
28	8465	7821	7177	6532	5886	5240	4594	3947	3299	2651	2003	1354	0705	0055	9405
27	8455	7811	7166	6521	5875	5229	4583	3936	3288	2640	1992	1343	0694	0044	9394
26	8444	7800	7155	6510	5864	5218	4572	3925	3278	2630	1981	1333	0683	0033	9383
25	8433	7789	7144	6499	5854	5208	4561	3914	3267	2619	1971	1322	0672	0023	9372
24	8423	7778	7134	6489	5843	5197	4550	3903	3256	2608	1960	1311	0662	0012	9362
23	8412	7768	7123	6478	5832	5186	4540	3893	3245	2597	1949	1300	0651	0001	9351
22	8401	7757	7112	6467	5821	5175	4529	3882	3234	2586	1938	1289	0640	9990	9340
21	8390	7746	7101	6456	5811	5165	4518	3871	3224	2576	1927	1278	0629	9979	9329
20	8380	7735	7091	6446	5800	5154	4507	3860	3213	2565	1916	1268	0618	9968	9318
19	8369	7725	7080	6435	5789	5143	4497	3849	3202	2554	1906	1257	0607	9958	9307
18	8358	7714	7069	6424	5778	5132	4486	3839	3191	2543	1895	1246	0597	9947	9297
17	8347	7703	7058	6413	5768	5122	4475	3828	3180	2532	1884	1235	0586	9936	9286
16	8337	7692	7048	6403	5757	5111	4464	3817	3170	2522	1873	1224	0575	9925	9275
15	8326	7682	7037	6392	5746	5100	4453	3806	3159	2511	1862	1214	0564	9914	9264
14	8315	7671	7026	6381	5735	5089	4443	3796	3148	2500	1852	1203	0553	9903	9253
13	8304	7660	7015	6370	5725	5078	4432	3785	3137	2489	1841	1192	0542	9893	9242
12	8294	7649	7005	6359	5714	5068	4421	3774	3126	2478	1830	1181	0532	9882	9231
11	8283	7639	6994	6349	5703	5057	4410	3763	3116	2468	1819	1170	0521	9871	9221
10	8272	7628	6983	6338	5692	5046	4399	3752	3105	2457	1808	1159	0510	9860	9210
9	8262	7617	6972	6327	5681	5035	4389	3742	3094	2446	1798	1149	0499	9849	9199
8	8251	7606	6962	6316	5671	5025	4378	3731	3083	2435	1787	1138	0488	9838	9188
7	8240	7596	6951	6306	5660	5014	4367	3720	3072	2424	1776	1127	0478	9828	9177
6	8229	7585	6940	6295	5649	5003	4356	3709	3062	2414	1765	1116	0467	9817	9166
5	8219	7574	6929	6284	5638	4992	4346	3698	3051	2403	1754	1105	0456	9806	9156
4	8208	7564	6919	6273	5628	4981	4335	3688	3040	2392	1743	1094	0445	9795	9145
3	8197	7553	6908	6263	5617	4971	4324	3677	3029	2381	1733	1084	0434	9784	9134
2	8186	7542	6897	6252	5606	4960	4313	3666	3018	2370	1722	1073	0423	9773	9123
1	8176	7531	6886	6241	5595	4949	4302	3655	3008	2360	1711	1062	0413	9763	9112
0	8165	7521	6876	6230	5585	4938	4292	3645	2997	2349	1700	1051	0402	9752	9101
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9. 707	9. 707	9. 707	9. 708	9. 708	9. 708	9. 709	9. 709	9. 709	9. 709	9. 710	9. 710	9. 710	9. 711	9. 711
0	1659	4781	7902	1022	4141	7258	0374	3488	6601	9713	2824	5933	9041	2148	5254
1	1711	4833	7954	1074	4193	7310	0426	3540	6653	9765	2876	5985	9093	2200	5305
2	1763	4885	8006	1126	4245	7362	0477	3592	6705	9817	2928	6037	9145	2252	5357
3	1815	4937	8058	1178	4296	7414	0529	3644	6757	9869	2979	6089	9197	2303	5409
4	1867	4989	8110	1230	4348	7466	0581	3696	6809	9921	3031	6141	9248	2355	5460
5	1919	5041	8162	1282	4400	7517	0633	3748	6861	9973	3083	6192	9300	2407	5512
6	1971	5093	8214	1334	4452	7569	0685	3800	6913	0024	3135	6244	9352	2459	5564
7	2023	5145	8266	1386	4504	7621	0737	3851	6964	0076	3187	6296	9404	2510	5616
8	2075	5197	8318	1438	4556	7673	0789	3903	7016	0128	3239	6348	9456	2562	5667
9	2127	5249	8370	1490	4608	7725	0841	3955	7068	0180	3290	6400	9507	2614	5719
10	2179	5302	8422	1542	4660	7777	0893	4007	7120	0232	3342	6451	9559	2666	5771
11	2231	5354	8474	1594	4712	7829	0945	4059	7172	0284	3394	6503	9611	2717	5823
12	2283	5406	8526	1646	4764	7881	0997	4111	7224	0336	3446	6555	9663	2769	5874
13	2335	5458	8578	1698	4816	7933	1049	4163	7276	0387	3498	6607	9715	2821	5926
14	2387	5510	8630	1750	4868	7985	1100	4215	7328	0439	3550	6659	9766	2873	5978
15	2440	5562	8682	1802	4920	8037	1152	4267	7379	0491	3601	6710	9818	2925	6030
16	2492	5614	8734	1854	4972	8089	1204	4318	7431	0543	3653	6762	9870	2976	6081
17	2544	5666	8786	1906	5024	8141	1256	4370	7483	0595	3705	6814	9922	3028	6133
18	2596	5718	8838	1958	5076	8193	1308	4422	7535	0647	3757	6866	9973	3080	6185
19	2648	5770	8890	2010	5128	8245	1360	4474	7587	0698	3809	6918	0025	3132	6237
20	2700	5822	8942	2062	5180	8297	1412	4526	7639	0750	3861	6969	0077	3183	6288
21	2752	5874	8994	2114	5232	8348	1464	4578	7691	0802	3912	7021	0129	3235	6340
22	2804	5926	9046	2166	5284	8400	1516	4630	7743	0854	3964	7073	0181	3287	6392
23	2856	5978	9098	2218	5336	8452	1568	4682	7794	0906	4016	7125	0232	3339	6444
24	2908	6030	9150	2270	5388	8504	1620	4734	7846	0958	4068	7177	0284	3390	6495
25	2960	6082	9202	2322	5440	8556	1671	4785	7898	1010	4120	7228	0336	3442	6547
26	3012	6134	9254	2374	5492	8608	1723	4837	7950	1061	4171	7280	0388	3494	6599
27	3064	6186	9306	2426	5543	8660	1775	4889	8002	1113	4223	7332	0440	3546	6651
28	3116	6238	9358	2478	5595	8712	1827	4941	8054	1165	4275	7384	0491	3597	6702
29	3168	6290	9410	2530	5647	8764	1879	4993	8106	1217	4327	7436	0543	3649	6754
30	3220	6342	9462	2582	5699	8816	1931	5045	8158	1269	4379	7487	0595	3701	6806
31	3272	6394	9514	2633	5751	8868	1983	5097	8209	1321	4431	7539	0647	3753	6857
32	3324	6446	9566	2685	5803	8920	2035	5149	8261	1372	4482	7591	0698	3804	6909
33	3376	6498	9618	2737	5855	8972	2087	5201	8313	1424	4534	7643	0750	3856	6961
34	3428	6550	9670	2789	5907	9024	2139	5252	8365	1476	4586	7695	0802	3908	7013
35	3480	6602	9722	2841	5959	9075	2191	5304	8417	1528	4638	7746	0854	3960	7064
36	3532	6654	9774	2893	6011	9127	2242	5356	8469	1580	4690	7798	0906	4011	7116
37	3584	6706	9826	2945	6063	9179	2294	5408	8521	1632	4742	7850	0957	4063	7168
38	3636	6758	9878	2997	6115	9231	2346	5460	8572	1684	4793	7902	1009	4115	7220
39	3689	6810	9930	3049	6167	9283	2398	5512	8624	1735	4845	7954	1061	4167	7271
40	3741	6862	9982	3101	6219	9335	2450	5564	8676	1787	4897	8005	1113	4219	7323
41	3793	6914	0034	3153	6271	9387	2502	5616	8728	1839	4949	8057	1164	4270	7375
42	3845	6966	0086	3205	6323	9439	2554	5668	8780	1891	5001	8109	1216	4322	7427
43	3897	7018	0138	3257	6375	9491	2606	5719	8832	1943	5052	8161	1268	4374	7478
44	3949	7070	0190	3309	6427	9543	2658	5771	8884	1995	5104	8213	1320	4426	7530
45	4001	7122	0242	3361	6479	9595	2710	5823	8935	2046	5156	8264	1371	4477	7582
46	4053	7174	0294	3413	6531	9647	2762	5875	8987	2098	5208	8316	1423	4529	7633
47	4105	7226	0346	3465	6582	9699	2813	5927	9039	2150	5260	8368	1475	4581	7685
48	4157	7278	0398	3517	6634	9751	2865	5979	9091	2202	5312	8420	1527	4633	7737
49	4209	7330	0450	3569	6686	9802	2917	6031	9143	2254	5363	8472	1579	4684	7789
50	4261	7382	0502	3621	6738	9854	2969	6083	9195	2306	5415	8523	1630	4736	7840
51	4313	7434	0554	3673	6790	9906	3021	6134	9247	2357	5467	8575	1682	4788	7892
52	4365	7486	0606	3725	6842	9958	3073	6186	9298	2409	5519	8627	1734	4840	7944
53	4417	7538	0658	3777	6894	0010	3125	6238	9350	2461	5571	8679	1786	4891	7996
54	4469	7590	0710	3829	6946	0062	3177	6290	9402	2513	5622	8731	1837	4943	8047
55	4521	7642	0762	3881	6998	0114	3229	6342	9454	2565	5674	8782	1889	4995	8099
56	4573	7694	0814	3933	7050	0166	3281	6394	9506	2617	5726	8834	1941	5047	8151
57	4625	7746	0866	3985	7102	0218	3332	6446	9558	2668	5778	8886	1993	5098	8203
58	4677	7798	0918	4037	7154	0270	3384	6498	9610	2720	5830	8938	2045	5150	8254
59	4729	7850	0970	4089	7206	0322	3436	6549	9661	2772	5881	8990	2096	5202	8306
60	4781	7902	1022	4141	7258	0374	3488	6601	9713	2824	5933	9041	2148	5254	8358
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
10. 292	10. 292	10. 292	10. 291	10. 291	10. 291	10. 290	10. 290	10. 290	10. 290	10. 289	10. 289	10. 289	10. 288	10. 288	″
8341	5219	2098	8978	5859	2742	9626	6512	3399	0287	7176	4067	0959	7852	4746	60
8289	5167	2046	8926	5807	2690	9574	6460	3347	0235	7124	4015	0907	7800	4695	59
8237	5115	1994	8874	5755	2638	9523	6408	3295	0183	7072	3963	0855	7748	4643	58
8185	5063	1942	8822	5704	2586	9471	6356	3243	0131	7021	3911	0803	7697	4591	57
8133	5011	1890	8770	5652	2534	9419	6304	3191	0079	6969	3859	0752	7645	4540	56
8081	4959	1838	8718	5600	2483	9367	6252	3139	0027	6917	3808	0700	7593	4488	55
8029	4907	1786	8666	5548	2431	9315	6200	3087	9976	6865	3756	0648	7541	4436	54
7977	4855	1734	8614	5496	2379	9263	6149	3036	9924	6813	3704	0596	7490	4384	53
7925	4803	1682	8562	5444	2327	9211	6097	2984	9872	6761	3652	0544	7438	4333	52
7873	4751	1630	8510	5392	2275	9159	6045	2932	9820	6710	3600	0493	7386	4281	51
7821	4698	1578	8458	5340	2223	9107	5993	2880	9768	6658	3549	0441	7334	4229	50
7769	4646	1526	8406	5288	2171	9055	5941	2828	9716	6606	3497	0389	7283	4177	49
7717	4594	1474	8354	5236	2119	9003	5889	2776	9664	6554	3445	0337	7231	4126	48
7665	4542	1422	8302	5184	2067	8951	5837	2724	9613	6502	3393	0285	7179	4074	47
7613	4490	1370	8250	5132	2015	8900	5785	2672	9561	6450	3341	0234	7127	4022	46
7560	4438	1318	8198	5080	1963	8848	5733	2621	9509	6399	3290	0182	7075	3970	45
7508	4386	1266	8146	5028	1911	8796	5682	2569	9457	6347	3238	0130	7024	3919	44
7456	4334	1214	8094	4976	1859	8744	5630	2517	9405	6295	3186	0078	6972	3867	43
7404	4282	1162	8042	4924	1807	8692	5578	2465	9353	6243	3134	0027	6920	3815	42
7352	4230	1110	7990	4872	1755	8640	5526	2413	9302	6191	3082	9975	6868	3763	41
7300	4178	1058	7938	4820	1703	8588	5474	2361	9250	6139	3031	9923	6817	3712	40
7248	4126	1006	7886	4768	1652	8536	5422	2309	9198	6088	2979	9871	6765	3660	39
7196	4074	0954	7834	4716	1600	8484	5370	2257	9146	6036	2927	9819	6713	3608	38
7144	4022	0902	7782	4664	1548	8432	5318	2206	9094	5984	2875	9768	6661	3556	37
7092	3970	0850	7730	4612	1496	8380	5266	2154	9042	5932	2823	9716	6610	3505	36
7040	3918	0798	7678	4560	1444	8329	5215	2102	8990	5880	2772	9664	6558	3453	35
6988	3866	0746	7626	4508	1392	8277	5163	2050	8939	5829	2720	9612	6506	3401	34
6936	3814	0694	7574	4457	1340	8225	5111	1998	8887	5777	2668	9560	6454	3349	33
6884	3762	0642	7522	4405	1288	8173	5059	1946	8835	5725	2616	9509	6403	3298	32
6832	3710	0590	7470	4353	1236	8121	5007	1894	8783	5673	2564	9457	6351	3246	31
6780	3658	0538	7418	4301	1184	8069	4955	1842	8731	5621	2513	9405	6299	3194	30
6728	3606	0486	7367	4249	1132	8017	4903	1791	8679	5569	2461	9353	6247	3143	29
6676	3554	0434	7315	4197	1080	7965	4851	1739	8628	5518	2409	9302	6196	3091	28
6624	3502	0382	7263	4145	1028	7913	4799	1687	8576	5466	2357	9250	6144	3039	27
6572	3450	0330	7211	4093	0976	7861	4748	1635	8524	5414	2305	9198	6092	2987	26
6520	3398	0278	7159	4041	0925	7809	4696	1583	8472	5362	2254	9146	6040	2936	25
6468	3346	0226	7107	3989	0873	7758	4644	1531	8420	5310	2202	9094	5989	2884	24
6416	3294	0174	7055	3937	0821	7706	4592	1479	8368	5258	2150	9043	5937	2832	23
6364	3242	0122	7003	3885	0769	7654	4540	1428	8316	5207	2098	8991	5885	2780	22
6311	3190	0070	6951	3833	0717	7602	4488	1376	8265	5155	2046	8939	5833	2729	21
6259	3138	0018	6899	3781	0665	7550	4436	1324	8213	5103	1995	8887	5781	2677	20
6207	3086	9966	6847	3729	0613	7498	4384	1272	8161	5051	1943	8836	5730	2625	19
6155	3034	9914	6795	3677	0561	7446	4332	1220	8109	4999	1891	8784	5678	2573	18
6103	2982	9862	6743	3625	0509	7394	4281	1168	8057	4948	1839	8732	5626	2522	17
6051	2930	9810	6691	3573	0457	7342	4229	1116	8005	4896	1787	8680	5574	2470	16
5999	2878	9758	6639	3521	0405	7290	4177	1065	7954	4844	1736	8629	5523	2418	15
5947	2826	9706	6587	3469	0353	7238	4125	1013	7902	4792	1684	8577	5471	2367	14
5895	2774	9654	6535	3418	0301	7187	4073	0961	7850	4740	1632	8525	5419	2315	13
5843	2722	9602	6483	3366	0249	7135	4021	0909	7798	4688	1580	8473	5367	2263	12
5791	2670	9550	6431	3314	0198	7083	3969	0857	7746	4637	1528	8421	5316	2211	11
5739	2618	9498	6379	3262	0146	7031	3917	0805	7694	4585	1477	8370	5264	2160	10
5687	2566	9446	6327	3210	0094	6979	3866	0753	7643	4533	1425	8318	5212	2108	9
5635	2514	9394	6275	3158	0042	6927	3814	0702	7591	4481	1373	8266	5160	2056	8
5583	2462	9342	6223	3106	9990	6875	3762	0650	7539	4429	1321	8214	5109	2004	7
5531	2410	9290	6171	3054	9938	6823	3710	0598	7487	4378	1269	8163	5057	1953	6
5479	2358	9238	6119	3002	9886	6771	3658	0546	7435	4326	1218	8111	5005	1901	5
5427	2306	9186	6067	2950	9834	6719	3606	0494	7383	4274	1166	8059	4953	1849	4
5375	2254	9134	6015	2898	9782	6668	3554	0442	7332	4222	1114	8007	4902	1797	3
5323	2202	9082	5963	2846	9730	6616	3502	0390	7280	4170	1062	7955	4850	1746	2
5271	2150	9030	5911	2794	9678	6564	3451	0339	7228	4119	1010	7904	4798	1694	1
5219	2098	8978	5859	2742	9626	6512	3399	0287	7176	4067	0959	7852	4746	1642	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9.660	9.660	9.661	9.661	9.661	9.661	9.662	9.662	9.662	9.662	9.663	9.663	9.663	9.663	9.664
0	7459	9911	2361	4810	7257	9702	2145	4586	7026	9464	1900	4335	6768	9199	1628
1	7500	9952	2402	4851	7297	9742	2185	4627	7067	9505	1941	4376	6808	9239	1669
2	7541	9993	2443	4891	7338	9783	2226	4668	7107	9545	1982	4416	6849	9280	1709
3	7582	0034	2484	4932	7379	9824	2267	4708	7148	9586	2022	4457	6889	9320	1750
4	7623	0074	2525	4973	7420	9864	2308	4749	7189	9627	2063	4497	6930	9361	1790
5	7663	0115	2565	5014	7460	9905	2348	4790	7229	9667	2103	4538	6970	9401	1831
6	7704	0156	2606	5055	7501	9946	2389	4830	7270	9708	2144	4578	7011	9442	1871
7	7745	0197	2647	5095	7542	9987	2430	4871	7311	9748	2185	4619	7052	9482	1912
8	7786	0238	2688	5136	7583	0027	2470	4912	7351	9789	2225	4659	7092	9523	1952
9	7827	0279	2729	5177	7623	0068	2511	4952	7392	9830	2266	4700	7133	9563	1993
10	7868	0320	2769	5218	7664	0109	2552	4993	7433	9870	2306	4741	7173	9604	2033
11	7909	0360	2810	5258	7705	0150	2593	5034	7473	9911	2347	4781	7214	9644	2074
12	7950	0401	2851	5299	7746	0190	2633	5074	7514	9952	2387	4822	7254	9685	2114
13	7990	0442	2892	5340	7786	0231	2674	5115	7554	9992	2428	4862	7295	9725	2154
14	8031	0483	2933	5381	7827	0272	2715	5156	7595	0033	2469	4903	7335	9766	2195
15	8072	0524	2974	5422	7868	0312	2755	5196	7636	0073	2509	4943	7376	9806	2235
16	8113	0565	3014	5462	7909	0353	2796	5237	7676	0114	2550	4984	7416	9847	2276
17	8154	0605	3055	5503	7949	0394	2837	5278	7717	0155	2590	5024	7457	9887	2316
18	8195	0646	3096	5544	7990	0435	2877	5318	7758	0195	2631	5065	7497	9928	2357
19	8236	0687	3137	5585	8031	0475	2918	5359	7798	0236	2672	5106	7538	9968	2397
20	8277	0728	3178	5626	8072	0516	2959	5400	7839	0276	2712	5146	7578	0009	2438
21	8317	0769	3218	5666	8112	0557	3000	5440	7880	0317	2753	5187	7619	0049	2478
22	8358	0810	3259	5707	8153	0598	3040	5481	7920	0358	2793	5227	7659	0090	2519
23	8399	0850	3300	5748	8194	0638	3081	5522	7961	0398	2834	5268	7700	0130	2559
24	8440	0891	3341	5789	8235	0679	3122	5562	8001	0439	2874	5308	7740	0171	2600
25	8481	0932	3382	5829	8275	0720	3162	5603	8042	0479	2915	5349	7781	0211	2640
26	8522	0973	3422	5870	8316	0760	3203	5644	8083	0520	2956	5389	7822	0252	2681
27	8563	1014	3463	5911	8357	0801	3244	5684	8123	0561	2996	5430	7862	0292	2721
28	8604	1055	3504	5952	8398	0842	3284	5725	8164	0601	3037	5471	7903	0333	2761
29	8644	1096	3545	5993	8438	0883	3325	5766	8205	0642	3077	5511	7943	0373	2802
30	8685	1136	3586	6033	8479	0923	3366	5806	8245	0682	3118	5552	7984	0414	2842
31	8726	1177	3627	6074	8520	0964	3406	5847	8286	0723	3158	5592	8024	0454	2883
32	8767	1218	3667	6115	8561	1005	3447	5888	8327	0764	3199	5633	8065	0495	2923
33	8808	1259	3708	6156	8601	1046	3488	5928	8367	0804	3240	5673	8105	0535	2964
34	8849	1300	3749	6196	8642	1086	3529	5969	8408	0845	3280	5714	8146	0576	3004
35	8890	1341	3790	6237	8683	1127	3569	6010	8448	0886	3321	5754	8186	0616	3045
36	8930	1381	3831	6278	8724	1168	3610	6050	8489	0926	3361	5795	8227	0657	3085
37	8971	1422	3871	6319	8764	1208	3651	6091	8530	0967	3402	5835	8267	0697	3126
38	9012	1463	3912	6360	8805	1249	3691	6132	8570	1007	3443	5876	8308	0738	3166
39	9053	1504	3953	6400	8846	1290	3732	6172	8611	1048	3483	5917	8348	0778	3207
40	9094	1545	3994	6441	8887	1331	3773	6213	8652	1089	3524	5957	8389	0819	3247
41	9135	1586	4035	6482	8927	1371	3813	6254	8692	1129	3564	5998	8429	0859	3287
42	9176	1626	4075	6523	8968	1412	3854	6294	8733	1170	3605	6038	8470	0900	3328
43	9216	1667	4116	6563	9009	1453	3895	6335	8774	1210	3645	6079	8510	0940	3368
44	9257	1708	4157	6604	9050	1493	3935	6376	8814	1251	3686	6119	8551	0981	3409
45	9298	1749	4198	6645	9090	1534	3976	6416	8855	1292	3727	6160	8591	1021	3449
46	9339	1790	4239	6686	9131	1575	4017	6457	8895	1332	3767	6200	8632	1062	3490
47	9380	1831	4279	6727	9172	1616	4057	6498	8936	1373	3808	6241	8672	1102	3530
48	9421	1871	4320	6767	9213	1656	4098	6538	8977	1413	3848	6281	8713	1143	3571
49	9462	1912	4361	6808	9253	1697	4139	6579	9017	1454	3889	6322	8753	1183	3611
50	9502	1953	4402	6849	9294	1738	4179	6620	9058	1494	3929	6362	8794	1224	3652
51	9543	1994	4443	6890	9335	1778	4220	6660	9099	1535	3970	6403	8834	1264	3692
52	9584	2035	4483	6930	9376	1819	4261	6701	9139	1576	4010	6444	8875	1305	3732
53	9625	2075	4524	6971	9416	1860	4302	6742	9180	1616	4051	6484	8915	1345	3773
54	9666	2116	4565	7012	9457	1901	4342	6782	9220	1657	4092	6525	8956	1385	3813
55	9707	2157	4606	7053	9498	1941	4383	6823	9261	1697	4132	6565	8996	1426	3854
56	9748	2198	4647	7093	9539	1982	4424	6863	9302	1738	4173	6606	9037	1466	3894
57	9788	2239	4687	7134	9579	2023	4464	6904	9342	1779	4213	6646	9077	1507	3935
58	9829	2280	4728	7175	9620	2063	4505	6945	9383	1819	4254	6687	9118	1547	3975
59	9870	2320	4769	7216	9661	2104	4546	6985	9423	1860	4294	6727	9158	1588	4016
60	9911	2361	4810	7257	9702	2145	4586	7026	9464	1900	4335	6768	9199	1628	4056
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Sine Deg. 62

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9.948	9.948	9.948	9.948	9.948	9.948	9.948	9.948	9.948	9.948	9.948	9.948	9.948	9.948	9.947
60	9101	8450	7799	7147	6495	5842	5189	4535	3881	3227	2572	1916	1260	0604	9947
59	9091	8440	7788	7136	6484	5831	5178	4525	3870	3216	2561	1905	1249	0593	9936
58	9080	8429	7777	7126	6473	5821	5167	4514	3859	3205	2550	1894	1238	0582	9925
57	9069	8418	7767	7115	6462	5810	5156	4503	3849	3194	2539	1883	1227	0571	9914
56	9058	8407	7756	7104	6452	5799	5146	4492	3838	3183	2528	1872	1216	0560	9903
55	9047	8396	7745	7093	6441	5788	5135	4481	3827	3172	2517	1861	1205	0549	9892
54	9036	8385	7734	7082	6430	5777	5124	4470	3816	3161	2506	1850	1194	0538	9881
53	9025	8375	7723	7071	6419	5766	5113	4459	3805	3150	2495	1840	1183	0527	9870
52	9015	8364	7712	7060	6408	5755	5102	4448	3794	3139	2484	1829	1173	0516	9859
51	9004	8353	7701	7049	6397	5744	5091	4437	3783	3128	2473	1818	1162	0505	9848
50	8993	8342	7691	7039	6386	5733	5080	4426	3772	3118	2462	1807	1151	0494	9837
49	8982	8331	7680	7028	6375	5723	5069	4416	3761	3107	2451	1796	1140	0483	9826
48	8971	8320	7669	7017	6365	5712	5058	4405	3750	3096	2441	1785	1129	0472	9815
47	8960	8309	7658	7006	6354	5701	5047	4394	3739	3085	2430	1774	1118	0461	9804
46	8950	8299	7647	6995	6343	5690	5037	4383	3729	3074	2419	1763	1107	0450	9793
45	8939	8288	7636	6984	6332	5679	5026	4372	3718	3063	2408	1752	1096	0439	9782
44	8928	8277	7625	6973	6321	5668	5015	4361	3707	3052	2397	1741	1085	0428	9771
43	8917	8266	7614	6963	6310	5657	5004	4350	3696	3041	2386	1730	1074	0417	9760
42	8906	8255	7604	6952	6299	5646	4993	4339	3685	3030	2375	1719	1063	0407	9749
41	8895	8244	7593	6941	6288	5635	4982	4328	3674	3019	2364	1708	1052	0396	9739
40	8884	8233	7582	6930	6278	5625	4971	4317	3663	3008	2353	1697	1041	0385	9728
39	8874	8223	7571	6919	6267	5614	4960	4307	3652	2997	2342	1687	1030	0374	9717
38	8863	8212	7560	6908	6256	5603	4949	4296	3641	2987	2331	1676	1019	0363	9706
37	8852	8201	7549	6897	6245	5592	4939	4285	3630	2976	2320	1665	1008	0352	9695
36	8841	8190	7538	6886	6234	5581	4928	4274	3619	2965	2309	1654	0998	0341	9684
35	8830	8179	7528	6876	6223	5570	4917	4263	3609	2954	2299	1643	0987	0330	9673
34	8819	8168	7517	6865	6212	5559	4906	4252	3598	2943	2288	1632	0976	0319	9662
33	8809	8157	7506	6854	6201	5548	4895	4241	3587	2932	2277	1621	0965	0308	9651
32	8798	8147	7495	6843	6190	5538	4884	4230	3576	2921	2266	1610	0954	0297	9640
31	8787	8136	7484	6832	6180	5527	4873	4219	3565	2910	2255	1599	0943	0286	9629
30	8776	8125	7473	6821	6169	5516	4862	4208	3554	2899	2244	1588	0932	0275	9618
29	8765	8114	7462	6810	6158	5505	4851	4197	3543	2888	2233	1577	0921	0264	9607
28	8754	8103	7452	6799	6147	5494	4841	4187	3532	2877	2222	1566	0910	0253	9596
27	8743	8092	7441	6789	6136	5483	4830	4176	3521	2866	2211	1555	0899	0242	9585
26	8733	8081	7430	6778	6125	5472	4819	4165	3510	2856	2200	1544	0888	0231	9574
25	8722	8071	7419	6767	6114	5461	4808	4154	3499	2845	2189	1533	0877	0220	9563
24	8711	8060	7408	6756	6103	5450	4797	4143	3489	2834	2178	1523	0866	0209	9552
23	8700	8049	7397	6745	6093	5440	4786	4132	3478	2823	2167	1512	0855	0199	9541
22	8689	8038	7386	6734	6082	5429	4775	4121	3467	2812	2156	1501	0844	0188	9530
21	8678	8027	7375	6723	6071	5418	4764	4110	3456	2801	2146	1490	0833	0177	9519
20	8667	8016	7365	6713	6060	5407	4753	4099	3445	2790	2135	1479	0822	0166	9508
19	8657	8005	7354	6702	6049	5396	4742	4088	3434	2779	2124	1468	0812	0155	9497
18	8646	7995	7343	6691	6038	5385	4732	4078	3423	2768	2113	1457	0801	0144	9487
17	8635	7984	7332	6680	6027	5374	4721	4067	3412	2757	2102	1446	0790	0133	9476
16	8624	7973	7321	6669	6016	5363	4710	4056	3401	2746	2091	1435	0779	0122	9465
15	8613	7962	7310	6658	6006	5352	4699	4045	3390	2735	2080	1424	0768	0111	9454
14	8602	7951	7299	6647	5995	5342	4688	4034	3379	2724	2069	1413	0757	0100	9443
13	8592	7940	7289	6636	5984	5331	4677	4023	3369	2714	2058	1402	0746	0089	9432
12	8581	7929	7278	6626	5973	5320	4666	4012	3357	2703	2047	1391	0735	0078	9421
11	8570	7919	7267	6615	5962	5309	4655	4001	3347	2692	2036	1380	0724	0067	9410
10	8559	7908	7256	6604	5951	5298	4644	3990	3336	2681	2025	1369	0713	0056	9399
9	8548	7897	7245	6593	5940	5287	4633	3979	3325	2670	2014	1358	0702	0045	9388
8	8537	7886	7234	6582	5929	5276	4623	3969	3314	2659	2003	1348	0691	0034	9377
7	8526	7875	7223	6571	5918	5265	4612	3958	3303	2648	1993	1337	0680	0023	9366
6	8516	7864	7213	6560	5908	5254	4601	3947	3292	2637	1982	1326	0669	0012	9355
5	8505	7853	7202	6549	5897	5244	4590	3936	3281	2626	1971	1315	0658	0001	9344
4	8494	7843	7191	6539	5886	5233	4579	3925	3270	2615	1960	1304	0647	9990	9333
3	8483	7832	7180	6528	5875	5222	4568	3914	3259	2604	1949	1293	0636	9980	9322
2	8472	7821	7169	6517	5864	5211	4557	3903	3248	2593	1938	1282	0625	9969	9311
1	8461	7810	7158	6506	5853	5200	4546	3892	3238	2583	1927	1271	0615	9958	9300
0	8450	7799	7147	6495	5842	5189	4535	3881	3227	2572	1916	1260	0604	9947	9289
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Sine Deg. 62

27 Deg. Tangent

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27	28′	29′
″	9. 711	9. 712	9. 712	9. 712	9. 713	9. 713	9. 713	9. 714	9. 714	9. 714	9. 714	9. 715	9. 715	9. 715	9. 716
0	8358	1461	4562	7662	0761	3859	6956	0051	3145	6237	9329	2419	5508	8595	1682
1	8409	1512	4614	7714	0813	3911	7007	0102	3196	6289	9380	2470	5559	8647	1733
2	8461	1564	4666	7766	0865	3962	7059	0154	3248	6341	9432	2522	5611	8698	1785
3	8513	1616	4717	7817	0916	4014	7110	0206	3299	6392	9483	2573	5662	8750	1836
4	8565	1667	4769	7869	0968	4066	7162	0257	3351	6444	9535	2625	5714	8801	1887
5	8616	1719	4821	7921	1020	4117	7214	0309	3403	6495	9586	2676	5765	8853	1939
6	8668	1771	4872	7972	1071	4169	7265	0360	3454	6547	9638	2728	5817	8904	1990
7	8720	1822	4924	8024	1123	4221	7317	0412	3506	6598	9689	2779	5868	8956	2042
8	8771	1874	4976	8076	1175	4272	7368	0463	3557	6650	9741	2831	5920	9007	2093
9	8823	1926	5027	8127	1226	4324	7420	0515	3609	6701	9792	2882	5971	9058	2145
10	8875	1978	5079	8179	1278	4375	7472	0567	3660	6753	9844	2934	6022	9110	2196
11	8927	2029	5131	8231	1329	4427	7523	0618	3712	6804	9895	2985	6074	9161	2247
12	8978	2081	5182	8282	1381	4479	7575	0670	3763	6856	9947	3037	6125	9213	2299
13	9030	2133	5234	8334	1433	4530	7626	0721	3815	6907	9998	3088	6177	9264	2350
14	9082	2184	5286	8386	1484	4582	7678	0773	3867	6959	0050	3140	6228	9316	2402
15	9134	2236	5337	8437	1536	4633	7730	0824	3918	7010	0101	3191	6280	9367	2453
16	9185	2288	5389	8489	1588	4685	7781	0876	3970	7062	0153	3243	6331	9419	2505
17	9237	2339	5441	8541	1639	4737	7833	0928	4021	7113	0204	3294	6383	9470	2556
18	9289	2391	5492	8592	1691	4788	7884	0979	4073	7165	0256	3346	6434	9521	2607
19	9340	2443	5544	8644	1743	4840	7936	1031	4124	7217	0307	3397	6486	9573	2659
20	9392	2495	5596	8696	1794	4892	7988	1082	4176	7268	0359	3449	6537	9624	2710
21	9444	2546	5647	8747	1846	4943	8039	1134	4227	7320	0411	3500	6589	9676	2762
22	9496	2598	5699	8799	1897	4995	8091	1185	4279	7371	0462	3552	6640	9727	2813
23	9547	2650	5751	8851	1949	5046	8142	1237	4330	7423	0514	3603	6692	9779	2864
24	9599	2701	5802	8902	2001	5098	8194	1289	4382	7474	0565	3655	6743	9830	2916
25	9651	2753	5854	8954	2052	5150	8246	1340	4434	7526	0617	3706	6794	9881	2967
26	9702	2805	5906	9006	2104	5201	8297	1392	4485	7577	0668	3758	6846	9933	3019
27	9754	2856	5957	9057	2156	5253	8349	1443	4537	7629	0720	3809	6897	9984	3070
28	9806	2908	6009	9109	2207	5304	8400	1495	4588	7680	0771	3861	6949	0036	3122
29	9858	2960	6061	9160	2259	5356	8452	1546	4640	7732	0823	3912	7000	0087	3173
30	9909	3012	6112	9212	2311	5408	8503	1598	4691	7783	0874	3964	7052	0139	3224
31	9961	3063	6164	9264	2362	5459	8555	1650	4743	7835	0926	4015	7103	0190	3276
32	0013	3115	6216	9315	2414	5511	8607	1701	4794	7886	0977	4066	7155	0242	3327
33	0064	3167	6267	9367	2465	5562	8658	1753	4846	7938	1029	4118	7206	0293	3379
34	0116	3218	6319	9419	2517	5614	8710	1804	4897	7989	1080	4169	7258	0344	3430
35	0168	3270	6371	9470	2569	5666	8761	1856	4949	8041	1132	4221	7309	0396	3481
36	0220	3322	6422	9522	2620	5717	8813	1907	5001	8092	1183	4272	7360	0447	3533
37	0271	3373	6474	9574	2672	5769	8865	1959	5052	8144	1235	4324	7412	0499	3584
38	0323	3425	6526	9625	2724	5820	8916	2011	5104	8195	1286	4375	7463	0550	3636
39	0375	3477	6577	9677	2775	5872	8968	2062	5155	8247	1338	4427	7515	0602	3687
40	0426	3528	6629	9729	2827	5924	9019	2114	5207	8299	1389	4478	7566	0653	3739
41	0478	3580	6681	9780	2878	5975	9071	2165	5258	8350	1441	4530	7618	0704	3790
42	0530	3632	6732	9832	2930	6027	9122	2217	5310	8402	1492	4581	7669	0756	3841
43	0582	3683	6784	9884	2982	6078	9174	2268	5361	8453	1544	4633	7721	0807	3893
44	0633	3735	6836	9935	3033	6130	9226	2320	5413	8505	1595	4684	7772	0859	3944
45	0685	3787	6887	9987	3085	6182	9277	2371	5464	8556	1647	4736	7824	0910	3996
46	0737	3839	6939	0038	3137	6233	9329	2423	5516	8608	1698	4787	7875	0962	4047
47	0788	3890	6991	0090	3188	6285	9380	2475	5567	8659	1750	4839	7926	1013	4098
48	0840	3942	7042	0142	3240	6336	9432	2526	5619	8711	1801	4890	7978	1065	4150
49	0892	3994	7094	0193	3291	6388	9484	2578	5671	8762	1853	4942	8029	1116	4201
50	0943	4045	7146	0245	3343	6440	9535	2629	5722	8814	1904	4993	8081	1167	4253
51	0995	4097	7197	0297	3395	6491	9587	2681	5774	8865	1956	5045	8132	1219	4304
52	1047	4149	7249	0348	3446	6543	9638	2732	5825	8917	2007	5096	8184	1270	4355
53	1099	4200	7301	0400	3498	6594	9690	2784	5877	8968	2058	5147	8235	1322	4407
54	1150	4252	7352	0452	3550	6646	9741	2835	5928	9020	2110	5199	8287	1373	4458
55	1202	4304	7404	0503	3601	6698	9793	2887	5980	9071	2161	5250	8338	1425	4510
56	1254	4355	7456	0555	3653	6749	9845	2939	6031	9123	2213	5302	8390	1476	4561
57	1305	4407	7507	0607	3704	6801	9896	2990	6083	9174	2264	5353	8441	1527	4613
58	1357	4459	7559	0658	3756	6852	9948	3042	6134	9226	2316	5405	8492	1579	4664
59	1409	4510	7611	0710	3808	6904	9999	3093	6186	9277	2367	5456	8544	1630	4715
60	1461	4562	7662	0761	3859	6956	0051	3145	6237	9329	2419	5508	8595	1682	4767
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

27 Deg. Co-Tangent

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28	29′	
10. 288	10. 287	10. 287	10. 287	10. 286	10. 286	10. 286	10. 285	10. 285	10. 285	10. 285	10. 284	10. 284	10. 284	10. 283	″
1642	8539	5438	2338	9239	6141	3044	9949	6855	3763	0671	7581	4492	1405	8318	60
1591	8488	5386	2286	9187	6089	2993	9898	6804	3711	0620	7530	4441	1353	8267	59
1539	8436	5334	2234	9135	6038	2941	9846	6752	3659	0568	7478	4389	1302	8215	58
1487	8384	5283	2183	9084	5986	2890	9794	6701	3608	0517	7427	4338	1250	8164	57
1435	8333	5231	2131	9032	5934	2838	9743	6649	3556	0465	7375	4286	1199	8113	56
1384	8281	5179	2079	8980	5883	2786	9691	6597	3505	0414	7324	4235	1147	8061	55
1332	8229	5128	2028	8929	5831	2735	9640	6546	3453	0362	7272	4183	1096	8010	54
1280	8178	5076	1976	8877	5779	2683	9588	6494	3402	0311	7221	4132	1044	7958	53
1229	8126	5024	1924	8825	5728	2632	9537	6443	3350	0259	7169	4080	0993	7907	52
1177	8074	4973	1873	8774	5676	2580	9485	6391	3299	0208	7118	4029	0942	7855	51
1125	8022	4921	1821	8722	5625	2528	9433	6340	3247	0156	7066	3978	0890	7804	50
1073	7971	4869	1769	8671	5573	2477	9382	6288	3196	0105	7015	3926	0839	7753	49
1022	7919	4818	1718	8619	5521	2425	9330	6237	3144	0053	6963	3875	0787	7701	48
0970	7867	4766	1666	8567	5470	2374	9279	6185	3093	0002	6912	3823	0736	7650	47
0918	7816	4714	1614	8516	5418	2322	9227	6133	3041	9950	6860	3772	0684	7598	46
0866	7764	4663	1563	8464	5367	2270	9176	6082	2990	9899	6809	3720	0633	7547	45
0815	7712	4611	1511	8412	5315	2219	9124	6030	2938	9847	6757	3669	0581	7495	44
0763	7661	4559	1459	8361	5263	2167	9072	5979	2887	9796	6706	3617	0530	7444	43
0711	7609	4508	1408	8309	5212	2116	9021	5927	2835	9744	6654	3566	0479	7393	42
0660	7557	4456	1356	8257	5160	2064	8969	5876	2783	9693	6603	3514	0427	7341	41
0608	7505	4404	1304	8206	5108	2012	8918	5824	2732	9641	6551	3463	0376	7290	40
0556	7454	4353	1253	8154	5057	1961	8866	5773	2680	9589	6500	3411	0324	7238	39
0504	7402	4301	1201	8103	5005	1909	8815	5721	2629	9538	6448	3360	0273	7187	38
0453	7350	4249	1149	8051	4954	1858	8763	5670	2577	9486	6397	3308	0221	7136	37
0401	7299	4198	1098	7999	4902	1806	8711	5618	2526	9435	6345	3257	0170	7084	36
0349	7247	4146	1046	7948	4850	1754	8660	5566	2474	9383	6294	3206	0119	7033	35
0298	7195	4094	0994	7896	4799	1703	8608	5515	2423	9332	6242	3154	0067	6981	34
0246	7144	4043	0943	7844	4747	1651	8557	5463	2371	9280	6191	3103	0016	6930	33
0194	7092	3991	0891	7793	4696	1600	8505	5412	2320	9229	6139	3051	9964	6878	32
0142	7040	3939	0840	7741	4644	1548	8454	5360	2268	9177	6088	3000	9913	6827	31
0091	6988	3888	0788	7689	4592	1497	8402	5309	2217	9126	6036	2948	9861	6776	30
0039	6937	3836	0736	7638	4541	1445	8350	5257	2165	9074	5985	2897	9810	6724	29
9987	6885	3784	0685	7586	4489	1393	8299	5206	2114	9023	5934	2845	9758	6673	28
9936	6833	3733	0633	7535	4438	1342	8247	5154	2062	8971	5882	2794	9707	6621	27
9884	6782	3681	0581	7483	4386	1290	8196	5103	2011	8920	5831	2742	9656	6570	26
9832	6730	3629	0530	7431	4334	1239	8144	5051	1959	8868	5779	2691	9604	6519	25
9780	6678	3578	0478	7380	4283	1187	8093	4999	1908	8817	5728	2640	9553	6467	24
9729	6627	3526	0426	7328	4231	1135	8041	4948	1856	8765	5676	2588	9501	6416	23
9677	6575	3474	0375	7276	4180	1084	7989	4896	1805	8714	5625	2537	9450	6364	22
9625	6523	3423	0323	7225	4128	1032	7938	4845	1753	8662	5573	2485	9398	6313	21
9574	6472	3371	0271	7173	4076	0981	7886	4793	1701	8611	5522	2434	9347	6261	20
9522	6420	3319	0220	7122	4025	0929	7835	4742	1650	8559	5470	2382	9296	6210	19
9470	6368	3268	0168	7070	3973	0878	7783	4690	1598	8508	5419	2331	9244	6159	18
9418	6317	3216	0116	7018	3922	0826	7732	4639	1547	8456	5367	2279	9193	6107	17
9367	6265	3164	0065	6967	3870	0774	7680	4587	1495	8405	5316	2228	9141	6056	16
9315	6213	3113	0013	6915	3818	0723	7629	4536	1444	8353	5264	2176	9090	6004	15
9263	6161	3061	9962	6863	3767	0671	7577	4484	1392	8302	5213	2125	9038	5953	14
9212	6110	3009	9910	6812	3715	0620	7525	4433	1341	8250	5161	2074	8987	5902	13
9160	6058	2958	9858	6760	3664	0568	7474	4381	1289	8199	5110	2022	8935	5850	12
9108	6006	2906	9807	6709	3612	0516	7422	4329	1238	8147	5058	1971	8884	5799	11
9057	5955	2854	9755	6657	3560	0465	7371	4278	1186	8096	5007	1919	8833	5747	10
9005	5903	2803	9703	6605	3509	0413	7319	4226	1135	8044	4955	1868	8781	5696	9
8953	5851	2751	9652	6554	3457	0362	7268	4175	1083	7993	4904	1816	8730	5645	8
8901	5800	2699	9600	6502	3406	0310	7216	4123	1032	7942	4853	1765	8678	5593	7
8850	5748	2648	9548	6450	3354	0259	7165	4072	0980	7890	4801	1713	8627	5542	6
8798	5696	2596	9497	6399	3302	0207	7113	4020	0929	7839	4750	1662	8575	5490	5
8746	5645	2544	9445	6347	3251	0155	7061	3969	0877	7787	4698	1610	8524	5439	4
8695	5593	2493	9393	6296	3199	0104	7010	3917	0826	7736	4647	1559	8473	5387	3
8643	5541	2441	9342	6244	3148	0052	6958	3866	0774	7684	4595	1508	8421	5336	2
8591	5490	2389	9290	6192	3096	0001	6907	3814	0723	7633	4544	1456	8370	5285	1
8539	5438	2338	9239	6141	3044	9949	6855	3763	0671	7581	4492	1405	8318	5233	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Co-Tangent Deg. 62 Tangent Deg. 62

27 Deg. Sine

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9.664	9.664	9.664	9.665	9.665	9.665	9.665	9.666	9.666	9.666	9.666	9.667	9.667	9.667	9.667
0	4056	6482	8906	1329	3749	6168	8586	1001	3415	5828	8238	0647	3054	5459	7863
1	4096	6522	8947	1369	3790	6209	8626	1042	3456	5868	8278	0687	3094	5500	7903
2	4137	6563	8987	1409	3830	6249	8666	1082	3496	5908	8318	0727	3134	5540	7943
3	4177	6603	9027	1450	3870	6289	8707	1122	3536	5948	8359	0767	3174	5580	7983
4	4218	6644	9068	1490	3911	6330	8747	1162	3576	5988	8399	0807	3214	5620	8023
5	4258	6684	9108	1530	3951	6370	8787	1203	3616	6029	8439	0848	3255	5660	8063
6	4299	6724	9148	1571	3991	6410	8827	1243	3657	6069	8479	0888	3295	5700	8103
7	4339	6765	9189	1611	4032	6451	8868	1283	3697	6109	8519	0928	3335	5740	8143
8	4380	6805	9229	1652	4072	6491	8908	1323	3737	6149	8559	0968	3375	5780	8184
9	4420	6846	9270	1692	4112	6531	8948	1364	3777	6189	8600	1008	3415	5820	8224
10	4460	6886	9310	1732	4153	6571	8989	1404	3818	6229	8640	1048	3455	5860	8264
11	4501	6927	9350	1773	4193	6612	9029	1444	3858	6270	8680	1088	3495	5900	8304
12	4541	6967	9391	1813	4233	6652	9069	1484	3898	6310	8720	1128	3535	5940	8344
13	4582	7007	9431	1853	4274	6692	9109	1525	3938	6350	8760	1169	3575	5980	8384
14	4622	7048	9472	1894	4314	6733	9150	1565	3978	6390	8800	1209	3615	6020	8424
15	4663	7088	9512	1934	4354	6773	9190	1605	4019	6430	8840	1249	3656	6061	8464
16	4703	7129	9552	1974	4395	6813	9230	1645	4059	6471	8881	1289	3696	6101	8504
17	4744	7169	9593	2015	4435	6854	9270	1686	4099	6511	8921	1329	3736	6141	8544
18	4784	7209	9633	2055	4475	6894	9311	1726	4139	6551	8961	1369	3776	6181	8584
19	4824	7250	9673	2095	4516	6934	9351	1766	4179	6591	9001	1409	3816	6221	8624
20	4865	7290	9714	2136	4556	6974	9391	1806	4220	6631	9041	1449	3856	6261	8664
21	4905	7331	9754	2176	4596	7015	9432	1847	4260	6671	9081	1490	3896	6301	8704
22	4946	7371	9795	2216	4637	7055	9472	1887	4300	6712	9122	1530	3936	6341	8744
23	4986	7411	9835	2257	4677	7095	9512	1927	4340	6752	9162	1570	3976	6381	8784
24	5027	7452	9875	2297	4717	7136	9552	1967	4380	6792	9202	1610	4016	6421	8824
25	5067	7492	9916	2338	4758	7176	9593	2007	4421	6832	9242	1650	4056	6461	8864
26	5107	7533	9956	2378	4798	7216	9633	2048	4461	6872	9282	1690	4097	6501	8904
27	5148	7573	9996	2418	4838	7257	9673	2088	4501	6913	9322	1730	4137	6541	8944
28	5188	7613	0037	2459	4879	7297	9713	2128	4541	6953	9362	1770	4177	6581	8984
29	5229	7654	0077	2499	4919	7337	9754	2168	4582	6993	9403	1811	4217	6621	9024
30	5269	7694	0118	2539	4959	7377	9794	2209	4622	7033	9443	1851	4257	6662	9064
31	5310	7735	0158	2580	4999	7418	9834	2249	4662	7073	9483	1891	4297	6702	9104
32	5350	7775	0198	2620	5040	7458	9874	2289	4702	7113	9523	1931	4337	6742	9144
33	5390	7815	0239	2660	5080	7498	9915	2329	4742	7154	9563	1971	4377	6782	9184
34	5431	7856	0279	2701	5120	7539	9955	2370	4783	7194	9603	2011	4417	6822	9224
35	5471	7896	0319	2741	5161	7579	9995	2410	4823	7234	9643	2051	4457	6862	9265
36	5512	7937	0360	2781	5201	7619	0035	2450	4863	7274	9684	2091	4497	6902	9305
37	5552	7977	0400	2822	5241	7659	0076	2490	4903	7314	9724	2132	4538	6942	9345
38	5593	8017	0441	2862	5282	7700	0116	2530	4943	7354	9764	2172	4578	6982	9385
39	5633	8058	0481	2902	5322	7740	0156	2571	4984	7395	9804	2212	4618	7022	9425
40	5673	8098	0521	2943	5362	7780	0196	2611	5024	7435	9844	2252	4658	7062	9465
41	5714	8139	0562	2983	5403	7821	0237	2651	5064	7475	9884	2292	4698	7102	9505
42	5754	8179	0602	3023	5443	7861	0277	2691	5104	7515	9924	2332	4738	7142	9545
43	5795	8219	0642	3064	5483	7901	0317	2732	5144	7555	9965	2372	4778	7182	9585
44	5835	8260	0683	3104	5524	7941	0357	2772	5185	7595	0005	2412	4818	7222	9625
45	5876	8300	0723	3144	5564	7982	0398	2812	5225	7636	0045	2452	4858	7262	9665
46	5916	8341	0764	3185	5604	8022	0438	2852	5265	7676	0085	2493	4898	7302	9705
47	5956	8381	0804	3225	5645	8062	0478	2893	5305	7716	0125	2533	4938	7342	9745
48	5997	8421	0844	3265	5685	8103	0518	2933	5345	7756	0165	2573	4978	7383	9785
49	6037	8462	0885	3306	5725	8143	0559	2973	5386	7796	0205	2613	5019	7423	9825
50	6078	8502	0925	3346	5765	8183	0599	3013	5426	7836	0246	2653	5059	7463	9865
51	6118	8543	0965	3386	5806	8223	0639	3053	5466	7877	0286	2693	5099	7503	9905
52	6159	8583	1006	3427	5846	8264	0679	3094	5506	7917	0326	2733	5139	7543	9945
53	6199	8623	1046	3467	5886	8304	0720	3134	5546	7957	0366	2773	5179	7583	9985
54	6239	8664	1086	3507	5927	8344	0760	3174	5586	7997	0406	2813	5219	7623	0025
55	6280	8704	1127	3548	5967	8384	0800	3214	5627	8037	0446	2854	5259	7663	0065
56	6320	8745	1167	3588	6007	8425	0840	3255	5667	8077	0486	2894	5299	7703	0105
57	6361	8785	1208	3628	6048	8465	0881	3295	5707	8118	0527	2934	5339	7743	0145
58	6401	8825	1248	3669	6088	8505	0921	3335	5747	8158	0567	2974	5379	7783	0185
59	6442	8866	1288	3709	6128	8546	0961	3375	5787	8198	0607	3014	5419	7823	0225
60	6482	8906	1329	3749	6168	8586	1001	3415	5828	8238	0647	3054	5459	7863	0265
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Sine Deg. 62

27 Deg. Co-Sine

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9.947	9.947	9.947	9.947	9.947	9.947	9.947	9.947	9.947	9.947	9.947	9.947	9.947	9.947	9.947
″															
60	9289	8631	7973	7314	6655	5995	5335	4674	4013	3352	2689	2027	1364	0700	0036
59	9278	8620	7962	7303	6644	5984	5324	4663	4002	3341	2678	2016	1353	0689	0025
58	9267	8609	7951	7292	6633	5973	5313	4652	3991	3329	2667	2005	1342	0678	0014
57	9256	8598	7940	7281	6622	5962	5302	4641	3980	3318	2656	1994	1331	0667	0003
56	9245	8587	7929	7270	6611	5951	5291	4630	3969	3307	2645	1983	1320	0656	9992
55	9234	8577	7918	7259	6600	5940	5280	4619	3958	3296	2634	1972	1309	0645	9981
54	9223	8566	7907	7248	6589	5929	5269	4608	3947	3285	2623	1961	1298	0634	9970
53	9213	8555	7896	7237	6578	5918	5258	4597	3936	3274	2612	1950	1287	0623	9959
52	9202	8544	7885	7226	6567	5907	5247	4586	3925	3263	2601	1939	1275	0612	9948
51	9191	8533	7874	7215	6556	5896	5236	4575	3914	3252	2590	1928	1264	0601	9937
50	9180	8522	7863	7204	6545	5885	5225	4564	3903	3241	2579	1916	1253	0590	9926
49	9169	8511	7852	7193	6534	5874	5214	4553	3892	3230	2568	1905	1242	0579	9915
48	9158	8500	7841	7182	6523	5863	5203	4542	3881	3219	2557	1894	1231	0568	9904
47	9147	8489	7830	7171	6512	5852	5192	4531	3870	3208	2546	1883	1220	0557	9893
46	9136	8478	7819	7160	6501	5841	5181	4520	3859	3197	2535	1872	1209	0546	9881
45	9125	8467	7808	7149	6490	5830	5170	4509	3848	3186	2524	1861	1198	0534	9870
44	9114	8456	7797	7138	6479	5819	5159	4498	3837	3175	2513	1850	1187	0523	9859
43	9103	8445	7786	7127	6468	5808	5148	4487	3826	3164	2502	1839	1176	0512	9848
42	9092	8434	7775	7116	6457	5797	5137	4476	3815	3153	2491	1828	1165	0501	9837
41	9081	8423	7764	7106	6446	5786	5126	4465	3804	3142	2480	1817	1154	0490	9826
40	9070	8412	7753	7095	6435	5775	5115	4454	3793	3131	2469	1806	1143	0479	9815
39	9059	8401	7742	7084	6424	5764	5104	4443	3782	3120	2458	1795	1132	0468	9804
38	9048	8390	7732	7073	6413	5753	5093	4432	3771	3109	2447	1784	1121	0457	9793
37	9037	8379	7721	7062	6402	5742	5082	4421	3760	3098	2436	1773	1110	0446	9782
36	9026	8368	7710	7051	6391	5731	5071	4410	3749	3087	2425	1762	1099	0435	9771
35	9015	8357	7699	7040	6380	5720	5060	4399	3738	3076	2413	1751	1088	0424	9760
34	9004	8346	7688	7029	6369	5709	5049	4388	3727	3065	2402	1740	1076	0413	9749
33	8993	8335	7677	7018	6358	5698	5038	4377	3716	3054	2391	1729	1065	0402	9738
32	8982	8324	7666	7007	6347	5687	5027	4366	3704	3043	2380	1718	1054	0391	9726
31	8971	8313	7655	6996	6336	5676	5016	4355	3693	3032	2369	1707	1043	0380	9715
30	8960	8302	7644	6985	6325	5665	5005	4344	3682	3021	2358	1695	1032	0369	9704
29	8949	8291	7633	6974	6314	5654	4994	4333	3671	3010	2347	1684	1021	0357	9693
28	8938	8280	7622	6963	6303	5643	4983	4322	3660	2999	2336	1673	1010	0346	9682
27	8927	8269	7611	6952	6292	5632	4972	4311	3649	2987	2325	1662	0999	0335	9671
26	8917	8258	7600	6941	6281	5621	4961	4300	3638	2976	2314	1651	0988	0324	9660
25	8906	8247	7589	6930	6270	5610	4950	4289	3627	2965	2303	1640	0977	0313	9649
24	8895	8236	7578	6919	6259	5599	4939	4278	3616	2954	2292	1629	0966	0302	9638
23	8884	8225	7567	6908	6248	5588	4928	4267	3605	2943	2281	1618	0955	0291	9627
22	8873	8214	7556	6897	6237	5577	4917	4256	3594	2932	2270	1607	0944	0280	9616
21	8862	8204	7545	6886	6226	5566	4906	4245	3583	2921	2259	1596	0933	0269	9605
20	8851	8193	7534	6875	6215	5555	4895	4234	3572	2910	2248	1585	0922	0258	9594
19	8840	8182	7523	6864	6204	5544	4884	4223	3561	2899	2237	1574	0911	0247	9582
18	8829	8171	7512	6853	6193	5533	4873	4212	3550	2888	2226	1563	0900	0236	9571
17	8818	8160	7501	6842	6182	5522	4862	4201	3539	2877	2215	1552	0888	0225	9560
16	8807	8149	7490	6831	6171	5511	4851	4190	3528	2866	2204	1541	0877	0214	9549
15	8796	8138	7479	6820	6160	5500	4840	4179	3517	2855	2193	1530	0866	0202	9538
14	8785	8127	7468	6809	6149	5489	4829	4167	3506	2844	2182	1519	0855	0191	9527
13	8774	8116	7457	6798	6138	5478	4818	4156	3495	2833	2171	1508	0844	0180	9516
12	8763	8105	7446	6787	6127	5467	4806	4145	3484	2822	2159	1497	0833	0169	9505
11	8752	8094	7435	6776	6116	5456	4795	4134	3473	2811	2148	1485	0822	0158	9494
10	8741	8083	7424	6765	6105	5445	4784	4123	3462	2800	2137	1474	0811	0147	9483
9	8730	8072	7413	6754	6094	5434	4773	4112	3451	2789	2126	1463	0800	0136	9472
8	8719	8061	7402	6743	6083	5423	4762	4101	3440	2778	2115	1452	0789	0125	9461
7	8708	8050	7391	6732	6072	5412	4751	4090	3429	2767	2104	1441	0778	0114	9450
6	8697	8039	7380	6721	6061	5401	4740	4079	3418	2756	2093	1430	0767	0103	9439
5	8686	8028	7369	6710	6050	5390	4729	4068	3407	2745	2082	1419	0756	0092	9427
4	8675	8017	7358	6699	6039	5379	4718	4057	3396	2734	2071	1408	0745	0081	9416
3	8664	8006	7347	6688	6028	5368	4707	4046	3385	2723	2060	1397	0734	0070	9405
2	8653	7995	7336	6677	6017	5357	4696	4035	3374	2712	2049	1386	0723	0059	9394
1	8642	7984	7325	6666	6006	5346	4685	4024	3363	2701	2038	1375	0711	0048	9383
0	8631	7973	7314	6655	5995	5335	4674	4013	3352	2689	2027	1364	0700	0036	9372
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Sine Deg. 62

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 716	9. 716	9. 717	9. 717	9. 717	9. 718	9. 718	9. 718	9. 718	9. 719	9. 719	9. 719	9. 720	9. 720	9. 720
0	4767	7851	0933	4014	7094	0173	3251	6327	9402	2476	5549	8620	1690	4759	7827
1	4818	7902	0984	4066	7146	0225	3302	6378	9453	2527	5600	8671	1741	4810	7878
2	4870	7953	1036	4117	7197	0276	3353	6430	9505	2578	5651	8722	1792	4861	7929
3	4921	8005	1087	4168	7248	0327	3405	6481	9556	2630	5702	8774	1844	4912	7980
4	4972	8056	1139	4220	7300	0378	3456	6532	9607	2681	5753	8825	1895	4964	8031
5	5024	8107	1190	4271	7351	0430	3507	6583	9658	2732	5805	8876	1946	5015	8082
6	5075	8159	1241	4322	7402	0481	3559	6635	9710	2783	5856	8927	1997	5066	8133
7	5127	8210	1293	4374	7454	0532	3610	6686	9761	2835	5907	8978	2048	5117	8184
8	5178	8262	1344	4425	7505	0584	3661	6737	9812	2886	5958	9029	2099	5168	8236
9	5229	8313	1395	4477	7556	0635	3712	6788	9863	2937	6009	9081	2151	5219	8287
10	5281	8364	1447	4528	7608	0686	3764	6840	9915	2988	6061	9132	2202	5270	8338
11	5332	8416	1498	4579	7659	0738	3815	6891	9966	3039	6112	9183	2253	5322	8389
12	5384	8467	1549	4631	7710	0789	3866	6942	0017	3091	6163	9234	2304	5373	8440
13	5435	8519	1601	4682	7762	0840	3917	6994	0068	3142	6214	9285	2355	5424	8491
14	5486	8570	1652	4733	7813	0891	3969	7045	0120	3193	6265	9336	2406	5475	8542
15	5538	8621	1704	4785	7864	0943	4020	7096	0171	3244	6317	9388	2457	5526	8593
16	5589	8673	1755	4836	7916	0994	4071	7147	0222	3296	6368	9439	2509	5577	8645
17	5641	8724	1806	4887	7967	1045	4123	7199	0273	3347	6419	9490	2560	5628	8696
18	5692	8775	1858	4939	8018	1097	4174	7250	0325	3398	6470	9541	2611	5679	8747
19	5743	8827	1909	4990	8070	1148	4225	7301	0376	3449	6521	9592	2662	5731	8798
20	5795	8878	1960	5041	8121	1199	4276	7352	0427	3500	6573	9644	2713	5782	8849
21	5846	8930	2012	5093	8172	1251	4328	7404	0478	3552	6624	9695	2764	5833	8900
22	5898	8981	2063	5144	8224	1302	4379	7455	0529	3603	6675	9746	2816	5884	8951
23	5949	9032	2114	5195	8275	1353	4430	7506	0581	3654	6726	9797	2867	5935	9002
24	6000	9084	2166	5247	8326	1404	4482	7557	0632	3705	6777	9848	2918	5986	9053
25	6052	9135	2217	5298	8377	1456	4533	7609	0683	3756	6829	9899	2969	6037	9105
26	6103	9186	2269	5349	8429	1507	4584	7660	0734	3808	6880	9951	3020	6088	9156
27	6155	9238	2320	5401	8480	1558	4635	7711	0786	3859	6931	0002	3071	6140	9207
28	6206	9289	2371	5452	8531	1610	4687	7762	0837	3910	6982	0053	3122	6191	9258
29	6257	9341	2423	5503	8583	1661	4738	7814	0888	3961	7033	0104	3174	6242	9309
30	6309	9392	2474	5555	8634	1712	4789	7865	0939	4013	7084	0155	3225	6293	9360
31	6360	9443	2525	5606	8685	1764	4840	7916	0991	4064	7136	0206	3276	6344	9411
32	6412	9495	2577	5657	8737	1815	4892	7967	1042	4115	7187	0258	3327	6395	9462
33	6463	9546	2628	5709	8788	1866	4943	8019	1093	4166	7238	0309	3378	6446	9513
34	6514	9598	2679	5760	8839	1917	4994	8070	1144	4217	7289	0360	3429	6498	9564
35	6566	9649	2731	5811	8891	1969	5046	8121	1195	4269	7340	0411	3480	6549	9616
36	6617	9700	2782	5863	8942	2020	5097	8172	1247	4320	7392	0462	3532	6600	9667
37	6669	9752	2833	5914	8993	2071	5148	8224	1298	4371	7443	0513	3583	6651	9718
38	6720	9803	2885	5965	9045	2123	5199	8275	1349	4422	7494	0565	3634	6702	9769
39	6771	9854	2936	6017	9096	2174	5251	8326	1400	4473	7545	0616	3685	6753	9820
40	6823	9906	2987	6068	9147	2225	5302	8377	1452	4525	7596	0667	3736	6804	9871
41	6874	9957	3039	6119	9198	2276	5353	8429	1503	4576	7648	0718	3787	6855	9922
42	6926	0008	3090	6171	9250	2328	5404	8480	1554	4627	7699	0769	3838	6907	9973
43	6977	0060	3142	6222	9301	2379	5456	8531	1605	4678	7750	0820	3890	6958	0024
44	7028	0111	3193	6273	9352	2430	5507	8582	1656	4729	7801	0872	3941	7009	0076
45	7080	0163	3244	6325	9404	2482	5558	8634	1708	4781	7852	0923	3992	7060	0127
46	7131	0214	3296	6376	9455	2533	5609	8685	1759	4832	7903	0974	4043	7111	0178
47	7183	0265	3347	6427	9506	2584	5661	8736	1810	4883	7955	1025	4094	7162	0229
48	7234	0317	3398	6479	9558	2635	5712	8787	1861	4934	8006	1076	4145	7213	0280
49	7285	0368	3450	6530	9609	2687	5763	8839	1913	4985	8057	1127	4196	7264	0331
50	7337	0419	3501	6581	9660	2738	5815	8890	1964	5037	8108	1179	4248	7315	0382
51	7388	0471	3552	6633	9712	2789	5866	8941	2015	5088	8159	1230	4299	7367	0433
52	7439	0522	3604	6684	9763	2841	5917	8992	2066	5139	8211	1281	4350	7418	0484
53	7491	0574	3655	6735	9814	2892	5968	9044	2118	5190	8262	1332	4401	7469	0535
54	7542	0625	3706	6787	9865	2943	6020	9095	2169	5241	8313	1383	4452	7520	0587
55	7594	0676	3758	6838	9917	2994	6071	9146	2220	5293	8364	1434	4503	7571	0638
56	7645	0728	3809	6889	9968	3046	6122	9197	2271	5344	8415	1485	4554	7622	0689
57	7696	0779	3860	6941	0019	3097	6173	9248	2322	5395	8466	1537	4606	7673	0740
58	7748	0830	3912	6992	0071	3148	6225	9300	2374	5446	8518	1588	4657	7724	0791
59	7799	0882	3963	7043	0122	3200	6276	9351	2425	5497	8569	1639	4708	7776	0842
60	7851	0933	4014	7094	0173	3251	6327	9402	2476	5549	8620	1690	4759	7827	0893
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
	10. 283	10. 283	10. 282	10. 282	10. 282	10. 281	10. 281	10. 281	10. 281	10. 280	10. 280	10. 280	10. 279	10. 279	10. 279	″
0	5233	2149	9067	5986	2906	9827	6749	3673	0598	7524	4451	1380	8310	5241	2173	60
1	5182	2098	9016	5934	2854	9775	6698	3622	0547	7473	4400	1329	8259	5190	2122	59
2	5130	2047	8964	5883	2803	9724	6647	3570	0495	7422	4349	1278	8208	5139	2071	58
3	5079	1995	8913	5832	2752	9673	6595	3519	0444	7370	4298	1226	8156	5088	2020	57
4	5028	1944	8861	5780	2700	9622	6544	3468	0393	7319	4247	1175	8105	5036	1969	56
5	4976	1893	8810	5729	2649	9570	6493	3417	0342	7268	4195	1124	8054	4985	1918	55
6	4925	1841	8759	5678	2598	9519	6441	3365	0290	7217	4144	1073	8003	4934	1867	54
7	4873	1790	8707	5626	2546	9468	6390	3314	0239	7165	4093	1022	7952	4883	1816	53
8	4822	1738	8656	5575	2495	9416	6339	3263	0188	7114	4042	0971	7901	4832	1764	52
9	4771	1687	8605	5523	2444	9365	6288	3212	0137	7063	3991	0919	7849	4781	1713	51
10	4719	1636	8553	5472	2392	9314	6236	3160	0085	7012	3939	0868	7798	4730	1662	50
11	4668	1584	8502	5421	2341	9262	6185	3109	0034	6961	3888	0817	7747	4678	1611	49
12	4616	1533	8451	5369	2290	9211	6134	3058	9983	6909	3837	0766	7696	4627	1560	48
13	4565	1481	8399	5318	2238	9160	6083	3006	9932	6858	3786	0715	7645	4576	1509	47
14	4514	1430	8348	5267	2187	9109	6031	2955	9880	6807	3735	0664	7594	4525	1458	46
15	4462	1379	8296	5215	2136	9057	5980	2904	9829	6756	3683	0612	7543	4474	1407	45
16	4411	1327	8245	5164	2084	9006	5929	2853	9778	6704	3632	0561	7491	4423	1355	44
17	4359	1276	8194	5113	2033	8955	5877	2801	9727	6653	3581	0510	7440	4372	1304	43
18	4308	1225	8142	5061	1982	8903	5826	2750	9675	6602	3530	0459	7389	4321	1253	42
19	4257	1173	8091	5010	1930	8852	5775	2699	9624	6551	3479	0408	7338	4269	1202	41
20	4205	1122	8040	4959	1879	8801	5724	2648	9573	6500	3427	0356	7287	4218	1151	40
21	4154	1070	7988	4907	1828	8749	5672	2596	9522	6448	3376	0305	7236	4167	1100	39
22	4102	1019	7937	4856	1776	8698	5621	2545	9471	6397	3325	0254	7184	4116	1049	38
23	4051	0968	7886	4805	1725	8647	5570	2494	9419	6346	3274	0203	7133	4065	0998	37
24	4000	0916	7834	4753	1674	8596	5518	2443	9368	6295	3223	0152	7082	4014	0947	36
25	3948	0865	7783	4702	1623	8544	5467	2391	9317	6244	3171	0101	7031	3963	0895	35
26	3897	0814	7731	4651	1571	8493	5416	2340	9266	6192	3120	0049	6980	3912	0844	34
27	3845	0762	7680	4599	1520	8442	5365	2289	9214	6141	3069	9998	6929	3860	0793	33
28	3794	0711	7629	4548	1469	8390	5313	2238	9163	6090	3018	9947	6878	3809	0742	32
29	3743	0659	7577	4497	1417	8339	5262	2186	9112	6039	2967	9896	6826	3758	0691	31
30	3691	0608	7526	4445	1366	8288	5211	2135	9061	5987	2916	9845	6775	3707	0640	30
31	3640	0557	7475	4394	1315	8236	5160	2084	9009	5936	2864	9794	6724	3656	0589	29
32	3588	0505	7423	4343	1263	8185	5108	2033	8958	5885	2813	9742	6673	3605	0538	28
33	3537	0454	7372	4291	1212	8134	5057	1981	8907	5834	2762	9691	6622	3554	0487	27
34	3486	0402	7321	4240	1161	8083	5006	1930	8856	5783	2711	9640	6571	3502	0436	26
35	3434	0351	7269	4189	1109	8031	4954	1879	8805	5731	2660	9589	6520	3451	0384	25
36	3383	0300	7218	4137	1058	7980	4903	1828	8753	5680	2608	9538	6468	3400	0333	24
37	3331	0248	7167	4086	1007	7929	4852	1776	8702	5629	2557	9487	6417	3349	0282	23
38	3280	0197	7115	4035	0955	7877	4801	1725	8651	5578	2506	9435	6366	3298	0231	22
39	3229	0146	7064	3983	0904	7826	4749	1674	8600	5527	2455	9384	6315	3247	0180	21
40	3177	0094	7013	3932	0853	7775	4698	1623	8548	5475	2404	9333	6264	3196	0129	20
41	3126	0043	6961	3881	0802	7724	4647	1571	8497	5424	2352	9282	6213	3145	0078	19
42	3074	9992	6910	3829	0750	7672	4596	1520	8446	5373	2301	9231	6162	3093	0027	18
43	3023	9940	6858	3778	0699	7621	4544	1469	8395	5322	2250	9180	6110	3042	9976	17
44	2972	9889	6807	3727	0648	7570	4493	1418	8344	5271	2199	9128	6059	2991	9924	16
45	2920	9837	6756	3675	0596	7518	4442	1366	8292	5219	2148	9077	6008	2940	9873	15
46	2869	9786	6704	3624	0545	7467	4391	1315	8241	5168	2097	9026	5957	2889	9822	14
47	2817	9735	6653	3573	0494	7416	4339	1264	8190	5117	2045	8975	5906	2838	9771	13
48	2766	9683	6602	3521	0442	7365	4288	1213	8139	5066	1994	8924	5855	2787	9720	12
49	2715	9632	6550	3470	0391	7313	4237	1161	8087	5015	1943	8873	5804	2736	9669	11
50	2663	9581	6499	3419	0340	7262	4185	1110	8036	4963	1892	8821	5752	2685	9618	10
51	2612	9529	6448	3367	0288	7211	4134	1059	7985	4912	1841	8770	5701	2633	9567	9
52	2561	9478	6396	3316	0237	7159	4083	1008	7934	4861	1789	8719	5650	2582	9516	8
53	2509	9426	6345	3265	0186	7108	4032	0956	7882	4810	1738	8668	5599	2531	9465	7
54	2458	9375	6294	3213	0135	7057	3980	0905	7831	4759	1687	8617	5548	2480	9413	6
55	2406	9324	6242	3162	0083	7006	3929	0854	7780	4707	1636	8566	5497	2429	9362	5
56	2355	9272	6191	3111	0032	6954	3878	0803	7729	4656	1585	8515	5446	2378	9311	4
57	2304	9221	6140	3059	9981	6903	3827	0752	7678	4605	1534	8463	5394	2327	9260	3
58	2252	9170	6088	3008	9929	6852	3775	0700	7626	4554	1482	8412	5343	2276	9209	2
59	2201	9118	6037	2957	9878	6800	3724	0649	7575	4503	1431	8361	5292	2224	9158	1
60	2149	9067	5986	2906	9827	6749	3673	0598	7524	4451	1380	8310	5241	2173	9107	0
	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

27 Deg. Sine

″	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9. 668	9. 668	9. 668	9. 668	9. 668	9. 669	9. 669	9. 669	9. 669	9. 670	9. 670	9. 670	9. 670	9. 671	9. 671
0	0265	2665	5064	7461	9856	2250	4642	7032	9420	1807	4192	6576	8958	1338	3716
1	0305	2705	5104	7501	9896	2290	4682	7072	9460	1847	4232	6615	8997	1377	3756
2	0345	2745	5144	7541	9936	2330	4721	7111	9500	1887	4272	6655	9037	1417	3795
3	0385	2785	5184	7581	9976	2369	4761	7151	9540	1926	4312	6695	9077	1457	3835
4	0425	2825	5224	7621	0016	2409	4801	7191	9580	1966	4351	6735	9116	1496	3875
5	0465	2865	5264	7661	0056	2449	4841	7231	9619	2006	4391	6774	9156	1536	3914
6	0505	2905	5304	7701	0096	2489	4881	7271	9659	2046	4431	6814	9196	1576	3954
7	0545	2945	5344	7741	0136	2529	4921	7311	9699	2086	4470	6854	9235	1615	3994
8	0585	2985	5384	7780	0175	2569	4960	7350	9739	2125	4510	6893	9275	1655	4033
9	0625	3025	5424	7820	0215	2609	5000	7390	9778	2165	4550	6933	9315	1695	4073
10	0665	3065	5464	7860	0255	2649	5040	7430	9818	2205	4590	6973	9354	1734	4112
11	0705	3105	5504	7900	0295	2688	5080	7470	9858	2245	4629	7013	9394	1774	4152
12	0745	3145	5544	7940	0335	2728	5120	7510	9898	2284	4669	7052	9434	1814	4192
13	0785	3185	5584	7980	0375	2768	5160	7550	9938	2324	4709	7092	9473	1853	4231
14	0825	3225	5624	8020	0415	2808	5200	7589	9977	2364	4749	7132	9513	1893	4271
15	0865	3265	5663	8060	0455	2848	5239	7629	0017	2404	4788	7171	9553	1932	4310
16	0905	3305	5703	8100	0495	2888	5279	7669	0057	2443	4828	7211	9592	1972	4350
17	0945	3345	5743	8140	0535	2928	5319	7709	0097	2483	4868	7251	9632	2012	4390
18	0985	3385	5783	8180	0574	2968	5359	7749	0137	2523	4908	7290	9672	2051	4429
19	1025	3425	5823	8220	0614	3007	5399	7788	0176	2563	4947	7330	9711	2091	4469
20	1065	3465	5863	8260	0654	3047	5439	7828	0216	2602	4987	7370	9751	2131	4509
21	1105	3505	5903	8300	0694	3087	5478	7868	0256	2642	5027	7410	9791	2170	4548
22	1145	3545	5943	8339	0734	3127	5518	7908	0296	2682	5066	7449	9830	2210	4588
23	1185	3585	5983	8379	0774	3167	5558	7948	0335	2722	5106	7489	9870	2250	4627
24	1225	3625	6023	8419	0814	3207	5598	7987	0375	2761	5146	7529	9910	2289	4667
25	1265	3665	6063	8459	0854	3247	5638	8027	0415	2801	5186	7568	9949	2329	4707
26	1305	3705	6103	8499	0894	3286	5678	8067	0455	2841	5225	7608	9989	2369	4746
27	1346	3745	6143	8539	0934	3326	5717	8107	0495	2881	5265	7648	0029	2408	4786
28	1386	3785	6183	8579	0973	3366	5757	8147	0534	2920	5305	7687	0068	2448	4826
29	1426	3825	6223	8619	1013	3406	5797	8187	0574	2960	5345	7727	0108	2487	4865
30	1466	3865	6263	8659	1053	3446	5837	8226	0614	3000	5384	7767	0148	2527	4905
31	1506	3905	6303	8699	1093	3486	5877	8266	0654	3040	5424	7807	0188	2567	4944
32	1546	3945	6343	8739	1133	3526	5917	8306	0694	3079	5464	7846	0227	2606	4984
33	1586	3985	6383	8779	1173	3566	5956	8346	0733	3119	5503	7886	0267	2646	5024
34	1626	4025	6423	8819	1213	3605	5996	8386	0773	3159	5543	7926	0307	2686	5063
35	1666	4065	6462	8858	1253	3645	6036	8425	0813	3199	5583	7965	0346	2725	5103
36	1706	4105	6502	8898	1293	3685	6076	8465	0853	3238	5623	8005	0386	2765	5142
37	1746	4145	6542	8938	1332	3725	6116	8505	0892	3278	5662	8045	0426	2805	5182
38	1786	4185	6582	8978	1372	3765	6156	8545	0932	3318	5702	8084	0465	2844	5222
39	1826	4225	6622	9018	1412	3805	6195	8585	0972	3358	5742	8124	0505	2884	5261
40	1866	4265	6662	9058	1452	3845	6235	8624	1012	3397	5781	8164	0544	2924	5301
41	1906	4305	6702	9098	1492	3884	6275	8664	1052	3437	5821	8204	0584	2963	5340
42	1946	4345	6742	9138	1532	3924	6315	8704	1091	3477	5861	8243	0624	3003	5380
43	1986	4385	6782	9178	1572	3964	6355	8744	1131	3517	5901	8283	0663	3042	5420
44	2026	4425	6822	9218	1612	4004	6395	8784	1171	3556	5940	8323	0703	3082	5459
45	2066	4465	6862	9258	1652	4044	6434	8823	1211	3596	5980	8362	0743	3122	5499
46	2106	4505	6902	9298	1691	4084	6474	8863	1250	3636	6020	8402	0782	3161	5538
47	2146	4545	6942	9337	1731	4124	6514	8903	1290	3676	6060	8442	0822	3201	5578
48	2186	4584	6982	9377	1771	4163	6554	8943	1330	3715	6099	8481	0862	3241	5618
49	2226	4624	7022	9417	1811	4203	6594	8983	1370	3755	6139	8521	0901	3280	5657
50	2266	4664	7062	9457	1851	4243	6634	9022	1409	3795	6179	8561	0941	3320	5697
51	2306	4704	7102	9497	1891	4283	6673	9062	1449	3835	6218	8600	0981	3359	5736
52	2346	4744	7142	9537	1931	4323	6713	9102	1489	3874	6258	8640	1020	3399	5776
53	2386	4784	7181	9577	1971	4363	6753	9142	1529	3914	6298	8680	1060	3439	5816
54	2426	4824	7221	9617	2011	4403	6793	9182	1569	3954	6338	8719	1100	3478	5855
55	2466	4864	7261	9657	2050	4442	6833	9221	1608	3994	6377	8759	1139	3518	5895
56	2505	4904	7301	9697	2090	4482	6873	9261	1648	4033	6417	8799	1179	3558	5935
57	2545	4944	7341	9737	2130	4522	6912	9301	1688	4073	6457	8839	1219	3597	5974
58	2585	4984	7381	9776	2170	4562	6952	9341	1728	4113	6496	8878	1258	3637	6014
59	2625	5024	7421	9816	2210	4602	6992	9381	1767	4153	6536	8918	1298	3677	6053
60	2665	5064	7461	9856	2250	4642	7032	9420	1807	4192	6576	8958	1338	3716	6093
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Sine Deg. 62

27 Deg. Co-Sine

″	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9. 946	9. 946	9. 946	9. 946	9. 946	9. 946	9. 946	9. 946	9. 946	9. 946	9 946	9 946	9. 946	9. 946	9. 946
0	9372	8707	8042	7376	6710	6043	5376	4708	4040	3371	2702	2032	1362	0692	0021
1	9361	8696	8031	7365	6699	6032	5365	4697	4029	3360	2691	2021	1351	0681	0010
2	9350	8685	8020	7354	6687	6021	5353	4686	4017	3349	2680	2010	1340	0669	9998
3	9339	8674	8009	7343	6676	6010	5342	4675	4006	3338	2668	1999	1329	0658	9987
4	9328	8663	7997	7332	6665	5998	5331	4663	3995	3326	2657	1988	1318	0647	9976
5	9317	8652	7986	7320	6654	5987	5320	4652	3984	3315	2646	1977	1306	0636	9965
6	9306	8641	7975	7309	6643	5976	5309	4641	3973	3304	2635	1965	1295	0625	9954
7	9294	8630	7964	7298	6632	5965	5298	4630	3962	3293	2624	1954	1284	0613	9942
8	9283	8618	7953	7287	6621	5954	5287	4619	3951	3282	2613	1943	1273	0602	9931
9	9272	8607	7942	7276	6610	5943	5276	4608	3939	3271	2602	1932	1262	0591	9920
10	9261	8596	7931	7265	6599	5932	5264	4597	3928	3260	2590	1921	1251	0580	9909
11	9250	8585	7920	7254	6587	5921	5253	4585	3917	3248	2579	1910	1239	0569	9898
12	9239	8574	7909	7243	6576	5909	5242	4574	3906	3237	2568	1898	1228	0558	9886
13	9228	8563	7898	7232	6565	5898	5231	4563	3895	3226	2557	1887	1217	0546	9875
14	9217	8552	7886	7221	6554	5887	5220	4552	3884	3215	2546	1876	1206	0535	9864
15	9206	8541	7875	7209	6543	5876	5209	4541	3873	3204	2535	1865	1195	0524	9853
16	9195	8530	7864	7198	6532	5865	5198	4530	3861	3193	2523	1854	1184	0513	9842
17	9184	8519	7853	7187	6521	5854	5186	4519	3850	3182	2512	1843	1172	0502	9831
18	9173	8508	7842	7176	6510	5843	5175	4508	3839	3170	2501	1831	1161	0491	9819
19	9162	8496	7831	7165	6499	5832	5164	4496	3828	3159	2490	1820	1150	0479	9808
20	9150	8485	7820	7154	6487	5821	5153	4485	3817	3148	2479	1809	1139	0468	9797
21	9139	8474	7809	7143	6476	5809	5142	4474	3806	3137	2468	1798	1128	0457	9786
22	9128	8463	7798	7132	6465	5798	5131	4463	3795	3126	2456	1787	1116	0446	9775
23	9117	8452	7787	7121	6454	5787	5120	4452	3783	3115	2445	1776	1105	0435	9763
24	9106	8441	7776	7109	6443	5776	5109	4441	3772	3103	2434	1764	1094	0423	9752
25	9095	8430	7764	7098	6432	5765	5097	4430	3761	3092	2423	1753	1083	0412	9741
26	9084	8419	7753	7087	6421	5754	5086	4418	3750	3081	2412	1742	1072	0401	9730
27	9073	8408	7742	7076	6410	5743	5075	4407	3739	3070	2401	1731	1061	0390	9719
28	9062	8397	7731	7065	6399	5732	5064	4396	3728	3059	2390	1720	1049	0379	9707
29	9051	8386	7720	7054	6387	5720	5053	4385	3717	3048	2378	1709	1038	0367	9696
30	9040	8375	7709	7043	6376	5709	5042	4374	3705	3037	2367	1697	1027	0356	9685
31	9029	8363	7698	7032	6365	5698	5031	4363	3694	3025	2356	1686	1016	0345	9674
32	9017	8352	7687	7021	6354	5687	5020	4352	3683	3014	2345	1675	1005	0334	9663
33	9006	8341	7676	7010	6343	5676	5008	4340	3672	3003	2334	1664	0994	0323	9651
34	8995	8330	7665	6998	6332	5665	4997	4329	3661	2992	2323	1653	0982	0312	9640
35	8984	8319	7653	6987	6321	5654	4986	4318	3650	2981	2311	1642	0971	0300	9629
36	8973	8308	7642	6976	6310	5643	4975	4307	3639	2970	2300	1630	0960	0289	9618
37	8962	8297	7631	6965	6299	5631	4964	4296	3627	2959	2289	1619	0949	0278	9607
38	8951	8286	7620	6954	6287	5620	4953	4285	3616	2947	2278	1608	0938	0267	9596
39	8940	8275	7609	6943	6276	5609	4942	4274	3605	2936	2267	1597	0926	0256	9584
40	8929	8264	7598	6932	6265	5598	4931	4263	3594	2925	2256	1586	0915	0244	9573
41	8918	8253	7587	6921	6254	5587	4919	4251	3583	2914	2244	1575	0904	0233	9562
42	8907	8241	7576	6910	6243	5576	4908	4240	3572	2903	2233	1563	0893	0222	9551
43	8896	8230	7565	6898	6232	5565	4897	4229	3561	2892	2222	1552	0882	0211	9540
44	8884	8219	7554	6887	6221	5554	4886	4218	3549	2880	2211	1541	0871	0200	9528
45	8873	8208	7542	6876	6210	5542	4875	4207	3538	2869	2200	1530	0859	0189	9517
46	8862	8197	7531	6865	6198	5531	4864	4196	3527	2858	2189	1519	0848	0177	9506
47	8851	8186	7520	6854	6187	5520	4853	4185	3516	2847	2177	1508	0837	0166	9495
48	8840	8175	7509	6843	6176	5509	4841	4173	3505	2836	2166	1496	0826	0155	9484
49	8829	8164	7498	6832	6165	5498	4830	4162	3494	2825	2155	1485	0815	0144	9472
50	8818	8153	7487	6821	6154	5487	4819	4151	3483	2814	2144	1474	0804	0133	9461
51	8807	8142	7476	6810	6143	5476	4808	4140	3471	2802	2133	1463	0792	0121	9450
52	8796	8131	7465	6799	6132	5465	4797	4129	3460	2791	2122	1452	0781	0110	9439
53	8785	8119	7454	6787	6121	5453	4786	4118	3449	2780	2111	1440	0770	0099	9428
54	8774	8108	7443	6776	6110	5442	4775	4107	3438	2769	2099	1429	0759	0088	9416
55	8763	8097	7431	6765	6098	5431	4764	4095	3427	2758	2088	1418	0748	0077	9405
56	8751	8086	7420	6754	6087	5420	4752	4084	3416	2747	2077	1407	0736	0065	9394
57	8740	8075	7409	6743	6076	5409	4741	4073	3405	2735	2066	1396	0725	0054	9383
58	8729	8064	7398	6732	6065	5398	4730	4062	3393	2724	2055	1385	0714	0043	9372
59	8718	8053	7387	6721	6054	5387	4719	4051	3382	2713	2044	1373	0703	0032	9360
60	8707	8042	7376	6710	6043	5376	4708	4040	3371	2702	2032	1362	0692	0021	9349
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Sine Deg. 62

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	9. 721	9. 721	9. 721	9. 722	9. 722	9. 722	9. 722	9. 723	9. 723	9. 723	9. 724	9. 724	9. 724	9. 725	9. 725
0	0893	3958	7022	0085	3147	6207	9266	2324	5381	8436	1490	4543	7595	0646	3695
1	0944	4009	7073	0136	3198	6258	9317	2375	5432	8487	1541	4594	7646	0697	3746
2	0995	4060	7124	0187	3249	6309	9368	2426	5482	8538	1592	4645	7697	0748	3797
3	1046	4112	7175	0238	3300	6360	9419	2477	5533	8589	1643	4696	7748	0798	3848
4	1098	4163	7227	0289	3351	6411	9470	2528	5584	8640	1694	4747	7799	0849	3899
5	1149	4214	7278	0340	3402	6462	9521	2579	5635	8691	1745	4798	7850	0900	3949
6	1200	4265	7329	0391	3453	6513	9572	2630	5686	8742	1796	4849	7900	0951	4000
7	1251	4316	7380	0442	3504	6564	9623	2681	5737	8792	1847	4900	7951	1002	4051
8	1302	4367	7431	0493	3555	6615	9674	2732	5788	8843	1898	4950	8002	1053	4102
9	1353	4418	7482	0544	3606	6666	9725	2783	5839	8894	1948	5001	8053	1103	4153
10	1404	4469	7533	0595	3657	6717	9776	2833	5890	8945	1999	5052	8104	1154	4204
11	1455	4520	7584	0646	3708	6768	9827	2884	5941	8996	2050	5103	8155	1205	4254
12	1506	4571	7635	0697	3759	6819	9878	2935	5992	9047	2101	5154	8206	1256	4305
13	1557	4622	7686	0749	3810	6870	9929	2986	6043	9098	2152	5205	8256	1307	4356
14	1608	4673	7737	0800	3861	6921	9980	3037	6094	9149	2203	5256	8307	1358	4407
15	1660	4724	7788	0851	3912	6972	0031	3088	6145	9200	2254	5306	8358	1408	4458
16	1711	4776	7839	0902	3963	7023	0082	3139	6196	9251	2305	5357	8409	1459	4508
17	1762	4827	7890	0953	4014	7074	0133	3190	6246	9302	2356	5408	8460	1510	4559
18	1813	4878	7941	1004	4065	7125	0184	3241	6297	9353	2406	5459	8511	1561	4610
19	1864	4929	7992	1055	4116	7176	0235	3292	6348	9403	2457	5510	8561	1612	4661
20	1915	4980	8043	1106	4167	7227	0285	3343	6399	9454	2508	5561	8612	1663	4712
21	1966	5031	8094	1157	4218	7278	0336	3394	6450	9505	2559	5612	8663	1713	4762
22	2017	5082	8145	1208	4269	7329	0387	3445	6501	9556	2610	5663	8714	1764	4813
23	2068	5133	8197	1259	4320	7380	0438	3496	6552	9607	2661	5713	8765	1815	4864
24	2119	5184	8248	1310	4371	7431	0489	3547	6603	9658	2712	5764	8816	1866	4915
25	2170	5235	8299	1361	4422	7482	0540	3598	6654	9709	2763	5815	8867	1917	4966
26	2222	5286	8350	1412	4473	7533	0591	3649	6705	9760	2813	5866	8917	1968	5016
27	2273	5337	8401	1463	4524	7584	0642	3700	6756	9811	2864	5917	8968	2018	5067
28	2324	5388	8452	1514	4575	7635	0693	3751	6807	9862	2915	5968	9019	2069	5118
29	2375	5439	8503	1565	4626	7686	0744	3801	6858	9912	2966	6019	9070	2120	5169
30	2426	5490	8554	1616	4677	7737	0795	3852	6909	9963	3017	6069	9121	2171	5220
31	2477	5542	8605	1667	4728	7788	0846	3903	6959	0014	3068	6120	9172	2222	5270
32	2528	5593	8656	1718	4779	7839	0897	3954	7010	0065	3119	6171	9222	2272	5321
33	2579	5644	8707	1769	4830	7890	0948	4005	7061	0116	3170	6222	9273	2323	5372
34	2630	5695	8758	1820	4881	7941	0999	4056	7112	0167	3221	6273	9324	2374	5423
35	2681	5746	8809	1871	4932	7992	1050	4107	7163	0218	3271	6324	9375	2425	5474
36	2732	5797	8860	1922	4983	8043	1101	4158	7214	0269	3322	6375	9426	2476	5524
37	2783	5848	8911	1973	5034	8094	1152	4209	7265	0320	3373	6426	9477	2527	5575
38	2835	5899	8962	2024	5085	8145	1203	4260	7316	0371	3424	6476	9527	2577	5626
39	2886	5950	9013	2075	5136	8195	1254	4311	7367	0422	3475	6527	9578	2628	5677
40	2937	6001	9064	2126	5187	8246	1305	4362	7418	0472	3526	6578	9629	2679	5728
41	2988	6052	9115	2177	5238	8297	1356	4413	7469	0523	3577	6629	9680	2730	5778
42	3039	6103	9166	2228	5289	8348	1407	4464	7520	0574	3628	6680	9731	2781	5829
43	3090	6154	9217	2279	5340	8399	1458	4515	7571	0625	3679	6731	9782	2831	5880
44	3141	6205	9268	2330	5391	8450	1509	4566	7621	0676	3729	6782	9833	2882	5931
45	3192	6256	9319	2381	5442	8501	1560	4617	7672	0727	3780	6832	9883	2933	5982
46	3243	6307	9371	2432	5493	8552	1611	4668	7723	0778	3831	6883	9934	2984	6032
47	3294	6359	9422	2483	5544	8603	1661	4718	7774	0829	3882	6934	9985	3035	6083
48	3345	6410	9473	2534	5595	8654	1712	4769	7825	0880	3933	6985	0036	3086	6134
49	3396	6461	9524	2585	5646	8705	1763	4820	7876	0931	3984	7036	0087	3136	6185
50	3448	6512	9575	2636	5697	8756	1814	4871	7927	0981	4035	7087	0138	3187	6236
51	3499	6563	9626	2687	5748	8807	1865	4922	7978	1032	4086	7138	0188	3238	6286
52	3550	6614	9677	2738	5799	8858	1916	4973	8029	1083	4136	7188	0239	3289	6337
53	3601	6665	9728	2789	5850	8909	1967	5024	8080	1134	4187	7239	0290	3340	6388
54	3652	6716	9779	2841	5901	8960	2018	5075	8131	1185	4238	7290	0341	3390	6439
55	3703	6767	9830	2892	5952	9011	2069	5126	8182	1236	4289	7341	0392	3441	6490
56	3754	6818	9881	2943	6003	9062	2120	5177	8232	1287	4340	7392	0443	3492	6540
57	3805	6869	9932	2994	6054	9113	2171	5228	8283	1338	4391	7443	0493	3543	6591
58	3856	6920	9983	3045	6105	9164	2222	5279	8334	1389	4442	7494	0544	3594	6642
59	3907	6971	0034	3096	6156	9215	2273	5330	8385	1439	4493	7544	0595	3645	6693
60	3958	7022	0085	3147	6207	9266	2324	5381	8436	1490	4543	7595	0646	3695	6744
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
	10. 278	10. 278	10. 278	10. 277	10. 277	10. 277	10. 277	10. 276	10. 276	10. 276	10. 275	10. 275	10. 275	10. 274	10. 274	″
	9107	6042	2978	9915	6853	3793	0734	7676	4619	1564	8510	5457	2405	9354	6305	60
	9056	5991	2927	9864	6802	3742	0683	7625	4568	1513	8459	5406	2354	9303	6254	59
	9005	5940	2876	9813	6751	3691	0632	7574	4518	1462	8408	5355	2303	9252	6203	58
	8954	5888	2825	9762	6700	3640	0581	7523	4467	1411	8357	5304	2252	9202	6152	57
	8902	5837	2773	9711	6649	3589	0530	7472	4416	1360	8306	5253	2201	9151	6101	56
	8851	5786	2722	9660	6598	3538	0479	7421	4365	1309	8255	5202	2150	9100	6051	55
	8800	5735	2671	9609	6547	3487	0428	7370	4314	1258	8204	5151	2100	9049	6000	54
	8749	5684	2620	9558	6496	3436	0377	7319	4263	1208	8153	5100	2049	8998	5949	53
	8698	5633	2569	9507	6445	3385	0326	7268	4212	1157	8102	5050	1998	8947	5898	52
	8647	5582	2518	9456	6394	3334	0275	7217	4161	1106	8052	4999	1947	8897	5847	51
	8596	5531	2467	9405	6343	3283	0224	7167	4110	1055	8001	4948	1896	8846	5796	50
	8545	5480	2416	9354	6292	3232	0173	7116	4059	1004	7950	4897	1845	8795	5746	49
	8494	5429	2365	9303	6241	3181	0122	7065	4008	0953	7899	4846	1794	8744	5695	48
	8443	5378	2314	9251	6190	3130	0071	7014	3957	0902	7848	4795	1744	8693	5644	47
	8392	5327	2263	9200	6139	3079	0020	6963	3906	0851	7797	4744	1693	8642	5593	46
	8340	5276	2212	9149	6088	3028	9969	6912	3855	0800	7746	4694	1642	8592	5542	45
	8289	5224	2161	9098	6037	2977	9918	6861	3804	0749	7695	4643	1591	8541	5492	44
	8238	5173	2110	9047	5986	2926	9867	6810	3754	0698	7644	4592	1540	8490	5441	43
	8187	5122	2059	8996	5935	2875	9816	6759	3703	0647	7594	4541	1489	8439	5390	42
	8136	5071	2008	8945	5884	2824	9765	6708	3652	0597	7543	4490	1439	8388	5339	41
	8085	5020	1957	8894	5833	2773	9715	6657	3601	0546	7492	4439	1388	8337	5288	40
	8034	4969	1906	8843	5782	2722	9664	6606	3550	0495	7441	4388	1337	8287	5238	39
	7983	4918	1855	8792	5731	2671	9613	6555	3499	0444	7390	4337	1286	8236	5187	38
	7932	4867	1803	8741	5680	2620	9562	6504	3448	0393	7339	4287	1235	8185	5136	37
	7881	4816	1752	8690	5629	2569	9511	6453	3397	0342	7288	4236	1184	8134	5085	36
	7830	4765	1701	8639	5578	2518	9460	6402	3346	0291	7237	4185	1133	8083	5034	35
	7778	4714	1650	8588	5527	2467	9409	6351	3295	0240	7187	4134	1083	8032	4984	34
	7727	4663	1599	8537	5476	2416	9358	6300	3244	0189	7136	4083	1032	7982	4933	33
	7676	4612	1548	8486	5425	2365	9307	6249	3193	0138	7085	4032	0981	7931	4882	32
	7625	4561	1497	8435	5374	2314	9256	6199	3142	0088	7034	3981	0930	7880	4831	31
	7574	4510	1446	8384	5323	2263	9205	6148	3091	0037	6983	3931	0879	7829	4780	30
	7523	4458	1395	8333	5272	2212	9154	6097	3041	9986	6932	3880	0828	7778	4730	29
	7472	4407	1344	8282	5221	2161	9103	6046	2990	9935	6881	3829	0778	7728	4679	28
	7421	4356	1293	8231	5170	2110	9052	5995	2939	9884	6830	3778	0727	7677	4628	27
	7370	4305	1242	8180	5119	2059	9001	5944	2888	9833	6779	3727	0676	7626	4577	26
	7319	4254	1191	8129	5068	2008	8950	5893	2837	9782	6729	3676	0625	7575	4526	25
	7268	4203	1140	8078	5017	1957	8899	5842	2786	9731	6678	3625	0574	7524	4476	24
	7217	4152	1089	8027	4966	1906	8848	5791	2735	9680	6627	3574	0523	7473	4425	23
	7165	4101	1038	7976	4915	1855	8797	5740	2684	9629	6576	3524	0473	7423	4374	22
	7114	4050	0987	7925	4864	1805	8746	5689	2633	9578	6525	3473	0422	7372	4323	21
	7063	3999	0936	7874	4813	1754	8695	5638	2582	9528	6474	3422	0371	7321	4272	20
	7012	3948	0885	7823	4762	1703	8644	5587	2531	9477	6423	3371	0320	7270	4222	19
	6961	3897	0834	7772	4711	1652	8593	5536	2480	9426	6372	3320	0269	7219	4171	18
	6910	3846	0783	7721	4660	1601	8542	5485	2429	9375	6321	3269	0218	7169	4120	17
	6859	3795	0732	7670	4609	1550	8491	5434	2379	9324	6271	3218	0167	7118	4069	16
	6808	3744	0681	7619	4558	1499	8440	5383	2328	9273	6220	3168	0117	7067	4018	15
	6757	3693	0629	7568	4507	1448	8389	5332	2277	9222	6169	3117	0066	7016	3968	14
	6706	3641	0578	7517	4456	1397	8339	5282	2226	9171	6118	3066	0015	6965	3917	13
	6655	3590	0527	7466	4405	1346	8288	5231	2175	9120	6067	3015	9964	6914	3866	12
	6604	3539	0476	7415	4354	1295	8237	5180	2124	9069	6016	2964	9913	6864	3815	11
	6552	3488	0425	7364	4303	1244	8186	5129	2073	9019	5965	2913	9862	6813	3764	10
	6501	3437	0374	7313	4252	1193	8135	5078	2022	8968	5914	2862	9812	6762	3714	9
	6450	3386	0323	7262	4201	1142	8084	5027	1971	8917	5864	2812	9761	6711	3663	8
	6399	3335	0272	7211	4150	1091	8033	4976	1920	8866	5813	2761	9710	6660	3612	7
	6348	3284	0221	7159	4099	1040	7982	4925	1869	8815	5762	2710	9659	6610	3561	6
	6297	3233	0170	7108	4048	0989	7931	4874	1818	8764	5711	2659	9608	6559	3510	5
	6246	3182	0119	7057	3997	0938	7880	4823	1768	8713	5660	2608	9557	6508	3460	4
	6195	3131	0068	7006	3946	0887	7829	4772	1717	8662	5609	2557	9507	6457	3409	3
	6144	3080	0017	6955	3895	0836	7778	4721	1666	8611	5558	2506	9456	6406	3358	2
	6093	3029	9966	6904	3844	0785	7727	4670	1615	8561	5507	2456	9405	6355	3307	1
	6042	2978	9915	6853	3793	0734	7676	4619	1564	8510	5457	2405	9354	6305	3256	0
	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

′	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.671	9.671	9.672	9.672	9.672	9.672	9.673	9.673	9.673	9.673	9.673	9.674	9.674	9.674	9.674
0	6093	8468	0841	3213	5583	7952	0319	2684	5047	7409	9769	2128	4485	6840	9194
1	6133	8508	0881	3253	5623	7991	0358	2723	5087	7448	9809	2167	4524	6879	9233
2	6172	8547	0921	3292	5662	8031	0397	2763	5126	7488	9848	2206	4563	6918	9272
3	6212	8587	0960	3332	5702	8070	0437	2802	5165	7527	9887	2246	4603	6958	9311
4	6251	8626	1000	3371	5741	8110	0476	2841	5205	7566	9927	2285	4642	6997	9350
5	6291	8666	1039	3411	5781	8149	0516	2881	5244	7606	9966	2324	4681	7036	9390
6	6330	8705	1079	3450	5820	8189	0555	2920	5284	7645	0005	2364	4720	7075	9429
7	6370	8745	1118	3490	5860	8228	0595	2960	5323	7685	0045	2403	4760	7115	9468
8	6410	8785	1158	3529	5899	8267	0634	2999	5362	7724	0084	2442	4799	7154	9507
9	6449	8824	1197	3569	5939	8307	0673	3038	5402	7763	0123	2481	4838	7193	9546
10	6489	8864	1237	3608	5978	8346	0713	3078	5441	7803	0162	2521	4877	7232	9586
11	6528	8903	1276	3648	6018	8386	0752	3117	5480	7842	0202	2560	4917	7272	9625
12	6568	8943	1316	3687	6057	8425	0792	3157	5520	7881	0241	2599	4956	7311	9664
13	6608	8982	1355	3727	6097	8465	0831	3196	5559	7921	0280	2639	4995	7350	9703
14	6647	9022	1395	3766	6136	8504	0871	3235	5598	7960	0320	2678	5034	7389	9742
15	6687	9062	1435	3806	6176	8544	0910	3275	5638	7999	0359	2717	5074	7429	9782
16	6726	9101	1474	3845	6215	8583	0949	3314	5677	8039	0398	2756	5113	7468	9821
17	6766	9141	1514	3885	6255	8623	0989	3354	5717	8078	0438	2796	5152	7507	9860
18	6806	9180	1553	3924	6294	8662	1028	3393	5756	8117	0477	2835	5191	7546	9899
19	6845	9220	1593	3964	6334	8701	1068	3432	5795	8157	0516	2874	5231	7585	9939
20	6885	9259	1632	4003	6373	8741	1107	3472	5835	8196	0556	2914	5270	7625	9978
21	6924	9299	1672	4043	6413	8780	1147	3511	5874	8235	0595	2953	5309	7664	0017
22	6964	9338	1711	4082	6452	8820	1186	3551	5913	8275	0634	2992	5348	7703	0056
23	7004	9378	1751	4122	6491	8859	1225	3590	5953	8314	0674	3031	5388	7742	0095
24	7043	9418	1790	4161	6531	8899	1265	3629	5992	8353	0713	3071	5427	7782	0135
25	7083	9457	1830	4201	6570	8938	1304	3669	6032	8393	0752	3110	5466	7821	0174
26	7122	9497	1869	4240	6610	8978	1344	3708	6071	8432	0792	3149	5506	7860	0213
27	7162	9536	1909	4280	6649	9017	1383	3748	6110	8471	0831	3189	5545	7899	0252
28	7202	9576	1949	4320	6689	9057	1423	3787	6150	8511	0870	3228	5584	7938	0291
29	7241	9615	1988	4359	6728	9096	1462	3826	6189	8550	0909	3267	5623	7978	0331
30	7281	9655	2028	4399	6768	9135	1501	3866	6228	8589	0949	3306	5663	8017	0370
31	7320	9695	2067	4438	6807	9175	1541	3905	6268	8629	0988	3346	5702	8056	0409
32	7360	9734	2107	4478	6847	9214	1580	3945	6307	8668	1027	3385	5741	8095	0448
33	7399	9774	2146	4517	6886	9254	1620	3984	6346	8707	1067	3424	5780	8135	0487
34	7439	9813	2186	4557	6926	9293	1659	4023	6386	8747	1106	3464	5820	8174	0527
35	7479	9853	2225	4596	6965	9333	1698	4063	6425	8786	1145	3503	5859	8213	0566
36	7518	9892	2265	4636	7005	9372	1738	4102	6465	8825	1185	3542	5898	8252	0605
37	7558	9932	2304	4675	7044	9412	1777	4141	6504	8865	1224	3581	5937	8292	0644
38	7597	9971	2344	4715	7084	9451	1817	4181	6543	8904	1263	3621	5977	8331	0683
39	7637	0011	2383	4754	7123	9490	1856	4220	6583	8943	1303	3660	6016	8370	0723
40	7677	0051	2423	4794	7163	9530	1896	4260	6622	8983	1342	3699	6055	8409	0762
41	7716	0090	2462	4833	7202	9569	1935	4299	6661	9022	1381	3739	6094	8448	0801
42	7756	0130	2502	4873	7241	9609	1974	4338	6701	9061	1420	3778	6134	8488	0840
43	7795	0169	2541	4912	7281	9648	2014	4378	6740	9101	1460	3817	6173	8527	0879
44	7835	0209	2581	4951	7320	9688	2053	4417	6779	9140	1499	3856	6212	8566	0918
45	7874	0248	2620	4991	7360	9727	2093	4457	6819	9179	1538	3896	6251	8605	0958
46	7914	0288	2660	5030	7399	9767	2132	4496	6858	9219	1578	3935	6291	8645	0997
47	7954	0327	2699	5070	7439	9806	2171	4535	6898	9258	1617	3974	6330	8684	1036
48	7993	0367	2739	5109	7478	9845	2211	4575	6937	9297	1656	4013	6369	8723	1075
49	8033	0406	2779	5149	7518	9885	2250	4614	6976	9337	1696	4053	6408	8762	1114
50	8072	0446	2818	5188	7557	9924	2290	4653	7016	9376	1735	4092	6448	8801	1154
51	8112	0486	2858	5228	7597	9964	2329	4693	7055	9415	1774	4131	6487	8841	1193
52	8151	0525	2897	5267	7636	0003	2369	4732	7094	9455	1813	4171	6526	8880	1232
53	8191	0565	2937	5307	7676	0043	2408	4772	7134	9494	1853	4210	6565	8919	1271
54	8231	0604	2976	5346	7715	0082	2447	4811	7173	9533	1892	4249	6604	8958	1310
55	8270	0644	3016	5386	7755	0121	2487	4850	7212	9573	1931	4288	6644	8997	1350
56	8310	0683	3055	5425	7794	0161	2526	4890	7252	9612	1971	4328	6683	9037	1389
57	8349	0723	3095	5465	7833	0200	2566	4929	7291	9651	2010	4367	6722	9076	1428
58	8389	0762	3134	5504	7873	0240	2605	4969	7330	9691	2049	4406	6761	9115	1467
59	8428	0802	3174	5544	7912	0279	2644	5008	7370	9730	2089	4445	6801	9154	1506
60	8468	0841	3213	5583	7952	0319	2684	5047	7409	9769	2128	4485	6840	9194	1546
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

′	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.945	9.945	9.945	9.945	9.945	9.945	9.945	9.945	9.945	9.945	9.945	9.945	9.945	9.945	9.944
0	9349	8677	8005	7332	6659	5985	5310	4636	3960	3285	2609	1932	1255	0577	9899
1	9338	8666	7994	7321	6647	5974	5299	4624	3949	3273	2597	1921	1243	0566	9888
2	9327	8655	7982	7310	6636	5962	5288	4613	3938	3262	2586	1909	1232	0554	9876
3	9316	8644	7971	7298	6625	5951	5277	4602	3927	3251	2575	1898	1221	0543	9865
4	9304	8633	7960	7287	6614	5940	5266	4591	3915	3240	2563	1887	1210	0532	9854
5	9293	8621	7949	7276	6603	5929	5254	4579	3904	3228	2552	1875	1198	0521	9842
6	9282	8610	7938	7265	6591	5917	5243	4568	3893	3217	2541	1864	1187	0509	9831
7	9271	8599	7926	7253	6580	5906	5232	4557	3882	3206	2530	1853	1176	0498	9820
8	9260	8588	7915	7242	6569	5895	5221	4546	3870	3195	2518	1842	1164	0487	9809
9	9249	8576	7904	7231	6558	5884	5209	4534	3859	3183	2507	1830	1153	0475	9797
10	9237	8565	7893	7220	6546	5872	5198	4523	3848	3172	2496	1819	1142	0464	9786
11	9226	8554	7882	7209	6535	5861	5187	4512	3837	3161	2485	1808	1131	0453	9775
12	9215	8543	7870	7197	6524	5850	5176	4501	3825	3150	2473	1796	1119	0442	9763
13	9204	8532	7859	7186	6513	5839	5164	4489	3814	3138	2462	1785	1108	0430	9752
14	9193	8520	7848	7175	6501	5828	5153	4478	3803	3127	2451	1774	1097	0419	9741
15	9181	8509	7837	7164	6490	5816	5142	4467	3792	3116	2439	1763	1085	0408	9729
16	9170	8498	7826	7152	6479	5805	5131	4456	3780	3104	2428	1751	1074	0396	9718
17	9159	8487	7814	7141	6468	5794	5119	4444	3769	3093	2417	1740	1063	0385	9707
18	9148	8476	7803	7130	6457	5783	5108	4433	3758	3082	2406	1729	1051	0374	9695
19	9137	8464	7792	7119	6445	5771	5097	4422	3747	3071	2394	1717	1040	0362	9684
20	9125	8453	7781	7108	6434	5760	5086	4411	3735	3059	2383	1706	1029	0351	9673
21	9114	8442	7769	7096	6423	5749	5074	4399	3724	3048	2372	1695	1018	0340	9662
22	9103	8431	7758	7085	6412	5738	5063	4388	3713	3037	2360	1684	1006	0329	9650
23	9092	8420	7747	7074	6400	5726	5052	4377	3701	3026	2349	1672	0995	0317	9639
24	9081	8408	7736	7063	6389	5715	5041	4366	3690	3014	2338	1661	0984	0306	9628
25	9069	8397	7725	7051	6378	5704	5029	4354	3679	3003	2327	1650	0972	0295	9616
26	9058	8386	7713	7040	6367	5693	5018	4343	3668	2992	2315	1638	0961	0283	9605
27	9047	8375	7702	7029	6355	5681	5007	4332	3656	2981	2304	1627	0950	0272	9594
28	9036	8364	7691	7018	6344	5670	4996	4321	3645	2969	2293	1616	0939	0261	9582
29	9025	8352	7680	7007	6333	5659	4984	4309	3634	2958	2282	1605	0927	0249	9571
30	9013	8341	7669	6995	6322	5648	4973	4298	3623	2947	2270	1593	0916	0238	9560
31	9002	8330	7657	6984	6311	5636	4962	4287	3611	2935	2259	1582	0905	0227	9548
32	8991	8319	7646	6973	6299	5625	4951	4276	3600	2924	2248	1571	0893	0216	9537
33	8980	8308	7635	6962	6288	5614	4939	4264	3589	2913	2236	1559	0882	0204	9526
34	8969	8296	7624	6950	6277	5603	4928	4253	3578	2902	2225	1548	0871	0193	9515
35	8957	8285	7612	6939	6266	5592	4917	4242	3566	2890	2214	1537	0859	0182	9503
36	8946	8274	7601	6928	6254	5580	4906	4231	3555	2879	2203	1526	0848	0170	9492
37	8935	8263	7590	6917	6243	5569	4894	4219	3544	2868	2191	1514	0837	0159	9481
38	8924	8252	7579	6906	6232	5558	4883	4208	3533	2857	2180	1503	0826	0148	9469
39	8913	8240	7568	6894	6221	5547	4872	4197	3521	2845	2169	1492	0814	0136	9458
40	8901	8229	7556	6883	6209	5535	4861	4186	3510	2834	2157	1480	0803	0125	9447
41	8890	8218	7545	6872	6198	5524	4849	4174	3499	2823	2146	1469	0792	0114	9435
42	8879	8207	7534	6861	6187	5513	4838	4163	3487	2811	2135	1458	0780	0102	9424
43	8868	8195	7523	6849	6176	5502	4827	4152	3476	2800	2124	1447	0769	0091	9413
44	8857	8184	7511	6838	6165	5490	4816	4141	3465	2789	2112	1435	0758	0080	9401
45	8845	8173	7500	6827	6153	5479	4804	4129	3454	2778	2101	1424	0747	0069	9390
46	8834	8162	7489	6816	6142	5468	4793	4118	3442	2766	2090	1413	0735	0057	9379
47	8823	8151	7478	6805	6131	5457	4782	4107	3431	2755	2079	1401	0724	0046	9367
48	8812	8139	7467	6793	6120	5445	4771	4096	3420	2744	2067	1390	0713	0035	9356
49	8801	8128	7455	6782	6108	5434	4759	4084	3409	2733	2056	1379	0701	0023	9345
50	8789	8117	7444	6771	6097	5423	4748	4073	3397	2721	2045	1368	0690	0012	9334
51	8778	8106	7433	6760	6086	5412	4737	4062	3386	2710	2033	1356	0679	0001	9322
52	8767	8095	7422	6748	6075	5400	4726	4051	3375	2699	2022	1345	0667	9989	9311
53	8756	8083	7411	6737	6063	5389	4714	4039	3364	2687	2011	1334	0656	9978	9300
54	8745	8072	7399	6726	6052	5378	4703	4028	3352	2676	2000	1322	0645	9967	9288
55	8733	8061	7388	6715	6041	5367	4692	4017	3341	2665	1988	1311	0634	9956	9277
56	8722	8050	7377	6704	6030	5355	4681	4005	3330	2654	1977	1300	0622	9944	9266
57	8711	8039	7366	6692	6019	5344	4669	3994	3319	2642	1966	1289	0611	9933	9254
58	8700	8027	7354	6681	6007	5333	4658	3983	3307	2631	1954	1277	0600	9922	9243
59	8689	8016	7343	6670	5996	5322	4647	3972	3296	2620	1943	1266	0588	9910	9232
60	8677	8005	7332	6659	5985	5310	4636	3960	3285	2609	1932	1255	0577	9899	9220
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9. 725	9. 725	9. 726	9. 726	9. 726	9. 727	9. 727	9. 727	9. 728	9. 728	9. 728	9. 729	9. 729	9. 729	9. 729
0	6744	9791	2837	5881	8925	1967	5008	8048	1087	4124	7161	0196	3230	6263	9295
1	6794	9841	2887	5932	8975	2018	5059	8099	1137	4175	7211	0247	3281	6313	9345
2	6845	9892	2938	5983	9026	2068	5109	8149	1188	4226	7262	0297	3331	6364	9396
3	6896	9943	2989	6033	9077	2119	5160	8200	1239	4276	7313	0348	3382	6414	9446
4	6947	9994	3040	6084	9128	2170	5211	8251	1289	4327	7363	0398	3432	6465	9497
5	6998	0045	3090	6135	9178	2220	5262	8301	1340	4377	7414	0449	3483	6516	9547
6	7048	0095	3141	6186	9229	2271	5312	8352	1391	4428	7464	0499	3533	6566	9598
7	7099	0146	3192	6236	9280	2322	5363	8403	1441	4479	7515	0550	3584	6617	9648
8	7150	0197	3243	6287	9330	2373	5414	8453	1492	4529	7566	0601	3634	6667	9699
9	7201	0248	3293	6338	9381	2423	5464	8504	1543	4580	7616	0651	3685	6718	9749
10	7252	0298	3344	6389	9432	2474	5515	8555	1593	4631	7667	0702	3736	6768	9800
11	7302	0349	3395	6439	9483	2525	5566	8605	1644	4681	7717	0752	3786	6819	9850
12	7353	0400	3446	6490	9533	2575	5616	8656	1694	4732	7768	0803	3837	6869	9901
13	7404	0451	3496	6541	9584	2626	5667	8707	1745	4782	7818	0853	3887	6920	9951
14	7455	0502	3547	6591	9635	2677	5718	8757	1796	4833	7869	0904	3938	6970	0002
15	7506	0552	3598	6642	9685	2727	5768	8808	1846	4884	7920	0955	3988	7021	0052
16	7556	0603	3649	6693	9736	2778	5819	8859	1897	4934	7970	1005	4039	7071	0103
17	7607	0654	3699	6744	9787	2829	5870	8909	1948	4985	8021	1056	4089	7122	0153
18	7658	0705	3750	6794	9838	2879	5920	8960	1998	5035	8071	1106	4140	7172	0204
19	7709	0755	3801	6845	9888	2930	5971	9010	2049	5086	8122	1157	4191	7223	0254
20	7759	0806	3852	6896	9939	2981	6022	9061	2099	5137	8173	1207	4241	7274	0305
21	7810	0857	3902	6947	9990	3032	6072	9112	2150	5187	8223	1258	4292	7324	0355
22	7861	0908	3953	6997	0040	3082	6123	9162	2201	5238	8274	1309	4342	7375	0406
23	7912	0958	4004	7048	0091	3133	6174	9213	2251	5288	8324	1359	4393	7425	0456
24	7963	1009	4055	7099	0142	3184	6224	9264	2302	5339	8375	1410	4443	7476	0507
25	8013	1060	4105	7150	0192	3234	6275	9314	2353	5390	8426	1460	4494	7526	0557
26	8064	1111	4156	7200	0243	3285	6326	9365	2403	5440	8476	1511	4544	7577	0608
27	8115	1161	4207	7251	0294	3336	6376	9416	2454	5491	8527	1561	4595	7627	0658
28	8166	1212	4258	7302	0345	3386	6427	9466	2504	5541	8577	1612	4645	7678	0709
29	8217	1263	4308	7352	0395	3437	6478	9517	2555	5592	8628	1663	4696	7728	0759
30	8267	1314	4359	7403	0446	3488	6528	9568	2606	5643	8679	1713	4747	7779	0810
31	8318	1365	4410	7454	0497	3538	6579	9618	2656	5693	8729	1764	4797	7829	0860
32	8369	1415	4461	7505	0547	3589	6630	9669	2707	5744	8780	1814	4848	7880	0911
33	8420	1466	4511	7555	0598	3640	6680	9720	2758	5795	8830	1865	4898	7930	0961
34	8470	1517	4562	7606	0649	3690	6731	9770	2808	5845	8881	1915	4949	7981	1012
35	8521	1568	4613	7657	0700	3741	6782	9821	2859	5896	8931	1966	4999	8031	1062
36	8572	1618	4664	7707	0750	3792	6832	9871	2909	5946	8982	2017	5050	8082	1113
37	8623	1669	4714	7758	0801	3843	6883	9922	2960	5997	9033	2067	5100	8133	1164
38	8674	1720	4765	7809	0852	3893	6934	9973	3011	6048	9083	2118	5151	8183	1214
39	8724	1771	4816	7860	0902	3944	6984	0023	3061	6098	9134	2168	5201	8234	1265
40	8775	1821	4866	7910	0953	3995	7035	0074	3112	6149	9184	2219	5252	8284	1315
41	8826	1872	4917	7961	1004	4045	7086	0125	3163	6199	9235	2269	5303	8335	1366
42	8877	1923	4968	8012	1054	4096	7136	0175	3213	6250	9286	2320	5353	8385	1416
43	8927	1974	5019	8063	1105	4147	7187	0226	3264	6301	9336	2370	5404	8436	1467
44	8978	2024	5069	8113	1156	4197	7238	0277	3314	6351	9387	2421	5454	8486	1517
45	9029	2075	5120	8164	1207	4248	7288	0327	3365	6402	9437	2472	5505	8537	1568
46	9080	2126	5171	8215	1257	4299	7339	0378	3416	6452	9488	2522	5555	8587	1618
47	9131	2177	5222	8265	1308	4349	7390	0429	3466	6503	9538	2573	5606	8638	1669
48	9181	2227	5272	8316	1359	4400	7440	0479	3517	6554	9589	2623	5656	8688	1719
49	9232	2278	5323	8367	1409	4451	7491	0530	3568	6604	9640	2674	5707	8739	1770
50	9283	2329	5374	8418	1460	4501	7541	0580	3618	6655	9690	2724	5757	8789	1820
51	9334	2380	5425	8468	1511	4552	7592	0631	3669	6705	9741	2775	5808	8840	1871
52	9384	2431	5475	8519	1561	4603	7643	0682	3719	6756	9791	2826	5859	8890	1921
53	9435	2481	5526	8570	1612	4653	7693	0732	3770	6807	9842	2876	5909	8941	1972
54	9486	2532	5577	8620	1663	4704	7744	0783	3821	6857	9892	2927	5960	8991	2022
55	9537	2583	5628	8671	1714	4755	7795	0834	3871	6908	9943	2977	6010	9042	2073
56	9588	2634	5678	8722	1764	4805	7845	0884	3922	6958	9994	3028	6061	9092	2123
57	9638	2684	5729	8773	1815	4856	7896	0935	3973	7009	0044	3078	6111	9143	2174
58	9689	2735	5780	8823	1866	4907	7947	0986	4023	7060	0095	3129	6162	9194	2224
59	9740	2786	5831	8874	1916	4957	7997	1036	4074	7110	0145	3179	6212	9244	2275
60	9791	2837	5881	8925	1967	5008	8048	1087	4124	7161	0196	3230	6263	9295	2325
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
	10. 274	10. 274	10. 273	10. 273	10. 273	10. 272	10. 272	10. 272	10. 271	10. 271	10. 271	10. 270	10. 270	10. 270	10. 270	″
	3256	0209	7163	4119	1075	8033	4992	1952	8913	5876	2839	9804	6770	3737	0705	60
	3206	0159	7113	4068	1025	7982	4941	1901	8863	5825	2789	9753	6719	3687	0655	59
	3155	0108	7062	4017	0974	7932	4891	1851	8812	5774	2738	9703	6669	3636	0604	58
	3104	0057	7011	3967	0923	7881	4840	1800	8761	5724	2687	9652	6618	3586	0554	57
	3053	0006	6960	3916	0872	7830	4789	1749	8711	5673	2637	9602	6568	3535	0503	56
	3002	9955	6910	3865	0822	7780	4738	1699	8660	5623	2586	9551	6517	3484	0453	55
	2952	9905	6859	3814	0771	7729	4688	1648	8609	5572	2536	9501	6467	3434	0402	54
	2901	9854	6808	3764	0720	7678	4637	1597	8559	5521	2485	9450	6416	3383	0352	53
	2850	9803	6757	3713	0670	7627	4586	1547	8508	5471	2434	9399	6366	3333	0301	52
	2799	9752	6707	3662	0619	7577	4536	1496	8457	5420	2384	9349	6315	3282	0251	51
	2748	9702	6656	3611	0568	7526	4485	1445	8407	5369	2333	9298	6264	3232	0200	50
	2698	9651	6605	3561	0517	7475	4434	1395	8356	5319	2283	9248	6214	3181	0150	49
	2647	9600	6554	3510	0467	7425	4384	1344	8306	5268	2232	9197	6163	3131	0099	48
	2596	9549	6504	3459	0416	7374	4333	1293	8255	5218	2182	9147	6113	3080	0049	47
	2545	9498	6453	3409	0365	7323	4282	1243	8204	5167	2131	9096	6062	3030	9998	46
	2494	9448	6402	3358	0315	7273	4232	1192	8154	5116	2080	9045	6012	2979	9948	45
	2444	9397	6351	3307	0264	7222	4181	1141	8103	5066	2030	8995	5961	2929	9897	44
	2393	9346	6301	3256	0213	7171	4130	1091	8052	5015	1979	8944	5911	2878	9847	43
	2342	9295	6250	3206	0162	7121	4080	1040	8002	4965	1929	8894	5860	2828	9796	42
	2291	9245	6199	3155	0112	7070	4029	0990	7951	4914	1878	8843	5809	2777	9746	41
	2241	9194	6148	3104	0061	7019	3978	0939	7901	4863	1827	8793	5759	2726	9695	40
	2190	9143	6098	3053	0010	6968	3928	0888	7850	4813	1777	8742	5708	2676	9645	39
	2139	9092	6047	3003	9960	6918	3877	0838	7799	4762	1726	8691	5658	2625	9594	38
	2088	9042	5996	2952	9909	6867	3826	0787	7749	4712	1676	8641	5607	2575	9544	37
	2037	8991	5945	2901	9858	6816	3776	0736	7698	4661	1625	8590	5557	2524	9493	36
	1987	8940	5895	2850	9808	6766	3725	0686	7647	4610	1574	8540	5506	2474	9443	35
	1936	8889	5844	2800	9757	6715	3674	0635	7597	4560	1524	8489	5456	2423	9392	34
	1885	8839	5793	2749	9706	6664	3624	0584	7546	4509	1473	8439	5405	2373	9342	33
	1834	8788	5742	2698	9655	6614	3573	0534	7496	4459	1423	8388	5355	2322	9291	32
	1783	8737	5692	2648	9605	6563	3522	0483	7445	4408	1372	8337	5304	2272	9241	31
	1733	8686	5641	2597	9554	6512	3472	0432	7394	4357	1321	8287	5253	2221	9190	30
	1682	8635	5590	2546	9503	6462	3421	0382	7344	4307	1271	8236	5203	2171	9140	29
	1631	8585	5539	2495	9453	6411	3370	0331	7293	4256	1220	8186	5152	2120	9089	28
	1580	8534	5489	2445	9402	6360	3320	0280	7242	4205	1170	8135	5102	2070	9039	27
	1530	8483	5438	2394	9351	6310	3269	0230	7192	4155	1119	8085	5051	2019	8988	26
	1479	8432	5387	2343	9300	6259	3218	0179	7141	4104	1069	8034	5001	1969	8938	25
	1428	8382	5336	2293	9250	6208	3168	0129	7091	4054	1018	7983	4950	1918	8887	24
	1377	8331	5286	2242	9199	6157	3117	0078	7040	4003	0967	7933	4900	1867	8836	23
	1326	8280	5235	2191	9148	6107	3066	0027	6989	3952	0917	7882	4849	1817	8786	22
	1276	8229	5184	2140	9098	6056	3016	9977	6939	3902	0866	7832	4799	1766	8735	21
	1225	8179	5134	2090	9047	6005	2965	9926	6888	3851	0816	7781	4748	1716	8685	20
	1174	8128	5083	2039	8996	5955	2914	9875	6837	3801	0765	7731	4697	1665	8634	19
	1123	8077	5032	1988	8946	5904	2864	9825	6787	3750	0714	7680	4647	1615	8584	18
	1073	8026	4981	1937	8895	5853	2813	9774	6736	3699	0664	7630	4596	1564	8533	17
	1022	7976	4931	1887	8844	5803	2762	9723	6686	3649	0613	7579	4546	1514	8483	16
	0971	7925	4880	1836	8793	5752	2712	9673	6635	3598	0563	7528	4495	1463	8432	15
	0920	7874	4829	1785	8743	5701	2661	9622	6584	3548	0512	7478	4445	1413	8382	14
	0869	7823	4778	1735	8692	5651	2610	9571	6534	3497	0462	7427	4394	1362	8331	13
	0819	7773	4728	1684	8641	5600	2560	9521	6483	3446	0411	7377	4344	1312	8281	12
	0768	7722	4677	1633	8591	5549	2509	9470	6432	3396	0360	7326	4293	1261	8230	11
	0717	7671	4626	1582	8540	5499	2459	9420	6382	3345	0310	7276	4243	1211	8180	10
	0666	7620	4575	1532	8489	5448	2408	9369	6331	3295	0259	7225	4192	1160	8129	9
	0616	7569	4525	1481	8439	5397	2357	9318	6281	3244	0209	7174	4141	1110	8079	8
	0565	7519	4474	1430	8388	5347	2307	9268	6230	3193	0158	7124	4091	1059	8028	7
	0514	7468	4423	1380	8337	5296	2256	9217	6179	3143	0108	7073	4040	1009	7978	6
	0463	7417	4372	1329	8286	5245	2205	9166	6129	3092	0057	7023	3990	0958	7927	5
	0412	7366	4322	1278	8236	5195	2155	9116	6078	3042	0006	6972	3939	0908	7877	4
	0362	7316	4271	1227	8185	5144	2104	9065	6027	2991	9956	6922	3889	0857	7826	3
	0311	7265	4220	1177	8134	5093	2053	9014	5977	2940	9905	6871	3838	0806	7776	2
	0260	7214	4169	1126	8084	5043	2003	8964	5926	2890	9855	6821	3788	0756	7725	1
	0209	7163	4119	1075	8033	4992	1952	8913	5876	2839	9804	6770	3737	0705	7675	0
	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

28 Deg. Sine

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9.675	9.675	9.675	9.675	9.676	9.676	9.676	9.676	9.677	9.677	9.677	9.677	9.677	9.678	9.678
0	1546	3896	6245	8592	0937	3281	5623	7963	0302	2640	4975	7309	9642	1972	4301
1	1585	3935	6284	8631	0976	3320	5662	8002	0341	2678	5014	7348	9680	2011	4340
2	1624	3974	6323	8670	1015	3359	5701	8041	0380	2717	5053	7387	9719	2050	4379
3	1663	4013	6362	8709	1054	3398	5740	8080	0419	2756	5092	7426	9758	2089	4418
4	1702	4052	6401	8748	1093	3437	5779	8119	0458	2795	5131	7465	9797	2128	4457
5	1741	4092	6440	8787	1132	3476	5818	8158	0497	2834	5170	7504	9836	2166	4495
6	1781	4131	6479	8826	1171	3515	5857	8197	0536	2873	5209	7542	9875	2205	4534
7	1820	4170	6518	8865	1210	3554	5896	8236	0575	2912	5248	7581	9914	2244	4573
8	1859	4209	6558	8904	1250	3593	5935	8275	0614	2951	5286	7620	9952	2283	4612
9	1898	4248	6597	8943	1289	3632	5974	8314	0653	2990	5325	7659	9991	2322	4651
10	1937	4287	6636	8983	1328	3671	6013	8353	0692	3029	5364	7698	0030	2361	4690
11	1977	4327	6675	9022	1367	3710	6052	8392	0731	3068	5403	7737	0069	2399	4728
12	2016	4366	6714	9061	1406	3749	6091	8431	0770	3107	5442	7776	0108	2438	4767
13	2055	4405	6753	9100	1445	3788	6130	8470	0809	3146	5481	7815	0147	2477	4806
14	2094	4444	6792	9139	1484	3827	6169	8509	0848	3185	5520	7854	0186	2516	4845
15	2133	4483	6831	9178	1523	3866	6208	8548	0887	3224	5559	7892	0224	2555	4884
16	2172	4522	6871	9217	1562	3905	6247	8587	0926	3263	5598	7931	0263	2594	4922
17	2212	4561	6910	9256	1601	3944	6286	8626	0965	3301	5637	7970	0302	2632	4961
18	2251	4601	6949	9295	1640	3984	6325	8665	1004	3340	5676	8009	0341	2671	5000
19	2290	4640	6988	9334	1679	4023	6364	8704	1043	3379	5714	8048	0380	2710	5039
20	2329	4679	7027	9374	1718	4062	6403	8743	1082	3418	5753	8087	0419	2749	5078
21	2368	4718	7066	9413	1757	4101	6442	8782	1120	3457	5792	8126	0458	2788	5116
22	2407	4757	7105	9452	1797	4140	6481	8821	1159	3496	5831	8165	0496	2827	5155
23	2447	4796	7144	9491	1836	4179	6520	8860	1198	3535	5870	8203	0535	2865	5194
24	2486	4835	7184	9530	1875	4218	6559	8899	1237	3574	5909	8242	0574	2904	5233
25	2525	4875	7223	9569	1914	4257	6598	8938	1276	3613	5948	8281	0613	2943	5271
26	2564	4914	7262	9608	1953	4296	6637	8977	1315	3652	5987	8320	0652	2982	5310
27	2603	4953	7301	9647	1992	4335	6676	9016	1354	3691	6026	8359	0691	3021	5349
28	2643	4992	7340	9686	2031	4374	6715	9055	1393	3730	6065	8398	0729	3059	5388
29	2682	5031	7379	9725	2070	4413	6754	9094	1432	3769	6103	8437	0768	3098	5427
30	2721	5070	7418	9764	2109	4452	6793	9133	1471	3808	6142	8476	0807	3137	5465
31	2760	5110	7457	9804	2148	4491	6832	9172	1510	3846	6181	8514	0846	3176	5504
32	2799	5149	7496	9843	2187	4530	6871	9211	1549	3885	6220	8553	0885	3215	5543
33	2838	5188	7536	9882	2226	4569	6910	9250	1588	3924	6259	8592	0924	3254	5582
34	2878	5227	7575	9921	2265	4608	6949	9289	1627	3963	6298	8631	0963	3292	5621
35	2917	5266	7614	9960	2304	4647	6988	9328	1666	4002	6337	8670	1001	3331	5659
36	2956	5305	7653	9999	2343	4686	7027	9367	1705	4041	6376	8709	1040	3370	5698
37	2995	5344	7692	0038	2382	4725	7066	9406	1744	4080	6415	8748	1079	3409	5737
38	3034	5384	7731	0077	2422	4764	7105	9445	1783	4119	6454	8787	1118	3448	5776
39	3073	5423	7770	0116	2461	4803	7144	9484	1822	4158	6492	8825	1157	3486	5815
40	3113	5462	7809	0155	2500	4842	7183	9523	1861	4197	6531	8864	1196	3525	5853
41	3152	5501	7848	0194	2539	4881	7222	9562	1900	4236	6570	8903	1234	3564	5892
42	3191	5540	7888	0233	2578	4920	7261	9601	1939	4275	6609	8942	1273	3603	5931
43	3230	5579	7927	0273	2617	4959	7300	9640	1977	4314	6648	8981	1312	3642	5970
44	3269	5618	7966	0312	2656	4998	7339	9679	2016	4352	6687	9020	1351	3681	6008
45	3308	5657	8005	0351	2695	5037	7378	9718	2055	4391	6726	9059	1390	3719	6047
46	3348	5697	8044	0390	2734	5077	7417	9757	2094	4430	6765	9097	1429	3758	6086
47	3387	5736	8083	0429	2773	5116	7456	9796	2133	4469	6804	9136	1467	3797	6125
48	3426	5775	8122	0468	2812	5155	7495	9835	2172	4508	6842	9175	1506	3836	6164
49	3465	5814	8161	0507	2851	5194	7534	9874	2211	4547	6881	9214	1545	3875	6202
50	3504	5853	8200	0546	2890	5233	7573	9913	2250	4586	6920	9253	1584	3913	6241
51	3543	5892	8240	0585	2929	5272	7612	9952	2289	4625	6959	9292	1623	3952	6280
52	3583	5931	8279	0624	2968	5311	7651	9991	2328	4664	6998	9331	1662	3991	6319
53	3622	5971	8318	0663	3007	5350	7690	0029	2367	4703	7037	9370	1700	4030	6358
54	3661	6010	8357	0702	3046	5389	7729	0068	2406	4742	7076	9408	1739	4069	6396
55	3700	6049	8396	0742	3085	5428	7768	0107	2445	4781	7115	9447	1778	4107	6435
56	3739	6088	8435	0781	3125	5467	7807	0146	2484	4819	7154	9486	1817	4146	6474
57	3778	6127	8474	0820	3164	5506	7846	0185	2523	4858	7193	9525	1856	4185	6513
58	3818	6166	8513	0859	3203	5545	7885	0224	2562	4897	7231	9564	1895	4224	6551
59	3857	6205	8552	0898	3242	5584	7924	0263	2601	4936	7270	9603	1933	4263	6590
60	3896	6245	8592	0937	3281	5623	7963	0302	2640	4975	7309	9642	1972	4301	6629
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Sine Deg. 61

28 Deg. Co-Sine

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
	9.944	9.944	9.944	9.944	9.944	9.944	9.944	9.944	9.944	9.944	9.944	9.944	9.944	9.944	9.943	″
	9220	8541	7862	7182	6501	5821	5139	4457	3775	3092	2409	1725	1041	0356	9671	60
	9209	8530	7851	7171	6490	5809	5128	4446	3763	3081	2397	1714	1029	0345	9659	59
	9198	8519	7839	7159	6479	5798	5116	4434	3752	3069	2386	1702	1018	0333	9648	58
	9186	8507	7828	7148	6467	5786	5105	4423	3741	3058	2375	1691	1006	0322	9636	57
	9175	8496	7817	7137	6456	5775	5094	4412	3729	3046	2363	1679	0995	0310	9625	56
	9164	8485	7805	7125	6445	5764	5082	4400	3718	3035	2352	1668	0984	0299	9614	55
	9153	8473	7794	7114	6433	5752	5071	4389	3707	3024	2340	1657	0972	0287	9602	54
	9141	8462	7783	7103	6422	5741	5060	4378	3695	3012	2329	1645	0961	0276	9591	53
	9130	8451	7771	7091	6411	5730	5048	4366	3684	3001	2318	1634	0949	0265	9579	52
	9119	8440	7760	7080	6399	5718	5037	4355	3672	2990	2306	1622	0938	0253	9568	51
	9107	8428	7749	7069	6388	5707	5025	4344	3661	2978	2295	1611	0927	0242	9556	50
	9096	8417	7737	7057	6377	5696	5014	4332	3650	2967	2283	1600	0915	0230	9545	49
	9085	8406	7726	7046	6365	5684	5003	4321	3638	2955	2272	1588	0904	0219	9534	48
	9073	8394	7715	7035	6354	5673	4991	4309	3627	2944	2261	1577	0892	0208	9522	47
	9062	8383	7703	7023	6343	5662	4980	4298	3616	2933	2249	1565	0881	0196	9511	46
	9051	8372	7692	7012	6331	5650	4969	4287	3604	2921	2238	1554	0870	0185	9499	45
	9039	8360	7681	7000	6320	5639	4957	4275	3593	2910	2226	1543	0858	0173	9488	44
	9028	8349	7669	6989	6309	5627	4946	4264	3581	2898	2215	1531	0847	0162	9477	43
	9017	8338	7658	6978	6297	5616	4935	4253	3570	2887	2204	1520	0835	0150	9465	42
	9005	8326	7647	6966	6286	5605	4923	4241	3559	2876	2192	1508	0824	0139	9454	41
	8994	8315	7635	6955	6275	5593	4912	4230	3547	2864	2181	1497	0812	0128	9442	40
	8983	8304	7624	6944	6263	5582	4900	4218	3536	2853	2169	1485	0801	0116	9431	39
	8972	8292	7613	6932	6252	5571	4889	4207	3525	2842	2158	1474	0790	0105	9419	38
	8960	8281	7601	6921	6240	5559	4878	4196	3513	2830	2147	1463	0778	0093	9408	37
	8949	8270	7590	6910	6229	5548	4866	4184	3502	2819	2135	1451	0767	0082	9397	36
	8938	8258	7579	6898	6218	5537	4855	4173	3490	2807	2124	1440	0755	0070	9385	35
	8926	8247	7567	6887	6206	5525	4844	4162	3479	2796	2112	1428	0744	0059	9374	34
	8915	8236	7556	6876	6195	5514	4832	4150	3468	2785	2101	1417	0733	0048	9362	33
	8904	8224	7545	6864	6184	5503	4821	4139	3456	2773	2090	1406	0721	0036	9351	32
	8892	8213	7533	6853	6172	5491	4810	4127	3445	2762	2078	1394	0710	0025	9339	31
	8881	8202	7522	6842	6161	5480	4798	4116	3433	2750	2067	1383	0698	0013	9328	30
	8870	8190	7511	6830	6150	5469	4787	4105	3422	2739	2055	1371	0687	0002	9317	29
	8858	8179	7499	6819	6138	5457	4775	4093	3411	2728	2044	1360	0676	9991	9305	28
	8847	8168	7488	6808	6127	5446	4764	4082	3399	2716	2033	1349	0664	9979	9294	27
	8836	8156	7477	6796	6116	5434	4753	4071	3388	2705	2021	1337	0653	9968	9282	26
	8824	8145	7465	6785	6104	5423	4741	4059	3377	2693	2010	1326	0641	9956	9271	25
	8813	8134	7454	6774	6093	5412	4730	4048	3365	2682	1999	1314	0630	9945	9259	24
	8802	8122	7443	6762	6082	5400	4719	4036	3354	2671	1987	1303	0618	9933	9248	23
	8790	8111	7431	6751	6070	5389	4707	4025	3342	2659	1976	1292	0607	9922	9237	22
	8779	8100	7420	6740	6059	5378	4696	4014	3331	2648	1964	1280	0596	9911	9225	21
	8768	8088	7409	6728	6048	5366	4685	4002	3320	2637	1953	1269	0584	9899	9214	20
	8756	8077	7397	6717	6036	5355	4673	3991	3308	2625	1942	1257	0573	9888	9202	19
	8745	8066	7386	6706	6025	5344	4662	3980	3297	2614	1930	1246	0561	9876	9191	18
	8734	8054	7375	6694	6013	5332	4650	3968	3286	2602	1919	1235	0550	9865	9179	17
	8723	8043	7363	6683	6002	5321	4639	3957	3274	2591	1907	1223	0539	9854	9168	16
	8711	8032	7352	6672	5991	5309	4628	3945	3263	2580	1896	1212	0527	9842	9157	15
	8700	8020	7341	6660	5979	5298	4616	3934	3251	2568	1885	1200	0516	9831	9145	14
	8689	8009	7329	6649	5968	5287	4605	3923	3240	2557	1873	1189	0504	9819	9134	13
	8677	7998	7318	6638	5957	5275	4594	3911	3229	2545	1862	1178	0493	9808	9122	12
	8666	7987	7307	6626	5945	5264	4582	3900	3217	2534	1850	1166	0482	9796	9111	11
	8655	7975	7295	6615	5934	5253	4571	3889	3206	2523	1839	1155	0470	9785	9099	10
	8643	7964	7284	6604	5923	5241	4560	3877	3194	2511	1828	1143	0459	9774	9088	9
	8632	7953	7273	6592	5911	5230	4548	3866	3183	2500	1816	1132	0447	9762	9077	8
	8621	7941	7261	6581	5900	5219	4537	3854	3172	2488	1805	1121	0436	9751	9065	7
	8609	7930	7250	6570	5889	5207	4525	3843	3160	2477	1793	1109	0424	9739	9054	6
	8598	7919	7239	6558	5877	5196	4514	3832	3149	2466	1782	1098	0413	9728	9042	5
	8587	7907	7227	6547	5866	5185	4503	3820	3138	2454	1771	1086	0402	9716	9031	4
	8575	7896	7216	6535	5855	5173	4491	3809	3126	2443	1759	1075	0390	9705	9019	3
	8564	7885	7205	6524	5843	5162	4480	3798	3115	2432	1748	1063	0379	9694	9008	2
	8553	7873	7193	6513	5832	5150	4469	3786	3103	2420	1736	1052	0367	9682	8996	1
	8541	7862	7182	6501	5821	5139	4457	3775	3092	2409	1725	1041	0356	9671	8985	0
	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Sine Deg. 61

″	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9. 730	9. 730	9. 730	9. 731	9. 731	9. 731	9. 732	9. 732	9. 732	9. 732	9. 733	9. 733	9. 733	9. 734	9. 734
0	2325	5354	8383	1410	4436	7460	0484	3506	6527	9547	2566	5584	8601	1616	4631
1	2376	5405	8433	1460	4486	7511	0534	3557	6578	9598	2617	5635	8651	1667	4681
2	2426	5455	8484	1511	4536	7561	0585	3607	6628	9648	2667	5685	8701	1717	4731
3	2477	5506	8534	1561	4587	7611	0635	3657	6678	9698	2717	5735	8752	1767	4781
4	2527	5556	8584	1611	4637	7662	0685	3708	6729	9749	2768	5785	8802	1817	4832
5	2578	5607	8635	1662	4688	7712	0736	3758	6779	9799	2818	5836	8852	1868	4882
6	2628	5657	8685	1712	4738	7763	0786	3808	6829	9849	2868	5886	8902	1918	4932
7	2679	5708	8736	1763	4788	7813	0836	3859	6880	9900	2919	5936	8953	1968	4982
8	2729	5758	8786	1813	4839	7863	0887	3909	6930	9950	2969	5987	9003	2018	5033
9	2780	5809	8837	1864	4889	7914	0937	3959	6980	0000	3019	6037	9053	2069	5083
10	2830	5859	8887	1914	4940	7964	0988	4010	7031	0051	3069	6087	9104	2119	5133
11	2881	5910	8938	1964	4990	8015	1038	4060	7081	0101	3120	6137	9154	2169	5183
12	2931	5960	8988	2015	5041	8065	1088	4111	7132	0151	3170	6188	9204	2219	5233
13	2982	6011	9039	2065	5091	8115	1139	4161	7182	0202	3220	6238	9254	2270	5284
14	3032	6061	9089	2116	5141	8166	1189	4211	7232	0252	3271	6288	9305	2320	5334
15	3083	6112	9139	2166	5192	8216	1239	4262	7283	0302	3321	6338	9355	2370	5384
16	3133	6162	9190	2217	5242	8267	1290	4312	7333	0353	3371	6389	9405	2420	5434
17	3184	6213	9240	2267	5293	8317	1340	4362	7383	0403	3422	6439	9455	2471	5485
18	3234	6263	9291	2318	5343	8367	1391	4413	7434	0453	3472	6489	9506	2521	5535
19	3284	6313	9341	2368	5393	8418	1441	4463	7484	0504	3522	6540	9556	2571	5585
20	3335	6364	9392	2418	5444	8468	1491	4513	7534	0554	3572	6590	9606	2621	5635
21	3385	6414	9442	2469	5494	8519	1542	4564	7585	0604	3623	6640	9656	2672	5686
22	3436	6465	9493	2519	5545	8569	1592	4614	7635	0655	3673	6690	9707	2722	5736
23	3486	6515	9543	2570	5595	8619	1642	4664	7685	0705	3723	6741	9757	2772	5786
24	3537	6566	9594	2620	5646	8670	1693	4715	7736	0755	3774	6791	9807	2822	5836
25	3587	6616	9644	2671	5696	8720	1743	4765	7786	0806	3824	6841	9857	2873	5886
26	3638	6667	9694	2721	5746	8771	1794	4816	7836	0856	3874	6892	9908	2923	5937
27	3688	6717	9745	2771	5797	8821	1844	4866	7887	0906	3925	6942	9958	2973	5987
28	3739	6768	9795	2822	5847	8871	1894	4916	7937	0956	3975	6992	0008	3023	6037
29	3789	6818	9846	2872	5898	8922	1945	4967	7987	1007	4025	7042	0059	3073	6087
30	3840	6869	9896	2923	5948	8972	1995	5017	8038	1057	4075	7093	0109	3124	6137
31	3890	6919	9947	2973	5998	9023	2045	5067	8088	1107	4126	7143	0159	3174	6188
32	3941	6970	9997	3024	6049	9073	2096	5118	8138	1158	4176	7193	0209	3224	6238
33	3991	7020	0048	3074	6099	9123	2146	5168	8189	1208	4226	7244	0260	3274	6288
34	4042	7071	0098	3124	6150	9174	2197	5218	8239	1258	4277	7294	0310	3325	6338
35	4092	7121	0149	3175	6200	9224	2247	5269	8289	1309	4327	7344	0360	3375	6389
36	4143	7171	0199	3225	6250	9274	2297	5319	8340	1359	4377	7394	0410	3425	6439
37	4193	7222	0249	3276	6301	9325	2348	5369	8390	1409	4428	7445	0461	3475	6489
38	4244	7272	0300	3326	6351	9375	2398	5420	8440	1460	4478	7495	0511	3526	6539
39	4294	7323	0350	3377	6302	9426	2448	5470	8491	1510	4528	7545	0561	3576	6589
40	4345	7373	0401	3427	6452	9476	2499	5520	8541	1560	4578	7595	0611	3626	6640
41	4395	7424	0451	3477	6503	9526	2549	5571	8591	1611	4629	7646	0662	3676	6690
42	4446	7474	0502	3528	6553	9577	2600	5621	8642	1661	4679	7696	0712	3727	6740
43	4496	7525	0552	3578	6603	9627	2650	5672	8692	1711	4729	7746	0762	3777	6790
44	4547	7575	0603	3629	6654	9678	2700	5722	8742	1761	4780	7797	0812	3827	6841
45	4597	7626	0653	3679	6704	9728	2751	5772	8793	1812	4830	7847	0863	3877	6891
46	4648	7676	0703	3730	6755	9778	2801	5823	8843	1862	4880	7897	0913	3927	6941
47	4698	7727	0754	3780	6805	9829	2851	5873	8893	1912	4930	7947	0963	3978	6991
48	4749	7777	0804	3830	6855	9870	2902	5923	8944	1963	4981	7998	1013	4028	7041
49	4799	7828	0855	3881	6906	9930	2952	5974	8994	2013	5031	8048	1064	4078	7092
50	4850	7878	0905	3931	6956	9980	3003	6024	9044	2063	5081	8098	1114	4128	7142
51	4900	7928	0956	3982	7007	0030	3053	6074	9095	2114	5132	8148	1164	4179	7192
52	4951	7979	1006	4032	7057	0081	3103	6125	9145	2164	5182	8199	1214	4229	7242
53	5001	8029	1057	4083	7107	0131	3154	6175	9195	2214	5232	8249	1265	4279	7292
54	5052	8080	1107	4133	7158	0181	3204	6225	9246	2265	5283	8299	1315	4329	7343
55	5102	8130	1157	4183	7208	0232	3254	6276	9296	2315	5333	8350	1365	4380	7393
56	5153	8181	1208	4234	7259	0282	3305	6326	9346	2365	5383	8400	1415	4430	7443
57	5203	8231	1258	4284	7309	0333	3355	6376	9397	2416	5433	8450	1466	4480	7493
58	5253	8282	1309	4335	7359	0383	3405	6427	9447	2466	5484	8500	1516	4530	7544
59	5304	8332	1359	4385	7410	0433	3456	6477	9497	2516	5534	8551	1566	4581	7594
60	5354	8383	1410	4436	7460	0484	3506	6527	9547	2566	5584	8601	1616	4631	7644
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	″
10. 269	10. 269	10. 269	10. 268	10. 268	10. 268	10. 267	10. 267	10. 267	10. 267	10. 266	10. 266	10. 266	10. 265	10. 265	
7675	4646	1617	8590	5564	2540	9516	6494	3473	0453	7434	4416	1399	8384	5369	60
7624	4595	1567	8540	5514	2489	9466	6443	3422	0402	7383	4365	1349	8333	5319	59
7574	4545	1516	8489	5464	2439	9415	6393	3372	0352	7333	4315	1299	8283	5269	58
7523	4494	1466	8439	5413	2389	9365	6343	3322	0302	7283	4265	1248	8233	5219	57
7473	4444	1416	8389	5363	2338	9315	6292	3271	0251	7232	4215	1198	8183	5168	56
7422	4393	1365	8338	5312	2288	9264	6242	3221	0201	7182	4164	1148	8132	5118	55
7372	4343	1315	8288	5262	2237	9214	6192	3171	0151	7132	4114	1098	8082	5068	54
7321	4292	1264	8237	5212	2187	9164	6141	3120	0100	7081	4064	1047	8032	5018	53
7271	4242	1214	8187	5161	2137	9113	6091	3070	0050	7031	4013	0997	7982	4967	52
7220	4191	1163	8136	5111	2086	9063	6041	3020	0000	6981	3963	0947	7931	4917	51
7170	4141	1113	8086	5060	2036	9012	5990	2969	9949	6931	3913	0896	7881	4867	50
7119	4090	1062	8036	5010	1985	8962	5940	2919	9899	6880	3863	0846	7831	4817	49
7069	4040	1012	7985	4959	1935	8912	5889	2868	9849	6830	3812	0796	7781	4767	48
7018	3989	0961	7935	4909	1885	8861	5839	2818	9798	6780	3762	0746	7730	4716	47
6968	3939	0911	7884	4859	1834	8811	5789	2768	9748	6729	3712	0695	7680	4666	46
6917	3888	0861	7834	4808	1784	8761	5738	2717	9698	6679	3662	0645	7630	4616	45
6867	3838	0810	7783	4758	1733	8710	5688	2667	9647	6629	3611	0595	7580	4566	44
6816	3787	0760	7733	4707	1683	8660	5638	2617	9597	6578	3561	0545	7529	4515	43
6766	3737	0709	7682	4657	1633	8609	5587	2566	9547	6528	3511	0494	7479	4465	42
6716	3687	0659	7632	4607	1582	8559	5537	2516	9496	6478	3460	0444	7429	4415	41
6665	3636	0608	7582	4556	1532	8509	5487	2466	9446	6428	3410	0394	7379	4365	40
6615	3586	0558	7531	4506	1481	8458	5436	2415	9396	6377	3360	0344	7328	4314	39
6564	3535	0507	7481	4455	1431	8408	5386	2365	9345	6327	3310	0293	7278	4264	38
6514	3485	0457	7430	4405	1381	8358	5336	2315	9295	6277	3259	0243	7228	4214	37
6463	3434	0406	7380	4354	1330	8307	5285	2264	9245	6226	3209	0193	7178	4164	36
6413	3384	0356	7329	4304	1280	8257	5235	2214	9194	6176	3159	0143	7127	4114	35
6362	3333	0306	7279	4254	1229	8206	5184	2164	9144	6126	3108	0092	7077	4063	34
6312	3283	0255	7229	4203	1179	8156	5134	2113	9094	6075	3058	0042	7027	4013	33
6261	3232	0205	7178	4153	1129	8106	5084	2063	9044	6025	3008	9992	6977	3963	32
6211	3182	0154	7128	4102	1078	8055	5033	2013	8993	5975	2958	9941	6927	3913	31
6160	3131	0104	7077	4052	1028	8005	4983	1962	8943	5925	2907	9891	6876	3863	30
6110	3081	0053	7027	4002	0977	7955	4933	1912	8893	5874	2857	9841	6826	3812	29
6059	3030	0003	6976	3951	0927	7904	4882	1862	8842	5824	2807	9791	6776	3762	28
6009	2980	9952	6926	3901	0877	7854	4832	1811	8792	5774	2756	9740	6726	3712	27
5958	2929	9902	6876	3850	0826	7803	4782	1761	8742	5723	2706	9690	6675	3662	26
5908	2879	9851	6825	3800	0776	7753	4731	1711	8691	5673	2656	9640	6625	3611	25
5857	2829	9801	6775	3750	0726	7703	4681	1660	8641	5623	2606	9590	6575	3561	24
5807	2778	9751	6724	3699	0675	7652	4631	1610	8591	5572	2555	9539	6525	3511	23
5756	2728	9700	6674	3649	0625	7602	4580	1560	8540	5522	2505	9489	6474	3461	22
5706	2677	9650	6623	3598	0574	7552	4530	1509	8490	5472	2455	9439	6424	3411	21
5655	2627	9599	6573	3548	0524	7501	4480	1459	8440	5422	2405	9389	6374	3360	20
5605	2576	9549	6523	3497	0474	7451	4429	1409	8389	5371	2354	9338	6324	3310	19
5554	2526	9498	6472	3447	0423	7400	4379	1358	8339	5321	2304	9288	6273	3260	18
5504	2475	9448	6422	3397	0373	7350	4328	1308	8289	5271	2254	9238	6223	3210	17
5453	2425	9397	6371	3346	0322	7300	4278	1258	8239	5220	2203	9188	6173	3159	16
5403	2374	9347	6321	3296	0272	7249	4228	1207	8188	5170	2153	9137	6123	3109	15
5352	2324	9297	6270	3245	0222	7199	4177	1157	8138	5120	2103	9087	6073	3059	14
5302	2273	9246	6220	3195	0171	7149	4127	1107	8088	5070	2053	9037	6022	3009	13
5251	2223	9196	6170	3145	0121	7098	4077	1056	8037	5019	2002	8987	5972	2959	12
5201	2172	9145	6119	3094	0070	7048	4026	1006	7987	4969	1952	8936	5922	2908	11
5150	2122	9095	6069	3044	0020	6997	3976	0956	7937	4919	1902	8886	5872	2858	10
5100	2072	9044	6018	2993	9970	6947	3926	0905	7886	4868	1852	8836	5821	2808	9
5049	2021	8994	5968	2943	9919	6897	3875	0855	7836	4818	1801	8786	5771	2758	8
4999	1971	8943	5917	2893	9869	6846	3825	0805	7786	4768	1751	8735	5721	2708	7
4948	1920	8893	5867	2842	9819	6796	3775	0754	7735	4717	1701	8685	5671	2657	6
4898	1870	8843	5817	2792	9768	6746	3724	0704	7685	4667	1650	8635	5620	2607	5
4847	1819	8792	5766	2741	9718	6695	3674	0654	7635	4617	1600	8585	5570	2557	4
4797	1769	8742	5716	2691	9667	6645	3624	0603	7584	4567	1550	8534	5520	2507	3
4747	1718	8691	5665	2641	9617	6595	3573	0553	7534	4516	1500	8484	5470	2456	2
4696	1668	8641	5615	2590	9567	6544	3523	0503	7484	4466	1449	8434	5419	2406	1
4646	1617	8590	5564	2540	9516	6494	3473	0453	7434	4416	1399	8384	5369	2356	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
″	9. 678	9. 678	9. 679	9. 679	9. 679	9. 679	9. 680	9. 680	9. 680	9. 680	9. 680	9. 681	9. 681	9. 681	9. 681	9. 943	9. 943	9. 943	9. 943	9. 943	9. 943	9. 943	9. 943	9. 943	9. 943	9. 943	9. 943	9. 943	9. 943	9. 942	″
0	6629	8955	1279	3602	5923	8243	0560	2877	5191	7504	9816	2126	4434	6741	9046	8985	8299	7612	6925	6238	5549	4861	4172	3482	2792	2102	1411	0720	0028	9335	60
1	6668	8994	1318	3641	5962	8281	0599	2915	5230	7543	9854	2164	4473	6779	9084	8974	8287	7601	6914	6226	5538	4849	4160	3471	2781	2091	1400	0708	0016	9324	59
2	6707	9032	1357	3679	6000	8320	0638	2954	5268	7582	9893	2203	4511	6818	9123	8962	8276	7589	6902	6215	5527	4838	4149	3459	2769	2079	1388	0697	0005	9312	58
3	6745	9071	1395	3718	6039	8358	0676	2992	5307	7620	9931	2241	4549	6856	9161	8951	8265	7578	6891	6203	5515	4827	4137	3448	2758	2067	1377	0685	9993	9301	57
4	6784	9110	1434	3757	6078	8397	0715	3031	5346	7659	9970	2280	4588	6894	9199	8939	8253	7566	6879	6192	5504	4815	4126	3436	2746	2056	1365	0674	9982	9289	56
5	6823	9149	1473	3795	6116	8436	0753	3070	5384	7697	0008	2318	4626	6933	9238	8928	8242	7555	6868	6180	5492	4804	4114	3425	2735	2044	1353	0662	9970	9278	55
6	6862	9187	1512	3834	6155	8474	0792	3108	5423	7736	0047	2357	4665	6971	9276	8916	8230	7544	6856	6169	5481	4792	4103	3413	2723	2033	1342	0651	9959	9266	54
7	6900	9226	1550	3873	6194	8513	0831	3147	5461	7774	0085	2395	4703	7010	9315	8905	8219	7532	6845	6157	5469	4781	4092	3402	2712	2021	1330	0639	9947	9255	53
8	6939	9265	1589	3912	6232	8552	0869	3185	5500	7813	0124	2434	4742	7048	9353	8894	8207	7521	6833	6146	5458	4769	4080	3390	2700	2010	1319	0627	9936	9243	52
9	6978	9304	1628	3950	6271	8590	0908	3224	5538	7851	0162	2472	4780	7087	9391	8882	8196	7509	6822	6134	5446	4758	4069	3379	2689	1998	1307	0616	9924	9232	51
10	7017	9342	1666	3989	6310	8629	0947	3263	5577	7890	0201	2511	4819	7125	9430	8871	8184	7498	6811	6123	5435	4746	4057	3367	2677	1987	1296	0604	9912	9220	50
11	7056	9381	1705	4028	6348	8668	0985	3301	5616	7928	0239	2549	4857	7163	9468	8859	8173	7486	6799	6111	5423	4735	4046	3356	2666	1975	1284	0593	9901	9208	49
12	7094	9420	1744	4066	6387	8706	1024	3340	5654	7967	0278	2588	4896	7202	9507	8848	8162	7475	6788	6100	5412	4723	4034	3344	2654	1964	1273	0581	9889	9197	48
13	7133	9459	1783	4105	6426	8745	1062	3378	5693	8005	0317	2626	4934	7240	9545	8836	8150	7463	6776	6089	5400	4712	4023	3333	2643	1952	1261	0570	9878	9185	47
14	7172	9497	1821	4144	6464	8784	1101	3417	5731	8044	0355	2665	4972	7279	9583	8825	8139	7452	6765	6077	5389	4700	4011	3321	2631	1941	1250	0558	9866	9174	46
15	7211	9536	1860	4182	6503	8822	1140	3455	5770	8082	0394	2703	5011	7317	9622	8814	8127	7441	6753	6066	5377	4689	4000	3310	2620	1929	1238	0547	9855	9162	45
16	7249	9575	1899	4221	6542	8861	1178	3494	5808	8121	0432	2741	5049	7356	9660	8802	8116	7429	6742	6054	5366	4677	3988	3298	2608	1918	1227	0535	9843	9151	44
17	7288	9614	1938	4260	6580	8899	1217	3533	5847	8160	0471	2780	5088	7394	9699	8791	8104	7418	6730	6043	5354	4666	3977	3287	2597	1906	1215	0524	9832	9139	43
18	7327	9652	1976	4298	6619	8938	1255	3571	5885	8198	0509	2818	5126	7432	9737	8779	8093	7406	6719	6031	5343	4654	3965	3275	2585	1895	1204	0512	9820	9127	42
19	7366	9691	2015	4337	6658	8977	1294	3610	5924	8237	0548	2857	5165	7471	9775	8768	8082	7395	6707	6020	5332	4643	3954	3264	2574	1883	1192	0501	9809	9116	41
20	7405	9730	2054	4376	6696	9015	1333	3648	5963	8275	0586	2895	5203	7509	9814	8756	8070	7383	6696	6008	5320	4631	3942	3252	2562	1872	1181	0489	9797	9105	40
21	7443	9769	2092	4415	6735	9054	1371	3687	6001	8314	0625	2934	5242	7548	9852	8745	8059	7372	6685	5997	5309	4620	3931	3241	2551	1860	1169	0478	9786	9093	39
22	7482	9807	2131	4453	6774	9093	1410	3726	6040	8352	0663	2972	5280	7586	9891	8734	8047	7360	6673	5985	5297	4608	3919	3229	2539	1849	1158	0466	9774	9081	38
23	7521	9846	2170	4492	6812	9131	1448	3764	6078	8391	0702	3011	5318	7625	9929	8722	8036	7349	6662	5974	5286	4597	3908	3218	2528	1837	1146	0455	9762	9070	37
24	7560	9885	2209	4531	6851	9170	1487	3803	6117	8429	0740	3049	5357	7663	9967	8711	8024	7337	6650	5962	5274	4585	3896	3207	2516	1826	1135	0443	9751	9058	36
25	7598	9924	2247	4569	6890	9209	1526	3841	6155	8468	0779	3088	5395	7701	0006	8699	8013	7326	6639	5951	5263	4574	3885	3195	2505	1814	1123	0431	9739	9047	35
26	7637	9962	2286	4608	6928	9247	1564	3880	6194	8506	0817	3126	5434	7740	0044	8688	8001	7315	6627	5939	5251	4562	3873	3184	2493	1803	1112	0420	9728	9035	34
27	7676	0001	2325	4647	6967	9286	1603	3918	6232	8545	0856	3165	5472	7778	0083	8676	7990	7303	6616	5928	5240	4551	3862	3172	2482	1791	1100	0408	9716	9024	33
28	7715	0040	2363	4685	7006	9324	1642	3957	6271	8583	0894	3203	5511	7817	0121	8665	7979	7292	6604	5917	5228	4539	3850	3161	2470	1780	1088	0397	9705	9012	32
29	7753	0079	2402	4724	7044	9363	1680	3996	6310	8622	0933	3242	5549	7855	0159	8653	7967	7280	6593	5905	5217	4528	3839	3149	2459	1768	1077	0385	9693	9001	31
30	7792	0117	2441	4763	7083	9402	1719	4034	6348	8660	0971	3280	5588	7894	0198	8642	7956	7269	6581	5894	5205	4516	3827	3138	2447	1757	1065	0374	9682	8989	30
31	7831	0156	2480	4801	7122	9440	1757	4073	6387	8699	1010	3319	5626	7932	0236	8631	7944	7257	6570	5882	5194	4505	3816	3126	2436	1745	1054	0362	9670	8978	29
32	7870	0195	2518	4840	7160	9479	1796	4111	6425	8737	1048	3357	5664	7970	0275	8619	7933	7246	6558	5871	5182	4494	3804	3115	2424	1734	1042	0351	9659	8966	28
33	7908	0234	2557	4879	7199	9518	1835	4150	6464	8776	1087	3396	5703	8009	0313	8608	7921	7234	6547	5859	5171	4482	3793	3103	2413	1722	1031	0339	9647	8954	27
34	7947	0272	2596	4917	7238	9556	1873	4189	6502	8814	1125	3434	5741	8047	0351	8596	7910	7223	6536	5848	5159	4471	3781	3092	2401	1711	1019	0328	9636	8943	26
35	7986	0311	2634	4956	7276	9595	1912	4227	6541	8853	1164	3472	5780	8086	0390	8585	7898	7211	6524	5836	5148	4459	3770	3080	2390	1699	1008	0316	9624	8931	25
36	8025	0350	2673	4995	7315	9633	1950	4266	6579	8892	1202	3511	5818	8124	0428	8573	7887	7200	6513	5825	5136	4448	3758	3069	2378	1688	0996	0305	9612	8920	24
37	8064	0388	2712	5033	7354	9672	1989	4304	6618	8930	1241	3549	5857	8162	0467	8562	7876	7189	6501	5813	5125	4436	3747	3057	2367	1676	0985	0293	9601	8908	23
38	8102	0427	2750	5072	7392	9711	2028	4343	6656	8969	1279	3588	5895	8201	0505	8551	7864	7177	6490	5802	5113	4425	3735	3046	2355	1664	0973	0282	9589	8897	22
39	8141	0466	2789	5111	7431	9749	2066	4381	6695	9007	1318	3626	5934	8239	0543	8539	7853	7166	6478	5790	5102	4413	3724	3034	2344	1653	0962	0270	9578	8885	21
40	8180	0505	2828	5150	7470	9788	2105	4420	6734	9046	1356	3665	5972	8278	0582	8528	7841	7154	6467	5779	5091	4402	3712	3023	2332	1641	0950	0258	9566	8874	20
41	8219	0543	2867	5188	7508	9827	2143	4459	6772	9084	1394	3703	6010	8316	0620	8516	7830	7143	6455	5767	5079	4390	3701	3011	2321	1630	0939	0247	9555	8862	19
42	8257	0582	2905	5227	7547	9865	2182	4497	6811	9123	1433	3742	6049	8354	0658	8505	7818	7131	6444	5756	5068	4379	3689	3000	2309	1618	0927	0235	9543	8851	18
43	8296	0621	2944	5266	7586	9904	2221	4536	6849	9161	1471	3780	6087	8393	0697	8493	7807	7120	6432	5744	5056	4367	3678	2988	2298	1607	0916	0224	9532	8839	17
44	8335	0660	2983	5304	7624	9942	2259	4574	6888	9200	1510	3819	6126	8431	0735	8482	7795	7108	6421	5733	5045	4356	3666	2977	2286	1595	0904	0212	9520	8827	16
45	8374	0698	3021	5343	7663	9981	2298	4613	6926	9238	1548	3857	6164	8470	0774	8470	7784	7097	6409	5722	5033	4344	3655	2965	2275	1584	0893	0201	9509	8816	15
46	8412	0737	3060	5382	7701	0020	2336	4651	6965	9277	1587	3896	6203	8508	0812	8459	7773	7086	6398	5710	5022	4333	3643	2953	2263	1572	0881	0189	9497	8804	14
47	8451	0776	3099	5420	7740	0058	2375	4690	7003	9315	1625	3934	6241	8547	0850	8448	7761	7074	6387	5699	5010	4321	3632	2942	2252	1561	0870	0178	9485	8793	13
48	8490	0815	3138	5459	7779	0097	2414	4729	7042	9354	1664	3973	6280	8585	0889	8436	7750	7063	6375	5687	4999	4310	3620	2930	2240	1549	0858	0166	9474	8781	12
49	8529	0853	3176	5498	7817	0136	2452	4767	7080	9392	1702	4011	6318	8623	0927	8425	7738	7051	6364	5676	4987	4298	3609	2919	2229	1538	0846	0155	9462	8770	11
50	8567	0892	3215	5536	7856	0174	2491	4806	7119	9431	1741	4049	6356	8662	0966	8413	7727	7040	6352	5664	4976	4287	3597	2907	2217	1526	0835	0143	9451	8758	10
51	8606	0931	3254	5575	7895	0213	2529	4844	7158	9469	1779	4088	6395	8700	1004	8402	7715	7028	6341	5653	4964	4275	3586	2896	2206	1515	0823	0132	9439	8747	9
52	8645	0969	3292	5614	7933	0251	2568	4883	7196	9508	1818	4126	6433	8739	1042	8390	7704	7017	6329	5641	4953	4264	3574	2884	2194	1503	0812	0120	9428	8735	8
53	8684	1008	3331	5652	7972	0290	2607	4921	7235	9546	1856	4165	6472	8777	1081	8379	7692	7005	6318	5630	4941	4252	3563	2873	2183	1492	0800	0109	9416	8723	7
54	8722	1047	3370	5691	8011	0329	2645	4960	7273	9585	1895	4203	6510	8815	1119	8368	7681	6994	6306	5618	4930	4241	3551	2861	2171	1480	0789	0097	9405	8712	6
55	8761	1086	3408	5730	8049	0367	2684	4999	7312	9623	1933	4242	6549	8854	1157	8356	7669	6982	6295	5607	4918	4229	3540	2850	2160	1469	0777	0085	9393	8700	5
56	8800	1124	3447	5768	8088	0406	2722	5037	7350	9662	1972	4280	6587	8892	1196	8345	7658	6971	6283	5595	4907	4218	3528	2838	2148	1457	0766	0074	9382	8689	4
57	8839	1163	3486	5807	8127	0445	2761	5076	7389	9700	2010	4319	6625	8931	1234	8333	7647	6960	6272	5584	4895	4206	3517	2827	2137	1446	0754	0062	9370	8677	3
58	8877	1202	3525	5846	8165	0483	2799	5114	7427	9739	2049	4357	6664	8969	1273	8322	7635	6948	6260	5572	4884	4195	3505	2815	2125	1434	0743	0051	9359	8666	2
59	8916	1241	3563	5884	8204	0522	2838	5153	7466	9777	2087	4396	6702	9007	1311	8310	7624	6937	6249	5561	4872	4183	3494	2804	2114	1423	0731	0039	9347	8654	1
60	8955	1279	3602	5923	8243	0560	2877	5191	7504	9816	2126	4434	6741	9046	1349	8299	7612	6925	6238	5549	4861	4172	3482	2792	2102	1411	0720	0028	9335	8643	0
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9.734	9.735	9.735	9.735	9.735	9.736	9.736	9.736	9.737	9.737	9.737	9.738	9.738	9.738	9.738
0	7644	0656	3667	6677	9685	2693	5699	8705	1709	4712	7714	0715	3714	6713	9710
1	7694	0706	3717	6727	9736	2743	5750	8755	1759	4762	7764	0765	3764	6763	9760
2	7744	0756	3767	6777	9786	2793	5800	8805	1809	4812	7814	0815	3814	6813	9810
3	7795	0807	3818	6827	9836	2843	5850	8855	1859	4862	7864	0865	3864	6863	9860
4	7845	0857	3868	6877	9886	2893	5900	8905	1909	4912	7914	0915	3914	6913	9910
5	7895	0907	3918	6928	9936	2944	5950	8955	1959	4962	7964	0965	3964	6963	9960
6	7945	0957	3968	6978	9986	2994	6000	9005	2009	5012	8014	1015	4014	7013	0010
7	7995	1007	4018	7028	0036	3044	6050	9055	2059	5062	8064	1065	4064	7063	0060
8	8046	1058	4068	7078	0087	3094	6100	9105	2109	5112	8114	1115	4114	7113	0110
9	8096	1108	4119	7128	0137	3144	6150	9155	2159	5162	8164	1165	4164	7163	0160
10	8146	1158	4169	7178	0187	3194	6200	9206	2210	5212	8214	1215	4214	7213	0210
11	8196	1208	4219	7228	0237	3244	6251	9256	2260	5262	8264	1265	4264	7263	0260
12	8246	1258	4269	7279	0287	3294	6301	9306	2310	5312	8314	1315	4314	7313	0310
13	8297	1309	4319	7329	0337	3345	6351	9356	2360	5362	8364	1365	4364	7362	0360
14	8347	1359	4369	7379	0387	3395	6401	9406	2410	5413	8414	1415	4414	7412	0410
15	8397	1409	4420	7429	0437	3445	6451	9456	2460	5463	8464	1465	4464	7462	0460
16	8447	1459	4470	7479	0488	3495	6501	9506	2510	5513	8514	1515	4514	7512	0510
17	8498	1509	4520	7529	0538	3545	6551	9556	2560	5563	8564	1565	4564	7562	0559
18	8548	1559	4570	7580	0588	3595	6601	9606	2610	5613	8614	1615	4614	7612	0609
19	8598	1610	4620	7630	0638	3645	6651	9656	2660	5663	8664	1665	4664	7662	0659
20	8648	1660	4670	7680	0688	3695	6701	9706	2710	5713	8714	1715	4714	7712	0709
21	8698	1710	4721	7730	0738	3745	6751	9756	2760	5763	8764	1765	4764	7762	0759
22	8749	1760	4771	7780	0788	3796	6802	9806	2810	5813	8814	1815	4814	7812	0809
23	8799	1810	4821	7830	0839	3846	6852	9856	2860	5863	8864	1865	4864	7862	0859
24	8849	1861	4871	7880	0889	3896	6902	9907	2910	5913	8914	1915	4914	7912	0909
25	8899	1911	4921	7931	0939	3946	6952	9957	2960	5963	8964	1965	4964	7962	0959
26	8949	1961	4971	7981	0989	3996	7002	0007	3010	6013	9014	2015	5014	8012	1009
27	9000	2011	5022	8031	1039	4046	7052	0057	3060	6063	9064	2065	5064	8062	1059
28	9050	2061	5072	8081	1089	4096	7102	0107	3110	6113	9114	2115	5114	8112	1109
29	9100	2111	5122	8131	1139	4146	7152	0157	3161	6163	9164	2165	5164	8162	1159
30	9150	2162	5172	8181	1189	4196	7202	0207	3211	6213	9214	2215	5214	8212	1209
31	9200	2212	5222	8231	1240	4246	7252	0257	3261	6263	9264	2265	5264	8262	1259
32	9251	2262	5272	8282	1290	4297	7302	0307	3311	6313	9314	2315	5314	8312	1309
33	9301	2312	5323	8332	1340	4347	7353	0357	3361	6363	9364	2365	5364	8362	1359
34	9351	2362	5373	8382	1390	4397	7403	0407	3411	6413	9414	2415	5414	8412	1408
35	9401	2413	5423	8432	1440	4447	7453	0457	3461	6463	9464	2465	5464	8462	1458
36	9451	2463	5473	8482	1490	4497	7503	0507	3511	6513	9515	2515	5514	8512	1508
37	9502	2513	5523	8532	1540	4547	7553	0557	3561	6563	9565	2565	5564	8562	1558
38	9552	2563	5573	8582	1590	4597	7603	0608	3611	6613	9615	2615	5614	8611	1608
39	9602	2613	5624	8633	1641	4647	7653	0658	3661	6663	9665	2665	5664	8661	1658
40	9652	2663	5674	8683	1691	4697	7703	0708	3711	6713	9715	2715	5714	8711	1708
41	9702	2714	5724	8733	1741	4748	7753	0758	3761	6763	9765	2765	5764	8761	1758
42	9753	2764	5774	8783	1791	4798	7803	0808	3811	6813	9815	2815	5813	8811	1808
43	9803	2814	5824	8833	1841	4848	7853	0858	3861	6863	9865	2865	5863	8861	1858
44	9853	2864	5874	8883	1891	4898	7903	0908	3911	6913	9915	2915	5913	8911	1908
45	9903	2914	5924	8933	1941	4948	7954	0958	3961	6964	9965	2965	5963	8961	1958
46	9953	2965	5975	8984	1991	4998	8004	1008	4011	7014	0015	3015	6013	9011	2008
47	0004	3015	6025	9034	2041	5048	8054	1058	4061	7064	0065	3065	6063	9061	2058
48	0054	3065	6075	9084	2092	5098	8104	1108	4111	7114	0115	3115	6113	9111	2108
49	0104	3115	6125	9134	2142	5148	8154	1158	4161	7164	0165	3165	6163	9161	2158
50	0154	3165	6175	9184	2192	5198	8204	1208	4212	7214	0215	3215	6213	9211	2207
51	0204	3215	6225	9234	2242	5249	8254	1258	4262	7264	0265	3264	6263	9261	2257
52	0255	3266	6276	9284	2292	5299	8304	1308	4312	7314	0315	3314	6313	9311	2307
53	0305	3316	6326	9335	2342	5349	8354	1358	4362	7364	0365	3364	6363	9361	2357
54	0355	3366	6376	9385	2392	5399	8404	1409	4412	7414	0415	3414	6413	9411	2407
55	0405	3416	6426	9435	2442	5449	8454	1459	4462	7464	0465	3464	6463	9461	2457
56	0455	3466	6476	9485	2493	5499	8504	1509	4512	7514	0515	3514	6513	9511	2507
57	0505	3516	6526	9535	2543	5549	8555	1559	4562	7564	0565	3564	6563	9561	2557
58	0556	3567	6577	9585	2593	5599	8605	1609	4612	7614	0615	3614	6613	9611	2607
59	0606	3617	6627	9635	2643	5649	8655	1659	4662	7664	0665	3664	6663	9660	2657
60	0656	3667	6677	9685	2693	5699	8705	1709	4712	7714	0715	3714	6713	9710	2707
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
″	10.265	10.264	10.264	10.264	10.264	10.263	10.263	10.263	10.262	10.262	10.262	10.261	10.261	10.261	10.261	″
0	2356	9344	6333	3323	0315	7307	4301	1295	8291	5288	2286	9285	6286	3287	0290	60
1	2306	9294	6283	3273	0264	7257	4250	1245	8241	5238	2236	9235	6236	3237	0240	59
2	2256	9244	6233	3223	0214	7207	4200	1195	8191	5188	2186	9185	6186	3187	0190	58
3	2205	9193	6182	3173	0164	7157	4150	1145	8141	5138	2136	9135	6136	3137	0140	57
4	2155	9143	6132	3123	0114	7107	4100	1095	8091	5088	2086	9085	6086	3087	0090	56
5	2105	9093	6082	3072	0064	7056	4050	1045	8041	5038	2036	9035	6036	3037	0040	55
6	2055	9043	6032	3022	0014	7006	4000	0995	7991	4988	1986	8985	5986	2987	9990	54
7	2005	8993	5982	2972	9964	6956	3950	0945	7941	4938	1936	8935	5936	2937	9940	53
8	1954	8942	5932	2922	9913	6906	3900	0895	7891	4888	1886	8885	5886	2887	9890	52
9	1904	8892	5881	2872	9863	6856	3850	0845	7841	4838	1836	8835	5836	2837	9840	51
10	1854	8842	5831	2822	9813	6806	3800	0794	7790	4788	1786	8785	5786	2787	9790	50
11	1804	8792	5781	2772	9763	6756	3749	0744	7740	4738	1736	8735	5736	2737	9740	49
12	1754	8742	5731	2721	9713	6706	3699	0694	7690	4688	1686	8685	5686	2687	9690	48
13	1703	8691	5681	2671	9663	6655	3649	0644	7640	4638	1636	8635	5636	2638	9640	47
14	1653	8641	5631	2621	9613	6605	3599	0594	7590	4587	1586	8585	5586	2588	9590	46
15	1603	8591	5580	2571	9563	6555	3549	0544	7540	4537	1536	8535	5536	2538	9540	45
16	1553	8541	5530	2521	9512	6505	3499	0494	7490	4487	1486	8485	5486	2488	9490	44
17	1502	8491	5480	2471	9462	6455	3449	0444	7440	4437	1436	8435	5436	2438	9441	43
18	1452	8441	5430	2420	9412	6405	3399	0394	7390	4387	1386	8385	5386	2388	9391	42
19	1402	8390	5380	2370	9362	6355	3349	0344	7340	4337	1336	8335	5336	2338	9341	41
20	1352	8340	5330	2320	9312	6305	3299	0294	7290	4287	1286	8285	5286	2288	9291	40
21	1302	8290	5279	2270	9262	6255	3249	0244	7240	4237	1236	8235	5236	2238	9241	39
22	1251	8240	5229	2220	9212	6204	3198	0194	7190	4187	1186	8185	5186	2188	9191	38
23	1201	8190	5179	2170	9161	6154	3148	0144	7140	4137	1136	8135	5136	2138	9141	37
24	1151	8139	5129	2120	9111	6104	3098	0093	7090	4087	1086	8085	5086	2088	9091	36
25	1101	8089	5079	2069	9061	6054	3048	0043	7040	4037	1036	8035	5036	2038	9041	35
26	1051	8039	5029	2019	9011	6004	2998	9993	6990	3987	0986	7985	4986	1988	8991	34
27	1000	7989	4978	1969	8961	5954	2948	9943	6940	3937	0936	7935	4936	1938	8941	33
28	0950	7939	4928	1919	8911	5904	2898	9893	6890	3887	0886	7885	4886	1888	8891	32
29	0900	7889	4878	1869	8861	5854	2848	9843	6839	3837	0836	7835	4836	1838	8841	31
30	0850	7838	4828	1819	8811	5804	2798	9793	6789	3787	0786	7785	4786	1788	8791	30
31	0800	7788	4778	1769	8760	5754	2748	9743	6739	3737	0736	7735	4736	1738	8741	29
32	0749	7738	4728	1718	8710	5703	2698	9693	6689	3687	0686	7685	4686	1688	8691	28
33	0699	7688	4677	1668	8660	5653	2647	9643	6639	3637	0636	7635	4636	1638	8641	27
34	0649	7638	4627	1618	8610	5603	2597	9593	6589	3587	0586	7585	4586	1588	8592	26
35	0599	7587	4577	1568	8560	5553	2547	9543	6539	3537	0536	7535	4536	1538	8542	25
36	0549	7537	4527	1518	8510	5503	2497	9493	6489	3487	0485	7485	4486	1488	8492	24
37	0498	7487	4477	1468	8460	5453	2447	9443	6439	3437	0435	7435	4436	1438	8442	23
38	0448	7437	4427	1418	8410	5403	2397	9392	6389	3387	0385	7385	4386	1389	8392	22
39	0398	7387	4376	1367	8359	5353	2347	9342	6339	3337	0335	7335	4336	1339	8342	21
40	0348	7337	4326	1317	8309	5303	2297	9292	6289	3287	0285	7285	4286	1289	8292	20
41	0298	7286	4276	1267	8259	5252	2247	9242	6239	3237	0235	7235	4236	1239	8242	19
42	0247	7236	4226	1217	8209	5202	2197	9192	6189	3187	0185	7185	4187	1189	8192	18
43	0197	7186	4176	1167	8159	5152	2147	9142	6139	3137	0135	7135	4137	1139	8142	17
44	0147	7136	4126	1117	8109	5102	2097	9092	6089	3087	0085	7085	4087	1089	8092	16
45	0097	7086	4076	1067	8059	5052	2046	9042	6039	3036	0035	7035	4037	1039	8042	15
46	0047	7035	4025	1016	8009	5002	1996	8992	5989	2986	9985	6985	3987	0989	7992	14
47	9996	6985	3975	0966	7959	4952	1946	8942	5939	2936	9935	6935	3937	0939	7942	13
48	9946	6935	3925	0916	7908	4902	1896	8892	5889	2886	9885	6885	3887	0889	7892	12
49	9896	6885	3875	0866	7858	4852	1846	8842	5839	2836	9835	6835	3837	0839	7842	11
50	9846	6835	3825	0816	7808	4802	1796	8792	5788	2786	9785	6785	3787	0789	7793	10
51	9796	6785	3775	0766	7758	4751	1746	8742	5738	2736	9735	6736	3737	0739	7743	9
52	9745	6734	3724	0716	7708	4701	1696	8692	5688	2686	9685	6686	3687	0689	7693	8
53	9695	6684	3674	0665	7658	4651	1646	8642	5638	2636	9635	6636	3637	0639	7643	7
54	9645	6634	3624	0615	7608	4601	1596	8591	5588	2586	9585	6586	3587	0589	7593	6
55	9595	6584	3574	0565	7558	4551	1546	8541	5538	2536	9535	6536	3537	0539	7543	5
56	9545	6534	3524	0515	7507	4501	1496	8491	5488	2486	9485	6486	3487	0489	7493	4
57	9495	6484	3474	0465	7457	4451	1445	8441	5438	2436	9435	6436	3437	0439	7443	3
58	9444	6433	3423	0415	7407	4401	1395	8391	5388	2386	9385	6386	3387	0389	7393	2
59	9394	6383	3373	0365	7357	4351	1345	8341	5338	2336	9335	6336	3337	0340	7343	1
60	9344	6333	3323	0315	7307	4301	1295	8291	5288	2286	9285	6286	3287	0290	7293	0
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′		45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
″	9.682	9.682	9.682	9.682	9.683	9.683	9.683	9.683	9.683	9.684	9.684	9.684	9.684	9.685	9.685		9.942	9.942	9.942	9.942	9.942	9.942	9.942	9.942	9.942	9.942	9.942	9.942	9.942	9.941	9.941	″
0	1349	3651	5952	8250	0548	2843	5137	7430	9720	2010	4297	6583	8868	1151	3432		8643	7949	7255	6561	5866	5171	4476	3779	3083	2386	1688	0990	0291	9592	8893	60
1	1388	3690	5990	8289	0586	2881	5175	7468	9759	2048	4335	6622	8906	1189	3470		8631	7938	7244	6550	5855	5160	4464	3768	3071	2374	1676	0978	0280	9581	8881	59
2	1426	3728	6028	8327	0624	2920	5214	7506	9797	2086	4374	6660	8944	1227	3508		8620	7926	7232	6538	5843	5148	4452	3756	3059	2362	1665	0967	0268	9569	8869	58
3	1464	3766	6067	8365	0662	2958	5252	7544	9835	2124	4412	6698	8982	1265	3546		8608	7915	7221	6526	5832	5136	4441	3745	3048	2351	1653	0955	0256	9557	8858	57
4	1503	3805	6105	8404	0701	2996	5290	7582	9873	2162	4450	6736	9020	1303	3584		8596	7903	7209	6515	5820	5125	4429	3733	3036	2339	1641	0943	0245	9546	8846	56
5	1541	3843	6143	8442	0739	3034	5328	7620	9911	2200	4488	6774	9058	1341	3622		8585	7891	7198	6503	5809	5113	4418	3721	3025	2327	1630	0932	0233	9534	8834	55
6	1580	3881	6182	8480	0777	3073	5366	7659	9949	2238	4526	6812	9096	1379	3660		8573	7880	7186	6492	5797	5102	4406	3710	3013	2316	1618	0920	0221	9522	8823	54
7	1618	3920	6220	8518	0815	3111	5405	7697	9988	2277	4564	6850	9134	1417	3699		8562	7868	7175	6480	5785	5090	4394	3698	3001	2304	1606	0908	0210	9511	8811	53
8	1656	3958	6258	8557	0854	3149	5443	7735	0026	2315	4602	6888	9173	1455	3737		8550	7857	7163	6469	5774	5079	4383	3686	2990	2293	1595	0897	0198	9499	8799	52
9	1695	3996	6297	8595	0892	3187	5481	7773	0064	2353	4640	6926	9211	1493	3775		8539	7845	7151	6457	5762	5067	4371	3675	2978	2281	1583	0885	0186	9487	8788	51
10	1733	4035	6335	8633	0930	3226	5519	7811	0102	2391	4678	6964	9249	1531	3813		8527	7834	7140	6445	5751	5055	4360	3663	2967	2269	1572	0873	0175	9476	8776	50
11	1771	4073	6373	8672	0968	3264	5557	7850	0140	2429	4717	7002	9287	1569	3851		8516	7822	7128	6434	5739	5044	4348	3652	2955	2258	1560	0862	0163	9464	8764	49
12	1810	4111	6411	8710	1007	3302	5596	7888	0178	2467	4755	7041	9325	1607	3889		8504	7811	7117	6422	5727	5032	4336	3640	2943	2246	1548	0850	0151	9452	8753	48
13	1848	4150	6450	8748	1045	3340	5634	7926	0217	2505	4793	7079	9363	1645	3927		8492	7799	7105	6411	5716	5021	4325	3628	2932	2234	1537	0838	0140	9441	8741	47
14	1887	4188	6488	8786	1083	3379	5672	7964	0255	2544	4831	7117	9401	1683	3965		8481	7787	7094	6399	5704	5009	4313	3617	2920	2223	1525	0827	0128	9429	8729	46
15	1925	4227	6526	8825	1122	3417	5710	8002	0293	2582	4869	7155	9439	1722	4003		8469	7776	7082	6388	5693	4997	4302	3605	2908	2211	1513	0815	0116	9417	8718	45
16	1963	4265	6565	8863	1160	3455	5749	8041	0331	2620	4907	7193	9477	1760	4041		8458	7764	7070	6376	5681	4986	4290	3594	2897	2200	1502	0804	0105	9406	8706	44
17	2002	4303	6603	8901	1198	3493	5787	8079	0369	2658	4945	7231	9515	1798	4079		8446	7753	7059	6364	5670	4974	4278	3582	2885	2188	1490	0792	0093	9394	8694	43
18	2040	4342	6641	8940	1236	3531	5825	8117	0407	2696	4983	7269	9553	1836	4117		8435	7741	7047	6353	5658	4963	4267	3570	2874	2176	1479	0780	0082	9382	8683	42
19	2078	4380	6680	8978	1275	3570	5863	8155	0445	2734	5021	7307	9591	1874	4155		8423	7730	7036	6341	5646	4951	4255	3559	2862	2165	1467	0769	0070	9371	8671	41
20	2117	4418	6718	9016	1313	3608	5901	8193	0484	2772	5060	7345	9629	1912	4193		8412	7718	7024	6330	5635	4939	4244	3547	2850	2153	1455	0757	0058	9359	8659	40
21	2155	4457	6756	9055	1351	3646	5940	8232	0522	2811	5098	7383	9667	1950	4231		8400	7707	7013	6318	5623	4928	4232	3536	2839	2141	1444	0745	0047	9347	8648	39
22	2194	4495	6795	9093	1389	3684	5978	8270	0560	2849	5136	7421	9705	1988	4269		8388	7695	7001	6307	5612	4916	4220	3524	2827	2130	1432	0734	0035	9336	8636	38
23	2232	4533	6833	9131	1428	3723	6016	8308	0598	2887	5174	7459	9743	2026	4307		8377	7683	6989	6295	5600	4905	4209	3512	2815	2118	1420	0722	0023	9324	8624	37
24	2270	4572	6871	9169	1466	3761	6054	8346	0636	2925	5212	7497	9781	2064	4345		8365	7672	6978	6283	5588	4893	4197	3501	2804	2107	1409	0710	0012	9312	8613	36
25	2309	4610	6910	9208	1504	3799	6092	8384	0674	2963	5250	7536	9819	2102	4383		8354	7660	6966	6272	5577	4881	4186	3489	2792	2095	1397	0699	0000	9301	8601	35
26	2347	4648	6948	9246	1542	3837	6131	8422	0713	3001	5288	7574	9858	2140	4421		8342	7649	6955	6260	5565	4870	4174	3478	2781	2083	1385	0687	9988	9289	8589	34
27	2385	4687	6986	9284	1581	3876	6169	8461	0751	3039	5326	7612	9896	2178	4459		8331	7637	6943	6249	5554	4858	4162	3466	2769	2072	1374	0676	9977	9277	8578	33
28	2424	4725	7025	9323	1619	3914	6207	8499	0789	3077	5364	7650	9934	2216	4497		8319	7626	6932	6237	5542	4847	4151	3454	2757	2060	1362	0664	9965	9266	8566	32
29	2462	4763	7063	9361	1657	3952	6245	8537	0827	3116	5402	7688	9972	2254	4535		8308	7614	6920	6225	5531	4835	4139	3443	2746	2048	1351	0652	9953	9254	8554	31
30	2501	4802	7101	9399	1696	3990	6284	8575	0865	3154	5441	7726	0010	2292	4573		8296	7602	6908	6214	5519	4823	4128	3431	2734	2037	1339	0641	9942	9242	8543	30
31	2539	4840	7139	9437	1734	4029	6322	8613	0903	3192	5479	7764	0048	2330	4611		8284	7591	6897	6202	5507	4812	4116	3419	2723	2025	1327	0629	9930	9231	8531	29
32	2577	4878	7178	9476	1773	4067	6360	8652	0942	3230	5517	7802	0086	2368	4649		8273	7579	6885	6191	5496	4800	4104	3408	2711	2014	1316	0617	9918	9219	8519	28
33	2616	4917	7216	9514	1810	4105	6398	8690	0980	3268	5555	7840	0124	2406	4687		8261	7568	6874	6179	5484	4789	4093	3396	2699	2002	1304	0606	9907	9207	8508	27
34	2654	4955	7254	9552	1849	4143	6436	8728	1018	3306	5593	7878	0162	2444	4725		8250	7556	6862	6168	5473	4777	4081	3385	2688	1990	1292	0594	9895	9196	8496	26
35	2692	4993	7293	9591	1887	4181	6475	8766	1056	3344	5631	7916	0200	2482	4763		8238	7545	6851	6156	5461	4765	4069	3373	2676	1979	1281	0582	9883	9184	8484	25
36	2731	5032	7331	9629	1925	4220	6513	8804	1094	3382	5669	7954	0238	2520	4801		8227	7533	6839	6144	5449	4754	4058	3361	2664	1967	1269	0571	9872	9172	8473	24
37	2769	5070	7369	9667	1963	4258	6551	8842	1132	3421	5707	7992	0276	2558	4839		8215	7522	6827	6133	5438	4742	4046	3350	2653	1955	1257	0559	9860	9161	8461	23
38	2807	5108	7408	9705	2002	4296	6589	8881	1170	3459	5745	8031	0314	2596	4877		8204	7510	6816	6121	5426	4731	4035	3338	2641	1944	1246	0547	9849	9149	8449	22
39	2846	5147	7446	9744	2040	4334	6627	8919	1209	3497	5784	8069	0352	2634	4915		8192	7498	6804	6110	5415	4719	4023	3327	2630	1932	1234	0536	9837	9138	8438	21
40	2884	5185	7484	9782	2078	4373	6666	8957	1247	3535	5822	8107	0390	2672	4953		8180	7487	6793	6098	5403	4707	4011	3315	2618	1921	1223	0524	9825	9126	8426	20
41	2923	5223	7523	9820	2116	4411	6704	8995	1285	3573	5860	8145	0428	2710	4991		8169	7475	6781	6087	5391	4696	4000	3303	2606	1909	1211	0512	9814	9114	8414	19
42	2961	5262	7561	9859	2155	4449	6742	9033	1323	3611	5898	8183	0466	2748	5028		8157	7464	6770	6075	5380	4684	3988	3292	2595	1897	1199	0501	9802	9103	8403	18
43	2999	5300	7599	9897	2193	4487	6780	9071	1361	3649	5936	8221	0504	2786	5066		8146	7452	6758	6063	5368	4673	3977	3280	2583	1886	1188	0489	9790	9091	8391	17
44	3038	5338	7638	9935	2231	4526	6818	9110	1399	3687	5974	8259	0542	2824	5104		8134	7441	6746	6052	5357	4661	3965	3269	2571	1874	1176	0478	9779	9079	8379	16
45	3076	5377	7676	9973	2269	4564	6857	9148	1437	3726	6012	8297	0580	2862	5142		8123	7429	6735	6040	5345	4650	3953	3257	2560	1862	1164	0466	9767	9068	8368	15
46	3114	5415	7714	0012	2308	4602	6895	9186	1476	3764	6050	8335	0618	2900	5180		8111	7417	6723	6029	5334	4638	3942	3245	2548	1851	1153	0454	9755	9056	8356	14
47	3153	5453	7752	0050	2346	4640	6933	9224	1514	3802	6088	8373	0657	2938	5218		8100	7406	6712	6017	5322	4626	3930	3234	2537	1839	1141	0443	9744	9044	8344	13
48	3191	5492	7791	0088	2384	4678	6971	9262	1552	3840	6126	8411	0695	2976	5256		8088	7394	6700	6005	5310	4615	3919	3222	2525	1827	1129	0431	9732	9033	8333	12
49	3229	5530	7829	0126	2422	4717	7009	9301	1590	3878	6164	8449	0733	3014	5294		8076	7383	6689	5994	5299	4603	3907	3210	2513	1816	1118	0419	9720	9021	8321	11
50	3268	5568	7867	0165	2461	4755	7048	9339	1628	3916	6203	8487	0771	3052	5332		8065	7371	6677	5982	5287	4592	3895	3199	2502	1804	1106	0408	9709	9009	8309	10
51	3306	5607	7906	0203	2499	4793	7086	9377	1666	3954	6241	8525	0809	3090	5370		8053	7360	6665	5971	5276	4580	3884	3187	2490	1793	1095	0396	9697	8998	8298	9
52	3344	5645	7944	0241	2537	4831	7124	9415	1704	3992	6279	8564	0847	3128	5408		8042	7348	6654	5959	5264	4568	3872	3176	2479	1781	1083	0384	9685	8986	8286	8
53	3383	5683	7982	0280	2575	4870	7162	9453	1743	4031	6317	8602	0885	3166	5446		8030	7336	6642	5948	5252	4557	3861	3164	2467	1769	1071	0373	9674	8974	8274	7
54	3421	5722	8021	0318	2614	4908	7200	9491	1781	4069	6355	8640	0923	3204	5484		8019	7325	6631	5936	5241	4545	3849	3152	2455	1758	1060	0361	9662	8963	8263	6
55	3460	5760	8059	0356	2652	4946	7239	9530	1819	4107	6393	8678	0961	3242	5522		8007	7313	6619	5924	5229	4534	3837	3141	2444	1746	1048	0349	9650	8951	8251	5
56	3498	5798	8097	0394	2690	4984	7277	9568	1857	4145	6431	8716	0999	3280	5560		7996	7302	6608	5913	5218	4522	3826	3129	2432	1734	1036	0338	9639	8939	8239	4
57	3536	5837	8135	0433	2728	5022	7315	9606	1895	4183	6469	8754	1037	3318	5598		7984	7290	6596	5901	5206	4510	3814	3118	2420	1723	1025	0326	9627	8928	8228	3
58	3575	5875	8174	0471	2767	5061	7353	9644	1933	4221	6507	8792	1075	3356	5636		7972	7279	6584	5890	5194	4499	3803	3106	2409	1711	1013	0315	9615	8916	8216	2
59	3613	5913	8212	0509	2805	5099	7391	9682	1972	4259	6545	8830	1113	3394	5674		7961	7267	6573	5878	5183	4487	3791	3094	2397	1700	1001	0303	9604	8904	8204	1
60	3651	5952	8250	0548	2843	5137	7430	9720	2010	4297	6583	8868	1151	3432	5712		7949	7255	6561	5866	5171	4476	3779	3083	2386	1688	0990	0291	9592	8893	8193	0
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′		14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

"	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.
	739	739	739	740	740	740	741	741	741	741	742	742	742	743	743
0	2707	5702	8696	1689	4681	7672	0662	3650	6638	9624	2609	5594	8577	1559	4540
1	2757	5752	8746	1739	4731	7722	0711	3700	6687	9674	2659	5643	8627	1609	4589
2	2807	5802	8796	1789	4781	7772	0761	3750	6737	9724	2709	5693	8676	1658	4639
3	2857	5852	8846	1839	4831	7821	0811	3800	6787	9773	2759	5743	8726	1708	4689
4	2906	5902	8896	1889	4880	7871	0861	3849	6837	9823	2808	5793	8776	1758	4739
5	2956	5952	8946	1938	4930	7921	0911	3899	6887	9873	2858	5842	8825	1807	4788
6	3006	6001	8995	1988	4980	7971	0960	3949	6936	9923	2908	5892	8875	1857	4838
7	3056	6051	9045	2038	5030	8021	1010	3999	6986	9972	2958	5942	8925	1907	4888
8	3106	6101	9095	2088	5080	8071	1060	4049	7036	0022	3007	5991	8974	1956	4937
9	3156	6151	9145	2138	5130	8120	1110	4098	7086	0072	3057	6041	9024	2006	4987
10	3206	6201	9195	2188	5180	8170	1160	4148	7136	0122	3107	6091	9074	2056	5037
11	3256	6251	9245	2238	5229	8220	1210	4198	7185	0172	3157	6141	9124	2105	5086
12	3306	6301	9295	2288	5279	8270	1259	4248	7235	0221	3206	6190	9173	2155	5136
13	3356	6351	9345	2337	5329	8320	1309	4298	7285	0271	3256	6240	9223	2205	5186
14	3406	6401	9395	2387	5379	8370	1359	4347	7335	0321	3306	6290	9273	2255	5235
15	3456	6451	9444	2437	5429	8419	1409	4397	7384	0371	3356	6340	9322	2304	5285
16	3506	6501	9494	2487	5479	8469	1459	4447	7434	0420	3405	6389	9372	2354	5335
17	3556	6550	9544	2537	5529	8519	1508	4497	7484	0470	3455	6439	9422	2404	5384
18	3605	6600	9594	2587	5578	8569	1558	4547	7534	0520	3505	6489	9472	2453	5434
19	3655	6650	9644	2637	5628	8619	1608	4596	7584	0570	3555	6538	9521	2503	5484
20	3705	6700	9694	2687	5678	8669	1658	4646	7633	0619	3604	6588	9571	2553	5533
21	3755	6750	9744	2736	5728	8718	1708	4696	7683	0669	3654	6638	9621	2602	5583
22	3805	6800	9794	2786	5778	8768	1758	4746	7733	0719	3704	6688	9670	2652	5633
23	3855	6850	9844	2836	5828	8818	1807	4796	7783	0769	3754	6737	9720	2702	5682
24	3905	6900	9893	2886	5878	8868	1857	4845	7832	0818	3803	6787	9770	2751	5732
25	3955	6950	9943	2936	5927	8918	1907	4895	7882	0868	3853	6837	9819	2801	5782
26	4005	7000	9993	2986	5977	8968	1957	4945	7932	0918	3903	6886	9869	2851	5831
27	4055	7049	0043	3036	6027	9017	2007	4995	7982	0968	3952	6936	9919	2900	5881
28	4105	7099	0093	3085	6077	9067	2056	5044	8031	1017	4002	6986	9969	2950	5931
29	4155	7149	0143	3135	6127	9117	2106	5094	8081	1067	4052	7036	0018	3000	5980
30	4205	7199	0193	3185	6177	9167	2156	5144	8131	1117	4102	7085	0068	3049	6030
31	4254	7249	0243	3235	6226	9217	2206	5194	8181	1167	4151	7135	0118	3099	6080
32	4304	7299	0293	3285	6276	9267	2256	5244	8231	1216	4201	7185	0167	3149	6129
33	4354	7349	0342	3335	6326	9316	2305	5293	8280	1266	4251	7235	0217	3199	6179
34	4404	7399	0392	3385	6376	9366	2355	5343	8330	1316	4301	7284	0267	3248	6229
35	4454	7449	0442	3435	6426	9416	2405	5393	8380	1366	4350	7334	0316	3298	6278
36	4504	7499	0492	3484	6476	9466	2455	5443	8430	1415	4400	7384	0366	3348	6328
37	4554	7548	0542	3534	6526	9516	2505	5493	8479	1465	4450	7433	0416	3397	6378
38	4604	7598	0592	3584	6575	9565	2554	5542	8529	1515	4500	7483	0466	3447	6427
39	4654	7648	0642	3634	6625	9615	2604	5592	8579	1565	4549	7533	0515	3497	6477
40	4704	7698	0692	3684	6675	9665	2654	5642	8629	1614	4599	7583	0565	3546	6527
41	4754	7748	0741	3734	6725	9715	2704	5692	8679	1664	4649	7632	0615	3596	6576
42	4804	7798	0791	3784	6775	9765	2754	5742	8728	1714	4699	7682	0664	3646	6626
43	4853	7848	0841	3833	6825	9815	2804	5791	8778	1764	4748	7732	0714	3695	6676
44	4903	7898	0891	3883	6874	9864	2853	5841	8828	1813	4798	7781	0764	3745	6725
45	4953	7948	0941	3933	6924	9914	2903	5891	8878	1863	4848	7831	0813	3795	6775
46	5003	7998	0991	3983	6974	9964	2953	5941	8927	1913	4897	7881	0863	3844	6824
47	5053	8047	1041	4033	7024	0014	3003	5990	8977	1963	4947	7931	0913	3894	6874
48	5103	8097	1091	4083	7074	0064	3053	6040	9027	2012	4997	7980	0963	3944	6924
49	5153	8147	1140	4133	7124	0114	3102	6090	9077	2062	5047	8030	1012	3993	6973
50	5203	8197	1190	4182	7173	0163	3152	6140	9126	2112	5096	8080	1062	4043	7023
51	5253	8247	1240	4232	7223	0213	3202	6190	9176	2162	5146	8129	1112	4093	7073
52	5303	8297	1290	4282	7273	0263	3252	6239	9226	2211	5196	8179	1161	4142	7122
53	5353	8347	1340	4332	7323	0313	3302	6289	9276	2261	5246	8229	1211	4192	7172
54	5403	8397	1390	4382	7373	0363	3351	6339	9326	2311	5295	8279	1261	4242	7222
55	5452	8447	1440	4432	7423	0412	3401	6389	9375	2361	5345	8328	1310	4291	7271
56	5502	8497	1490	4482	7473	0462	3451	6439	9425	2410	5395	8378	1360	4341	7321
57	5552	8546	1540	4531	7522	0512	3501	6488	9475	2460	5444	8428	1410	4391	7371
58	5602	8596	1589	4581	7572	0562	3551	6538	9525	2510	5494	8477	1459	4440	7420
59	5652	8646	1639	4631	7622	0612	3600	6588	9574	2560	5544	8527	1509	4490	7470
60	5702	8696	1689	4681	7672	0662	3650	6638	9624	2609	5594	8577	1559	4540	7520
"	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	"
260	260	260	259	259	259	258	258	258	258	257	257	257	256	256	
7293	4298	1304	8311	5319	2328	9338	6350	3362	0376	7391	4406	1423	8441	5460	60
7243	4248	1254	8261	5269	2278	9289	6300	3313	0326	7341	4357	1373	8391	5411	59
7193	4198	1204	8211	5219	2228	9239	6250	3263	0276	7291	4307	1324	8342	5361	58
7143	4148	1154	8161	5169	2179	9189	6200	3213	0227	7241	4257	1274	8292	5311	57
7094	4098	1104	8111	5120	2129	9139	6151	3163	0177	7192	4207	1224	8242	5261	56
7044	4048	1054	8062	5070	2079	9089	6101	3113	0127	7142	4158	1175	8193	5212	55
6994	3999	1005	8012	5020	2029	9040	6051	3064	0077	7092	4108	1125	8143	5162	54
6944	3949	0955	7962	4970	1979	8990	6001	3014	0028	7042	4058	1075	8093	5112	53
6894	3899	0905	7912	4920	1929	8940	5951	2964	9978	6993	4009	1026	8044	5063	52
6844	3849	0855	7862	4870	1880	8890	5902	2914	9928	6943	3959	0976	7994	5013	51
6794	3799	0805	7812	4820	1830	8840	5852	2864	9878	6893	3909	0926	7944	4963	50
6744	3749	0755	7762	4771	1780	8790	5802	2815	9828	6843	3859	0876	7895	4914	49
6694	3699	0705	7712	4721	1730	8741	5752	2765	9779	6794	3810	0827	7845	4864	48
6644	3649	0655	7663	4671	1680	8691	5702	2715	9729	6744	3760	0777	7795	4814	47
6594	3599	0605	7613	4621	1630	8641	5653	2665	9679	6694	3710	0727	7745	4765	46
6544	3549	0556	7563	4571	1581	8591	5603	2616	9629	6644	3660	0678	7696	4715	45
6494	3499	0506	7513	4521	1531	8541	5553	2566	9580	6595	3611	0628	7646	4665	44
6444	3450	0456	7463	4471	1481	8492	5503	2516	9530	6545	3561	0578	7596	4616	43
6395	3400	0406	7413	4422	1431	8442	5453	2466	9480	6495	3511	0528	7547	4566	42
6345	3350	0356	7363	4372	1381	8392	5404	2416	9430	6445	3462	0479	7497	4516	41
6295	3300	0306	7313	4322	1331	8342	5354	2367	9381	6396	3412	0429	7447	4467	40
6245	3250	0256	7264	4272	1282	8292	5304	2317	9331	6346	3362	0379	7398	4417	39
6195	3200	0206	7214	4222	1232	8242	5254	2267	9281	6296	3312	0330	7348	4367	38
6145	3150	0156	7164	4172	1182	8193	5204	2217	9231	6246	3263	0280	7298	4318	37
6095	3100	0107	7114	4122	1132	8143	5155	2168	9182	6197	3213	0230	7249	4268	36
6045	3050	0057	7064	4073	1082	8093	5105	2118	9132	6147	3163	0181	7199	4218	35
5995	3000	0007	7014	4023	1032	8043	5055	2068	9082	6097	3114	0131	7149	4169	34
5945	2951	9957	6964	3973	0983	7993	5005	2018	9032	6048	3064	0081	7100	4119	33
5895	2901	9907	6915	3923	0933	7944	4956	1969	8983	5998	3014	0031	7050	4069	32
5845	2851	9857	6865	3873	0883	7894	4906	1919	8933	5948	2964	9982	7000	4020	31
5795	2801	9807	6815	3823	0833	7844	4856	1869	8883	5898	2915	9932	6951	3970	30
5746	2751	9757	6765	3774	0783	7794	4806	1819	8833	5849	2865	9882	6901	3920	29
5696	2701	9707	6715	3724	0733	7744	4756	1769	8784	5799	2815	9833	6851	3871	28
5646	2651	9658	6665	3674	0684	7695	4707	1720	8734	5749	2765	9783	6801	3821	27
5596	2601	9608	6615	3624	0634	7645	4657	1670	8684	5699	2716	9733	6752	3771	26
5546	2551	9558	6565	3574	0584	7595	4607	1620	8634	5650	2666	9684	6702	3722	25
5496	2501	9508	6516	3524	0534	7545	4557	1570	8585	5600	2616	9634	6652	3672	24
5446	2452	9458	6466	3474	0484	7495	4507	1521	8535	5550	2567	9584	6603	3622	23
5396	2402	9408	6416	3425	0435	7446	4458	1471	8485	5500	2517	9534	6553	3573	22
5346	2352	9358	6366	3375	0385	7396	4408	1421	8435	5451	2467	9485	6503	3523	21
5296	2302	9308	6316	3325	0335	7346	4358	1371	8386	5401	2417	9435	6454	3473	20
5246	2252	9259	6266	3275	0285	7296	4308	1321	8336	5351	2368	9385	6404	3424	19
5196	2202	9209	6216	3225	0235	7246	4258	1272	8286	5301	2318	9336	6354	3374	18
5147	2152	9159	6167	3175	0185	7196	4209	1222	8236	5252	2268	9286	6305	3324	17
5097	2102	9109	6117	3126	0136	7147	4159	1172	8187	5202	2219	9236	6255	3275	16
5047	2052	9059	6067	3076	0086	7097	4109	1122	8137	5152	2169	9187	6205	3225	15
4997	2002	9009	6017	3026	0036	7047	4059	1073	8087	5103	2119	9137	6156	3176	14
4947	1953	8959	5967	2976	9986	6997	4010	1023	8037	5053	2069	9087	6106	3126	13
4897	1903	8909	5917	2926	9936	6947	3960	0973	7988	5003	2020	9037	6056	3076	12
4847	1853	8860	5867	2876	9886	6898	3910	0923	7938	4953	1970	8988	6007	3027	11
4797	1803	8810	5818	2827	9837	6848	3860	0874	7888	4904	1920	8938	5957	2977	10
4747	1753	8760	5768	2777	9787	6798	3810	0824	7838	4854	1871	8888	5907	2927	9
4697	1703	8710	5718	2727	9737	6748	3761	0774	7789	4804	1821	8839	5858	2878	8
4647	1653	8660	5668	2677	9687	6698	3711	0724	7739	4754	1771	8789	5808	2828	7
4597	1603	8610	5618	2627	9637	6649	3661	0674	7689	4705	1721	8739	5758	2778	6
4548	1553	8560	5568	2577	9588	6599	3611	0625	7639	4655	1672	8690	5709	2729	5
4498	1503	8510	5518	2527	9538	6549	3561	0575	7590	4605	1622	8640	5659	2679	4
4448	1454	8460	5469	2478	9488	6499	3512	0525	7540	4556	1572	8590	5609	2629	3
4398	1404	8411	5419	2428	9438	6449	3462	0475	7490	4506	1523	8541	5560	2580	2
4348	1354	8361	5369	2378	9388	6400	3412	0426	7440	4456	1473	8491	5510	2530	1
4298	1304	8311	5319	2328	9338	6350	3362	0376	7391	4406	1423	8441	5460	2480	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	"

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
″	9.685	9.685	9.686	9.686	9.686	9.686	9.686	9.687	9.687	9.687	9.687	9.688	9.688	9.688	9.688	9.941	9.941	9.941	9.941	9.941	9.941	9.941	9.941	9.941	9.941	9.941	9.941	9.940	9.940	9.940	″
0	5712	7991	0267	2542	4816	7088	9359	1628	3895	6161	8425	0688	2949	5209	7467	8193	7492	6791	6090	5388	4685	3982	3279	2575	1871	1166	0461	9755	9048	8342	60
1	5750	8029	0305	2580	4854	7126	9396	1665	3933	6199	8463	0726	2987	5246	7504	8181	7480	6779	6078	5376	4674	3971	3267	2563	1859	1154	0449	9743	9037	8330	59
2	5788	8066	0343	2618	4892	7164	9434	1703	3971	6236	8501	0763	3024	5284	7542	8169	7469	6768	6066	5364	4662	3959	3255	2552	1847	1142	0437	9731	9025	8318	58
3	5826	8104	0381	2656	4930	7202	9472	1741	4008	6274	8538	0801	3062	5322	7580	8158	7457	6756	6055	5353	4650	3947	3244	2540	1835	1131	0425	9719	9013	8306	57
4	5864	8142	0419	2694	4968	7240	9510	1779	4046	6312	8576	0839	3100	5359	7617	8146	7445	6744	6043	5341	4638	3935	3232	2528	1824	1119	0414	9708	9001	8295	56
5	5902	8180	0457	2732	5005	7277	9548	1817	4084	6350	8614	0876	3137	5397	7655	8134	7434	6733	6031	5329	4627	3924	3220	2516	1812	1107	0402	9696	8990	8283	55
6	5940	8218	0495	2770	5043	7315	9586	1854	4122	6387	8651	0914	3175	5435	7693	8123	7422	6721	6019	5317	4615	3912	3209	2505	1800	1095	0390	9684	8978	8271	54
7	5978	8256	0533	2808	5081	7353	9623	1892	4159	6425	8689	0952	3213	5472	7730	8111	7410	6709	6008	5306	4603	3900	3197	2493	1789	1084	0378	9672	8966	8259	53
8	6016	8294	0571	2846	5119	7391	9661	1930	4197	6463	8727	0989	3250	5510	7768	8099	7399	6698	5996	5294	4592	3889	3185	2481	1777	1072	0366	9661	8954	8247	52
9	6054	8332	0609	2884	5157	7429	9699	1968	4235	6501	8765	1027	3288	5548	7805	8088	7387	6686	5984	5282	4580	3877	3173	2469	1765	1060	0355	9649	8943	8236	51
10	6092	8370	0647	2922	5195	7467	9737	2006	4273	6538	8802	1065	3326	5585	7843	8076	7375	6674	5973	5271	4568	3865	3162	2458	1753	1048	0343	9637	8931	8224	50
11	6130	8408	0685	2959	5233	7505	9775	2043	4311	6576	8840	1103	3363	5623	7881	8064	7364	6663	5961	5259	4556	3853	3150	2446	1742	1037	0331	9625	8919	8212	49
12	6168	8446	0722	2997	5271	7542	9813	2081	4348	6614	8878	1140	3401	5660	7918	8053	7352	6651	5949	5247	4545	3842	3138	2434	1730	1025	0319	9614	8907	8200	48
13	6206	8484	0760	3035	5309	7580	9850	2119	4386	6652	8916	1178	3439	5698	7956	8041	7340	6639	5938	5236	4533	3830	3126	2423	1718	1013	0308	9602	8895	8189	47
14	6244	8522	0798	3073	5346	7618	9888	2157	4424	6689	8953	1216	3476	5736	7994	8029	7329	6627	5926	5224	4521	3818	3115	2411	1706	1001	0296	9590	8884	8177	46
15	6282	8560	0836	3111	5384	7656	9926	2195	4462	6727	8991	1253	3514	5773	8031	8018	7317	6616	5914	5212	4510	3807	3103	2399	1695	0990	0284	9578	8872	8165	45
16	6320	8598	0874	3149	5422	7694	9964	2232	4499	6765	9029	1291	3552	5811	8069	8006	7305	6604	5902	5200	4498	3795	3091	2387	1683	0978	0272	9566	8860	8153	44
17	6358	8636	0912	3187	5460	7732	0002	2270	4537	6803	9066	1329	3589	5849	8106	7994	7294	6592	5891	5189	4486	3783	3080	2376	1671	0966	0261	9555	8848	8141	43
18	6396	8674	0950	3225	5498	7769	0039	2308	4575	6840	9104	1366	3627	5886	8144	7982	7282	6581	5879	5177	4474	3771	3068	2364	1659	0954	0249	9543	8837	8130	42
19	6434	8712	0988	3263	5536	7807	0077	2346	4613	6878	9142	1404	3665	5924	8182	7971	7270	6569	5867	5165	4463	3760	3056	2352	1648	0943	0237	9531	8825	8118	41
20	6472	8750	1026	3301	5574	7845	0115	2384	4650	6916	9180	1442	3702	5962	8219	7959	7258	6557	5856	5154	4451	3748	3044	2340	1636	0931	0225	9519	8813	8106	40
21	6510	8788	1064	3338	5611	7883	0153	2421	4688	6954	9217	1479	3740	5999	8257	7947	7247	6546	5844	5142	4439	3736	3033	2329	1624	0919	0214	9508	8801	8094	39
22	6548	8826	1102	3376	5649	7921	0191	2459	4726	6991	9255	1517	3778	6037	8294	7936	7235	6534	5832	5130	4428	3724	3021	2317	1612	0907	0202	9496	8789	8082	38
23	6586	8864	1140	3414	5687	7959	0229	2497	4764	7029	9293	1555	3815	6075	8332	7924	7223	6522	5821	5118	4416	3713	3009	2305	1601	0896	0190	9484	8778	8071	37
24	6624	8901	1178	3452	5725	7997	0266	2535	4802	7067	9330	1593	3853	6112	8370	7912	7212	6511	5809	5107	4404	3701	2997	2293	1589	0884	0178	9472	8766	8059	36
25	6662	8939	1215	3490	5763	8034	0304	2573	4839	7104	9368	1630	3891	6150	8407	7901	7200	6499	5797	5095	4392	3689	2986	2282	1577	0872	0167	9461	8754	8047	35
26	6700	8977	1253	3528	5801	8072	0342	2610	4877	7142	9406	1668	3928	6187	8445	7889	7188	6487	5786	5083	4381	3678	2974	2270	1565	0860	0155	9449	8742	8035	34
27	6738	9015	1291	3566	5839	8110	0380	2648	4915	7180	9444	1706	3966	6225	8483	7877	7177	6475	5774	5072	4369	3666	2962	2258	1554	0849	0143	9437	8731	8024	33
28	6776	9053	1329	3604	5877	8148	0418	2686	4953	7218	9481	1743	4004	6263	8520	7866	7165	6464	5762	5060	4357	3654	2951	2246	1542	0837	0131	9425	8719	8012	32
29	6814	9091	1367	3642	5914	8186	0456	2724	4990	7255	9519	1781	4041	6300	8558	7854	7153	6452	5750	5048	4346	3642	2939	2235	1530	0825	0119	9413	8707	8000	31
30	6852	9129	1405	3679	5952	8224	0493	2761	5028	7293	9557	1819	4079	6338	8595	7842	7142	6440	5739	5037	4334	3631	2927	2223	1518	0813	0108	9402	8695	7988	30
31	6890	9167	1443	3717	5990	8261	0531	2799	5066	7331	9594	1856	4117	6376	8633	7831	7130	6429	5727	5025	4322	3619	2915	2211	1507	0802	0096	9390	8683	7976	29
32	6928	9205	1481	3755	6028	8299	0569	2837	5104	7369	9632	1894	4154	6413	8671	7819	7118	6417	5715	5013	4310	3607	2904	2199	1495	0790	0084	9378	8672	7965	28
33	6966	9243	1519	3793	6066	8337	0607	2875	5141	7406	9670	1932	4192	6451	8708	7807	7107	6405	5704	5001	4299	3596	2892	2188	1483	0778	0072	9366	8660	7953	27
34	7004	9281	1557	3831	6104	8375	0645	2913	5179	7444	9708	1969	4230	6489	8746	7796	7095	6394	5692	4990	4287	3584	2880	2176	1471	0766	0061	9355	8648	7941	26
35	7041	9319	1595	3869	6142	8413	0682	2950	5217	7482	9745	2007	4267	6526	8783	7784	7083	6382	5680	4978	4275	3572	2868	2164	1460	0755	0049	9343	8636	7929	25
36	7079	9357	1633	3907	6180	8451	0720	2988	5255	7520	9783	2045	4305	6564	8821	7772	7072	6370	5669	4966	4264	3560	2857	2153	1448	0743	0037	9331	8624	7917	24
37	7117	9395	1671	3945	6217	8488	0758	3026	5292	7557	9821	2082	4343	6601	8859	7761	7060	6359	5657	4955	4252	3549	2845	2141	1436	0731	0025	9319	8613	7906	23
38	7155	9433	1708	3983	6255	8526	0796	3064	5330	7595	9858	2120	4380	6639	8896	7749	7048	6347	5645	4943	4240	3537	2833	2129	1424	0719	0014	9308	8601	7894	22
39	7193	9471	1746	4021	6293	8564	0834	3102	5368	7633	9896	2158	4418	6677	8934	7737	7036	6335	5633	4931	4228	3525	2821	2117	1413	0707	0002	9296	8589	7882	21
40	7231	9509	1784	4058	6331	8602	0871	3139	5406	7671	9934	2196	4456	6714	8971	7726	7025	6324	5622	4919	4217	3513	2810	2106	1401	0696	9990	9284	8577	7870	20
41	7269	9547	1822	4096	6369	8640	0909	3177	5443	7708	9972	2233	4493	6752	9009	7714	7013	6312	5610	4908	4205	3502	2798	2094	1389	0684	9978	9272	8566	7858	19
42	7307	9584	1860	4134	6407	8678	0947	3215	5481	7746	0009	2271	4531	6790	9047	7702	7001	6300	5598	4896	4193	3490	2786	2082	1377	0672	9967	9260	8554	7847	18
43	7345	9622	1898	4172	6445	8716	0985	3253	5519	7784	0047	2309	4569	6827	9084	7691	6990	6288	5587	4884	4182	3478	2775	2070	1366	0660	9955	9249	8542	7835	17
44	7383	9660	1936	4210	6482	8753	1023	3291	5557	7821	0085	2346	4606	6865	9122	7679	6978	6277	5575	4873	4170	3467	2763	2059	1354	0649	9943	9237	8530	7823	16
45	7421	9698	1974	4248	6520	8791	1061	3328	5595	7859	0122	2384	4644	6902	9159	7667	6966	6265	5563	4861	4158	3455	2751	2047	1342	0637	9931	9225	8518	7811	15
46	7459	9736	2012	4286	6558	8829	1098	3366	5632	7897	0160	2422	4682	6940	9197	7656	6955	6253	5552	4849	4146	3443	2739	2035	1330	0625	9920	9213	8507	7800	14
47	7497	9774	2050	4324	6596	8867	1136	3404	5670	7935	0198	2459	4719	6978	9235	7644	6943	6242	5540	4837	4135	3431	2728	2023	1319	0613	9908	9202	8495	7788	13
48	7535	9812	2088	4361	6634	8905	1174	3442	5708	7972	0235	2497	4757	7015	9272	7632	6931	6230	5528	4826	4123	3420	2716	2012	1307	0602	9896	9190	8483	7776	12
49	7573	9850	2125	4399	6672	8943	1212	3479	5746	8010	0273	2535	4795	7053	9310	7621	6920	6218	5516	4814	4111	3408	2704	2000	1295	0590	9884	9178	8471	7764	11
50	7611	9888	2163	4437	6710	8980	1250	3517	5783	8048	0311	2572	4832	7091	9347	7609	6908	6207	5505	4802	4100	3396	2692	1988	1283	0578	9872	9166	8460	7752	10
51	7649	9926	2201	4475	6747	9018	1287	3555	5821	8086	0349	2610	4870	7128	9385	7597	6896	6195	5493	4791	4088	3384	2681	1976	1272	0566	9861	9154	8448	7741	9
52	7687	9964	2239	4513	6785	9056	1325	3593	5859	8123	0386	2648	4908	7166	9423	7586	6885	6183	5481	4779	4076	3373	2669	1965	1260	0555	9849	9143	8436	7729	8
53	7725	0002	2277	4551	6823	9094	1363	3631	5897	8161	0424	2685	4945	7203	9460	7574	6873	6171	5470	4767	4064	3361	2657	1953	1248	0543	9837	9131	8424	7717	7
54	7763	0040	2315	4589	6861	9132	1401	3668	5934	8199	0462	2723	4983	7241	9498	7562	6861	6160	5458	4756	4053	3349	2645	1941	1236	0531	9825	9119	8412	7705	6
55	7801	0078	2353	4627	6899	9170	1439	3706	5972	8236	0499	2761	5020	7279	9535	7550	6850	6148	5446	4744	4041	3338	2634	1929	1225	0519	9814	9107	8401	7693	5
56	7839	0116	2391	4665	6937	9207	1476	3744	6010	8274	0537	2798	5058	7316	9573	7539	6838	6136	5434	4732	4029	3326	2622	1918	1213	0508	9802	9096	8389	7682	4
57	7877	0154	2429	4702	6975	9245	1514	3782	6048	8312	0575	2836	5096	7354	9611	7527	6826	6125	5423	4720	4018	3314	2610	1906	1201	0496	9790	9084	8377	7670	3
58	7915	0191	2467	4740	7012	9283	1552	3819	6085	8350	0612	2874	5133	7392	9648	7515	6814	6113	5411	4709	4006	3302	2599	1894	1189	0484	9778	9072	8365	7658	2
59	7953	0229	2505	4778	7050	9321	1590	3857	6123	8387	0650	2911	5171	7429	9686	7504	6803	6101	5399	4697	3994	3291	2587	1882	1178	0472	9767	9060	8354	7646	1
60	7991	0267	2542	4816	7088	9359	1628	3895	6161	8425	0688	2949	5209	7467	9723	7492	6791	6090	5388	4685	3982	3279	2575	1871	1166	0461	9755	9048	8342	7634	0
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

29 Deg. Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.743	9.744	9.744	9.744	9.744	9.745	9.745	9.745	9.746	9.746	9.746	9.747	9.747	9.747	9.747
0	7520	0499	3476	6453	9428	2403	5376	8349	1320	4290	7259	0227	3194	6160	9125
1	7569	0548	3526	6502	9478	2452	5426	8398	1369	4340	7309	0277	3244	6210	9175
2	7619	0598	3575	6552	9528	2502	5475	8448	1419	4389	7358	0326	3293	6259	9224
3	7669	0647	3625	6602	9577	2552	5525	8497	1468	4439	7408	0376	3343	6309	9273
4	7718	0697	3675	6651	9627	2601	5574	8547	1518	4488	7457	0425	3392	6358	9323
5	7768	0747	3724	6701	9676	2651	5624	8596	1567	4538	7507	0475	3442	6407	9372
6	7818	0796	3774	6750	9726	2700	5674	8646	1617	4587	7556	0524	3491	6457	9422
7	7867	0846	3824	6800	9775	2750	5723	8695	1666	4637	7606	0574	3540	6506	9471
8	7917	0896	3873	6850	9825	2799	5773	8745	1716	4686	7655	0623	3590	6556	9520
9	7967	0945	3923	6899	9875	2849	5822	8794	1766	4736	7705	0672	3639	6605	9570
10	8016	0995	3972	6949	9924	2899	5872	8844	1815	4785	7754	0722	3689	6654	9619
11	8066	1044	4022	6998	9974	2948	5921	8893	1865	4835	7803	0771	3738	6704	9669
12	8116	1094	4072	7048	0023	2998	5971	8943	1914	4884	7853	0821	3788	6753	9718
13	8165	1144	4121	7098	0073	3047	6020	8993	1964	4934	7902	0870	3837	6803	9767
14	8215	1193	4171	7147	0123	3097	6070	9042	2013	4983	7952	0920	3886	6852	9817
15	8265	1243	4220	7197	0172	3146	6119	9092	2063	5032	8001	0969	3936	6902	9866
16	8314	1293	4270	7246	0222	3196	6169	9141	2112	5082	8051	1019	3985	6951	9916
17	8364	1342	4320	7296	0271	3245	6219	9191	2162	5131	8100	1068	4035	7000	9965
18	8413	1392	4369	7346	0321	3295	6268	9240	2211	5181	8150	1118	4084	7050	0014
19	8463	1442	4419	7395	0370	3345	6318	9290	2261	5230	8199	1167	4134	7099	0064
20	8513	1491	4469	7445	0420	3394	6367	9339	2310	5280	8249	1216	4183	7149	0113
21	8562	1541	4518	7494	0470	3444	6417	9389	2360	5329	8298	1266	4233	7198	0163
22	8612	1590	4568	7544	0519	3493	6466	9438	2409	5379	8348	1315	4282	7247	0212
23	8662	1640	4617	7594	0569	3543	6516	9488	2459	5428	8397	1365	4331	7297	0261
24	8711	1690	4667	7643	0618	3592	6565	9537	2508	5478	8447	1414	4381	7346	0311
25	8761	1739	4717	7693	0668	3642	6615	9587	2558	5527	8496	1464	4430	7396	0360
26	8811	1789	4766	7742	0717	3692	6664	9636	2607	5577	8546	1513	4480	7445	0410
27	8860	1839	4816	7792	0767	3741	6714	9686	2657	5626	8595	1563	4529	7495	0459
28	8910	1888	4865	7842	0817	3791	6764	9735	2706	5676	8644	1612	4579	7544	0508
29	8960	1938	4915	7891	0866	3840	6813	9785	2756	5725	8694	1661	4628	7593	0558
30	9009	1987	4965	7941	0916	3890	6863	9834	2805	5775	8743	1711	4677	7643	0607
31	9059	2037	5014	7990	0965	3939	6912	9884	2855	5824	8793	1760	4727	7692	0657
32	9109	2087	5064	8040	1015	3989	6962	9933	2904	5874	8842	1810	4776	7742	0706
33	9158	2136	5113	8090	1065	4038	7011	9983	2954	5923	8892	1859	4826	7791	0755
34	9208	2186	5163	8139	1114	4088	7061	0032	3003	5973	8941	1909	4875	7840	0805
35	9257	2236	5213	8189	1164	4138	7110	0082	3053	6022	8991	1958	4925	7890	0854
36	9307	2285	5262	8238	1213	4187	7160	0132	3102	6072	9040	2008	4974	7939	0904
37	9357	2335	5312	8288	1263	4237	7209	0181	3152	6121	9090	2057	5023	7989	0953
38	9406	2385	5362	8338	1312	4286	7259	0231	3201	6171	9139	2107	5073	8038	1002
39	9456	2434	5411	8387	1362	4336	7308	0280	3251	6220	9189	2156	5122	8088	1052
40	9506	2484	5461	8437	1412	4385	7358	0330	3300	6270	9238	2205	5172	8137	1101
41	9555	2533	5510	8486	1461	4435	7408	0379	3350	6319	9288	2255	5221	8186	1151
42	9605	2583	5560	8536	1511	4484	7457	0429	3399	6369	9337	2304	5271	8236	1200
43	9655	2633	5610	8585	1560	4534	7507	0478	3449	6418	9386	2354	5320	8285	1249
44	9704	2682	5659	8635	1610	4584	7556	0528	3498	6468	9436	2403	5369	8335	1299
45	9754	2732	5709	8685	1659	4633	7606	0577	3548	6517	9485	2453	5419	8384	1348
46	9804	2782	5758	8734	1709	4683	7655	0627	3597	6567	9535	2502	5468	8433	1397
47	9853	2831	5808	8784	1759	4732	7705	0676	3647	6616	9584	2552	5518	8483	1447
48	9903	2881	5858	8833	1808	4782	7754	0726	3696	6665	9634	2601	5567	8532	1496
49	9952	2930	5907	8883	1858	4831	7804	0775	3746	6715	9683	2650	5617	8582	1546
50	0002	2980	5957	8933	1907	4881	7853	0825	3795	6764	9733	2700	5666	8631	1595
51	0052	3030	6006	8982	1957	4930	7903	0874	3845	6814	9782	2749	5715	8680	1644
52	0101	3079	6056	9032	2006	4980	7952	0924	3894	6863	9832	2799	5765	8730	1694
53	0151	3129	6106	9081	2056	5029	8002	0973	3944	6913	9881	2848	5814	8779	1743
54	0201	3178	6155	9131	2105	5079	8051	1023	3993	6962	9931	2898	5864	8829	1793
55	0250	3228	6205	9180	2155	5129	8101	1072	4043	7012	9980	2947	5913	8878	1842
56	0300	3278	6254	9230	2205	5178	8151	1122	4092	7061	0029	2997	5963	8927	1891
57	0350	3327	6304	9280	2254	5228	8200	1171	4142	7111	0079	3046	6012	8977	1941
58	0399	3377	6354	9329	2304	5277	8250	1221	4191	7160	0128	3095	6061	9026	1990
59	0449	3427	6403	9379	2353	5327	8299	1270	4241	7210	0178	3145	6111	9076	2040
60	0499	3476	6453	9428	2403	5376	8349	1320	4290	7259	0227	3194	6160	9125	2089
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Tangent Deg. 60

29 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
10.256	10.255	10.255	10.255	10.255	10.254	10.254	10.254	10.253	10.253	10.253	10.252	10.252	10.252	10.252	″
2480	9501	6524	3547	0572	7597	4624	1651	8680	5710	2741	9773	6806	3840	0875	60
2431	9452	6474	3498	0522	7548	4574	1602	8631	5660	2691	9723	6756	3790	0825	59
2381	9402	6425	3448	0472	7498	4525	1552	8581	5611	2642	9674	6707	3741	0776	58
2331	9353	6375	3398	0423	7448	4475	1503	8532	5561	2592	9624	6657	3691	0727	57
2282	9303	6325	3349	0373	7399	4426	1453	8482	5512	2543	9575	6608	3642	0677	56
2232	9253	6276	3299	0324	7349	4376	1404	8433	5462	2493	9525	6558	3593	0628	55
2182	9204	6226	3250	0274	7300	4326	1354	8383	5413	2444	9476	6509	3543	0578	54
2133	9154	6176	3200	0225	7250	4277	1305	8334	5363	2394	9426	6460	3494	0529	53
2083	9104	6127	3150	0175	7201	4227	1255	8284	5314	2345	9377	6410	3444	0480	52
2033	9055	6077	3101	0125	7151	4178	1206	8234	5264	2295	9328	6361	3395	0430	51
1984	9005	6028	3051	0076	7101	4128	1156	8185	5215	2246	9278	6311	3346	0381	50
1934	8956	5978	3002	0026	7052	4079	1107	8135	5165	2197	9229	6262	3296	0331	49
1884	8906	5928	2952	9977	7002	4029	1057	8086	5116	2147	9179	6212	3247	0282	48
1835	8856	5879	2902	9927	6953	3980	1007	8036	5066	2098	9130	6163	3197	0233	47
1785	8807	5829	2853	9877	6903	3930	0958	7987	5017	2048	9080	6114	3148	0183	46
1735	8757	5780	2803	9828	6854	3881	0908	7937	4968	1999	9031	6064	3098	0134	45
1686	8707	5730	2754	9778	6804	3831	0859	7888	4918	1949	8981	6015	3049	0084	44
1636	8658	5680	2704	9729	6755	3781	0809	7838	4869	1900	8932	5965	3000	0035	43
1587	8608	5631	2654	9679	6705	3732	0760	7789	4819	1850	8882	5916	2950	9986	42
1537	8558	5581	2605	9630	6655	3682	0710	7739	4770	1801	8833	5866	2901	9936	41
1487	8509	5531	2555	9580	6606	3633	0661	7690	4720	1751	8784	5817	2851	9887	40
1438	8459	5482	2506	9530	6556	3583	0611	7640	4671	1702	8734	5767	2802	9837	39
1388	8410	5432	2456	9481	6507	3534	0562	7591	4621	1652	8685	5718	2753	9788	38
1338	8360	5383	2406	9431	6457	3484	0512	7541	4572	1603	8635	5669	2703	9739	37
1289	8310	5333	2357	9382	6408	3435	0463	7492	4522	1553	8586	5619	2654	9689	36
1239	8261	5283	2307	9332	6358	3385	0413	7442	4473	1504	8536	5570	2604	9640	35
1189	8211	5234	2258	9283	6308	3336	0364	7393	4423	1454	8487	5520	2555	9590	34
1140	8161	5184	2208	9233	6259	3286	0314	7343	4374	1405	8437	5471	2505	9541	33
1090	8112	5135	2158	9183	6209	3236	0265	7294	4324	1356	8388	5421	2456	9492	32
1040	8062	5085	2109	9134	6160	3187	0215	7244	4275	1306	8339	5372	2407	9442	31
0991	8013	5035	2059	9084	6110	3137	0166	7195	4225	1257	8289	5323	2357	9393	30
0941	7963	4986	2010	9035	6061	3088	0116	7145	4176	1207	8240	5273	2308	9343	29
0891	7913	4936	1960	8985	6011	3038	0067	7096	4126	1158	8190	5224	2258	9294	28
0842	7864	4887	1910	8935	5962	2989	0017	7046	4077	1108	8141	5174	2209	9245	27
0792	7814	4837	1861	8886	5912	2939	9968	6997	4027	1059	8091	5125	2160	9195	26
0743	7764	4787	1811	8836	5862	2890	9918	6947	3978	1009	8042	5075	2110	9146	25
0693	7715	4738	1762	8787	5813	2840	9868	6898	3928	0960	7992	5026	2061	9096	24
0643	7665	4688	1712	8737	5763	2791	9819	6848	3879	0910	7943	4977	2011	9047	23
0594	7615	4638	1662	8688	5714	2741	9769	6799	3829	0861	7893	4927	1962	8998	22
0544	7566	4589	1613	8638	5664	2692	9720	6749	3780	0811	7844	4878	1912	8948	21
0494	7516	4539	1563	8588	5615	2642	9670	6700	3730	0762	7795	4828	1863	8899	20
0445	7467	4490	1514	8539	5565	2592	9621	6650	3681	0712	7745	4779	1814	8849	19
0395	7417	4440	1464	8489	5516	2543	9571	6601	3631	0663	7696	4729	1764	8800	18
0345	7367	4390	1415	8440	5466	2493	9522	6551	3582	0614	7646	4680	1715	8751	17
0296	7318	4341	1365	8390	5416	2444	9472	6502	3532	0564	7597	4631	1665	8701	16
0246	7268	4291	1315	8341	5367	2394	9423	6452	3483	0515	7547	4581	1616	8652	15
0196	7218	4242	1266	8291	5317	2345	9373	6403	3433	0465	7498	4532	1567	8603	14
0147	7169	4192	1216	8241	5268	2295	9324	6353	3384	0416	7448	4482	1517	8553	13
0097	7119	4142	1167	8192	5218	2246	9274	6304	3335	0366	7399	4433	1468	8504	12
0048	7070	4093	1117	8142	5169	2196	9225	6254	3285	0317	7350	4383	1418	8454	11
9998	7020	4043	1067	8093	5119	2147	9175	6205	3236	0267	7300	4334	1369	8405	10
9948	6970	3994	1018	8043	5070	2097	9126	6155	3186	0218	7251	4285	1320	8356	9
9899	6921	3944	0968	7994	5020	2048	9076	6106	3137	0168	7201	4235	1270	8306	8
9849	6871	3894	0919	7944	4971	1998	9027	6056	3087	0119	7152	4186	1221	8257	7
9799	6822	3845	0869	7895	4921	1949	8977	6007	3038	0069	7102	4136	1171	8207	6
9750	6772	3795	0820	7845	4871	1899	8928	5957	2988	0020	7053	4087	1122	8158	5
9700	6722	3746	0770	7795	4822	1849	8878	5908	2939	9971	7003	4037	1073	8109	4
9650	6673	3696	0720	7746	4772	1800	8829	5858	2889	9921	6954	3988	1023	8059	3
9601	6623	3646	0671	7696	4723	1750	8779	5809	2840	9872	6905	3939	0974	8010	2
9551	6573	3597	0621	7647	4673	1701	8730	5759	2790	9822	6855	3889	0924	7960	1
9501	6524	3547	0572	7597	4624	1651	8680	5710	2741	9773	6806	3840	0875	7911	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Tangent Deg. 60

29 Deg. Sine

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9.688	9.689	9.689	9.689	9.689	9.690	9.690	9.690	9.690	9.690	9.691	9.691	9.691	9.691	9.692
0	9723	1978	4232	6484	8734	0983	3231	5476	7721	9964	2205	4445	6683	8919	1155
1	9761	2016	4270	6521	8772	1021	3268	5514	7758	0001	2242	4482	6720	8957	1192
2	9799	2054	4307	6559	8809	1058	3305	5551	7796	0038	2279	4519	6757	8994	1229
3	9836	2091	4345	6596	8847	1096	3343	5589	7833	0076	2317	4556	6795	9031	1266
4	9874	2129	4382	6634	8884	1133	3380	5626	7870	0113	2354	4594	6832	9068	1304
5	9911	2166	4420	6672	8922	1171	3418	5664	7908	0150	2391	4631	6869	9106	1341
6	9949	2204	4457	6709	8959	1208	3455	5701	7945	0188	2429	4668	6906	9143	1378
7	9987	2241	4495	6747	8997	1246	3493	5738	7982	0225	2466	4706	6944	9180	1415
8	0024	2279	4532	6784	9034	1283	3530	5776	8020	0262	2504	4743	6981	9218	1452
9	0062	2317	4570	6822	9072	1320	3568	5813	8057	0300	2541	4780	7018	9255	1490
10	0099	2354	4607	6859	9109	1358	3605	5851	8095	0337	2578	4818	7056	9292	1527
11	0137	2392	4645	6897	9147	1395	3642	5888	8132	0375	2616	4855	7093	9329	1564
12	0175	2429	4682	6934	9184	1433	3680	5925	8169	0412	2653	4892	7130	9367	1601
13	0212	2467	4720	6972	9222	1470	3717	5963	8207	0449	2690	4930	7167	9404	1639
14	0250	2504	4758	7009	9259	1508	3755	6000	8244	0487	2728	4967	7205	9441	1676
15	0287	2542	4795	7047	9297	1545	3792	6038	8282	0524	2765	5004	7242	9478	1713
16	0325	2580	4833	7084	9334	1583	3830	6075	8319	0561	2802	5042	7279	9516	1750
17	0363	2617	4870	7122	9372	1620	3867	6112	8356	0599	2840	5079	7317	9553	1788
18	0400	2655	4908	7159	9409	1658	3905	6150	8394	0636	2877	5116	7354	9590	1825
19	0438	2692	4945	7197	9447	1695	3942	6187	8431	0673	2914	5153	7391	9627	1862
20	0475	2730	4983	7234	9484	1733	3979	6225	8469	0711	2952	5191	7428	9665	1899
21	0513	2767	5020	7272	9522	1770	4017	6262	8506	0748	2989	5228	7466	9702	1937
22	0550	2805	5058	7309	9559	1807	4054	6300	8543	0785	3026	5265	7503	9739	1974
23	0588	2842	5095	7347	9597	1845	4092	6337	8581	0823	3064	5303	7540	9776	2011
24	0626	2880	5133	7384	9634	1882	4129	6374	8618	0860	3101	5340	7578	9814	2048
25	0663	2918	5170	7422	9672	1920	4167	6412	8655	0898	3138	5377	7615	9851	2085
26	0701	2955	5208	7459	9709	1957	4204	6449	8693	0935	3176	5415	7652	9888	2123
27	0738	2993	5246	7497	9747	1995	4241	6487	8730	0972	3213	5452	7689	9925	2160
28	0776	3030	5283	7534	9784	2032	4279	6524	8768	1010	3250	5489	7727	9963	2197
29	0814	3068	5321	7572	9822	2070	4316	6561	8805	1047	3288	5527	7764	0000	2234
30	0851	3105	5358	7609	9859	2107	4354	6599	8842	1084	3325	5564	7801	0037	2272
31	0889	3143	5396	7647	9896	2145	4391	6636	8880	1122	3362	5601	7839	0074	2309
32	0926	3181	5433	7684	9934	2182	4429	6674	8917	1159	3399	5638	7876	0112	2346
33	0964	3218	5471	7722	9971	2219	4466	6711	8954	1196	3437	5676	7913	0149	2383
34	1001	3256	5508	7759	0009	2257	4503	6748	8992	1234	3474	5713	7950	0186	2421
35	1039	3293	5546	7797	0046	2294	4541	6786	9029	1271	3511	5750	7988	0223	2458
36	1077	3331	5583	7834	0084	2332	4578	6823	9067	1308	3549	5788	8025	0261	2495
37	1114	3368	5621	7872	0121	2369	4616	6861	9104	1346	3586	5825	8062	0298	2532
38	1152	3406	5658	7909	0159	2407	4653	6898	9141	1383	3623	5862	8099	0335	2569
39	1189	3443	5696	7947	0196	2444	4691	6935	9179	1421	3661	5900	8137	0372	2607
40	1227	3481	5733	7984	0234	2482	4728	6973	9216	1458	3698	5937	8174	0410	2644
41	1265	3519	5771	8022	0271	2519	4765	7010	9253	1495	3735	5974	8211	0447	2681
42	1302	3556	5808	8059	0309	2557	4803	7048	9291	1533	3773	6011	8249	0484	2718
43	1340	3594	5846	8097	0346	2594	4840	7085	9328	1570	3810	6049	8286	0521	2756
44	1377	3631	5884	8134	0384	2631	4878	7122	9366	1607	3847	6086	8323	0559	2793
45	1415	3669	5921	8172	0421	2669	4915	7160	9403	1645	3885	6123	8360	0596	2830
46	1452	3706	5959	8209	0459	2706	4953	7197	9440	1682	3922	6161	8398	0633	2867
47	1490	3744	5996	8247	0496	2744	4990	7235	9478	1719	3959	6198	8435	0670	2904
48	1528	3781	6034	8284	0534	2781	5027	7272	9515	1757	3997	6235	8472	0708	2942
49	1565	3819	6071	8322	0571	2819	5065	7309	9552	1794	4034	6272	8509	0745	2979
50	1603	3856	6109	8359	0609	2856	5102	7347	9590	1831	4071	6310	8547	0782	3016
51	1640	3894	6146	8397	0646	2894	5140	7384	9627	1869	4109	6347	8584	0819	3053
52	1678	3932	6184	8434	0683	2931	5177	7422	9665	1906	4146	6384	8621	0857	3091
53	1715	3969	6221	8472	0721	2968	5215	7459	9702	1943	4183	6422	8659	0894	3128
54	1753	4007	6259	8509	0758	3006	5252	7496	9739	1981	4221	6459	8696	0931	3165
55	1791	4044	6296	8547	0796	3043	5289	7534	9777	2018	4258	6496	8733	0968	3202
56	1828	4082	6334	8584	0833	3081	5327	7571	9814	2055	4295	6534	8770	1006	3239
57	1866	4119	6371	8622	0871	3118	5364	7609	9851	2093	4333	6571	8808	1043	3277
58	1903	4157	6409	8659	0908	3156	5402	7646	9889	2130	4370	6608	8845	1080	3314
59	1941	4194	6446	8697	0946	3193	5439	7683	9926	2167	4407	6645	8882	1117	3351
60	1978	4232	6484	8734	0983	3231	5476	7721	9964	2205	4445	6683	8919	1155	3388
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Sine Deg. 60

29 Deg. Co-Sine

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
	9.940	9.940	9.940	9.940	9.940	9.940	9.940	9.940	9.940	9.940	9.940	9.939	9.939	9.939	9.939	″
0	7634	6927	6219	5510	4801	4091	3381	2670	1959	1248	0535	9823	9110	8396	7682	60
1	7623	6915	6207	5498	4789	4079	3369	2658	1947	1236	0524	9811	9098	8384	7670	59
2	7611	6903	6195	5486	4777	4067	3357	2647	1935	1224	0512	9799	9086	8372	7658	58
3	7599	6891	6183	5474	4765	4056	3345	2635	1924	1212	0500	9787	9074	8361	7647	57
4	7587	6880	6171	5463	4753	4044	3333	2623	1912	1200	0488	9775	9062	8349	7635	56
5	7576	6868	6159	5451	4742	4032	3322	2611	1900	1188	0476	9763	9050	8337	7623	55
6	7564	6856	6148	5439	4730	4020	3310	2599	1888	1176	0464	9752	9038	8325	7611	54
7	7552	6844	6136	5427	4718	4008	3298	2587	1876	1164	0452	9740	9027	8313	7599	53
8	7540	6832	6124	5415	4706	3996	3286	2575	1864	1153	0440	9728	9015	8301	7587	52
9	7528	6821	6112	5403	4694	3985	3274	2564	1852	1141	0429	9716	9003	8289	7575	51
10	7517	6809	6100	5392	4682	3973	3262	2552	1841	1129	0417	9704	8991	8277	7563	50
11	7505	6797	6089	5380	4671	3961	3251	2540	1829	1117	0405	9692	8979	8265	7551	49
12	7493	6785	6077	5368	4659	3949	3239	2528	1817	1105	0393	9680	8967	8254	7539	48
13	7481	6773	6065	5356	4647	3937	3227	2516	1805	1093	0381	9668	8955	8242	7527	47
14	7469	6762	6053	5344	4635	3925	3215	2504	1793	1081	0369	9657	8943	8230	7516	46
15	7458	6750	6041	5333	4623	3914	3203	2492	1781	1070	0357	9645	8931	8218	7504	45
16	7446	6738	6030	5321	4611	3902	3191	2481	1769	1058	0345	9633	8920	8206	7492	44
17	7434	6726	6018	5309	4600	3890	3180	2469	1758	1046	0334	9621	8908	8194	7480	43
18	7422	6714	6006	5297	4588	3878	3168	2457	1746	1034	0322	9609	8896	8182	7468	42
19	7410	6703	5994	5285	4576	3866	3156	2445	1734	1022	0310	9597	8884	8170	7456	41
20	7399	6691	5982	5274	4564	3854	3144	2433	1722	1010	0298	9585	8872	8158	7444	40
21	7387	6679	5971	5262	4552	3843	3132	2421	1710	0998	0286	9573	8860	8146	7432	39
22	7375	6667	5959	5250	4541	3831	3120	2410	1698	0986	0274	9561	8848	8135	7420	38
23	7363	6655	5947	5238	4529	3819	3109	2398	1686	0975	0262	9550	8836	8123	7408	37
24	7351	6644	5935	5226	4517	3807	3097	2386	1675	0963	0250	9538	8824	8111	7397	36
25	7340	6632	5923	5214	4505	3795	3085	2374	1663	0951	0239	9526	8813	8099	7385	35
26	7328	6620	5911	5203	4493	3783	3073	2362	1651	0939	0227	9514	8801	8087	7373	34
27	7316	6608	5900	5191	4481	3771	3061	2350	1639	0927	0215	9502	8789	8075	7361	33
28	7304	6596	5888	5179	4470	3760	3049	2338	1627	0915	0203	9490	8777	8063	7349	32
29	7292	6585	5876	5167	4458	3748	3037	2327	1615	0903	0191	9478	8765	8051	7337	31
30	7281	6573	5864	5155	4446	3736	3026	2315	1603	0892	0179	9466	8753	8039	7325	30
31	7269	6561	5852	5143	4434	3724	3014	2303	1592	0880	0167	9455	8741	8027	7313	29
32	7257	6549	5841	5132	4422	3712	3002	2291	1580	0868	0155	9443	8729	8016	7301	28
33	7245	6537	5829	5120	4410	3700	2990	2279	1568	0856	0144	9431	8717	8004	7289	27
34	7233	6525	5817	5108	4399	3689	2978	2267	1556	0844	0132	9419	8706	7992	7277	26
35	7222	6514	5805	5096	4387	3677	2966	2255	1544	0832	0120	9407	8694	7980	7266	25
36	7210	6502	5793	5084	4375	3665	2955	2244	1532	0820	0108	9395	8682	7968	7254	24
37	7198	6490	5782	5073	4363	3653	2943	2232	1520	0808	0096	9383	8670	7956	7242	23
38	7186	6478	5770	5061	4351	3641	2931	2220	1508	0797	0084	9371	8657	7944	7230	22
39	7175	6466	5758	5049	4339	3629	2919	2208	1497	0785	0072	9359	8646	7932	7218	21
40	7163	6455	5746	5037	4328	3618	2907	2196	1485	0773	0060	9348	8634	7920	7206	20
41	7151	6443	5734	5025	4316	3606	2895	2184	1473	0761	0049	9336	8622	7908	7194	19
42	7139	6431	5723	5013	4304	3594	2883	2172	1461	0749	0037	9324	8610	7897	7182	18
43	7127	6419	5711	5002	4292	3582	2872	2161	1449	0737	0025	9312	8599	7885	7170	17
44	7116	6407	5699	4990	4280	3570	2860	2149	1437	0725	0013	9300	8587	7873	7158	16
45	7104	6396	5687	4978	4268	3558	2848	2137	1425	0713	0001	9288	8575	7861	7146	15
46	7092	6384	5675	4966	4257	3547	2836	2125	1414	0702	9989	9276	8563	7849	7135	14
47	7080	6372	5663	4954	4245	3535	2824	2113	1402	0690	9977	9264	8551	7837	7123	13
48	7068	6360	5652	4943	4233	3523	2812	2101	1390	0678	9965	9252	8539	7825	7111	12
49	7057	6348	5640	4931	4221	3511	2801	2090	1378	0666	9954	9241	8527	7813	7098	11
50	7045	6337	5628	4919	4209	3499	2789	2078	1366	0654	9942	9229	8515	7801	7087	10
51	7033	6325	5616	4907	4197	3487	2777	2066	1354	0642	9930	9217	8503	7789	7075	9
52	7021	6313	5604	4895	4186	3476	2765	2054	1342	0630	9918	9205	8491	7777	7063	8
53	7009	6301	5593	4883	4174	3464	2753	2042	1331	0619	9906	9193	8480	7766	7051	7
54	6998	6289	5581	4872	4162	3452	2741	2030	1319	0607	9894	9181	8468	7754	7039	6
55	6986	6278	5569	4860	4150	3440	2729	2018	1307	0595	9882	9169	8456	7742	7027	5
56	6974	6266	5557	4848	4138	3428	2718	2007	1295	0583	9870	9157	8444	7730	7015	4
57	6962	6254	5545	4836	4126	3416	2706	1995	1283	0571	9859	9145	8432	7718	7003	3
58	6950	6242	5533	4824	4115	3405	2694	1983	1271	0559	9847	9134	8420	7706	6992	2
59	6939	6230	5522	4812	4103	3393	2682	1971	1259	0547	9835	9122	8408	7694	6980	1
60	6927	6219	5510	4801	4091	3381	2670	1959	1248	0535	9823	9110	8396	7682	6968	0
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Sine Deg. 60

29 Deg. Tangent

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 748	9. 748	9. 748	9. 749	9. 749	9. 749	9. 749	9. 750	9. 750	9. 750	9. 751	9. 751	9. 751	9. 752	9. 752
0	2089	5052	8013	0974	3934	6892	9850	2806	5762	8716	1669	4622	7573	0523	3472
1	2138	5101	8063	1023	3983	6942	9899	2855	5811	8765	1719	4671	7622	0572	3521
2	2188	5150	8112	1073	4032	6991	9948	2905	5860	8814	1768	4720	7671	0621	3571
3	2237	5200	8161	1122	4082	7040	9998	2954	5909	8864	1817	4769	7720	0671	3620
4	2286	5249	8211	1171	4131	7089	0047	3003	5959	8913	1866	4818	7770	0720	3669
5	2336	5299	8260	1221	4180	7139	0096	3053	6008	8962	1915	4868	7819	0769	3718
6	2385	5348	8310	1270	4230	7188	0145	3102	6057	9011	1965	4917	7868	0818	3767
7	2435	5397	8359	1319	4279	7237	0195	3151	6106	9061	2014	4966	7917	0867	3816
8	2484	5447	8408	1369	4328	7287	0244	3200	6156	9110	2063	5015	7966	0916	3865
9	2533	5496	8458	1418	4378	7336	0293	3250	6205	9159	2112	5064	8016	0966	3915
10	2583	5545	8507	1467	4427	7385	0343	3299	6254	9208	2161	5114	8065	1015	3964
11	2632	5595	8556	1517	4476	7435	0392	3348	6303	9258	2211	5163	8114	1064	4013
12	2682	5644	8606	1566	4525	7484	0441	3397	6353	9307	2260	5212	8163	1113	4062
13	2731	5694	8655	1615	4575	7533	0490	3447	6402	9356	2309	5261	8212	1162	4111
14	2780	5743	8704	1665	4624	7582	0540	3496	6451	9405	2358	5310	8261	1211	4160
15	2830	5792	8754	1714	4673	7632	0589	3545	6500	9454	2408	5360	8311	1261	4209
16	2879	5842	8803	1763	4723	7681	0638	3594	6550	9504	2457	5409	8360	1310	4259
17	2929	5891	8852	1813	4772	7730	0688	3644	6599	9553	2506	5458	8409	1359	4308
18	2978	5940	8902	1862	4821	7780	0737	3693	6648	9602	2555	5507	8458	1408	4357
19	3027	5990	8951	1911	4871	7829	0786	3742	6697	9651	2604	5556	8507	1457	4406
20	3077	6039	9000	1961	4920	7878	0835	3791	6747	9701	2654	5606	8556	1506	4455
21	3126	6088	9050	2010	4969	7927	0885	3841	6796	9750	2703	5655	8606	1555	4504
22	3175	6138	9099	2059	5019	7977	0934	3890	6845	9799	2752	5704	8655	1605	4553
23	3225	6187	9148	2109	5068	8026	0983	3939	6894	9848	2801	5753	8704	1654	4603
24	3274	6237	9198	2158	5117	8075	1032	3989	6944	9897	2850	5802	8753	1703	4652
25	3324	6286	9247	2207	5167	8125	1082	4038	6993	9947	2900	5851	8802	1752	4701
26	3373	6335	9297	2257	5216	8174	1131	4087	7042	9996	2949	5901	8851	1801	4750
27	3422	6385	9346	2306	5265	8223	1180	4136	7091	0045	2998	5950	8901	1850	4799
28	3472	6434	9395	2355	5314	8273	1230	4186	7140	0094	3047	5999	8950	1900	4848
29	3521	6483	9445	2405	5364	8322	1279	4235	7190	0144	3096	6048	8999	1949	4897
30	3570	6533	9494	2454	5413	8371	1328	4284	7239	0193	3146	6097	9048	1998	4947
31	3620	6582	9543	2503	5462	8420	1377	4333	7288	0242	3195	6147	9097	2047	4996
32	3669	6631	9593	2553	5512	8470	1427	4383	7337	0291	3244	6196	9146	2096	5045
33	3719	6681	9642	2602	5561	8519	1476	4432	7387	0340	3293	6245	9196	2145	5094
34	3768	6730	9691	2651	5610	8568	1525	4481	7436	0390	3342	6294	9245	2194	5143
35	3817	6780	9741	2701	5660	8618	1574	4530	7485	0439	3392	6343	9294	2244	5192
36	3867	6829	9790	2750	5709	8667	1624	4580	7534	0488	3441	6393	9343	2293	5241
37	3916	6878	9839	2799	5758	8716	1673	4629	7584	0537	3490	6442	9392	2342	5290
38	3965	6928	9889	2849	5808	8765	1722	4678	7633	0587	3539	6491	9442	2391	5340
39	4015	6977	9938	2898	5857	8815	1772	4727	7682	0636	3588	6540	9491	2440	5389
40	4064	7026	9987	2947	5906	8864	1821	4777	7731	0685	3638	6589	9540	2489	5438
41	4114	7076	0037	2997	5955	8913	1870	4826	7781	0734	3687	6638	9589	2539	5487
42	4163	7125	0086	3046	6005	8963	1919	4875	7830	0783	3736	6688	9638	2588	5536
43	4212	7174	0135	3095	6054	9012	1969	4924	7879	0833	3785	6737	9687	2637	5585
44	4262	7224	0185	3145	6103	9061	2018	4974	7928	0882	3834	6786	9737	2686	5634
45	4311	7273	0234	3194	6153	9110	2067	5023	7978	0931	3884	6835	9786	2735	5684
46	4360	7322	0283	3243	6202	9160	2116	5072	8027	0980	3933	6884	9835	2784	5733
47	4410	7372	0333	3293	6251	9209	2166	5121	8076	1030	3982	6934	9884	2833	5782
48	4459	7421	0382	3342	6301	9258	2215	5171	8125	1079	4031	6983	9933	2883	5831
49	4509	7471	0431	3391	6350	9308	2264	5220	8174	1128	4080	7032	9982	2932	5880
50	4558	7520	0481	3440	6399	9357	2314	5269	8224	1177	4130	7081	0031	2981	5929
51	4607	7569	0530	3490	6449	9406	2363	5318	8273	1226	4179	7130	0081	3030	5978
52	4657	7619	0579	3539	6498	9455	2412	5368	8322	1276	4228	7179	0130	3079	6027
53	4706	7668	0629	3588	6547	9505	2461	5417	8371	1325	4277	7229	0179	3128	6077
54	4755	7717	0678	3638	6596	9554	2511	5466	8421	1374	4326	7278	0228	3177	6126
55	4805	7767	0727	3687	6646	9603	2560	5515	8470	1423	4376	7327	0277	3227	6175
56	4854	7816	0777	3736	6695	9653	2609	5565	8519	1472	4425	7376	0326	3276	6224
57	4904	7865	0826	3786	6744	9702	2658	5614	8568	1522	4474	7425	0376	3325	6273
58	4953	7915	0875	3835	6794	9751	2708	5663	8618	1571	4523	7475	0425	3374	6322
59	5002	7964	0925	3884	6843	9800	2757	5712	8667	1620	4572	7524	0474	3423	6371
60	5052	8013	0974	3934	6892	9850	2806	5762	8716	1669	4622	7573	0523	3472	6420
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Tangent Deg. 60

29 Deg. Co-Tangent

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
10. 251	10. 251	10. 251	10. 250	10. 250	10. 250	10. 250	10. 249	10. 249	10. 249	10. 248	10. 248	10. 248	10. 247	10. 247	″
7911	4948	1987	9026	6066	3108	0150	7194	4238	1284	8331	5378	2427	9477	6528	60
7862	4899	1937	8977	6017	3058	0101	7145	4189	1235	8281	5329	2378	9428	6479	59
7812	4850	1888	8927	5968	3009	0052	7095	4140	1186	8232	5280	2329	9379	6429	58
7763	4800	1839	8878	5918	2960	0002	7046	4091	1136	8183	5231	2280	9329	6380	57
7714	4751	1789	8829	5869	2911	9953	6997	4041	1087	8134	5182	2230	9280	6331	56
7664	4701	1740	8779	5820	2861	9904	6947	3992	1038	8085	5132	2181	9231	6282	55
7615	4652	1690	8730	5770	2812	9855	6898	3943	0989	8035	5083	2132	9182	6233	54
7565	4603	1641	8681	5721	2763	9805	6849	3894	0939	7986	5034	2083	9133	6184	53
7516	4553	1592	8631	5672	2713	9756	6800	3844	0890	7937	4985	2034	9084	6135	52
7467	4504	1542	8582	5622	2664	9707	6750	3795	0841	7888	4936	1984	9034	6085	51
7417	4455	1493	8533	5573	2615	9657	6701	3746	0792	7839	4886	1935	8985	6036	50
7368	4405	1444	8483	5524	2565	9608	6652	3697	0742	7789	4837	1886	8936	5987	49
7318	4356	1394	8434	5475	2516	9559	6603	3647	0693	7740	4788	1837	8887	5938	48
7269	4306	1345	8385	5425	2467	9510	6553	3598	0644	7691	4739	1788	8838	5889	47
7220	4257	1296	8335	5376	2418	9460	6504	3549	0595	7642	4690	1739	8789	5840	46
7170	4208	1246	8286	5327	2368	9411	6455	3500	0546	7592	4640	1689	8739	5791	45
7121	4158	1197	8237	5277	2319	9362	6406	3450	0496	7543	4591	1640	8690	5741	44
7071	4109	1148	8187	5228	2270	9312	6356	3401	0447	7494	4542	1591	8641	5692	43
7022	4060	1098	8138	5179	2220	9263	6307	3352	0398	7445	4493	1542	8592	5643	42
6973	4010	1049	8089	5129	2171	9214	6258	3303	0349	7396	4444	1493	8543	5594	41
6923	3961	1000	8039	5080	2122	9165	6209	3253	0299	7346	4394	1444	8494	5545	40
6874	3912	0950	7990	5031	2073	9115	6159	3204	0250	7297	4345	1394	8445	5496	39
6825	3862	0901	7941	4981	2023	9066	6110	3155	0201	7248	4296	1345	8395	5447	38
6775	3813	0852	7891	4932	1974	9017	6061	3106	0152	7199	4247	1296	8346	5397	37
6726	3763	0802	7842	4883	1925	8968	6011	3056	0103	7150	4198	1247	8297	5348	36
6676	3714	0753	7793	4833	1875	8918	5962	3007	0053	7100	4149	1198	8248	5299	35
6627	3665	0703	7743	4784	1826	8869	5913	2958	0004	7051	4099	1149	8199	5250	34
6578	3615	0654	7694	4735	1777	8820	5864	2909	9955	7002	4050	1099	8150	5201	33
6528	3566	0605	7645	4686	1727	8770	5814	2860	9906	6953	4001	1050	8100	5152	32
6479	3517	0555	7595	4636	1678	8721	5765	2810	9856	6904	3952	1001	8051	5103	31
6430	3467	0506	7546	4587	1629	8672	5716	2761	9807	6854	3903	0952	8002	5053	30
6380	3418	0457	7497	4538	1580	8623	5667	2712	9758	6805	3853	0903	7953	5004	29
6331	3369	0407	7447	4488	1530	8573	5617	2663	9709	6756	3804	0854	7904	4955	28
6281	3319	0358	7398	4439	1481	8524	5568	2613	9660	6707	3755	0804	7855	4906	27
6232	3270	0309	7349	4390	1432	8475	5519	2564	9610	6658	3706	0755	7806	4857	26
6183	3220	0259	7299	4340	1382	8426	5470	2515	9561	6608	3657	0706	7756	4808	25
6133	3171	0210	7250	4291	1333	8376	5420	2466	9512	6559	3607	0657	7707	4759	24
6084	3122	0161	7201	4242	1284	8327	5371	2416	9463	6510	3558	0608	7658	4710	23
6035	3072	0111	7151	4192	1235	8278	5322	2367	9413	6461	3509	0558	7609	4660	22
5985	3023	0062	7102	4143	1185	8228	5273	2318	9364	6412	3460	0509	7560	4611	21
5936	2974	0013	7053	4094	1136	8179	5223	2269	9315	6362	3411	0460	7511	4562	20
5886	2924	9963	7003	4045	1087	8130	5174	2219	9266	6313	3362	0411	7461	4513	19
5837	2875	9914	6954	3995	1037	8081	5125	2170	9217	6264	3312	0362	7412	4464	18
5788	2826	9865	6905	3946	0988	8031	5076	2121	9167	6215	3263	0313	7363	4415	17
5738	2776	9815	6855	3897	0939	7982	5026	2072	9118	6166	3214	0263	7314	4366	16
5689	2727	9766	6806	3847	0890	7933	4977	2022	9069	6116	3165	0214	7265	4316	15
5640	2678	9717	6757	3798	0840	7884	4928	1973	9020	6067	3116	0165	7216	4267	14
5590	2628	9667	6707	3749	0791	7834	4879	1924	8970	6018	3066	0116	7167	4218	13
5541	2579	9618	6658	3699	0742	7785	4829	1875	8921	5969	3017	0067	7117	4169	12
5491	2529	9569	6609	3650	0692	7736	4780	1826	8872	5920	2968	0018	7068	4120	11
5442	2480	9519	6560	3601	0643	7686	4731	1776	8823	5870	2919	9969	7019	4071	10
5393	2431	9470	6510	3551	0594	7637	4682	1727	8774	5821	2870	9919	6970	4022	9
5343	2381	9421	6461	3502	0545	7588	4632	1678	8724	5772	2821	9870	6921	3973	8
5294	2332	9371	6412	3453	0495	7539	4583	1629	8675	5723	2771	9821	6872	3923	7
5245	2283	9322	6362	3404	0446	7489	4534	1579	8626	5674	2722	9772	6823	3874	6
5195	2233	9273	6313	3354	0397	7440	4485	1530	8577	5624	2673	9723	6773	3825	5
5146	2184	9223	6264	3305	0347	7391	4435	1481	8528	5575	2624	9674	6724	3776	4
5096	2135	9174	6214	3256	0298	7342	4386	1432	8478	5526	2575	9624	6675	3727	3
5047	2085	9125	6165	3206	0249	7292	4337	1382	8429	5477	2525	9575	6626	3678	2
4998	2036	9075	6116	3157	0200	7243	4288	1333	8380	5428	2476	9526	6577	3629	1
4948	1987	9026	6066	3108	0150	7194	4238	1284	8331	5378	2427	9477	6528	3580	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Tangent Deg. 60

29 Deg. Sine

″	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9.692	9.692	9.692	9.693	9.693	9.693	9.693	9.693	9.694	9.694	9.694	9.694	9.695	9.695	9.695
0	3388	5620	7851	0080	2308	4534	6758	8981	1203	3423	5642	7859	0074	2288	4501
1	3425	5658	7888	0117	2345	4571	6795	9019	1240	3460	5679	7896	0111	2325	4538
2	3463	5695	7925	0154	2382	4608	6833	9056	1277	3497	5716	7933	0148	2362	4575
3	3500	5732	7962	0192	2419	4645	6870	9093	1314	3534	5753	7970	0185	2399	4612
4	3537	5769	8000	0229	2456	4682	6907	9130	1351	3571	5790	8006	0222	2436	4648
5	3574	5806	8037	0266	2493	4719	6944	9167	1388	3608	5826	8043	0259	2473	4685
6	3612	5844	8074	0303	2530	4756	6981	9204	1425	3645	5863	8080	0296	2510	4722
7	3649	5881	8111	0340	2567	4793	7018	9241	1462	3682	5900	8117	0333	2547	4759
8	3686	5918	8148	0377	2605	4830	7055	9278	1499	3719	5937	8154	0370	2583	4796
9	3723	5955	8185	0414	2642	4868	7092	9315	1536	3756	5974	8191	0407	2620	4833
10	3760	5992	8223	0451	2679	4905	7129	9352	1573	3793	6011	8228	0443	2657	4870
11	3798	6029	8260	0489	2716	4942	7166	9389	1610	3830	6048	8265	0480	2694	4906
12	3835	6067	8297	0526	2753	4979	7203	9426	1647	3867	6085	8302	0517	2731	4943
13	3872	6104	8334	0563	2790	5016	7240	9463	1684	3904	6122	8339	0554	2768	4980
14	3909	6141	8371	0600	2827	5053	7277	9500	1721	3941	6159	8376	0591	2805	5017
15	3946	6178	8408	0637	2864	5090	7314	9537	1758	3978	6196	8413	0628	2842	5054
16	3984	6215	8446	0674	2901	5127	7351	9574	1795	4015	6233	8450	0665	2879	5091
17	4021	6253	8483	0711	2939	5164	7388	9611	1832	4052	6270	8487	0702	2915	5128
18	4058	6290	8520	0749	2976	5201	7425	9648	1869	4089	6307	8524	0739	2952	5164
19	4095	6327	8557	0786	3013	5238	7463	9685	1906	4126	6344	8561	0776	2989	5201
20	4132	6364	8594	0823	3050	5275	7500	9722	1943	4163	6381	8597	0813	3026	5238
21	4170	6401	8631	0860	3087	5313	7537	9759	1980	4200	6418	8634	0849	3063	5275
22	4207	6438	8669	0897	3124	5350	7574	9796	2017	4237	6455	8671	0886	3100	5312
23	4244	6476	8706	0934	3161	5387	7611	9833	2054	4274	6492	8708	0923	3137	5349
24	4281	6513	8743	0971	3198	5424	7648	9870	2091	4311	6529	8745	0960	3174	5386
25	4318	6550	8780	1008	3235	5461	7685	9907	2128	4348	6566	8782	0997	3210	5422
26	4356	6587	8817	1046	3273	5498	7722	9944	2165	4385	6603	8819	1034	3247	5459
27	4393	6624	8854	1083	3310	5535	7759	9981	2202	4422	6640	8856	1071	3284	5496
28	4430	6662	8891	1120	3347	5572	7796	0018	2239	4459	6676	8893	1108	3321	5533
29	4467	6699	8929	1157	3384	5609	7833	0055	2276	4496	6713	8930	1145	3358	5570
30	4504	6736	8966	1194	3421	5646	7870	0092	2313	4533	6750	8967	1182	3395	5607
31	4542	6773	9003	1231	3458	5683	7907	0129	2350	4570	6787	9004	1218	3432	5644
32	4579	6810	9040	1268	3495	5720	7944	0166	2387	4607	6824	9041	1255	3469	5680
33	4616	6847	9077	1305	3532	5758	7981	0204	2424	4644	6861	9077	1292	3505	5717
34	4653	6885	9114	1343	3569	5795	8018	0241	2461	4680	6898	9114	1329	3542	5754
35	4690	6922	9151	1380	3606	5832	8055	0278	2498	4717	6935	9151	1366	3579	5791
36	4728	6959	9189	1417	3644	5869	8092	0315	2535	4754	6972	9188	1403	3616	5828
37	4765	6996	9226	1454	3681	5906	8129	0352	2572	4791	7009	9225	1440	3653	5865
38	4802	7033	9263	1491	3718	5943	8167	0389	2609	4828	7046	9262	1477	3690	5901
39	4839	7070	9300	1528	3755	5980	8204	0426	2646	4865	7083	9299	1514	3727	5938
40	4876	7108	9337	1565	3792	6017	8241	0463	2683	4902	7120	9336	1551	3764	5975
41	4914	7145	9374	1602	3829	6054	8278	0500	2720	4939	7157	9373	1587	3800	6012
42	4951	7182	9412	1640	3866	6091	8315	0537	2757	4976	7194	9410	1624	3837	6049
43	4988	7219	9449	1677	3903	6128	8352	0574	2794	5013	7231	9447	1661	3874	6086
44	5025	7256	9486	1714	3940	6165	8389	0611	2831	5050	7268	9484	1698	3911	6123
45	5062	7293	9523	1751	3977	6202	8426	0648	2868	5087	7305	9521	1735	3948	6159
46	5100	7331	9560	1788	4015	6239	8463	0685	2905	5124	7342	9557	1772	3985	6196
47	5137	7368	9597	1825	4052	6277	8500	0722	2942	5161	7379	9594	1809	4022	6233
48	5174	7405	9634	1862	4089	6314	8537	0759	2979	5198	7415	9631	1846	4059	6270
49	5211	7442	9672	1899	4126	6351	8574	0796	3016	5235	7452	9668	1883	4095	6307
50	5248	7479	9709	1937	4163	6388	8611	0833	3053	5272	7489	9705	1919	4132	6344
51	5286	7517	9746	1974	4200	6425	8648	0870	3090	5309	7526	9742	1956	4169	6380
52	5323	7554	9783	2011	4237	6462	8685	0907	3127	5346	7563	9779	1993	4206	6417
53	5360	7591	9820	2048	4274	6499	8722	0944	3164	5383	7600	9816	2030	4243	6454
54	5397	7628	9857	2085	4311	6536	8759	0981	3201	5420	7637	9853	2067	4280	6491
55	5434	7665	9894	2122	4348	6573	8796	1018	3238	5457	7674	9890	2104	4317	6528
56	5472	7702	9932	2159	4385	6610	8833	1055	3275	5494	7711	9927	2141	4354	6565
57	5509	7740	9969	2196	4423	6647	8870	1092	3312	5531	7748	9964	2178	4390	6602
58	5546	7777	0006	2233	4460	6684	8907	1129	3349	5568	7785	0000	2215	4427	6638
59	5583	7814	0043	2271	4497	6721	8944	1166	3386	5605	7822	0037	2251	4464	6675
60	5620	7851	0080	2308	4534	6758	8981	1203	3423	5642	7859	0074	2288	4501	6712
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Sine Deg. 60

29 Deg. Co-Sine

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	″
9.939	9.939	9.939	9.939	9.939	9.939	9.939	9.939	9.939	9.939	9.938	9.938	9.938	9.938	9.938	
6968	6253	5537	4821	4105	3388	2671	1953	1234	0515	9796	9076	8356	7635	6914	60
6956	6241	5525	4809	4093	3376	2659	1941	1222	0503	9784	9064	8344	7623	6902	59
6944	6229	5513	4797	4081	3364	2647	1929	1210	0491	9772	9052	8332	7611	6890	58
6932	6217	5502	4786	4069	3352	2635	1917	1198	0479	9760	9040	8320	7599	6878	57
6920	6205	5490	4774	4057	3340	2623	1905	1186	0467	9748	9028	8308	7587	6866	56
6908	6193	5478	4762	4045	3328	2611	1893	1174	0455	9736	9016	8296	7575	6854	55
6896	6181	5466	4750	4033	3316	2599	1881	1162	0443	9724	9004	8284	7563	6842	54
6884	6169	5454	4738	4021	3304	2587	1869	1150	0431	9712	8992	8272	7551	6829	53
6872	6157	5442	4726	4009	3292	2575	1857	1138	0419	9700	8980	8260	7539	6817	52
6861	6145	5430	4714	3997	3280	2563	1845	1126	0407	9688	8968	8248	7527	6805	51
6849	6134	5418	4702	3985	3268	2551	1833	1114	0396	9676	8956	8236	7515	6793	50
6837	6122	5406	4690	3973	3256	2539	1821	1102	0384	9664	8944	8224	7503	6781	49
6825	6110	5394	4678	3962	3245	2527	1809	1091	0372	9652	8932	8212	7491	6769	48
6813	6098	5382	4666	3950	3233	2515	1797	1079	0360	9640	8920	8200	7479	6757	47
6801	6086	5370	4654	3938	3221	2503	1785	1067	0348	9628	8908	8188	7467	6745	46
6789	6074	5358	4642	3926	3209	2491	1773	1055	0336	9616	8896	8176	7455	6733	45
6777	6062	5346	4630	3914	3197	2479	1761	1043	0324	9604	8884	8164	7443	6721	44
6765	6050	5334	4618	3902	3185	2467	1749	1031	0312	9592	8872	8152	7431	6709	43
6753	6038	5323	4606	3890	3173	2455	1737	1019	0300	9580	8860	8140	7419	6697	42
6741	6026	5311	4595	3878	3161	2443	1725	1007	0288	9568	8848	8128	7407	6685	41
6729	6014	5299	4583	3866	3149	2431	1713	0995	0276	9556	8836	8116	7395	6673	40
6718	6002	5287	4571	3854	3137	2419	1701	0983	0264	9544	8824	8104	7383	6661	39
6706	5990	5275	4559	3842	3125	2407	1689	0971	0252	9532	8812	8092	7371	6649	38
6694	5979	5263	4547	3830	3113	2395	1677	0959	0240	9520	8800	8080	7359	6637	37
6682	5967	5251	4535	3818	3101	2383	1665	0947	0228	9508	8788	8068	7347	6625	36
6670	5955	5239	4523	3806	3089	2371	1653	0935	0216	9496	8776	8056	7335	6613	35
6658	5943	5227	4511	3794	3077	2360	1641	0923	0204	9484	8764	8044	7322	6601	34
6646	5931	5215	4499	3782	3065	2348	1629	0911	0192	9472	8752	8032	7310	6589	33
6634	5919	5203	4487	3770	3053	2336	1617	0899	0180	9460	8740	8019	7298	6577	32
6622	5907	5191	4475	3758	3041	2324	1605	0887	0168	9448	8728	8007	7286	6565	31
6610	5895	5179	4463	3746	3029	2312	1593	0875	0156	9436	8716	7995	7274	6553	30
6598	5883	5167	4451	3735	3017	2300	1582	0863	0144	9424	8704	7983	7262	6541	29
6586	5871	5156	4439	3723	3005	2288	1570	0851	0132	9412	8692	7971	7250	6529	28
6575	5859	5144	4427	3711	2993	2276	1558	0839	0120	9400	8680	7959	7238	6517	27
6563	5847	5132	4415	3699	2981	2264	1546	0827	0108	9388	8668	7947	7226	6505	26
6551	5835	5120	4403	3687	2970	2252	1534	0815	0096	9376	8656	7935	7214	6493	25
6539	5824	5108	4392	3675	2958	2240	1522	0803	0084	9364	8644	7923	7202	6481	24
6527	5812	5096	4380	3663	2946	2228	1510	0791	0072	9352	8632	7911	7190	6469	23
6515	5800	5084	4368	3651	2934	2216	1498	0779	0060	9340	8620	7899	7178	6457	22
6503	5788	5072	4356	3639	2922	2204	1486	0767	0048	9328	8608	7887	7166	6445	21
6491	5776	5060	4344	3627	2910	2192	1474	0755	0036	9316	8596	7875	7154	6433	20
6479	5764	5048	4332	3615	2898	2180	1462	0743	0024	9304	8584	7863	7142	6421	19
6467	5752	5036	4320	3603	2886	2168	1450	0731	0012	9292	8572	7851	7130	6408	18
6455	5740	5024	4308	3591	2874	2156	1438	0719	0000	9280	8560	7839	7118	6396	17
6443	5728	5012	4296	3579	2862	2144	1426	0707	9988	9268	8548	7827	7106	6384	16
6432	5716	5000	4284	3567	2850	2132	1414	0695	9976	9256	8536	7815	7094	6372	15
6420	5704	4988	4272	3555	2838	2120	1402	0683	9964	9244	8524	7803	7082	6360	14
6408	5692	4976	4260	3543	2826	2108	1390	0671	9952	9232	8512	7791	7070	6348	13
6396	5680	4965	4248	3531	2814	2096	1378	0659	9940	9220	8500	7779	7058	6336	12
6384	5668	4953	4236	3519	2802	2084	1366	0647	9928	9208	8488	7767	7046	6324	11
6372	5657	4941	4224	3507	2790	2072	1354	0635	9916	9196	8476	7755	7034	6312	10
6360	5645	4929	4212	3496	2778	2060	1342	0623	9904	9184	8464	7743	7022	6300	9
6348	5633	4917	4200	3484	2766	2048	1330	0611	9892	9172	8452	7731	7010	6288	8
6336	5621	4905	4188	3472	2754	2036	1318	0599	9880	9160	8440	7719	6998	6276	7
6324	5609	4893	4177	3460	2742	2024	1306	0587	9868	9148	8428	7707	6986	6264	6
6312	5597	4881	4165	3448	2730	2012	1294	0575	9856	9136	8416	7695	6974	6252	5
6300	5585	4869	4153	3436	2718	2001	1282	0563	9844	9124	8404	7683	6962	6240	4
6289	5573	4857	4141	3424	2706	1989	1270	0551	9832	9112	8392	7671	6950	6228	3
6277	5561	4845	4129	3412	2694	1977	1258	0539	9820	9100	8380	7659	6938	6216	2
6265	5549	4833	4117	3400	2682	1965	1246	0527	9808	9088	8368	7647	6926	6204	1
6253	5537	4821	4105	3388	2671	1953	1234	0515	9796	9076	8356	7635	6914	6192	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Sine Deg. 60

29 Deg. Tangent

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 752	9. 752	9. 753	9. 753	9. 753	9. 754	9. 754	9. 754	9. 754	9. 755	9. 755	9. 755	9. 756	9. 756	9. 756
0	6420	9368	2314	5259	8203	1146	4088	7029	9969	2908	5846	8783	1718	4653	7587
1	6470	9417	2363	5308	8252	1195	4137	7078	0018	2957	5895	8832	1767	4702	7636
2	6519	9466	2412	5357	8301	1244	4186	7127	0067	3006	5944	8880	1816	4751	7685
3	6568	9515	2461	5406	8350	1293	4235	7176	0116	3055	5993	8929	1865	4800	7734
4	6617	9564	2510	5455	8399	1342	4284	7225	0165	3104	6041	8978	1914	4849	7783
5	6666	9613	2559	5504	8448	1391	4333	7274	0214	3153	6090	9027	1963	4898	7832
6	6715	9662	2608	5553	8497	1440	4382	7323	0263	3202	6139	9076	2012	4947	7881
7	6764	9711	2657	5602	8546	1489	4431	7372	0312	3251	6188	9125	2061	4996	7929
8	6813	9760	2706	5651	8595	1538	4480	7421	0361	3300	6237	9174	2110	5045	7978
9	6863	9810	2756	5700	8644	1587	4529	7470	0410	3348	6286	9223	2159	5094	8027
10	6912	9859	2805	5750	8693	1636	4578	7519	0459	3397	6335	9272	2208	5142	8076
11	6961	9908	2854	5799	8742	1685	4627	7568	0508	3446	6384	9321	2257	5191	8125
12	7010	9957	2903	5848	8792	1734	4676	7617	0557	3495	6433	9370	2306	5240	8174
13	7059	0006	2952	5897	8841	1783	4725	7666	0606	3544	6482	9419	2354	5289	8223
14	7108	0055	3001	5946	8890	1832	4774	7715	0655	3593	6531	9468	2403	5338	8272
15	7157	0104	3050	5995	8939	1881	4823	7764	0704	3642	6580	9517	2452	5387	8321
16	7206	0153	3099	6044	8988	1930	4872	7813	0753	3691	6629	9566	2501	5436	8369
17	7256	0202	3148	6093	9037	1980	4921	7862	0802	3740	6678	9615	2550	5485	8418
18	7305	0252	3197	6142	9086	2029	4970	7911	0851	3789	6727	9663	2599	5534	8467
19	7354	0301	3246	6191	9135	2078	5019	7960	0900	3838	6776	9712	2648	5583	8516
20	7403	0350	3296	6240	9184	2127	5068	8009	0949	3887	6825	9761	2697	5631	8565
21	7452	0399	3345	6289	9233	2176	5117	8058	0998	3936	6874	9810	2746	5680	8614
22	7501	0448	3394	6338	9282	2225	5166	8107	1047	3985	6923	9859	2795	5729	8663
23	7550	0497	3443	6387	9331	2274	5215	8156	1096	4034	6972	9908	2844	5778	8712
24	7599	0546	3492	6437	9380	2323	5264	8205	1144	4083	7021	9957	2893	5827	8761
25	7649	0595	3541	6486	9429	2372	5313	8254	1193	4132	7070	0006	2941	5876	8809
26	7698	0644	3590	6535	9478	2421	5362	8303	1242	4181	7118	0055	2990	5925	8858
27	7747	0693	3639	6584	9527	2470	5411	8352	1291	4230	7167	0104	3039	5974	8907
28	7796	0743	3688	6633	9576	2519	5460	8401	1340	4279	7216	0153	3088	6023	8956
29	7845	0792	3737	6682	9625	2568	5509	8450	1389	4328	7265	0202	3137	6072	9005
30	7894	0841	3786	6731	9674	2617	5558	8499	1438	4377	7314	0251	3186	6120	9054
31	7943	0890	3835	6780	9724	2666	5607	8548	1487	4426	7363	0300	3235	6169	9103
32	7992	0939	3885	6829	9773	2715	5656	8597	1536	4475	7412	0349	3284	6218	9152
33	8042	0988	3934	6878	9822	2764	5706	8646	1585	4524	7461	0397	3333	6267	9200
34	8091	1037	3983	6927	9871	2813	5755	8695	1634	4573	7510	0446	3382	6316	9249
35	8140	1086	4032	6976	9920	2862	5804	8744	1683	4622	7559	0495	3431	6365	9298
36	8189	1135	4081	7025	9969	2911	5853	8793	1732	4671	7608	0544	3480	6414	9347
37	8238	1184	4130	7074	0018	2960	5902	8842	1781	4720	7657	0593	3528	6463	9396
38	8287	1234	4179	7123	0067	3009	5951	8891	1830	4769	7706	0642	3577	6512	9445
39	8336	1283	4228	7173	0116	3058	6000	8940	1879	4818	7755	0691	3626	6561	9494
40	8385	1332	4277	7222	0165	3107	6049	8989	1928	4866	7804	0740	3675	6609	9543
41	8434	1381	4326	7271	0214	3156	6098	9038	1977	4915	7853	0789	3724	6658	9592
42	8484	1430	4375	7320	0263	3205	6147	9087	2026	4964	7902	0838	3773	6707	9640
43	8533	1479	4424	7369	0312	3254	6196	9136	2075	5013	7951	0887	3822	6756	9689
44	8582	1528	4474	7418	0361	3303	6245	9185	2124	5062	8000	0936	3871	6805	9738
45	8631	1577	4523	7467	0410	3352	6294	9234	2173	5111	8048	0985	3920	6854	9787
46	8680	1626	4572	7516	0459	3401	6343	9283	2222	5160	8097	1034	3969	6903	9836
47	8729	1675	4621	7565	0508	3451	6392	9332	2271	5209	8146	1082	4018	6952	9885
48	8778	1725	4670	7614	0557	3500	6441	9381	2320	5258	8195	1131	4066	7001	9934
49	8827	1774	4719	7663	0606	3549	6490	9430	2369	5307	8244	1180	4115	7049	9983
50	8876	1823	4768	7712	0655	3598	6539	9479	2418	5356	8293	1229	4164	7098	0031
51	8926	1872	4817	7761	0704	3647	6588	9528	2467	5405	8342	1278	4213	7147	0080
52	8975	1921	4866	7810	0754	3696	6637	9577	2516	5454	8391	1327	4262	7196	0129
53	9024	1970	4915	7859	0803	3745	6686	9626	2565	5503	8440	1376	4311	7245	0178
54	9073	2019	4964	7908	0852	3794	6735	9675	2614	5552	8489	1425	4360	7294	0227
55	9122	2068	5013	7958	0901	3843	6784	9724	2663	5601	8538	1474	4409	7343	0276
56	9171	2117	5062	8007	0950	3892	6833	9773	2712	5650	8587	1523	4458	7392	0325
57	9220	2166	5112	8056	0999	3941	6882	9822	2761	5699	8636	1572	4507	7441	0374
58	9269	2216	5161	8105	1048	3990	6931	9871	2810	5748	8685	1621	4556	7489	0422
59	9318	2265	5210	8154	1097	4039	6980	9920	2859	5797	8734	1670	4604	7538	0471
60	9368	2314	5259	8203	1146	4088	7029	9969	2908	5846	8783	1718	4653	7587	0520
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Tangent Deg. 60

29 Deg. Co-Tangent

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	10. 247	10. 247	10. 246	10. 246	10. 246	10. 245	10. 245	10. 245	10. 245	10. 244	10. 244	10. 244	10. 243	10. 243	10. 243
60	3580	0632	7686	4741	1797	8854	5912	2971	0031	7092	4154	1217	8282	5347	2413
59	3530	0583	7637	4692	1748	8805	5863	2922	9982	7043	4105	1168	8233	5298	2364
58	3481	0534	7588	4643	1699	8756	5814	2873	9933	6994	4056	1120	8184	5249	2315
57	3432	0485	7539	4594	1650	8707	5765	2824	9884	6945	4007	1071	8135	5200	2266
56	3383	0436	7490	4545	1601	8658	5716	2775	9835	6896	3959	1022	8086	5151	2217
55	3334	0387	7441	4496	1552	8609	5667	2726	9786	6847	3910	0973	8037	5102	2168
54	3285	0338	7392	4447	1503	8560	5618	2677	9737	6798	3861	0924	7988	5053	2119
53	3236	0289	7343	4398	1454	8511	5569	2628	9688	6749	3812	0875	7939	5004	2071
52	3187	0240	7294	4349	1405	8462	5520	2579	9639	6700	3763	0826	7890	4955	2022
51	3137	0190	7244	4300	1356	8413	5471	2530	9590	6652	3714	0777	7841	4906	1973
50	3088	0141	7195	4250	1307	8364	5422	2481	9541	6603	3665	0728	7792	4858	1924
49	3039	0092	7146	4201	1258	8315	5373	2432	9492	6554	3616	0679	7743	4809	1875
48	2990	0043	7097	4152	1208	8266	5324	2383	9443	6505	3567	0630	7694	4760	1826
47	2941	9994	7048	4103	1159	8217	5275	2334	9394	6456	3518	0581	7646	4711	1777
46	2892	9945	6999	4054	1110	8168	5226	2285	9345	6407	3469	0532	7597	4662	1728
45	2843	9896	6950	4005	1061	8119	5177	2236	9296	6358	3420	0483	7548	4613	1679
44	2794	9847	6901	3956	1012	8070	5128	2187	9247	6309	3371	0434	7499	4564	1631
43	2744	9798	6852	3907	0963	8020	5079	2138	9198	6260	3322	0385	7450	4515	1582
42	2695	9748	6803	3858	0914	7971	5030	2089	9149	6211	3273	0337	7401	4466	1533
41	2646	9699	6754	3809	0865	7922	4981	2040	9100	6162	3224	0288	7352	4417	1484
40	2597	9650	6704	3760	0816	7873	4932	1991	9051	6113	3175	0239	7303	4369	1435
39	2548	9601	6655	3711	0767	7824	4883	1942	9002	6064	3126	0190	7254	4320	1386
38	2499	9552	6606	3662	0718	7775	4834	1893	8953	6015	3077	0141	7205	4271	1337
37	2450	9503	6557	3613	0669	7726	4785	1844	8904	5966	3028	0092	7156	4222	1288
36	2401	9454	6508	3563	0620	7677	4736	1795	8856	5917	2979	0043	7107	4173	1239
35	2351	9405	6459	3514	0571	7628	4687	1746	8807	5868	2930	9994	7059	4124	1191
34	2302	9356	6410	3465	0522	7579	4638	1697	8758	5819	2882	9945	7010	4075	1142
33	2253	9307	6361	3416	0473	7530	4589	1648	8709	5770	2833	9896	6961	4026	1093
32	2204	9257	6312	3367	0424	7481	4540	1599	8660	5721	2784	9847	6912	3977	1044
31	2155	9208	6263	3318	0375	7432	4491	1550	8611	5672	2735	9798	6863	3928	0995
30	2106	9159	6214	3269	0326	7383	4442	1501	8562	5623	2686	9749	6814	3880	0946
29	2057	9110	6165	3220	0276	7334	4393	1452	8513	5574	2637	9700	6765	3831	0897
28	2008	9061	6115	3171	0227	7285	4344	1403	8464	5525	2588	9651	6716	3782	0848
27	1958	9012	6066	3122	0178	7236	4294	1354	8415	5476	2539	9603	6667	3733	0800
26	1909	8963	6017	3073	0129	7187	4245	1305	8366	5427	2490	9554	6618	3684	0751
25	1860	8914	5968	3024	0080	7138	4196	1256	8317	5378	2441	9505	6569	3635	0702
24	1811	8865	5919	2975	0031	7089	4147	1207	8268	5329	2392	9456	6520	3586	0653
23	1762	8816	5870	2926	9982	7040	4098	1158	8219	5280	2343	9407	6472	3537	0604
22	1713	8766	5821	2877	9933	6991	4049	1109	8170	5231	2294	9358	6423	3488	0555
21	1664	8717	5772	2827	9884	6942	4000	1060	8121	5182	2245	9309	6374	3439	0506
20	1615	8668	5723	2778	9835	6893	3951	1011	8072	5134	2196	9260	6325	3391	0457
19	1566	8619	5674	2729	9786	6844	3902	0962	8023	5085	2147	9211	6276	3342	0408
18	1516	8570	5625	2680	9737	6795	3853	0913	7974	5036	2098	9162	6227	3293	0360
17	1467	8521	5576	2631	9688	6746	3804	0864	7925	4987	2049	9113	6178	3244	0311
16	1418	8472	5526	2582	9639	6697	3755	0815	7876	4938	2000	9064	6129	3195	0262
15	1369	8423	5477	2533	9590	6648	3706	0766	7827	4889	1952	9015	6080	3146	0213
14	1320	8374	5428	2484	9541	6599	3657	0717	7778	4840	1903	8966	6031	3097	0164
13	1271	8325	5379	2435	9492	6549	3608	0668	7729	4791	1854	8918	5982	3048	0115
12	1222	8275	5330	2386	9443	6500	3559	0619	7680	4742	1805	8869	5934	2999	0066
11	1173	8226	5281	2337	9394	6451	3510	0570	7631	4693	1756	8820	5885	2951	0017
10	1124	8177	5232	2288	9345	6402	3461	0521	7582	4644	1707	8771	5836	2902	9969
9	1074	8128	5183	2239	9296	6353	3412	0472	7533	4595	1658	8722	5787	2853	9920
8	1025	8079	5134	2190	9246	6304	3363	0423	7484	4546	1609	8673	5738	2804	9871
7	0976	8030	5085	2141	9197	6255	3314	0374	7435	4497	1560	8624	5689	2755	9822
6	0927	7981	5036	2092	9148	6206	3265	0325	7386	4448	1511	8575	5640	2706	9773
5	0878	7932	4987	2042	9099	6157	3216	0276	7337	4399	1462	8526	5591	2657	9724
4	0829	7883	4938	1993	9050	6108	3167	0227	7288	4350	1413	8477	5542	2608	9675
3	0780	7834	4888	1944	9001	6059	3118	0178	7239	4301	1364	8428	5493	2559	9626
2	0731	7784	4839	1895	8952	6010	3069	0129	7190	4252	1315	8379	5444	2511	9578
1	0682	7735	4790	1846	8903	5961	3020	0080	7141	4203	1266	8330	5396	2462	9529
0	0632	7686	4741	1797	8854	5912	2971	0031	7092	4154	1217	8282	5347	2413	9480
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Tangent Deg. 60

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	9.695	9.695	9.696	9.696	9.696	9.696	9.696	9.697	9.697	9.697	9.697	9.698	9.698	9.698	9.698
0	6712	8922	1130	3336	5541	7745	9947	2148	4347	6545	8741	0936	3129	5321	7511
1	6749	8958	1167	3373	5578	7782	9984	2185	4384	6581	8778	0972	3166	5357	7548
2	6786	8995	1203	3410	5615	7819	0021	2221	4420	6618	8814	1009	3202	5394	7584
3	6823	9032	1240	3447	5652	7855	0057	2258	4457	6655	8851	1045	3239	5430	7621
4	6859	9069	1277	3483	5688	7892	0094	2295	4494	6691	8887	1082	3275	5467	7657
5	6896	9106	1314	3520	5725	7929	0131	2331	4530	6728	8924	1119	3312	5503	7694
6	6933	9143	1350	3557	5762	7965	0167	2368	4567	6765	8961	1155	3348	5540	7730
7	6970	9179	1387	3594	5799	8002	0204	2405	4604	6801	8997	1192	3385	5576	7767
8	7007	9216	1424	3630	5835	8039	0241	2441	4640	6838	9034	1228	3421	5613	7803
9	7044	9253	1461	3667	5872	8076	0277	2478	4677	6874	9070	1265	3458	5650	7840
10	7080	9290	1498	3704	5909	8112	0314	2515	4713	6911	9107	1301	3494	5686	7876
11	7117	9327	1534	3741	5946	8149	0351	2551	4750	6948	9144	1338	3531	5723	7913
12	7154	9363	1571	3777	5982	8186	0388	2588	4787	6984	9180	1375	3568	5759	7949
13	7191	9400	1608	3814	6019	8222	0424	2625	4823	7021	9217	1411	3604	5796	7986
14	7228	9437	1645	3851	6056	8259	0461	2661	4860	7057	9253	1448	3641	5832	8022
15	7265	9474	1682	3888	6093	8296	0498	2698	4897	7094	9290	1484	3677	5869	8059
16	7301	9511	1718	3925	6129	8332	0534	2735	4933	7131	9326	1521	3714	5905	8095
17	7338	9547	1755	3961	6166	8369	0571	2771	4970	7167	9363	1557	3750	5942	8132
18	7375	9584	1792	3998	6203	8406	0608	2808	5007	7204	9400	1594	3787	5978	8168
19	7412	9621	1829	4035	6239	8443	0644	2844	5043	7240	9436	1630	3823	6015	8204
20	7449	9658	1865	4072	6276	8479	0681	2881	5080	7277	9473	1667	3860	6051	8241
21	7486	9695	1902	4108	6313	8516	0718	2918	5116	7314	9509	1704	3896	6088	8277
22	7522	9731	1939	4145	6350	8553	0754	2954	5153	7350	9546	1740	3933	6124	8314
23	7559	9768	1976	4182	6386	8589	0791	2991	5190	7387	9583	1777	3969	6161	8350
24	7596	9805	2013	4219	6423	8626	0828	3028	5226	7423	9619	1813	4006	6197	8387
25	7633	9842	2049	4255	6460	8663	0864	3064	5263	7460	9656	1850	4042	6234	8423
26	7670	9879	2086	4292	6497	8700	0901	3101	5300	7497	9692	1886	4079	6270	8460
27	7707	9915	2123	4329	6533	8736	0938	3138	5336	7533	9729	1923	4116	6307	8496
28	7743	9952	2160	4366	6570	8773	0974	3174	5373	7570	9765	1960	4152	6343	8533
29	7780	9989	2196	4402	6607	8810	1011	3211	5410	7607	9802	1996	4189	6380	8569
30	7817	0026	2233	4439	6643	8846	1048	3248	5446	7643	9839	2033	4225	6416	8606
31	7854	0063	2270	4476	6680	8883	1084	3284	5483	7680	9875	2069	4262	6453	8642
32	7891	0099	2307	4513	6717	8920	1121	3321	5519	7716	9912	2106	4298	6489	8679
33	7928	0136	2344	4549	6754	8956	1158	3358	5556	7753	9948	2142	4335	6526	8715
34	7964	0173	2380	4586	6790	8993	1194	3394	5593	7790	9985	2179	4371	6562	8752
35	8001	0210	2417	4623	6827	9030	1231	3431	5629	7826	0021	2215	4408	6599	8788
36	8038	0247	2454	4660	6864	9067	1268	3468	5666	7863	0058	2252	4444	6635	8825
37	8075	0283	2491	4696	6901	9103	1305	3504	5703	7899	0095	2288	4481	6672	8861
38	8112	0320	2527	4733	6937	9140	1341	3541	5739	7936	0131	2325	4517	6708	8898
39	8148	0357	2564	4770	6974	9177	1378	3578	5776	7973	0168	2362	4554	6745	8934
40	8185	0394	2601	4807	7011	9213	1415	3614	5812	8009	0204	2398	4590	6781	8971
41	8222	0431	2638	4843	7047	9250	1451	3651	5849	8046	0241	2435	4627	6818	9007
42	8259	0467	2675	4880	7084	9287	1488	3688	5886	8082	0278	2471	4663	6854	9044
43	8296	0504	2711	4917	7121	9323	1525	3724	5922	8119	0314	2508	4700	6891	9080
44	8333	0541	2748	4954	7158	9360	1561	3761	5959	8156	0351	2544	4737	6927	9116
45	8369	0578	2785	4990	7194	9397	1598	3797	5996	8192	0387	2581	4773	6964	9153
46	8406	0615	2822	5027	7231	9434	1635	3834	6032	8229	0424	2617	4810	7000	9189
47	8443	0651	2858	5064	7268	9470	1671	3871	6069	8265	0460	2654	4846	7037	9226
48	8480	0688	2895	5101	7304	9507	1708	3907	6105	8302	0497	2691	4883	7073	9262
49	8517	0725	2932	5137	7341	9544	1745	3944	6142	8339	0534	2727	4919	7110	9299
50	8553	0762	2969	5174	7378	9580	1781	3981	6179	8375	0570	2764	4956	7146	9335
51	8590	0799	3005	5211	7415	9617	1818	4017	6215	8412	0607	2800	4992	7183	9372
52	8627	0835	3042	5248	7451	9654	1855	4054	6252	8448	0643	2837	5029	7219	9408
53	8664	0872	3079	5284	7488	9690	1891	4091	6288	8485	0680	2873	5065	7256	9445
54	8701	0909	3116	5321	7525	9727	1928	4127	6325	8521	0716	2910	5102	7292	9481
55	8738	0946	3153	5358	7562	9764	1965	4164	6362	8558	0753	2946	5138	7329	9518
56	8774	0983	3189	5395	7598	9800	2001	4201	6398	8595	0790	2983	5175	7365	9554
57	8811	1019	3226	5431	7635	9837	2038	4237	6435	8631	0826	3019	5211	7402	9591
58	8848	1056	3263	5468	7672	9874	2075	4274	6472	8668	0863	3056	5248	7438	9627
59	8885	1093	3300	5505	7708	9911	2111	4310	6508	8704	0899	3093	5284	7475	9664
60	8922	1130	3336	5541	7745	9947	2148	4347	6545	8741	0936	3129	5321	7511	9700
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
	9.938	9.938	9.938	9.938	9.938	9.938	9.938	9.938	9.938	9.937	9.937	9.937	9.937	9.937	9.937	″
	6192	5470	4747	4024	3300	2576	1851	1126	0400	9674	8947	8220	7492	6764	6035	60
	6180	5458	4735	4012	3288	2564	1839	1114	0388	9662	8935	8208	7480	6752	6023	59
	6168	5446	4723	3999	3276	2551	1827	1101	0376	9650	8923	8196	7468	6740	6011	58
	6156	5433	4711	3987	3264	2539	1815	1089	0364	9637	8911	8184	7456	6728	5999	57
	6144	5421	4699	3975	3252	2527	1803	1077	0352	9625	8899	8171	7444	6716	5987	56
	6132	5409	4687	3963	3239	2515	1790	1065	0339	9613	8886	8159	7432	6703	5975	55
	6120	5397	4675	3951	3227	2503	1778	1053	0327	9601	8874	8147	7419	6691	5963	54
	6108	5385	4662	3939	3215	2491	1766	1041	0315	9589	8862	8135	7407	6679	5950	53
	6096	5373	4650	3927	3203	2479	1754	1029	0303	9577	8850	8123	7395	6667	5938	52
	6084	5361	4638	3915	3191	2467	1742	1017	0291	9565	8838	8111	7383	6655	5926	51
	6072	5349	4626	3903	3179	2455	1730	1005	0279	9553	8826	8099	7371	6643	5914	50
	6060	5337	4614	3891	3167	2443	1718	0993	0267	9541	8814	8087	7359	6631	5902	49
	6047	5325	4602	3879	3155	2431	1706	0981	0255	9528	8802	8074	7347	6618	5890	48
	6035	5313	4590	3867	3143	2419	1694	0968	0243	9516	8790	8062	7335	6606	5878	47
	6023	5301	4578	3855	3131	2407	1682	0956	0231	9504	8777	8050	7322	6594	5865	46
	6011	5289	4566	3843	3119	2394	1670	0944	0218	9492	8765	8038	7310	6582	5853	45
	5999	5277	4554	3831	3107	2382	1658	0932	0206	9480	8753	8026	7298	6570	5841	44
	5987	5265	4542	3819	3095	2370	1645	0920	0194	9468	8741	8014	7286	6558	5829	43
	5975	5253	4530	3806	3083	2358	1633	0908	0182	9456	8729	8002	7274	6546	5817	42
	5963	5241	4518	3794	3071	2346	1621	0896	0170	9444	8717	7990	7262	6533	5805	41
	5951	5229	4506	3782	3058	2334	1609	0884	0158	9432	8705	7977	7250	6521	5792	40
	5939	5217	4494	3770	3046	2322	1597	0872	0146	9419	8693	7965	7237	6509	5780	39
	5927	5205	4482	3758	3034	2310	1585	0860	0134	9407	8680	7953	7225	6497	5768	38
	5915	5193	4470	3746	3022	2298	1573	0848	0122	9395	8668	7941	7213	6485	5756	37
	5903	5181	4458	3734	3010	2286	1561	0835	0110	9383	8656	7929	7201	6473	5744	36
	5891	5169	4446	3722	2998	2274	1549	0823	0097	9371	8644	7917	7189	6461	5732	35
	5879	5156	4433	3710	2986	2262	1537	0811	0085	9359	8632	7905	7177	6448	5720	34
	5867	5144	4421	3698	2974	2250	1525	0799	0073	9347	8620	7893	7165	6436	5707	33
	5855	5132	4409	3686	2962	2237	1512	0787	0061	9335	8608	7880	7152	6424	5695	32
	5843	5120	4397	3674	2950	2225	1500	0775	0049	9323	8596	7868	7140	6412	5683	31
	5831	5108	4385	3662	2938	2213	1488	0763	0037	9310	8584	7856	7128	6400	5671	30
	5819	5096	4373	3650	2926	2201	1476	0751	0025	9298	8571	7844	7116	6388	5659	29
	5807	5084	4361	3638	2914	2189	1464	0739	0013	9286	8559	7832	7104	6376	5647	28
	5795	5072	4349	3626	2902	2177	1452	0727	0001	9274	8547	7820	7092	6363	5634	27
	5783	5060	4337	3613	2889	2165	1440	0714	9988	9262	8535	7808	7080	6351	5622	26
	5771	5048	4325	3601	2877	2153	1428	0702	9976	9250	8523	7795	7068	6339	5610	25
	5759	5036	4313	3589	2865	2141	1416	0690	9964	9238	8510	7783	7055	6327	5598	24
	5747	5024	4301	3577	2853	2129	1404	0678	9952	9226	8499	7771	7043	6315	5586	23
	5734	5012	4289	3565	2841	2117	1392	0666	9940	9214	8487	7759	7031	6303	5574	22
	5722	5000	4277	3553	2829	2105	1380	0654	9928	9201	8474	7747	7019	6291	5562	21
	5710	4988	4265	3541	2817	2092	1367	0642	9916	9189	8462	7735	7007	6278	5549	20
	5698	4976	4253	3529	2805	2080	1355	0630	9904	9177	8450	7723	6995	6266	5537	19
	5686	4964	4241	3517	2793	2068	1343	0618	9892	9165	8438	7711	6983	6254	5525	18
	5674	4952	4229	3505	2781	2056	1331	0606	9880	9153	8426	7698	6970	6242	5513	17
	5662	4940	4216	3493	2769	2044	1319	0594	9867	9141	8414	7686	6958	6230	5501	16
	5650	4928	4204	3481	2757	2032	1307	0581	9855	9129	8402	7674	6946	6218	5489	15
	5638	4916	4192	3469	2745	2020	1295	0569	9843	9117	8390	7662	6934	6206	5476	14
	5626	4903	4180	3457	2733	2008	1283	0557	9831	9105	8377	7650	6922	6193	5464	13
	5614	4891	4168	3445	2720	1996	1271	0545	9819	9092	8365	7638	6910	6181	5452	12
	5602	4879	4156	3433	2708	1984	1259	0533	9807	9080	8353	7626	6898	6169	5440	11
	5590	4867	4144	3420	2696	1972	1247	0521	9795	9068	8341	7614	6885	6157	5428	10
	5578	4855	4132	3408	2684	1960	1234	0509	9783	9056	8329	7601	6873	6145	5416	9
	5566	4843	4120	3396	2672	1948	1222	0497	9771	9044	8317	7589	6861	6133	5404	8
	5554	4831	4108	3384	2660	1935	1210	0485	9758	9032	8305	7577	6849	6120	5391	7
	5542	4819	4096	3372	2648	1923	1198	0473	9746	9020	8293	7565	6837	6108	5379	6
	5530	4807	4084	3360	2636	1911	1186	0460	9734	9008	8281	7553	6825	6096	5367	5
	5518	4795	4072	3348	2624	1899	1174	0448	9722	8996	8268	7541	6813	6084	5355	4
	5506	4783	4060	3336	2612	1887	1162	0436	9710	8983	8256	7529	6801	6072	5343	3
	5494	4771	4048	3324	2600	1875	1150	0424	9698	8971	8244	7516	6788	6060	5331	2
	5482	4759	4036	3312	2588	1863	1138	0412	9686	8959	8232	7504	6776	6048	5318	1
	5470	4747	4024	3300	2576	1851	1126	0400	9674	8947	8220	7492	6764	6035	5306	0
	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

29 Deg. Tangent

"	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9.757	9.757	9.757	9.757	9.758	9.758	9.758	9.759	9.759	9.759	9.759	9.760	9.760	9.760	9.761
0	0520	3452	6383	9313	2242	5170	8096	1022	3947	6871	9794	2716	5637	8557	1476
1	0569	3501	6432	9362	2290	5218	8145	1071	3996	6920	9843	2765	5686	8605	1524
2	0618	3550	6481	9410	2339	5267	8194	1120	4045	6969	9891	2813	5734	8654	1573
3	0667	3599	6529	9459	2388	5316	8243	1169	4093	7017	9940	2862	5783	8703	1622
4	0716	3647	6578	9508	2437	5365	8291	1217	4142	7066	9989	2911	5832	8751	1670
5	0765	3696	6627	9557	2486	5413	8340	1266	4191	7115	0038	2959	5880	8800	1719
6	0813	3745	6676	9606	2534	5462	8389	1315	4240	7163	0086	3008	5929	8849	1768
7	0862	3794	6725	9655	2583	5511	8438	1364	4288	7212	0135	3057	5978	8897	1816
8	0911	3843	6774	9703	2632	5560	8487	1412	4337	7261	0184	3105	6026	8946	1865
9	0960	3892	6822	9752	2681	5609	8535	1461	4386	7310	0232	3154	6075	8995	1914
10	1009	3941	6871	9801	2730	5657	8584	1510	4435	7358	0281	3203	6124	9043	1962
11	1058	3989	6920	9850	2779	5706	8633	1559	4483	7407	0330	3251	6172	9092	2011
12	1107	4038	6969	9899	2827	5755	8682	1607	4532	7456	0378	3300	6221	9141	2059
13	1155	4087	7018	9947	2876	5804	8730	1656	4581	7504	0427	3349	6270	9189	2108
14	1204	4136	7067	9996	2925	5853	8779	1705	4630	7553	0476	3398	6318	9238	2157
15	1253	4185	7115	0045	2974	5901	8828	1754	4678	7602	0525	3446	6367	9287	2205
16	1302	4234	7164	0094	3023	5950	8877	1802	4727	7651	0573	3495	6416	9335	2254
17	1351	4283	7213	0143	3071	5999	8926	1851	4776	7699	0622	3544	6464	9384	2303
18	1400	4331	7262	0192	3120	6048	8974	1900	4824	7748	0671	3592	6513	9433	2351
19	1449	4380	7311	0240	3169	6096	9023	1949	4873	7797	0719	3641	6562	9481	2400
20	1498	4429	7360	0289	3218	6145	9072	1997	4922	7845	0768	3690	6610	9530	2449
21	1546	4478	7408	0338	3267	6194	9121	2046	4971	7894	0817	3738	6659	9579	2497
22	1595	4527	7457	0387	3315	6243	9169	2095	5019	7943	0865	3787	6708	9627	2546
23	1644	4576	7506	0436	3364	6292	9218	2144	5068	7992	0914	3836	6756	9676	2594
24	1693	4625	7555	0484	3413	6340	9267	2192	5117	8040	0963	3884	6805	9724	2643
25	1742	4673	7604	0533	3462	6389	9316	2241	5166	8089	1012	3933	6854	9773	2692
26	1791	4722	7653	0582	3511	6438	9364	2290	5214	8138	1060	3982	6902	9822	2740
27	1840	4771	7701	0631	3559	6487	9413	2339	5263	8187	1109	4030	6951	9870	2789
28	1888	4820	7750	0680	3608	6536	9462	2387	5312	8235	1158	4079	7000	9919	2838
29	1937	4869	7799	0729	3657	6584	9511	2436	5361	8284	1206	4128	7048	9968	2886
30	1986	4918	7848	0777	3706	6633	9559	2485	5409	8333	1255	4176	7097	0016	2935
31	2035	4966	7897	0826	3755	6682	9608	2534	5458	8381	1304	4225	7146	0065	2983
32	2084	5015	7946	0875	3803	6731	9657	2582	5507	8430	1352	4274	7194	0114	3032
33	2133	5064	7994	0924	3852	6779	9706	2631	5555	8479	1401	4323	7243	0162	3081
34	2182	5113	8043	0973	3901	6828	9755	2680	5604	8528	1450	4371	7292	0211	3129
35	2231	5162	8092	1021	3950	6877	9803	2729	5653	8576	1499	4420	7340	0260	3178
36	2279	5211	8141	1070	3998	6926	9852	2777	5702	8625	1547	4469	7389	0308	3227
37	2328	5260	8190	1119	4047	6975	9901	2826	5750	8674	1596	4517	7438	0357	3275
38	2377	5308	8239	1168	4096	7023	9950	2875	5799	8722	1645	4566	7486	0406	3324
39	2426	5357	8287	1217	4145	7072	9998	2924	5848	8771	1693	4615	7535	0454	3373
40	2475	5406	8336	1265	4194	7121	0047	2972	5897	8820	1742	4663	7584	0503	3421
41	2524	5455	8385	1314	4242	7170	0096	3021	5945	8869	1791	4712	7632	0552	3470
42	2573	5504	8434	1363	4291	7218	0145	3070	5994	8917	1839	4761	7681	0600	3518
43	2621	5553	8483	1412	4340	7267	0193	3119	6043	8966	1888	4809	7730	0649	3567
44	2670	5601	8532	1461	4389	7316	0242	3167	6091	9015	1937	4858	7778	0697	3616
45	2719	5650	8580	1510	4438	7365	0291	3216	6140	9063	1986	4907	7827	0746	3664
46	2768	5699	8629	1558	4486	7414	0340	3265	6189	9112	2034	4955	7876	0795	3713
47	2817	5748	8678	1607	4535	7462	0388	3314	6238	9161	2083	5004	7924	0843	3762
48	2866	5797	8727	1656	4584	7511	0437	3362	6286	9209	2132	5053	7973	0892	3810
49	2915	5846	8776	1705	4633	7560	0486	3411	6335	9258	2180	5101	8022	0941	3859
50	2963	5894	8825	1754	4682	7609	0535	3460	6384	9307	2229	5150	8070	0989	3907
51	3012	5943	8873	1802	4730	7657	0583	3509	6433	9356	2278	5199	8119	1038	3956
52	3061	5992	8922	1851	4779	7706	0632	3557	6481	9404	2326	5247	8168	1087	4005
53	3110	6041	8971	1900	4828	7755	0681	3606	6530	9453	2375	5296	8216	1135	4053
54	3159	6090	9020	1949	4877	7804	0730	3655	6579	9502	2424	5345	8265	1184	4102
55	3208	6139	9069	1998	4926	7853	0778	3703	6627	9550	2472	5393	8313	1233	4151
56	3257	6188	9117	2046	4974	7901	0827	3752	6676	9599	2521	5442	8362	1281	4199
57	3305	6236	9166	2095	5023	7950	0876	3801	6725	9648	2570	5491	8411	1330	4248
58	3354	6285	9215	2144	5072	7999	0925	3850	6774	9697	2619	5539	8459	1378	4296
59	3403	6334	9264	2193	5121	8048	0974	3898	6822	9745	2667	5588	8508	1427	4345
60	3452	6383	9313	2242	5170	8096	1022	3947	6871	9794	2716	5637	8557	1476	4394
"	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Tangent Deg. 60

29 Deg. Co-Tangent

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
10.242	10.242	10.242	10.242	10.241	10.241	10.241	10.240	10.240	10.240	10.240	10.239	10.239	10.239	10.238	"
9480	6548	3617	0687	7758	4830	1904	8978	6053	3129	0206	7284	4363	1443	8524	60
9431	6499	3568	0638	7710	4782	1855	8929	6004	3080	0157	7235	4314	1395	8476	59
9382	6450	3519	0590	7661	4733	1806	8880	5955	3031	0109	7187	4266	1346	8427	58
9333	6401	3471	0541	7612	4684	1757	8831	5907	2983	0060	7138	4217	1297	8378	57
9284	6353	3422	0492	7563	4635	1709	8783	5858	2934	0011	7089	4168	1249	8330	56
9235	6304	3373	0443	7514	4587	1660	8734	5809	2885	9962	7041	4120	1200	8281	55
9187	6255	3324	0394	7466	4538	1611	8685	5760	2837	9914	6992	4071	1151	8232	54
9138	6206	3275	0345	7417	4489	1562	8636	5712	2788	9865	6943	4022	1103	8184	53
9089	6157	3226	0297	7368	4440	1513	8588	5663	2739	9816	6895	3974	1054	8135	52
9040	6108	3178	0248	7319	4391	1465	8539	5614	2690	9768	6846	3925	1005	8086	51
8991	6059	3129	0199	7270	4343	1416	8490	5565	2642	9719	6797	3876	0957	8038	50
8942	6011	3080	0150	7221	4294	1367	8441	5517	2593	9670	6749	3828	0908	7989	49
8893	5962	3031	0101	7173	4245	1318	8393	5468	2544	9622	6700	3779	0859	7941	48
8845	5913	2982	0053	7124	4196	1270	8344	5419	2496	9573	6651	3730	0811	7892	47
8796	5864	2933	0004	7075	4147	1221	8295	5370	2447	9524	6602	3682	0762	7843	46
8747	5815	2885	9955	7026	4099	1172	8246	5322	2398	9475	6554	3633	0713	7795	45
8698	5766	2836	9906	6977	4050	1123	8198	5273	2349	9427	6505	3584	0665	7746	44
8649	5717	2787	9857	6929	4001	1074	8149	5224	2301	9378	6456	3536	0616	7697	43
8600	5669	2738	9808	6880	3952	1026	8100	5176	2252	9329	6408	3487	0567	7649	42
8551	5620	2689	9760	6831	3904	0977	8051	5127	2203	9281	6359	3438	0519	7600	41
8502	5571	2640	9711	6782	3855	0928	8003	5078	2155	9232	6310	3390	0470	7551	40
8454	5522	2592	9662	6733	3806	0879	7954	5029	2106	9183	6262	3341	0421	7503	39
8405	5473	2543	9613	6685	3757	0831	7905	4981	2057	9135	6213	3292	0373	7454	38
8356	5424	2494	9564	6636	3708	0782	7856	4932	2008	9086	6164	3244	0324	7406	37
8307	5375	2445	9516	6587	3660	0733	7808	4883	1960	9037	6116	3195	0276	7357	36
8258	5327	2396	9467	6538	3611	0684	7759	4834	1911	8988	6067	3146	0227	7308	35
8209	5278	2347	9418	6489	3562	0636	7710	4786	1862	8940	6018	3098	0178	7260	34
8160	5229	2299	9369	6441	3513	0587	7661	4737	1813	8891	5970	3049	0130	7211	33
8112	5180	2250	9320	6392	3464	0538	7613	4688	1765	8842	5921	3000	0081	7162	32
8063	5131	2201	9271	6343	3416	0489	7564	4639	1716	8794	5872	2952	0032	7114	31
8014	5082	2152	9223	6294	3367	0441	7515	4591	1667	8745	5824	2903	9984	7065	30
7965	5034	2103	9174	6245	3318	0392	7466	4542	1619	8696	5775	2854	9935	7017	29
7916	4985	2054	9125	6197	3269	0343	7418	4493	1570	8648	5726	2806	9886	6968	28
7867	4936	2006	9076	6148	3221	0294	7369	4445	1521	8599	5677	2757	9838	6919	27
7818	4887	1957	9027	6099	3172	0245	7320	4396	1472	8550	5629	2708	9789	6871	26
7769	4838	1908	8979	6050	3123	0197	7271	4347	1424	8501	5580	2660	9740	6822	25
7721	4789	1859	8930	6002	3074	0148	7223	4298	1375	8453	5531	2611	9692	6773	24
7672	4740	1810	8881	5953	3025	0099	7174	4250	1326	8404	5483	2562	9643	6725	23
7623	4692	1761	8832	5904	2977	0050	7125	4201	1278	8355	5434	2514	9594	6676	22
7574	4643	1713	8783	5855	2928	0002	7076	4152	1229	8307	5385	2465	9546	6627	21
7525	4594	1664	8735	5806	2879	9953	7028	4103	1180	8258	5337	2416	9497	6579	20
7476	4545	1615	8686	5758	2830	9904	6979	4055	1131	8209	5288	2368	9448	6530	19
7427	4496	1566	8637	5709	2782	9855	6930	4006	1083	8161	5239	2319	9400	6482	18
7379	4447	1517	8588	5660	2733	9807	6881	3957	1034	8112	5191	2270	9351	6433	17
7330	4399	1468	8539	5611	2684	9758	6833	3909	0985	8063	5142	2222	9303	6384	16
7281	4350	1420	8490	5562	2635	9709	6784	3860	0937	8014	5093	2173	9254	6336	15
7232	4301	1371	8442	5514	2586	9660	6735	3811	0888	7966	5045	2124	9205	6287	14
7183	4252	1322	8393	5465	2538	9612	6686	3762	0839	7917	4996	2076	9157	6238	13
7134	4203	1273	8344	5416	2489	9563	6638	3714	0791	7868	4947	2027	9108	6190	12
7085	4154	1224	8295	5367	2440	9514	6589	3665	0742	7820	4899	1978	9059	6141	11
7037	4106	1175	8246	5318	2391	9465	6540	3616	0693	7771	4850	1930	9011	6093	10
6988	4057	1127	8198	5270	2343	9417	6491	3567	0644	7722	4801	1881	8962	6044	9
6939	4008	1078	8149	5221	2294	9368	6443	3519	0596	7674	4753	1832	8913	5995	8
6890	3959	1029	8100	5172	2245	9319	6394	3470	0547	7625	4704	1784	8865	5947	7
6841	3910	0980	8051	5123	2196	9270	6345	3421	0498	7576	4655	1735	8816	5898	6
6792	3861	0931	8002	5074	2147	9222	6297	3373	0450	7528	4607	1687	8767	5849	5
6743	3812	0883	7954	5026	2099	9173	6248	3324	0401	7479	4558	1638	8719	5801	4
6695	3764	0834	7905	4977	2050	9124	6199	3275	0352	7430	4509	1589	8670	5752	3
6646	3715	0785	7856	4928	2001	9075	6150	3226	0303	7381	4461	1541	8622	5704	2
6597	3666	0736	7807	4879	1952	9026	6102	3178	0255	7333	4412	1492	8573	5655	1
6548	3617	0687	7758	4830	1994	8978	6053	3129	0206	7284	4363	1443	8524	5606	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	"

Tangent Deg. 60

30 Deg. Sine

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.698	9.699	9.699	9.699	9.699	9.700	9.700	9.700	9.700	9.700	9.701	9.701	9.701	9.701	9.702
0	9700	1887	4073	6258	8441	0622	2802	4981	7158	9334	1508	3681	5852	8022	0190
1	9737	1924	4110	6294	8477	0659	2839	5017	7194	9370	1544	3717	5888	8058	0226
2	9773	1960	4146	6331	8514	0695	2875	5054	7231	9406	1580	3753	5924	8094	0263
3	9809	1997	4183	6367	8550	0731	2911	5090	7267	9443	1617	3789	5961	8130	0299
4	9846	2033	4219	6403	8586	0768	2948	5126	7303	9479	1653	3826	5997	8167	0335
5	9882	2070	4255	6440	8623	0804	2984	5162	7339	9515	1689	3862	6033	8203	0371
6	9919	2106	4292	6476	8659	0840	3020	5199	7376	9551	1725	3898	6069	8239	0407
7	9955	2143	4328	6513	8695	0877	3057	5235	7412	9588	1762	3934	6105	8275	0443
8	9992	2179	4365	6549	8732	0913	3093	5271	7448	9624	1798	3970	6141	8311	0479
9	0028	2215	4401	6585	8768	0949	3129	5308	7485	9660	1834	4007	6178	8347	0515
10	0065	2252	4438	6622	8804	0986	3166	5344	7521	9696	1870	4043	6214	8383	0552
11	0101	2288	4474	6658	8841	1022	3202	5380	7557	9732	1906	4079	6250	8420	0588
12	0138	2325	4510	6695	8877	1058	3238	5416	7593	9769	1943	4115	6286	8456	0624
13	0174	2361	4547	6731	8914	1095	3275	5453	7630	9805	1979	4151	6322	8492	0660
14	0211	2398	4583	6767	8950	1131	3311	5489	7666	9841	2015	4188	6358	8528	0696
15	0247	2434	4620	6804	8986	1167	3347	5525	7702	9877	2051	4224	6395	8564	0732
16	0283	2470	4656	6840	9023	1204	3383	5562	7738	9914	2088	4260	6431	8600	0768
17	0320	2507	4692	6876	9059	1240	3420	5598	7775	9950	2124	4296	6467	8636	0804
18	0356	2543	4729	6913	9095	1276	3456	5634	7811	9986	2160	4332	6503	8673	0841
19	0393	2580	4765	6949	9132	1313	3492	5671	7847	0022	2196	4368	6539	8709	0877
20	0429	2616	4802	6986	9168	1349	3529	5707	7883	0059	2232	4405	6576	8745	0913
21	0466	2653	4838	7022	9204	1385	3565	5743	7920	0095	2269	4441	6612	8781	0949
22	0502	2689	4874	7058	9241	1422	3601	5779	7956	0131	2305	4477	6648	8817	0985
23	0539	2726	4911	7095	9277	1458	3638	5816	7992	0167	2341	4513	6684	8853	1021
24	0575	2762	4947	7131	9314	1494	3674	5852	8029	0204	2377	4549	6720	8889	1057
25	0612	2798	4984	7168	9350	1531	3710	5888	8065	0240	2413	4586	6756	8926	1093
26	0648	2835	5020	7204	9386	1567	3747	5925	8101	0276	2450	4622	6793	8962	1130
27	0685	2871	5057	7240	9423	1604	3783	5961	8137	0312	2486	4658	6829	8998	1166
28	0721	2908	5093	7277	9459	1640	3819	5997	8174	0349	2522	4694	6865	9034	1202
29	0757	2944	5129	7313	9495	1676	3856	6033	8210	0385	2558	4730	6901	9070	1238
30	0794	2981	5166	7349	9532	1713	3892	6070	8246	0421	2595	4767	6937	9106	1274
31	0830	3017	5202	7386	9568	1749	3928	6106	8282	0457	2631	4803	6973	9142	1310
32	0867	3053	5239	7422	9604	1785	3964	6142	8319	0494	2667	4839	7010	9179	1346
33	0903	3090	5275	7459	9641	1822	4001	6179	8355	0530	2703	4875	7046	9215	1382
34	0940	3126	5311	7495	9677	1858	4037	6215	8391	0566	2739	4911	7082	9251	1418
35	0976	3163	5348	7531	9714	1894	4073	6251	8427	0602	2776	4948	7118	9287	1455
36	1013	3199	5384	7568	9750	1931	4110	6287	8464	0638	2812	4984	7154	9323	1491
37	1049	3236	5421	7604	9786	1967	4146	6324	8500	0675	2848	5020	7190	9359	1527
38	1086	3272	5457	7641	9823	2003	4182	6360	8536	0711	2884	5056	7226	9395	1563
39	1122	3308	5493	7677	9859	2040	4219	6396	8572	0747	2920	5092	7263	9432	1599
40	1158	3345	5530	7713	9895	2076	4255	6433	8609	0783	2957	5128	7299	9468	1635
41	1195	3381	5566	7750	9932	2112	4291	6469	8645	0820	2993	5165	7335	9504	1671
42	1231	3418	5603	7786	9968	2148	4328	6505	8681	0856	3029	5201	7371	9540	1707
43	1268	3454	5639	7822	0004	2185	4364	6541	8717	0892	3065	5237	7407	9576	1743
44	1304	3491	5675	7859	0041	2221	4400	6578	8754	0928	3101	5273	7443	9612	1780
45	1341	3527	5712	7895	0077	2257	4436	6614	8790	0965	3138	5309	7480	9648	1816
46	1377	3563	5748	7932	0113	2294	4473	6650	8826	1001	3174	5346	7516	9685	1852
47	1414	3600	5785	7968	0150	2330	4509	6686	8862	1037	3210	5382	7552	9721	1888
48	1450	3636	5821	8004	0186	2366	4545	6723	8899	1073	3246	5418	7588	9757	1924
49	1487	3673	5857	8041	0222	2403	4582	6759	8935	1109	3283	5454	7624	9793	1960
50	1523	3709	5894	8077	0259	2439	4618	6795	8971	1146	3319	5490	7660	9829	1996
51	1559	3746	5930	8113	0295	2475	4654	6832	9008	1182	3355	5526	7697	9865	2032
52	1596	3782	5967	8150	0332	2512	4691	6868	9044	1218	3391	5563	7733	9901	2068
53	1632	3818	6003	8186	0368	2548	4727	6904	9080	1254	3427	5599	7769	9937	2105
54	1669	3855	6039	8223	0404	2584	4763	6940	9116	1291	3464	5635	7805	9974	2141
55	1705	3891	6076	8259	0441	2621	4799	6977	9153	1327	3500	5671	7841	0010	2177
56	1742	3928	6112	8295	0477	2657	4836	7013	9189	1363	3536	5707	7877	0046	2213
57	1778	3964	6149	8332	0513	2693	4872	7049	9225	1399	3572	5744	7913	0082	2249
58	1815	4001	6185	8368	0550	2730	4908	7086	9261	1436	3608	5780	7950	0118	2285
59	1851	4037	6221	8404	0586	2766	4945	7122	9298	1472	3645	5816	7986	0154	2321
60	1887	4073	6258	8441	0622	2802	4981	7158	9334	1508	3681	5852	8022	0190	2357
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Sine Deg. 59

30 Deg. Co-Sine

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
9.937	9.937	9.937	9.937	9.937	9.937	9.937	9.937	9.936	9.936	9.936	9.936	9.936	9.936	9.936	″
5306	4577	3847	3116	2385	1653	0921	0189	9456	8722	7988	7254	6519	5783	5047	60
5294	4565	3834	3104	2373	1641	0909	0176	9443	8710	7976	7241	6506	5771	5035	59
5282	4552	3822	3092	2361	1629	0897	0164	9431	8698	7964	7229	6494	5758	5022	58
5270	4540	3810	3079	2348	1617	0885	0152	9419	8685	7951	7217	6482	5746	5010	57
5258	4528	3798	3067	2336	1605	0872	0140	9407	8673	7939	7205	6469	5734	4998	56
5246	4516	3786	3055	2324	1592	0860	0128	9395	8661	7927	7192	6457	5722	4986	55
5233	4504	3774	3043	2312	1580	0848	0115	9382	8649	7915	7180	6445	5709	4973	54
5221	4492	3761	3031	2300	1568	0836	0103	9370	8636	7902	7168	6433	5697	4961	53
5209	4479	3749	3019	2287	1556	0824	0091	9358	8624	7890	7156	6420	5685	4949	52
5197	4467	3737	3006	2275	1544	0811	0079	9346	8612	7878	7143	6408	5673	4937	51
5185	4455	3725	2994	2263	1531	0799	0067	9333	8600	7866	7131	6396	5660	4924	50
5173	4443	3713	2982	2251	1519	0787	0054	9321	8588	7853	7119	6384	5648	4912	49
5160	4431	3701	2970	2239	1507	0775	0042	9309	8575	7841	7107	6371	5636	4900	48
5148	4419	3688	2958	2226	1495	0763	0030	9297	8563	7829	7094	6359	5624	4887	47
5136	4406	3676	2945	2214	1483	0750	0018	9285	8551	7817	7082	6347	5611	4875	46
5124	4394	3664	2933	2202	1470	0738	0005	9272	8539	7804	7070	6335	5599	4863	45
5112	4382	3652	2921	2190	1458	0726	9993	9260	8526	7792	7058	6322	5587	4851	44
5100	4370	3640	2909	2178	1446	0714	9981	9248	8514	7780	7045	6310	5575	4838	43
5087	4358	3627	2897	2165	1434	0702	9969	9236	8502	7768	7033	6298	5562	4826	42
5075	4346	3615	2885	2153	1422	0689	9957	9223	8490	7756	7021	6286	5550	4814	41
5063	4333	3603	2872	2141	1409	0677	9944	9211	8477	7743	7009	6273	5538	4802	40
5051	4321	3591	2860	2129	1397	0665	9932	9199	8465	7731	6996	6261	5525	4789	39
5039	4309	3579	2848	2117	1385	0653	9920	9187	8453	7719	6984	6249	5513	4777	38
5027	4297	3567	2836	2105	1373	0640	9908	9175	8441	7707	6972	6237	5501	4765	37
5015	4285	3554	2824	2092	1361	0628	9896	9162	8429	7694	6960	6224	5489	4752	36
5002	4273	3542	2811	2080	1348	0616	9883	9150	8416	7682	6947	6212	5476	4740	35
4990	4260	3530	2799	2068	1336	0604	9871	9138	8404	7670	6935	6200	5464	4728	34
4978	4248	3518	2787	2056	1324	0592	9859	9126	8392	7658	6923	6188	5452	4716	33
4966	4236	3506	2775	2044	1312	0579	9847	9113	8380	7645	6911	6175	5440	4703	32
4954	4224	3494	2763	2031	1300	0567	9834	9101	8367	7633	6898	6163	5427	4691	31
4942	4212	3481	2751	2019	1287	0555	9822	9089	8355	7621	6886	6151	5415	4679	30
4929	4200	3469	2738	2007	1275	0543	9810	9077	8343	7609	6874	6139	5403	4667	29
4917	4187	3457	2726	1995	1263	0531	9798	9064	8331	7596	6862	6126	5391	4654	28
4905	4175	3445	2714	1983	1251	0518	9786	9052	8318	7584	6849	6114	5378	4642	27
4893	4163	3433	2702	1970	1239	0506	9773	9040	8306	7572	6837	6102	5366	4630	26
4881	4151	3420	2690	1958	1226	0494	9761	9028	8294	7560	6825	6090	5354	4617	25
4869	4139	3408	2677	1946	1214	0482	9749	9016	8282	7547	6813	6077	5341	4605	24
4856	4127	3396	2665	1934	1202	0470	9737	9003	8269	7535	6800	6065	5329	4593	23
4844	4114	3384	2653	1922	1190	0457	9724	8991	8257	7523	6788	6053	5317	4581	22
4832	4102	3372	2641	1909	1178	0445	9712	8979	8245	7511	6776	6040	5305	4568	21
4820	4090	3360	2629	1897	1165	0433	9700	8967	8233	7498	6764	6028	5292	4556	20
4808	4078	3347	2616	1885	1153	0421	9688	8954	8221	7486	6751	6016	5280	4544	19
4796	4066	3335	2604	1873	1141	0409	9676	8942	8208	7474	6739	6004	5268	4532	18
4783	4054	3323	2592	1861	1129	0396	9663	8930	8196	7462	6727	5991	5256	4519	17
4771	4041	3311	2580	1848	1117	0384	9651	8918	8184	7449	6715	5979	5243	4507	16
4759	4029	3299	2568	1836	1104	0372	9639	8906	8172	7437	6702	5967	5231	4495	15
4747	4017	3287	2556	1824	1092	0360	9627	8893	8159	7425	6690	5955	5219	4482	14
4735	4005	3274	2543	1812	1080	0347	9615	8881	8147	7413	6678	5942	5207	4470	13
4723	3993	3262	2531	1800	1068	0335	9602	8869	8135	7400	6666	5930	5194	4458	12
4710	3980	3250	2519	1787	1056	0323	9590	8857	8123	7388	6653	5918	5182	4446	11
4698	3968	3238	2507	1775	1043	0311	9578	8844	8110	7376	6641	5906	5170	4433	10
4686	3956	3226	2495	1763	1031	0299	9566	8832	8098	7364	6629	5893	5157	4421	9
4674	3944	3213	2482	1751	1019	0286	9553	8820	8086	7351	6617	5881	5145	4409	8
4662	3932	3201	2470	1739	1007	0274	9541	8808	8074	7339	6604	5869	5133	4396	7
4650	3920	3189	2458	1727	0994	0262	9529	8795	8061	7327	6592	5857	5121	4384	6
4638	3907	3177	2446	1714	0982	0250	9517	8783	8049	7315	6580	5844	5108	4372	5
4625	3895	3165	2434	1702	0970	0238	9505	8771	8037	7303	6568	5832	5096	4360	4
4613	3883	3153	2421	1690	0958	0225	9492	8759	8025	7290	6555	5820	5084	4347	3
4601	3871	3140	2409	1678	0946	0213	9480	8747	8013	7278	6543	5808	5072	4335	2
4589	3859	3128	2397	1666	0933	0201	9468	8734	8000	7266	6531	5795	5059	4323	1
4577	3847	3116	2385	1653	0921	0189	9456	8722	7988	7254	6519	5783	5047	4311	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Sine Deg. 59

30 Deg. Tangent

″	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
	9.761	9.761	9.762	9.762	9.762	9.762	9.763	9.763	9.763	9.764	9.764	9.764	9.764	9.765	9.765
0	4394	7311	0227	3142	6056	8969	1881	4792	7702	0612	3520	6427	9334	2239	5143
1	4442	7359	0275	3190	6104	9018	1930	4841	7751	0660	3568	6476	9382	2287	5192
2	4491	7408	0324	3239	6153	9066	1978	4889	7799	0709	3617	6524	9430	2336	5240
3	4540	7457	0373	3288	6202	9115	2027	4938	7848	0757	3665	6573	9479	2384	5289
4	4588	7505	0421	3336	6250	9163	2075	4986	7896	0806	3714	6621	9527	2433	5337
5	4637	7554	0470	3385	6299	9212	2124	5035	7945	0854	3762	6669	9576	2481	5385
6	4685	7602	0518	3433	6347	9260	2172	5083	7993	0903	3811	6718	9624	2529	5434
7	4734	7651	0567	3482	6396	9309	2221	5132	8042	0951	3859	6766	9673	2578	5482
8	4783	7700	0615	3530	6444	9357	2269	5180	8090	0999	3908	6815	9721	2626	5531
9	4831	7748	0664	3579	6493	9406	2318	5229	8139	1048	3956	6863	9769	2675	5579
10	4880	7797	0713	3628	6541	9454	2366	5277	8187	1096	4005	6912	9818	2723	5627
11	4929	7845	0761	3676	6590	9503	2415	5326	8236	1145	4053	6960	9866	2771	5676
12	4977	7894	0810	3725	6639	9551	2463	5374	8284	1193	4101	7009	9915	2820	5724
13	5026	7943	0858	3773	6687	9600	2512	5423	8333	1242	4150	7057	9963	2868	5773
14	5074	7991	0907	3822	6736	9649	2560	5471	8381	1290	4198	7105	0012	2917	5821
15	5123	8040	0956	3870	6784	9697	2609	5520	8430	1339	4247	7154	0060	2965	5869
16	5172	8088	1004	3919	6833	9746	2658	5568	8478	1387	4295	7202	0108	3014	5918
17	5220	8137	1053	3968	6881	9794	2706	5617	8527	1436	4344	7251	0157	3062	5966
18	5269	8186	1101	4016	6930	9843	2755	5665	8575	1484	4392	7299	0205	3110	6014
19	5318	8234	1150	4065	6978	9891	2803	5714	8624	1533	4441	7348	0254	3159	6063
20	5366	8283	1199	4113	7027	9940	2852	5762	8672	1581	4489	7396	0302	3207	6111
21	5415	8331	1247	4162	7076	9988	2900	5811	8721	1630	4538	7445	0351	3256	6160
22	5463	8380	1296	4210	7124	0037	2949	5859	8769	1678	4586	7493	0399	3304	6208
23	5512	8429	1344	4259	7173	0085	2997	5908	8818	1727	4635	7541	0447	3352	6256
24	5561	8477	1393	4308	7221	0134	3046	5956	8866	1775	4683	7590	0496	3401	6305
25	5609	8526	1441	4356	7270	0182	3094	6005	8915	1824	4731	7638	0544	3449	6353
26	5658	8574	1490	4405	7318	0231	3143	6053	8963	1872	4780	7687	0593	3498	6402
27	5707	8623	1539	4453	7367	0280	3191	6102	9012	1921	4828	7735	0641	3546	6450
28	5755	8672	1587	4502	7415	0328	3240	6150	9060	1969	4877	7784	0690	3594	6498
29	5804	8720	1636	4550	7464	0377	3288	6199	9109	2017	4925	7832	0738	3643	6547
30	5852	8769	1684	4599	7513	0425	3337	6247	9157	2066	4974	7881	0786	3691	6595
31	5901	8817	1733	4648	7561	0474	3385	6296	9206	2114	5022	7929	0835	3740	6644
32	5950	8866	1782	4696	7610	0522	3434	6344	9254	2163	5071	7977	0883	3788	6692
33	5998	8915	1830	4745	7658	0571	3482	6393	9303	2211	5119	8026	0932	3836	6740
34	6047	8963	1879	4793	7707	0619	3531	6441	9351	2260	5168	8074	0980	3885	6789
35	6095	9012	1927	4842	7755	0668	3579	6490	9400	2308	5216	8123	1028	3933	6837
36	6144	9060	1976	4890	7804	0716	3628	6538	9448	2357	5264	8171	1077	3982	6886
37	6193	9109	2024	4939	7852	0765	3676	6587	9497	2405	5313	8220	1125	4030	6934
38	6241	9158	2073	4987	7901	0813	3725	6635	9545	2454	5361	8268	1174	4078	6982
39	6290	9206	2122	5036	7949	0862	3773	6684	9594	2502	5410	8316	1222	4127	7031
40	6339	9255	2170	5085	7998	0911	3822	6732	9642	2551	5458	8365	1271	4175	7079
41	6387	9303	2219	5133	8047	0959	3870	6781	9691	2599	5507	8413	1319	4224	7127
42	6436	9352	2267	5182	8095	1008	3919	6829	9739	2648	5555	8462	1367	4272	7176
43	6484	9401	2316	5230	8144	1056	3968	6878	9787	2696	5604	8510	1416	4321	7224
44	6533	9449	2365	5279	8192	1105	4016	6926	9836	2744	5652	8559	1464	4369	7273
45	6582	9498	2413	5327	8241	1153	4065	6975	9884	2793	5700	8607	1513	4417	7321
46	6630	9546	2462	5376	8289	1202	4113	7023	9933	2841	5749	8655	1561	4466	7369
47	6679	9595	2510	5425	8338	1250	4162	7072	9981	2890	5797	8704	1610	4514	7418
48	6727	9644	2559	5473	8386	1299	4210	7120	0030	2938	5846	8752	1658	4563	7466
49	6776	9692	2607	5522	8435	1347	4259	7169	0078	2987	5894	8801	1706	4611	7515
50	6825	9741	2656	5570	8484	1396	4307	7217	0127	3035	5943	8849	1755	4659	7563
51	6873	9789	2705	5619	8532	1444	4356	7266	0175	3084	5991	8898	1803	4708	7611
52	6922	9838	2753	5667	8581	1493	4404	7314	0224	3132	6040	8946	1852	4756	7660
53	6970	9887	2802	5716	8629	1541	4453	7363	0272	3181	6088	8995	1900	4805	7708
54	7019	9935	2850	5765	8678	1590	4501	7411	0321	3229	6137	9043	1948	4853	7756
55	7068	9984	2899	5813	8726	1638	4550	7460	0369	3278	6185	9091	1997	4901	7805
56	7116	0032	2947	5862	8775	1687	4598	7508	0418	3326	6233	9140	2045	4950	7853
57	7165	0081	2996	5910	8823	1736	4647	7557	0466	3375	6282	9188	2094	4998	7902
58	7214	0130	3045	5959	8872	1784	4695	7605	0515	3423	6330	9237	2142	5047	7950
59	7262	0178	3093	6007	8920	1833	4744	7654	0563	3471	6379	9285	2191	5095	7998
60	7311	0227	3142	6056	8969	1881	4792	7702	0612	3520	6427	9334	2239	5143	8047
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Tangent Deg. 59

30 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	″
10.238	10.238	10.237	10.237	10.237	10.237	10.236	10.236	10.236	10.235	10.235	10.235	10.235	10.234	10.234	″
5606	2689	9773	6858	3944	1031	8119	5208	2298	9388	6480	3573	0666	7761	4857	60
5558	2641	9725	6810	3896	0982	8070	5159	2249	9340	6432	3524	0618	7713	4808	59
5509	2592	9676	6761	3847	0934	8022	5111	2201	9291	6383	3476	0570	7664	4760	58
5460	2543	9627	6712	3798	0885	7973	5062	2152	9243	6335	3427	0521	7616	4711	57
5412	2495	9579	6664	3750	0837	7925	5014	2104	9194	6286	3379	0473	7567	4663	56
5363	2446	9530	6615	3701	0788	7876	4965	2055	9146	6238	3331	0424	7519	4615	55
5315	2398	9482	6567	3653	0740	7828	4917	2007	9097	6189	3282	0376	7471	4566	54
5266	2349	9433	6518	3604	0691	7779	4868	1958	9049	6141	3234	0327	7422	4518	53
5217	2300	9385	6470	3556	0643	7731	4820	1910	9001	6092	3185	0279	7374	4469	52
5169	2252	9336	6421	3507	0594	7682	4771	1861	8952	6044	3137	0231	7325	4421	51
5120	2203	9287	6372	3459	0546	7634	4723	1813	8904	5995	3088	0182	7277	4373	50
5071	2155	9239	6324	3410	0497	7585	4674	1764	8855	5947	3040	0134	7229	4324	49
5023	2106	9190	6275	3361	0449	7537	4626	1716	8807	5899	2991	0085	7180	4276	48
4974	2057	9142	6227	3313	0400	7488	4577	1667	8758	5850	2943	0037	7132	4227	47
4926	2009	9093	6178	3264	0351	7440	4529	1619	8710	5802	2895	9988	7083	4179	46
4877	1960	9044	6130	3216	0303	7391	4480	1570	8661	5753	2846	9940	7035	4131	45
4828	1912	8996	6081	3167	0254	7342	4432	1522	8613	5705	2798	9892	6986	4082	44
4780	1863	8947	6032	3119	0206	7294	4383	1473	8564	5656	2749	9843	6938	4034	43
4731	1814	8899	5984	3070	0157	7245	4335	1425	8516	5608	2701	9795	6890	3986	42
4682	1766	8850	5935	3022	0109	7197	4286	1376	8467	5559	2652	9746	6841	3937	41
4634	1717	8801	5887	2973	0060	7148	4238	1328	8419	5511	2604	9698	6793	3889	40
4585	1669	8753	5838	2924	0012	7100	4189	1279	8370	5462	2555	9649	6744	3840	39
4537	1620	8704	5790	2876	9963	7051	4141	1231	8322	5414	2507	9601	6696	3792	38
4488	1571	8656	5741	2827	9915	7003	4092	1182	8273	5365	2459	9553	6648	3744	37
4439	1523	8607	5692	2779	9866	6954	4044	1134	8225	5317	2410	9504	6599	3695	36
4391	1474	8559	5644	2730	9818	6906	3995	1085	8176	5269	2362	9456	6551	3647	35
4342	1426	8510	5595	2682	9769	6857	3947	1037	8128	5220	2313	9407	6502	3598	34
4293	1377	8461	5547	2633	9720	6809	3898	0988	8079	5172	2265	9359	6454	3550	33
4245	1328	8413	5498	2585	9672	6760	3850	0940	8031	5123	2216	9310	6406	3592	32
4196	1280	8364	5450	2536	9623	6712	3801	0891	7983	5075	2168	9262	6357	3453	31
4148	1231	8316	5401	2487	9575	6663	3753	0843	7934	5026	2119	9214	6309	3405	30
4099	1183	8267	5352	2439	9526	6615	3704	0794	7886	4978	2071	9165	6260	3356	29
4050	1134	8218	5304	2390	9478	6566	3656	0746	7837	4929	2023	9117	6212	3308	28
4002	1085	8170	5255	2342	9429	6518	3607	0697	7789	4881	1974	9068	6164	3260	27
3953	1037	8121	5207	2293	9381	6469	3559	0649	7740	4832	1926	9020	6115	3211	26
3905	0988	8073	5158	2245	9332	6421	3510	0600	7692	4784	1877	8972	6067	3163	25
3856	0940	8024	5110	2196	9284	6372	3462	0552	7643	4736	1829	8923	6018	3114	24
3807	0891	7976	5061	2148	9235	6324	3413	0503	7595	4687	1780	8875	5970	3066	23
3759	0842	7927	5013	2099	9187	6275	3365	0455	7546	4639	1732	8826	5922	3018	22
3710	0794	7878	4964	2051	9138	6227	3316	0406	7498	4590	1684	8778	5873	2969	21
3661	0745	7830	4915	2002	9089	6178	3268	0358	7449	4542	1635	8729	5825	2921	20
3613	0697	7781	4867	1953	9041	6130	3219	0309	7401	4493	1587	8681	5776	2873	19
3564	0648	7733	4818	1905	8992	6081	3171	0261	7352	4445	1538	8633	5728	2824	18
3516	0599	7684	4770	1856	8944	6032	3122	0213	7304	4396	1490	8584	5679	2776	17
3467	0551	7635	4721	1808	8895	5984	3074	0164	7256	4348	1441	8536	5631	2727	16
3418	0502	7587	4673	1759	8847	5935	3025	0116	7207	4300	1393	8487	5583	2679	15
3370	0454	7538	4624	1711	8798	5887	2977	0067	7159	4251	1345	8439	5534	2631	14
3321	0405	7490	4575	1662	8750	5838	2928	0019	7110	4203	1296	8390	5486	2582	13
3273	0356	7441	4527	1614	8701	5790	2880	9970	7062	4154	1248	8342	5437	2534	12
3224	0308	7393	4478	1565	8653	5741	2831	9922	7013	4106	1199	8294	5389	2485	11
3175	0259	7344	4430	1516	8604	5693	2783	9873	6965	4057	1151	8245	5341	2437	10
3127	0211	7295	4381	1468	8556	5644	2734	9825	6916	4009	1102	8197	5292	2389	9
3078	0162	7247	4333	1419	8507	5596	2686	9776	6868	3960	1054	8148	5244	2340	8
3030	0113	7198	4284	1371	8459	5547	2637	9728	6819	3912	1005	8100	5195	2292	7
2981	0065	7150	4235	1322	8410	5499	2589	9679	6771	3863	0957	8052	5147	2244	6
2932	0016	7101	4187	1274	8362	5450	2540	9631	6722	3815	0909	8003	5099	2195	5
2884	9968	7053	4138	1225	8313	5402	2492	9582	6674	3767	0860	7955	5050	2147	4
2835	9919	7004	4090	1177	8264	5353	2443	9534	6625	3718	0812	7906	5002	2098	3
2786	9870	6955	4041	1128	8216	5305	2395	9485	6577	3670	0763	7858	4953	2050	2
2738	9822	6907	3993	1080	8167	5256	2346	9437	6529	3621	0715	7809	4905	2002	1
2689	9773	6858	3944	1031	8119	5208	2298	9388	6480	3573	0666	7761	4857	1953	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Tangent Deg. 59

30 Deg. Sine

″	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9. 702	9. 702	9. 702	9. 702	9. 703	9. 703	9. 703	9. 703	9. 703	9. 704	9. 704	9. 704	9. 704	9. 705	9. 705
0	2357	4523	6687	8849	1011	3170	5329	7486	9641	1795	3947	6099	8248	0397	2543
1	2393	4559	6723	8886	1047	3206	5365	7521	9677	1831	3983	6134	8284	0432	2579
2	2430	4595	6759	8922	1083	3242	5401	7557	9713	1867	4019	6170	8320	0468	2615
3	2466	4631	6795	8958	1119	3278	5437	7593	9749	1903	4055	6206	8356	0504	2651
4	2502	4667	6831	8994	1155	3314	5473	7629	9785	1939	4091	6242	8392	0540	2686
5	2538	4703	6867	9030	1191	3350	5508	7665	9821	1974	4127	6278	8427	0575	2722
6	2574	4739	6903	9066	1227	3386	5544	7701	9856	2010	4163	6314	8463	0611	2758
7	2610	4775	6939	9102	1263	3422	5580	7737	9892	2046	4199	6349	8499	0647	2794
8	2646	4811	6975	9138	1299	3458	5616	7773	9928	2082	4234	6385	8535	0683	2829
9	2682	4848	7011	9174	1335	3494	5652	7809	9964	2118	4270	6421	8571	0719	2865
10	2718	4884	7047	9210	1371	3530	5688	7845	0000	2154	4306	6457	8606	0754	2901
11	2754	4920	7083	9246	1407	3566	5724	7881	0036	2190	4342	6493	8642	0790	2937
12	2791	4956	7120	9282	1443	3602	5760	7917	0072	2226	4378	6529	8678	0826	2973
13	2827	4992	7156	9318	1479	3638	5796	7953	0108	2261	4414	6564	8714	0862	3008
14	2863	5028	7192	9354	1515	3674	5832	7989	0144	2297	4450	6600	8750	0898	3044
15	2899	5064	7228	9390	1551	3710	5868	8025	0180	2333	4485	6636	8785	0933	3080
16	2935	5100	7264	9426	1587	3746	5904	8060	0216	2369	4521	6672	8821	0969	3116
17	2971	5136	7300	9462	1623	3782	5940	8096	0251	2405	4557	6708	8857	1005	3151
18	3007	5172	7336	9498	1659	3818	5976	8132	0287	2441	4593	6744	8893	1041	3187
19	3043	5208	7372	9534	1695	3854	6012	8168	0323	2477	4629	6779	8929	1077	3223
20	3079	5244	7408	9570	1731	3890	6048	8204	0359	2513	4665	6815	8965	1112	3259
21	3115	5280	7444	9606	1767	3926	6084	8240	0395	2549	4701	6851	9000	1148	3294
22	3151	5316	7480	9642	1803	3962	6120	8276	0431	2584	4736	6887	9036	1184	3330
23	3188	5353	7516	9678	1839	3998	6156	8312	0467	2620	4772	6923	9072	1220	3366
24	3224	5389	7552	9714	1875	4034	6192	8348	0503	2656	4808	6959	9108	1255	3402
25	3260	5425	7588	9750	1911	4070	6228	8384	0539	2692	4844	6994	9144	1291	3437
26	3296	5461	7624	9786	1947	4106	6264	8420	0575	2728	4880	7030	9179	1327	3473
27	3332	5497	7660	9822	1983	4142	6299	8456	0610	2764	4916	7066	9215	1363	3509
28	3368	5533	7696	9858	2019	4178	6335	8492	0646	2800	4952	7102	9251	1399	3545
29	3404	5569	7732	9894	2055	4214	6371	8528	0682	2836	4987	7138	9287	1434	3580
30	3440	5605	7768	9930	2091	4250	6407	8563	0718	2871	5023	7174	9323	1470	3616
31	3476	5641	7804	9966	2127	4286	6443	8599	0754	2907	5059	7209	9358	1506	3652
32	3512	5677	7840	0002	2163	4322	6479	8635	0790	2943	5095	7245	9394	1542	3688
33	3549	5713	7876	0038	2199	4358	6515	8671	0826	2979	5131	7281	9430	1577	3723
34	3585	5749	7913	0074	2235	4394	6551	8707	0862	3015	5167	7317	9466	1613	3759
35	3621	5785	7949	0110	2271	4430	6587	8743	0898	3051	5202	7353	9502	1649	3795
36	3657	5821	7985	0146	2307	4466	6623	8779	0934	3087	5238	7389	9537	1685	3831
37	3693	5857	8021	0182	2343	4502	6659	8815	0969	3123	5274	7424	9573	1721	3867
38	3729	5894	8057	0218	2379	4537	6695	8851	1005	3158	5310	7460	9609	1756	3902
39	3765	5930	8093	0254	2415	4573	6731	8887	1041	3194	5346	7496	9645	1792	3938
40	3801	5966	8129	0290	2451	4609	6767	8923	1077	3230	5382	7532	9681	1828	3974
41	3837	6002	8165	0326	2487	4645	6803	8959	1113	3266	5418	7568	9716	1864	4010
42	3873	6038	8201	0362	2523	4681	6839	8994	1149	3302	5453	7604	9752	1899	4045
43	3909	6074	8237	0398	2559	4717	6875	9030	1185	3338	5489	7639	9788	1935	4081
44	3945	6110	8273	0435	2595	4753	6911	9066	1221	3374	5525	7675	9824	1971	4117
45	3982	6146	8309	0471	2631	4789	6946	9102	1257	3409	5561	7711	9860	2007	4153
46	4018	6182	8345	0507	2667	4825	6982	9138	1292	3445	5597	7747	9895	2043	4188
47	4054	6218	8381	0543	2703	4861	7018	9174	1328	3481	5633	7783	9931	2078	4224
48	4090	6254	8417	0579	2739	4897	7054	9210	1364	3517	5669	7818	9967	2114	4260
49	4126	6290	8453	0615	2775	4933	7090	9246	1400	3553	5704	7854	0003	2150	4296
50	4162	6326	8489	0651	2811	4969	7126	9282	1436	3589	5740	7890	0039	2186	4331
51	4198	6362	8525	0687	2847	5005	7162	9318	1472	3625	5776	7926	0074	2221	4367
52	4234	6398	8561	0723	2883	5041	7198	9354	1508	3661	5812	7962	0110	2257	4403
53	4270	6434	8597	0759	2919	5077	7234	9390	1544	3696	5848	7998	0146	2293	4439
54	4306	6471	8633	0795	2954	5113	7270	9425	1580	3732	5884	8033	0182	2329	4474
55	4342	6507	8669	0831	2990	5149	7306	9461	1616	3768	5919	8069	0218	2365	4510
56	4378	6543	8705	0867	3026	5185	7342	9497	1651	3804	5955	8105	0253	2400	4546
57	4415	6579	8741	0903	3062	5221	7378	9533	1687	3840	5991	8141	0289	2436	4582
58	4451	6615	8777	0939	3098	5257	7414	9569	1723	3876	6027	8177	0325	2472	4617
59	4487	6651	8813	0975	3134	5293	7450	9605	1759	3912	6063	8212	0361	2508	4653
60	4523	6687	8849	1011	3170	5329	7486	9641	1795	3947	6099	8248	0397	2543	4689
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Sine Deg. 59

30 Deg. Co-Sine

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	″
9. 936	9. 936	9. 936	9. 936	9. 936	9. 936	9. 935	9. 935	9. 935	9. 935	9. 935	9. 935	9. 935	9. 935	9. 935	
4311	3574	2836	2098	1360	0621	9881	9141	8401	7660	6918	6177	5434	4691	3948	60
4298	3561	2824	2086	1347	0608	9869	9129	8388	7648	6906	6164	5422	4679	3935	59
4286	3549	2811	2073	1335	0596	9857	9117	8376	7635	6894	6152	5409	4666	3923	58
4274	3537	2799	2061	1323	0584	9844	9104	8364	7623	6881	6139	5397	4654	3911	57
4261	3524	2787	2049	1310	0571	9832	9092	8351	7610	6869	6127	5385	4642	3898	56
4249	3512	2775	2037	1298	0559	9820	9080	8339	7598	6857	6115	5372	4629	3886	55
4237	3500	2762	2024	1286	0547	9807	9067	8327	7586	6844	6102	5360	4617	3873	54
4225	3488	2750	2012	1273	0534	9795	9055	8314	7573	6832	6090	5347	4604	3861	53
4212	3475	2738	2000	1261	0522	9783	9043	8302	7561	6820	6078	5335	4592	3849	52
4200	3463	2725	1987	1249	0510	9770	9030	8290	7549	6807	6065	5323	4580	3836	51
4188	3451	2713	1975	1236	0497	9758	9018	8277	7536	6795	6053	5310	4567	3824	50
4175	3438	2701	1963	1224	0485	9746	9006	8265	7524	6782	6040	5298	4555	3811	49
4163	3426	2688	1950	1212	0473	9733	8993	8253	7512	6770	6028	5286	4543	3799	48
4151	3414	2676	1938	1200	0460	9721	8981	8240	7499	6758	6016	5273	4530	3787	47
4139	3401	2664	1926	1187	0448	9709	8969	8228	7487	6745	6003	5261	4518	3774	46
4126	3389	2652	1913	1175	0436	9696	8956	8216	7475	6733	5991	5248	4505	3762	45
4114	3377	2639	1901	1163	0423	9684	8944	8203	7462	6721	5979	5236	4493	3749	44
4102	3365	2627	1889	1150	0411	9672	8931	8191	7450	6708	5966	5224	4481	3737	43
4089	3352	2615	1877	1138	0399	9659	8919	8179	7437	6696	5954	5211	4468	3725	42
4077	3340	2602	1864	1126	0387	9647	8907	8166	7425	6684	5941	5199	4456	3712	41
4065	3328	2590	1852	1113	0374	9635	8894	8154	7413	6671	5929	5187	4443	3700	40
4053	3315	2578	1840	1101	0362	9622	8882	8142	7400	6659	5917	5174	4431	3687	39
4040	3303	2566	1827	1089	0350	9610	8870	8129	7388	6646	5904	5162	4419	3675	38
4028	3291	2553	1815	1076	0337	9598	8857	8117	7376	6634	5892	5149	4406	3663	37
4016	3279	2541	1803	1064	0325	9585	8845	8104	7363	6622	5880	5137	4394	3650	36
4003	3266	2529	1790	1052	0313	9573	8833	8092	7351	6609	5867	5125	4381	3638	35
3991	3254	2516	1778	1039	0300	9561	8820	8080	7339	6597	5855	5112	4369	3625	34
3979	3242	2504	1766	1027	0288	9548	8808	8067	7326	6585	5842	5100	4357	3613	33
3967	3229	2492	1754	1015	0276	9536	8796	8055	7314	6572	5830	5087	4344	3601	32
3954	3217	2479	1741	1002	0263	9524	8783	8043	7302	6560	5818	5075	4332	3588	31
3942	3205	2467	1729	0990	0251	9511	8771	8030	7289	6548	5805	5063	4320	3576	30
3930	3193	2455	1717	0978	0239	9499	8759	8018	7277	6535	5793	5050	4307	3563	29
3918	3180	2443	1704	0966	0226	9487	8746	8006	7264	6523	5781	5038	4295	3551	28
3905	3168	2430	1692	0953	0214	9474	8734	7993	7252	6510	5768	5026	4282	3539	27
3893	3156	2418	1680	0941	0202	9462	8722	7981	7240	6498	5756	5013	4270	3526	26
3881	3143	2406	1667	0929	0189	9450	8709	7969	7227	6486	5744	5001	4258	3514	25
3868	3131	2393	1655	0916	0177	9437	8697	7956	7215	6473	5731	4988	4245	3502	24
3856	3119	2381	1643	0904	0165	9425	8685	7944	7203	6461	5719	4976	4233	3489	23
3844	3107	2369	1630	0892	0152	9413	8672	7932	7190	6449	5706	4964	4220	3477	22
3832	3094	2356	1618	0879	0140	9400	8660	7919	7178	6436	5694	4951	4208	3464	21
3819	3082	2344	1606	0867	0128	9388	8648	7907	7166	6424	5682	4939	4196	3452	20
3807	3070	2332	1593	0855	0115	9376	8635	7895	7153	6412	5669	4926	4183	3440	19
3795	3057	2320	1581	0842	0103	9363	8623	7882	7141	6399	5657	4914	4171	3427	18
3782	3045	2307	1569	0830	0091	9351	8611	7870	7129	6387	5645	4902	4158	3415	17
3770	3033	2295	1557	0818	0078	9339	8598	7857	7116	6374	5632	4889	4146	3402	16
3758	3020	2283	1544	0805	0066	9326	8586	7845	7104	6362	5620	4877	4134	3390	15
3746	3008	2270	1532	0793	0054	9314	8574	7833	7091	6350	5607	4865	4121	3378	14
3733	2996	2258	1520	0781	0041	9302	8561	7820	7079	6337	5595	4852	4109	3365	13
3721	2984	2246	1507	0768	0029	9289	8549	7808	7067	6325	5583	4840	4097	3353	12
3709	2971	2233	1495	0756	0017	9277	8537	7796	7054	6313	5570	4827	4084	3340	11
3696	2959	2221	1483	0744	0004	9265	8524	7783	7042	6300	5558	4815	4072	3328	10
3684	2947	2209	1470	0732	9992	9252	8512	7771	7030	6288	5545	4803	4059	3316	9
3672	2934	2196	1458	0719	9980	9240	8500	7759	7017	6275	5533	4790	4047	3303	8
3660	2922	2184	1446	0707	9967	9228	8487	7746	7005	6263	5521	4778	4035	3291	7
3647	2910	2172	1433	0695	9955	9215	8475	7734	6993	6251	5508	4766	4022	3278	6
3635	2898	2160	1421	0682	9943	9203	8463	7722	6980	6238	5496	4753	4010	3266	5
3623	2885	2147	1409	0670	9930	9191	8450	7709	6968	6226	5484	4741	3997	3253	4
3610	2873	2135	1397	0658	9918	9178	8438	7697	6956	6214	5471	4728	3985	3241	3
3598	2861	2123	1384	0645	9906	9166	8425	7685	6943	6201	5459	4716	3973	3229	2
3586	2848	2110	1372	0633	9894	9154	8413	7672	6931	6189	5446	4704	3960	3216	1
3574	2836	2098	1360	0621	9881	9141	8401	7660	6918	6177	5434	4691	3948	3204	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Sine Deg. 59

30 Deg. Tangent

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 765	9. 766	9. 766	9. 766	9. 766	9. 767	9. 767	9. 767	9. 768	9. 768	9. 768	9. 768	9. 769	9. 769	9. 769
0	8047	0949	3851	6751	9651	2550	5448	8344	1240	4135	7029	9922	2814	5705	8596
1	8095	0998	3899	6800	9699	2598	5496	8393	1288	4183	7077	9970	2862	5754	8644
2	8144	1046	3948	6848	9748	2646	5544	8441	1337	4232	7126	0019	2911	5802	8692
3	8192	1094	3996	6896	9796	2695	5592	8489	1385	4280	7174	0067	2959	5850	8740
4	8240	1143	4044	6945	9844	2743	5641	8537	1433	4328	7222	0115	3007	5898	8788
5	8289	1191	4093	6993	9893	2791	5689	8586	1481	4376	7270	0163	3055	5946	8836
6	8337	1239	4141	7041	9941	2840	5737	8634	1530	4425	7318	0211	3103	5994	8885
7	8385	1288	4189	7090	9989	2888	5786	8682	1578	4473	7367	0260	3152	6043	8933
8	8434	1336	4238	7138	0038	2936	5834	8730	1626	4521	7415	0308	3200	6091	8981
9	8482	1385	4286	7186	0086	2984	5882	8779	1674	4569	7463	0356	3248	6139	9029
10	8531	1433	4334	7235	0134	3033	5930	8827	1723	4617	7511	0404	3296	6187	9077
11	8579	1481	4383	7283	0183	3081	5979	8875	1771	4666	7560	0452	3344	6235	9125
12	8627	1530	4431	7331	0231	3129	6027	8924	1819	4714	7608	0501	3392	6283	9174
13	8676	1578	4479	7380	0279	3178	6075	8972	1867	4762	7656	0549	3441	6332	9222
14	8724	1626	4528	7428	0328	3226	6124	9020	1916	4810	7704	0597	3489	6380	9270
15	8773	1675	4576	7476	0376	3274	6172	9068	1964	4859	7752	0645	3537	6428	9318
16	8821	1723	4624	7525	0424	3323	6220	9117	2012	4907	7801	0693	3585	6476	9366
17	8869	1771	4673	7573	0472	3371	6268	9165	2060	4955	7849	0742	3633	6524	9414
18	8918	1820	4721	7621	0521	3419	6317	9213	2109	5003	7897	0790	3682	6573	9462
19	8966	1868	4769	7670	0569	3467	6365	9261	2157	5052	7945	0838	3730	6621	9511
20	9014	1917	4818	7718	0617	3516	6413	9310	2205	5100	7994	0886	3778	6669	9559
21	9063	1965	4866	7766	0666	3564	6462	9358	2254	5148	8042	0934	3826	6717	9607
22	9111	2013	4915	7815	0714	3612	6510	9406	2302	5196	8090	0983	3874	6765	9655
23	9160	2062	4963	7863	0762	3661	6558	9455	2350	5245	8138	1031	3923	6813	9703
24	9208	2110	5011	7911	0811	3709	6606	9503	2398	5293	8186	1079	3971	6862	9751
25	9256	2158	5060	7960	0859	3757	6655	9551	2447	5341	8235	1127	4019	6910	9800
26	9305	2207	5108	8008	0907	3806	6703	9599	2495	5389	8283	1175	4067	6958	9848
27	9353	2255	5156	8056	0956	3854	6751	9648	2543	5437	8331	1224	4115	7006	9896
28	9401	2303	5205	8105	1004	3902	6799	9696	2591	5486	8379	1272	4164	7054	9944
29	9450	2352	5253	8153	1052	3950	6848	9744	2640	5534	8427	1320	4212	7102	9992
30	9498	2400	5301	8201	1101	3999	6896	9792	2688	5582	8476	1368	4260	7151	0040
31	9547	2449	5350	8250	1149	4047	6944	9841	2736	5630	8524	1416	4308	7199	0088
32	9595	2497	5398	8298	1197	4095	6993	9889	2784	5679	8572	1465	4356	7247	0137
33	9643	2545	5446	8346	1245	4144	7041	9937	2832	5727	8620	1513	4404	7295	0185
34	9692	2594	5495	8395	1294	4192	7089	9985	2881	5775	8669	1561	4453	7343	0233
35	9740	2642	5543	8443	1342	4240	7137	0034	2929	5823	8717	1609	4501	7391	0281
36	9788	2690	5591	8491	1390	4289	7186	0082	2977	5872	8765	1657	4549	7440	0329
37	9837	2739	5640	8540	1439	4337	7234	0130	3025	5920	8813	1706	4597	7488	0377
38	9885	2787	5688	8588	1487	4385	7282	0178	3074	5968	8861	1754	4645	7536	0426
39	9934	2835	5736	8636	1535	4433	7331	0227	3122	6016	8910	1802	4694	7584	0474
40	9982	2884	5785	8685	1584	4482	7379	0275	3170	6065	8958	1850	4742	7632	0522
41	0030	2932	5833	8733	1632	4530	7427	0323	3218	6113	9006	1898	4790	7680	0570
42	0079	2980	5881	8781	1680	4578	7475	0372	3267	6161	9054	1947	4838	7729	0618
43	0127	3029	5930	8830	1729	4627	7524	0420	3315	6209	9102	1995	4886	7777	0666
44	0175	3077	5978	8878	1777	4675	7572	0468	3363	6257	9151	2043	4934	7825	0714
45	0224	3126	6026	8926	1825	4723	7620	0516	3411	6306	9199	2091	4983	7873	0763
46	0272	3174	6075	8975	1873	4771	7668	0565	3460	6354	9247	2139	5031	7921	0811
47	0321	3222	6123	9023	1922	4820	7717	0613	3508	6402	9295	2188	5079	7969	0859
48	0369	3271	6171	9071	1970	4868	7765	0661	3556	6450	9344	2236	5127	8018	0907
49	0417	3319	6220	9120	2018	4916	7813	0709	3604	6499	9392	2284	5175	8066	0955
50	0466	3367	6268	9168	2067	4965	7862	0758	3653	6547	9440	2332	5224	8114	1003
51	0514	3416	6316	9216	2115	5013	7910	0806	3701	6595	9488	2380	5272	8162	1052
52	0562	3464	6365	9265	2163	5061	7958	0854	3749	6643	9536	2429	5320	8210	1100
53	0611	3512	6413	9313	2212	5109	8006	0902	3797	6691	9585	2477	5368	8258	1148
54	0659	3561	6461	9361	2260	5158	8055	0951	3846	6740	9633	2525	5416	8307	1196
55	0707	3609	6510	9409	2308	5206	8103	0999	3894	6788	9681	2573	5464	8355	1244
56	0756	3657	6558	9458	2357	5254	8151	1047	3942	6836	9729	2621	5513	8403	1292
57	0804	3706	6606	9506	2405	5303	8200	1095	3990	6884	9777	2670	5561	8451	1340
58	0853	3754	6655	9554	2453	5351	8248	1144	4039	6933	9826	2718	5609	8499	1389
59	0901	3802	6703	9603	2501	5399	8296	1192	4087	6981	9874	2766	5657	8547	1437
60	0949	3851	6751	9651	2550	5448	8344	1240	4135	7029	9922	2814	5705	8596	1485
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Tangent Deg. 59

30 Deg. Co-Tangent

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
10. 234	10. 233	10. 233	10. 233	10. 233	10. 232	10. 232	10. 232	10. 231	10. 231	10. 231	10. 231	10. 230	10. 230	10. 230	″
1953	9051	6149	3249	0349	7450	4552	1656	8760	5865	2971	0078	7186	4295	1404	60
1905	9002	6101	3200	0301	7402	4504	1607	8712	5817	2923	0030	7138	4246	1356	59
1856	8954	6052	3152	0252	7354	4456	1559	8663	5768	2874	9981	7089	4198	1308	58
1808	8906	6004	3104	0204	7305	4408	1511	8615	5720	2826	9933	7041	4150	1260	57
1760	8857	5956	3055	0156	7257	4359	1463	8567	5672	2778	9885	6993	4102	1212	56
1711	8809	5907	3007	0107	7209	4311	1414	8519	5624	2730	9837	6945	4054	1164	55
1663	8761	5859	2959	0059	7160	4263	1366	8470	5575	2682	9789	6897	4006	1115	54
1615	8712	5811	2910	0011	7112	4214	1318	8422	5527	2633	9740	6848	3957	1067	53
1566	8664	5762	2862	9962	7064	4166	1270	8374	5479	2585	9692	6800	3909	1019	52
1518	8615	5714	2814	9914	7016	4118	1221	8326	5431	2537	9644	6752	3861	0971	51
1469	8567	5666	2765	9866	6967	4070	1173	8277	5383	2489	9596	6704	3813	0923	50
1421	8519	5617	2717	9817	6919	4021	1125	8229	5334	2440	9548	6656	3765	0875	49
1373	8470	5569	2669	9769	6871	3973	1076	8181	5286	2392	9499	6608	3717	0826	48
1324	8422	5521	2620	9721	6822	3925	1028	8133	5238	2344	9451	6559	3668	0778	47
1276	8374	5472	2572	9672	6774	3876	0980	8084	5190	2296	9403	6511	3620	0730	46
1227	8325	5424	2524	9624	6726	3828	0932	8036	5141	2248	9355	6463	3572	0682	45
1179	8277	5376	2475	9576	6677	3780	0883	7988	5093	2199	9307	6415	3524	0634	44
1131	8229	5327	2427	9528	6629	3732	0835	7940	5045	2151	9258	6367	3476	0586	43
1082	8180	5279	2379	9479	6581	3683	0787	7891	4997	2103	9210	6318	3427	0538	42
1034	8132	5231	2330	9431	6533	3635	0739	7843	4948	2055	9162	6270	3379	0489	41
0986	8083	5182	2282	9383	6484	3587	0690	7795	4900	2006	9114	6222	3331	0441	40
0937	8035	5134	2234	9334	6436	3538	0642	7746	4852	1958	9066	6174	3283	0393	39
0889	7987	5085	2185	9286	6388	3490	0594	7698	4804	1910	9017	6126	3235	0345	38
0840	7938	5037	2137	9238	6339	3442	0545	7650	4755	1862	8969	6077	3187	0297	37
0792	7890	4989	2089	9189	6291	3394	0497	7602	4707	1814	8921	6029	3138	0249	36
0744	7842	4940	2040	9141	6243	3345	0449	7553	4659	1765	8873	5981	3090	0200	35
0695	7793	4892	1992	9093	6194	3297	0401	7505	4611	1717	8825	5933	3042	0152	34
0647	7745	4844	1944	9044	6146	3249	0352	7457	4563	1669	8776	5885	2994	0104	33
0599	7697	4795	1895	8996	6098	3201	0304	7409	4514	1621	8728	5836	2946	0056	32
0550	7648	4747	1847	8948	6050	3152	0256	7360	4466	1573	8680	5788	2898	0008	31
0502	7600	4699	1799	8899	6001	3104	0208	7312	4418	1524	8632	5740	2849	9960	30
0453	7551	4650	1750	8851	5953	3056	0159	7264	4370	1476	8584	5692	2801	9912	29
0405	7503	4602	1702	8803	5905	3007	0111	7216	4321	1428	8535	5644	2753	9863	28
0357	7455	4554	1654	8755	5856	2959	0063	7168	4273	1380	8487	5596	2705	9815	27
0308	7406	4505	1605	8706	5808	2911	0015	7119	4225	1331	8439	5547	2657	9767	26
0260	7358	4457	1557	8658	5760	2863	9966	7071	4177	1283	8391	5499	2609	9719	25
0212	7310	4409	1509	8610	5711	2814	9918	7023	4128	1235	8343	5451	2560	9671	24
0163	7261	4360	1460	8561	5663	2766	9870	6975	4080	1187	8294	5403	2512	9623	23
0115	7213	4312	1412	8513	5615	2718	9822	6926	4032	1139	8246	5355	2464	9574	22
0066	7165	4264	1364	8465	5567	2669	9773	6878	3984	1090	8198	5306	2416	9526	21
0018	7116	4215	1315	8416	5518	2621	9725	6830	3935	1042	8150	5258	2368	9478	20
9970	7068	4167	1267	8368	5470	2573	9677	6782	3887	0994	8102	5210	2320	9430	19
9921	7020	4119	1219	8320	5422	2525	9628	6733	3839	0946	8053	5162	2271	9382	18
9873	6971	4070	1170	8271	5373	2476	9580	6685	3791	0898	8005	5114	2223	9334	17
9825	6923	4022	1122	8223	5325	2428	9532	6637	3743	0849	7957	5066	2175	9286	16
9776	6874	3974	1074	8175	5277	2380	9484	6589	3694	0801	7909	5017	2127	9237	15
9728	6826	3925	1025	8127	5229	2332	9435	6540	3646	0753	7861	4969	2079	9189	14
9679	6778	3877	0977	8078	5180	2283	9387	6492	3598	0705	7812	4921	2031	9141	13
9631	6729	3829	0929	8030	5132	2235	9339	6444	3550	0656	7764	4873	1982	9093	12
9583	6681	3780	0880	7982	5084	2187	9291	6396	3501	0608	7716	4825	1934	9045	11
9534	6633	3732	0832	7933	5035	2138	9242	6347	3453	0560	7668	4776	1886	8997	10
9486	6584	3684	0784	7885	4987	2090	9194	6299	3405	0512	7620	4728	1838	8948	9
9438	6536	3635	0735	7837	4939	2042	9146	6251	3357	0464	7571	4680	1790	8900	8
9389	6488	3587	0687	7788	4891	1994	9098	6203	3309	0415	7523	4632	1742	8852	7
9341	6439	3539	0639	7740	4842	1945	9049	6154	3260	0367	7475	4584	1693	8804	6
9293	6391	3490	0591	7692	4794	1897	9001	6106	3212	0319	7427	4536	1645	8756	5
9244	6343	3442	0542	7643	4746	1849	8953	6058	3164	0271	7379	4487	1597	8708	4
9196	6294	3394	0494	7595	4697	1800	8905	6010	3116	0223	7330	4439	1549	8660	3
9147	6246	3345	0446	7547	4649	1752	8856	5961	3067	0174	7282	4391	1501	8611	2
9099	6198	3297	0397	7499	4601	1704	8808	5913	3019	0126	7234	4343	1453	8563	1
9051	6149	3249	0349	7450	4552	1656	8760	5865	2971	0078	7186	4295	1404	8515	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Tangent Deg. 59

"	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9.705	9.705	9.705	9.706	9.706	9.706	9.706	9.706	9.707	9.707	9.707	9.707	9.708	9.708	9.708
0	4689	6833	8975	1116	3256	5394	7531	9667	1801	3933	6064	8194	0323	2450	4575
1	4724	6868	9011	1152	3292	5430	7567	9702	1836	3969	6100	8230	0358	2485	4610
2	4760	6904	9047	1188	3327	5466	7602	9738	1872	4004	6135	8265	0393	2520	4646
3	4796	6940	9082	1223	3363	5501	7638	9773	1907	4040	6171	8301	0429	2556	4681
4	4832	6976	9118	1259	3399	5537	7674	9809	1943	4075	6206	8336	0464	2591	4717
5	4867	7011	9154	1295	3434	5572	7709	9845	1978	4111	6242	8372	0500	2627	4752
6	4903	7047	9189	1330	3470	5608	7745	9880	2014	4146	6277	8407	0535	2662	4788
7	4939	7083	9225	1366	3506	5644	7780	9916	2050	4182	6313	8443	0571	2698	4823
8	4975	7118	9261	1402	3541	5679	7816	9951	2085	4217	6348	8478	0606	2733	4858
9	5010	7154	9297	1437	3577	5715	7852	9987	2121	4253	6384	8514	0642	2768	4894
10	5046	7190	9332	1473	3613	5751	7887	0022	2156	4289	6419	8549	0677	2804	4929
11	5082	7226	9368	1509	3648	5786	7923	0058	2192	4324	6455	8585	0713	2839	4965
12	5118	7261	9404	1544	3684	5822	7958	0094	2227	4360	6490	8620	0748	2875	5000
13	5153	7297	9439	1580	3719	5857	7994	0129	2263	4395	6526	8655	0784	2910	5035
14	5189	7333	9475	1616	3755	5893	8030	0165	2298	4431	6561	8691	0819	2946	5071
15	5225	7368	9511	1651	3791	5929	8065	0200	2334	4466	6597	8726	0854	2981	5106
16	5261	7404	9546	1687	3826	5964	8101	0236	2369	4502	6633	8762	0890	3016	5142
17	5296	7440	9582	1723	3862	6000	8136	0271	2405	4537	6668	8797	0925	3052	5177
18	5332	7476	9618	1758	3898	6036	8172	0307	2441	4573	6704	8833	0961	3087	5212
19	5368	7511	9653	1794	3933	6071	8208	0343	2476	4608	6739	8868	0996	3123	5248
20	5404	7547	9689	1830	3969	6107	8243	0378	2512	4644	6775	8904	1032	3158	5283
21	5439	7583	9725	1865	4005	6142	8279	0414	2547	4679	6810	8939	1067	3194	5319
22	5475	7618	9760	1901	4040	6178	8314	0449	2583	4715	6846	8975	1103	3229	5354
23	5511	7654	9796	1937	4076	6214	8350	0485	2618	4750	6881	9010	1138	3264	5389
24	5547	7690	9832	1972	4112	6249	8386	0520	2654	4786	6917	9046	1174	3300	5425
25	5582	7726	9868	2008	4147	6285	8421	0556	2689	4821	6952	9081	1209	3335	5460
26	5618	7761	9903	2044	4183	6320	8457	0592	2725	4857	6987	9117	1244	3371	5496
27	5654	7797	9939	2079	4218	6356	8492	0627	2760	4892	7023	9152	1280	3406	5531
28	5689	7833	9975	2115	4254	6392	8528	0663	2796	4928	7058	9188	1315	3442	5567
29	5725	7868	0010	2151	4290	6427	8563	0698	2832	4963	7094	9223	1351	3477	5602
30	5761	7904	0046	2186	4325	6463	8599	0734	2867	4999	7129	9259	1386	3512	5637
31	5797	7940	0082	2222	4361	6499	8635	0769	2903	5035	7165	9294	1422	3548	5673
32	5832	7976	0117	2258	4397	6534	8670	0805	2938	5070	7200	9330	1457	3583	5708
33	5868	8011	0153	2293	4432	6570	8706	0840	2974	5106	7236	9365	1493	3619	5744
34	5904	8047	0189	2329	4468	6605	8741	0876	3009	5141	7271	9400	1528	3654	5779
35	5940	8083	0224	2365	4504	6641	8777	0912	3045	5177	7307	9436	1563	3690	5814
36	5975	8118	0260	2400	4539	6677	8813	0947	3080	5212	7342	9471	1599	3725	5850
37	6011	8154	0296	2436	4575	6712	8848	0983	3116	5248	7378	9507	1634	3760	5885
38	6047	8190	0331	2472	4610	6748	8884	1018	3151	5283	7413	9542	1670	3796	5921
39	6082	8226	0367	2507	4646	6783	8919	1054	3187	5319	7449	9578	1705	3831	5956
40	6118	8261	0403	2543	4682	6819	8955	1089	3223	5354	7484	9613	1741	3867	5991
41	6154	8297	0438	2579	4717	6855	8991	1125	3258	5390	7520	9649	1776	3902	6027
42	6190	8333	0474	2614	4753	6890	9026	1161	3294	5425	7555	9684	1812	3938	6062
43	6225	8368	0510	2650	4789	6926	9062	1196	3329	5461	7591	9720	1847	3973	6098
44	6261	8404	0546	2686	4824	6961	9097	1232	3365	5496	7626	9755	1882	4008	6133
45	6297	8440	0581	2721	4860	6997	9133	1267	3400	5532	7662	9791	1918	4044	6168
46	6333	8475	0617	2757	4896	7033	9168	1303	3436	5567	7697	9826	1953	4079	6204
47	6368	8511	0653	2793	4931	7068	9204	1338	3471	5603	7733	9862	1989	4115	6239
48	6404	8547	0688	2828	4967	7104	9240	1374	3507	5638	7768	9897	2024	4150	6274
49	6440	8583	0724	2864	5002	7140	9275	1410	3542	5674	7804	9932	2060	4185	6310
50	6475	8618	0760	2900	5038	7175	9311	1445	3578	5709	7839	9968	2095	4221	6345
51	6511	8654	0795	2935	5074	7211	9346	1481	3613	5745	7875	0003	2131	4256	6381
52	6547	8690	0831	2971	5109	7246	9382	1516	3649	5780	7910	0039	2166	4292	6416
53	6583	8725	0867	3006	5145	7282	9418	1552	3685	5816	7946	0074	2201	4327	6451
54	6618	8761	0902	3042	5181	7318	9453	1587	3720	5851	7981	0110	2237	4363	6487
55	6654	8797	0938	3078	5216	7353	9489	1623	3756	5887	8017	0145	2272	4398	6522
56	6690	8832	0974	3113	5252	7389	9524	1658	3791	5922	8052	0181	2308	4433	6558
57	6726	8868	1009	3149	5287	7424	9560	1694	3827	5958	8088	0216	2343	4469	6593
58	6761	8904	1045	3185	5323	7460	9595	1730	3862	5993	8123	0252	2379	4504	6628
59	6797	8940	1081	3220	5359	7496	9631	1765	3898	6029	8159	0287	2414	4540	6664
60	6833	8975	1116	3256	5394	7531	9667	1801	3933	6064	8194	0323	2450	4575	6699
"	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

"	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9.935	9.935	9.935	9.935	9.935	9.934	9.934	9.934	9.934	9.934	9.934	9.934	9.934	9.934	9.934
0	3204	2459	1715	0969	0223	9477	8730	7983	7235	6486	5738	4988	4238	3488	2737
1	3191	2447	1702	0957	0211	9465	8718	7970	7222	6474	5725	4976	4226	3476	2725
2	3179	2435	1690	0944	0198	9452	8705	7958	7210	6462	5713	4963	4213	3463	2712
3	3167	2422	1677	0932	0186	9440	8693	7945	7197	6449	5700	4951	4201	3451	2700
4	3154	2410	1665	0920	0174	9427	8680	7933	7185	6437	5688	4938	4188	3438	2687
5	3142	2397	1653	0907	0161	9415	8668	7920	7173	6424	5675	4926	4176	3426	2675
6	3129	2385	1640	0895	0149	9402	8655	7908	7160	6412	5663	4913	4163	3413	2662
7	3117	2373	1628	0882	0136	9390	8643	7895	7148	6399	5650	4901	4151	3401	2650
8	3105	2360	1615	0870	0124	9377	8630	7883	7135	6387	5638	4888	4138	3388	2637
9	3092	2348	1603	0857	0111	9365	8618	7871	7123	6374	5625	4876	4126	3375	2625
10	3080	2335	1590	0845	0099	9353	8606	7858	7110	6362	5613	4863	4113	3363	2612
11	3067	2323	1578	0833	0087	9340	8593	7846	7098	6349	5600	4851	4101	3350	2600
12	3055	2311	1566	0820	0074	9328	8581	7833	7085	6337	5588	4838	4088	3338	2587
13	3043	2298	1553	0808	0062	9315	8568	7821	7073	6324	5575	4826	4076	3325	2574
14	3030	2286	1541	0795	0049	9303	8556	7808	7060	6312	5563	4813	4063	3313	2562
15	3018	2273	1528	0783	0037	9290	8543	7796	7048	6299	5550	4801	4051	3300	2549
16	3005	2261	1516	0770	0024	9278	8531	7783	7035	6287	5538	4788	4038	3288	2537
17	2993	2248	1503	0758	0012	9265	8518	7771	7023	6274	5525	4776	4026	3275	2524
18	2981	2236	1491	0746	9999	9253	8506	7758	7010	6262	5513	4763	4013	3263	2512
19	2968	2224	1479	0733	9987	9241	8493	7746	6998	6249	5500	4751	4001	3250	2499
20	2956	2211	1466	0721	9975	9228	8481	7733	6985	6237	5488	4738	3988	3238	2487
21	2943	2199	1454	0708	9962	9216	8469	7721	6973	6224	5475	4726	3976	3225	2474
22	2931	2186	1441	0696	9950	9203	8456	7709	6961	6212	5463	4713	3963	3213	2462
23	2919	2174	1429	0683	9937	9191	8444	7696	6948	6199	5450	4701	3951	3200	2449
24	2906	2162	1417	0671	9925	9178	8431	7684	6936	6187	5438	4688	3938	3188	2437
25	2894	2149	1404	0658	9912	9166	8419	7671	6923	6175	5425	4676	3926	3175	2424
26	2881	2137	1392	0646	9900	9153	8406	7659	6911	6162	5413	4663	3913	3163	2412
27	2869	2124	1379	0634	9888	9141	8394	7646	6898	6150	5400	4651	3901	3150	2399
28	2857	2112	1367	0621	9875	9128	8381	7634	6886	6137	5388	4638	3888	3138	2387
29	2844	2100	1354	0609	9863	9116	8369	7621	6873	6125	5376	4626	3876	3125	2374
30	2832	2087	1342	0596	9850	9104	8356	7609	6861	6112	5363	4613	3863	3113	2362
31	2819	2075	1330	0584	9838	9091	8344	7596	6848	6100	5351	4601	3851	3100	2349
32	2807	2062	1317	0571	9825	9079	8332	7584	6836	6087	5338	4588	3838	3088	2337
33	2795	2050	1305	0559	9813	9066	8319	7571	6823	6075	5326	4576	3826	3075	2324
34	2782	2037	1292	0547	9800	9054	8307	7559	6811	6062	5313	4563	3813	3063	2312
35	2770	2025	1280	0534	9788	9041	8294	7547	6798	6050	5301	4551	3801	3050	2299
36	2757	2013	1267	0522	9776	9029	8282	7534	6786	6037	5288	4538	3788	3038	2286
37	2745	2000	1255	0509	9763	9016	8269	7522	6773	6025	5276	4526	3776	3025	2274
38	2732	1988	1243	0497	9751	9004	8257	7509	6761	6012	5263	4513	3763	3013	2261
39	2720	1975	1230	0484	9738	8992	8244	7497	6748	6000	5251	4501	3751	3000	2249
40	2708	1963	1218	0472	9726	8979	8232	7484	6736	5987	5238	4488	3738	2988	2236
41	2695	1951	1205	0460	9713	8967	8219	7472	6724	5975	5226	4476	3726	2975	2224
42	2683	1938	1193	0447	9701	8954	8207	7459	6711	5962	5213	4463	3713	2963	2211
43	2670	1926	1180	0435	9688	8942	8195	7447	6699	5950	5201	4451	3701	2950	2199
44	2658	1913	1168	0422	9676	8929	8182	7434	6686	5937	5188	4438	3688	2938	2186
45	2646	1901	1156	0410	9664	8917	8170	7422	6674	5925	5176	4426	3676	2925	2174
46	2633	1888	1143	0397	9651	8904	8157	7409	6661	5912	5163	4413	3663	2912	2161
47	2621	1876	1131	0385	9639	8892	8145	7397	6649	5900	5151	4401	3651	2900	2149
48	2608	1864	1118	0373	9626	8879	8132	7384	6636	5887	5138	4388	3638	2887	2136
49	2596	1851	1106	0360	9614	8867	8120	7372	6624	5875	5126	4376	3626	2875	2124
50	2584	1839	1093	0348	9601	8855	8107	7360	6611	5862	5113	4363	3613	2862	2111
51	2571	1826	1081	0335	9589	8842	8095	7347	6599	5850	5101	4351	3601	2850	2099
52	2559	1814	1069	0323	9577	8830	8082	7335	6586	5838	5088	4338	3588	2837	2086
53	2546	1802	1056	0310	9564	8817	8070	7322	6574	5825	5076	4326	3576	2825	2074
54	2534	1789	1044	0298	9552	8805	8057	7310	6561	5813	5063	4313	3563	2812	2061
55	2522	1777	1031	0286	9539	8792	8045	7297	6549	5800	5051	4301	3551	2800	2049
56	2509	1764	1019	0273	9527	8780	8033	7285	6536	5788	5038	4288	3538	2787	2036
57	2497	1752	1006	0261	9514	8767	8020	7272	6524	5775	5026	4276	3526	2775	2023
58	2484	1739	0994	0248	9502	8755	8008	7260	6511	5763	5013	4263	3513	2762	2011
59	2472	1727	0982	0236	9489	8743	7995	7247	6499	5750	5001	4251	3501	2750	1998
60	2459	1715	0969	0223	9477	8730	7983	7235	6486	5738	4988	4238	3488	2737	1986
"	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

30 Deg. Tangent

"	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9. 770	9. 770	9. 770	9. 771	9. 771	9. 771	9. 771	9. 772	9. 772	9. 772	9. 773	9. 773	9. 773	9. 773	9. 774
0	1485	4373	7261	0147	3033	5917	8801	1684	4566	7447	0327	3206	6084	8961	1838
1	1533	4421	7309	0195	3081	5965	8849	1732	4614	7495	0375	3254	6132	9009	1886
2	1581	4469	7357	0243	3129	6014	8897	1780	4662	7543	0423	3302	6180	9057	1934
3	1629	4518	7405	0291	3177	6062	8945	1828	4710	7591	0471	3350	6228	9105	1982
4	1677	4566	7453	0340	3225	6110	8993	1876	4758	7639	0519	3398	6276	9153	2030
5	1726	4614	7501	0388	3273	6158	9041	1924	4806	7687	0567	3446	6324	9201	2077
6	1774	4662	7549	0436	3321	6206	9089	1972	4854	7735	0615	3494	6372	9249	2125
7	1822	4710	7597	0484	3369	6254	9137	2020	4902	7783	0663	3542	6420	9297	2173
8	1870	4758	7646	0532	3417	6302	9186	2068	4950	7831	0711	3590	6468	9345	2221
9	1918	4806	7694	0580	3465	6350	9234	2116	4998	7879	0759	3638	6516	9393	2269
10	1966	4855	7742	0628	3514	6398	9282	2164	5046	7927	0807	3686	6564	9441	2317
11	2014	4903	7790	0676	3562	6446	9330	2212	5094	7975	0855	3734	6612	9489	2365
12	2063	4951	7838	0724	3610	6494	9378	2260	5142	8023	0903	3782	6660	9537	2413
13	2111	4999	7886	0772	3658	6542	9426	2308	5190	8071	0951	3830	6708	9585	2461
14	2159	5047	7934	0821	3706	6590	9474	2356	5238	8119	0999	3878	6756	9633	2509
15	2207	5095	7982	0869	3754	6638	9522	2404	5286	8167	1047	3926	6804	9681	2557
16	2255	5143	8030	0917	3802	6686	9570	2452	5334	8215	1095	3974	6852	9729	2605
17	2303	5191	8079	0965	3850	6735	9618	2501	5382	8263	1143	4022	6899	9777	2653
18	2351	5240	8127	1013	3898	6783	9666	2549	5430	8311	1191	4069	6947	9824	2701
19	2400	5288	8175	1061	3946	6831	9714	2597	5478	8359	1239	4117	6995	9872	2748
20	2448	5336	8223	1109	3994	6879	9762	2645	5526	8407	1287	4165	7043	9920	2796
21	2496	5384	8271	1157	4042	6927	9810	2693	5574	8455	1335	4213	7091	9968	2844
22	2544	5432	8319	1205	4091	6975	9858	2741	5622	8503	1383	4261	7139	0016	2892
23	2592	5480	8367	1253	4139	7023	9906	2789	5670	8551	1431	4309	7187	0064	2940
24	2640	5528	8415	1301	4187	7071	9954	2837	5718	8599	1479	4357	7235	0112	2988
25	2688	5576	8463	1350	4235	7119	0002	2885	5766	8647	1527	4405	7283	0160	3036
26	2737	5625	8512	1398	4283	7167	0050	2933	5814	8695	1575	4453	7331	0208	3084
27	2785	5673	8560	1446	4331	7215	0098	2981	5862	8743	1623	4501	7379	0256	3132
28	2833	5721	8608	1494	4379	7263	0147	3029	5910	8791	1670	4549	7427	0304	3180
29	2881	5769	8656	1542	4427	7311	0195	3077	5958	8839	1718	4597	7475	0352	3228
30	2929	5817	8704	1590	4475	7359	0243	3125	6006	8887	1766	4645	7523	0400	3276
31	2977	5865	8752	1638	4523	7407	0291	3173	6054	8935	1814	4693	7571	0448	3324
32	3025	5913	8800	1686	4571	7455	0339	3221	6102	8983	1862	4741	7619	0496	3372
33	3074	5961	8848	1734	4619	7504	0387	3269	6150	9031	1910	4789	7667	0544	3419
34	3122	6010	8896	1782	4667	7552	0435	3317	6198	9079	1958	4837	7715	0592	3467
35	3170	6058	8945	1831	4716	7600	0483	3365	6246	9127	2006	4885	7763	0639	3515
36	3218	6106	8993	1879	4764	7648	0531	3413	6294	9175	2054	4933	7811	0687	3563
37	3266	6154	9041	1927	4812	7696	0579	3461	6342	9223	2102	4981	7859	0735	3611
38	3314	6202	9089	1975	4860	7744	0627	3509	6391	9271	2150	5029	7907	0783	3659
39	3362	6250	9137	2023	4908	7792	0675	3557	6439	9319	2198	5077	7954	0831	3707
40	3411	6298	9185	2071	4956	7840	0723	3605	6487	9367	2246	5125	8002	0879	3755
41	3459	6346	9233	2119	5004	7888	0771	3653	6535	9415	2294	5173	8050	0927	3803
42	3507	6395	9281	2167	5052	7936	0819	3701	6583	9463	2342	5221	8098	0975	3851
43	3555	6443	9329	2215	5100	7984	0867	3749	6631	9511	2390	5269	8146	1023	3899
44	3603	6491	9378	2263	5148	8032	0915	3797	6679	9559	2438	5317	8194	1071	3947
45	3651	6539	9426	2311	5196	8080	0963	3845	6727	9607	2486	5365	8242	1119	3995
46	3699	6587	9474	2360	5244	8128	1011	3893	6775	9655	2534	5413	8290	1167	4042
47	3747	6635	9522	2408	5292	8176	1059	3941	6823	9703	2582	5461	8338	1215	4090
48	3796	6683	9570	2456	5341	8224	1107	3989	6871	9751	2630	5509	8386	1263	4138
49	3844	6731	9618	2504	5389	8272	1155	4038	6919	9799	2678	5557	8434	1311	4186
50	3892	6779	9666	2552	5437	8321	1203	4086	6967	9847	2726	5604	8482	1358	4234
51	3940	6828	9714	2600	5485	8369	1252	4134	7015	9895	2774	5652	8530	1406	4282
52	3988	6876	9762	2648	5533	8417	1300	4182	7063	9943	2822	5700	8578	1454	4330
53	4036	6924	9810	2696	5581	8465	1348	4230	7111	9991	2870	5748	8626	1502	4378
54	4084	6972	9859	2744	5629	8513	1396	4278	7159	0039	2918	5796	8674	1550	4426
55	4133	7020	9907	2792	5677	8561	1444	4326	7207	0087	2966	5844	8722	1598	4474
56	4181	7068	9955	2840	5725	8609	1492	4374	7255	0135	3014	5892	8770	1646	4522
57	4229	7116	0003	2888	5773	8657	1540	4422	7303	0183	3062	5940	8818	1694	4570
58	4277	7164	0051	2937	5821	8705	1588	4470	7351	0231	3110	5988	8866	1742	4617
59	4325	7213	0099	2985	5869	8753	1636	4518	7399	0279	3158	6036	8913	1790	4665
60	4373	7261	0147	3033	5917	8801	1684	4566	7447	0327	3206	6084	8961	1838	4713
"	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

30 Deg. Co-Tangent

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	"
10. 229	10. 229	10. 229	10. 228	10. 228	10. 228	10. 228	10. 227	10. 227	10. 227	10. 226	10. 226	10. 226	10. 226	10. 225	
8515	5627	2739	9853	6967	4083	1199	8316	5434	2553	9673	6794	3916	1039	8162	60
8467	5579	2691	9805	6919	4035	1151	8268	5386	2505	9625	6746	3868	0991	8114	59
8419	5531	2643	9757	6871	3986	1103	8220	5338	2457	9577	6698	3820	0943	8066	58
8371	5482	2595	9709	6823	3938	1055	8172	5290	2409	9529	6650	3772	0895	8018	57
8323	5434	2547	9660	6775	3890	1007	8124	5242	2361	9481	6602	3724	0847	7970	56
8274	5386	2499	9612	6727	3842	0959	8076	5194	2313	9433	6554	3676	0799	7923	55
8226	5338	2451	9564	6679	3794	0911	8028	5145	2265	9385	6506	3628	0751	7875	54
8178	5290	2403	9516	6631	3746	0863	7980	5098	2217	9337	6458	3580	0703	7827	53
8130	5242	2354	9468	6583	3698	0814	7932	5050	2169	9289	6410	3532	0655	7779	52
8082	5194	2306	9420	6535	3650	0766	7884	5002	2121	9241	6362	3484	0607	7731	51
8034	5145	2258	9372	6486	3602	0718	7836	4954	2073	9193	6314	3436	0559	7683	50
7986	5097	2210	9324	6438	3554	0670	7788	4906	2025	9145	6266	3388	0511	7635	49
7937	5049	2162	9276	6390	3506	0622	7740	4858	1977	9097	6218	3340	0463	7587	48
7889	5001	2114	9228	6342	3458	0574	7692	4810	1929	9049	6170	3292	0415	7539	47
7841	4953	2066	9179	6294	3410	0526	7644	4762	1881	9001	6122	3244	0367	7491	46
7793	4905	2018	9131	6246	3362	0478	7596	4714	1833	8953	6074	3196	0319	7443	45
7745	4857	1970	9083	6198	3314	0430	7548	4666	1785	8905	6026	3148	0271	7395	44
7697	4809	1921	9035	6150	3265	0382	7499	4618	1737	8857	5978	3101	0223	7347	43
7649	4760	1873	8987	6102	3217	0334	7451	4570	1689	8809	5931	3053	0176	7299	42
7600	4712	1825	8939	6054	3169	0286	7403	4522	1641	8761	5883	3005	0128	7252	41
7552	4664	1777	8891	6006	3121	0238	7355	4474	1593	8713	5835	2957	0080	7204	40
7504	4616	1729	8843	5958	3073	0190	7307	4426	1545	8665	5787	2909	0032	7156	39
7456	4568	1681	8795	5909	3025	0142	7259	4378	1497	8617	5739	2861	9984	7108	38
7408	4520	1633	8747	5861	2977	0094	7211	4330	1449	8569	5691	2813	9936	7060	37
7360	4472	1585	8699	5813	2929	0046	7163	4282	1401	8521	5643	2765	9888	7012	36
7312	4424	1537	8650	5765	2881	9998	7115	4234	1353	8473	5595	2717	9840	6964	35
7263	4375	1488	8602	5717	2833	9950	7067	4186	1305	8425	5547	2669	9792	6916	34
7215	4327	1440	8554	5669	2785	9902	7019	4138	1257	8377	5499	2621	9744	6868	33
7167	4279	1392	8506	5621	2737	9853	6971	4090	1209	8330	5451	2573	9696	6820	32
7119	4231	1344	8458	5573	2689	9805	6923	4042	1161	8282	5403	2525	9648	6772	31
7071	4183	1296	8410	5525	2641	9757	6875	3994	1113	8234	5355	2477	9600	6724	30
7023	4135	1248	8362	5477	2593	9709	6827	3946	1065	8186	5307	2429	9552	6676	29
6975	4087	1200	8314	5429	2545	9661	6779	3898	1017	8138	5259	2381	9504	6628	28
6926	4039	1152	8266	5381	2496	9613	6731	3850	0969	8090	5211	2333	9456	6581	27
6878	3990	1104	8218	5333	2448	9565	6683	3802	0921	8042	5163	2285	9408	6533	26
6830	3942	1055	8169	5284	2400	9517	6635	3754	0873	7994	5115	2237	9361	6485	25
6782	3894	1007	8121	5236	2352	9469	6587	3706	0825	7946	5067	2189	9313	6437	24
6734	3846	0959	8073	5188	2304	9421	6539	3658	0777	7898	5019	2141	9265	6389	23
6686	3798	0911	8025	5140	2256	9373	6491	3609	0729	7850	4971	2093	9217	6341	22
6638	3750	0863	7977	5092	2208	9325	6443	3561	0681	7802	4923	2046	9169	6293	21
6589	3702	0815	7929	5044	2160	9277	6395	3513	0633	7754	4875	1998	9121	6245	20
6541	3654	0767	7881	4996	2112	9229	6347	3465	0585	7706	4827	1950	9073	6197	19
6493	3605	0719	7833	4948	2064	9181	6299	3417	0537	7658	4779	1902	9025	6149	18
6445	3557	0671	7785	4900	2016	9133	6251	3369	0489	7610	4731	1854	8977	6101	17
6397	3509	0622	7737	4852	1968	9085	6203	3321	0441	7562	4683	1806	8929	6053	16
6349	3461	0574	7689	4804	1920	9037	6155	3273	0393	7514	4635	1758	8881	6005	15
6301	3413	0526	7640	4756	1872	8989	6107	3225	0345	7466	4587	1710	8833	5958	14
6253	3365	0478	7592	4708	1824	8941	6059	3177	0297	7418	4539	1662	8785	5910	13
6204	3317	0430	7544	4659	1776	8893	6011	3129	0249	7370	4491	1614	8737	5862	12
6156	3269	0382	7496	4611	1728	8845	5962	3081	0201	7322	4443	1566	8689	5814	11
6108	3221	0334	7448	4563	1679	8797	5914	3033	0153	7274	4396	1518	8642	5766	10
6060	3172	0286	7400	4515	1631	8748	5866	2985	0105	7226	4348	1470	8594	5718	9
6012	3124	0238	7352	4467	1583	8700	5818	2937	0057	7178	4300	1422	8546	5670	8
5964	3076	0190	7304	4419	1535	8652	5770	2889	0009	7130	4252	1374	8498	5622	7
5916	3028	0141	7256	4371	1487	8604	5722	2841	9961	7082	4204	1326	8450	5574	6
5867	2980	0093	7208	4323	1439	8556	5674	2793	9913	7034	4156	1278	8402	5526	5
5819	2932	0045	7160	4275	1391	8508	5626	2745	9865	6986	4108	1230	8354	5478	4
5771	2884	9997	7112	4227	1343	8460	5578	2697	9817	6938	4060	1182	8306	5430	3
5723	2836	9949	7063	4179	1295	8412	5530	2649	9769	6890	4012	1134	8258	5383	2
5675	2787	9901	7015	4131	1247	8364	5482	2601	9721	6842	3964	1087	8210	5335	1
5627	2739	9853	6967	4083	1199	8316	5434	2553	9673	6794	3916	1039	8162	5287	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	"

Co-Tangent Deg. 59

Tangent Deg. 59

30 Deg. Sine

″	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9. 708	9. 708	9. 709	9. 709	9. 709	9. 709	9. 709	9. 710	9. 710	9. 710	9. 710	9. 710	9. 711	9. 711	9. 711
0	6699	8822	0943	3063	5182	7299	9415	1529	3642	5753	7863	9972	2080	4186	6290
1	6735	8857	0979	3099	5217	7334	9450	1564	3677	5789	7899	0007	2115	4221	6325
2	6770	8893	1014	3134	5252	7369	9485	1599	3712	5824	7934	0043	2150	4256	6360
3	6805	8928	1049	3169	5288	7405	9520	1635	3747	5859	7969	0078	2185	4291	6395
4	6841	8963	1085	3204	5323	7440	9556	1670	3783	5894	8004	0113	2220	4326	6430
5	6876	8999	1120	3240	5358	7475	9591	1705	3818	5929	8039	0148	2255	4361	6465
6	6912	9034	1155	3275	5393	7510	9626	1740	3853	5964	8074	0183	2290	4396	6501
7	6947	9069	1191	3310	5429	7546	9661	1775	3888	6000	8110	0218	2325	4431	6536
8	6982	9105	1226	3346	5464	7581	9697	1811	3923	6035	8145	0253	2360	4466	6571
9	7018	9140	1261	3381	5499	7616	9732	1846	3959	6070	8180	0288	2396	4501	6606
10	7053	9176	1297	3416	5535	7652	9767	1881	3994	6105	8215	0324	2431	4536	6641
11	7088	9211	1332	3452	5570	7687	9802	1916	4029	6140	8250	0359	2466	4572	6676
12	7124	9246	1367	3487	5605	7722	9838	1952	4064	6175	8285	0394	2501	4607	6711
13	7159	9282	1403	3522	5641	7757	9873	1987	4099	6211	8321	0429	2536	4642	6746
14	7195	9317	1438	3558	5676	7793	9908	2022	4135	6246	8356	0464	2571	4677	6781
15	7230	9352	1473	3593	5711	7828	9943	2057	4170	6281	8391	0499	2606	4712	6816
16	7265	9388	1509	3628	5746	7863	9979	2092	4205	6316	8426	0534	2641	4747	6851
17	7301	9423	1544	3664	5782	7898	0014	2128	4240	6351	8461	0569	2676	4782	6886
18	7336	9458	1579	3699	5817	7934	0049	2163	4275	6387	8496	0605	2712	4817	6921
19	7372	9494	1615	3734	5852	7969	0084	2198	4311	6422	8531	0640	2747	4852	6956
20	7407	9529	1650	3770	5888	8004	0119	2233	4346	6457	8567	0675	2782	4887	6991
21	7442	9565	1685	3805	5923	8039	0155	2269	4381	6492	8602	0710	2817	4922	7026
22	7478	9600	1721	3840	5958	8075	0190	2304	4416	6527	8637	0745	2852	4957	7061
23	7513	9635	1756	3875	5993	8110	0225	2339	4451	6562	8672	0780	2887	4993	7097
24	7548	9671	1791	3911	6029	8145	0260	2374	4487	6598	8707	0815	2922	5028	7132
25	7584	9706	1827	3946	6064	8181	0296	2409	4522	6633	8742	0850	2957	5063	7167
26	7619	9741	1862	3981	6099	8216	0331	2445	4557	6668	8777	0886	2992	5098	7202
27	7655	9777	1897	4017	6135	8251	0366	2480	4592	6703	8813	0921	3027	5133	7237
28	7690	9812	1933	4052	6170	8286	0401	2515	4627	6738	8848	0956	3063	5168	7272
29	7725	9847	1968	4087	6205	8322	0437	2550	4663	6773	8883	0991	3098	5203	7307
30	7761	9883	2003	4123	6240	8357	0472	2586	4698	6809	8918	1026	3133	5238	7342
31	7796	9918	2039	4158	6276	8392	0507	2621	4733	6844	8953	1061	3168	5273	7377
32	7832	9953	2074	4193	6311	8427	0542	2656	4768	6879	8988	1096	3203	5308	7412
33	7867	9989	2109	4229	6346	8463	0578	2691	4803	6914	9023	1131	3238	5343	7447
34	7902	0024	2145	4264	6382	8498	0613	2726	4839	6949	9059	1167	3273	5378	7482
35	7938	0060	2180	4299	6417	8533	0648	2762	4874	6984	9094	1202	3308	5413	7517
36	7973	0095	2215	4334	6452	8568	0683	2797	4909	7020	9129	1237	3343	5448	7552
37	8008	0130	2251	4370	6487	8604	0719	2832	4944	7055	9164	1272	3378	5484	7587
38	8044	0166	2286	4405	6523	8639	0754	2867	4979	7090	9199	1307	3414	5519	7622
39	8079	0201	2321	4440	6558	8674	0789	2902	5014	7125	9234	1342	3449	5554	7657
40	8115	0236	2357	4476	6593	8709	0824	2938	5050	7160	9269	1377	3484	5589	7692
41	8150	0272	2392	4511	6629	8745	0860	2973	5085	7195	9305	1412	3519	5624	7727
42	8185	0307	2427	4546	6664	8780	0895	3008	5120	7231	9340	1448	3554	5659	7763
43	8221	0342	2463	4582	6699	8815	0930	3043	5155	7266	9375	1483	3589	5694	7798
44	8256	0378	2498	4617	6734	8851	0965	3079	5190	7301	9410	1518	3624	5729	7833
45	8291	0413	2533	4652	6770	8886	1000	3114	5226	7336	9445	1553	3659	5764	7868
46	8327	0448	2569	4688	6805	8921	1036	3149	5261	7371	9480	1588	3694	5799	7903
47	8362	0484	2604	4723	6840	8956	1071	3184	5296	7406	9515	1623	3729	5834	7938
48	8398	0519	2639	4758	6876	8992	1106	3219	5331	7442	9551	1658	3764	5869	7973
49	8433	0554	2675	4793	6911	9027	1141	3255	5366	7477	9586	1693	3800	5904	8008
50	8468	0590	2710	4829	6946	9062	1177	3290	5402	7512	9621	1728	3835	5939	8043
51	8504	0625	2745	4864	6981	9097	1212	3325	5437	7547	9656	1764	3870	5975	8078
52	8539	0660	2781	4899	7017	9133	1247	3360	5472	7582	9691	1799	3905	6010	8113
53	8574	0696	2816	4935	7052	9168	1282	3395	5507	7617	9726	1834	3940	6045	8148
54	8610	0731	2851	4970	7087	9203	1318	3431	5542	7653	9761	1869	3975	6080	8183
55	8645	0767	2887	5005	7122	9238	1353	3466	5577	7688	9797	1904	4010	6115	8218
56	8680	0802	2922	5041	7158	9274	1388	3501	5613	7723	9832	1939	4045	6150	8253
57	8716	0837	2957	5076	7193	9309	1423	3536	5648	7758	9867	1974	4080	6185	8288
58	8751	0873	2993	5111	7228	9344	1458	3571	5683	7793	9902	2009	4115	6220	8323
59	8787	0908	3028	5146	7264	9379	1494	3607	5718	7828	9937	2044	4150	6255	8358
60	8822	0943	3063	5182	7299	9415	1529	3642	5753	7863	9972	2080	4186	6290	8393
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Sine Deg. 59

30 Deg. Co-Sine

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	″
9. 934	9. 934	9. 934	9. 933	9. 933	9. 933	9. 933	9. 933	9. 933	9. 933	9. 933	9. 933	9. 933	9. 933	9. 933	
1986	1234	0482	9729	8976	8222	7467	6713	5957	5201	4445	3688	2931	2173	1415	60
1973	1222	0469	9716	8963	8209	7455	6700	5945	5189	4432	3676	2918	2160	1402	59
1961	1209	0457	9704	8950	8197	7442	6687	5932	5176	4420	3663	2906	2148	1389	58
1948	1196	0444	9691	8938	8184	7430	6675	5919	5164	4407	3650	2893	2135	1377	57
1936	1184	0432	9679	8925	8171	7417	6662	5907	5151	4395	3638	2880	2123	1364	56
1923	1171	0419	9666	8913	8159	7404	6650	5894	5138	4382	3625	2868	2110	1352	55
1911	1159	0406	9654	8900	8146	7392	6637	5882	5126	4369	3613	2855	2097	1339	54
1898	1146	0394	9641	8888	8134	7379	6624	5869	5113	4357	3600	2843	2085	1326	53
1886	1134	0381	9628	8875	8121	7367	6612	5856	5101	4344	3587	2830	2072	1314	52
1873	1121	0369	9616	8863	8109	7354	6599	5844	5088	4332	3575	2817	2059	1301	51
1861	1109	0356	9603	8850	8096	7342	6587	5831	5075	4319	3562	2805	2047	1288	50
1848	1096	0344	9591	8837	8083	7329	6574	5819	5063	4306	3549	2792	2034	1276	49
1836	1084	0331	9578	8825	8071	7316	6562	5806	5050	4294	3537	2779	2021	1263	48
1823	1071	0319	9566	8812	8058	7304	6549	5794	5038	4281	3524	2767	2009	1250	47
1811	1059	0306	9553	8800	8046	7291	6536	5781	5025	4269	3512	2754	1996	1238	46
1798	1046	0294	9541	8787	8033	7279	6524	5768	5012	4256	3499	2742	1984	1225	45
1785	1033	0281	9528	8775	8021	7266	6511	5756	5000	4243	3486	2729	1971	1212	44
1773	1021	0268	9515	8762	8008	7254	6499	5743	4987	4231	3474	2716	1958	1200	43
1760	1008	0256	9503	8749	7995	7241	6486	5731	4975	4218	3461	2704	1946	1187	42
1748	0996	0243	9490	8737	7983	7228	6473	5718	4962	4205	3448	2691	1933	1175	41
1735	0983	0231	9478	8724	7970	7216	6461	5705	4949	4193	3436	2678	1920	1162	40
1723	0971	0218	9465	8712	7958	7203	6448	5693	4937	4180	3423	2666	1908	1149	39
1710	0958	0206	9453	8699	7945	7191	6436	5680	4924	4168	3411	2653	1895	1137	38
1698	0946	0193	9440	8687	7933	7178	6423	5668	4912	4155	3398	2640	1882	1124	37
1685	0933	0181	9428	8674	7920	7166	6410	5655	4899	4142	3385	2628	1870	1111	36
1673	0921	0168	9415	8662	7907	7153	6398	5642	4886	4130	3373	2615	1857	1099	35
1660	0908	0156	9402	8649	7895	7140	6385	5630	4874	4117	3360	2603	1845	1086	34
1648	0896	0143	9390	8636	7882	7128	6373	5617	4861	4105	3348	2590	1832	1073	33
1635	0883	0130	9377	8624	7870	7115	6360	5605	4849	4092	3335	2577	1819	1061	32
1623	0870	0118	9365	8611	7857	7103	6348	5592	4836	4079	3322	2565	1807	1048	31
1610	0858	0105	9352	8599	7845	7090	6335	5579	4823	4067	3310	2552	1794	1035	30
1598	0845	0093	9340	8586	7832	7077	6322	5567	4811	4054	3297	2539	1781	1023	29
1585	0833	0080	9327	8574	7819	7065	6310	5554	4798	4041	3284	2527	1769	1010	28
1572	0820	0068	9315	8561	7807	7052	6297	5542	4785	4029	3272	2514	1756	0997	27
1560	0808	0055	9302	8548	7794	7040	6285	5529	4773	4016	3259	2502	1743	0985	26
1547	0795	0043	9289	8536	7782	7027	6272	5516	4760	4004	3247	2489	1731	0972	25
1535	0783	0030	9277	8523	7769	7015	6259	5504	4748	3991	3234	2476	1718	0960	24
1522	0770	0018	9264	8511	7757	7002	6247	5491	4735	3978	3221	2464	1706	0947	23
1510	0758	0005	9252	8498	7744	6989	6234	5479	4722	3966	3209	2451	1693	0934	22
1497	0745	9992	9239	8486	7731	6977	6222	5466	4710	3953	3196	2438	1680	0922	21
1485	0733	9980	9227	8473	7719	6964	6209	5453	4697	3941	3183	2426	1668	0909	20
1472	0720	9967	9214	8460	7706	6952	6196	5441	4685	3928	3171	2413	1655	0896	19
1460	0707	9955	9202	8448	7694	6939	6184	5428	4672	3915	3158	2401	1642	0884	18
1447	0695	9942	9189	8435	7681	6926	6171	5416	4659	3903	3146	2388	1630	0871	17
1435	0682	9930	9176	8423	7669	6914	6159	5403	4647	3890	3133	2375	1617	0858	16
1422	0670	9917	9164	8410	7656	6901	6146	5390	4634	3878	3120	2363	1604	0846	15
1410	0657	9905	9151	8398	7643	6889	6134	5378	4622	3865	3108	2350	1592	0833	14
1397	0645	9892	9139	8385	7631	6876	6121	5365	4609	3852	3095	2337	1579	0820	13
1384	0632	9879	9126	8373	7618	6864	6108	5353	4596	3840	3082	2325	1566	0808	12
1372	0620	9867	9114	8360	7606	6851	6096	5340	4584	3827	3070	2312	1554	0795	11
1359	0607	9854	9101	8347	7593	6838	6083	5327	4571	3814	3057	2299	1541	0782	10
1347	0595	9842	9089	8335	7581	6826	6071	5315	4559	3802	3045	2287	1529	0770	9
1334	0582	9829	9076	8322	7568	6813	6058	5302	4546	3789	3032	2274	1516	0757	8
1322	0570	9817	9063	8310	7555	6801	6045	5290	4533	3777	3019	2262	1503	0745	7
1309	0557	9804	9051	8297	7543	6788	6033	5277	4521	3764	3007	2249	1491	0732	6
1297	0544	9792	9038	8285	7530	6775	6020	5264	4508	3751	2994	2236	1478	0719	5
1284	0532	9779	9026	8272	7518	6763	6008	5252	4496	3739	2981	2224	1465	0707	4
1272	0519	9767	9013	8259	7505	6750	5995	5239	4483	3726	2969	2211	1453	0694	3
1259	0507	9754	9001	8247	7493	6738	5982	5227	4470	3713	2956	2198	1440	0681	2
1247	0494	9741	8988	8234	7480	6725	5970	5214	4458	3701	2944	2186	1427	0669	1
1234	0482	9729	8976	8222	7467	6713	5957	5201	4445	3688	2931	2173	1415	0656	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Sine Deg. 59

30 Deg. Tangent

″	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9.774	9.774	9.775	9.775	9.775	9.775	9.776	9.776	9.776	9.777	9.777	9.777	9.777	9.778	9.778
0	4713	7588	0462	3334	6206	9077	1947	4816	7685	0552	3418	6284	9149	2012	4875
1	4761	7636	0509	3382	6254	9125	1995	4864	7732	0600	3466	6332	9196	2060	4923
2	4809	7684	0557	3430	6302	9173	2043	4912	7780	0648	3514	6380	9244	2108	4971
3	4857	7732	0605	3478	6350	9221	2091	4960	7828	0695	3562	6427	9292	2156	5019
4	4905	7779	0653	3526	6398	9268	2138	5008	7876	0743	3609	6475	9340	2203	5066
5	4953	7827	0701	3574	6445	9316	2186	5055	7924	0791	3657	6523	9387	2251	5114
6	5001	7875	0749	3622	6493	9364	2234	5103	7971	0839	3705	6571	9435	2299	5162
7	5049	7923	0797	3669	6541	9412	2282	5151	8019	0886	3753	6618	9483	2347	5209
8	5097	7971	0845	3717	6589	9460	2330	5199	8067	0934	3801	6666	9531	2394	5257
9	5145	8019	0893	3765	6637	9508	2378	5247	8115	0982	3848	6714	9578	2442	5305
10	5192	8067	0940	3813	6685	9556	2425	5294	8163	1030	3896	6762	9626	2490	5352
11	5240	8115	0988	3861	6733	9603	2473	5342	8210	1078	3944	6809	9674	2537	5400
12	5288	8163	1036	3909	6780	9651	2521	5390	8258	1125	3992	6857	9722	2585	5448
13	5336	8211	1084	3957	6828	9699	2569	5438	8306	1173	4039	6905	9769	2633	5496
14	5384	8258	1132	4004	6876	9747	2617	5486	8354	1221	4087	6953	9817	2681	5543
15	5432	8306	1180	4052	6924	9795	2665	5533	8402	1269	4135	7000	9865	2728	5591
16	5480	8354	1228	4100	6972	9843	2712	5581	8449	1316	4183	7048	9912	2776	5639
17	5528	8402	1276	4148	7020	9890	2760	5629	8497	1364	4230	7096	9960	2824	5686
18	5576	8450	1323	4196	7068	9938	2808	5677	8545	1412	4278	7143	0008	2871	5734
19	5624	8498	1371	4244	7115	9986	2856	5725	8593	1460	4326	7191	0056	2919	5782
20	5672	8546	1419	4292	7163	0034	2904	5773	8640	1508	4374	7239	0103	2967	5829
21	5720	8594	1467	4340	7211	0082	2951	5820	8688	1555	4421	7287	0151	3015	5877
22	5767	8642	1515	4387	7259	0130	2999	5868	8736	1603	4469	7334	0199	3062	5925
23	5815	8690	1563	4435	7307	0177	3047	5916	8784	1651	4517	7382	0247	3110	5973
24	5863	8737	1611	4483	7355	0225	3095	5964	8832	1699	4565	7430	0294	3158	6020
25	5911	8785	1659	4531	7403	0273	3143	6012	8879	1746	4613	7478	0342	3205	6068
26	5959	8833	1707	4579	7450	0321	3191	6059	8927	1794	4660	7525	0390	3253	6116
27	6007	8881	1754	4627	7498	0369	3238	6107	8975	1842	4708	7573	0438	3301	6163
28	6055	8929	1802	4675	7546	0417	3286	6155	9023	1890	4756	7621	0485	3349	6211
29	6103	8977	1850	4722	7594	0464	3334	6203	9071	1938	4804	7669	0533	3396	6259
30	6151	9025	1898	4770	7642	0512	3382	6251	9118	1985	4851	7716	0581	3444	6307
31	6199	9073	1946	4818	7690	0560	3430	6298	9166	2033	4899	7764	0628	3492	6354
32	6247	9121	1994	4866	7737	0608	3478	6346	9214	2081	4947	7812	0676	3539	6402
33	6294	9169	2042	4914	7785	0656	3525	6394	9262	2129	4995	7860	0724	3587	6450
34	6342	9216	2090	4962	7833	0704	3573	6442	9310	2176	5042	7907	0772	3635	6497
35	6390	9264	2137	5010	7881	0751	3621	6490	9357	2224	5090	7955	0819	3683	6545
36	6438	9312	2185	5058	7929	0799	3669	6537	9405	2272	5138	8003	0867	3730	6593
37	6486	9360	2233	5105	7977	0847	3717	6585	9453	2320	5186	8051	0915	3778	6640
38	6534	9408	2281	5153	8025	0895	3764	6633	9501	2367	5233	8098	0963	3826	6688
39	6582	9456	2329	5201	8072	0943	3812	6681	9548	2415	5281	8146	1010	3873	6736
40	6630	9504	2377	5249	8120	0991	3860	6729	9596	2463	5329	8194	1058	3921	6784
41	6678	9552	2425	5297	8168	1038	3908	6776	9644	2511	5377	8242	1106	3969	6831
42	6726	9600	2473	5345	8216	1086	3956	6824	9692	2559	5424	8289	1153	4017	6879
43	6774	9647	2520	5393	8264	1134	4003	6872	9740	2606	5472	8337	1201	4064	6927
44	6821	9695	2568	5440	8312	1182	4051	6920	9787	2654	5520	8385	1249	4112	6974
45	6869	9743	2616	5488	8359	1230	4099	6968	9835	2702	5568	8433	1297	4160	7022
46	6917	9791	2664	5536	8407	1278	4147	7015	9883	2750	5615	8480	1344	4207	7070
47	6965	9839	2712	5584	8455	1325	4195	7063	9931	2797	5663	8528	1392	4255	7117
48	7013	9887	2760	5632	8503	1373	4243	7111	9979	2845	5711	8576	1440	4303	7165
49	7061	9935	2808	5680	8551	1421	4290	7159	0026	2893	5759	8624	1488	4351	7213
50	7109	9983	2856	5728	8599	1469	4338	7207	0074	2941	5806	8671	1535	4398	7260
51	7157	0031	2903	5775	8647	1517	4386	7254	0122	2989	5854	8719	1583	4446	7308
52	7205	0078	2951	5823	8694	1565	4434	7302	0170	3036	5902	8767	1631	4494	7356
53	7253	0126	2999	5871	8742	1612	4482	7350	0217	3084	5950	8815	1678	4541	7404
54	7300	0174	3047	5919	8790	1660	4529	7398	0265	3132	5997	8862	1726	4589	7451
55	7348	0222	3095	5967	8838	1708	4577	7446	0313	3180	6045	8910	1774	4637	7499
56	7396	0270	3143	6015	8886	1756	4625	7493	0361	3227	6093	8958	1822	4685	7547
57	7444	0318	3191	6063	8934	1804	4673	7541	0409	3275	6141	9005	1869	4732	7594
58	7492	0366	3239	6110	8981	1852	4721	7589	0456	3323	6188	9053	1917	4780	7642
59	7540	0414	3286	6158	9029	1899	4769	7637	0504	3371	6236	9101	1965	4828	7690
60	7588	0462	3334	6206	9077	1947	4816	7685	0552	3418	6284	9149	2012	4875	7737
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

30 Deg. Co-Tangent

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	″
10.225	10.225	10.224	10.224	10.224	10.224	10.223	10.223	10.223	10.222	10.222	10.222	10.222	10.221	10.221	
5287	2412	9538	6666	3794	0923	8053	5184	2315	9448	6582	3716	0851	7988	5125	60
5239	2364	9491	6618	3746	0875	8005	5136	2268	9400	6534	3668	0804	7940	5077	59
5191	2316	9443	6570	3698	0827	7957	5088	2220	9352	6486	3620	0756	7892	5029	58
5143	2268	9395	6522	3650	0779	7909	5040	2172	9305	6438	3573	0708	7844	4981	57
5095	2221	9347	6474	3602	0732	7862	4992	2124	9257	6391	3525	0660	7797	4934	56
5047	2173	9299	6426	3555	0684	7814	4945	2076	9209	6343	3477	0613	7749	4886	55
4999	2125	9251	6378	3507	0636	7766	4897	2029	9161	6295	3429	0565	7701	4838	54
4951	2077	9203	6331	3459	0588	7718	4849	1981	9114	6247	3382	0517	7653	4791	53
4903	2029	9155	6283	3411	0540	7670	4801	1933	9066	6199	3334	0469	7606	4743	52
4855	1981	9107	6235	3363	0492	7622	4753	1885	9018	6152	3286	0422	7558	4695	51
4808	1933	9060	6187	3315	0444	7575	4706	1837	8970	6104	3238	0374	7510	4648	50
4760	1885	9012	6139	3267	0397	7527	4658	1790	8922	6056	3191	0326	7463	4600	49
4712	1837	8964	6091	3220	0349	7479	4610	1742	8875	6008	3143	0278	7415	4552	48
4664	1789	8916	6043	3172	0301	7431	4562	1694	8827	5961	3095	0231	7367	4504	47
4616	1742	8868	5996	3124	0253	7383	4514	1646	8779	5913	3047	0183	7319	4457	46
4568	1694	8820	5948	3076	0205	7335	4467	1598	8731	5865	3000	0135	7272	4409	45
4520	1646	8772	5900	3028	0157	7288	4419	1551	8684	5817	2952	0088	7224	4361	44
4472	1598	8724	5852	2980	0110	7240	4371	1503	8636	5770	2904	0040	7176	4314	43
4424	1550	8677	5804	2932	0062	7192	4323	1455	8588	5722	2857	9992	7129	4266	42
4376	1502	8629	5756	2885	0014	7144	4275	1407	8540	5674	2809	9944	7081	4218	41
4328	1454	8581	5708	2837	9966	7096	4227	1360	8492	5626	2761	9897	7033	4171	40
4280	1406	8533	5660	2789	9918	7049	4180	1312	8445	5579	2713	9849	6985	4123	39
4233	1358	8485	5613	2741	9870	7001	4132	1264	8397	5531	2666	9801	6938	4075	38
4185	1310	8437	5565	2693	9823	6953	4084	1216	8349	5483	2618	9753	6890	4027	37
4137	1263	8389	5517	2645	9775	6905	4036	1168	8301	5435	2570	9706	6842	3980	36
4089	1215	8341	5469	2597	9727	6857	3988	1121	8254	5387	2522	9658	6795	3932	35
4041	1167	8293	5421	2550	9679	6809	3941	1073	8206	5340	2475	9610	6747	3884	34
3993	1119	8246	5373	2502	9631	6762	3893	1025	8158	5292	2427	9562	6699	3837	33
3945	1071	8198	5325	2454	9583	6714	3845	0977	8110	5244	2379	9515	6651	3789	32
3897	1023	8150	5278	2406	9536	6666	3797	0929	8062	5196	2331	9467	6604	3741	31
3849	0975	8102	5230	2358	9488	6618	3749	0882	8015	5149	2284	9419	6556	3693	30
3801	0927	8054	5182	2310	9440	6570	3702	0834	7967	5101	2236	9372	6508	3646	29
3753	0879	8006	5134	2263	9392	6522	3654	0786	7919	5053	2188	9324	6461	3598	28
3706	0831	7958	5086	2215	9344	6475	3606	0738	7871	5005	2140	9276	6413	3550	27
3658	0784	7910	5038	2167	9296	6427	3558	0690	7824	4958	2093	9228	6365	3503	26
3610	0736	7863	4990	2119	9249	6379	3510	0643	7776	4910	2045	9181	6317	3455	25
3562	0688	7815	4942	2071	9201	6331	3463	0595	7728	4862	1997	9133	6270	3407	24
3514	0640	7767	4895	2023	9153	6283	3415	0547	7680	4814	1949	9085	6222	3360	23
3466	0592	7719	4847	1975	9105	6236	3367	0499	7633	4767	1902	9037	6174	3312	22
3418	0544	7671	4799	1928	9057	6188	3319	0452	7585	4719	1854	8990	6127	3264	21
3370	0496	7623	4751	1880	9009	6140	3271	0404	7537	4671	1806	8942	6079	3216	20
3322	0448	7575	4703	1832	8962	6092	3224	0356	7489	4623	1758	8894	6031	3169	19
3274	0400	7527	4655	1784	8914	6044	3176	0308	7441	4576	1711	8847	5983	3121	18
3226	0353	7480	4607	1736	8866	5997	3128	0260	7394	4528	1663	8799	5936	3073	17
3179	0305	7432	4560	1688	8818	5949	3080	0213	7346	4480	1615	8751	5888	3026	16
3131	0257	7384	4512	1641	8770	5901	3032	0165	7298	4432	1567	8703	5840	2978	15
3083	0209	7336	4464	1593	8722	5853	2985	0117	7250	4385	1520	8656	5793	2930	14
3035	0161	7288	4416	1545	8675	5805	2937	0069	7203	4337	1472	8608	5745	2883	13
2987	0113	7240	4368	1497	8627	5757	2889	0021	7155	4289	1424	8560	5697	2835	12
2939	0065	7192	4320	1449	8579	5710	2841	9974	7107	4241	1376	8512	5649	2787	11
2891	0017	7144	4272	1401	8531	5662	2793	9926	7059	4194	1329	8465	5602	2740	10
2843	9969	7097	4225	1353	8483	5614	2746	9878	7011	4146	1281	8417	5554	2692	9
2795	9922	7049	4177	1306	8435	5566	2698	9830	6964	4098	1233	8369	5506	2644	8
2747	9874	7001	4129	1258	8388	5518	2650	9783	6916	4050	1185	8322	5459	2596	7
2700	9826	6953	4081	1210	8340	5471	2602	9735	6868	4003	1138	8274	5411	2549	6
2652	9778	6905	4033	1162	8292	5423	2554	9687	6820	3955	1090	8226	5363	2501	5
2604	9730	6857	3985	1114	8244	5375	2507	9639	6773	3907	1042	8178	5315	2453	4
2556	9682	6809	3937	1066	8196	5327	2459	9591	6725	3859	0995	8131	5268	2406	3
2508	9634	6761	3890	1019	8148	5279	2411	9544	6677	3812	0947	8083	5220	2358	2
2460	9586	6714	3842	0971	8101	5231	2363	9496	6629	3764	0899	8035	5172	2310	1
2412	9538	6666	3794	0923	8053	5184	2315	9448	6582	3716	0851	7988	5125	2263	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Co-Tangent Deg. 59

Tangent Deg. 59

31 Deg. Sine

″	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
	9. 711	9. 712	9. 712	9. 712	9. 712	9. 712	9. 713	9. 713	9. 713	9. 713	9. 713	9. 714	9. 714	9. 714	9. 714
0	8393	0495	2596	4695	6792	8889	0983	3077	5169	7260	9349	1437	3524	5609	7693
1	8428	0530	2631	4730	6827	8924	1018	3112	5204	7295	9384	1472	3559	5644	7728
2	8463	0565	2666	4765	6862	8958	1053	3147	5239	7330	9419	1507	3594	5679	7763
3	8498	0600	2701	4800	6897	8993	1088	3182	5274	7364	9454	1542	3628	5714	7797
4	8534	0635	2736	4835	6932	9028	1123	3217	5309	7399	9489	1577	3663	5748	7832
5	8569	0670	2771	4869	6967	9063	1158	3251	5343	7434	9523	1611	3698	5783	7867
6	8604	0705	2806	4904	7002	9098	1193	3286	5378	7469	9558	1646	3733	5818	7902
7	8639	0740	2841	4939	7037	9133	1228	3321	5413	7504	9593	1681	3767	5853	7936
8	8674	0775	2876	4974	7072	9168	1263	3356	5448	7539	9628	1716	3802	5887	7971
9	8709	0810	2911	5009	7107	9203	1298	3391	5483	7573	9663	1750	3837	5922	8006
10	8744	0845	2946	5044	7142	9238	1333	3426	5518	7608	9697	1785	3872	5957	8040
11	8779	0880	2981	5079	7177	9273	1367	3461	5553	7643	9732	1820	3906	5991	8075
12	8814	0915	3016	5114	7212	9308	1402	3496	5587	7678	9767	1855	3941	6026	8110
13	8849	0950	3051	5149	7247	9343	1437	3530	5622	7713	9802	1890	3976	6061	8145
14	8884	0985	3085	5184	7282	9378	1472	3565	5657	7748	9837	1924	4011	6096	8179
15	8919	1020	3120	5219	7317	9412	1507	3600	5692	7782	9871	1959	4045	6130	8214
16	8954	1055	3155	5254	7351	9447	1542	3635	5727	7817	9906	1994	4080	6165	8249
17	8989	1090	3190	5289	7386	9482	1577	3670	5762	7852	9941	2029	4115	6200	8283
18	9024	1125	3225	5324	7421	9517	1612	3705	5797	7887	9976	2064	4150	6235	8318
19	9059	1160	3260	5359	7456	9552	1647	3740	5831	7922	0011	2098	4185	6269	8353
20	9094	1195	3295	5394	7491	9587	1681	3775	5866	7957	0046	2133	4219	6304	8388
21	9129	1230	3330	5429	7526	9622	1716	3809	5901	7991	0080	2168	4254	6339	8422
22	9164	1265	3365	5464	7561	9657	1751	3844	5936	8026	0115	2203	4289	6374	8457
23	9199	1300	3400	5499	7596	9692	1786	3879	5971	8061	0150	2237	4324	6408	8492
24	9234	1336	3435	5534	7631	9727	1821	3914	6006	8096	0185	2272	4358	6443	8526
25	9269	1371	3470	5569	7666	9762	1856	3949	6040	8131	0220	2307	4393	6478	8561
26	9304	1406	3505	5604	7701	9797	1891	3984	6075	8166	0254	2342	4428	6513	8596
27	9339	1441	3540	5639	7736	9831	1926	4019	6110	8200	0289	2377	4463	6547	8631
28	9374	1476	3575	5674	7771	9866	1961	4054	6145	8235	0324	2411	4497	6582	8665
29	9409	1511	3610	5709	7806	9901	1996	4088	6180	8270	0359	2446	4532	6617	8700
30	9444	1546	3645	5744	7841	9936	2030	4123	6215	8305	0394	2481	4567	6651	8735
31	9479	1581	3680	5779	7876	9971	2065	4158	6250	8340	0428	2516	4602	6686	8769
32	9514	1616	3715	5814	7910	0006	2100	4193	6284	8374	0463	2550	4636	6721	8804
33	9550	1651	3750	5849	7945	0041	2135	4228	6319	8409	0498	2585	4671	6756	8839
34	9585	1686	3785	5883	7980	0076	2170	4263	6354	8444	0533	2620	4706	6790	8874
35	9620	1721	3820	5918	8015	0111	2205	4298	6389	8479	0568	2655	4741	6825	8908
36	9655	1756	3855	5953	8050	0146	2240	4332	6424	8514	0602	2690	4775	6860	8943
37	9690	1791	3890	5988	8085	0181	2275	4367	6459	8549	0637	2724	4810	6895	8978
38	9725	1826	3925	6023	8120	0216	2310	4402	6493	8583	0672	2759	4845	6929	9012
39	9760	1861	3960	6058	8155	0250	2344	4437	6528	8618	0707	2794	4880	6964	9047
40	9795	1896	3995	6093	8190	0285	2379	4472	6563	8653	0742	2829	4914	6999	9082
41	9830	1931	4030	6128	8225	0320	2414	4507	6598	8688	0776	2863	4949	7033	9116
42	9865	1966	4065	6163	8260	0355	2449	4542	6633	8723	0811	2898	4984	7068	9151
43	9900	2001	4100	6198	8295	0390	2484	4577	6668	8757	0846	2933	5019	7103	9186
44	9935	2036	4135	6233	8330	0425	2519	4611	6703	8792	0881	2968	5053	7138	9221
45	9970	2071	4170	6268	8365	0460	2554	4646	6737	8827	0915	3003	5088	7172	9255
46	0005	2106	4205	6303	8400	0495	2589	4681	6772	8862	0950	3037	5123	7207	9290
47	0040	2141	4240	6338	8435	0530	2624	4716	6807	8897	0985	3072	5158	7242	9325
48	0075	2176	4275	6373	8469	0565	2658	4751	6842	8932	1020	3107	5192	7277	9359
49	0110	2211	4310	6408	8504	0600	2693	4786	6877	8966	1055	3142	5227	7311	9394
50	0145	2246	4345	6443	8539	0634	2728	4821	6912	9001	1089	3176	5262	7346	9429
51	0180	2281	4380	6478	8574	0669	2763	4855	6946	9036	1124	3211	5297	7381	9464
52	0215	2316	4415	6513	8609	0704	2798	4890	6981	9071	1159	3246	5331	7415	9498
53	0250	2351	4450	6548	8644	0739	2833	4925	7016	9106	1194	3281	5366	7450	9533
54	0285	2386	4485	6583	8679	0774	2868	4960	7051	9140	1229	3315	5401	7485	9568
55	0320	2421	4520	6618	8714	0809	2903	4995	7086	9175	1263	3350	5436	7520	9602
56	0355	2456	4555	6653	8749	0844	2937	5030	7121	9210	1298	3385	5470	7554	9637
57	0390	2491	4590	6687	8784	0879	2972	5065	7155	9245	1333	3420	5505	7589	9672
58	0425	2526	4625	6722	8819	0914	3007	5099	7190	9280	1368	3455	5540	7624	9706
59	0460	2561	4660	6757	8854	0949	3042	5134	7225	9315	1403	3489	5575	7659	9741
60	0495	2596	4695	6792	8889	0983	3077	5169	7260	9349	1437	3524	5609	7693	9776
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Sine Deg. 58

31 Deg. Co-Sine

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	″
9. 933	9. 932	9. 932	9. 932	9. 932	9. 932	9. 932	9. 932	9. 932	9. 932	9. 932	9. 932	9. 932	9. 932	9. 931	
0656	9897	9137	8376	7616	6854	6092	5330	4567	3804	3040	2276	1511	0746	9980	60
0643	9884	9124	8364	7603	6842	6080	5317	4555	3791	3027	2263	1498	0733	9967	59
0631	9871	9111	8351	7590	6829	6067	5305	4542	3779	3015	2250	1485	0720	9954	58
0618	9859	9099	8338	7578	6816	6054	5292	4529	3766	3002	2238	1473	0707	9942	57
0605	9846	9086	8326	7565	6804	6042	5279	4516	3753	2989	2225	1460	0695	9929	56
0593	9833	9073	8313	7552	6791	6029	5267	4504	3740	2976	2212	1447	0682	9916	55
0580	9821	9061	8300	7540	6778	6016	5254	4491	3728	2964	2199	1434	0669	9903	54
0567	9808	9048	8288	7527	6765	6004	5241	4478	3715	2951	2187	1422	0656	9890	53
0555	9795	9035	8275	7514	6753	5991	5228	4466	3702	2938	2174	1409	0644	9878	52
0542	9783	9023	8262	7501	6740	5978	5216	4453	3689	2926	2161	1396	0631	9865	51
0529	9770	9010	8250	7489	6727	5965	5203	4440	3677	2913	2148	1383	0618	9852	50
0517	9757	8997	8237	7476	6715	5953	5190	4427	3664	2900	2136	1371	0605	9839	49
0504	9745	8985	8224	7463	6702	5940	5178	4415	3651	2887	2123	1358	0593	9827	48
0491	9732	8972	8212	7451	6689	5927	5165	4402	3639	2875	2110	1345	0580	9814	47
0479	9719	8959	8199	7438	6677	5915	5152	4389	3626	2862	2097	1332	0567	9801	46
0466	9707	8947	8186	7425	6664	5902	5140	4377	3613	2849	2085	1320	0554	9788	45
0454	9694	8934	8174	7413	6651	5889	5127	4364	3600	2836	2072	1307	0541	9776	44
0441	9681	8921	8161	7400	6639	5877	5114	4351	3588	2824	2059	1294	0529	9763	43
0428	9669	8909	8148	7387	6626	5864	5101	4338	3575	2811	2046	1281	0516	9750	42
0416	9656	8896	8136	7375	6613	5851	5089	4326	3562	2798	2034	1269	0503	9737	41
0403	9643	8883	8123	7362	6600	5838	5076	4313	3549	2785	2021	1256	0490	9724	40
0390	9631	8871	8110	7349	6588	5826	5063	4300	3537	2773	2008	1243	0478	9712	39
0378	9618	8858	8098	7337	6575	5813	5051	4288	3524	2760	1995	1230	0465	9699	38
0365	9605	8845	8085	7324	6562	5800	5038	4275	3511	2747	1983	1218	0452	9686	37
0352	9593	8833	8072	7311	6550	5788	5025	4262	3499	2734	1970	1205	0439	9673	36
0340	9580	8820	8060	7298	6537	5775	5012	4249	3486	2722	1957	1192	0427	9661	35
0327	9567	8807	8047	7286	6524	5762	5000	4237	3473	2709	1944	1179	0414	9648	34
0314	9555	8795	8034	7273	6512	5750	4987	4224	3460	2696	1932	1167	0401	9635	33
0302	9542	8782	8021	7260	6499	5737	4974	4211	3448	2684	1919	1154	0388	9622	32
0289	9529	8769	8009	7248	6486	5724	4962	4198	3435	2671	1906	1141	0376	9609	31
0276	9517	8757	7996	7235	6473	5711	4949	4186	3422	2658	1893	1128	0363	9597	30
0264	9504	8744	7983	7222	6461	5699	4936	4173	3409	2645	1881	1116	0350	9584	29
0251	9491	8731	7971	7210	6448	5686	4923	4160	3397	2633	1868	1103	0337	9571	28
0238	9479	8719	7958	7197	6435	5673	4911	4148	3384	2620	1855	1090	0325	9558	27
0226	9466	8706	7945	7184	6423	5661	4898	4135	3371	2607	1842	1077	0312	9546	26
0213	9453	8693	7933	7172	6410	5648	4885	4122	3358	2594	1830	1065	0299	9533	25
0200	9441	8681	7920	7159	6397	5635	4873	4109	3346	2582	1817	1052	0286	9520	24
0188	9428	8668	7907	7146	6385	5622	4860	4097	3333	2569	1804	1039	0273	9507	23
0175	9415	8655	7895	7134	6372	5610	4847	4084	3320	2556	1792	1026	0261	9495	22
0162	9403	8643	7882	7121	6359	5597	4834	4071	3308	2543	1779	1014	0248	9482	21
0150	9390	8630	7869	7108	6346	5584	4822	4059	3295	2531	1766	1001	0235	9469	20
0137	9377	8617	7857	7095	6334	5572	4809	4046	3282	2518	1753	0988	0222	9456	19
0124	9365	8605	7844	7083	6321	5559	4796	4033	3269	2505	1741	0975	0210	9443	18
0112	9352	8592	7831	7070	6308	5546	4784	4020	3257	2492	1728	0963	0197	9431	17
0099	9339	8579	7819	7057	6296	5534	4771	4008	3244	2480	1715	0950	0184	9418	16
0087	9327	8567	7806	7045	6283	5521	4758	3995	3231	2467	1702	0937	0171	9405	15
0074	9314	8554	7793	7032	6270	5508	4745	3982	3218	2454	1690	0924	0159	9392	14
0061	9301	8541	7781	7019	6258	5495	4733	3969	3206	2441	1677	0912	0146	9380	13
0049	9289	8529	7768	7007	6245	5483	4720	3957	3193	2429	1664	0899	0133	9367	12
0036	9276	8516	7755	6994	6232	5470	4707	3944	3180	2416	1651	0886	0120	9354	11
0023	9263	8503	7742	6981	6220	5457	4695	3931	3168	2403	1639	0873	0107	9341	10
0011	9251	8491	7730	6969	6207	5445	4682	3919	3155	2391	1626	0860	0095	9328	9
9998	9238	8478	7717	6956	6194	5432	4669	3906	3142	2378	1613	0848	0082	9316	8
9985	9225	8465	7704	6943	6181	5419	4656	3893	3129	2365	1600	0835	0069	9303	7
9973	9213	8453	7692	6930	6169	5406	4644	3880	3117	2352	1588	0822	0056	9290	6
9960	9200	8440	7679	6918	6156	5394	4631	3868	3104	2340	1575	0809	0044	9277	5
9947	9187	8427	7666	6905	6143	5381	4618	3855	3091	2327	1562	0797	0031	9265	4
9935	9175	8415	7654	6892	6131	5368	4605	3842	3078	2314	1549	0784	0018	9252	3
9922	9162	8402	7641	6880	6118	5356	4593	3829	3066	2301	1537	0771	0005	9239	2
9909	9149	8389	7628	6867	6105	5343	4580	3817	3053	2289	1524	0758	9993	9226	1
9897	9137	8376	7616	6854	6092	5330	4567	3804	3040	2276	1511	0746	9980	9213	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Sine Deg. 58

31 Deg. Tangent

"	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
	9. 778	9. 779	9. 779	9. 779	9. 779	9. 780	9. 780	9. 780	9. 781	9. 781	9. 781	9. 781	9. 782	9. 782	9. 782
0	7737	0599	3459	6318	9177	2034	4891	7747	0602	3456	6309	9162	2013	4864	7713
1	7785	0646	3506	6366	9224	2082	4939	7794	0649	3504	6357	9209	2061	4911	7761
2	7833	0694	3554	6413	9272	2129	4986	7842	0697	3551	6404	9257	2108	4959	7808
3	7880	0742	3602	6461	9320	2177	5034	7890	0745	3599	6452	9304	2156	5006	7856
4	7928	0789	3649	6509	9367	2225	5081	7937	0792	3646	6499	9352	2203	5054	7903
5	7976	0837	3697	6556	9415	2272	5129	7985	0840	3694	6547	9399	2251	5101	7951
6	8024	0885	3745	6604	9462	2320	5177	8032	0887	3741	6594	9447	2298	5149	7998
7	8071	0932	3792	6652	9510	2368	5224	8080	0935	3789	6642	9494	2346	5196	8046
8	8119	0980	3840	6699	9558	2415	5272	8128	0982	3836	6690	9542	2393	5244	8093
9	8167	1028	3888	6747	9605	2463	5319	8175	1030	3884	6737	9589	2441	5291	8141
10	8214	1075	3935	6795	9653	2510	5367	8223	1078	3932	6785	9637	2488	5339	8188
11	8262	1123	3983	6842	9701	2558	5415	8270	1125	3979	6832	9684	2536	5386	8236
12	8310	1171	4031	6890	9748	2606	5462	8318	1173	4027	6880	9732	2583	5434	8283
13	8357	1218	4078	6938	9796	2653	5510	8366	1220	4074	6927	9779	2631	5481	8331
14	8405	1266	4126	6985	9844	2701	5557	8413	1268	4122	6975	9827	2678	5529	8378
15	8453	1314	4174	7033	9891	2749	5605	8461	1315	4169	7022	9874	2726	5576	8426
16	8500	1361	4221	7081	9939	2796	5653	8508	1363	4217	7070	9922	2773	5624	8473
17	8548	1409	4269	7128	9986	2844	5700	8556	1411	4264	7117	9970	2821	5671	8521
18	8596	1457	4317	7176	0034	2891	5748	8603	1458	4312	7165	0017	2868	5719	8568
19	8644	1504	4364	7223	0082	2939	5795	8651	1506	4360	7213	0065	2916	5766	8616
20	8691	1552	4412	7271	0129	2987	5843	8699	1553	4407	7260	0112	2963	5814	8663
21	8739	1600	4460	7319	0177	3034	5891	8746	1601	4455	7308	0160	3011	5861	8711
22	8787	1647	4507	7366	0225	3082	5938	8794	1648	4502	7355	0207	3058	5909	8758
23	8834	1695	4555	7414	0272	3129	5986	8841	1696	4550	7403	0255	3106	5956	8806
24	8882	1743	4603	7462	0320	3177	6033	8889	1744	4597	7450	0302	3153	6004	8853
25	8930	1790	4650	7509	0367	3225	6081	8937	1791	4645	7498	0350	3201	6051	8901
26	8977	1838	4698	7557	0415	3272	6129	8984	1839	4692	7545	0397	3248	6099	8948
27	9025	1886	4746	7605	0463	3320	6176	9032	1886	4740	7593	0445	3296	6146	8996
28	9073	1933	4793	7652	0510	3368	6224	9079	1934	4788	7640	0492	3343	6194	9043
29	9120	1981	4841	7700	0558	3415	6271	9127	1981	4835	7688	0540	3391	6241	9091
30	9168	2029	4889	7748	0606	3463	6319	9174	2029	4883	7735	0587	3438	6289	9138
31	9216	2076	4936	7795	0653	3510	6367	9222	2077	4930	7783	0635	3486	6336	9185
32	9263	2124	4984	7843	0701	3558	6414	9270	2124	4978	7831	0682	3533	6384	9233
33	9311	2172	5032	7890	0748	3606	6462	9317	2172	5025	7878	0730	3581	6431	9280
34	9359	2219	5079	7938	0796	3653	6509	9365	2219	5073	7926	0777	3629	6479	9328
35	9407	2267	5127	7986	0844	3701	6557	9412	2267	5120	7973	0825	3676	6526	9375
36	9454	2315	5175	8033	0891	3748	6605	9460	2314	5168	8021	0873	3724	6574	9423
37	9502	2362	5222	8081	0939	3796	6652	9508	2362	5216	8068	0920	3771	6621	9470
38	9550	2410	5270	8129	0987	3844	6700	9555	2410	5263	8116	0968	3819	6669	9518
39	9597	2458	5317	8176	1034	3891	6747	9603	2457	5311	8163	1015	3866	6716	9565
40	9645	2505	5365	8224	1082	3939	6795	9650	2505	5358	8211	1063	3914	6764	9613
41	9693	2553	5413	8272	1129	3986	6843	9698	2552	5406	8258	1110	3961	6811	9660
42	9740	2601	5460	8319	1177	4034	6890	9745	2600	5453	8306	1158	4009	6859	9708
43	9788	2648	5508	8367	1225	4082	6938	9793	2647	5501	8353	1205	4056	6906	9755
44	9836	2696	5556	8414	1272	4129	6985	9841	2695	5548	8401	1253	4104	6954	9803
45	9883	2744	5603	8462	1320	4177	7033	9888	2742	5596	8449	1300	4151	7001	9850
46	9931	2791	5651	8510	1368	4225	7081	9936	2790	5643	8496	1348	4199	7049	9898
47	9979	2839	5699	8557	1415	4272	7128	9983	2838	5691	8544	1395	4246	7096	9945
48	0026	2887	5746	8605	1463	4320	7176	0031	2885	5739	8591	1443	4294	7144	9993
49	0074	2934	5794	8653	1510	4367	7223	0078	2933	5786	8639	1490	4341	7191	0040
50	0122	2982	5842	8700	1558	4415	7271	0126	2980	5834	8686	1538	4389	7239	0088
51	0169	3030	5889	8748	1606	4463	7319	0174	3028	5881	8734	1585	4436	7286	0135
52	0217	3077	5937	8796	1653	4510	7366	0221	3075	5929	8781	1633	4484	7334	0183
53	0265	3125	5985	8843	1701	4558	7414	0269	3123	5976	8829	1680	4531	7381	0230
54	0312	3173	6032	8891	1749	4605	7461	0316	3171	6024	8876	1728	4579	7428	0277
55	0360	3220	6080	8938	1796	4653	7509	0364	3218	6071	8924	1775	4626	7476	0325
56	0408	3268	6128	8986	1844	4701	7556	0412	3266	6119	8971	1823	4674	7523	0372
57	0456	3316	6175	9034	1891	4748	7604	0459	3313	6167	9019	1870	4721	7571	0420
58	0503	3363	6223	9081	1939	4796	7652	0507	3361	6214	9066	1918	4769	7618	0467
59	0551	3411	6271	9129	1987	4843	7699	0554	3408	6262	9114	1966	4816	7666	0515
60	0599	3459	6318	9177	2034	4891	7747	0602	3456	6309	9162	2013	4864	7713	0562
"	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Tangent Deg. 58

31 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	"
10. 221	10. 220	10. 220	10. 220	10. 220	10. 219	10. 219	10. 219	10. 218	10. 218	10. 218	10. 218	10. 217	10. 217	10. 217	
2263	9401	6541	3682	0823	7966	5109	2253	9398	6544	3691	0838	7987	5136	2287	60
2215	9354	6494	3634	0776	7918	5061	2206	9351	6496	3643	0791	7939	5089	2239	59
2167	9306	6446	3587	0728	7871	5014	2158	9303	6449	3596	0743	7892	5041	2192	58
2120	9258	6398	3539	0680	7823	4966	2110	9255	6401	3548	0696	7844	4994	2144	57
2072	9211	6351	3491	0633	7775	4919	2063	9208	6354	3501	0648	7797	4946	2097	56
2024	9163	6303	3444	0585	7728	4871	2015	9160	6306	3453	0601	7749	4899	2049	55
1976	9115	6255	3396	0538	7680	4823	1968	9113	6259	3406	0553	7702	4851	2002	54
1929	9068	6208	3348	0490	7632	4776	1920	9065	6211	3358	0506	7654	4804	1954	53
1881	9020	6160	3301	0442	7585	4728	1872	9018	6164	3310	0458	7607	4756	1907	52
1833	8972	6112	3253	0395	7537	4681	1825	8970	6116	3263	0411	7559	4709	1859	51
1786	8925	6065	3205	0347	7490	4633	1777	8922	6068	3215	0363	7512	4661	1812	50
1738	8877	6017	3158	0299	7442	4585	1730	8875	6021	3168	0316	7464	4614	1764	49
1690	8829	5969	3110	0252	7394	4538	1682	8827	5973	3120	0268	7417	4566	1717	48
1643	8782	5922	3062	0204	7347	4490	1634	8780	5926	3073	0221	7369	4519	1669	47
1595	8734	5874	3015	0156	7299	4443	1587	8732	5878	3025	0173	7322	4471	1622	46
1547	8686	5826	2967	0109	7251	4395	1539	8685	5831	2978	0126	7274	4424	1574	45
1500	8639	5779	2919	0061	7204	4347	1492	8637	5783	2930	0078	7227	4376	1527	44
1452	8591	5731	2872	0014	7156	4300	1444	8589	5736	2883	0030	7179	4329	1479	43
1404	8543	5683	2824	9966	7109	4252	1397	8542	5688	2835	9983	7132	4281	1432	42
1356	8496	5636	2777	9918	7061	4205	1349	8494	5640	2787	9935	7084	4234	1384	41
1309	8448	5588	2729	9871	7013	4157	1301	8447	5593	2740	9888	7037	4186	1337	40
1261	8400	5540	2681	9823	6966	4109	1254	8399	5545	2692	9840	6989	4139	1289	39
1213	8353	5493	2634	9775	6918	4062	1206	8352	5498	2645	9793	6942	4091	1242	38
1166	8305	5445	2586	9728	6871	4014	1159	8304	5450	2597	9745	6894	4044	1194	37
1118	8257	5397	2538	9680	6823	3967	1111	8256	5403	2550	9698	6847	3996	1147	36
1070	8210	5350	2491	9633	6775	3919	1063	8209	5355	2502	9650	6799	3949	1099	35
1023	8162	5302	2443	9585	6728	3871	1016	8161	5308	2455	9603	6752	3901	1052	34
0975	8114	5254	2395	9537	6680	3824	0968	8114	5260	2407	9555	6704	3854	1004	33
0927	8067	5207	2348	9490	6632	3776	0921	8066	5212	2360	9508	6657	3806	0957	32
0880	8019	5159	2300	9442	6585	3729	0873	8019	5165	2312	9460	6609	3759	0909	31
0832	7971	5111	2252	9394	6537	3681	0826	7971	5117	2265	9413	6562	3711	0862	30
0784	7924	5064	2205	9347	6490	3633	0778	7923	5070	2217	9365	6514	3664	0815	29
0737	7876	5016	2157	9299	6442	3586	0730	7876	5022	2169	9318	6467	3616	0767	28
0689	7828	4968	2110	9252	6394	3538	0683	7828	4975	2122	9270	6419	3569	0720	27
0641	7781	4921	2062	9204	6347	3491	0635	7781	4927	2074	9223	6371	3521	0672	26
0593	7733	4873	2014	9156	6299	3443	0588	7733	4880	2027	9175	6324	3474	0625	25
0546	7685	4825	1967	9109	6252	3395	0540	7686	4832	1979	9127	6276	3426	0577	24
0498	7638	4778	1919	9061	6204	3348	0492	7638	4784	1932	9080	6229	3379	0530	23
0450	7590	4730	1871	9013	6156	3300	0445	7590	4737	1884	9032	6181	3331	0482	22
0403	7542	4683	1824	8966	6109	3253	0397	7543	4689	1837	8985	6134	3284	0435	21
0355	7495	4635	1776	8918	6061	3205	0350	7495	4642	1789	8937	6086	3236	0387	20
0307	7447	4587	1728	8871	6014	3157	0302	7448	4594	1742	8890	6039	3189	0340	19
0260	7399	4540	1681	8823	5966	3110	0255	7400	4547	1694	8842	5991	3141	0292	18
0212	7352	4492	1633	8775	5918	3062	0207	7353	4499	1647	8795	5944	3094	0245	17
0164	7304	4444	1586	8728	5871	3015	0159	7305	4452	1599	8747	5896	3046	0197	16
0117	7256	4397	1538	8680	5823	2967	0112	7258	4404	1551	8700	5849	2999	0150	15
0069	7209	4349	1490	8632	5775	2919	0064	7210	4357	1504	8652	5801	2951	0102	14
0021	7161	4301	1443	8585	5728	2872	0017	7162	4309	1456	8605	5754	2904	0055	13
9974	7113	4254	1395	8537	5680	2824	9969	7115	4261	1409	8557	5706	2856	0007	12
9926	7066	4206	1347	8490	5633	2777	9922	7067	4214	1361	8510	5659	2809	9960	11
9878	7018	4158	1300	8442	5585	2729	9874	7020	4166	1314	8462	5611	2761	9912	10
9831	6970	4111	1252	8394	5537	2681	9826	6972	4119	1266	8415	5564	2714	9865	9
9783	6923	4063	1204	8347	5490	2634	9779	6925	4071	1219	8367	5516	2666	9817	8
9735	6875	4015	1157	8299	5442	2586	9731	6877	4024	1171	8320	5469	2619	9770	7
9688	6827	3968	1109	8251	5395	2539	9684	6829	3976	1124	8272	5421	2572	9723	6
9640	6780	3920	1062	8204	5347	2491	9636	6782	3929	1076	8225	5374	2524	9675	5
9592	6732	3872	1014	8156	5299	2444	9588	6734	3881	1029	8177	5326	2477	9628	4
9544	6684	3825	0966	8109	5252	2396	9541	6687	3833	0981	8130	5279	2429	9580	3
9497	6637	3777	0919	8061	5204	2348	9493	6639	3786	0934	8082	5231	2382	9533	2
9449	6589	3729	0871	8013	5157	2301	9446	6592	3738	0886	8034	5184	2334	9485	1
9401	6541	3682	0823	7966	5109	2253	9398	6544	3691	0838	7987	5136	2287	9438	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	"

Tangent Deg. 58

31 Deg. Sine

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 714	9. 715	9. 715	9. 715	9. 715	9. 716	9. 716	9. 716	9. 716	9. 716	9. 717	9. 717	9. 717	9. 717	9. 717
0	9776	1857	3937	6015	8092	0168	2243	4316	6387	8458	0526	2594	4660	6725	8789
1	9811	1892	3971	6050	8127	0203	2277	4350	6422	8492	0561	2629	4695	6760	8823
2	9845	1926	4006	6085	8162	0237	2312	4385	6456	8527	0595	2663	4729	6794	8858
3	9880	1961	4041	6119	8196	0272	2346	4419	6491	8561	0630	2697	4764	6828	8892
4	9915	1996	4075	6154	8231	0306	2381	4454	6525	8595	0664	2732	4798	6863	8926
5	9949	2030	4110	6188	8265	0341	2415	4488	6560	8630	0699	2766	4832	6897	8961
6	9984	2065	4145	6223	8300	0376	2450	4523	6594	8664	0733	2801	4867	6932	8995
7	0019	2100	4179	6258	8335	0410	2484	4557	6629	8699	0768	2835	4901	6966	9029
8	0053	2134	4214	6292	8369	0445	2519	4592	6663	8733	0802	2870	4936	7000	9064
9	0088	2169	4249	6327	8404	0479	2554	4626	6698	8768	0837	2904	4970	7035	9098
10	0123	2204	4283	6362	8438	0514	2588	4661	6732	8802	0871	2939	5005	7069	9133
11	0157	2238	4318	6396	8473	0549	2623	4695	6767	8837	0906	2973	5039	7104	9167
12	0192	2273	4353	6431	8508	0583	2657	4730	6801	8871	0940	3007	5073	7138	9201
13	0227	2308	4387	6465	8542	0618	2692	4765	6836	8906	0975	3042	5108	7172	9236
14	0262	2342	4422	6500	8577	0652	2726	4799	6870	8940	1009	3076	5142	7207	9270
15	0296	2377	4457	6535	8611	0687	2761	4834	6905	8975	1044	3111	5177	7241	9304
16	0331	2412	4491	6569	8646	0721	2795	4868	6939	9009	1078	3145	5211	7276	9339
17	0366	2446	4526	6604	8681	0756	2830	4903	6974	9044	1112	3180	5246	7310	9373
18	0400	2481	4561	6639	8715	0791	2865	4937	7008	9078	1147	3214	5280	7344	9408
19	0435	2516	4595	6673	8750	0825	2899	4972	7043	9113	1181	3249	5314	7379	9442
20	0470	2550	4630	6708	8784	0860	2934	5006	7077	9147	1216	3283	5349	7413	9476
21	0504	2585	4664	6742	8819	0894	2968	5041	7112	9182	1250	3317	5383	7448	9511
22	0539	2620	4699	6777	8854	0929	3003	5075	7146	9216	1285	3352	5418	7482	9545
23	0574	2654	4734	6812	8888	0963	3037	5110	7181	9251	1319	3386	5452	7516	9579
24	0608	2689	4768	6846	8923	0998	3072	5144	7215	9285	1354	3421	5486	7551	9614
25	0643	2724	4803	6881	8957	1033	3106	5179	7250	9320	1388	3455	5521	7585	9648
26	0678	2758	4838	6916	8992	1067	3141	5213	7285	9354	1423	3490	5555	7620	9683
27	0713	2793	4872	6950	9027	1102	3176	5248	7319	9389	1457	3524	5590	7654	9717
28	0747	2828	4907	6985	9061	1136	3210	5282	7354	9423	1492	3559	5624	7688	9751
29	0782	2862	4942	7019	9096	1171	3245	5317	7388	9458	1526	3593	5659	7723	9786
30	0817	2897	4976	7054	9130	1205	3279	5352	7423	9492	1560	3627	5693	7757	9820
31	0851	2932	5011	7089	9165	1240	3314	5386	7457	9527	1595	3662	5727	7792	9854
32	0886	2966	5046	7123	9200	1275	3348	5421	7492	9561	1629	3696	5762	7826	9889
33	0921	3001	5080	7158	9234	1309	3383	5455	7526	9596	1664	3731	5796	7860	9923
34	0955	3036	5115	7192	9269	1344	3417	5490	7561	9630	1698	3765	5831	7895	9958
35	0990	3070	5149	7227	9303	1378	3452	5524	7595	9665	1733	3800	5865	7929	9992
36	1025	3105	5184	7262	9338	1413	3486	5559	7630	9699	1767	3834	5899	7964	0026
37	1059	3140	5219	7296	9373	1447	3521	5593	7664	9734	1802	3868	5934	7998	0061
38	1094	3174	5253	7331	9407	1482	3556	5628	7699	9768	1836	3903	5968	8032	0095
39	1129	3209	5288	7366	9442	1517	3590	5662	7733	9802	1871	3937	6003	8067	0129
40	1163	3244	5323	7400	9476	1551	3625	5697	7768	9837	1905	3972	6037	8101	0164
41	1198	3278	5357	7435	9511	1586	3659	5731	7802	9871	1939	4006	6072	8135	0198
42	1233	3313	5392	7469	9546	1620	3694	5766	7837	9906	1974	4041	6106	8170	0232
43	1267	3348	5427	7504	9580	1655	3728	5800	7871	9940	2008	4075	6140	8204	0267
44	1302	3382	5461	7539	9615	1689	3763	5835	7906	9975	2043	4109	6175	8239	0301
45	1337	3417	5496	7573	9649	1724	3797	5869	7940	0009	2077	4144	6209	8273	0336
46	1372	3452	5530	7608	9684	1759	3832	5904	7975	0044	2112	4178	6244	8307	0370
47	1406	3486	5565	7642	9719	1793	3866	5938	8009	0078	2146	4213	6278	8342	0404
48	1441	3521	5600	7677	9753	1828	3901	5973	8044	0113	2181	4247	6312	8376	0439
49	1476	3556	5634	7712	9788	1862	3936	6008	8078	0147	2215	4282	6347	8411	0473
50	1510	3590	5669	7746	9822	1897	3970	6042	8113	0182	2250	4316	6381	8445	0507
51	1545	3625	5704	7781	9857	1931	4005	6077	8147	0216	2284	4350	6416	8479	0542
52	1580	3660	5738	7816	9891	1966	4039	6111	8182	0251	2318	4385	6450	8514	0576
53	1614	3694	5773	7850	9926	2001	4074	6146	8216	0285	2353	4419	6484	8548	0610
54	1649	3729	5808	7885	9961	2035	4108	6180	8251	0320	2387	4454	6519	8583	0645
55	1684	3764	5842	7919	9995	2070	4143	6215	8285	0354	2422	4488	6553	8617	0679
56	1718	3798	5877	7954	0030	2104	4177	6249	8320	0389	2456	4523	6588	8651	0714
57	1753	3833	5911	7989	0064	2139	4212	6284	8354	0423	2491	4557	6622	8686	0748
58	1788	3868	5946	8023	0099	2173	4246	6318	8389	0458	2525	4591	6656	8720	0782
59	1822	3902	5981	8058	0134	2208	4281	6353	8423	0492	2560	4626	6691	8754	0817
60	1857	3937	6015	8092	0168	2243	4316	6387	8458	0526	2594	4660	6725	8789	0851
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Sine Deg. 58

31 Deg. Co-Sine

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
9. 931	9. 931	9. 931	9. 931	9. 931	9. 931	9. 931	9. 931	9. 931	9. 931	9. 931	9. 931	9. 930	9. 930	9. 930	″
9213	8447	7679	6911	6143	5374	4605	3835	3065	2294	1522	0750	9978	9205	8432	60
9201	8434	7666	6899	6130	5361	4592	3822	3052	2281	1509	0738	9965	9192	8419	59
9188	8421	7654	6886	6117	5349	4579	3809	3039	2268	1497	0725	9952	9179	8406	58
9175	8408	7641	6873	6105	5336	4566	3796	3026	2255	1484	0712	9939	9167	8393	57
9162	8395	7628	6860	6092	5323	4554	3784	3013	2242	1471	0699	9927	9154	8380	56
9150	8383	7615	6847	6079	5310	4541	3771	3000	2229	1458	0686	9914	9141	8367	55
9137	8370	7603	6835	6066	5297	4528	3758	2988	2217	1445	0673	9901	9128	8354	54
9124	8357	7590	6822	6053	5284	4515	3745	2975	2204	1432	0660	9888	9115	8342	53
9111	8344	7577	6809	6041	5272	4502	3732	2962	2191	1419	0647	9875	9102	8329	52
9098	8332	7564	6796	6028	5259	4489	3719	2949	2178	1407	0635	9862	9089	8316	51
9086	8319	7551	6783	6015	5246	4477	3707	2936	2165	1394	0622	9849	9076	8303	50
9073	8306	7539	6771	6002	5233	4464	3694	2923	2152	1381	0609	9836	9063	8290	49
9060	8293	7526	6758	5989	5220	4451	3681	2910	2139	1368	0596	9824	9051	8277	48
9047	8280	7513	6745	5977	5208	4438	3668	2898	2127	1355	0583	9811	9038	8264	47
9035	8268	7500	6732	5964	5195	4425	3655	2885	2114	1342	0570	9798	9025	8251	46
9022	8255	7487	6719	5951	5182	4412	3642	2872	2101	1329	0557	9785	9012	8238	45
9009	8242	7475	6707	5938	5169	4400	3630	2859	2088	1317	0545	9772	8999	8225	44
8996	8229	7462	6694	5925	5156	4387	3617	2846	2075	1304	0532	9759	8986	8213	43
8983	8216	7449	6681	5912	5143	4374	3604	2833	2062	1291	0519	9746	8973	8200	42
8971	8204	7436	6668	5900	5131	4361	3591	2821	2050	1278	0506	9733	8960	8187	41
8958	8191	7423	6655	5887	5118	4348	3578	2808	2037	1265	0493	9720	8947	8174	40
8945	8178	7411	6643	5874	5105	4335	3565	2795	2024	1252	0480	9708	8935	8161	39
8932	8165	7398	6630	5861	5092	4323	3553	2782	2011	1239	0467	9695	8922	8148	38
8920	8153	7385	6617	5848	5079	4310	3540	2769	1998	1227	0454	9682	8909	8135	37
8907	8140	7372	6604	5836	5067	4297	3527	2756	1985	1214	0442	9669	8896	8122	36
8894	8127	7359	6591	5823	5054	4284	3514	2743	1972	1201	0429	9656	8883	8109	35
8881	8114	7347	6579	5810	5041	4271	3501	2731	1960	1188	0416	9643	8870	8096	34
8868	8101	7334	6566	5797	5028	4258	3488	2718	1947	1175	0403	9630	8857	8084	33
8856	8089	7321	6553	5784	5015	4246	3476	2705	1934	1162	0390	9617	8844	8071	32
8843	8076	7308	6540	5772	5002	4233	3463	2692	1921	1149	0377	9605	8831	8058	31
8830	8063	7295	6527	5759	4990	4220	3450	2679	1908	1136	0364	9592	8819	8045	30
8817	8050	7283	6515	5746	4977	4207	3437	2666	1895	1124	0351	9579	8806	8032	29
8805	8037	7270	6502	5733	4964	4194	3424	2654	1882	1111	0339	9566	8793	8019	28
8792	8025	7257	6489	5720	4951	4181	3411	2641	1870	1098	0326	9553	8780	8006	27
8779	8012	7244	6476	5707	4938	4169	3398	2628	1857	1085	0313	9540	8767	7993	26
8766	7999	7231	6463	5695	4925	4156	3386	2615	1844	1072	0300	9527	8754	7980	25
8753	7986	7219	6450	5682	4913	4143	3373	2602	1831	1059	0287	9514	8741	7967	24
8741	7973	7206	6438	5669	4900	4130	3360	2589	1818	1046	0274	9502	8728	7955	23
8728	7961	7193	6425	5656	4887	4117	3347	2576	1805	1034	0261	9489	8715	7942	22
8715	7948	7180	6412	5643	4874	4104	3334	2564	1792	1021	0248	9476	8703	7929	21
8702	7935	7167	6399	5631	4861	4092	3321	2551	1780	1008	0236	9463	8690	7916	20
8690	7922	7155	6386	5618	4849	4079	3309	2538	1767	0995	0223	9450	8677	7903	19
8677	7910	7142	6374	5605	4836	4066	3296	2525	1754	0982	0210	9437	8664	7890	18
8664	7897	7129	6361	5592	4823	4053	3283	2512	1741	0969	0197	9424	8651	7877	17
8651	7884	7116	6348	5579	4810	4040	3270	2499	1728	0956	0184	9411	8638	7864	16
8638	7871	7103	6335	5566	4797	4027	3257	2486	1715	0943	0171	9398	8625	7851	15
8626	7858	7091	6322	5554	4784	4015	3244	2474	1702	0931	0158	9386	8612	7838	14
8613	7846	7078	6310	5541	4772	4002	3232	2461	1690	0918	0145	9373	8599	7826	13
8600	7833	7065	6297	5528	4759	3989	3219	2448	1677	0905	0133	9360	8586	7813	12
8587	7820	7052	6284	5515	4746	3976	3206	2435	1664	0892	0120	9347	8574	7800	11
8574	7807	7039	6271	5502	4733	3963	3193	2422	1651	0879	0107	9334	8561	7787	10
8562	7794	7027	6258	5490	4720	3950	3180	2409	1638	0866	0094	9321	8548	7774	9
8549	7782	7014	6246	5477	4707	3938	3167	2397	1625	0853	0081	9308	8535	7761	8
8536	7769	7001	6233	5464	4695	3925	3155	2384	1612	0841	0068	9295	8522	7748	7
8523	7756	6988	6220	5451	4682	3912	3142	2371	1600	0828	0055	9282	8509	7735	6
8511	7743	6975	6207	5438	4669	3899	3129	2358	1587	0815	0042	9270	8496	7722	5
8498	7730	6963	6194	5425	4656	3886	3116	2345	1574	0802	0030	9257	8483	7709	4
8485	7718	6950	6181	5413	4643	3873	3103	2332	1561	0789	0017	9244	8470	7697	3
8472	7705	6937	6169	5400	4630	3861	3090	2319	1548	0776	0004	9231	8458	7684	2
8459	7692	6924	6156	5387	4618	3848	3077	2307	1535	0763	9991	9218	8445	7671	1
8447	7679	6911	6143	5374	4605	3835	3065	2294	1522	0750	9978	9205	8432	7658	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Sine Deg. 58

31 Deg. Tangent

″	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9.783	9.783	9.783	9.783	9.784	9.784	9.784	9.785	9.785	9.785	9.785	9.786	9.786	9.786	9.787
0	0562	3410	6258	9104	1949	4794	7638	0481	3323	6164	9004	1844	4682	7520	0357
1	0610	3458	6305	9151	1997	4841	7685	0528	3370	6211	9051	1891	4730	7567	0404
2	0657	3505	6352	9199	2044	4889	7732	0575	3417	6258	9099	1938	4777	7615	0452
3	0705	3553	6400	9246	2092	4936	7780	0623	3465	6306	9146	1986	4824	7662	0499
4	0752	3600	6447	9294	2139	4984	7827	0670	3512	6353	9193	2033	4871	7709	0546
5	0800	3648	6495	9341	2186	5031	7875	0717	3559	6401	9241	2080	4919	7757	0593
6	0847	3695	6542	9388	2234	5078	7922	0765	3607	6448	9288	2128	4966	7804	0641
7	0895	3743	6590	9436	2281	5126	7969	0812	3654	6495	9335	2175	5013	7851	0688
8	0942	3790	6637	9483	2329	5173	8017	0860	3701	6543	9383	2222	5061	7898	0735
9	0990	3838	6685	9531	2376	5221	8064	0907	3749	6590	9430	2269	5108	7946	0783
10	1037	3885	6732	9578	2423	5268	8112	0954	3796	6637	9477	2317	5155	7993	0830
11	1085	3932	6779	9626	2471	5315	8159	1002	3844	6685	9525	2364	5203	8040	0877
12	1132	3980	6827	9673	2518	5363	8206	1049	3891	6732	9572	2411	5250	8088	0924
13	1179	4027	6874	9720	2566	5410	8254	1096	3938	6779	9619	2459	5297	8135	0972
14	1227	4075	6922	9768	2613	5458	8301	1144	3986	6827	9667	2506	5345	8182	1019
15	1274	4122	6969	9815	2661	5505	8348	1191	4033	6874	9714	2553	5392	8229	1066
16	1322	4170	7017	9863	2708	5552	8396	1239	4080	6921	9761	2601	5439	8277	1113
17	1369	4217	7064	9910	2755	5600	8443	1286	4128	6969	9809	2648	5486	8324	1161
18	1417	4265	7112	9958	2803	5647	8491	1333	4175	7016	9856	2695	5534	8371	1208
19	1464	4312	7159	0005	2850	5695	8538	1381	4222	7063	9903	2743	5581	8419	1255
20	1512	4360	7206	0052	2898	5742	8585	1428	4270	7111	9951	2790	5628	8466	1303
21	1559	4407	7254	0100	2945	5789	8633	1475	4317	7158	9998	2837	5676	8513	1350
22	1607	4454	7301	0147	2992	5837	8680	1523	4364	7205	0045	2885	5723	8560	1397
23	1654	4502	7349	0195	3040	5884	8728	1570	4412	7253	0093	2932	5770	8608	1444
24	1702	4549	7396	0242	3087	5932	8775	1617	4459	7300	0140	2979	5817	8655	1492
25	1749	4597	7444	0290	3135	5979	8822	1665	4507	7347	0187	3027	5865	8702	1539
26	1797	4644	7491	0337	3182	6026	8870	1712	4554	7395	0235	3074	5912	8750	1586
27	1844	4692	7538	0384	3230	6074	8917	1760	4601	7442	0282	3121	5959	8797	1633
28	1892	4739	7586	0432	3277	6121	8964	1807	4649	7489	0329	3168	6007	8844	1681
29	1939	4787	7633	0479	3324	6169	9012	1854	4696	7537	0377	3216	6054	8891	1728
30	1986	4834	7681	0527	3372	6216	9059	1902	4743	7584	0424	3263	6101	8939	1775
31	2034	4882	7728	0574	3419	6263	9107	1949	4791	7631	0471	3310	6149	8986	1822
32	2081	4929	7776	0622	3467	6311	9154	1996	4838	7679	0519	3358	6196	9033	1870
33	2129	4976	7823	0669	3514	6358	9201	2044	4885	7726	0566	3405	6243	9081	1917
34	2176	5024	7871	0716	3561	6405	9249	2091	4933	7773	0613	3452	6290	9128	1964
35	2224	5071	7918	0764	3609	6453	9296	2139	4980	7821	0661	3500	6338	9175	2012
36	2271	5119	7965	0811	3656	6500	9344	2186	5027	7868	0708	3547	6385	9222	2059
37	2319	5166	8013	0859	3704	6548	9391	2233	5075	7915	0755	3594	6432	9270	2106
38	2366	5214	8060	0906	3751	6595	9438	2281	5122	7963	0803	3642	6480	9317	2153
39	2414	5261	8108	0954	3798	6642	9486	2328	5169	8010	0850	3689	6527	9364	2201
40	2461	5309	8155	1001	3846	6690	9533	2375	5217	8057	0897	3736	6574	9411	2248
41	2509	5356	8203	1048	3893	6737	9580	2423	5264	8105	0945	3783	6622	9459	2295
42	2556	5403	8250	1096	3941	6785	9628	2470	5312	8152	0992	3831	6669	9506	2342
43	2604	5451	8297	1143	3988	6832	9675	2517	5359	8199	1039	3878	6716	9553	2390
44	2651	5498	8345	1191	4035	6879	9723	2565	5406	8247	1087	3925	6763	9601	2437
45	2698	5546	8392	1238	4083	6927	9770	2612	5454	8294	1134	3973	6811	9648	2484
46	2746	5593	8440	1285	4130	6974	9817	2660	5501	8341	1181	4020	6858	9695	2531
47	2793	5641	8487	1333	4178	7022	9865	2707	5548	8389	1228	4067	6905	9742	2579
48	2841	5688	8535	1380	4225	7069	9912	2754	5596	8436	1276	4115	6953	9790	2626
49	2888	5736	8582	1428	4272	7116	9959	2802	5643	8483	1323	4162	7000	9837	2673
50	2936	5783	8630	1475	4320	7164	0007	2849	5690	8531	1370	4209	7047	9884	2721
51	2983	5831	8677	1523	4367	7211	0054	2896	5738	8578	1418	4257	7094	9932	2768
52	3031	5878	8724	1570	4415	7259	0102	2944	5785	8625	1465	4304	7142	9979	2815
53	3078	5925	8772	1617	4462	7306	0149	2991	5832	8673	1512	4351	7189	0026	2862
54	3126	5973	8819	1665	4510	7353	0196	3038	5880	8720	1560	4398	7236	0073	2910
55	3173	6020	8867	1712	4557	7401	0244	3086	5927	8767	1607	4446	7284	0121	2957
56	3221	6068	8914	1760	4604	7448	0291	3133	5974	8815	1654	4493	7331	0168	3004
57	3268	6115	8962	1807	4652	7496	0338	3181	6022	8862	1702	4540	7378	0215	3051
58	3315	6163	9009	1854	4699	7543	0386	3228	6069	8909	1749	4588	7425	0262	3099
59	3363	6210	9056	1902	4747	7590	0433	3275	6116	8957	1796	4635	7473	0310	3146
60	3410	6258	9104	1949	4794	7638	0481	3323	6164	9004	1844	4682	7520	0357	3193
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Tangent Deg. 58

31 Deg. Co-Tangent

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	″
10.216	10.216	10.216	10.216	10.215	10.215	10.215	10.214	10.214	10.214	10.214	10.213	10.213	10.213	10.212	
9438	6590	3742	0896	8051	5206	2362	9519	6677	3836	0996	8156	5318	2480	9643	60
9390	6542	3695	0849	8003	5159	2315	9472	6630	3789	0949	8109	5270	2433	9596	59
9343	6495	3648	0801	7956	5111	2268	9425	6583	3742	0901	8062	5223	2385	9548	58
9295	6447	3600	0754	7908	5064	2220	9377	6535	3694	0854	8014	5176	2338	9501	57
9248	6400	3553	0706	7861	5016	2173	9330	6488	3647	0807	7967	5129	2291	9454	56
9200	6352	3505	0659	7814	4969	2125	9283	6441	3599	0759	7920	5081	2243	9407	55
9153	6305	3458	0612	7766	4922	2078	9235	6393	3552	0712	7872	5034	2196	9359	54
9105	6257	3410	0564	7719	4874	2031	9188	6346	3505	0665	7825	4987	2149	9312	53
9058	6210	3363	0517	7671	4827	1983	9140	6299	3457	0617	7778	4939	2102	9265	52
9010	6162	3315	0469	7624	4779	1936	9093	6251	3410	0570	7731	4892	2054	9217	51
8963	6115	3268	0422	7577	4732	1888	9046	6204	3363	0523	7683	4845	2007	9170	50
8915	6068	3221	0374	7529	4685	1841	8998	6156	3315	0475	7636	4797	1960	9123	49
8868	6020	3173	0327	7482	4637	1794	8951	6109	3268	0428	7589	4750	1912	9076	48
8821	5973	3126	0280	7434	4590	1746	8904	6062	3221	0381	7541	4703	1865	9028	47
8773	5925	3078	0232	7387	4542	1699	8856	6014	3173	0333	7494	4655	1818	8981	46
8726	5878	3031	0185	7339	4495	1652	8809	5967	3126	0286	7447	4608	1771	8934	45
8678	5830	2983	0137	7292	4448	1604	8761	5920	3079	0239	7399	4561	1723	8887	44
8631	5783	2936	0090	7245	4400	1557	8714	5872	3031	0191	7352	4514	1676	8839	43
8583	5735	2888	0042	7197	4353	1509	8667	5825	2984	0144	7305	4466	1629	8792	42
8536	5688	2841	9995	7150	4305	1462	8619	5778	2937	0097	7257	4419	1581	8745	41
8488	5640	2794	9948	7102	4258	1415	8572	5730	2889	0049	7210	4372	1534	8697	40
8441	5593	2746	9900	7055	4211	1367	8525	5683	2842	0002	7163	4324	1487	8650	39
8393	5546	2699	9853	7008	4163	1320	8477	5636	2795	9955	7115	4277	1440	8603	38
8346	5498	2651	9805	6960	4116	1272	8430	5588	2747	9907	7068	4230	1392	8556	37
8298	5451	2604	9758	6913	4068	1225	8383	5541	2700	9860	7021	4183	1345	8508	36
8251	5403	2556	9710	6865	4021	1178	8335	5493	2653	9813	6973	4135	1298	8461	35
8203	5356	2509	9663	6818	3974	1130	8288	5446	2605	9765	6926	4088	1250	8414	34
8156	5308	2462	9616	6770	3926	1083	8240	5399	2558	9718	6879	4041	1203	8367	33
8108	5261	2414	9568	6723	3879	1036	8193	5351	2511	9671	6832	3993	1156	8319	32
8061	5213	2367	9521	6676	3831	0988	8146	5304	2463	9623	6784	3946	1109	8272	31
8014	5166	2319	9473	6628	3784	0941	8098	5257	2416	9576	6737	3899	1061	8225	30
7966	5118	2272	9426	6581	3737	0893	8051	5209	2369	9529	6690	3851	1014	8178	29
7919	5071	2224	9378	6533	3689	0846	8004	5162	2321	9481	6642	3804	0967	8130	28
7871	5024	2177	9331	6486	3642	0799	7956	5115	2274	9434	6595	3757	0919	8083	27
7824	4976	2129	9284	6439	3595	0751	7909	5067	2227	9387	6548	3710	0872	8036	26
7776	4929	2082	9236	6391	3547	0704	7861	5020	2179	9339	6500	3662	0825	7988	25
7729	4881	2035	9189	6344	3500	0656	7814	4973	2132	9292	6453	3615	0778	7941	24
7681	4834	1987	9141	6296	3452	0609	7767	4925	2085	9245	6406	3568	0730	7894	23
7634	4786	1940	9094	6249	3405	0562	7719	4878	2037	9197	6358	3520	0683	7847	22
7586	4739	1892	9046	6202	3358	0514	7672	4831	1990	9150	6311	3473	0636	7799	21
7539	4691	1845	8999	6154	3310	0467	7625	4783	1943	9103	6264	3426	0589	7752	20
7491	4644	1797	8952	6107	3263	0420	7577	4736	1895	9055	6217	3378	0541	7705	19
7444	4597	1750	8904	6059	3215	0372	7530	4688	1848	9008	6169	3331	0494	7658	18
7396	4549	1703	8857	6012	3168	0325	7483	4641	1801	8961	6122	3284	0447	7610	17
7349	4502	1655	8809	5965	3121	0277	7435	4594	1753	8913	6075	3237	0399	7563	16
7302	4454	1608	8762	5917	3073	0230	7388	4546	1706	8866	6027	3189	0352	7516	15
7254	4407	1560	8715	5870	3026	0183	7340	4499	1659	8819	5980	3142	0305	7469	14
7207	4359	1513	8667	5822	2978	0135	7293	4452	1611	8772	5933	3095	0258	7421	13
7159	4312	1465	8620	5775	2931	0088	7246	4404	1564	8724	5885	3047	0210	7374	12
7112	4264	1418	8572	5728	2884	0041	7198	4357	1517	8677	5838	3000	0163	7327	11
7064	4217	1370	8525	5680	2836	9993	7151	4310	1469	8630	5791	2953	0116	7279	10
7017	4169	1323	8477	5633	2789	9946	7104	4262	1422	8582	5743	2906	0068	7232	9
6969	4122	1276	8430	5585	2741	9898	7056	4215	1375	8535	5696	2858	0021	7185	8
6922	4075	1228	8383	5538	2694	9851	7009	4168	1327	8488	5649	2811	9974	7138	7
6874	4027	1181	8335	5490	2647	9804	6962	4120	1280	8440	5602	2764	9927	7090	6
6827	3980	1133	8288	5443	2599	9756	6914	4073	1233	8393	5554	2716	9879	7043	5
6779	3932	1086	8240	5396	2552	9709	6867	4026	1185	8346	5507	2669	9832	6996	4
6732	3885	1038	8193	5348	2504	9662	6819	3978	1138	8298	5460	2622	9785	6949	3
6685	3837	0991	8146	5301	2457	9614	6772	3931	1091	8251	5412	2575	9738	6901	2
6637	3790	0944	8098	5253	2410	9567	6725	3884	1043	8204	5365	2527	9690	6854	1
6590	3742	0896	8051	5206	2362	9519	6677	3836	0996	8156	5318	2480	9643	6807	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Tangent Deg. 58

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 718	9. 718	9. 718	9. 718	9. 718	9. 719	9. 719	9. 719	9. 719	9. 719	9. 720	9. 720	9. 720	9. 720	9. 720
0	0851	2912	4971	7030	9086	1142	3196	5249	7300	9350	1399	3447	5493	7538	9581
1	0885	2946	5006	7064	9121	1176	3230	5283	7335	9385	1433	3481	5527	7572	9615
2	0920	2981	5040	7098	9155	1210	3265	5317	7369	9419	1468	3515	5561	7606	9649
3	0954	3015	5074	7132	9189	1245	3299	5351	7403	9453	1502	3549	5595	7640	9683
4	0988	3049	5109	7167	9223	1279	3333	5386	7437	9487	1536	3583	5629	7674	9717
5	1023	3084	5143	7201	9258	1313	3367	5420	7471	9521	1570	3617	5663	7708	9751
6	1057	3118	5177	7235	9292	1347	3401	5454	7505	9555	1604	3651	5697	7742	9785
7	1092	3152	5212	7270	9326	1382	3436	5488	7540	9590	1638	3686	5732	7776	9820
8	1126	3187	5246	7304	9361	1416	3470	5522	7574	9624	1672	3720	5766	7810	9854
9	1160	3221	5280	7338	9395	1450	3504	5557	7608	9658	1707	3754	5800	7844	9888
10	1195	3255	5315	7372	9429	1484	3538	5591	7642	9692	1741	3788	5834	7878	9922
11	1229	3290	5349	7407	9463	1519	3573	5625	7676	9726	1775	3822	5868	7912	9956
12	1263	3324	5383	7441	9498	1553	3607	5659	7710	9760	1809	3856	5902	7947	9990
13	1298	3358	5417	7475	9532	1587	3641	5693	7745	9795	1843	3890	5936	7981	0024
14	1332	3393	5452	7510	9566	1621	3675	5728	7779	9829	1877	3924	5970	8015	0058
15	1366	3427	5486	7544	9600	1656	3709	5762	7813	9863	1911	3958	6004	8049	0092
16	1401	3461	5520	7578	9635	1690	3744	5796	7847	9897	1945	3993	6038	8083	0126
17	1435	3496	5555	7612	9669	1724	3778	5830	7881	9931	1980	4027	6072	8117	0160
18	1469	3530	5589	7647	9703	1758	3812	5864	7916	9965	2014	4061	6106	8151	0194
19	1504	3564	5623	7681	9737	1793	3846	5899	7950	9999	2048	4095	6141	8185	0228
20	1538	3599	5658	7715	9772	1827	3880	5933	7984	0034	2082	4129	6175	8219	0262
21	1572	3633	5692	7750	9806	1861	3915	5967	8018	0068	2116	4163	6209	8253	0296
22	1607	3667	5726	7784	9840	1895	3949	6001	8052	0102	2150	4197	6243	8287	0330
23	1641	3702	5761	7818	9875	1929	3983	6035	8086	0136	2184	4231	6277	8321	0364
24	1676	3736	5795	7852	9909	1964	4017	6070	8121	0170	2218	4265	6311	8355	0398
25	1710	3770	5829	7887	9943	1998	4052	6104	8155	0204	2253	4299	6345	8389	0432
26	1744	3805	5863	7921	9977	2032	4086	6138	8189	0238	2287	4334	6379	8423	0466
27	1779	3839	5898	7955	0012	2066	4120	6172	8223	0273	2321	4368	6413	8457	0500
28	1813	3873	5932	7990	0046	2101	4154	6206	8257	0307	2355	4402	6447	8492	0534
29	1847	3907	5966	8024	0080	2135	4188	6241	8291	0341	2389	4436	6481	8526	0568
30	1882	3942	6001	8058	0114	2169	4223	6275	8326	0375	2423	4470	6515	8560	0602
31	1916	3976	6035	8092	0149	2203	4257	6309	8360	0409	2457	4504	6550	8594	0636
32	1950	4010	6069	8127	0183	2238	4291	6343	8394	0443	2491	4538	6584	8628	0671
33	1985	4045	6104	8161	0217	2272	4325	6377	8428	0477	2526	4572	6618	8662	0705
34	2019	4079	6138	8195	0251	2306	4359	6412	8462	0512	2560	4606	6652	8696	0739
35	2053	4113	6172	8230	0286	2340	4394	6446	8496	0546	2594	4641	6686	8730	0773
36	2088	4148	6206	8264	0320	2375	4428	6480	8531	0580	2628	4675	6720	8764	0807
37	2122	4182	6241	8298	0354	2409	4462	6514	8565	0614	2662	4709	6754	8798	0841
38	2156	4216	6275	8332	0388	2443	4496	6548	8599	0648	2696	4743	6788	8832	0875
39	2191	4251	6309	8367	0423	2477	4531	6582	8633	0682	2730	4777	6822	8866	0909
40	2225	4285	6344	8401	0457	2511	4565	6617	8667	0717	2764	4811	6856	8900	0943
41	2259	4319	6378	8435	0491	2546	4599	6651	8701	0751	2799	4845	6890	8934	0977
42	2294	4354	6412	8470	0525	2580	4633	6685	8736	0785	2833	4879	6924	8968	1011
43	2328	4388	6447	8504	0560	2614	4667	6719	8770	0819	2867	4913	6958	9002	1045
44	2362	4422	6481	8538	0594	2648	4702	6753	8804	0853	2901	4947	6993	9036	1079
45	2397	4457	6515	8572	0628	2683	4736	6788	8838	0887	2935	4982	7027	9070	1113
46	2431	4491	6549	8607	0662	2717	4770	6822	8872	0921	2969	5016	7061	9105	1147
47	2465	4525	6584	8641	0697	2751	4804	6856	8906	0956	3003	5050	7095	9139	1181
48	2500	4560	6618	8675	0731	2785	4838	6890	8941	0990	3037	5084	7129	9173	1215
49	2534	4594	6652	8709	0765	2820	4873	6924	8975	1024	3071	5118	7163	9207	1249
50	2568	4628	6687	8744	0799	2854	4907	6959	9009	1058	3106	5152	7197	9241	1283
51	2603	4663	6721	8778	0834	2888	4941	6993	9043	1092	3140	5186	7231	9275	1317
52	2637	4697	6755	8812	0868	2922	4975	7027	9077	1126	3174	5220	7265	9309	1351
53	2672	4731	6790	8847	0902	2956	5009	7061	9111	1160	3208	5254	7299	9343	1385
54	2706	4766	6824	8881	0936	2991	5044	7095	9146	1194	3242	5288	7333	9377	1419
55	2740	4800	6858	8915	0971	3025	5078	7129	9180	1229	3276	5322	7367	9411	1453
56	2775	4834	6892	8949	1005	3059	5112	7164	9214	1263	3310	5357	7401	9445	1487
57	2809	4868	6927	8984	1039	3093	5146	7198	9248	1297	3344	5391	7436	9479	1521
58	2843	4903	6961	9018	1073	3128	5180	7232	9282	1331	3379	5425	7470	9513	1555
59	2878	4937	6995	9052	1108	3162	5215	7266	9316	1365	3413	5459	7504	9547	1589
60	2912	4971	7030	9086	1142	3196	5249	7300	9350	1399	3447	5493	7538	9581	1623
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
	9. 930	9. 930	9. 930	9. 930	9. 930	9. 930	9. 930	9. 930	9. 930	9. 930	9. 929	9. 929	9. 929	9. 929	9. 929	″
0	7658	6883	6109	5333	4557	3781	3004	2226	1448	0670	9891	9112	8332	7551	6770	60
1	7645	6871	6096	5320	4544	3768	2991	2213	1435	0657	9878	9099	8319	7538	6757	59
2	7632	6858	6083	5307	4531	3755	2978	2200	1422	0644	9865	9086	8306	7525	6744	58
3	7619	6845	6070	5294	4518	3742	2965	2187	1409	0631	9852	9073	8293	7512	6731	57
4	7606	6832	6057	5281	4505	3729	2952	2175	1397	0618	9839	9060	8280	7499	6718	56
5	7593	6819	6044	5268	4493	3716	2939	2162	1384	0605	9826	9047	8266	7486	6705	55
6	7580	6806	6031	5256	4480	3703	2926	2149	1371	0592	9813	9034	8253	7473	6692	54
7	7568	6793	6018	5243	4467	3690	2913	2136	1358	0579	9800	9021	8240	7460	6679	53
8	7555	6780	6005	5230	4454	3677	2900	2123	1345	0566	9787	9008	8227	7447	6666	52
9	7542	6767	5992	5217	4441	3664	2887	2110	1332	0553	9774	8995	8214	7434	6653	51
10	7529	6754	5979	5204	4428	3651	2874	2097	1319	0540	9761	8982	8201	7421	6640	50
11	7516	6741	5966	5191	4415	3638	2861	2084	1306	0527	9748	8969	8188	7408	6627	49
12	7503	6729	5953	5178	4402	3625	2848	2071	1293	0514	9735	8956	8175	7395	6614	48
13	7490	6716	5941	5165	4389	3612	2835	2058	1280	0501	9722	8943	8162	7382	6601	47
14	7477	6703	5928	5152	4376	3600	2822	2045	1267	0488	9709	8930	8149	7369	6588	46
15	7464	6690	5915	5139	4363	3587	2809	2032	1254	0475	9696	8917	8136	7356	6575	45
16	7451	6677	5902	5126	4350	3574	2797	2019	1241	0462	9683	8904	8123	7343	6562	44
17	7439	6664	5889	5113	4337	3561	2784	2006	1228	0449	9670	8891	8110	7330	6549	43
18	7426	6651	5876	5100	4324	3548	2771	1993	1215	0436	9657	8878	8097	7317	6536	42
19	7413	6638	5863	5087	4311	3535	2758	1980	1202	0423	9644	8865	8084	7304	6523	41
20	7400	6625	5850	5075	4298	3522	2745	1967	1189	0410	9631	8852	8071	7291	6510	40
21	7387	6612	5837	5062	4285	3509	2732	1954	1176	0397	9618	8839	8058	7278	6497	39
22	7374	6599	5824	5049	4273	3496	2719	1941	1163	0384	9605	8826	8045	7265	6484	38
23	7361	6586	5811	5036	4260	3483	2706	1928	1150	0371	9592	8813	8032	7252	6471	37
24	7348	6574	5798	5023	4247	3470	2693	1915	1137	0358	9579	8800	8019	7239	6457	36
25	7335	6561	5786	5010	4234	3457	2680	1902	1124	0345	9566	8787	8006	7226	6444	35
26	7322	6548	5773	4997	4221	3444	2667	1889	1111	0332	9553	8774	7993	7213	6431	34
27	7309	6535	5760	4984	4208	3431	2654	1876	1098	0319	9540	8761	7980	7200	6418	33
28	7297	6522	5747	4971	4195	3418	2641	1863	1085	0306	9527	8748	7967	7187	6405	32
29	7284	6509	5734	4958	4182	3405	2628	1850	1072	0294	9514	8735	7954	7174	6392	31
30	7271	6496	5721	4945	4169	3392	2615	1837	1059	0281	9501	8722	7941	7161	6379	30
31	7258	6483	5708	4932	4156	3379	2602	1824	1046	0268	9488	8709	7928	7148	6366	29
32	7245	6470	5695	4919	4143	3366	2589	1812	1033	0255	9475	8696	7915	7135	6353	28
33	7232	6457	5682	4906	4130	3353	2576	1799	1020	0242	9462	8683	7902	7122	6340	27
34	7219	6444	5669	4893	4117	3341	2563	1786	1007	0229	9449	8670	7889	7109	6327	26
35	7206	6431	5656	4881	4104	3328	2550	1773	0994	0216	9436	8657	7876	7096	6314	25
36	7193	6419	5643	4868	4091	3315	2537	1760	0981	0203	9423	8644	7863	7082	6301	24
37	7180	6406	5630	4855	4078	3302	2524	1747	0968	0190	9410	8631	7850	7069	6288	23
38	7167	6393	5617	4842	4066	3289	2511	1734	0955	0177	9397	8618	7837	7056	6275	22
39	7155	6380	5605	4829	4053	3276	2499	1721	0942	0164	9384	8605	7824	7043	6262	21
40	7142	6367	5592	4816	4040	3263	2486	1708	0929	0151	9371	8592	7811	7030	6249	20
41	7129	6354	5579	4803	4027	3250	2473	1695	0917	0138	9358	8579	7798	7017	6236	19
42	7116	6341	5566	4790	4014	3237	2460	1682	0904	0125	9345	8566	7785	7004	6223	18
43	7103	6328	5553	4777	4001	3224	2447	1669	0891	0112	9332	8553	7772	6991	6210	17
44	7090	6315	5540	4764	3988	3211	2434	1656	0878	0099	9319	8540	7759	6978	6197	16
45	7077	6302	5527	4751	3975	3198	2421	1643	0865	0086	9306	8527	7746	6965	6184	15
46	7064	6289	5514	4738	3962	3185	2408	1630	0852	0073	9293	8514	7733	6952	6171	14
47	7051	6276	5501	4725	3949	3172	2395	1617	0839	0060	9280	8501	7720	6939	6158	13
48	7038	6264	5488	4712	3936	3159	2382	1604	0826	0047	9267	8488	7707	6926	6145	12
49	7025	6251	5475	4699	3923	3146	2369	1591	0813	0034	9254	8475	7694	6913	6132	11
50	7013	6238	5462	4687	3910	3133	2356	1578	0800	0021	9241	8462	7681	6900	6119	10
51	7000	6225	5449	4674	3897	3120	2343	1565	0787	0008	9228	8449	7668	6887	6106	9
52	6987	6212	5437	4661	3884	3107	2330	1552	0774	9995	9215	8436	7655	6874	6093	8
53	6974	6199	5424	4648	3871	3094	2317	1539	0761	9982	9202	8423	7642	6861	6080	7
54	6961	6186	5411	4635	3858	3082	2304	1526	0748	9969	9189	8410	7629	6848	6067	6
55	6948	6173	5398	4622	3845	3069	2291	1513	0735	9956	9176	8397	7616	6835	6054	5
56	6935	6160	5385	4609	3833	3056	2278	1500	0722	9943	9163	8384	7603	6822	6041	4
57	6922	6147	5372	4596	3820	3043	2265	1487	0709	9930	9150	8371	7590	6809	6028	3
58	6909	6134	5359	4583	3807	3030	2252	1474	0696	9917	9137	8358	7577	6796	6015	2
59	6896	6121	5346	4570	3794	3017	2239	1461	0683	9904	9124	8345	7564	6783	6002	1
60	6883	6109	5333	4557	3781	3004	2226	1448	0670	9891	9112	8332	7551	6770	5989	0
	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

31 Deg. Tangent

″	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.
	787	787	787	788	788	788	789	789	789	789	790	790	790	790	791
0	3193	6028	8863	1696	4529	7361	0192	3023	5852	8681	1508	4335	7161	9987	2811
1	3240	6076	8910	1744	4576	7408	0239	3070	5899	8728	1555	4382	7208	0034	2858
2	3288	6123	8957	1791	4624	7456	0287	3117	5946	8775	1603	4429	7256	0081	2905
3	3335	6170	9005	1838	4671	7503	0334	3164	5993	8822	1650	4477	7303	0128	2952
4	3382	6217	9052	1885	4718	7550	0381	3211	6041	8869	1697	4524	7350	0175	2999
5	3429	6265	9099	1933	4765	7597	0428	3258	6088	8916	1744	4571	7397	0222	3047
6	3477	6312	9146	1980	4812	7644	0475	3305	6135	8963	1791	4618	7444	0269	3094
7	3524	6359	9193	2027	4860	7691	0522	3353	6182	9010	1838	4665	7491	0316	3141
8	3571	6406	9241	2074	4907	7739	0570	3400	6229	9058	1885	4712	7538	0363	3188
9	3618	6454	9288	2121	4954	7786	0617	3447	6276	9105	1932	4759	7585	0410	3235
10	3666	6501	9335	2169	5001	7833	0664	3494	6323	9152	1980	4806	7632	0457	3282
11	3713	6548	9382	2216	5048	7880	0711	3541	6371	9199	2027	4853	7679	0505	3329
12	3760	6595	9439	2263	5096	7927	0758	3588	6418	9246	2074	4901	7727	0552	3376
13	3808	6643	9477	2310	5143	7975	0806	3636	6465	9293	2121	4948	7774	0599	3423
14	3855	6690	9524	2358	5190	8022	0853	3683	6512	9340	2168	4995	7821	0646	3470
15	3902	6737	9571	2405	5237	8069	0900	3730	6559	9388	2215	5042	7868	0693	3517
16	3949	6784	9619	2452	5284	8116	0947	3777	6606	9435	2262	5089	7915	0740	3564
17	3997	6832	9666	2499	5332	8163	0994	3824	6653	9482	2309	5136	7962	0787	3611
18	4044	6879	9713	2546	5379	8211	1041	3871	6701	9529	2356	5183	8009	0834	3658
19	4091	6926	9760	2594	5426	8258	1089	3919	6748	9576	2404	5230	8056	0881	3705
20	4138	6973	9807	2641	5473	8305	1136	3966	6795	9623	2451	5277	8103	0928	3752
21	4186	7021	9855	2688	5520	8352	1183	4013	6842	9670	2498	5325	8150	0975	3800
22	4233	7068	9902	2735	5568	8399	1230	4060	6889	9717	2545	5372	8197	1022	3847
23	4280	7115	9949	2782	5615	8447	1277	4107	6936	9765	2592	5419	8245	1070	3894
24	4327	7162	9996	2830	5662	8494	1324	4154	6983	9812	2639	5466	8292	1117	3941
25	4375	7210	0044	2877	5709	8541	1372	4202	7031	9859	2686	5513	8339	1164	3988
26	4422	7257	0091	2924	5756	8588	1419	4249	7078	9906	2733	5560	8386	1211	4035
27	4469	7304	0138	2971	5804	8635	1466	4296	7125	9953	2781	5607	8433	1258	4082
28	4516	7351	0185	3019	5851	8682	1513	4343	7172	0000	2828	5654	8480	1305	4129
29	4564	7399	0233	3066	5898	8730	1560	4390	7219	0047	2875	5701	8527	1352	4176
30	4611	7446	0280	3113	5945	8777	1607	4437	7266	0095	2922	5748	8574	1399	4223
31	4658	7493	0327	3160	5992	8824	1655	4484	7313	0142	2969	5796	8621	1446	4270
32	4705	7540	0374	3207	6040	8871	1702	4532	7361	0189	3016	5843	8668	1493	4317
33	4753	7587	0421	3255	6087	8918	1749	4579	7408	0236	3063	5890	8715	1540	4364
34	4800	7635	0469	3302	6134	8966	1796	4626	7455	0283	3110	5937	8762	1587	4411
35	4847	7682	0516	3349	6181	9013	1843	4673	7502	0330	3157	5984	8810	1634	4458
36	4894	7729	0563	3396	6228	9060	1891	4720	7549	0377	3205	6031	8857	1681	4505
37	4942	7776	0610	3443	6276	9107	1938	4767	7596	0424	3252	6078	8904	1729	4553
38	4989	7824	0658	3491	6323	9154	1985	4815	7643	0472	3299	6125	8951	1776	4600
39	5036	7871	0705	3538	6370	9201	2032	4862	7691	0519	3346	6172	8998	1823	4647
40	5083	7918	0752	3585	6417	9249	2079	4909	7738	0566	3393	6219	9045	1870	4694
41	5131	7965	0799	3632	6464	9296	2126	4956	7785	0613	3440	6267	9092	1917	4741
42	5178	8013	0846	3679	6512	9343	2174	5003	7832	0660	3487	6314	9139	1964	4788
43	5225	8060	0894	3727	6559	9390	2221	5050	7879	0707	3534	6361	9186	2011	4835
44	5272	8107	0941	3774	6606	9437	2268	5098	7926	0754	3581	6408	9233	2058	4882
45	5320	8154	0988	3821	6653	9485	2315	5145	7973	0801	3629	6455	9280	2105	4929
46	5367	8202	1035	3868	6700	9532	2362	5192	8021	0849	3676	6502	9328	2152	4976
47	5414	8249	1083	3916	6748	9579	2409	5239	8068	0896	3723	6549	9375	2199	5023
48	5461	8296	1130	3963	6795	9626	2457	5286	8115	0943	3770	6596	9422	2246	5070
49	5509	8343	1177	4010	6842	9673	2504	5333	8162	0990	3817	6643	9469	2293	5117
50	5556	8391	1224	4057	6889	9720	2551	5380	8209	1037	3864	6690	9516	2340	5164
51	5603	8438	1271	4104	6936	9768	2598	5428	8256	1084	3911	6738	9563	2388	5211
52	5650	8485	1319	4152	6984	9815	2645	5475	8303	1131	3958	6785	9610	2435	5258
53	5698	8532	1366	4199	7031	9862	2692	5522	8351	1178	4005	6832	9657	2482	5305
54	5745	8579	1413	4246	7078	9909	2740	5569	8398	1226	4053	6879	9704	2529	5353
55	5792	8627	1460	4293	7125	9956	2787	5616	8445	1273	4100	6926	9751	2576	5400
56	5839	8674	1508	4340	7172	0004	2834	5663	8492	1320	4147	6973	9798	2623	5447
57	5887	8721	1555	4388	7220	0051	2881	5710	8539	1367	4194	7020	9845	2670	5494
58	5934	8768	1602	4435	7267	0098	2928	5758	8586	1414	4241	7067	9893	2717	5541
59	5981	8816	1649	4482	7314	0145	2975	5805	8633	1461	4288	7114	9940	2764	5588
60	6028	8863	1696	4529	7361	0192	3023	5852	8681	1508	4335	7161	9987	2811	5635
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Tangent Deg. 58

31 Deg. Co-Tangent

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	″
10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	
212	212	212	211	211	211	210	210	210	210	209	209	209	209	208	
6807	3972	1137	8304	5471	2639	9808	6977	4148	1319	8492	5665	2839	0013	7189	60
6760	3924	1090	8256	5424	2592	9761	6930	4101	1272	8445	5618	2792	9966	7142	59
6712	3877	1043	8209	5376	2544	9713	6883	4054	1225	8397	5571	2744	9919	7095	58
6665	3830	0995	8162	5329	2497	9666	6836	4007	1178	8350	5523	2697	9872	7048	57
6618	3783	0948	8115	5282	2450	9619	6789	3959	1131	8303	5476	2650	9825	7001	56
6571	3735	0901	8067	5235	2403	9572	6742	3912	1084	8256	5429	2603	9778	6953	55
6523	3688	0854	8020	5188	2356	9525	6695	3865	1037	8209	5382	2556	9731	6906	54
6476	3641	0807	7973	5140	2309	9478	6647	3818	0990	8162	5335	2509	9684	6859	53
6429	3594	0759	7926	5093	2261	9430	6600	3771	0942	8115	5288	2462	9637	6812	52
6382	3546	0712	7879	5046	2214	9383	6553	3724	0895	8068	5241	2415	9590	6765	51
6334	3499	0665	7831	4999	2167	9336	6506	3677	0848	8020	5194	2368	9543	6718	50
6287	3452	0618	7784	4952	2120	9289	6459	3629	0801	7973	5147	2321	9495	6671	49
6240	3405	0570	7737	4904	2073	9242	6412	3582	0754	7926	5099	2273	9448	6624	48
6192	3357	0523	7690	4857	2025	9194	6364	3535	0707	7879	5052	2226	9401	6577	47
6145	3310	0476	7642	4810	1978	9147	6317	3488	0660	7832	5005	2179	9354	6530	46
6098	3263	0429	7595	4763	1931	9100	6270	3441	0612	7785	4958	2132	9307	6483	45
6051	3216	0381	7548	4716	1884	9053	6223	3394	0565	7738	4911	2085	9260	6436	44
6003	3168	0334	7501	4668	1837	9006	6176	3347	0518	7691	4864	2038	9213	6389	43
5956	3121	0287	7454	4621	1789	8959	6129	3299	0471	7644	4817	1991	9166	6342	42
5909	3074	0240	7406	4574	1742	8911	6081	3252	0424	7596	4770	1944	9119	6295	41
5862	3027	0193	7359	4527	1695	8864	6034	3205	0377	7549	4723	1897	9072	6248	40
5814	2979	0145	7312	4480	1648	8817	5987	3158	0330	7502	4675	1850	9025	6200	39
5767	2932	0098	7265	4432	1601	8770	5940	3111	0283	7455	4628	1803	8978	6153	38
5720	2885	0051	7218	4385	1553	8723	5893	3064	0235	7408	4581	1755	8930	6106	37
5673	2838	0004	7170	4338	1506	8676	5846	3017	0188	7361	4534	1708	8883	6059	36
5625	2790	9956	7123	4291	1459	8628	5798	2969	0141	7314	4487	1661	8836	6012	35
5578	2743	9909	7076	4244	1412	8581	5751	2922	0094	7267	4440	1614	8789	5965	34
5531	2696	9862	7029	4196	1365	8534	5704	2875	0047	7219	4393	1567	8742	5918	33
5484	2649	9815	6981	4149	1318	8487	5657	2828	0000	7172	4346	1520	8695	5871	32
5436	2601	9767	6934	4102	1270	8440	5610	2781	9953	7125	4299	1473	8648	5824	31
5389	2554	9720	6887	4055	1223	8393	5563	2734	9905	7078	4252	1426	8601	5777	30
5342	2507	9673	6840	4008	1176	8345	5516	2687	9858	7031	4204	1379	8554	5730	29
5295	2460	9626	6793	3960	1129	8298	5468	2639	9811	6984	4157	1332	8507	5683	28
5247	2413	9579	6745	3913	1082	8251	5421	2592	9764	6937	4110	1285	8460	5636	27
5200	2365	9531	6698	3866	1034	8204	5374	2545	9717	6890	4063	1238	8413	5589	26
5153	2318	9484	6651	3819	0987	8157	5327	2498	9670	6843	4016	1190	8366	5542	25
5106	2271	9437	6604	3772	0940	8109	5280	2451	9623	6795	3969	1143	8319	5495	24
5058	2224	9390	6557	3724	0893	8062	5233	2404	9576	6748	3922	1096	8271	5447	23
5011	2176	9342	6509	3677	0846	8015	5185	2357	9528	6701	3875	1049	8224	5400	22
4964	2129	9295	6462	3630	0799	7968	5138	2309	9481	6654	3828	1002	8177	5353	21
4917	2082	9248	6415	3583	0751	7921	5091	2262	9434	6607	3781	0955	8130	5306	20
4869	2035	9201	6368	3536	0704	7874	5044	2215	9387	6560	3733	0908	8083	5259	19
4822	1987	9154	6321	3488	0657	7826	4997	2168	9340	6513	3686	0861	8036	5212	18
4775	1940	9106	6273	3441	0610	7779	4950	2121	9293	6466	3639	0814	7989	5165	17
4728	1893	9059	6226	3394	0563	7732	4902	2074	9246	6419	3592	0767	7942	5118	16
4680	1846	9012	6179	3347	0515	7685	4855	2027	9199	6371	3545	0720	7895	5071	15
4633	1798	8965	6122	3300	0468	7638	4808	1979	9151	6324	3498	0672	7848	5024	14
4586	1751	8917	6084	3252	0421	7591	4761	1932	9104	6277	3451	0625	7801	4977	13
4539	1704	8870	6037	3205	0374	7543	4714	1885	9057	6230	3404	0578	7754	4930	12
4491	1657	8823	5990	3158	0327	7496	4667	1838	9010	6183	3357	0531	7707	4883	11
4444	1609	8776	5943	3111	0280	7449	4620	1791	8963	6136	3310	0484	7660	4836	10
4397	1562	8729	5896	3064	0232	7402	4572	1744	8916	6089	3262	0437	7612	4789	9
4350	1515	8681	5848	3016	0185	7355	4525	1697	8869	6042	3215	0390	7565	4742	8
4302	1468	8634	5801	2969	0138	7308	4478	1649	8822	5995	3168	0343	7518	4695	7
4255	1421	8587	5754	2922	0091	7260	4431	1602	8774	5947	3121	0296	7471	4647	6
4208	1373	8540	5707	2875	0044	7213	4384	1555	8727	5900	3074	0249	7424	4600	5
4161	1326	8492	5660	2828	9996	7166	4337	1508	8680	5853	3027	0202	7377	4553	4
4113	1279	8445	5612	2780	9949	7119	4290	1461	8633	5806	2980	0155	7330	4506	3
4066	1232	8398	5565	2733	9902	7072	4242	1414	8586	5759	2933	0107	7283	4459	2
4019	1184	8351	5518	2686	9855	7025	4195	1367	8539	5712	2886	0060	7236	4412	1
3972	1137	8304	5471	2639	9808	6977	4148	1319	8492	5665	2839	0013	7189	4365	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Tangent Deg. 58

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	9. 721	9. 721	9. 721	9. 721	9. 721	9. 722	9. 722	9. 722	9. 722	9. 722	9. 723	9. 723	9. 723	9. 723	9. 724
0	1623	3664	5704	7742	9779	1814	3848	5881	7913	9943	1972	4000	6026	8051	0075
1	1657	3698	5738	7776	9813	1848	3882	5915	7947	9977	2006	4033	6060	8085	0108
2	1691	3732	5772	7810	9847	1882	3916	5949	7981	0011	2040	4067	6094	8118	0142
3	1725	3766	5806	7844	9881	1916	3950	5983	8014	0045	2074	4101	6127	8152	0176
4	1759	3800	5840	7878	9914	1950	3984	6017	8048	0078	2107	4135	6161	8186	0210
5	1793	3834	5874	7912	9948	1984	4018	6051	8082	0112	2141	4169	6195	8220	0243
6	1827	3868	5908	7946	9982	2018	4052	6085	8116	0146	2175	4202	6229	8253	0277
7	1862	3902	5942	7980	0016	2052	4086	6118	8150	0180	2209	4236	6262	8287	0311
8	1896	3936	5976	8014	0050	2086	4120	6152	8184	0214	2243	4270	6296	8321	0344
9	1930	3970	6009	8047	0084	2119	4153	6186	8218	0248	2276	4304	6330	8355	0378
10	1964	4004	6043	8081	0118	2153	4187	6220	8251	0281	2310	4338	6364	8388	0412
11	1998	4038	6077	8115	0152	2187	4221	6254	8285	0315	2344	4371	6397	8422	0446
12	2032	4072	6111	8149	0186	2221	4255	6288	8319	0349	2378	4405	6431	8456	0479
13	2066	4106	6145	8183	0220	2255	4289	6322	8353	0383	2412	4439	6465	8490	0513
14	2100	4140	6179	8217	0254	2289	4323	6355	8387	0417	2445	4473	6499	8523	0547
15	2134	4174	6213	8251	0288	2323	4357	6389	8421	0451	2479	4506	6532	8557	0580
16	2168	4208	6247	8285	0322	2357	4391	6423	8454	0484	2513	4540	6566	8591	0614
17	2202	4242	6281	8319	0356	2391	4425	6457	8488	0518	2547	4574	6600	8625	0648
18	2236	4276	6315	8353	0390	2425	4458	6491	8522	0552	2581	4608	6634	8658	0682
19	2270	4310	6349	8387	0423	2459	4492	6525	8556	0586	2614	4642	6667	8692	0715
20	2304	4344	6383	8421	0457	2492	4526	6559	8590	0620	2648	4675	6701	8726	0749
21	2338	4378	6417	8455	0491	2526	4560	6593	8624	0653	2682	4709	6735	8759	0783
22	2372	4412	6451	8489	0525	2560	4594	6626	8657	0687	2716	4743	6769	8793	0816
23	2406	4446	6485	8523	0559	2594	4628	6660	8691	0721	2750	4777	6802	8827	0850
24	2440	4480	6519	8557	0593	2628	4662	6694	8725	0755	2783	4810	6836	8861	0884
25	2474	4514	6553	8591	0627	2662	4696	6728	8759	0789	2817	4844	6870	8894	0918
26	2508	4548	6587	8625	0661	2696	4730	6762	8793	0823	2851	4878	6904	8928	0951
27	2542	4582	6621	8659	0695	2730	4763	6796	8827	0856	2885	4912	6937	8962	0985
28	2576	4616	6655	8693	0729	2764	4797	6830	8861	0890	2918	4945	6971	8996	1019
29	2610	4650	6689	8726	0763	2798	4831	6863	8894	0924	2952	4979	7005	9029	1052
30	2644	4684	6723	8760	0797	2832	4865	6897	8928	0958	2986	5013	7039	9063	1086
31	2678	4718	6757	8794	0831	2865	4899	6931	8962	0992	3020	5047	7072	9097	1120
32	2712	4752	6791	8828	0864	2899	4933	6965	8996	1025	3054	5081	7106	9130	1153
33	2746	4786	6825	8862	0898	2933	4967	6999	9030	1059	3087	5114	7140	9164	1187
34	2780	4820	6859	8896	0932	2967	5001	7033	9064	1093	3121	5148	7174	9198	1221
35	2814	4854	6893	8930	0966	3001	5034	7067	9097	1127	3155	5182	7207	9232	1255
36	2848	4888	6927	8964	1000	3035	5068	7100	9131	1161	3189	5216	7241	9265	1288
37	2882	4922	6961	8998	1034	3069	5102	7134	9165	1194	3223	5249	7275	9299	1322
38	2916	4956	6995	9032	1068	3103	5136	7168	9199	1228	3256	5283	7309	9333	1356
39	2950	4990	7029	9066	1102	3137	5170	7202	9233	1262	3290	5317	7342	9367	1389
40	2984	5024	7063	9100	1136	3171	5204	7236	9267	1296	3324	5351	7376	9400	1423
41	3018	5058	7097	9134	1170	3204	5238	7270	9300	1330	3358	5384	7410	9434	1457
42	3052	5092	7131	9168	1204	3238	5272	7304	9334	1364	3392	5418	7444	9468	1491
43	3086	5126	7165	9202	1238	3272	5305	7337	9368	1397	3425	5452	7477	9501	1524
44	3120	5160	7198	9236	1272	3306	5339	7371	9402	1431	3459	5486	7511	9535	1558
45	3154	5194	7232	9270	1305	3340	5373	7405	9436	1465	3493	5520	7545	9569	1592
46	3188	5228	7266	9304	1339	3374	5407	7439	9470	1499	3527	5553	7579	9603	1625
47	3222	5262	7300	9338	1373	3408	5441	7473	9503	1533	3561	5587	7612	9636	1659
48	3256	5296	7334	9371	1407	3442	5475	7507	9537	1566	3594	5621	7646	9670	1693
49	3290	5330	7368	9405	1441	3476	5509	7541	9571	1600	3628	5655	7680	9704	1726
50	3324	5364	7402	9439	1475	3509	5543	7574	9605	1634	3662	5688	7714	9738	1760
51	3358	5398	7436	9473	1509	3543	5576	7608	9639	1668	3696	5722	7747	9771	1794
52	3392	5432	7470	9507	1543	3577	5610	7642	9673	1702	3729	5756	7781	9805	1828
53	3426	5466	7504	9541	1577	3611	5644	7676	9706	1735	3763	5790	7815	9839	1861
54	3460	5500	7538	9575	1611	3645	5678	7710	9740	1769	3797	5823	7849	9872	1895
55	3494	5534	7572	9609	1645	3679	5712	7744	9774	1803	3831	5857	7882	9906	1929
56	3528	5568	7606	9643	1679	3713	5746	7778	9808	1837	3865	5891	7916	9940	1962
57	3562	5602	7640	9677	1712	3747	5780	7811	9842	1871	3898	5925	7950	9974	1996
58	3596	5636	7674	9711	1746	3781	5814	7845	9875	1904	3932	5958	7984	0007	2030
59	3630	5670	7708	9745	1780	3815	5847	7879	9909	1938	3966	5992	8017	0041	2063
60	3664	5704	7742	9779	1814	3848	5881	7913	9943	1972	4000	6026	8051	0075	2097
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9. 929	9. 929	9. 929	9. 929	9. 929	9. 929	9. 929	9. 929	9. 928	9. 928	9. 928	9. 928	9. 928	9. 928	9. 928
0	5989	5207	4424	3641	2857	2073	1289	0504	9718	8932	8145	7358	6571	5783	4994
1	5975	5193	4411	3628	2844	2060	1276	0491	9705	8919	8132	7345	6558	5769	4981
2	5962	5180	4398	3615	2831	2047	1263	0478	9692	8906	8119	7332	6544	5756	4968
3	5949	5167	4385	3602	2818	2034	1250	0464	9679	8893	8106	7319	6531	5743	4955
4	5936	5154	4372	3589	2805	2021	1236	0451	9666	8880	8093	7306	6518	5730	4941
5	5923	5141	4359	3576	2792	2008	1223	0438	9653	8867	8080	7293	6505	5717	4928
6	5910	5128	4346	3563	2779	1995	1210	0425	9640	8853	8067	7280	6492	5704	4915
7	5897	5115	4333	3550	2766	1982	1197	0412	9626	8840	8054	7267	6479	5691	4902
8	5884	5102	4320	3537	2753	1969	1184	0399	9613	8827	8041	7253	6466	5677	4889
9	5871	5089	4307	3523	2740	1956	1171	0386	9600	8814	8027	7240	6453	5664	4876
10	5858	5076	4294	3510	2727	1943	1158	0373	9587	8801	8014	7227	6439	5651	4862
11	5845	5063	4280	3497	2714	1930	1145	0360	9574	8788	8001	7214	6426	5638	4849
12	5832	5050	4267	3484	2701	1916	1132	0347	9561	8775	7988	7201	6413	5625	4836
13	5819	5037	4254	3471	2688	1903	1119	0334	9548	8762	7975	7188	6400	5612	4823
14	5806	5024	4241	3458	2675	1890	1106	0320	9535	8749	7962	7175	6387	5599	4810
15	5793	5011	4228	3445	2661	1877	1093	0307	9522	8735	7949	7162	6374	5586	4797
16	5780	4998	4215	3432	2648	1864	1080	0294	9509	8722	7936	7148	6361	5572	4784
17	5767	4985	4202	3419	2635	1851	1066	0281	9495	8709	7923	7135	6347	5559	4770
18	5754	4972	4189	3406	2622	1838	1053	0268	9482	8696	7909	7122	6334	5546	4757
19	5741	4959	4176	3393	2609	1825	1040	0255	9469	8683	7896	7109	6321	5533	4744
20	5728	4946	4163	3380	2596	1812	1027	0242	9456	8670	7883	7096	6308	5520	4731
21	5715	4933	4150	3367	2583	1799	1014	0229	9443	8657	7870	7083	6295	5507	4718
22	5702	4920	4137	3354	2570	1786	1001	0216	9430	8644	7857	7070	6282	5494	4705
23	5689	4907	4124	3341	2557	1773	0988	0203	9417	8631	7844	7057	6269	5480	4692
24	5676	4894	4111	3328	2544	1760	0975	0190	9404	8617	7831	7043	6256	5467	4678
25	5663	4881	4098	3315	2531	1747	0962	0176	9391	8604	7818	7030	6242	5454	4665
26	5650	4867	4085	3301	2518	1733	0949	0163	9378	8591	7804	7017	6229	5441	4652
27	5637	4854	4072	3288	2505	1720	0936	0150	9364	8578	7791	7004	6216	5428	4639
28	5624	4841	4059	3275	2492	1707	0923	0137	9351	8565	7778	6991	6203	5415	4626
29	5611	4828	4046	3262	2479	1694	0909	0124	9338	8552	7765	6978	6190	5402	4613
30	5598	4815	4033	3249	2465	1681	0896	0111	9325	8539	7752	6965	6177	5388	4599
31	5585	4802	4019	3236	2452	1668	0883	0098	9312	8526	7739	6951	6164	5375	4586
32	5572	4789	4006	3223	2439	1655	0870	0085	9299	8513	7726	6938	6150	5362	4573
33	5558	4776	3993	3210	2426	1642	0857	0072	9286	8500	7713	6925	6137	5349	4560
34	5545	4763	3980	3197	2413	1629	0844	0059	9273	8486	7700	6912	6124	5336	4547
35	5532	4750	3967	3184	2400	1616	0831	0046	9260	8473	7686	6899	6111	5323	4534
36	5519	4737	3954	3171	2387	1603	0818	0032	9247	8460	7673	6886	6098	5310	4521
37	5506	4724	3941	3158	2374	1590	0805	0019	9233	8447	7660	6873	6085	5296	4507
38	5493	4711	3928	3145	2361	1577	0792	0006	9220	8434	7647	6860	6072	5283	4494
39	5480	4698	3915	3132	2348	1563	0779	9993	9207	8421	7634	6846	6059	5270	4481
40	5467	4685	3902	3119	2335	1550	0765	9980	9194	8408	7621	6833	6045	5257	4468
41	5454	4672	3889	3106	2322	1537	0752	9967	9181	8395	7608	6820	6032	5244	4455
42	5441	4659	3876	3093	2309	1524	0739	9954	9168	8382	7595	6807	6019	5231	4442
43	5428	4646	3863	3079	2296	1511	0726	9941	9155	8368	7581	6794	6006	5217	4428
44	5415	4633	3850	3066	2282	1498	0713	9928	9142	8355	7568	6781	5993	5204	4415
45	5402	4620	3837	3053	2269	1485	0700	9915	9129	8342	7555	6768	5980	5191	4402
46	5389	4607	3824	3040	2256	1472	0687	9902	9116	8329	7542	6755	5967	5178	4389
47	5376	4594	3811	3027	2243	1459	0674	9888	9102	8316	7529	6741	5953	5165	4376
48	5363	4581	3798	3014	2230	1446	0661	9875	9089	8303	7516	6728	5940	5152	4363
49	5350	4567	3785	3001	2217	1433	0648	9862	9076	8290	7503	6715	5927	5139	4350
50	5337	4554	3771	2988	2204	1420	0635	9849	9063	8277	7490	6702	5914	5125	4336
51	5324	4541	3758	2975	2191	1407	0622	9836	9050	8263	7476	6689	5901	5112	4323
52	5311	4528	3745	2962	2178	1393	0608	9823	9037	8250	7463	6676	5888	5099	4310
53	5298	4515	3732	2949	2165	1380	0595	9810	9024	8237	7450	6663	5875	5086	4297
54	5285	4502	3719	2936	2152	1367	0582	9797	9011	8224	7437	6650	5861	5073	4284
55	5272	4489	3706	2923	2139	1354	0569	9784	8998	8211	7424	6636	5848	5060	4271
56	5259	4476	3693	2910	2126	1341	0556	9771	8984	8198	7411	6623	5835	5047	4257
57	5246	4463	3680	2897	2113	1328	0543	9757	8971	8185	7398	6610	5822	5033	4244
58	5233	4450	3667	2884	2100	1315	0530	9744	8958	8172	7385	6597	5809	5020	4231
59	5220	4437	3654	2870	2086	1302	0517	9731	8945	8159	7371	6584	5796	5007	4218
60	5207	4424	3641	2857	2073	1289	0504	9718	8932	8145	7358	6571	5783	4994	4205
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

31 Deg. Tangent

″	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9. 791	9. 791	9. 792	9. 792	9. 792	9. 792	9. 793	9. 793	9. 793	9. 794	9. 794	9. 794	9. 794	9. 795	9. 795
0	5635	8458	1280	4101	6921	9741	2560	5378	8195	1011	3827	6641	9455	2268	5081
1	5682	8505	1327	4148	6968	9788	2607	5425	8242	1058	3874	6688	9502	2315	5128
2	5729	8552	1374	4195	7015	9835	2654	5472	8289	1105	3920	6735	9549	2362	5174
3	5776	8599	1421	4242	7062	9882	2701	5518	8336	1152	3967	6782	9596	2409	5221
4	5823	8646	1468	4289	7109	9929	2748	5565	8383	1199	4014	6829	9643	2456	5268
5	5870	8693	1515	4336	7156	9976	2794	5612	8429	1246	4061	6876	9690	2503	5315
6	5917	8740	1562	4383	7203	0023	2841	5659	8476	1293	4108	6923	9737	2550	5362
7	5964	8787	1609	4430	7250	0070	2888	5706	8523	1340	4155	6970	9784	2597	5409
8	6011	8834	1656	4477	7297	0117	2935	5753	8570	1387	4202	7017	9830	2643	5456
9	6058	8881	1703	4524	7344	0164	2982	5800	8617	1433	4249	7063	9877	2690	5502
10	6105	8928	1750	4571	7391	0211	3029	5847	8664	1480	4296	7110	9924	2737	5549
11	6152	8975	1797	4618	7438	0258	3076	5894	8711	1527	4343	7157	9971	2784	5596
12	6199	9022	1844	4665	7485	0305	3123	5941	8758	1574	4390	7204	0018	2831	5643
13	6247	9069	1891	4712	7532	0352	3170	5988	8805	1621	4437	7251	0065	2878	5690
14	6294	9116	1938	4759	7579	0399	3217	6035	8852	1668	4483	7298	0112	2925	5737
15	6341	9163	1985	4806	7626	0446	3264	6082	8899	1715	4530	7345	0159	2972	5784
16	6388	9210	2032	4853	7673	0493	3311	6129	8946	1762	4577	7392	0206	3018	5831
17	6435	9257	2079	4900	7720	0540	3358	6176	8993	1809	4624	7439	0252	3065	5877
18	6482	9304	2126	4947	7767	0587	3405	6223	9040	1856	4671	7486	0299	3112	5924
19	6529	9351	2173	4994	7814	0634	3452	6270	9087	1903	4718	7533	0346	3159	5971
20	6576	9398	2220	5041	7861	0681	3499	6317	9134	1950	4765	7579	0393	3206	6018
21	6623	9445	2267	5088	7908	0728	3546	6364	9181	1997	4812	7626	0440	3253	6065
22	6670	9493	2314	5135	7955	0775	3593	6411	9227	2044	4859	7673	0487	3300	6112
23	6717	9540	2361	5182	8002	0821	3640	6458	9274	2090	4906	7720	0534	3347	6159
24	6764	9587	2408	5229	8049	0868	3687	6505	9321	2137	4953	7767	0581	3393	6205
25	6811	9634	2455	5276	8096	0915	3734	6552	9368	2184	5000	7814	0628	3440	6252
26	6858	9681	2502	5323	8143	0962	3781	6598	9415	2231	5046	7861	0674	3487	6299
27	6905	9728	2549	5370	8190	1009	3828	6645	9462	2278	5093	7908	0721	3534	6346
28	6952	9775	2596	5417	8237	1056	3875	6692	9509	2325	5140	7955	0768	3581	6393
29	6999	9822	2643	5464	8284	1103	3922	6739	9556	2372	5187	8002	0815	3628	6440
30	7046	9869	2690	5511	8331	1150	3969	6786	9603	2419	5234	8048	0862	3675	6487
31	7093	9916	2737	5558	8378	1197	4016	6833	9650	2466	5281	8095	0909	3722	6533
32	7140	9963	2784	5605	8425	1244	4063	6880	9697	2513	5328	8142	0956	3768	6580
33	7187	0010	2831	5652	8472	1291	4110	6927	9744	2560	5375	8189	1003	3815	6627
34	7235	0057	2878	5699	8519	1338	4157	6974	9791	2607	5422	8236	1049	3862	6674
35	7282	0104	2925	5746	8566	1385	4204	7021	9838	2654	5469	8283	1096	3909	6721
36	7329	0151	2973	5793	8613	1432	4251	7068	9885	2700	5516	8330	1143	3956	6768
37	7376	0198	3020	5840	8660	1479	4297	7115	9932	2747	5562	8377	1190	4003	6815
38	7423	0245	3067	5887	8707	1526	4344	7162	9979	2794	5609	8424	1237	4050	6861
39	7470	0292	3114	5934	8754	1573	4391	7209	0025	2841	5656	8470	1284	4096	6908
40	7517	0339	3161	5981	8801	1620	4438	7256	0072	2888	5703	8517	1331	4143	6955
41	7564	0386	3208	6028	8848	1667	4485	7303	0119	2935	5750	8564	1378	4190	7002
42	7611	0433	3255	6075	8895	1714	4532	7350	0166	2982	5797	8611	1425	4237	7049
43	7658	0480	3302	6122	8942	1761	4579	7397	0213	3029	5844	8658	1471	4284	7096
44	7705	0527	3349	6169	8989	1808	4626	7444	0260	3076	5891	8705	1518	4331	7143
45	7752	0574	3396	6216	9036	1855	4673	7491	0307	3123	5938	8752	1565	4378	7189
46	7799	0621	3443	6263	9083	1902	4720	7537	0354	3170	5985	8799	1612	4425	7236
47	7846	0668	3490	6310	9130	1949	4767	7584	0401	3217	6032	8846	1659	4471	7283
48	7893	0715	3537	6357	9177	1996	4814	7631	0448	3264	6078	8893	1706	4518	7330
49	7940	0762	3584	6404	9224	2043	4861	7678	0495	3310	6125	8939	1753	4565	7377
50	7987	0809	3631	6451	9271	2090	4908	7725	0542	3357	6172	8986	1800	4612	7424
51	8034	0856	3678	6498	9318	2137	4955	7772	0589	3404	6219	9033	1846	4659	7471
52	8081	0903	3725	6545	9365	2184	5002	7819	0636	3451	6266	9080	1893	4706	7517
53	8128	0950	3772	6592	9412	2231	5049	7866	0683	3498	6313	9127	1940	4753	7564
54	8175	0998	3819	6639	9459	2278	5096	7913	0729	3545	6360	9174	1987	4800	7611
55	8222	1045	3866	6686	9506	2325	5143	7960	0776	3592	6407	9221	2034	4846	7658
56	8270	1092	3913	6733	9553	2372	5190	8007	0823	3639	6454	9268	2081	4893	7705
57	8317	1139	3960	6780	9600	2419	5237	8054	0870	3686	6501	9315	2128	4940	7752
58	8364	1186	4007	6827	9647	2466	5284	8101	0917	3733	6548	9361	2175	4987	7799
59	8411	1233	4054	6874	9694	2513	5331	8148	0964	3780	6594	9408	2222	5034	7845
60	8458	1280	4101	6921	9741	2560	5378	8195	1011	3827	6641	9455	2268	5081	7892
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Tangent Deg. 58

31 Deg. Co-Tangent

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	″
10. 208	10. 208	10. 207	10. 207	10. 207	10. 207	10. 206	10. 206	10. 206	10. 205	10. 205	10. 205	10. 205	10. 204	10. 204	
4365	1542	8720	5899	3079	0259	7440	4622	1805	8989	6173	3359	0545	7732	4919	60
4318	1495	8673	5852	3032	0212	7393	4575	1758	8942	6126	3312	0498	7685	4872	59
4271	1448	8626	5805	2985	0165	7346	4528	1711	8895	6080	3265	0451	7638	4826	58
4224	1401	8579	5758	2938	0118	7299	4482	1664	8848	6033	3218	0404	7591	4779	57
4177	1354	8532	5711	2891	0071	7252	4435	1617	8801	5986	3171	0357	7544	4732	56
4130	1307	8485	5664	2844	0024	7206	4388	1571	8754	5939	3124	0310	7497	4685	55
4083	1260	8438	5617	2797	9977	7159	4341	1524	8707	5892	3077	0263	7450	4638	54
4036	1213	8391	5570	2750	9930	7112	4294	1477	8660	5845	3030	0216	7403	4591	53
3989	1166	8344	5523	2703	9883	7065	4247	1430	8613	5798	2983	0170	7357	4544	52
3942	1119	8297	5476	2656	9836	7018	4200	1383	8567	5751	2937	0123	7310	4498	51
3895	1072	8250	5429	2609	9789	6971	4153	1336	8520	5704	2890	0076	7263	4451	50
3848	1025	8203	5382	2562	9742	6924	4106	1289	8473	5657	2843	0029	7216	4404	49
3801	0978	8156	5335	2515	9695	6877	4059	1242	8426	5610	2796	9982	7169	4357	48
3753	0931	8109	5288	2468	9648	6830	4012	1195	8379	5563	2749	9935	7122	4310	47
3706	0884	8062	5241	2421	9601	6783	3965	1148	8332	5517	2702	9888	7075	4263	46
3659	0837	8015	5194	2374	9554	6736	3918	1101	8285	5470	2655	9841	7028	4216	45
3612	0790	7968	5147	2327	9507	6689	3871	1054	8238	5423	2608	9794	6982	4169	44
3565	0743	7921	5100	2280	9460	6642	3824	1007	8191	5376	2561	9748	6935	4123	43
3518	0696	7874	5053	2233	9413	6595	3777	0960	8144	5329	2514	9701	6888	4076	42
3471	0649	7827	5006	2186	9366	6548	3730	0913	8097	5282	2467	9654	6841	4029	41
3424	0602	7780	4959	2139	9319	6501	3683	0866	8050	5235	2421	9607	6794	3982	40
3377	0555	7733	4912	2092	9272	6454	3636	0819	8003	5188	2374	9560	6747	3935	39
3330	0507	7686	4865	2045	9225	6407	3589	0773	7956	5141	2327	9513	6700	3888	38
3283	0460	7639	4818	1998	9179	6360	3542	0726	7910	5094	2280	9466	6653	3841	37
3236	0413	7592	4771	1951	9132	6313	3495	0679	7863	5047	2233	9419	6607	3795	36
3189	0366	7545	4724	1904	9085	6266	3448	0632	7816	5000	2186	9372	6560	3748	35
3142	0319	7498	4677	1857	9038	6219	3402	0585	7769	4954	2139	9326	6513	3701	34
3095	0272	7451	4630	1810	8991	6172	3355	0538	7722	4907	2092	9279	6466	3654	33
3048	0225	7404	4583	1763	8944	6125	3308	0491	7675	4860	2045	9232	6419	3607	32
3001	0178	7357	4536	1716	8897	6078	3261	0444	7628	4813	1998	9185	6372	3560	31
2954	0131	7310	4489	1669	8850	6031	3214	0397	7581	4766	1952	9138	6325	3513	30
2907	0084	7263	4442	1622	8803	5984	3167	0350	7534	4719	1905	9091	6278	3467	29
2860	0037	7216	4395	1575	8756	5937	3120	0303	7487	4672	1858	9044	6232	3420	28
2813	9990	7169	4348	1528	8709	5890	3073	0256	7440	4625	1811	8997	6185	3373	27
2765	9943	7122	4301	1481	8662	5843	3026	0209	7393	4578	1764	8951	6138	3326	26
2718	9896	7075	4254	1434	8615	5796	2979	0162	7346	4531	1717	8904	6091	3279	25
2671	9849	7027	4207	1387	8568	5749	2932	0115	7300	4484	1670	8857	6044	3232	24
2624	9802	6980	4160	1340	8521	5703	2885	0068	7253	4438	1623	8810	5997	3185	23
2577	9755	6933	4113	1293	8474	5656	2838	0021	7206	4391	1576	8763	5950	3139	22
2530	9708	6886	4066	1246	8427	5609	2791	9975	7159	4344	1530	8716	5904	3092	21
2483	9661	6839	4019	1199	8380	5562	2744	9928	7112	4297	1483	8669	5857	3045	20
2436	9614	6792	3972	1152	8333	5515	2697	9881	7065	4250	1436	8622	5810	2998	19
2389	9567	6745	3925	1105	8286	5468	2650	9834	7018	4203	1389	8575	5763	2951	18
2342	9520	6698	3878	1058	8239	5421	2603	9787	6971	4156	1342	8529	5716	2904	17
2295	9473	6651	3831	1011	8192	5374	2556	9740	6924	4109	1295	8482	5669	2857	16
2248	9426	6604	3784	0964	8145	5327	2509	9693	6877	4062	1248	8435	5622	2811	15
2201	9379	6557	3737	0917	8098	5280	2463	9646	6830	4015	1201	8388	5575	2764	14
2154	9332	6510	3690	0870	8051	5233	2416	9599	6783	3968	1154	8341	5529	2717	13
2107	9285	6463	3643	0823	8004	5186	2369	9552	6736	3922	1107	8294	5482	2670	12
2060	9238	6416	3596	0776	7957	5139	2322	9505	6690	3875	1061	8247	5435	2623	11
2013	9191	6369	3549	0729	7910	5092	2275	9458	6643	3828	1014	8200	5388	2576	10
1966	9144	6322	3502	0682	7863	5045	2228	9411	6596	3781	0967	8154	5341	2529	9
1919	9097	6275	3455	0635	7816	4998	2181	9364	6549	3734	0920	8107	5294	2483	8
1872	9050	6228	3408	0588	7769	4951	2134	9317	6502	3687	0873	8060	5247	2436	7
1825	9002	6181	3361	0541	7722	4904	2087	9271	6455	3640	0826	8013	5200	2389	6
1778	8955	6134	3314	0494	7675	4857	2040	9224	6408	3593	0779	7966	5154	2342	5
1730	8908	6087	3267	0447	7628	4810	1993	9177	6361	3546	0732	7919	5107	2295	4
1683	8861	6040	3220	0400	7581	4763	1946	9130	6314	3499	0685	7872	5060	2248	3
1636	8814	5993	3173	0353	7534	4716	1899	9083	6267	3452	0639	7825	5013	2201	2
1589	8767	5946	3126	0306	7487	4669	1852	9036	6220	3406	0592	7778	4966	2155	1
1542	8720	5899	3079	0259	7440	4622	1805	8989	6173	3359	0545	7732	4919	2108	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Tangent Deg. 58

″	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
	9.724	9.724	9.724	9.724	9.725	9.725	9.725	9.725	9.725	9.726	9.726	9.726	9.726	9.726	9.727
0	2097	4118	6138	8156	0174	2189	4204	6217	8229	0240	2249	4257	6264	8269	0273
1	2131	4152	6172	8190	0207	2223	4237	6251	8263	0273	2283	4291	6297	8303	0307
2	2164	4185	6205	8224	0241	2257	4271	6284	8296	0307	2316	4324	6331	8336	0340
3	2198	4219	6239	8257	0274	2290	4305	6318	8330	0340	2349	4357	6364	8370	0374
4	2232	4253	6273	8291	0308	2324	4338	6351	8363	0374	2383	4391	6398	8403	0407
5	2266	4287	6306	8325	0342	2357	4372	6385	8397	0407	2416	4424	6431	8436	0440
6	2299	4320	6340	8358	0375	2391	4405	6418	8430	0441	2450	4458	6464	8470	0474
7	2333	4354	6373	8392	0409	2424	4439	6452	8464	0474	2483	4491	6498	8503	0507
8	2367	4388	6407	8425	0442	2458	4472	6485	8497	0508	2517	4525	6531	8537	0541
9	2400	4421	6441	8459	0476	2492	4506	6519	8531	0541	2550	4558	6565	8570	0574
10	2434	4455	6474	8493	0510	2525	4540	6553	8564	0575	2584	4592	6598	8603	0607
11	2468	4489	6508	8526	0543	2559	4573	6586	8598	0608	2617	4625	6632	8637	0641
12	2501	4522	6542	8560	0577	2592	4607	6620	8631	0642	2651	4659	6665	8670	0674
13	2535	4556	6575	8594	0610	2626	4640	6653	8665	0675	2684	4692	6698	8704	0708
14	2569	4590	6609	8627	0644	2660	4674	6687	8698	0709	2718	4725	6732	8737	0741
15	2602	4623	6643	8661	0678	2693	4707	6720	8732	0742	2751	4759	6765	8770	0774
16	2636	4657	6676	8694	0711	2727	4741	6754	8765	0776	2785	4792	6799	8804	0808
17	2670	4691	6710	8728	0745	2760	4774	6787	8799	0809	2818	4826	6832	8837	0841
18	2704	4724	6744	8762	0778	2794	4808	6821	8832	0843	2852	4859	6866	8871	0874
19	2737	4758	6777	8795	0812	2827	4842	6854	8866	0876	2885	4893	6899	8904	0908
20	2771	4792	6811	8829	0846	2861	4875	6888	8899	0910	2919	4926	6932	8938	0941
21	2805	4825	6845	8863	0879	2895	4909	6921	8933	0943	2952	4960	6966	8971	0975
22	2838	4859	6878	8896	0913	2928	4942	6955	8966	0977	2985	4993	6999	9004	1008
23	2872	4893	6912	8930	0946	2962	4976	6989	9000	1010	3019	5027	7033	9038	1041
24	2906	4926	6945	8963	0980	2995	5009	7022	9033	1044	3052	5060	7066	9071	1075
25	2939	4960	6979	8997	1014	3029	5043	7056	9067	1077	3086	5093	7100	9105	1108
26	2973	4994	7013	9031	1047	3062	5076	7089	9101	1111	3119	5127	7133	9138	1142
27	3007	5027	7046	9064	1081	3096	5110	7123	9134	1144	3153	5160	7166	9171	1175
28	3040	5061	7080	9098	1114	3130	5144	7156	9168	1178	3186	5194	7200	9205	1208
29	3074	5095	7114	9131	1148	3163	5177	7190	9201	1211	3220	5227	7233	9238	1242
30	3108	5128	7147	9165	1182	3197	5211	7223	9235	1245	3253	5261	7267	9272	1275
31	3141	5162	7181	9199	1215	3230	5244	7257	9268	1278	3287	5294	7300	9305	1308
32	3175	5196	7215	9232	1249	3264	5278	7290	9302	1312	3320	5328	7334	9338	1342
33	3209	5229	7248	9266	1282	3298	5311	7324	9335	1345	3354	5361	7367	9372	1375
34	3243	5263	7282	9300	1316	3331	5345	7357	9369	1379	3387	5394	7400	9405	1409
35	3276	5296	7315	9333	1350	3365	5378	7391	9402	1412	3421	5428	7434	9439	1442
36	3310	5330	7349	9367	1383	3398	5412	7424	9436	1445	3454	5461	7467	9472	1475
37	3344	5364	7383	9400	1417	3432	5446	7458	9469	1479	3488	5495	7501	9505	1509
38	3377	5397	7416	9434	1450	3465	5479	7492	9503	1512	3521	5528	7534	9539	1542
39	3411	5431	7450	9468	1484	3499	5513	7525	9536	1546	3554	5562	7568	9572	1575
40	3445	5465	7484	9501	1518	3533	5546	7559	9570	1579	3588	5595	7601	9606	1609
41	3478	5498	7517	9535	1551	3566	5580	7592	9603	1613	3621	5629	7634	9639	1642
42	3512	5532	7551	9568	1585	3600	5613	7626	9637	1646	3655	5662	7668	9672	1676
43	3546	5566	7585	9602	1618	3633	5647	7659	9670	1680	3688	5695	7701	9706	1709
44	3579	5599	7618	9636	1652	3667	5680	7693	9704	1713	3722	5729	7735	9739	1742
45	3613	5633	7652	9669	1686	3700	5714	7726	9737	1747	3755	5762	7768	9773	1776
46	3647	5667	7685	9703	1719	3734	5747	7760	9771	1780	3789	5796	7801	9806	1809
47	3680	5700	7719	9737	1753	3768	5781	7793	9804	1814	3822	5829	7835	9839	1843
48	3714	5734	7753	9770	1786	3801	5815	7827	9838	1847	3856	5863	7868	9873	1876
49	3748	5768	7786	9804	1820	3835	5848	7860	9871	1881	3889	5896	7902	9906	1909
50	3781	5801	7820	9837	1853	3868	5882	7894	9905	1914	3923	5929	7935	9940	1943
51	3815	5835	7854	9871	1887	3902	5915	7927	9938	1948	3956	5963	7969	9973	1976
52	3849	5869	7887	9905	1921	3935	5949	7961	9972	1981	3989	5996	8002	0006	2009
53	3882	5902	7921	9938	1954	3969	5982	7994	0005	2015	4023	6030	8035	0040	2043
54	3916	5936	7955	9972	1988	4002	6016	8028	0039	2048	4056	6063	8069	0073	2076
55	3950	5970	7988	0005	2021	4036	6049	8061	0072	2082	4090	6097	8102	0107	2109
56	3983	6003	8022	0039	2055	4070	6083	8095	0106	2115	4123	6130	8136	0140	2143
57	4017	6037	8055	0073	2089	4103	6117	8129	0139	2149	4157	6164	8169	0173	2176
58	4051	6071	8089	0106	2122	4137	6150	8162	0173	2182	4190	6197	8202	0207	2210
59	4084	6104	8123	0140	2156	4170	6184	8196	0206	2216	4224	6230	8236	0240	2243
60	4118	6138	8156	0174	2189	4204	6217	8229	0240	2249	4257	6264	8269	0273	2276
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	″
9.928	9.928	9.928	9.928	9.928	9.928	9.927	9.927	9.927	9.927	9.927	9.927	9.927	9.927	9.927	
4205	3415	2625	1834	1043	0251	9459	8666	7873	7079	6285	5490	4695	3899	3103	60
4192	3402	2612	1821	1030	0238	9446	8653	7860	7066	6272	5477	4682	3886	3090	59
4179	3389	2599	1808	1017	0225	9433	8640	7847	7053	6259	5464	4669	3873	3076	58
4165	3376	2585	1795	1004	0212	9420	8627	7834	7040	6245	5451	4655	3860	3063	57
4152	3363	2572	1782	0990	0199	9406	8614	7820	7027	6232	5437	4642	3846	3050	56
4139	3349	2559	1768	0977	0185	9393	8600	7807	7013	6219	5424	4629	3833	3037	55
4126	3336	2546	1755	0964	0172	9380	8587	7794	7000	6206	5411	4616	3820	3023	54
4113	3323	2533	1742	0951	0159	9367	8574	7781	6987	6193	5398	4602	3806	3010	53
4100	3310	2520	1729	0938	0146	9354	8561	7767	6974	6179	5384	4589	3793	2997	52
4086	3297	2506	1716	0924	0133	9340	8548	7754	6960	6166	5371	4576	3780	2984	51
4073	3284	2493	1702	0911	0119	9327	8534	7741	6947	6153	5358	4563	3767	2970	50
4060	3270	2480	1689	0898	0106	9314	8521	7728	6934	6140	5345	4549	3753	2957	49
4047	3257	2467	1676	0885	0093	9301	8508	7715	6921	6126	5331	4536	3740	2944	48
4034	3244	2454	1663	0872	0080	9287	8495	7701	6907	6113	5318	4523	3727	2930	47
4021	3231	2441	1650	0858	0067	9274	8481	7688	6894	6100	5305	4509	3714	2917	46
4007	3218	2427	1637	0845	0053	9261	8468	7675	6881	6087	5292	4496	3700	2904	45
3994	3205	2414	1623	0832	0040	9248	8455	7662	6868	6073	5278	4483	3687	2891	44
3981	3191	2401	1610	0819	0027	9235	8442	7648	6854	6060	5265	4470	3674	2877	43
3968	3178	2388	1597	0806	0014	9221	8429	7635	6841	6047	5252	4456	3660	2864	42
3955	3165	2375	1584	0792	0001	9208	8415	7622	6828	6034	5239	4443	3647	2851	41
3942	3152	2361	1571	0779	9987	9195	8402	7609	6815	6020	5225	4430	3634	2837	40
3929	3139	2348	1557	0766	9974	9182	8389	7595	6802	6007	5212	4417	3621	2824	39
3915	3126	2335	1544	0753	9961	9169	8376	7582	6788	5994	5199	4403	3607	2811	38
3902	3112	2322	1531	0740	9948	9155	8362	7569	6775	5981	5186	4390	3594	2798	37
3889	3099	2309	1518	0727	9935	9142	8349	7556	6762	5967	5172	4377	3581	2784	36
3876	3086	2296	1505	0713	9921	9129	8336	7543	6749	5954	5159	4364	3568	2771	35
3863	3073	2282	1492	0700	9908	9116	8323	7529	6735	5941	5146	4350	3554	2758	34
3850	3060	2269	1478	0687	9895	9103	8310	7516	6722	5928	5133	4337	3541	2745	33
3836	3046	2256	1465	0674	9882	9089	8296	7503	6709	5914	5119	4324	3528	2731	32
3823	3033	2243	1452	0661	9869	9076	8283	7490	6696	5901	5106	4311	3515	2718	31
3810	3020	2230	1439	0647	9855	9063	8270	7476	6682	5888	5093	4297	3501	2705	30
3797	3007	2217	1426	0634	9842	9050	8257	7463	6669	5875	5080	4284	3488	2691	29
3784	2994	2203	1412	0621	9829	9036	8243	7450	6656	5861	5066	4271	3475	2678	28
3771	2981	2190	1399	0608	9816	9023	8230	7437	6643	5848	5053	4258	3461	2665	27
3757	2967	2177	1386	0595	9803	9010	8217	7423	6629	5835	5040	4244	3448	2652	26
3744	2954	2164	1373	0581	9789	8997	8204	7410	6616	5822	5027	4231	3435	2638	25
3731	2941	2151	1360	0568	9776	8984	8191	7397	6603	5808	5013	4218	3422	2625	24
3718	2928	2137	1346	0555	9763	8970	8177	7384	6590	5795	5000	4204	3408	2612	23
3705	2915	2124	1333	0542	9750	8957	8164	7371	6577	5782	4987	4191	3395	2598	22
3692	2902	2111	1320	0529	9737	8944	8151	7357	6563	5769	4974	4178	3382	2585	21
3678	2888	2098	1307	0515	9723	8931	8138	7344	6550	5755	4960	4165	3369	2572	20
3665	2875	2085	1294	0502	9710	8918	8124	7331	6537	5742	4947	4151	3355	2559	19
3652	2862	2072	1281	0489	9697	8904	8111	7318	6524	5729	4934	4138	3342	2545	18
3639	2849	2058	1267	0476	9684	8891	8098	7304	6510	5716	4921	4125	3329	2532	17
3626	2836	2045	1254	0463	9671	8878	8085	7291	6497	5702	4907	4112	3315	2519	16
3613	2823	2032	1241	0449	9657	8865	8072	7278	6484	5689	4894	4098	3302	2505	15
3599	2809	2019	1228	0436	9644	8851	8058	7265	6471	5676	4881	4085	3289	2492	14
3586	2796	2006	1215	0423	9631	8838	8045	7251	6457	5663	4867	4072	3276	2479	13
3573	2783	1992	1201	0410	9618	8825	8032	7238	6444	5649	4854	4059	3262	2466	12
3560	2770	1979	1188	0397	9604	8812	8019	7225	6431	5636	4841	4045	3249	2452	11
3547	2757	1966	1175	0383	9591	8799	8005	7212	6418	5623	4828	4032	3236	2439	10
3534	2744	1953	1162	0370	9578	8785	7992	7199	6404	5610	4814	4019	3222	2426	9
3520	2730	1940	1149	0357	9565	8772	7979	7185	6391	5596	4801	4005	3209	2412	8
3507	2717	1927	1135	0344	9552	8759	7966	7172	6378	5583	4788	3992	3196	2399	7
3494	2704	1913	1122	0331	9538	8746	7953	7159	6365	5570	4775	3979	3183	2386	6
3481	2691	1900	1109	0317	9525	8733	7939	7146	6351	5557	4761	3966	3169	2373	5
3468	2678	1887	1096	0304	9512	8719	7926	7132	6338	5543	4748	3952	3156	2359	4
3455	2665	1874	1083	0291	9499	8706	7913	7119	6325	5530	4735	3939	3143	2346	3
3442	2651	1861	1070	0278	9486	8693	7900	7106	6312	5517	4722	3926	3130	2333	2
3428	2638	1848	1056	0265	9472	8680	7886	7093	6298	5504	4708	3913	3116	2319	1
3415	2625	1834	1043	0251	9459	8666	7873	7079	6285	5490	4695	3899	3103	2306	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

32 Deg. Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.795	9.796	9.796	9.796	9.796	9.797	9.797	9.797	9.798	9.798	9.798	9.798	9.799	9.799	9.799
0	7892	0703	3513	6322	9130	1938	4745	7551	0356	3160	5964	8767	1569	4370	7170
1	7939	0750	3560	6369	9177	1985	4791	7597	0403	3207	6011	8813	1615	4417	7217
2	7986	0797	3607	6416	9224	2031	4838	7644	0449	3254	6057	8860	1662	4463	7264
3	8033	0843	3653	6462	9271	2078	4885	7691	0496	3300	6104	8907	1709	4510	7310
4	8080	0890	3700	6509	9318	2125	4932	7738	0543	3347	6151	8954	1755	4557	7357
5	8127	0937	3747	6556	9364	2172	4979	7784	0590	3394	6197	9000	1802	4603	7404
6	8173	0984	3794	6603	9411	2219	5025	7831	0636	3441	6244	9047	1849	4650	7450
7	8220	1031	3841	6650	9458	2265	5072	7878	0683	3487	6291	9094	1896	4697	7497
8	8267	1078	3887	6697	9505	2312	5119	7925	0730	3534	6338	9140	1942	4743	7544
9	8314	1125	3934	6743	9552	2359	5166	7971	0777	3581	6384	9187	1989	4790	7590
10	8361	1171	3981	6790	9598	2406	5212	8018	0823	3628	6431	9234	2036	4837	7637
11	8408	1218	4028	6837	9645	2453	5259	8065	0870	3674	6478	9280	2082	4883	7684
12	8454	1265	4075	6884	9692	2499	5306	8112	0917	3721	6524	9327	2129	4930	7730
13	8501	1312	4122	6931	9739	2546	5353	8159	0964	3768	6571	9374	2176	4977	7777
14	8548	1359	4168	6977	9786	2593	5399	8205	1010	3814	6618	9421	2222	5023	7824
15	8595	1406	4215	7024	9832	2640	5446	8252	1057	3861	6665	9467	2269	5070	7870
16	8642	1452	4262	7071	9879	2686	5493	8299	1104	3908	6711	9514	2316	5117	7917
17	8689	1499	4309	7118	9926	2733	5540	8346	1151	3955	6758	9561	2362	5164	7964
18	8736	1546	4356	7165	9973	2780	5587	8392	1197	4001	6805	9607	2409	5210	8010
19	8782	1593	4403	7211	0020	2827	5633	8439	1244	4048	6851	9654	2456	5257	8057
20	8829	1640	4449	7258	0066	2874	5680	8486	1291	4095	6898	9701	2503	5304	8104
21	8876	1687	4496	7305	0113	2920	5727	8533	1337	4142	6945	9747	2549	5350	8150
22	8923	1733	4543	7352	0160	2967	5774	8579	1384	4188	6992	9794	2596	5397	8197
23	8970	1780	4590	7399	0207	3014	5820	8626	1431	4235	7038	9841	2643	5444	8244
24	9017	1827	4637	7445	0253	3061	5867	8673	1478	4282	7085	9888	2689	5490	8290
25	9063	1874	4683	7492	0300	3108	5914	8720	1524	4329	7132	9934	2736	5537	8337
26	9110	1921	4730	7539	0347	3154	5961	8766	1571	4375	7179	9981	2783	5584	8384
27	9157	1968	4777	7586	0394	3201	6007	8813	1618	4422	7225	0028	2829	5630	8430
28	9204	2014	4824	7633	0441	3248	6054	8860	1665	4469	7272	0074	2876	5677	8477
29	9251	2061	4871	7679	0487	3295	6101	8907	1711	4515	7319	0121	2923	5724	8524
30	9298	2108	4918	7726	0534	3341	6148	8953	1758	4562	7365	0168	2969	5770	8570
31	9345	2155	4964	7773	0581	3388	6195	9000	1805	4609	7412	0214	3016	5817	8617
32	9391	2202	5011	7820	0628	3435	6241	9047	1852	4656	7459	0261	3063	5864	8664
33	9438	2249	5058	7867	0675	3482	6288	9094	1898	4702	7506	0308	3110	5910	8710
34	9485	2295	5105	7914	0721	3529	6335	9140	1945	4749	7552	0355	3156	5957	8757
35	9532	2342	5152	7960	0768	3575	6382	9187	1992	4796	7599	0401	3203	6004	8804
36	9579	2389	5198	8007	0815	3622	6428	9234	2039	4842	7646	0448	3250	6050	8850
37	9626	2436	5245	8054	0862	3669	6475	9281	2085	4889	7692	0495	3296	6097	8897
38	9672	2483	5292	8101	0909	3716	6522	9327	2132	4936	7739	0541	3343	6144	8944
39	9719	2530	5339	8148	0955	3762	6569	9374	2179	4983	7786	0588	3390	6190	8990
40	9766	2576	5386	8194	1002	3809	6615	9421	2226	5029	7832	0635	3436	6237	9037
41	9813	2623	5433	8241	1049	3856	6662	9468	2272	5076	7879	0681	3483	6284	9084
42	9860	2670	5479	8288	1096	3903	6709	9514	2319	5123	7926	0728	3530	6330	9130
43	9907	2717	5526	8335	1143	3950	6756	9561	2366	5170	7973	0775	3576	6377	9177
44	9954	2764	5573	8382	1189	3996	6802	9608	2412	5216	8019	0822	3623	6424	9224
45	0000	2810	5620	8428	1236	4043	6849	9655	2459	5263	8066	0868	3670	6470	9270
46	0047	2857	5667	8475	1283	4090	6896	9701	2506	5310	8113	0915	3716	6517	9317
47	0094	2904	5713	8522	1330	4137	6943	9748	2553	5356	8159	0962	3763	6564	9364
48	0141	2951	5760	8569	1376	4183	6990	9795	2599	5403	8206	1008	3810	6610	9410
49	0188	2998	5807	8616	1423	4230	7036	9842	2646	5450	8253	1055	3856	6657	9457
50	0235	3045	5854	8662	1470	4277	7083	9888	2693	5497	8300	1102	3903	6704	9504
51	0281	3091	5901	8709	1517	4324	7130	9935	2740	5543	8346	1148	3950	6750	9550
52	0328	3138	5948	8756	1564	4370	7177	9982	2786	5590	8393	1195	3997	6797	9597
53	0375	3185	5994	8803	1610	4417	7223	0029	2833	5637	8440	1242	4043	6844	9644
54	0422	3232	6041	8850	1657	4464	7270	0075	2880	5684	8486	1289	4090	6890	9690
55	0469	3279	6088	8896	1704	4511	7317	0122	2927	5730	8533	1335	4137	6937	9737
56	0516	3326	6135	8943	1751	4558	7364	0169	2973	5777	8580	1382	4183	6984	9784
57	0562	3372	6182	8990	1798	4604	7410	0216	3020	5824	8627	1429	4230	7030	9830
58	0609	3419	6228	9037	1844	4651	7457	0262	3067	5870	8673	1475	4277	7077	9877
59	0656	3466	6275	9084	1891	4698	7504	0309	3114	5917	8720	1522	4323	7124	9924
60	0703	3513	6322	9130	1938	4745	7551	0356	3160	5964	8767	1569	4370	7170	9970
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Tangent Deg. 57

32 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
10.204	10.203	10.203	10.203	10.203	10.202	10.202	10.202	10.201	10.201	10.201	10.201	10.200	10.200	10.200	″
2108	9297	6487	3678	0870	8062	5255	2449	9644	6840	4036	1233	8431	5630	2830	60
2061	9250	6440	3631	0823	8015	5209	2403	9597	6793	3989	1187	8385	5583	2783	59
2014	9203	6393	3584	0776	7969	5162	2356	9551	6746	3943	1140	8338	5537	2736	58
1967	9157	6347	3538	0729	7922	5115	2309	9504	6700	3896	1093	8291	5490	2690	57
1920	9110	6300	3491	0682	7875	5068	2262	9457	6653	3849	1046	8245	5443	2643	56
1873	9063	6253	3444	0636	7828	5021	2216	9410	6606	3803	1000	8198	5397	2596	55
1827	9016	6206	3397	0589	7781	4975	2169	9364	6559	3756	0953	8151	5350	2550	54
1780	8969	6159	3350	0542	7735	4928	2122	9317	6513	3709	0906	8104	5303	2503	53
1733	8922	6113	3303	0495	7688	4881	2075	9270	6466	3662	0860	8058	5257	2456	52
1686	8875	6066	3257	0448	7641	4834	2029	9223	6419	3616	0813	8011	5210	2410	51
1639	8829	6019	3210	0402	7594	4788	1982	9177	6372	3569	0766	7964	5163	2363	50
1592	8782	5972	3163	0355	7547	4741	1935	9130	6326	3522	0720	7918	5117	2316	49
1546	8735	5925	3116	0308	7501	4694	1888	9083	6279	3476	0673	7871	5070	2270	48
1499	8688	5878	3069	0261	7454	4647	1842	9036	6232	3429	0626	7824	5023	2223	47
1452	8641	5832	3023	0214	7407	4601	1795	8990	6186	3382	0579	7778	4977	2176	46
1405	8594	5785	2976	0168	7360	4554	1748	8943	6139	3335	0533	7731	4930	2130	45
1358	8548	5738	2929	0121	7314	4507	1701	8896	6092	3289	0486	7684	4883	2083	44
1311	8501	5691	2882	0074	7267	4460	1655	8849	6045	3242	0439	7638	4836	2036	43
1264	8454	5644	2835	0027	7220	4413	1608	8803	5999	3195	0393	7591	4790	1990	42
1218	8407	5597	2789	9980	7173	4367	1561	8756	5952	3149	0346	7544	4743	1943	41
1171	8360	5551	2742	9934	7126	4320	1514	8709	5905	3102	0299	7497	4696	1896	40
1124	8313	5504	2695	9887	7080	4273	1467	8663	5858	3055	0253	7451	4650	1850	39
1077	8267	5457	2648	9840	7033	4226	1421	8616	5812	3008	0206	7404	4603	1803	38
1030	8220	5410	2601	9793	6986	4180	1374	8569	5765	2962	0159	7357	4556	1756	37
0983	8173	5363	2555	9747	6939	4133	1327	8522	5718	2915	0112	7311	4510	1710	36
0937	8126	5317	2508	9700	6892	4086	1280	8476	5671	2868	0066	7264	4463	1663	35
0890	8079	5270	2461	9653	6846	4039	1234	8429	5625	2821	0019	7217	4416	1616	34
0843	8032	5223	2414	9606	6799	3993	1187	8382	5578	2775	9972	7171	4370	1570	33
0796	7986	5176	2367	9559	6752	3946	1140	8335	5531	2728	9926	7124	4323	1523	32
0749	7939	5129	2321	9513	6705	3899	1093	8289	5485	2681	9879	7077	4276	1476	31
0702	7892	5082	2274	9466	6659	3852	1047	8242	5438	2635	9832	7031	4230	1430	30
0655	7845	5036	2227	9419	6612	3805	1000	8195	5391	2588	9786	6984	4183	1383	29
0609	7798	4989	2180	9372	6565	3759	0953	8148	5344	2541	9739	6937	4136	1336	28
0562	7751	4942	2133	9325	6518	3712	0906	8102	5298	2494	9692	6890	4090	1290	27
0515	7705	4895	2086	9279	6471	3665	0860	8055	5251	2448	9645	6844	4043	1243	26
0468	7658	4848	2040	9232	6425	3618	0813	8008	5204	2401	9599	6797	3996	1196	25
0421	7611	4802	1993	9185	6378	3572	0766	7961	5158	2354	9552	6750	3950	1150	24
0374	7564	4755	1946	9138	6331	3525	0719	7915	5111	2308	9505	6704	3903	1103	23
0328	7517	4708	1899	9091	6284	3478	0673	7868	5064	2261	9459	6657	3856	1056	22
0281	7470	4661	1852	9045	6238	3431	0626	7821	5017	2214	9412	6610	3810	1010	21
0234	7424	4614	1806	8998	6191	3385	0579	7774	4971	2168	9365	6564	3763	0963	20
0187	7377	4567	1759	8951	6144	3338	0532	7728	4924	2121	9319	6517	3716	0916	19
0140	7330	4521	1712	8904	6097	3291	0486	7681	4877	2074	9272	6470	3670	0870	18
0093	7283	4474	1665	8857	6050	3244	0439	7634	4830	2027	9225	6424	3623	0823	17
0046	7236	4427	1618	8811	6004	3198	0392	7588	4784	1981	9178	6377	3576	0776	16
0000	7190	4380	1572	8764	5957	3151	0345	7541	4737	1934	9132	6330	3530	0730	15
9953	7143	4333	1525	8717	5910	3104	0299	7494	4690	1887	9085	6284	3483	0683	14
9906	7096	4287	1478	8670	5863	3057	0252	7447	4644	1841	9038	6237	3436	0636	13
9859	7049	4240	1431	8624	5817	3010	0205	7401	4597	1794	8992	6190	3390	0590	12
9812	7002	4193	1384	8577	5770	2964	0158	7354	4550	1747	8945	6144	3343	0543	11
9765	6955	4146	1338	8530	5723	2917	0112	7307	4503	1700	8898	6097	3296	0496	10
9719	6909	4099	1291	8483	5676	2870	0065	7260	4457	1654	8852	6050	3250	0450	9
9672	6862	4052	1244	8436	5630	2823	0018	7214	4410	1607	8805	6003	3203	0403	8
9625	6815	4006	1197	8390	5583	2777	9971	7167	4363	1560	8758	5957	3156	0356	7
9578	6768	3959	1150	8343	5536	2730	9925	7120	4316	1514	8711	5910	3110	0310	6
9531	6721	3912	1104	8296	5489	2683	9878	7073	4270	1467	8665	5863	3063	0263	5
9484	6674	3865	1057	8249	5442	2636	9831	7027	4223	1420	8618	5817	3016	0216	4
9438	6628	3818	1010	8202	5396	2590	9784	6980	4176	1373	8571	5770	2970	0170	3
9391	6581	3772	0963	8156	5349	2543	9738	6933	4130	1327	8525	5723	2923	0123	2
9344	6534	3725	0916	8109	5302	2496	9691	6886	4083	1280	8478	5677	2876	0076	1
9297	6487	3678	0870	8062	5255	2449	9644	6840	4036	1233	8431	5630	2830	0030	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Tangent Deg. 57

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 727	9. 727	9. 727	9. 727	9. 728	9. 728	9. 728	9. 728	9. 728	9. 729	9. 729	9. 729	9. 729	9. 729	9. 730
0	2276	4278	6278	8277	0275	2271	4267	6260	8253	0244	2234	4223	6211	8197	0182
1	2310	4311	6312	8311	0308	2305	4300	6294	8286	0277	2267	4256	6244	8230	0215
2	2343	4345	6345	8344	0342	2338	4333	6327	8319	0311	2301	4289	6277	8263	0248
3	2376	4378	6378	8377	0375	2371	4366	6360	8353	0344	2334	4322	6310	8296	0281
4	2410	4411	6412	8410	0408	2404	4399	6393	8386	0377	2367	4356	6343	8329	0314
5	2443	4445	6445	8444	0441	2438	4433	6426	8419	0410	2400	4389	6376	8362	0347
6	2477	4478	6478	8477	0475	2471	4466	6460	8452	0443	2433	4422	6409	8395	0380
7	2510	4511	6512	8510	0508	2504	4499	6493	8485	0477	2466	4455	6442	8428	0413
8	2543	4545	6545	8544	0541	2537	4532	6526	8519	0510	2500	4488	6475	8461	0446
9	2577	4578	6578	8577	0574	2571	4566	6559	8552	0543	2533	4521	6509	8495	0479
10	2610	4611	6611	8610	0608	2604	4599	6593	8585	0576	2566	4554	6542	8528	0512
11	2643	4645	6645	8644	0641	2637	4632	6626	8618	0609	2599	4588	6575	8561	0545
12	2677	4678	6678	8677	0674	2671	4665	6659	8651	0642	2632	4621	6608	8594	0578
13	2710	4711	6711	8710	0708	2704	4699	6692	8685	0676	2665	4654	6641	8627	0611
14	2744	4745	6745	8743	0741	2737	4732	6725	8718	0709	2698	4687	6674	8660	0645
15	2777	4778	6778	8777	0774	2770	4765	6759	8751	0742	2732	4720	6707	8693	0678
16	2810	4811	6811	8810	0807	2804	4798	6792	8784	0775	2765	4753	6740	8726	0711
17	2844	4845	6845	8843	0841	2837	4832	6825	8817	0808	2798	4786	6773	8759	0744
18	2877	4878	6878	8877	0874	2870	4865	6858	8850	0841	2831	4819	6806	8792	0777
19	2910	4911	6911	8910	0907	2903	4898	6892	8884	0875	2864	4853	6840	8825	0810
20	2944	4945	6945	8943	0941	2937	4931	6925	8917	0908	2897	4886	6873	8858	0843
21	2977	4978	6978	8977	0974	2970	4965	6958	8950	0941	2931	4919	6906	8892	0876
22	3010	5012	7011	9010	1007	3003	4998	6991	8983	0974	2964	4952	6939	8925	0909
23	3044	5045	7045	9043	1040	3036	5031	7024	9016	1007	2997	4985	6972	8958	0942
24	3077	5078	7078	9076	1074	3070	5064	7058	9050	1040	3030	5018	7005	8991	0975
25	3111	5112	7111	9110	1107	3103	5097	7091	9083	1074	3063	5051	7038	9024	1008
26	3144	5145	7145	9143	1140	3136	5131	7124	9116	1107	3096	5084	7071	9057	1041
27	3177	5178	7178	9176	1174	3169	5164	7157	9149	1140	3129	5118	7104	9090	1074
28	3211	5212	7211	9210	1207	3203	5197	7190	9182	1173	3163	5151	7138	9123	1107
29	3244	5245	7245	9243	1240	3236	5230	7224	9216	1206	3196	5184	7171	9156	1141
30	3277	5278	7278	9276	1273	3269	5264	7257	9249	1239	3229	5217	7204	9189	1174
31	3311	5312	7311	9310	1307	3302	5297	7290	9282	1273	3262	5250	7237	9222	1207
32	3344	5345	7345	9343	1340	3336	5330	7323	9315	1306	3295	5283	7270	9255	1240
33	3377	5378	7378	9376	1373	3369	5363	7356	9348	1339	3328	5316	7303	9289	1273
34	3411	5412	7411	9409	1406	3402	5397	7390	9382	1372	3361	5349	7336	9322	1306
35	3444	5445	7444	9443	1440	3435	5430	7423	9415	1405	3395	5383	7369	9355	1339
36	3477	5478	7478	9476	1473	3469	5463	7456	9448	1438	3428	5416	7402	9388	1372
37	3511	5512	7511	9509	1506	3502	5496	7489	9481	1472	3461	5449	7435	9421	1405
38	3544	5545	7544	9543	1540	3535	5529	7523	9514	1505	3494	5482	7469	9454	1438
39	3578	5578	7578	9576	1573	3568	5563	7556	9547	1538	3527	5515	7502	9487	1471
40	3611	5612	7611	9609	1606	3602	5596	7589	9581	1571	3560	5548	7535	9520	1504
41	3644	5645	7644	9642	1639	3635	5629	7622	9614	1604	3593	5581	7568	9553	1537
42	3678	5678	7678	9676	1673	3668	5662	7655	9647	1637	3627	5614	7601	9586	1570
43	3711	5712	7711	9709	1706	3701	5696	7689	9680	1671	3660	5648	7634	9619	1603
44	3744	5745	7744	9742	1739	3735	5729	7722	9713	1704	3693	5681	7667	9652	1636
45	3778	5778	7778	9776	1772	3768	5762	7755	9747	1737	3726	5714	7700	9685	1669
46	3811	5812	7811	9809	1806	3801	5795	7788	9780	1770	3759	5747	7733	9719	1703
47	3844	5845	7844	9842	1839	3834	5828	7821	9813	1803	3792	5780	7766	9752	1736
48	3878	5878	7878	9876	1872	3868	5862	7855	9846	1836	3825	5813	7800	9785	1769
49	3911	5912	7911	9909	1905	3901	5895	7888	9879	1870	3859	5846	7833	9818	1802
50	3944	5945	7944	9942	1939	3934	5928	7921	9912	1903	3892	5879	7866	9851	1835
51	3978	5978	7977	9975	1972	3967	5961	7954	9946	1936	3925	5912	7899	9884	1868
52	4011	6012	8011	0009	2005	4001	5995	7987	9979	1969	3958	5946	7932	9917	1901
53	4044	6045	8044	0042	2039	4034	6028	8021	0012	2002	3991	5979	7965	9950	1934
54	4078	6078	8077	0075	2072	4067	6061	8054	0045	2035	4024	6012	7998	9983	1967
55	4111	6112	8111	0109	2105	4100	6094	8087	0078	2069	4057	6045	8031	0016	1000
56	4145	6145	8144	0142	2138	4134	6128	8120	0112	2102	4090	6078	8064	0049	2033
57	4178	6178	8177	0175	2172	4167	6161	8153	0145	2135	4124	6111	8097	0082	2066
58	4211	6212	8211	0208	2205	4200	6194	8187	0178	2168	4157	6144	8131	0115	2099
59	4245	6245	8244	0242	2238	4233	6227	8220	0211	2201	4190	6177	8164	0149	2132
60	4278	6278	8277	0275	2271	4267	6260	8253	0244	2234	4223	6211	8197	0182	2165
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

	15′	16′	17′	18′	19′	20′	21′	22	23′	24′	25′	26′	27′	28′	29′	
	9. 927	9. 927	9. 927	9. 926	9. 926	9. 926	9. 926	9. 926	9. 926	9. 926	9. 926	9. 926	9. 926	9. 926	9. 926	″
0	2306	1509	0711	9913	9114	8314	7514	6714	5913	5112	4310	3507	2704	1901	1096	60
1	2293	1496	0698	9899	9100	8301	7501	6701	5900	5098	4296	3494	2691	1887	1083	59
2	2280	1482	0684	9886	9087	8288	7488	6687	5886	5085	4283	3480	2677	1874	1070	58
3	2266	1469	0671	9873	9074	8274	7474	6674	5873	5071	4269	3467	2664	1860	1056	57
4	2253	1456	0658	9859	9060	8261	7461	6661	5860	5058	4256	3454	2650	1847	1042	56
5	2240	1442	0644	9846	9047	8248	7448	6647	5846	5045	4243	3440	2637	1834	1029	55
6	2226	1429	0631	9833	9034	8234	7434	6634	5833	5031	4229	3427	2624	1820	1016	54
7	2213	1416	0618	9819	9020	8221	7421	6621	5820	5018	4216	3413	2610	1807	1003	53
8	2200	1402	0605	9806	9007	8208	7408	6607	5806	5005	4203	3400	2597	1793	0989	52
9	2187	1389	0591	9793	8994	8194	7394	6594	5793	4991	4189	3387	2584	1780	0976	51
10	2173	1376	0578	9779	8981	8181	7381	6580	5779	4978	4176	3373	2570	1767	0962	50
11	2160	1363	0565	9766	8967	8168	7368	6567	5766	4965	4162	3360	2557	1753	0949	49
12	2147	1349	0551	9753	8954	8154	7354	6554	5753	4951	4149	3346	2543	1740	0936	48
13	2133	1336	0538	9740	8941	8141	7341	6540	5739	4938	4136	3333	2530	1726	0922	47
14	2120	1323	0525	9726	8927	8128	7328	6527	5726	4924	4122	3320	2517	1713	0909	46
15	2107	1309	0511	9713	8914	8114	7314	6514	5713	4911	4109	3306	2503	1700	0895	45
16	2094	1296	0498	9700	8901	8101	7301	6500	5699	4898	4096	3293	2490	1686	0882	44
17	2080	1283	0485	9686	8887	8088	7288	6487	5686	4884	4082	3280	2476	1673	0869	43
18	2067	1270	0472	9673	8874	8074	7274	6474	5673	4871	4069	3266	2463	1659	0855	42
19	2054	1256	0458	9660	8861	8061	7261	6460	5659	4858	4055	3253	2450	1646	0842	41
20	2040	1243	0445	9646	8847	8048	7248	6447	5646	4844	4042	3239	2436	1633	0828	40
21	2027	1230	0432	9633	8834	8034	7234	6434	5633	4831	4029	3226	2423	1619	0815	39
22	2014	1216	0418	9620	8821	8021	7221	6420	5619	4818	4015	3213	2409	1606	0802	38
23	2001	1203	0405	9606	8807	8008	7208	6407	5606	4804	4002	3199	2396	1592	0788	37
24	1987	1190	0392	9593	8794	7994	7194	6394	5592	4791	3989	3186	2383	1579	0775	36
25	1974	1176	0378	9580	8781	7981	7181	6380	5579	4777	3975	3173	2369	1566	0761	35
26	1961	1163	0365	9566	8767	7968	7168	6367	5566	4764	3962	3159	2356	1552	0748	34
27	1947	1150	0352	9553	8754	7954	7154	6354	5552	4751	3948	3146	2343	1539	0734	33
28	1934	1137	0338	9540	8741	7941	7141	6340	5539	4737	3935	3132	2329	1525	0721	32
29	1921	1123	0325	9527	8727	7928	7128	6327	5526	4724	3922	3119	2316	1512	0708	31
30	1908	1110	0312	9513	8714	7914	7114	6314	5512	4711	3908	3106	2302	1499	0694	30
31	1894	1097	0299	9500	8701	7901	7101	6300	5499	4697	3895	3092	2289	1485	0681	29
32	1881	1083	0285	9487	8687	7888	7088	6287	5486	4684	3882	3079	2276	1472	0667	28
33	1868	1070	0272	9473	8674	7874	7074	6273	5472	4671	3868	3065	2262	1458	0654	27
34	1854	1057	0259	9460	8661	7861	7061	6260	5459	4657	3855	3052	2249	1445	0641	26
35	1841	1043	0245	9447	8647	7848	7048	6247	5446	4644	3841	3039	2235	1432	0627	25
36	1828	1030	0232	9433	8634	7834	7034	6233	5432	4630	3828	3025	2222	1418	0614	24
37	1815	1017	0219	9420	8621	7821	7021	6220	5419	4617	3815	3012	2209	1405	0600	23
38	1801	1004	0205	9407	8607	7808	7007	6207	5405	4604	3801	2999	2195	1391	0587	22
39	1788	0990	0192	9393	8594	7794	6994	6193	5392	4590	3788	2985	2182	1378	0574	21
40	1775	0977	0179	9380	8581	7781	6981	6180	5379	4577	3775	2972	2168	1365	0560	20
41	1761	0964	0165	9367	8568	7768	6967	6167	5365	4564	3761	2958	2155	1351	0547	19
42	1748	0950	0152	9353	8554	7754	6954	6153	5352	4550	3748	2945	2142	1338	0533	18
43	1735	0937	0139	9340	8541	7741	6941	6140	5339	4537	3734	2932	2128	1324	0520	17
44	1722	0924	0126	9327	8528	7728	6927	6127	5325	4523	3721	2918	2115	1311	0507	16
45	1708	0910	0112	9313	8514	7714	6914	6113	5312	4510	3708	2905	2101	1298	0493	15
46	1695	0897	0099	9300	8501	7701	6901	6100	5299	4497	3694	2891	2088	1284	0480	14
47	1682	0884	0086	9287	8488	7688	6887	6087	5285	4483	3681	2878	2075	1271	0466	13
48	1668	0871	0072	9274	8474	7674	6874	6073	5272	4470	3668	2865	2061	1257	0453	12
49	1655	0857	0059	9260	8461	7661	6861	6060	5259	4457	3654	2851	2048	1244	0439	11
50	1642	0844	0046	9247	8448	7648	6847	6047	5245	4443	3641	2838	2034	1231	0426	10
51	1628	0831	0032	9234	8434	7634	6834	6033	5232	4430	3627	2825	2021	1217	0413	9
52	1615	0817	0019	9220	8421	7621	6821	6020	5218	4417	3614	2811	2008	1204	0399	8
53	1602	0804	0006	9207	8408	7608	6807	6006	5205	4403	3601	2798	1994	1190	0386	7
54	1589	0791	9992	9194	8394	7594	6794	5993	5192	4390	3587	2784	1981	1177	0372	6
55	1575	0777	9979	9180	8381	7581	6781	5980	5178	4376	3574	2771	1968	1164	0359	5
56	1562	0764	9966	9167	8368	7568	6767	5966	5165	4363	3561	2758	1954	1150	0346	4
57	1549	0751	9953	9154	8354	7554	6754	5953	5152	4350	3547	2744	1941	1137	0332	3
58	1535	0738	9939	9140	8341	7541	6741	5940	5138	4336	3534	2731	1927	1123	0319	2
59	1522	0724	9926	9127	8328	7528	6727	5926	5125	4323	3520	2717	1914	1110	0305	1
60	1509	0711	9913	9114	8314	7514	6714	5913	5112	4310	3507	2704	1901	1096	0292	0
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

32 Deg. Tangent

"	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9. 799	9. 800	9. 800	9. 800	9. 801	9. 801	9. 801	9. 801	9. 802	9. 802	9. 802	9. 803	9. 803	9. 803	9. 803
0	9970	2769	5567	8365	1161	3957	6752	9546	2340	5133	7925	0716	3506	6296	9085
1	0017	2816	5614	8411	1208	4004	6799	9593	2387	5179	7971	0762	3553	6343	9132
2	0063	2862	5661	8458	1254	4050	6845	9640	2433	5226	8018	0809	3599	6389	9178
3	0110	2909	5707	8504	1301	4097	6892	9686	2480	5272	8064	0856	3646	6436	9225
4	0157	2956	5754	8551	1348	4143	6938	9733	2526	5319	8111	0902	3692	6482	9271
5	0203	3002	5800	8598	1394	4190	6985	9779	2573	5365	8157	0949	3739	6529	9318
6	0250	3049	5847	8644	1441	4237	7032	9826	2619	5412	8204	0995	3785	6575	9364
7	0297	3096	5894	8691	1487	4283	7078	9872	2666	5459	8250	1042	3832	6622	9410
8	0343	3142	5940	8738	1534	4330	7125	9919	2712	5505	8297	1088	3878	6668	9457
9	0390	3189	5987	8784	1581	4376	7171	9966	2759	5552	8343	1135	3925	6715	9503
10	0437	3236	6034	8831	1627	4423	7218	0012	2805	5598	8390	1181	3971	6761	9550
11	0483	3282	6080	8877	1674	4470	7264	0059	2852	5645	8437	1228	4018	6808	9596
12	0530	3329	6127	8924	1720	4516	7311	0105	2899	5691	8483	1274	4064	6854	9643
13	0577	3375	6173	8971	1767	4563	7358	0152	2945	5738	8530	1321	4111	6901	9689
14	0623	3422	6220	9017	1814	4609	7404	0198	2992	5784	8576	1367	4157	6947	9736
15	0670	3469	6267	9064	1860	4656	7451	0245	3038	5831	8623	1414	4204	6993	9782
16	0717	3515	6313	9110	1907	4703	7497	0291	3085	5877	8669	1460	4250	7040	9829
17	0763	3562	6360	9157	1953	4749	7544	0338	3131	5924	8716	1507	4297	7086	9875
18	0810	3609	6407	9204	2000	4796	7591	0385	3178	5970	8762	1553	4343	7133	9922
19	0857	3655	6453	9250	2047	4842	7637	0431	3224	6017	8809	1600	4390	7179	9968
20	0903	3702	6500	9297	2093	4889	7684	0478	3271	6063	8855	1646	4436	7226	0015
21	0950	3749	6546	9344	2140	4935	7730	0524	3318	6110	8902	1693	4483	7272	0061
22	0997	3795	6593	9390	2186	4982	7777	0571	3364	6157	8948	1739	4529	7319	0108
23	1043	3842	6640	9437	2233	5029	7823	0617	3411	6203	8995	1786	4576	7365	0154
24	1090	3888	6686	9483	2280	5075	7870	0664	3457	6250	9041	1832	4622	7412	0200
25	1136	3935	6733	9530	2326	5122	7917	0711	3504	6296	9088	1879	4669	7458	0247
26	1183	3982	6780	9577	2373	5168	7963	0757	3550	6343	9134	1925	4715	7505	0293
27	1230	4028	6826	9623	2419	5215	8010	0804	3597	6389	9181	1972	4762	7551	0340
28	1276	4075	6873	9670	2466	5262	8056	0850	3643	6436	9227	2018	4808	7598	0386
29	1323	4122	6919	9716	2513	5308	8103	0897	3690	6482	9274	2065	4855	7644	0433
30	1370	4168	6966	9763	2559	5355	8149	0943	3736	6529	9320	2111	4901	7691	0479
31	1416	4215	7013	9810	2606	5401	8196	0990	3783	6575	9367	2158	4948	7737	0526
32	1463	4262	7059	9856	2652	5448	8243	1036	3830	6622	9413	2204	4994	7784	0572
33	1510	4308	7106	9903	2699	5494	8289	1083	3876	6668	9460	2251	5041	7830	0619
34	1556	4355	7153	9949	2746	5541	8336	1130	3923	6715	9507	2297	5087	7877	0665
35	1603	4401	7199	9996	2792	5588	8382	1176	3969	6761	9553	2344	5134	7923	0712
36	1650	4448	7246	0043	2839	5634	8429	1223	4016	6808	9600	2390	5180	7970	0758
37	1696	4495	7292	0089	2885	5681	8475	1269	4062	6855	9646	2437	5227	8016	0805
38	1743	4541	7339	0136	2932	5727	8522	1316	4109	6901	9693	2483	5273	8063	0851
39	1790	4588	7386	0183	2979	5774	8569	1362	4155	6948	9739	2530	5320	8109	0898
40	1836	4635	7432	0229	3025	5821	8615	1409	4202	6994	9786	2576	5366	8156	0944
41	1883	4681	7479	0276	3072	5867	8662	1455	4248	7041	9832	2623	5413	8202	0990
42	1930	4728	7526	0322	3118	5914	8708	1502	4295	7087	9879	2669	5459	8249	1037
43	1976	4775	7572	0369	3165	5960	8755	1549	4342	7134	9925	2716	5506	8295	1083
44	2023	4821	7619	0416	3212	6007	8801	1595	4388	7180	9972	2762	5552	8341	1130
45	2069	4868	7665	0462	3258	6053	8848	1642	4435	7227	0018	2809	5599	8388	1176
46	2116	4914	7712	0509	3305	6100	8895	1688	4481	7273	0065	2855	5645	8434	1223
47	2163	4961	7759	0555	3351	6147	8941	1735	4528	7320	0111	2902	5692	8481	1269
48	2209	5008	7805	0602	3398	6193	8988	1781	4574	7366	0158	2948	5738	8527	1316
49	2256	5054	7852	0649	3445	6240	9034	1828	4621	7413	0204	2995	5785	8574	1362
50	2303	5101	7898	0695	3491	6286	9081	1874	4667	7459	0251	3041	5831	8620	1409
51	2349	5148	7945	0742	3538	6333	9127	1921	4714	7506	0297	3088	5878	8667	1455
52	2396	5194	7992	0788	3584	6380	9174	1968	4760	7553	0344	3134	5924	8713	1502
53	2443	5241	8038	0835	3631	6426	9220	2014	4807	7599	0390	3181	5971	8760	1548
54	2489	5287	8085	0882	3678	6473	9267	2061	4853	7646	0437	3227	6017	8806	1595
55	2536	5334	8132	0928	3724	6519	9314	2107	4900	7692	0483	3274	6064	8853	1641
56	2583	5381	8178	0975	3771	6566	9360	2154	4947	7739	0530	3320	6110	8899	1687
57	2629	5427	8225	1021	3817	6612	9407	2200	4993	7785	0576	3367	6157	8946	1734
58	2676	5474	8271	1068	3864	6659	9453	2247	5040	7832	0623	3413	6203	8992	1780
59	2722	5521	8318	1115	3910	6706	9500	2293	5086	7878	0669	3460	6250	9039	1827
60	2769	5567	8365	1161	3957	6752	9546	2340	5133	7925	0716	3506	6296	9085	1873
"	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Tangent Deg. 57

32 Deg. Co-Tangent

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	"
10. 200	10. 199	10. 199	10. 199	10. 198	10. 198	10. 198	10. 198	10. 197	10. 197	10. 197	10. 196	10. 196	10. 196	10. 196	
0030	7231	4433	1635	8839	6043	3248	0454	7660	4867	2075	9284	6494	3704	0915	60
9983	7184	4386	1589	8792	5996	3201	0407	7613	4821	2029	9238	6447	3657	0868	59
9937	7138	4339	1542	8746	5950	3155	0360	7567	4774	1982	9191	6401	3611	0822	58
9890	7091	4293	1496	8699	5903	3108	0314	7520	4728	1936	9144	6354	3564	0775	57
9843	7044	4246	1449	8652	5857	3062	0267	7474	4681	1889	9098	6308	3518	0729	56
9797	6998	4200	1402	8606	5810	3015	0221	7427	4635	1843	9051	6261	3471	0682	55
9750	6951	4153	1356	8559	5763	2968	0174	7381	4588	1796	9005	6215	3425	0636	54
9703	6904	4106	1309	8513	5717	2922	0128	7334	4541	1750	8958	6168	3378	0590	53
9657	6858	4060	1262	8466	5670	2875	0081	7288	4495	1703	8912	6122	3332	0543	52
9610	6811	4013	1216	8419	5624	2829	0034	7241	4448	1657	8865	6075	3285	0497	51
9563	6764	3966	1169	8373	5577	2782	9988	7195	4402	1610	8819	6029	3239	0450	50
9517	6718	3920	1123	8326	5530	2736	9941	7148	4355	1563	8772	5982	3192	0404	49
9470	6671	3873	1076	8280	5484	2689	9895	7101	4309	1517	8726	5936	3146	0357	48
9423	6625	3827	1029	8233	5437	2642	9848	7055	4262	1470	8679	5889	3099	0311	47
9377	6578	3780	0983	8186	5391	2596	9802	7008	4216	1424	8633	5843	3053	0264	46
9330	6531	3733	0936	8140	5344	2549	9755	6962	4169	1377	8586	5796	3007	0218	45
9283	6485	3687	0890	8093	5297	2503	9709	6915	4123	1331	8540	5750	2960	0171	44
9237	6438	3640	0843	8047	5251	2456	9662	6869	4076	1284	8493	5703	2914	0125	43
9190	6391	3593	0796	8000	5204	2409	9615	6822	4030	1238	8447	5657	2867	0078	42
9143	6345	3547	0750	7953	5158	2363	9569	6776	3983	1191	8400	5610	2821	0032	41
9097	6298	3500	0703	7907	5111	2316	9522	6729	3937	1145	8354	5564	2774	9985	40
9050	6251	3454	0656	7860	5065	2270	9476	6682	3890	1098	8307	5517	2728	9939	39
9003	6205	3407	0610	7814	5018	2223	9429	6636	3843	1052	8261	5471	2681	9892	38
8957	6158	3360	0563	7767	4971	2177	9383	6589	3797	1005	8214	5424	2635	9846	37
8910	6112	3314	0517	7720	4925	2130	9336	6543	3750	0959	8168	5378	2588	9800	36
8864	6065	3267	0470	7674	4878	2083	9289	6496	3704	0912	8121	5331	2542	9753	35
8817	6018	3220	0423	7627	4832	2037	9243	6450	3657	0866	8075	5285	2495	9707	34
8770	5972	3174	0377	7581	4785	1990	9196	6403	3611	0819	8028	5238	2449	9660	33
8724	5925	3127	0330	7534	4738	1944	9150	6357	3564	0773	7982	5192	2402	9614	32
8677	5878	3081	0284	7487	4692	1897	9103	6310	3518	0726	7935	5145	2356	9567	31
8630	5832	3034	0237	7441	4645	1851	9057	6264	3471	0680	7889	5099	2309	9521	30
8584	5785	2987	0190	7394	4599	1804	9010	6217	3425	0633	7842	5052	2263	9474	29
8537	5738	2941	0144	7348	4552	1757	8964	6170	3378	0587	7796	5006	2216	9428	28
8490	5692	2894	0097	7301	4506	1711	8917	6124	3332	0540	7749	4959	2170	9381	27
8444	5645	2847	0051	7254	4459	1664	8870	6077	3285	0493	7703	4913	2123	9335	26
8397	5599	2801	0004	7208	4412	1618	8824	6031	3239	0447	7656	4866	2077	9288	25
8350	5552	2754	9957	7161	4366	1571	8777	5984	3192	0400	7610	4820	2030	9242	24
8304	5505	2708	9911	7115	4319	1525	8731	5938	3145	0354	7563	4773	1984	9195	23
8257	5459	2661	9864	7068	4273	1478	8684	5891	3099	0307	7517	4727	1937	9149	22
8210	5412	2614	9817	7021	4226	1431	8638	5845	3052	0261	7470	4680	1891	9102	21
8164	5365	2568	9771	6975	4179	1385	8591	5798	3006	0214	7424	4634	1844	9056	20
8117	5319	2521	9724	6928	4133	1338	8545	5752	2959	0168	7377	4587	1798	9010	19
8070	5272	2474	9678	6882	4086	1292	8498	5705	2913	0121	7331	4541	1751	8963	18
8024	5225	2428	9631	6835	4040	1245	8451	5658	2866	0075	7284	4494	1705	8917	17
7977	5179	2381	9584	6788	3993	1199	8405	5612	2820	0028	7238	4448	1659	8870	16
7931	5132	2335	9538	6742	3947	1152	8358	5565	2773	9982	7191	4401	1612	8824	15
7884	5086	2288	9491	6695	3900	1105	8312	5519	2727	9935	7145	4355	1566	8777	14
7837	5039	2241	9445	6649	3853	1059	8265	5472	2680	9889	7098	4308	1519	8731	13
7791	4992	2195	9398	6602	3807	1012	8219	5426	2634	9842	7052	4262	1473	8684	12
7744	4946	2148	9351	6555	3760	0966	8172	5379	2587	9796	7005	4215	1426	8638	11
7697	4899	2102	9305	6509	3714	0919	8126	5333	2541	9749	6959	4169	1380	8591	10
7651	4852	2055	9258	6462	3667	0873	8079	5286	2494	9703	6912	4122	1333	8545	9
7604	4806	2008	9212	6416	3620	0826	8032	5240	2447	9656	6866	4076	1287	8498	8
7557	4759	1962	9165	6369	3574	0780	7986	5193	2401	9610	6819	4029	1240	8452	7
7511	4713	1915	9118	6322	3527	0733	7939	5147	2354	9563	6773	3983	1194	8405	6
7464	4666	1868	9072	6276	3481	0686	7893	5100	2308	9517	6726	3936	1147	8359	5
7417	4619	1822	9025	6229	3434	0640	7846	5053	2261	9470	6680	3890	1101	8313	4
7371	4573	1775	8979	6183	3388	0593	7800	5007	2215	9424	6633	3843	1054	8266	3
7324	4526	1729	8932	6136	3341	0547	7753	4960	2168	9377	6587	3797	1008	8220	2
7278	4479	1682	8885	6090	3294	0500	7707	4914	2122	9331	6540	3750	0961	8173	1
7231	4433	1635	8839	6043	3248	0454	7660	4867	2075	9284	6494	3704	0915	8127	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	"

Tangent Deg. 57

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 730	9. 730	9. 730	9. 730	9. 731	9. 731	9. 731	9. 731	9. 731	9. 731	9. 732	9. 732	9. 732	9. 732	9. 732
0	2165	4148	6129	8109	0087	2064	4040	6015	7989	9961	1932	3902	5870	7837	9803
1	2198	4181	6162	8142	0120	2097	4073	6048	8021	9994	1965	3934	5903	7870	9836
2	2231	4214	6195	8174	0153	2130	4106	6081	8054	0027	1997	3967	5936	7903	9869
3	2264	4247	6228	8207	0186	2163	4139	6114	8087	0059	2030	4000	5968	7935	9901
4	2297	4280	6261	8240	0219	2196	4172	6147	8120	0092	2063	4033	6001	7968	9934
5	2330	4313	6294	8273	0252	2229	4205	6180	8153	0125	2096	4066	6034	8001	9967
6	2364	4346	6327	8306	0285	2262	4238	6213	8186	0158	2129	4098	6067	8034	0000
7	2397	4379	6360	8339	0318	2295	4271	6245	8219	0191	2162	4131	6100	8067	0032
8	2430	4412	6393	8372	0351	2328	4304	6278	8252	0224	2195	4164	6132	8099	0065
9	2463	4445	6426	8405	0384	2361	4337	6311	8285	0257	2227	4197	6165	8132	0098
10	2496	4478	6459	8438	0417	2394	4370	6344	8317	0289	2260	4230	6198	8165	0131
11	2529	4511	6492	8471	0450	2427	4403	6377	8350	0322	2293	4262	6231	8198	0163
12	2562	4544	6525	8504	0483	2460	4435	6410	8383	0355	2326	4295	6263	8230	0196
13	2595	4577	6558	8537	0516	2493	4468	6443	8416	0388	2359	4328	6296	8263	0229
14	2628	4610	6591	8570	0549	2526	4501	6476	8449	0421	2392	4361	6329	8296	0262
15	2661	4643	6624	8603	0582	2558	4534	6509	8482	0454	2424	4394	6362	8329	0294
16	2694	4676	6657	8636	0614	2591	4567	6542	8515	0487	2457	4427	6395	8361	0327
17	2727	4709	6690	8669	0647	2624	4600	6574	8548	0519	2490	4459	6427	8394	0360
18	2760	4742	6723	8702	0680	2657	4633	6607	8580	0552	2523	4492	6460	8427	0393
19	2793	4775	6756	8735	0713	2690	4666	6640	8613	0585	2556	4525	6493	8460	0425
20	2826	4808	6789	8768	0746	2723	4699	6673	8646	0618	2589	4558	6526	8493	0458
21	2859	4841	6822	8801	0779	2756	4732	6706	8679	0651	2621	4591	6559	8525	0491
22	2892	4874	6855	8834	0812	2789	4765	6739	8712	0684	2654	4623	6591	8558	0524
23	2925	4907	6888	8867	0845	2822	4798	6772	8745	0717	2687	4656	6624	8591	0556
24	2958	4940	6921	8900	0878	2855	4830	6805	8778	0749	2720	4689	6657	8624	0589
25	2991	4973	6954	8933	0911	2888	4863	6838	8811	0782	2753	4722	6690	8656	0622
26	3024	5006	6987	8966	0944	2921	4896	6870	8843	0815	2785	4755	6723	8689	0655
27	3057	5039	7020	8999	0977	2954	4929	6903	8876	0848	2818	4787	6755	8722	0687
28	3091	5072	7053	9032	1010	2987	4962	6936	8909	0881	2851	4820	6788	8755	0720
29	3124	5105	7086	9065	1043	3020	4995	6969	8942	0914	2884	4853	6821	8787	0753
30	3157	5138	7119	9098	1076	3053	5028	7002	8975	0946	2917	4886	6854	8820	0786
31	3190	5171	7152	9131	1109	3085	5061	7035	9008	0979	2950	4919	6886	8853	0818
32	3223	5204	7185	9164	1142	3118	5094	7068	9041	1012	2982	4951	6919	8886	0851
33	3256	5237	7218	9197	1175	3151	5127	7101	9073	1045	3015	4984	6952	8919	0884
34	3289	5270	7251	9230	1208	3184	5160	7134	9106	1078	3048	5017	6985	8951	0917
35	3322	5303	7284	9263	1241	3217	5192	7166	9139	1111	3081	5050	7018	8984	0949
36	3355	5336	7317	9296	1274	3250	5225	7199	9172	1144	3114	5083	7050	9017	0982
37	3388	5369	7350	9329	1307	3283	5258	7232	9205	1176	3147	5116	7083	9050	1015
38	3421	5402	7383	9362	1340	3316	5291	7265	9238	1209	3179	5148	7116	9082	1047
39	3454	5435	7416	9395	1372	3349	5324	7298	9271	1242	3212	5181	7149	9115	1080
40	3487	5468	7449	9428	1405	3382	5357	7331	9304	1275	3245	5214	7182	9148	1113
41	3520	5501	7482	9461	1438	3415	5390	7364	9336	1308	3278	5247	7214	9181	1146
42	3553	5535	7515	9494	1471	3448	5423	7397	9369	1341	3311	5280	7247	9213	1178
43	3586	5568	7548	9527	1504	3481	5456	7430	9402	1373	3344	5312	7280	9246	1211
44	3619	5601	7581	9560	1537	3514	5489	7462	9435	1406	3376	5345	7313	9279	1244
45	3652	5634	7614	9593	1570	3546	5522	7495	9468	1439	3409	5378	7345	9312	1277
46	3685	5667	7647	9626	1603	3579	5554	7528	9501	1472	3442	5411	7378	9344	1309
47	3718	5700	7680	9658	1636	3612	5587	7561	9534	1505	3475	5444	7411	9377	1342
48	3751	5733	7713	9691	1669	3645	5620	7594	9566	1538	3508	5476	7444	9410	1375
49	3784	5766	7746	9724	1702	3678	5653	7627	9599	1571	3540	5509	7477	9443	1408
50	3817	5799	7779	9757	1735	3711	5686	7660	9632	1603	3573	5542	7509	9475	1440
51	3850	5832	7812	9790	1768	3744	5719	7693	9665	1636	3606	5575	7542	9508	1473
52	3883	5865	7845	9823	1801	3777	5752	7726	9698	1669	3639	5608	7575	9541	1506
53	3916	5898	7878	9856	1834	3810	5785	7758	9731	1702	3672	5640	7608	9574	1539
54	3949	5931	7911	9889	1867	3843	5818	7791	9764	1735	3705	5673	7640	9607	1571
55	3982	5964	7944	9922	1900	3876	5851	7824	9797	1768	3737	5706	7673	9639	1604
56	4015	5997	7977	9955	1933	3909	5884	7857	9829	1800	3770	5739	7706	9672	1637
57	4049	6030	8010	9988	1966	3942	5916	7890	9862	1833	3803	5772	7739	9705	1670
58	4082	6063	8043	0021	1998	3975	5949	7923	9895	1866	3836	5804	7772	9738	1702
59	4115	6096	8076	0054	2031	4007	5982	7956	9928	1899	3869	5837	7804	9770	1735
60	4148	6129	8109	0087	2064	4040	6015	7989	9961	1932	3902	5870	7837	9803	1768
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
	9. 926	9. 925	9. 925	9. 925	9. 925	9. 925	9. 925	9. 925	9. 925	9. 925	9. 925	9. 925	9. 925	9. 924	9. 924	″
0	0292	9487	8681	7875	7069	6261	5454	4646	3837	3028	2218	1408	0597	9786	8974	60
1	0279	9473	8668	7862	7055	6248	5440	4632	3823	3014	2204	1394	0583	9772	8960	59
2	0265	9460	8654	7848	7042	6234	5427	4619	3810	3001	2191	1381	0570	9759	8947	58
3	0252	9447	8641	7835	7028	6221	5413	4605	3796	2987	2177	1367	0556	9745	8933	57
4	0238	9433	8628	7821	7015	6208	5400	4592	3783	2974	2164	1354	0543	9731	8920	56
5	0225	9420	8614	7808	7001	6194	5386	4578	3769	2960	2150	1340	0529	9718	8906	55
6	0211	9406	8601	7794	6988	6181	5373	4565	3756	2947	2137	1327	0516	9704	8893	54
7	0198	9393	8587	7781	6974	6167	5359	4551	3742	2933	2123	1313	0502	9691	8879	53
8	0185	9379	8574	7768	6961	6154	5346	4538	3729	2920	2110	1300	0489	9677	8865	52
9	0171	9366	8560	7754	6947	6140	5333	4524	3715	2906	2096	1286	0475	9664	8852	51
10	0158	9353	8547	7741	6934	6127	5319	4511	3702	2893	2083	1273	0462	9650	8838	50
11	0144	9339	8533	7727	6921	6113	5306	4497	3689	2879	2069	1259	0448	9637	8825	49
12	0131	9326	8520	7714	6907	6100	5292	4484	3675	2866	2056	1246	0435	9623	8811	48
13	0118	9312	8507	7700	6894	6086	5279	4470	3662	2852	2042	1232	0421	9610	8798	47
14	0104	9299	8493	7687	6880	6073	5265	4457	3648	2839	2029	1218	0408	9596	8784	46
15	0091	9285	8480	7674	6867	6059	5252	4443	3635	2825	2015	1205	0394	9583	8771	45
16	0077	9272	8466	7660	6853	6046	5238	4430	3621	2812	2002	1191	0381	9569	8757	44
17	0064	9259	8453	7647	6840	6033	5225	4416	3608	2798	1988	1178	0367	9556	8744	43
18	0050	9245	8439	7633	6826	6019	5211	4403	3594	2785	1975	1164	0354	9542	8730	42
19	0037	9232	8426	7620	6813	6006	5198	4389	3581	2771	1961	1151	0340	9529	8717	41
20	0024	9218	8413	7606	6800	5992	5184	4376	3567	2758	1948	1137	0326	9515	8703	40
21	0010	9205	8399	7593	6786	5979	5171	4363	3554	2744	1934	1124	0313	9501	8689	39
22	9997	9192	8386	7579	6773	5965	5157	4349	3540	2731	1921	1110	0299	9488	8676	38
23	9983	9178	8372	7566	6759	5952	5144	4336	3527	2717	1907	1097	0286	9474	8662	37
24	9970	9165	8359	7553	6746	5938	5130	4322	3513	2704	1894	1083	0272	9461	8649	36
25	9957	9151	8345	7539	6732	5925	5117	4309	3500	2690	1880	1070	0259	9447	8635	35
26	9943	9138	8332	7526	6719	5911	5104	4295	3486	2677	1867	1056	0245	9434	8622	34
27	9930	9124	8319	7512	6705	5898	5090	4282	3473	2663	1853	1043	0232	9420	8608	33
28	9916	9111	8305	7499	6692	5885	5077	4268	3459	2650	1840	1029	0218	9407	8595	32
29	9903	9098	8292	7485	6678	5871	5063	4255	3446	2636	1826	1016	0205	9393	8581	31
30	9889	9084	8278	7472	6665	5858	5050	4241	3432	2623	1813	1002	0191	9380	8568	30
31	9876	9071	8265	7458	6652	5844	5036	4228	3419	2609	1799	0989	0178	9366	8554	29
32	9863	9057	8251	7445	6638	5831	5023	4214	3405	2596	1786	0975	0164	9353	8541	28
33	9849	9044	8238	7432	6625	5817	5009	4201	3392	2582	1772	0962	0151	9339	8527	27
34	9836	9030	8225	7418	6611	5804	4996	4187	3378	2569	1759	0948	0137	9326	8513	26
35	9822	9017	8211	7405	6598	5790	4982	4174	3365	2555	1745	0935	0124	9312	8500	25
36	9809	9004	8198	7391	6584	5777	4969	4160	3351	2542	1732	0921	0110	9299	8486	24
37	9796	8990	8184	7378	6571	5763	4955	4147	3338	2528	1718	0908	0097	9285	8473	23
38	9782	8977	8171	7364	6557	5750	4942	4133	3324	2515	1705	0894	0083	9271	8459	22
39	9769	8963	8157	7351	6544	5736	4928	4120	3311	2501	1691	0881	0070	9258	8446	21
40	9755	8950	8144	7337	6530	5723	4915	4106	3297	2488	1678	0867	0056	9244	8432	20
41	9742	8936	8130	7324	6517	5710	4902	4093	3284	2474	1664	0854	0043	9231	8419	19
42	9728	8923	8117	7311	6504	5696	4888	4079	3270	2461	1651	0840	0029	9217	8405	18
43	9715	8910	8104	7297	6490	5683	4875	4066	3257	2447	1637	0827	0015	9204	8392	17
44	9702	8896	8090	7284	6477	5669	4861	4053	3243	2434	1624	0813	0002	9190	8378	16
45	9688	8883	8077	7270	6463	5656	4848	4039	3230	2420	1610	0800	9988	9177	8365	15
46	9675	8869	8063	7257	6450	5642	4834	4026	3216	2407	1597	0786	9975	9163	8351	14
47	9661	8856	8050	7243	6436	5629	4821	4012	3203	2393	1583	0773	9961	9150	8337	13
48	9648	8842	8036	7230	6423	5615	4807	3999	3189	2380	1570	0759	9948	9136	8324	12
49	9634	8829	8023	7216	6409	5602	4794	3985	3176	2366	1556	0746	9934	9123	8310	11
50	9621	8816	8010	7203	6396	5588	4780	3972	3163	2353	1543	0732	9921	9109	8297	10
51	9608	8802	7996	7190	6382	5575	4767	3958	3149	2339	1529	0718	9907	9096	8283	9
52	9594	8789	7983	7176	6369	5561	4753	3945	3136	2326	1516	0705	9894	9082	8270	8
53	9581	8775	7969	7163	6356	5548	4740	3931	3122	2312	1502	0691	9880	9068	8256	7
54	9567	8762	7956	7149	6342	5534	4726	3918	3109	2299	1489	0678	9867	9055	8243	6
55	9554	8748	7942	7136	6329	5521	4713	3904	3095	2285	1475	0664	9853	9041	8229	5
56	9541	8735	7929	7122	6315	5508	4699	3891	3082	2272	1462	0651	9840	9028	8216	4
57	9527	8722	7915	7109	6302	5494	4686	3877	3068	2258	1448	0637	9826	9014	8202	3
58	9514	8708	7902	7095	6288	5481	4672	3864	3055	2245	1435	0624	9813	9001	8189	2
59	9500	8695	7889	7082	6275	5467	4659	3850	3041	2231	1421	0610	9799	8987	8175	1
60	9487	8681	7875	7069	6261	5454	4646	3837	3028	2218	1408	0597	9786	8974	8161	0
	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 804	9. 804	9. 804	9. 805	9. 805	9. 805	9. 805	9. 806	9. 806	9. 806	9. 806	9. 807	9. 807	9. 807	9. 808
0	1873	4661	7447	0233	3019	5803	8587	1370	4152	6933	9714	2494	5273	8052	0829
1	1920	4707	7494	0280	3065	5849	8633	1416	4198	6980	9760	2540	5319	8098	0876
2	1966	4754	7540	0326	3111	5896	8679	1462	4245	7026	9807	2587	5366	8144	0922
3	2013	4800	7587	0373	3158	5942	8726	1509	4291	7072	9853	2633	5412	8190	0968
4	2059	4847	7633	0419	3204	5989	8772	1555	4337	7119	9899	2679	5458	8237	1014
5	2106	4893	7680	0466	3251	6035	8819	1601	4384	7165	9946	2726	5505	8283	1061
6	2152	4939	7726	0512	3297	6081	8865	1648	4430	7211	9992	2772	5551	8329	1107
7	2199	4986	7773	0558	3343	6128	8911	1694	4476	7258	0038	2818	5597	8376	1153
8	2245	5032	7819	0605	3390	6174	8958	1741	4523	7304	0085	2864	5644	8422	1200
9	2291	5079	7865	0651	3436	6221	9004	1787	4569	7350	0131	2911	5690	8468	1246
10	2338	5125	7912	0698	3483	6267	9051	1833	4615	7397	0177	2957	5736	8515	1292
11	2384	5172	7958	0744	3529	6313	9097	1880	4662	7443	0224	3003	5783	8561	1338
12	2431	5218	8005	0790	3576	6360	9143	1926	4708	7489	0270	3050	5829	8607	1385
13	2477	5265	8051	0837	3622	6406	9190	1972	4755	7536	0316	3096	5875	8653	1431
14	2524	5311	8098	0883	3668	6453	9236	2019	4801	7582	0363	3142	5921	8700	1477
15	2570	5358	8144	0930	3715	6499	9282	2065	4847	7628	0409	3189	5968	8746	1524
16	2617	5404	8190	0976	3761	6545	9329	2112	4894	7675	0455	3235	6014	8792	1570
17	2663	5450	8237	1023	3808	6592	9375	2158	4940	7721	0502	3281	6060	8839	1616
18	2710	5497	8283	1069	3854	6638	9422	2204	4986	7768	0548	3328	6107	8885	1662
19	2756	5543	8330	1115	3900	6685	9468	2251	5033	7814	0594	3374	6153	8931	1709
20	2803	5590	8376	1162	3947	6731	9514	2297	5079	7860	0641	3420	6199	8978	1755
21	2849	5636	8423	1208	3993	6777	9561	2343	5125	7907	0687	3467	6246	9024	1801
22	2895	5683	8469	1255	4040	6824	9607	2390	5172	7953	0733	3513	6292	9070	1848
23	2942	5729	8515	1301	4086	6870	9654	2436	5218	7999	0780	3559	6338	9116	1894
24	2988	5776	8562	1348	4132	6917	9700	2483	5264	8046	0826	3606	6385	9163	1940
25	3035	5822	8608	1394	4179	6963	9746	2529	5311	8092	0872	3652	6431	9209	1986
26	3081	5868	8655	1440	4225	7009	9793	2575	5357	8138	0919	3698	6477	9255	2033
27	3128	5915	8701	1487	4272	7056	9839	2622	5404	8185	0965	3745	6523	9302	2079
28	3174	5961	8748	1533	4318	7102	9885	2668	5450	8231	1011	3791	6570	9348	2125
29	3221	6008	8794	1580	4364	7149	9932	2714	5496	8277	1058	3837	6616	9394	2172
30	3267	6054	8841	1626	4411	7195	9978	2761	5543	8324	1104	3884	6662	9441	2218
31	3314	6101	8887	1672	4457	7241	0025	2807	5589	8370	1150	3930	6709	9487	2264
32	3360	6147	8933	1719	4504	7288	0071	2854	5635	8416	1197	3976	6755	9533	2310
33	3407	6194	8980	1765	4550	7334	0117	2900	5682	8463	1243	4023	6801	9579	2357
34	3453	6240	9026	1812	4597	7381	0164	2946	5728	8509	1289	4069	6848	9626	2403
35	3499	6286	9073	1858	4643	7427	0210	2993	5774	8555	1336	4115	6894	9672	2449
36	3546	6333	9119	1905	4689	7473	0257	3039	5821	8602	1382	4161	6940	9718	2496
37	3592	6379	9166	1951	4736	7520	0303	3085	5867	8648	1428	4208	6987	9765	2542
38	3639	6426	9212	1997	4782	7566	0349	3132	5913	8694	1475	4254	7033	9811	2588
39	3685	6472	9258	2044	4829	7612	0396	3178	5960	8741	1521	4300	7079	9857	2634
40	3732	6519	9305	2090	4875	7659	0442	3224	6006	8787	1567	4347	7125	9903	2681
41	3778	6565	9351	2137	4921	7705	0488	3271	6053	8833	1614	4393	7172	9950	2727
42	3825	6612	9398	2183	4968	7752	0535	3317	6099	8880	1660	4439	7218	9996	2773
43	3871	6658	9444	2230	5014	7798	0581	3364	6145	8926	1706	4486	7264	0042	2820
44	3918	6704	9491	2276	5061	7844	0628	3410	6192	8972	1753	4532	7311	0089	2866
45	3964	6751	9537	2322	5107	7891	0674	3456	6238	9019	1799	4578	7357	0135	2912
46	4010	6797	9583	2369	5153	7937	0720	3503	6284	9065	1845	4625	7403	0181	2958
47	4057	6844	9630	2415	5200	7984	0767	3549	6331	9112	1892	4671	7450	0228	3005
48	4103	6890	9676	2462	5246	8030	0813	3595	6377	9158	1938	4717	7496	0274	3051
49	4150	6937	9723	2508	5293	8076	0859	3642	6423	9204	1984	4764	7542	0320	3097
50	4196	6983	9769	2554	5339	8123	0906	3688	6470	9251	2031	4810	7589	0366	3144
51	4243	7029	9816	2601	5385	8169	0952	3735	6516	9297	2077	4856	7635	0413	3190
52	4289	7076	9862	2647	5432	8216	0999	3781	6562	9343	2123	4903	7681	0459	3236
53	4336	7122	9908	2694	5478	8262	1045	3827	6609	9390	2170	4949	7727	0505	3282
54	4382	7169	9955	2740	5525	8308	1091	3874	6655	9436	2216	4995	7774	0552	3329
55	4429	7215	0001	2786	5571	8355	1138	3920	6701	9482	2262	5042	7820	0598	3375
56	4475	7262	0048	2833	5617	8401	1184	3966	6748	9529	2309	5088	7866	0644	3421
57	4521	7308	0094	2879	5664	8448	1230	4013	6794	9575	2355	5134	7913	0690	3467
58	4568	7355	0141	2926	5710	8494	1277	4059	6841	9621	2401	5180	7959	0737	3514
59	4614	7401	0187	2972	5757	8540	1323	4105	6887	9668	2448	5227	8005	0783	3560
60	4661	7447	0233	3019	5803	8587	1370	4152	6933	9714	2494	5273	8052	0829	3606
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	″
10. 195	10. 195	10. 195	10. 194	10. 194	10. 194	10. 194	10. 193	10. 193	10. 193	10. 193	10. 192	10. 192	10. 192	10. 191	
8127	5339	2553	9767	6981	4197	1413	8630	5848	3067	0286	7506	4727	1948	9171	60
8080	5293	2506	9720	6935	4151	1367	8584	5802	3020	0240	7460	4681	1902	9124	59
8034	5246	2460	9674	6889	4104	1321	8538	5755	2974	0193	7413	4634	1856	9078	58
7987	5200	2413	9627	6842	4058	1274	8491	5709	2928	0147	7367	4588	1810	9032	57
7941	5153	2367	9581	6796	4011	1228	8445	5663	2881	0101	7321	4542	1763	8986	56
7894	5107	2320	9534	6749	3965	1181	8399	5616	2835	0054	7274	4495	1717	8939	55
7848	5061	2274	9488	6703	3919	1135	8352	5570	2789	0008	7228	4449	1671	8893	54
7801	5014	2227	9442	6657	3872	1089	8306	5524	2742	9962	7182	4403	1624	8847	53
7755	4968	2181	9395	6610	3826	1042	8259	5477	2696	9915	7136	4356	1578	8800	52
7709	4921	2135	9349	6564	3779	0996	8213	5431	2650	9869	7089	4310	1532	8754	51
7662	4875	2088	9302	6517	3733	0949	8167	5385	2603	9823	7043	4264	1485	8708	50
7616	4828	2042	9256	6471	3687	0903	8120	5338	2557	9776	6997	4217	1439	8662	49
7569	4782	1995	9210	6424	3640	0857	8074	5292	2511	9730	6950	4171	1393	8615	48
7523	4735	1949	9163	6378	3594	0810	8028	5245	2464	9684	6904	4125	1347	8569	47
7476	4689	1902	9117	6332	3547	0764	7981	5199	2418	9637	6858	4079	1300	8523	46
7430	4642	1856	9070	6285	3501	0718	7935	5153	2372	9591	6811	4032	1254	8476	45
7383	4596	1810	9024	6239	3455	0671	7888	5106	2325	9545	6765	3986	1208	8430	44
7337	4550	1763	8977	6192	3408	0625	7842	5060	2279	9498	6719	3940	1161	8384	43
7290	4503	1717	8931	6146	3362	0578	7796	5014	2232	9452	6672	3893	1115	8338	42
7244	4457	1670	8885	6100	3315	0532	7749	4967	2186	9406	6626	3847	1069	8291	41
7197	4410	1624	8838	6053	3269	0486	7703	4921	2140	9359	6580	3801	1022	8245	40
7151	4364	1577	8792	6007	3223	0439	7657	4875	2093	9313	6533	3754	0976	8199	39
7105	4317	1531	8745	5960	3176	0393	7610	4828	2047	9267	6487	3708	0930	8152	38
7058	4271	1485	8699	5914	3130	0346	7564	4782	2001	9220	6441	3662	0884	8106	37
7012	4224	1438	8652	5868	3083	0300	7517	4736	1954	9174	6394	3615	0837	8060	36
6965	4178	1392	8606	5821	3037	0254	7471	4689	1908	9128	6348	3569	0791	8014	35
6919	4132	1345	8560	5775	2991	0207	7425	4643	1862	9081	6302	3523	0745	7967	34
6872	4085	1299	8513	5728	2944	0161	7378	4596	1815	9035	6255	3477	0698	7921	33
6826	4039	1252	8467	5682	2898	0115	7332	4550	1769	8989	6209	3430	0652	7875	32
6779	3992	1206	8420	5636	2851	0068	7286	4504	1723	8942	6163	3384	0606	7828	31
6733	3946	1159	8374	5589	2805	0022	7239	4457	1676	8896	6116	3338	0559	7782	30
6686	3899	1113	8328	5543	2759	9975	7193	4411	1630	8850	6070	3291	0513	7736	29
6640	3853	1067	8281	5496	2712	9929	7146	4365	1584	8803	6024	3245	0467	7690	28
6593	3806	1020	8235	5450	2666	9883	7100	4318	1537	8757	5977	3199	0421	7643	27
6547	3760	0974	8188	5403	2619	9836	7054	4272	1491	8711	5931	3152	0374	7597	26
6501	3714	0927	8142	5357	2573	9790	7007	4226	1445	8664	5885	3106	0328	7551	25
6454	3667	0881	8095	5311	2527	9743	6961	4179	1398	8618	5839	3060	0282	7504	24
6408	3621	0834	8049	5264	2480	9697	6915	4133	1352	8572	5792	3013	0235	7458	23
6361	3574	0788	8003	5218	2434	9651	6868	4087	1306	8525	5746	2967	0189	7412	22
6315	3528	0742	7956	5171	2388	9604	6822	4040	1259	8479	5700	2921	0143	7366	21
6268	3481	0695	7910	5125	2341	9558	6776	3994	1213	8433	5653	2875	0097	7319	20
6222	3435	0649	7863	5079	2295	9512	6729	3947	1167	8386	5607	2828	0050	7273	19
6175	3388	0602	7817	5032	2248	9465	6683	3901	1120	8340	5561	2782	0004	7227	18
6129	3342	0556	7770	4986	2202	9419	6636	3855	1074	8294	5514	2736	9958	7180	17
6082	3296	0509	7724	4939	2156	9372	6590	3808	1028	8247	5468	2689	9911	7134	16
6036	3249	0463	7678	4893	2109	9326	6544	3762	0981	8201	5422	2643	9865	7088	15
5990	3203	0417	7631	4847	2063	9280	6497	3716	0935	8155	5375	2597	9819	7042	14
5943	3156	0370	7585	4800	2016	9233	6451	3669	0888	8108	5329	2550	9772	6995	13
5897	3110	0324	7538	4754	1970	9187	6405	3623	0842	8062	5283	2504	9726	6949	12
5850	3063	0277	7492	4707	1924	9141	6358	3577	0796	8016	5236	2458	9680	6903	11
5804	3017	0231	7446	4661	1877	9094	6312	3530	0749	7969	5190	2411	9634	6856	10
5757	2971	0184	7399	4615	1831	9048	6265	3484	0703	7923	5144	2365	9587	6810	9
5711	2924	0138	7353	4568	1784	9001	6219	3438	0657	7877	5097	2319	9541	6764	8
5664	2878	0092	7306	4522	1738	8955	6173	3391	0610	7830	5051	2273	9495	6718	7
5618	2831	0045	7260	4475	1692	8909	6126	3345	0564	7784	5005	2226	9448	6671	6
5571	2785	9999	7214	4429	1645	8862	6080	3299	0518	7738	4958	2180	9402	6625	5
5525	2738	9952	7167	4383	1599	8816	6034	3252	0471	7691	4912	2134	9356	6579	4
5479	2692	9906	7121	4336	1552	8770	5987	3206	0425	7645	4866	2087	9310	6533	3
5432	2645	9859	7074	4290	1506	8723	5941	3159	0379	7599	4820	2041	9263	6486	2
5386	2599	9813	7028	4243	1460	8677	5895	3113	0332	7552	4773	1995	9217	6440	1
5339	2553	9767	6981	4197	1413	8630	5848	3067	0286	7506	4727	1948	9171	6394	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

″	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9.733	9.733	9.733	9.733	9.733	9.734	9.734	9.734	9.734	9.734	9.735	9.735	9.735	9.735	9.735
0	1768	3731	5693	7654	9614	1572	3529	5485	7440	9393	1345	3296	5246	7195	9142
1	1800	3764	5726	7687	9646	1605	3562	5518	7472	9426	1378	3329	5279	7227	9174
2	1833	3797	5759	7720	9679	1637	3595	5550	7505	9458	1411	3361	5311	7259	9207
3	1866	3829	5791	7752	9712	1670	3627	5583	7538	9491	1443	3394	5344	7292	9239
4	1899	3862	5824	7785	9744	1703	3660	5616	7570	9524	1476	3426	5376	7324	9271
5	1931	3895	5857	7818	9777	1735	3692	5648	7603	9556	1508	3459	5408	7357	9304
6	1964	3927	5889	7850	9810	1768	3725	5681	7635	9589	1541	3491	5441	7389	9336
7	1997	3960	5922	7883	9842	1801	3758	5713	7668	9621	1573	3524	5473	7422	9369
8	2030	3993	5955	7916	9875	1833	3790	5746	7700	9654	1606	3556	5506	7454	9401
9	2062	4026	5987	7948	9908	1866	3823	5779	7733	9686	1638	3589	5538	7487	9434
10	2095	4058	6020	7981	9940	1899	3855	5811	7766	9719	1671	3621	5571	7519	9466
11	2128	4091	6053	8014	9973	1931	3888	5844	7798	9751	1703	3654	5603	7552	9499
12	2160	4124	6086	8046	0006	1964	3921	5876	7831	9784	1736	3686	5636	7584	9531
13	2193	4156	6118	8079	0038	1996	3953	5909	7863	9816	1768	3719	5668	7617	9563
14	2226	4189	6151	8112	0071	2029	3986	5941	7896	9849	1801	3751	5701	7649	9596
15	2259	4222	6184	8144	0104	2062	4018	5974	7928	9881	1833	3784	5733	7681	9628
16	2291	4254	6216	8177	0136	2094	4051	6007	7961	9914	1866	3816	5766	7714	9661
17	2324	4287	6249	8210	0169	2127	4084	6039	7994	9947	1898	3849	5798	7746	9693
18	2357	4320	6282	8242	0201	2160	4116	6072	8026	9979	1931	3881	5831	7779	9726
19	2390	4353	6314	8275	0234	2192	4149	6104	8059	0012	1963	3914	5863	7811	9758
20	2422	4385	6347	8308	0267	2225	4181	6137	8091	0044	1996	3946	5896	7844	9790
21	2455	4418	6380	8340	0299	2257	4214	6170	8124	0077	2028	3979	5928	7876	9823
22	2488	4451	6412	8373	0332	2290	4247	6202	8156	0109	2061	4011	5961	7909	9855
23	2521	4483	6445	8406	0365	2323	4279	6235	8189	0142	2093	4044	5993	7941	9888
24	2553	4516	6478	8438	0397	2355	4312	6267	8221	0174	2126	4076	6026	7974	9920
25	2586	4549	6510	8471	0430	2388	4344	6300	8254	0207	2159	4109	6058	8006	9953
26	2619	4582	6543	8504	0463	2420	4377	6332	8287	0239	2191	4141	6091	8038	9985
27	2651	4614	6576	8536	0495	2453	4410	6365	8319	0272	2224	4174	6123	8071	0018
28	2684	4647	6609	8569	0528	2486	4442	6398	8352	0304	2256	4206	6156	8103	0050
29	2717	4680	6641	8601	0561	2518	4475	6430	8384	0337	2289	4239	6188	8136	0082
30	2750	4712	6674	8634	0593	2551	4507	6463	8417	0370	2321	4271	6220	8168	0115
31	2782	4745	6707	8667	0626	2584	4540	6495	8449	0402	2354	4304	6253	8201	0147
32	2815	4778	6739	8699	0658	2616	4573	6528	8482	0435	2386	4336	6285	8233	0180
33	2848	4810	6772	8732	0691	2649	4605	6560	8514	0467	2419	4369	6318	8266	0212
34	2880	4843	6805	8765	0724	2681	4638	6593	8547	0500	2451	4401	6350	8298	0245
35	2913	4876	6837	8797	0756	2714	4670	6626	8580	0532	2484	4434	6383	8331	0277
36	2946	4909	6870	8830	0789	2747	4703	6658	8612	0565	2516	4466	6415	8363	0309
37	2979	4941	6903	8863	0822	2779	4736	6691	8645	0597	2549	4499	6448	8395	0342
38	3011	4974	6935	8895	0854	2812	4768	6723	8677	0630	2581	4531	6480	8428	0374
39	3044	5007	6968	8928	0887	2845	4801	6756	8710	0662	2614	4564	6513	8460	0407
40	3077	5039	7001	8961	0920	2877	4833	6789	8742	0695	2646	4596	6545	8493	0439
41	3110	5072	7033	8993	0952	2910	4866	6821	8775	0727	2679	4629	6578	8525	0472
42	3142	5105	7066	9026	0985	2942	4899	6854	8807	0760	2711	4661	6610	8558	0504
43	3175	5137	7099	9059	1017	2975	4931	6886	8840	0793	2744	4694	6643	8590	0536
44	3208	5170	7131	9091	1050	3008	4964	6919	8873	0825	2776	4726	6675	8623	0569
45	3240	5203	7164	9124	1083	3040	4996	6951	8905	0858	2809	4759	6708	8655	0601
46	3273	5236	7197	9157	1115	3073	5029	6984	8938	0890	2841	4791	6740	8687	0634
47	3306	5268	7229	9189	1148	3105	5062	7017	8970	0923	2874	4824	6772	8720	0666
48	3339	5301	7262	9222	1181	3138	5094	7049	9003	0955	2906	4856	6805	8752	0699
49	3371	5334	7295	9255	1213	3171	5127	7082	9035	0988	2939	4889	6837	8785	0731
50	3404	5366	7327	9287	1246	3203	5159	7114	9068	1020	2971	4921	6870	8817	0763
51	3437	5399	7360	9320	1279	3236	5192	7147	9100	1053	3004	4954	6902	8850	0796
52	3469	5432	7393	9353	1311	3268	5225	7179	9133	1085	3036	4986	6935	8882	0828
53	3502	5464	7425	9385	1344	3301	5257	7212	9165	1118	3069	5019	6967	8915	0861
54	3535	5497	7458	9418	1376	3334	5290	7245	9198	1150	3101	5051	7000	8947	0893
55	3568	5530	7491	9451	1409	3366	5322	7277	9231	1183	3134	5084	7032	8979	0926
56	3600	5563	7523	9483	1442	3399	5355	7310	9263	1215	3166	5116	7065	9012	0958
57	3633	5595	7556	9516	1474	3432	5388	7342	9296	1248	3199	5149	7097	9044	0990
58	3666	5628	7589	9549	1507	3464	5420	7375	9328	1280	3231	5181	7130	9077	1023
59	3698	5661	7622	9581	1540	3497	5453	7407	9361	1313	3264	5214	7162	9109	1055
60	3731	5693	7654	9614	1572	3529	5485	7440	9393	1345	3296	5246	7195	9142	1088
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	″
9.924	9.924	9.924	9.924	9.924	9.924	9.924	9.924	9.924	9.924	9.924	9.923	9.923	9.923	9.923	
8161	7349	6535	5721	4907	4092	3277	2461	1644	0827	0010	9191	8373	7554	6734	60
8148	7335	6522	5708	4893	4078	3263	2447	1630	0813	9996	9178	8359	7540	6721	59
8134	7321	6508	5694	4880	4065	3249	2433	1617	0800	9982	9164	8346	7526	6707	58
8121	7308	6495	5681	4866	4051	3236	2420	1603	0786	9969	9151	8332	7513	6693	57
8107	7294	6481	5667	4853	4038	3222	2406	1590	0773	9955	9137	8318	7499	6680	56
8094	7281	6467	5653	4839	4024	3209	2393	1576	0759	9941	9123	8305	7486	6666	55
8080	7267	6454	5640	4825	4010	3195	2379	1562	0745	9928	9110	8291	7472	6652	54
8067	7254	6440	5626	4812	3997	3181	2365	1549	0732	9914	9096	8277	7458	6639	53
8053	7240	6427	5613	4798	3983	3168	2352	1535	0718	9900	9082	8264	7445	6625	52
8040	7227	6413	5599	4785	3970	3154	2338	1522	0704	9887	9069	8250	7431	6611	51
8026	7213	6400	5586	4771	3956	3141	2325	1508	0691	9873	9055	8236	7417	6598	50
8012	7199	6386	5572	4758	3943	3127	2310	1494	0677	9860	9041	8223	7404	6584	49
7999	7186	6372	5558	4744	3929	3113	2297	1481	0664	9846	9028	8209	7390	6570	48
7985	7172	6359	5545	4730	3915	3100	2284	1467	0650	9832	9014	8195	7376	6557	47
7972	7159	6345	5531	4717	3902	3086	2270	1453	0636	9819	9001	8182	7363	6543	46
7958	7145	6332	5518	4703	3888	3073	2256	1440	0623	9805	8987	8168	7349	6529	45
7945	7132	6318	5504	4690	3875	3059	2243	1426	0609	9791	8973	8155	7335	6516	44
7931	7118	6305	5491	4676	3861	3045	2229	1413	0595	9778	8960	8141	7322	6502	43
7918	7105	6291	5477	4662	3847	3032	2216	1399	0582	9764	8946	8127	7308	6488	42
7904	7091	6278	5463	4649	3834	3018	2202	1385	0568	9751	8932	8114	7294	6475	41
7891	7078	6264	5450	4635	3820	3005	2188	1372	0555	9737	8919	8100	7281	6461	40
7877	7064	6250	5436	4622	3807	2991	2175	1358	0541	9723	8905	8086	7267	6447	39
7863	7050	6237	5423	4608	3793	2977	2161	1345	0527	9710	8891	8073	7253	6434	38
7850	7037	6223	5409	4595	3779	2964	2148	1331	0514	9696	8878	8059	7240	6420	37
7836	7023	6210	5396	4581	3766	2950	2134	1317	0500	9682	8864	8045	7226	6406	36
7823	7010	6196	5382	4567	3752	2937	2120	1304	0486	9669	8850	8032	7212	6393	35
7809	6996	6183	5368	4554	3739	2923	2107	1290	0473	9655	8837	8018	7199	6379	34
7796	6983	6169	5355	4540	3725	2909	2093	1276	0459	9641	8823	8004	7185	6365	33
7782	6969	6155	5341	4527	3711	2896	2080	1263	0446	9628	8810	7991	7171	6351	32
7769	6956	6142	5328	4513	3698	2882	2066	1249	0432	9614	8796	7977	7158	6338	31
7755	6942	6128	5314	4500	3684	2869	2052	1236	0418	9601	8782	7963	7144	6324	30
7742	6928	6115	5301	4486	3671	2855	2039	1222	0405	9587	8769	7950	7130	6310	29
7728	6915	6101	5287	4472	3657	2841	2025	1208	0391	9573	8755	7936	7117	6297	28
7714	6901	6088	5273	4459	3644	2828	2012	1195	0377	9560	8741	7922	7103	6283	27
7701	6888	6074	5260	4445	3630	2814	1998	1181	0364	9546	8728	7909	7089	6269	26
7687	6874	6060	5246	4432	3616	2801	1984	1168	0350	9532	8714	7895	7076	6256	25
7674	6861	6047	5233	4418	3603	2787	1971	1154	0337	9519	8700	7881	7062	6242	24
7660	6847	6033	5219	4404	3589	2773	1957	1140	0323	9505	8687	7868	7048	6228	23
7647	6833	6020	5206	4391	3576	2760	1944	1127	0309	9491	8673	7854	7035	6215	22
7633	6820	6006	5192	4377	3562	2746	1930	1113	0296	9478	8659	7841	7021	6201	21
7620	6806	5993	5178	4364	3548	2733	1916	1099	0282	9464	8646	7827	7007	6187	20
7606	6793	5979	5165	4350	3535	2719	1903	1086	0268	9451	8632	7813	6994	6174	19
7592	6779	5966	5151	4337	3521	2705	1889	1072	0255	9437	8619	7800	6980	6160	18
7579	6766	5952	5138	4323	3508	2692	1875	1059	0241	9423	8605	7786	6966	6146	17
7565	6752	5938	5124	4309	3494	2678	1862	1045	0228	9410	8591	7772	6953	6133	16
7552	6739	5925	5111	4296	3480	2665	1848	1031	0214	9396	8578	7759	6939	6119	15
7538	6725	5911	5097	4282	3467	2651	1835	1018	0200	9382	8564	7745	6925	6105	14
7525	6711	5898	5083	4269	3453	2637	1821	1004	0187	9369	8550	7731	6912	6092	13
7511	6698	5884	5070	4255	3440	2624	1807	0990	0173	9355	8537	7718	6898	6078	12
7498	6684	5871	5056	4241	3426	2610	1794	0977	0159	9341	8523	7704	6884	6064	11
7484	6671	5857	5043	4228	3412	2597	1780	0963	0146	9328	8509	7690	6871	6051	10
7471	6657	5843	5029	4214	3399	2583	1767	0950	0132	9314	8496	7677	6857	6037	9
7457	6644	5830	5016	4201	3385	2569	1753	0936	0119	9301	8482	7663	6843	6023	8
7443	6630	5816	5002	4187	3372	2556	1739	0922	0105	9287	8468	7649	6830	6010	7
7430	6617	5803	4988	4173	3358	2542	1726	0909	0091	9273	8455	7636	6816	5996	6
7416	6603	5789	4975	4160	3344	2529	1712	0895	0078	9260	8441	7622	6802	5982	5
7403	6589	5776	4961	4146	3331	2515	1699	0882	0064	9246	8427	7608	6789	5969	4
7389	6576	5762	4948	4133	3317	2501	1685	0868	0050	9232	8414	7595	6775	5955	3
7376	6562	5748	4934	4119	3304	2488	1671	0854	0037	9219	8400	7581	6761	5941	2
7362	6549	5735	4920	4106	3290	2474	1658	0841	0023	9205	8387	7567	6748	5928	1
7349	6535	5721	4907	4092	3277	2461	1644	0827	0010	9191	8373	7554	6734	5914	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	9.808	9.808	9.808	9.809	9.809	9.809	9.810	9.810	9.810	9.810	9.811	9.811	9.811	9.811	9.812
0	3606	6383	9158	1933	4707	7480	0253	3025	5796	8566	1336	4105	6873	9641	2408
1	3653	6429	9204	1979	4753	7526	0299	3071	5842	8612	1382	4151	6919	9687	2454
2	3699	6475	9251	2025	4799	7573	0345	3117	5888	8659	1428	4197	6965	9733	2500
3	3745	6521	9297	2072	4846	7619	0391	3163	5934	8705	1474	4243	7012	9779	2546
4	3791	6568	9343	2118	4892	7665	0438	3209	5981	8751	1521	4290	7058	9825	2592
5	3838	6614	9389	2164	4938	7711	0484	3256	6027	8797	1567	4336	7104	9871	2638
6	3884	6660	9436	2210	4984	7758	0530	3302	6073	8843	1613	4382	7150	9917	2684
7	3930	6706	9482	2257	5031	7804	0576	3348	6119	8889	1659	4428	7196	9964	2730
8	3977	6753	9528	2303	5077	7850	0622	3394	6165	8936	1705	4474	7242	0010	2776
9	4023	6799	9574	2349	5123	7896	0669	3440	6211	8982	1751	4520	7288	0056	2822
10	4069	6845	9621	2395	5169	7942	0715	3487	6258	9028	1798	4566	7334	0102	2869
11	4115	6891	9667	2442	5215	7989	0761	3533	6304	9074	1844	4613	7381	0148	2915
12	4162	6938	9713	2488	5262	8035	0807	3579	6350	9120	1890	4659	7427	0194	2961
13	4208	6984	9759	2534	5308	8081	0853	3625	6396	9166	1936	4705	7473	0240	3007
14	4254	7030	9806	2580	5354	8127	0900	3671	6442	9213	1982	4751	7519	0286	3053
15	4300	7077	9852	2626	5400	8173	0946	3718	6489	9259	2028	4797	7565	0332	3099
16	4347	7123	9898	2673	5447	8220	0992	3764	6535	9305	2074	4843	7611	0379	3145
17	4393	7169	9944	2719	5493	8266	1038	3810	6581	9351	2121	4889	7657	0425	3191
18	4439	7215	9991	2765	5539	8312	1084	3856	6627	9397	2167	4935	7704	0471	3237
19	4486	7262	0037	2811	5585	8358	1131	3902	6673	9443	2213	4982	7750	0517	3284
20	4532	7308	0083	2858	5631	8405	1177	3949	6719	9490	2259	5028	7796	0563	3330
21	4578	7354	0129	2904	5678	8451	1223	3995	6766	9536	2305	5074	7842	0609	3376
22	4624	7400	0176	2950	5724	8497	1269	4041	6812	9582	2351	5120	7888	0655	3422
23	4671	7447	0222	2996	5770	8543	1315	4087	6858	9628	2397	5166	7934	0701	3468
24	4717	7493	0268	3043	5816	8589	1362	4133	6904	9674	2444	5212	7980	0748	3514
25	4763	7539	0314	3089	5863	8636	1408	4179	6950	9720	2490	5258	8026	0794	3560
26	4809	7585	0361	3135	5909	8682	1454	4226	6996	9767	2536	5305	8073	0840	3606
27	4856	7632	0407	3181	5955	8728	1500	4272	7043	9813	2582	5351	8119	0886	3652
28	4902	7678	0453	3228	6001	8774	1546	4318	7089	9859	2628	5397	8165	0932	3698
29	4948	7724	0499	3274	6047	8820	1593	4364	7135	9905	2674	5443	8211	0978	3745
30	4995	7770	0546	3320	6094	8867	1639	4410	7181	9951	2721	5489	8257	1024	3791
31	5041	7817	0592	3366	6140	8913	1685	4457	7227	9997	2767	5535	8303	1070	3837
32	5087	7863	0638	3412	6186	8959	1731	4503	7274	0044	2813	5581	8349	1116	3883
33	5133	7909	0684	3459	6232	9005	1777	4549	7320	0090	2859	5628	8395	1163	3929
34	5180	7955	0731	3505	6279	9051	1824	4595	7366	0136	2905	5674	8442	1209	3975
35	5226	8002	0777	3551	6325	9098	1870	4641	7412	0182	2951	5720	8488	1255	4021
36	5272	8048	0823	3597	6371	9144	1916	4687	7458	0228	2997	5766	8534	1301	4067
37	5318	8094	0869	3644	6417	9190	1962	4734	7504	0274	3044	5812	8580	1347	4113
38	5365	8140	0916	3690	6463	9236	2008	4780	7551	0321	3090	5858	8626	1393	4159
39	5411	8187	0962	3736	6510	9283	2055	4826	7597	0367	3136	5904	8672	1439	4206
40	5457	8233	1008	3782	6556	9329	2101	4872	7643	0413	3182	5951	8718	1485	4252
41	5503	8279	1054	3829	6602	9375	2147	4918	7689	0459	3228	5997	8764	1531	4298
42	5550	8325	1101	3875	6648	9421	2193	4965	7735	0505	3274	6043	8811	1578	4344
43	5596	8372	1147	3921	6695	9467	2239	5011	7781	0551	3320	6089	8857	1624	4390
44	5642	8418	1193	3967	6741	9514	2286	5057	7828	0597	3367	6135	8903	1670	4436
45	5689	8464	1239	4013	6787	9560	2332	5103	7874	0644	3413	6181	8949	1716	4482
46	5735	8511	1285	4060	6833	9606	2378	5149	7920	0690	3459	6227	8995	1762	4528
47	5781	8557	1332	4106	6879	9652	2424	5196	7966	0736	3505	6273	9041	1808	4574
48	5827	8603	1378	4152	6926	9698	2470	5242	8012	0782	3551	6320	9087	1854	4620
49	5874	8649	1424	4198	6972	9745	2517	5288	8058	0828	3597	6366	9133	1900	4667
50	5920	8696	1470	4245	7018	9791	2563	5334	8105	0874	3644	6412	9180	1946	4713
51	5966	8742	1517	4291	7064	9837	2609	5380	8151	0921	3690	6458	9226	1993	4759
52	6012	8788	1563	4337	7111	9883	2655	5426	8197	0967	3736	6504	9272	2039	4805
53	6059	8834	1609	4383	7157	9929	2701	5473	8243	1013	3782	6550	9318	2085	4851
54	6105	8881	1655	4430	7203	9976	2748	5519	8289	1059	3828	6596	9364	2131	4897
55	6151	8927	1702	4476	7249	0022	2794	5565	8335	1105	3874	6643	9410	2177	4943
56	6197	8973	1748	4522	7295	0068	2840	5611	8382	1151	3920	6689	9456	2223	4989
57	6244	9019	1794	4568	7342	0114	2886	5657	8428	1198	3967	6735	9502	2269	5035
58	6290	9066	1840	4614	7388	0160	2932	5704	8474	1244	4013	6781	9548	2315	5081
59	6336	9112	1887	4661	7434	0207	2979	5750	8520	1290	4059	6827	9595	2361	5128
60	6383	9158	1933	4707	7480	0253	3025	5796	8566	1336	4105	6873	9641	2408	5174
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
	10.191	10.191	10.191	10.190	10.190	10.190	10.189	10.189	10.189	10.189	10.188	10.188	10.188	10.188	10.187	″
0	6394	3617	0842	8067	5293	2520	9747	6975	4204	1434	8664	5895	3127	0359	7592	60
1	6347	3571	0796	8021	5247	2474	9701	6929	4158	1388	8618	5849	3081	0313	7546	59
2	6301	3525	0749	7975	5201	2427	9655	6883	4112	1341	8572	5803	3035	0267	7500	58
3	6255	3479	0703	7928	5154	2381	9609	6837	4066	1295	8526	5757	2988	0221	7454	57
4	6209	3432	0657	7882	5108	2335	9562	6791	4019	1249	8479	5710	2942	0175	7408	56
5	6162	3386	0611	7836	5062	2289	9516	6744	3973	1203	8433	5664	2896	0129	7362	55
6	6116	3340	0564	7790	5016	2242	9470	6698	3927	1157	8387	5618	2850	0083	7316	54
7	6070	3294	0518	7743	4969	2196	9424	6652	3881	1111	8341	5572	2804	0036	7270	53
8	6023	3247	0472	7697	4923	2150	9378	6606	3835	1064	8295	5526	2758	9990	7224	52
9	5977	3201	0426	7651	4877	2104	9331	6560	3789	1018	8249	5480	2712	9944	7178	51
10	5931	3155	0379	7605	4831	2058	9285	6513	3742	0972	8202	5434	2666	9898	7131	50
11	5885	3109	0333	7558	4785	2011	9239	6467	3696	0926	8156	5387	2619	9852	7085	49
12	5838	3062	0287	7512	4738	1965	9193	6421	3650	0880	8110	5341	2573	9806	7039	48
13	5792	3016	0241	7466	4692	1919	9147	6375	3604	0834	8064	5295	2527	9760	6993	47
14	5746	2970	0194	7420	4646	1873	9100	6329	3558	0787	8018	5249	2481	9714	6947	46
15	5700	2923	0148	7374	4600	1827	9054	6282	3511	0741	7972	5203	2435	9668	6901	45
16	5653	2877	0102	7327	4553	1780	9008	6236	3465	0695	7926	5157	2389	9621	6855	44
17	5607	2831	0056	7281	4507	1734	8962	6190	3419	0649	7879	5111	2343	9575	6809	43
18	5561	2785	0009	7235	4461	1688	8916	6144	3373	0603	7833	5065	2296	9529	6763	42
19	5514	2738	9963	7189	4415	1642	8869	6098	3327	0557	7787	5018	2250	9483	6716	41
20	5468	2692	9917	7142	4369	1595	8823	6051	3281	0510	7741	4972	2204	9437	6670	40
21	5422	2646	9871	7096	4322	1549	8777	6005	3234	0464	7695	4926	2158	9391	6624	39
22	5376	2600	9824	7050	4276	1503	8731	5959	3188	0418	7649	4880	2112	9345	6578	38
23	5329	2553	9778	7004	4230	1457	8685	5913	3142	0372	7603	4834	2066	9299	6532	37
24	5283	2507	9732	6957	4184	1411	8638	5867	3096	0326	7556	4788	2020	9252	6486	36
25	5237	2461	9686	6911	4137	1364	8592	5821	3050	0280	7510	4742	1974	9206	6440	35
26	5191	2415	9639	6865	4091	1318	8546	5774	3004	0233	7464	4695	1927	9160	6394	34
27	5144	2368	9593	6819	4045	1272	8500	5728	2957	0187	7418	4649	1881	9114	6348	33
28	5098	2322	9547	6772	3999	1226	8454	5682	2911	0141	7372	4603	1835	9068	6302	32
29	5052	2276	9501	6726	3953	1180	8407	5636	2865	0095	7326	4557	1789	9022	6255	31
30	5005	2230	9454	6680	3906	1133	8361	5590	2819	0049	7279	4511	1743	8976	6209	30
31	4959	2183	9408	6634	3860	1087	8315	5543	2773	0003	7233	4465	1697	8930	6163	29
32	4913	2137	9362	6588	3814	1041	8269	5497	2726	9956	7187	4419	1651	8884	6117	28
33	4867	2091	9316	6541	3768	0995	8223	5451	2680	9910	7141	4372	1605	8837	6071	27
34	4820	2045	9269	6495	3721	0949	8176	5405	2634	9864	7095	4326	1558	8791	6025	26
35	4774	1998	9223	6449	3675	0902	8130	5359	2588	9818	7049	4280	1512	8745	5979	25
36	4728	1952	9177	6403	3629	0856	8084	5313	2542	9772	7003	4234	1466	8699	5933	24
37	4682	1906	9131	6356	3583	0810	8038	5266	2496	9726	6956	4188	1420	8653	5887	23
38	4635	1860	9084	6310	3537	0764	7992	5220	2449	9679	6910	4142	1374	8607	5841	22
39	4589	1813	9038	6264	3490	0717	7945	5174	2403	9633	6864	4096	1328	8561	5794	21
40	4543	1767	8992	6218	3444	0671	7899	5128	2357	9587	6818	4049	1282	8515	5748	20
41	4497	1721	8946	6171	3398	0625	7853	5082	2311	9541	6772	4003	1236	8469	5702	19
42	4450	1675	8899	6125	3352	0579	7807	5035	2265	9495	6726	3957	1189	8422	5656	18
43	4404	1628	8853	6079	3305	0533	7761	4989	2219	9449	6680	3911	1143	8376	5610	17
44	4358	1582	8807	6033	3259	0486	7714	4943	2172	9403	6633	3865	1097	8330	5564	16
45	4311	1536	8761	5987	3213	0440	7668	4897	2126	9356	6587	3819	1051	8284	5518	15
46	4265	1489	8715	5940	3167	0394	7622	4851	2080	9310	6541	3773	1005	8238	5472	14
47	4219	1443	8668	5894	3121	0348	7576	4804	2034	9264	6495	3727	0959	8192	5426	13
48	4173	1397	8622	5848	3074	0302	7530	4758	1988	9218	6449	3680	0913	8146	5380	12
49	4126	1351	8576	5802	3028	0255	7483	4712	1942	9172	6403	3634	0867	8100	5333	11
50	4080	1304	8530	5755	2982	0209	7437	4666	1895	9126	6356	3588	0820	8054	5287	10
51	4034	1258	8483	5709	2936	0163	7391	4620	1849	9079	6310	3542	0774	8007	5241	9
52	3988	1212	8437	5663	2889	0117	7345	4574	1803	9033	6264	3496	0728	7961	5195	8
53	3941	1166	8391	5617	2843	0071	7299	4527	1757	8987	6218	3450	0682	7915	5149	7
54	3895	1119	8345	5570	2797	0024	7252	4481	1711	8941	6172	3404	0636	7869	5103	6
55	3849	1073	8298	5524	2751	9978	7206	4435	1665	8895	6126	3357	0590	7823	5057	5
56	3803	1027	8252	5478	2705	9932	7160	4389	1618	8849	6080	3311	0544	7777	5011	4
57	3756	0981	8206	5432	2658	9886	7114	4343	1572	8802	6033	3265	0498	7731	4965	3
58	3710	0934	8160	5386	2612	9840	7068	4296	1526	8756	5987	3219	0452	7685	4919	2
59	3664	0888	8113	5339	2566	9793	7021	4250	1480	8710	5941	3173	0405	7639	4872	1
60	3617	0842	8067	5293	2520	9747	6975	4204	1434	8664	5895	3127	0359	7592	4826	0
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.736	9.736	9.736	9.736	9.736	9.737	9.737	9.737	9.737	9.737	9.738	9.738	9.738	9.738	9.738
0	1088	3032	4976	6918	8859	0799	2737	4675	6611	8546	0479	2412	4343	6273	8201
1	1120	3065	5008	6950	8891	0831	2770	4707	6643	8578	0511	2444	4375	6305	8233
2	1152	3097	5041	6983	8924	0863	2802	4739	6675	8610	0544	2476	4407	6337	8266
3	1185	3130	5073	7015	8956	0896	2834	4771	6708	8642	0576	2508	4439	6369	8298
4	1217	3162	5105	7048	8988	0928	2867	4804	6740	8675	0608	2540	4471	6401	8330
5	1250	3194	5138	7080	9021	0960	2899	4836	6772	8707	0640	2573	4504	6433	8362
6	1282	3227	5170	7112	9053	0993	2931	4868	6804	8739	0672	2605	4536	6466	8394
7	1315	3259	5202	7145	9085	1025	2963	4901	6837	8771	0705	2637	4568	6498	8426
8	1347	3292	5235	7177	9118	1057	2996	4933	6869	8803	0737	2669	4600	6530	8458
9	1379	3324	5267	7209	9150	1090	3028	4965	6901	8836	0769	2701	4632	6562	8491
10	1412	3356	5300	7242	9182	1122	3060	4997	6933	8868	0801	2734	4664	6594	8523
11	1444	3389	5332	7274	9215	1154	3093	5030	6966	8900	0834	2766	4697	6626	8555
12	1477	3421	5364	7306	9247	1187	3125	5062	6998	8932	0866	2798	4729	6658	8587
13	1509	3454	5397	7339	9279	1219	3157	5094	7030	8965	0898	2830	4761	6691	8619
14	1542	3486	5429	7371	9312	1251	3190	5127	7062	8997	0930	2862	4793	6723	8651
15	1574	3518	5462	7403	9344	1284	3222	5159	7095	9029	0962	2894	4825	6755	8683
16	1606	3551	5494	7436	9376	1316	3254	5191	7127	9061	0995	2927	4857	6787	8715
17	1639	3583	5526	7468	9409	1348	3286	5223	7159	9094	1027	2959	4890	6819	8748
18	1671	3616	5559	7500	9441	1381	3319	5256	7191	9126	1059	2991	4922	6851	8780
19	1704	3648	5591	7533	9473	1413	3351	5288	7224	9158	1091	3023	4954	6884	8812
20	1736	3680	5623	7565	9506	1445	3383	5320	7256	9190	1123	3055	4986	6916	8844
21	1768	3713	5656	7598	9538	1477	3416	5352	7288	9222	1156	3088	5018	6948	8876
22	1801	3745	5688	7630	9570	1510	3448	5385	7320	9255	1188	3120	5050	6980	8908
23	1833	3777	5720	7662	9603	1542	3480	5417	7353	9287	1220	3152	5083	7012	8940
24	1866	3810	5753	7695	9635	1574	3512	5449	7385	9319	1252	3184	5115	7044	8972
25	1898	3842	5785	7727	9667	1607	3545	5482	7417	9351	1284	3216	5147	7076	9005
26	1931	3875	5818	7759	9700	1639	3577	5514	7449	9384	1317	3249	5179	7109	9037
27	1963	3907	5850	7792	9732	1671	3609	5546	7482	9416	1349	3281	5211	7141	9069
28	1995	3939	5882	7824	9764	1704	3642	5578	7514	9448	1381	3313	5244	7173	9101
29	2028	3972	5915	7856	9797	1736	3674	5611	7546	9480	1413	3345	5276	7205	9133
30	2060	4004	5947	7889	9829	1768	3706	5643	7578	9513	1446	3377	5308	7237	9165
31	2093	4037	5979	7921	9861	1801	3738	5675	7611	9545	1478	3409	5340	7269	9197
32	2125	4069	6012	7953	9894	1833	3771	5707	7643	9577	1510	3442	5372	7301	9229
33	2157	4101	6044	7986	9926	1865	3803	5740	7675	9609	1542	3474	5404	7334	9262
34	2190	4134	6077	8018	9958	1897	3835	5772	7707	9641	1574	3506	5436	7366	9294
35	2222	4166	6109	8050	9991	1930	3868	5804	7740	9674	1607	3538	5469	7398	9326
36	2255	4199	6141	8083	0023	1962	3900	5836	7772	9706	1639	3570	5501	7430	9358
37	2287	4231	6174	8115	0055	1994	3932	5869	7804	9738	1671	3603	5533	7462	9390
38	2319	4263	6206	8148	0088	2027	3964	5901	7836	9770	1703	3635	5565	7494	9422
39	2352	4296	6238	8180	0120	2059	3997	5933	7869	9803	1735	3667	5597	7526	9454
40	2384	4328	6271	8212	0152	2091	4029	5966	7901	9835	1768	3699	5629	7559	9486
41	2417	4361	6303	8245	0185	2124	4061	5998	7933	9867	1800	3731	5662	7591	9519
42	2449	4393	6336	8277	0217	2156	4094	6030	7965	9899	1832	3763	5694	7623	9551
43	2481	4425	6368	8309	0249	2188	4126	6062	7997	9931	1864	3796	5726	7655	9583
44	2514	4458	6400	8342	0282	2221	4158	6095	8030	9964	1896	3828	5758	7687	9615
45	2546	4490	6433	8374	0314	2253	4190	6127	8062	9996	1929	3860	5790	7719	9647
46	2579	4522	6465	8406	0346	2285	4223	6159	8094	0028	1961	3892	5822	7751	9679
47	2611	4555	6497	8439	0379	2317	4255	6191	8126	0060	1993	3924	5855	7784	9711
48	2644	4587	6530	8471	0411	2350	4287	6224	8159	0093	2025	3957	5887	7816	9743
49	2676	4620	6562	8503	0443	2382	4320	6256	8191	0125	2057	3989	5919	7848	9776
50	2708	4652	6594	8536	0476	2414	4352	6288	8223	0157	2090	4021	5951	7880	9808
51	2741	4684	6627	8568	0508	2447	4384	6320	8255	0189	2122	4053	5983	7912	9840
52	2773	4717	6659	8600	0540	2479	4416	6353	8288	0221	2154	4085	6015	7944	9872
53	2806	4749	6692	8633	0573	2511	4449	6385	8320	0254	2186	4117	6048	7976	9904
54	2838	4782	6724	8665	0605	2544	4481	6417	8352	0286	2218	4150	6080	8009	9936
55	2870	4814	6756	8697	0637	2576	4513	6449	8384	0318	2251	4182	6112	8041	9968
56	2903	4846	6789	8730	0670	2608	4546	6482	8417	0350	2283	4214	6144	8073	0000
57	2935	4879	6821	8762	0702	2640	4578	6514	8449	0383	2315	4246	6176	8105	0032
58	2968	4911	6853	8794	0734	2673	4610	6546	8481	0415	2347	4278	6208	8137	0065
59	3000	4943	6886	8827	0767	2705	4642	6578	8513	0447	2379	4311	6240	8169	0097
60	3032	4976	6918	8859	0799	2737	4675	6611	8546	0479	2412	4343	6273	8201	0129
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
	9.923	9.923	9.923	9.923	9.923	9.923	9.923	9.923	9.922	9.922	9.922	9.922	9.922	9.922	9.922	″
0	5914	5093	4272	3450	2628	1805	0982	0158	9334	8509	7684	6858	6032	5205	4377	60
1	5900	5080	4258	3437	2615	1792	0968	0145	9320	8495	7670	6844	6018	5191	4363	59
2	5887	5066	4245	3423	2601	1778	0955	0131	9307	8482	7656	6830	6004	5177	4349	58
3	5873	5052	4231	3409	2587	1764	0941	0117	9293	8468	7643	6817	5990	5163	4336	57
4	5859	5039	4217	3396	2573	1751	0927	0103	9279	8454	7629	6803	5976	5149	4322	56
5	5846	5025	4204	3382	2560	1737	0914	0090	9265	8440	7615	6789	5963	5136	4308	55
6	5832	5011	4190	3368	2546	1723	0900	0076	9252	8427	7601	6775	5949	5122	4294	54
7	5818	4998	4176	3355	2532	1709	0886	0062	9238	8413	7587	6762	5935	5108	4281	53
8	5805	4984	4163	3341	2519	1696	0872	0049	9224	8399	7574	6748	5921	5094	4267	52
9	5791	4970	4149	3327	2505	1682	0859	0035	9210	8385	7560	6734	5907	5080	4253	51
10	5777	4957	4135	3313	2491	1668	0845	0021	9197	8372	7546	6720	5894	5067	4239	50
11	5764	4943	4122	3300	2477	1655	0831	0007	9183	8358	7532	6706	5880	5053	4225	49
12	5750	4929	4108	3286	2464	1641	0817	9994	9169	8344	7519	6693	5866	5039	4212	48
13	5736	4915	4094	3272	2450	1627	0804	9980	9155	8330	7505	6679	5852	5025	4198	47
14	5723	4902	4080	3259	2436	1613	0790	9966	9142	8317	7491	6665	5839	5012	4184	46
15	5709	4888	4067	3245	2423	1600	0776	9952	9128	8303	7477	6651	5825	4998	4170	45
16	5695	4874	4053	3231	2409	1586	0763	9939	9114	8289	7464	6638	5811	4984	4156	44
17	5682	4861	4039	3218	2395	1572	0749	9925	9100	8275	7450	6624	5797	4970	4143	43
18	5668	4847	4026	3204	2381	1559	0735	9911	9087	8262	7436	6610	5783	4956	4129	42
19	5654	4833	4012	3190	2368	1545	0721	9897	9073	8248	7422	6596	5770	4943	4115	41
20	5641	4820	3998	3176	2354	1531	0708	9884	9059	8234	7409	6583	5756	4929	4101	40
21	5627	4806	3985	3163	2340	1517	0694	9870	9045	8220	7395	6569	5742	4915	4087	39
22	5613	4792	3971	3149	2327	1504	0680	9856	9032	8207	7381	6555	5728	4901	4074	38
23	5599	4779	3957	3135	2313	1490	0666	9842	9018	8193	7367	6541	5715	4887	4060	37
24	5586	4765	3944	3122	2299	1476	0653	9829	9004	8179	7354	6527	5701	4874	4046	36
25	5572	4751	3930	3108	2285	1462	0639	9815	8990	8165	7340	6514	5687	4860	4032	35
26	5558	4738	3916	3094	2272	1449	0625	9801	8977	8152	7326	6500	5673	4846	4018	34
27	5545	4724	3902	3081	2258	1435	0612	9787	8963	8138	7312	6486	5659	4832	4005	33
28	5531	4710	3889	3067	2244	1421	0598	9774	8949	8124	7298	6472	5646	4818	3991	32
29	5517	4697	3875	3053	2231	1408	0584	9760	8935	8110	7285	6459	5632	4805	3977	31
30	5504	4683	3861	3039	2217	1394	0570	9746	8922	8097	7271	6445	5618	4791	3963	30
31	5490	4669	3848	3026	2203	1380	0557	9733	8908	8083	7257	6431	5604	4777	3949	29
32	5476	4655	3834	3012	2189	1366	0543	9719	8894	8069	7243	6417	5591	4763	3936	28
33	5463	4642	3820	2998	2176	1353	0529	9705	8880	8055	7230	6403	5577	4750	3922	27
34	5449	4628	3807	2985	2162	1339	0515	9691	8867	8042	7216	6390	5563	4736	3908	26
35	5435	4614	3793	2971	2148	1325	0502	9678	8853	8028	7202	6376	5549	4722	3894	25
36	5422	4601	3779	2957	2135	1312	0488	9664	8839	8014	7188	6362	5535	4708	3880	24
37	5408	4587	3766	2943	2121	1298	0474	9650	8825	8000	7175	6348	5522	4694	3867	23
38	5394	4573	3752	2930	2107	1284	0461	9636	8812	7987	7161	6335	5508	4681	3853	22
39	5381	4560	3738	2916	2093	1270	0447	9623	8798	7973	7147	6321	5494	4667	3839	21
40	5367	4546	3724	2902	2080	1257	0433	9609	8784	7959	7133	6307	5480	4653	3825	20
41	5353	4532	3711	2889	2066	1243	0419	9595	8770	7945	7120	6293	5466	4639	3811	19
42	5340	4519	3697	2875	2052	1229	0406	9581	8757	7931	7106	6279	5453	4625	3798	18
43	5326	4505	3683	2861	2039	1216	0392	9568	8743	7918	7092	6266	5439	4612	3784	17
44	5312	4491	3670	2848	2025	1202	0378	9554	8729	7904	7078	6252	5425	4598	3770	16
45	5299	4478	3656	2834	2011	1188	0364	9540	8715	7890	7064	6238	5411	4584	3756	15
46	5285	4464	3642	2820	1997	1174	0351	9526	8702	7876	7051	6224	5398	4570	3742	14
47	5271	4450	3629	2806	1984	1161	0337	9513	8688	7863	7037	6211	5384	4556	3729	13
48	5258	4436	3615	2793	1970	1147	0323	9499	8674	7849	7023	6197	5370	4543	3715	12
49	5244	4423	3601	2779	1956	1133	0309	9485	8660	7835	7009	6183	5356	4529	3701	11
50	5230	4409	3587	2765	1943	1119	0296	9471	8647	7821	6996	6169	5342	4515	3687	10
51	5216	4395	3574	2752	1929	1106	0282	9458	8633	7808	6982	6155	5329	4501	3673	9
52	5203	4382	3560	2738	1915	1092	0268	9444	8619	7794	6968	6142	5315	4487	3660	8
53	5189	4368	3546	2724	1901	1078	0255	9430	8605	7780	6954	6128	5301	4474	3646	7
54	5175	4354	3533	2710	1888	1065	0241	9417	8592	7766	6941	6114	5287	4460	3632	6
55	5162	4341	3519	2697	1874	1051	0227	9403	8578	7753	6927	6100	5273	4446	3618	5
56	5148	4327	3505	2683	1860	1037	0213	9389	8564	7739	6913	6087	5260	4432	3604	4
57	5134	4313	3492	2669	1847	1023	0200	9375	8550	7725	6899	6073	5246	4418	3590	3
58	5121	4300	3478	2656	1833	1010	0186	9362	8537	7711	6885	6059	5232	4405	3577	2
59	5107	4286	3464	2642	1819	0996	0172	9348	8523	7698	6872	6045	5218	4391	3563	1
60	5093	4272	3450	2628	1805	0982	0158	9334	8509	7684	6858	6032	5205	4377	3549	0
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

33 Deg. Tangent

″	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
	9.812	9.812	9.813	9.813	9.813	9.813	9.814	9.814	9.814	9.815	9.815	9.815	9.815	9.816	9.816
0	5174	7939	0704	3468	6231	8993	1755	4516	7277	0036	2795	5554	8311	1068	3824
1	5220	7985	0750	3514	6277	9039	1801	4562	7323	0082	2841	5600	8357	1114	3870
2	5266	8031	0796	3560	6323	9085	1847	4608	7369	0128	2887	5646	8403	1160	3916
3	5312	8077	0842	3606	6369	9131	1893	4654	7415	0174	2933	5692	8449	1206	3962
4	5358	8123	0888	3652	6415	9178	1939	4700	7461	0220	2979	5737	8495	1252	4008
5	5404	8169	0934	3698	6461	9224	1985	4746	7507	0266	3025	5783	8541	1298	4054
6	5450	8215	0980	3744	6507	9270	2031	4792	7553	0312	3071	5829	8587	1344	4100
7	5496	8262	1026	3790	6553	9316	2077	4838	7599	0358	3117	5875	8633	1390	4146
8	5542	8308	1072	3836	6599	9362	2123	4884	7645	0404	3163	5921	8679	1436	4192
9	5588	8354	1118	3882	6645	9408	2169	4930	7691	0450	3209	5967	8725	1482	4238
10	5635	8400	1164	3928	6691	9454	2215	4976	7737	0496	3255	6013	8771	1528	4284
11	5681	8446	1210	3974	6737	9500	2261	5022	7783	0542	3301	6059	8817	1573	4329
12	5727	8492	1257	4020	6783	9546	2307	5068	7829	0588	3347	6105	8863	1619	4375
13	5773	8538	1303	4066	6829	9592	2353	5114	7875	0634	3393	6151	8909	1665	4421
14	5819	8584	1349	4112	6875	9638	2399	5160	7921	0680	3439	6197	8955	1711	4467
15	5865	8630	1395	4158	6922	9684	2446	5206	7967	0726	3485	6243	9001	1757	4513
16	5911	8676	1441	4205	6968	9730	2492	5252	8013	0772	3531	6289	9046	1803	4559
17	5957	8722	1487	4251	7014	9776	2538	5298	8059	0818	3577	6335	9092	1849	4605
18	6003	8768	1533	4297	7060	9822	2584	5344	8105	0864	3623	6381	9138	1895	4651
19	6049	8815	1579	4343	7106	9868	2630	5390	8151	0910	3669	6427	9184	1941	4697
20	6095	8861	1625	4389	7152	9914	2676	5436	8197	0956	3715	6473	9230	1987	4743
21	6142	8907	1671	4435	7198	9960	2722	5482	8243	1002	3761	6519	9276	2033	4789
22	6188	8953	1717	4481	7244	0006	2768	5529	8289	1048	3807	6565	9322	2079	4835
23	6234	8999	1763	4527	7290	0052	2814	5575	8335	1094	3853	6611	9368	2125	4881
24	6280	9045	1809	4573	7336	0098	2860	5621	8381	1140	3899	6657	9414	2171	4927
25	6326	9091	1855	4619	7382	0144	2906	5667	8427	1186	3945	6703	9460	2217	4972
26	6372	9137	1901	4665	7428	0190	2952	5713	8473	1232	3991	6749	9506	2263	5018
27	6418	9183	1948	4711	7474	0236	2998	5759	8519	1278	4037	6795	9552	2308	5064
28	6464	9229	1994	4757	7520	0282	3044	5805	8565	1324	4083	6841	9598	2354	5110
29	6510	9275	2040	4803	7566	0328	3090	5851	8611	1370	4129	6887	9644	2400	5156
30	6556	9321	2086	4849	7612	0374	3136	5897	8657	1416	4175	6933	9690	2446	5202
31	6602	9367	2132	4895	7658	0420	3182	5943	8703	1462	4221	6978	9736	2492	5248
32	6649	9414	2178	4941	7704	0466	3228	5989	8749	1508	4267	7024	9782	2538	5294
33	6695	9460	2224	4987	7750	0512	3274	6035	8795	1554	4312	7070	9828	2584	5340
34	6741	9506	2270	5034	7796	0558	3320	6081	8841	1600	4358	7116	9874	2630	5386
35	6787	9552	2316	5080	7842	0605	3366	6127	8887	1646	4404	7162	9919	2676	5432
36	6833	9598	2362	5126	7888	0651	3412	6173	8933	1692	4450	7208	9965	2722	5478
37	6879	9644	2408	5172	7934	0697	3458	6219	8979	1738	4496	7254	0011	2768	5524
38	6925	9690	2454	5218	7981	0743	3504	6265	9025	1784	4542	7300	0057	2814	5569
39	6971	9736	2500	5264	8027	0789	3550	6311	9071	1830	4588	7346	0103	2860	5615
40	7017	9782	2546	5310	8073	0835	3596	6357	9117	1876	4634	7392	0149	2906	5661
41	7063	9828	2592	5356	8119	0881	3642	6403	9163	1922	4680	7438	0195	2952	5707
42	7109	9874	2638	5402	8165	0927	3688	6449	9209	1968	4726	7484	0241	2997	5753
43	7156	9920	2685	5448	8211	0973	3734	6495	9255	2014	4772	7530	0287	3043	5799
44	7202	9966	2731	5494	8257	1019	3780	6541	9301	2060	4818	7576	0333	3089	5845
45	7248	0013	2777	5540	8303	1065	3826	6587	9347	2106	4864	7622	0379	3135	5891
46	7294	0059	2823	5586	8349	1111	3872	6633	9393	2152	4910	7668	0425	3181	5937
47	7340	0105	2869	5632	8395	1157	3918	6679	9438	2198	4956	7714	0471	3227	5983
48	7386	0151	2915	5678	8441	1203	3964	6725	9484	2244	5002	7760	0517	3273	6029
49	7432	0197	2961	5724	8487	1249	4010	6771	9530	2290	5048	7806	0563	3319	6075
50	7478	0243	3007	5770	8533	1295	4056	6817	9576	2336	5094	7852	0609	3365	6121
51	7524	0289	3053	5816	8579	1341	4102	6863	9622	2382	5140	7898	0655	3411	6166
52	7570	0335	3099	5862	8625	1387	4148	6909	9668	2428	5186	7944	0701	3457	6212
53	7616	0381	3145	5908	8671	1433	4194	6955	9714	2474	5232	7990	0746	3503	6258
54	7662	0427	3191	5955	8717	1479	4240	7001	9760	2519	5278	8035	0792	3549	6304
55	7709	0473	3237	6001	8763	1525	4286	7047	9806	2565	5324	8081	0838	3595	6350
56	7755	0519	3283	6047	8809	1571	4332	7093	9852	2611	5370	8127	0884	3641	6396
57	7801	0565	3329	6093	8855	1617	4378	7139	9898	2657	5416	8173	0930	3686	6442
58	7847	0612	3375	6139	8901	1663	4424	7185	9944	2703	5462	8219	0976	3732	6488
59	7893	0658	3422	6185	8947	1709	4470	7231	9990	2749	5508	8265	1022	3778	6534
60	7939	0704	3468	6231	8993	1755	4516	7277	0036	2795	5554	8311	1068	3824	6580
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Tangent Deg. 56

33 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	″
10.187	10.187	10.186	10.186	10.186	10.186	10.185	10.185	10.185	10.184	10.184	10.184	10.184	10.183	10.183	
4826	2061	9296	6532	3769	1007	8245	5484	2723	9964	7205	4446	1689	8932	6176	60
4780	2015	9250	6486	3723	0961	8199	5438	2677	9918	7159	4400	1643	8886	6130	59
4734	1969	9204	6440	3677	0915	8153	5392	2631	9872	7113	4354	1597	8840	6084	58
4688	1923	9158	6394	3631	0869	8107	5346	2585	9826	7067	4308	1551	8794	6038	57
4642	1877	9112	6348	3585	0822	8061	5300	2539	9780	7021	4263	1505	8748	5992	56
4596	1831	9066	6302	3539	0776	8015	5254	2493	9734	6975	4217	1459	8702	5946	55
4550	1785	9020	6256	3493	0730	7969	5208	2447	9688	6929	4171	1413	8656	5900	54
4504	1738	8974	6210	3447	0684	7923	5162	2401	9642	6883	4125	1367	8610	5854	53
4458	1692	8928	6164	3401	0638	7877	5116	2355	9596	6837	4079	1321	8564	5808	52
4412	1646	8882	6118	3355	0592	7831	5070	2309	9550	6791	4033	1275	8518	5762	51
4365	1600	8836	6072	3309	0546	7785	5024	2263	9504	6745	3987	1229	8472	5716	50
4319	1554	8790	6026	3263	0500	7739	4978	2217	9458	6699	3941	1183	8427	5671	49
4273	1508	8743	5980	3217	0454	7693	4932	2171	9412	6653	3895	1137	8381	5625	48
4227	1462	8697	5934	3171	0408	7647	4886	2125	9366	6607	3849	1091	8335	5579	47
4181	1416	8651	5888	3125	0362	7601	4840	2079	9320	6561	3803	1045	8289	5533	46
4135	1370	8605	5842	3078	0316	7554	4794	2033	9274	6515	3757	0999	8243	5487	45
4089	1324	8559	5795	3032	0270	7508	4748	1987	9228	6469	3711	0954	8197	5441	44
4043	1278	8513	5749	2986	0224	7462	4702	1941	9182	6423	3665	0908	8151	5395	43
3997	1232	8467	5703	2940	0178	7416	4656	1895	9136	6377	3619	0862	8105	5349	42
3951	1185	8421	5657	2894	0132	7370	4610	1849	9090	6331	3573	0816	8059	5303	41
3905	1139	8375	5611	2848	0086	7324	4564	1803	9044	6285	3527	0770	8013	5257	40
3858	1093	8329	5565	2802	0040	7278	4518	1757	8998	6239	3481	0724	7967	5211	39
3812	1047	8283	5519	2756	9994	7232	4471	1711	8952	6193	3435	0678	7921	5165	38
3766	1001	8237	5473	2710	9948	7186	4425	1665	8906	6147	3389	0632	7875	5119	37
3720	0955	8191	5427	2664	9902	7140	4379	1619	8860	6101	3343	0586	7829	5073	36
3674	0909	8145	5381	2618	9856	7094	4333	1573	8814	6055	3297	0540	7783	5028	35
3628	0863	8099	5335	2572	9810	7048	4287	1527	8768	6009	3251	0494	7737	4982	34
3582	0817	8052	5289	2526	9764	7002	4241	1481	8722	5963	3205	0448	7692	4936	33
3536	0771	8006	5243	2480	9718	6956	4195	1435	8676	5917	3159	0402	7646	4890	32
3490	0725	7960	5197	2434	9672	6910	4149	1389	8630	5871	3113	0356	7600	4844	31
3444	0679	7914	5151	2388	9626	6864	4103	1343	8584	5825	3067	0310	7554	4798	30
3398	0633	7868	5105	2342	9580	6818	4057	1297	8538	5779	3022	0264	7508	4752	29
3351	0586	7822	5059	2296	9534	6772	4011	1251	8492	5733	2976	0218	7462	4706	28
3305	0540	7776	5013	2250	9488	6726	3965	1205	8446	5688	2930	0172	7416	4660	27
3259	0494	7730	4966	2204	9442	6680	3919	1159	8400	5642	2884	0126	7370	4614	26
3213	0448	7684	4920	2158	9395	6634	3873	1113	8354	5596	2838	0081	7324	4568	25
3167	0402	7638	4874	2112	9349	6588	3827	1067	8308	5550	2792	0035	7278	4522	24
3121	0356	7592	4828	2066	9303	6542	3781	1021	8262	5504	2746	9989	7232	4476	23
3075	0310	7546	4782	2019	9257	6496	3735	0975	8216	5458	2700	9943	7186	4431	22
3029	0264	7500	4736	1973	9211	6450	3689	0929	8170	5412	2654	9897	7140	4385	21
2983	0218	7454	4690	1927	9165	6404	3643	0883	8124	5366	2608	9851	7094	4339	20
2937	0172	7408	4644	1881	9119	6358	3597	0837	8078	5320	2562	9805	7048	4293	19
2891	0126	7362	4598	1835	9073	6312	3551	0791	8032	5274	2516	9759	7003	4247	18
2844	0080	7315	4552	1789	9027	6266	3505	0745	7986	5228	2470	9713	6957	4201	17
2798	0034	7269	4506	1743	8981	6220	3459	0699	7940	5182	2424	9667	6911	4155	16
2752	9987	7223	4460	1697	8935	6174	3413	0653	7894	5136	2378	9621	6865	4109	15
2706	9941	7177	4414	1651	8889	6128	3367	0607	7848	5090	2332	9575	6819	4063	14
2660	9895	7131	4368	1605	8843	6082	3321	0562	7802	5044	2286	9529	6773	4017	13
2614	9849	7085	4322	1559	8797	6036	3275	0516	7756	4998	2240	9483	6727	3971	12
2568	9803	7039	4276	1513	8751	5990	3229	0470	7710	4952	2194	9437	6681	3925	11
2522	9757	6993	4230	1467	8705	5944	3183	0424	7664	4906	2148	9391	6635	3879	10
2476	9711	6947	4184	1421	8659	5898	3137	0378	7618	4860	2102	9345	6589	3834	9
2430	9665	6901	4138	1375	8613	5852	3091	0332	7572	4814	2056	9299	6543	3788	8
2384	9619	6855	4092	1329	8567	5806	3045	0286	7526	4768	2010	9254	6497	3742	7
2338	9573	6809	4045	1283	8521	5760	2999	0240	7481	4722	1965	9208	6451	3696	6
2291	9527	6763	3999	1237	8475	5714	2953	0194	7435	4676	1919	9162	6405	3650	5
2245	9481	6717	3953	1191	8429	5668	2907	0148	7389	4630	1873	9116	6359	3604	4
2199	9435	6671	3907	1145	8383	5622	2861	0102	7343	4584	1827	9070	6314	3558	3
2153	9388	6625	3861	1099	8337	5576	2815	0056	7297	4538	1781	9024	6268	3512	2
2107	9342	6578	3815	1053	8291	5530	2769	0010	7251	4492	1735	8978	6222	3466	1
2061	9296	6532	3769	1007	8245	5484	2723	9964	7205	4446	1689	8932	6176	3420	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Tangent Deg. 56

33 Deg. Sine

"	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9. 739	9. 739	9. 739	9. 739	9. 739	9. 739	9. 740	9. 740	9. 740	9. 740	9. 740	9. 741	9. 741	9. 741	9. 741
0	0129	2055	3980	5904	7827	9748	1668	3587	5505	7421	9337	1251	3164	5075	6986
1	0161	2087	4012	5936	7859	9780	1700	3619	5537	7453	9369	1283	3195	5107	7018
2	0193	2119	4044	5968	7891	9812	1732	3651	5569	7485	9400	1314	3227	5139	7049
3	0225	2151	4076	6000	7923	9844	1764	3683	5601	7517	9432	1346	3259	5171	7081
4	0257	2183	4108	6032	7955	9876	1796	3715	5633	7549	9464	1378	3291	5203	7113
5	0289	2216	4140	6064	7987	9908	1828	3747	5665	7581	9496	1410	3323	5234	7145
6	0322	2248	4173	6096	8019	9940	1860	3779	5696	7613	9528	1442	3355	5266	7177
7	0354	2280	4205	6128	8051	9972	1892	3811	5728	7645	9560	1474	3387	5298	7209
8	0386	2312	4237	6160	8083	0004	1924	3843	5760	7677	9592	1506	3419	5330	7240
9	0418	2344	4269	6192	8115	0036	1956	3875	5792	7709	9624	1538	3450	5362	7272
10	0450	2376	4301	6224	8147	0068	1988	3907	5824	7741	9656	1570	3482	5394	7304
11	0482	2408	4333	6257	8179	0100	2020	3939	5856	7773	9688	1601	3514	5426	7336
12	0514	2440	4365	6289	8211	0132	2052	3971	5888	7804	9720	1633	3546	5457	7368
13	0546	2472	4397	6321	8243	0164	2084	4003	5920	7836	9751	1665	3578	5489	7399
14	0578	2504	4429	6353	8275	0196	2116	4035	5952	7868	9783	1697	3610	5521	7431
15	0611	2536	4461	6385	8307	0228	2148	4067	5984	7900	9815	1729	3642	5553	7463
16	0643	2569	4493	6417	8339	0260	2180	4099	6016	7932	9847	1761	3673	5585	7495
17	0675	2601	4525	6449	8371	0292	2212	4131	6048	7964	9879	1793	3705	5617	7527
18	0707	2633	4557	6481	8403	0324	2244	4162	6080	7996	9911	1825	3737	5649	7559
19	0739	2665	4589	6513	8435	0356	2276	4194	6112	8028	9943	1857	3769	5680	7590
20	0771	2697	4622	6545	8467	0388	2308	4226	6144	8060	9975	1888	3801	5712	7622
21	0803	2729	4654	6577	8499	0420	2340	4258	6176	8092	0007	1920	3833	5744	7654
22	0835	2761	4686	6609	8531	0452	2372	4290	6208	8124	0039	1952	3865	5776	7686
23	0867	2793	4718	6641	8563	0484	2404	4322	6240	8156	0070	1984	3897	5808	7718
24	0899	2825	4750	6673	8595	0516	2436	4354	6272	8188	0102	2016	3928	5840	7750
25	0932	2857	4782	6705	8627	0548	2468	4386	6303	8219	0134	2048	3960	5871	7781
26	0964	2889	4814	6737	8659	0580	2500	4418	6335	8251	0166	2080	3992	5903	7813
27	0996	2922	4846	6769	8691	0612	2532	4450	6367	8283	0198	2112	4024	5935	7845
28	1028	2954	4878	6801	8723	0644	2564	4482	6399	8315	0230	2144	4056	5967	7877
29	1060	2986	4910	6833	8755	0676	2596	4514	6431	8347	0262	2175	4088	5999	7909
30	1092	3018	4942	6865	8787	0708	2628	4546	6463	8379	0294	2207	4120	6031	7940
31	1124	3050	4974	6897	8819	0740	2660	4578	6495	8411	0326	2239	4151	6062	7972
32	1156	3082	5006	6929	8851	0772	2692	4610	6527	8443	0358	2271	4183	6094	8004
33	1188	3114	5038	6962	8883	0804	2724	4642	6559	8475	0389	2303	4215	6126	8036
34	1221	3146	5070	6994	8915	0836	2756	4674	6591	8507	0421	2335	4247	6158	8068
35	1253	3178	5103	7026	8947	0868	2788	4706	6623	8539	0453	2367	4279	6190	8100
36	1285	3210	5135	7058	8980	0900	2820	4738	6655	8571	0485	2399	4311	6222	8131
37	1317	3242	5167	7090	9012	0932	2852	4770	6687	8603	0517	2430	4343	6254	8163
38	1349	3274	5199	7122	9044	0964	2884	4802	6719	8634	0549	2462	4374	6285	8195
39	1381	3307	5231	7154	9076	0996	2916	4834	6751	8666	0581	2494	4406	6317	8227
40	1413	3339	5263	7186	9108	1028	2948	4866	6783	8698	0613	2526	4438	6349	8259
41	1445	3371	5295	7218	9140	1060	2979	4898	6815	8730	0645	2558	4470	6381	8291
42	1477	3403	5327	7250	9172	1092	3011	4930	6846	8762	0677	2590	4502	6413	8322
43	1509	3435	5359	7282	9204	1124	3043	4962	6878	8794	0708	2622	4534	6445	8354
44	1542	3467	5391	7314	9236	1156	3075	4993	6910	8826	0740	2654	4566	6476	8386
45	1574	3499	5423	7346	9268	1188	3107	5025	6942	8858	0772	2685	4597	6508	8418
46	1606	3531	5455	7378	9300	1220	3139	5057	6974	8890	0804	2717	4629	6540	8450
47	1638	3563	5487	7410	9332	1252	3171	5089	7006	8922	0836	2749	4661	6572	8481
48	1670	3595	5519	7442	9364	1284	3203	5121	7038	8954	0868	2781	4693	6604	8513
49	1702	3627	5551	7474	9396	1316	3235	5153	7070	8986	0900	2813	4725	6636	8545
50	1734	3659	5583	7506	9428	1348	3267	5185	7102	9017	0932	2845	4757	6667	8577
51	1766	3691	5615	7538	9460	1380	3299	5217	7134	9049	0964	2877	4789	6699	8609
52	1798	3724	5648	7570	9492	1412	3331	5249	7166	9081	0996	2909	4820	6731	8640
53	1830	3756	5680	7602	9524	1444	3363	5281	7198	9113	1027	2940	4852	6763	8672
54	1863	3788	5712	7634	9556	1476	3395	5313	7230	9145	1059	2972	4884	6795	8704
55	1895	3820	5744	7666	9588	1508	3427	5345	7262	9177	1091	3004	4916	6827	8736
56	1927	3852	5776	7698	9620	1540	3459	5377	7294	9209	1123	3036	4948	6858	8768
57	1959	3884	5808	7730	9652	1572	3491	5409	7325	9241	1155	3068	4980	6890	8800
58	1991	3916	5840	7762	9684	1604	3523	5441	7357	9273	1187	3100	5012	6922	8831
59	2023	3948	5872	7795	9716	1636	3555	5473	7389	9305	1219	3132	5043	6954	8863
60	2055	3980	5904	7827	9748	1668	3587	5505	7421	9337	1251	3164	5075	6986	8895
"	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Sine Deg. 56

33 Deg. Co-Sine

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	"
9. 922	9. 922	9. 922	9. 922	9. 922	9. 921	9. 921	9. 921	9. 921	9. 921	9. 921	9. 921	9. 921	9. 921	9. 921	
3549	2721	1891	1062	0232	9401	8570	7738	6906	6073	5240	4406	3572	2737	1902	60
3535	2707	1878	1048	0218	9387	8556	7724	6892	6060	5226	4392	3558	2723	1888	59
3521	2693	1864	1034	0204	9373	8542	7711	6878	6046	5212	4379	3544	2709	1874	58
3508	2679	1850	1020	0190	9360	8528	7697	6865	6032	5198	4365	3530	2695	1860	57
3494	2665	1836	1007	0176	9346	8515	7683	6851	6018	5185	4351	3516	2682	1846	56
3480	2651	1822	0993	0163	9332	8501	7669	6837	6004	5171	4337	3502	2668	1832	55
3466	2638	1809	0979	0149	9318	8487	7655	6823	5990	5157	4323	3489	2654	1818	54
3452	2624	1795	0965	0135	9304	8473	7641	6809	5976	5143	4309	3475	2640	1804	53
3439	2610	1781	0951	0121	9290	8459	7627	6795	5962	5129	4295	3461	2626	1790	52
3425	2596	1767	0937	0107	9277	8445	7614	6781	5948	5115	4281	3447	2612	1776	51
3411	2582	1753	0924	0093	9263	8431	7600	6767	5935	5101	4267	3433	2598	1763	50
3397	2569	1739	0910	0080	9249	8418	7586	6754	5921	5087	4253	3419	2584	1749	49
3383	2555	1726	0896	0066	9235	8404	7572	6740	5907	5073	4240	3405	2570	1735	48
3370	2541	1712	0882	0052	9221	8390	7558	6726	5893	5060	4226	3391	2556	1721	47
3356	2527	1698	0868	0038	9207	8376	7544	6712	5879	5046	4212	3377	2542	1707	46
3342	2513	1684	0854	0024	9193	8362	7530	6698	5865	5032	4198	3363	2528	1693	45
3328	2500	1670	0841	0010	9180	8348	7516	6684	5851	5018	4184	3349	2514	1679	44
3314	2486	1657	0827	9997	9166	8334	7503	6670	5837	5004	4170	3336	2501	1665	43
3301	2472	1643	0813	9983	9152	8321	7489	6656	5823	4990	4156	3322	2487	1651	42
3287	2458	1629	0799	9969	9138	8307	7475	6642	5810	4976	4142	3308	2473	1637	41
3273	2444	1615	0785	9955	9124	8293	7461	6629	5796	4962	4128	3294	2459	1623	40
3259	2430	1601	0771	9941	9110	8279	7447	6615	5782	4948	4114	3280	2445	1609	39
3245	2417	1587	0758	9927	9096	8265	7433	6601	5768	4934	4100	3266	2431	1595	38
3232	2403	1574	0744	9913	9083	8251	7419	6587	5754	4921	4087	3252	2417	1581	37
3218	2389	1560	0730	9900	9069	8237	7406	6573	5740	4907	4073	3238	2403	1568	36
3204	2375	1546	0716	9886	9055	8224	7392	6559	5726	4893	4059	3224	2389	1554	35
3190	2361	1532	0702	9872	9041	8210	7378	6545	5712	4879	4045	3210	2375	1540	34
3176	2348	1518	0688	9858	9027	8196	7364	6531	5698	4865	4031	3196	2361	1526	33
3162	2334	1504	0675	9844	9013	8182	7350	6518	5685	4851	4017	3182	2347	1512	32
3149	2320	1491	0661	9830	9000	8168	7336	6504	5671	4837	4003	3169	2333	1498	31
3135	2306	1477	0647	9817	8986	8154	7322	6490	5657	4823	3989	3155	2320	1484	30
3121	2292	1463	0633	9803	8972	8140	7308	6476	5643	4809	3975	3141	2306	1470	29
3107	2278	1449	0619	9789	8958	8127	7295	6462	5629	4796	3961	3127	2292	1456	28
3093	2265	1435	0605	9775	8944	8113	7281	6448	5615	4782	3948	3113	2278	1442	27
3080	2251	1421	0592	9761	8930	8099	7267	6434	5601	4768	3934	3099	2264	1428	26
3066	2237	1408	0578	9747	8916	8085	7253	6420	5587	4754	3920	3085	2250	1414	25
3052	2223	1394	0564	9733	8903	8071	7239	6407	5574	4740	3906	3071	2236	1400	24
3038	2209	1380	0550	9720	8889	8057	7225	6393	5560	4726	3892	3057	2222	1386	23
3024	2196	1366	0536	9706	8875	8043	7211	6379	5546	4712	3878	3043	2208	1372	22
3011	2182	1352	0522	9692	8861	8029	7197	6365	5532	4698	3864	3029	2194	1359	21
2997	2168	1339	0509	9678	8847	8016	7184	6351	5518	4684	3850	3016	2180	1345	20
2983	2154	1325	0495	9664	8833	8002	7170	6337	5504	4670	3836	3002	2166	1331	19
2969	2140	1311	0481	9650	8819	7988	7156	6323	5490	4657	3822	2988	2152	1317	18
2955	2126	1297	0467	9637	8806	7974	7142	6309	5476	4643	3808	2974	2139	1303	17
2942	2113	1283	0453	9623	8792	7960	7128	6296	5462	4629	3795	2960	2125	1289	16
2928	2099	1269	0439	9609	8778	7946	7114	6282	5449	4615	3781	2946	2111	1275	15
2914	2085	1256	0426	9595	8764	7932	7100	6268	5435	4601	3767	2932	2097	1261	14
2900	2071	1242	0412	9581	8750	7919	7086	6254	5421	4587	3753	2918	2083	1247	13
2886	2057	1228	0398	9567	8736	7905	7073	6240	5407	4573	3739	2904	2069	1233	12
2872	2044	1214	0384	9554	8722	7891	7059	6226	5393	4559	3725	2890	2055	1219	11
2859	2030	1200	0370	9540	8709	7877	7045	6212	5379	4545	3711	2876	2041	1205	10
2845	2016	1186	0356	9526	8695	7863	7031	6198	5365	4531	3697	2862	2027	1191	9
2831	2002	1173	0343	9512	8681	7849	7017	6184	5351	4518	3683	2849	2013	1177	8
2817	1988	1159	0329	9498	8667	7835	7003	6171	5337	4504	3669	2835	1999	1163	7
2803	1974	1145	0315	9484	8653	7822	6989	6157	5323	4490	3655	2821	1985	1150	6
2790	1961	1131	0301	9470	8639	7808	6976	6143	5310	4476	3642	2807	1971	1136	5
2776	1947	1117	0287	9457	8625	7794	6962	6129	5296	4462	3628	2793	1958	1122	4
2762	1933	1103	0273	9443	8612	7780	6948	6115	5282	4448	3614	2779	1944	1108	3
2748	1919	1090	0259	9429	8598	7766	6934	6101	5268	4434	3600	2765	1930	1094	2
2734	1905	1076	0246	9415	8584	7752	6920	6087	5254	4420	3586	2751	1916	1080	1
2721	1891	1062	0232	9401	8570	7738	6906	6073	5240	4406	3572	2737	1902	1066	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	"

Sine Deg. 56

33 Deg. Tangent

"	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9.816	9.816	9.817	9.817	9.817	9.818	9.818	9.818	9.818	9.819	9.819	9.819	9.819	9.820	9.820
0	6580	9335	2089	4842	7595	0347	3098	5849	8599	1348	4096	6844	9592	2338	5084
1	6626	9380	2135	4888	7641	0393	3144	5895	8644	1394	4142	6890	9637	2384	5130
2	6672	9426	2180	4934	7686	0438	3190	5940	8690	1440	4188	6936	9683	2430	5175
3	6718	9472	2226	4980	7732	0484	3236	5986	8736	1485	4234	6982	9729	2475	5221
4	6763	9518	2272	5026	7778	0530	3281	6032	8782	1531	4280	7028	9775	2521	5267
5	6809	9564	2318	5071	7824	0576	3327	6078	8828	1577	4325	7073	9820	2567	5313
6	6855	9610	2364	5117	7870	0622	3373	6124	8874	1623	4371	7119	9866	2613	5358
7	6901	9656	2410	5163	7916	0668	3419	6170	8919	1669	4417	7165	9912	2658	5404
8	6947	9702	2456	5209	7962	0714	3465	6215	8965	1714	4463	7211	9958	2704	5450
9	6993	9748	2502	5255	8008	0759	3511	6261	9011	1760	4509	7256	0004	2750	5496
10	7039	9794	2548	5301	8053	0805	3557	6307	9057	1806	4554	7302	0049	2796	5541
11	7085	9840	2593	5347	8099	0851	3602	6353	9103	1852	4600	7348	0095	2842	5587
12	7131	9885	2639	5393	8145	0897	3648	6399	9149	1898	4646	7394	0141	2887	5633
13	7177	9931	2685	5439	8191	0943	3694	6445	9194	1943	4692	7440	0187	2933	5679
14	7223	9977	2731	5484	8237	0989	3740	6490	9240	1989	4738	7485	0232	2979	5725
15	7269	0023	2777	5530	8283	1035	3786	6536	9286	2035	4783	7531	0278	3025	5770
16	7314	0069	2823	5576	8329	1080	3832	6582	9332	2081	4829	7577	0324	3070	5816
17	7360	0115	2869	5622	8375	1126	3877	6628	9378	2127	4875	7623	0370	3116	5862
18	7406	0161	2915	5668	8420	1172	3923	6674	9423	2173	4921	7669	0416	3162	5908
19	7452	0207	2961	5714	8466	1218	3969	6720	9469	2218	4967	7714	0461	3208	5953
20	7498	0253	3007	5760	8512	1264	4015	6765	9515	2264	5012	7760	0507	3253	5999
21	7544	0299	3052	5806	8558	1310	4061	6811	9561	2310	5058	7806	0553	3299	6045
22	7590	0344	3098	5851	8604	1356	4107	6857	9607	2356	5104	7852	0599	3345	6091
23	7636	0390	3144	5897	8650	1401	4153	6903	9653	2402	5150	7898	0644	3391	6136
24	7682	0436	3190	5943	8696	1447	4198	6949	9698	2447	5196	7943	0690	3436	6182
25	7728	0482	3236	5989	8741	1493	4244	6995	9744	2493	5241	7989	0736	3482	6228
26	7774	0528	3282	6035	8787	1539	4290	7040	9790	2539	5287	8035	0782	3528	6274
27	7819	0574	3328	6081	8833	1585	4336	7086	9836	2585	5333	8081	0828	3574	6319
28	7865	0620	3374	6127	8879	1631	4382	7132	9882	2631	5379	8126	0873	3620	6365
29	7911	0666	3420	6173	8925	1677	4428	7178	9928	2676	5425	8172	0919	3665	6411
30	7957	0712	3465	6218	8971	1722	4473	7224	9973	2722	5470	8218	0965	3711	6457
31	8003	0758	3511	6264	9017	1768	4519	7270	0019	2768	5516	8264	1011	3757	6502
32	8049	0803	3557	6310	9063	1814	4565	7315	0065	2814	5562	8310	1056	3803	6548
33	8095	0849	3603	6356	9108	1860	4611	7361	0111	2860	5608	8355	1102	3848	6594
34	8141	0895	3649	6402	9154	1906	4657	7407	0157	2905	5654	8401	1148	3894	6640
35	8187	0941	3695	6448	9200	1952	4703	7453	0202	2951	5699	8447	1194	3940	6685
36	8233	0987	3741	6494	9246	1998	4749	7499	0248	2997	5745	8493	1240	3986	6731
37	8279	1033	3787	6540	9292	2043	4794	7545	0294	3043	5791	8539	1285	4031	6777
38	8325	1079	3833	6585	9338	2089	4840	7590	0340	3089	5837	8584	1331	4077	6823
39	8370	1125	3878	6631	9384	2135	4886	7636	0386	3135	5883	8630	1377	4123	6868
40	8416	1171	3924	6677	9429	2181	4932	7682	0432	3180	5928	8676	1423	4169	6914
41	8462	1217	3970	6723	9475	2227	4978	7728	0477	3226	5974	8722	1468	4214	6960
42	8508	1262	4016	6769	9521	2273	5024	7774	0523	3272	6020	8767	1514	4260	7006
43	8554	1308	4062	6815	9567	2319	5069	7820	0569	3318	6066	8813	1560	4306	7051
44	8600	1354	4108	6861	9613	2364	5115	7865	0615	3364	6112	8859	1606	4352	7097
45	8646	1400	4154	6907	9659	2410	5161	7911	0661	3409	6157	8905	1652	4398	7143
46	8692	1446	4200	6952	9705	2456	5207	7957	0706	3455	6203	8951	1697	4443	7189
47	8738	1492	4246	6998	9751	2502	5253	8003	0752	3501	6249	8996	1743	4489	7234
48	8784	1538	4291	7044	9796	2548	5299	8049	0798	3547	6295	9042	1789	4535	7280
49	8830	1584	4337	7090	9842	2594	5344	8095	0844	3593	6341	9088	1835	4581	7326
50	8875	1630	4383	7136	9888	2640	5390	8140	0890	3638	6386	9134	1880	4626	7372
51	8921	1676	4429	7182	9934	2685	5436	8186	0936	3684	6432	9180	1926	4672	7417
52	8967	1721	4475	7228	9980	2731	5482	8232	0981	3730	6478	9225	1972	4718	7463
53	9013	1767	4521	7274	0026	2777	5528	8278	1027	3776	6524	9271	2018	4764	7509
54	9059	1813	4567	7319	0072	2823	5574	8324	1073	3822	6570	9317	2063	4809	7555
55	9105	1859	4613	7365	0117	2869	5619	8369	1119	3867	6615	9363	2109	4855	7600
56	9151	1905	4658	7411	0163	2915	5665	8415	1165	3913	6661	9408	2155	4901	7646
57	9197	1951	4704	7457	0209	2961	5711	8461	1210	3959	6707	9454	2201	4947	7692
58	9243	1997	4750	7503	0255	3006	5757	8507	1256	4005	6753	9500	2247	4992	7738
59	9289	2043	4796	7549	0301	3052	5803	8553	1302	4051	6799	9546	2292	5038	7783
60	9335	2089	4842	7595	0347	3098	5849	8599	1348	4096	6844	9592	2338	5084	7829
"	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

33 Deg. Co-Tangent

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	"
10.183	10.183	10.182	10.182	10.182	10.181	10.181	10.181	10.181	10.180	10.180	10.180	10.180	10.179	10.179	
3420	0665	7911	5158	2405	9653	6902	4151	1401	8652	5904	3156	0408	7662	4916	60
3374	0620	7865	5112	2359	9607	6856	4105	1356	8606	5858	3110	0363	7616	4870	59
3328	0574	7820	5066	2314	9562	6810	4060	1310	8560	5812	3064	0317	7570	4825	58
3282	0528	7774	5020	2268	9516	6764	4014	1264	8515	5766	3018	0271	7525	4779	57
3237	0482	7728	4974	2222	9470	6719	3968	1218	8469	5720	2972	0225	7479	4733	56
3191	0436	7682	4929	2176	9424	6673	3922	1172	8423	5675	2927	0180	7433	4687	55
3145	0390	7636	4883	2130	9378	6627	3876	1126	8377	5629	2881	0134	7387	4642	54
3099	0344	7590	4837	2084	9332	6581	3830	1081	8331	5583	2835	0088	7342	4596	53
3053	0298	7544	4791	2038	9286	6535	3785	1035	8286	5537	2789	0042	7296	4550	52
3007	0252	7498	4745	1992	9241	6489	3739	0989	8240	5491	2744	9996	7250	4504	51
2961	0206	7452	4699	1947	9195	6443	3693	0943	8194	5446	2698	9951	7204	4459	50
2915	0160	7407	4653	1901	9149	6398	3647	0897	8148	5400	2652	9905	7158	4413	49
2869	0115	7361	4607	1855	9103	6352	3601	0851	8102	5354	2606	9859	7113	4367	48
2823	0069	7315	4561	1809	9057	6306	3555	0806	8057	5308	2560	9813	7067	4321	47
2777	0023	7269	4516	1763	9011	6260	3510	0760	8011	5262	2515	9768	7021	4275	46
2731	9977	7223	4470	1717	8965	6214	3464	0714	7965	5217	2469	9722	6975	4230	45
2686	9931	7177	4424	1671	8920	6168	3418	0668	7919	5171	2423	9676	6930	4184	44
2640	9885	7131	4378	1625	8874	6123	3372	0622	7873	5125	2377	9630	6884	4138	43
2594	9839	7085	4332	1580	8828	6077	3326	0577	7827	5079	2331	9584	6838	4092	42
2548	9793	7039	4286	1534	8782	6031	3280	0531	7782	5033	2286	9539	6792	4047	41
2502	9747	6993	4240	1488	8736	5985	3235	0485	7736	4988	2240	9493	6747	4001	40
2456	9701	6948	4194	1442	8690	5939	3189	0439	7690	4942	2194	9447	6701	3955	39
2410	9656	6902	4149	1396	8644	5893	3143	0393	7644	4896	2148	9401	6655	3909	38
2364	9610	6856	4103	1350	8599	5847	3097	0347	7598	4850	2102	9356	6609	3864	37
2318	9564	6810	4057	1304	8553	5802	3051	0302	7553	4804	2057	9310	6564	3818	36
2272	9518	6764	4011	1259	8507	5756	3005	0256	7507	4759	2011	9264	6518	3772	35
2226	9472	6718	3965	1213	8461	5710	2960	0210	7461	4713	1965	9218	6472	3726	34
2181	9426	6672	3919	1167	8415	5664	2914	0164	7415	4667	1919	9172	6426	3681	33
2135	9380	6626	3873	1121	8369	5618	2868	0118	7369	4621	1874	9127	6380	3635	32
2089	9334	6580	3827	1075	8323	5572	2822	0072	7324	4575	1828	9081	6335	3589	31
2043	9288	6535	3782	1029	8278	5527	2776	0027	7278	4530	1782	9035	6289	3543	30
1997	9242	6489	3736	0983	8232	5481	2730	9981	7232	4484	1736	8989	6243	3498	29
1951	9197	6443	3690	0937	8186	5435	2685	9935	7186	4438	1690	8944	6197	3452	28
1905	9151	6397	3644	0892	8140	5389	2639	9889	7140	4392	1645	8898	6152	3406	27
1859	9105	6351	3598	0846	8094	5343	2593	9843	7095	4346	1599	8852	6106	3360	26
1813	9059	6305	3552	0800	8048	5297	2547	9798	7049	4301	1553	8806	6060	3315	25
1767	9013	6259	3506	0754	8002	5251	2501	9752	7003	4255	1507	8760	6014	3269	24
1721	8967	6213	3460	0708	7957	5206	2455	9706	6957	4209	1461	8715	5969	3223	23
1675	8921	6167	3415	0662	7911	5160	2410	9660	6911	4163	1416	8669	5923	3177	22
1630	8875	6122	3369	0616	7865	5114	2364	9614	6865	4117	1370	8623	5877	3132	21
1584	8829	6076	3323	0571	7819	5068	2318	9568	6820	4072	1324	8577	5831	3086	20
1538	8783	6030	3277	0525	7773	5022	2272	9523	6774	4026	1278	8532	5786	3040	19
1492	8738	5984	3231	0479	7727	4976	2226	9477	6728	3980	1233	8486	5740	2994	18
1446	8692	5938	3185	0433	7681	4931	2180	9431	6682	3934	1187	8440	5694	2949	17
1400	8646	5892	3139	0387	7636	4885	2135	9385	6636	3888	1141	8394	5648	2903	16
1354	8600	5846	3093	0341	7590	4839	2089	9339	6591	3843	1095	8348	5602	2857	15
1308	8554	5800	3048	0295	7544	4793	2043	9294	6545	3797	1049	8303	5557	2811	14
1262	8508	5754	3002	0249	7498	4747	1997	9248	6499	3751	1004	8257	5511	2766	13
1216	8462	5709	2956	0204	7452	4701	1951	9202	6453	3705	0958	8211	5465	2720	12
1170	8416	5663	2910	0158	7406	4656	1905	9156	6407	3659	0912	8165	5419	2674	11
1125	8370	5617	2864	0112	7360	4610	1860	9110	6362	3614	0866	8120	5374	2628	10
1079	8324	5571	2818	0066	7315	4564	1814	9064	6316	3568	0820	8074	5328	2583	9
1033	8279	5525	2772	0020	7269	4518	1768	9019	6270	3522	0775	8028	5282	2537	8
0987	8233	5479	2726	9974	7223	4472	1722	8973	6224	3476	0729	7982	5236	2491	7
0941	8187	5433	2681	9928	7177	4426	1676	8927	6178	3430	0683	7937	5191	2445	6
0895	8141	5387	2635	9883	7131	4381	1631	8881	6133	3385	0637	7891	5145	2400	5
0849	8095	5342	2589	9837	7085	4335	1585	8835	6087	3339	0592	7845	5099	2354	4
0803	8049	5296	2543	9791	7039	4289	1539	8790	6041	3293	0546	7799	5053	2308	3
0757	8003	5250	2497	9745	6994	4243	1493	8744	5995	3247	0500	7753	5008	2262	2
0711	7957	5204	2451	9699	6948	4197	1447	8698	5949	3201	0454	7708	4962	2217	1
0665	7911	5158	2405	9653	6902	4151	1401	8652	5904	3156	0408	7662	4916	2171	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	"

Co-Tangent Deg. 56 Tangent Deg. 56

33 Deg. Sine

″	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9. 741	9. 742	9. 742	9. 742	9. 742	9. 742	9. 743	9. 743	9. 743	9. 743	9. 743	9. 743	9. 744	9. 744	9. 744
0	8895	0803	2710	4616	6520	8423	0325	2226	4126	6024	7921	9817	1712	3606	5498
1	8927	0835	2742	4647	6552	8455	0357	2258	4157	6056	7953	9849	1744	3637	5530
2	8959	0867	2773	4679	6583	8487	0389	2289	4189	6087	7985	9881	1775	3669	5561
3	8990	0898	2805	4711	6615	8518	0420	2321	4221	6119	8016	9912	1807	3701	5593
4	9022	0930	2837	4743	6647	8550	0452	2353	4252	6151	8048	9944	1839	3732	5625
5	9054	0962	2869	4774	6679	8582	0484	2384	4284	6182	8079	9975	1870	3764	5656
6	9086	0994	2900	4806	6710	8613	0515	2416	4316	6214	8111	0007	1902	3795	5688
7	9118	1026	2932	4838	6742	8645	0547	2448	4347	6246	8143	0039	1933	3827	5719
8	9149	1057	2964	4870	6774	8677	0579	2479	4379	6277	8174	0070	1965	3858	5751
9	9181	1089	2996	4901	6806	8709	0610	2511	4411	6309	8206	0102	1996	3890	5782
10	9213	1121	3028	4933	6837	8740	0642	2543	4442	6340	8237	0133	2028	3921	5814
11	9245	1153	3059	4965	6869	8772	0674	2574	4474	6372	8269	0165	2060	3953	5845
12	9277	1184	3091	4996	6901	8804	0705	2606	4505	6404	8301	0196	2091	3985	5877
13	9308	1216	3123	5028	6932	8835	0737	2638	4537	6435	8332	0228	2123	4016	5908
14	9340	1248	3155	5060	6964	8867	0769	2669	4569	6467	8364	0260	2154	4048	5940
15	9372	1280	3186	5092	6996	8899	0801	2701	4600	6499	8396	0291	2186	4079	5971
16	9404	1312	3218	5123	7028	8931	0832	2733	4632	6530	8427	0323	2217	4111	6003
17	9436	1343	3250	5155	7059	8962	0864	2764	4664	6562	8459	0354	2249	4142	6034
18	9468	1375	3282	5187	7091	8994	0896	2796	4695	6593	8490	0386	2281	4174	6066
19	9499	1407	3313	5219	7123	9026	0927	2828	4727	6625	8522	0418	2312	4205	6097
20	9531	1439	3345	5250	7154	9057	0959	2859	4759	6657	8554	0449	2344	4237	6129
21	9563	1471	3377	5282	7186	9089	0991	2891	4790	6688	8585	0481	2375	4268	6160
22	9595	1502	3409	5314	7218	9121	1022	2923	4822	6720	8617	0512	2407	4300	6192
23	9627	1534	3441	5346	7250	9152	1054	2954	4854	6752	8648	0544	2438	4332	6224
24	9658	1566	3472	5377	7281	9184	1086	2986	4885	6783	8680	0576	2470	4363	6255
25	9690	1598	3504	5409	7313	9216	1117	3018	4917	6815	8712	0607	2501	4395	6287
26	9722	1629	3536	5441	7345	9248	1149	3049	4949	6846	8743	0639	2533	4426	6318
27	9754	1661	3568	5473	7377	9279	1181	3081	4980	6878	8775	0670	2565	4458	6350
28	9786	1693	3599	5504	7408	9311	1212	3113	5012	6910	8806	0702	2596	4489	6381
29	9817	1725	3631	5536	7440	9343	1244	3144	5043	6941	8838	0733	2628	4521	6413
30	9849	1757	3663	5568	7472	9374	1276	3176	5075	6973	8870	0765	2659	4552	6444
31	9881	1788	3695	5600	7503	9406	1307	3208	5107	7005	8901	0797	2691	4584	6476
32	9913	1820	3726	5631	7535	9438	1339	3239	5138	7036	8933	0828	2722	4615	6507
33	9945	1852	3758	5663	7567	9469	1371	3271	5170	7068	8964	0860	2754	4647	6539
34	9976	1884	3790	5695	7599	9501	1403	3303	5202	7099	8996	0891	2786	4678	6570
35	0008	1915	3822	5727	7630	9533	1434	3334	5233	7131	9028	0923	2817	4710	6602
36	0040	1947	3853	5758	7662	9565	1466	3366	5265	7163	9059	0954	2849	4742	6633
37	0072	1979	3885	5790	7694	9596	1498	3398	5297	7194	9091	0986	2880	4773	6665
38	0104	2011	3917	5822	7725	9628	1529	3429	5328	7226	9122	1018	2912	4805	6696
39	0135	2043	3949	5854	7757	9660	1561	3461	5360	7257	9154	1049	2943	4836	6728
40	0167	2074	3980	5885	7789	9691	1593	3493	5391	7289	9186	1081	2975	4868	6759
41	0199	2106	4012	5917	7821	9723	1624	3524	5423	7321	9217	1112	3006	4899	6791
42	0231	2138	4044	5949	7852	9755	1656	3556	5455	7352	9249	1144	3038	4931	6822
43	0263	2170	4076	5980	7884	9786	1688	3588	5486	7384	9280	1176	3070	4962	6854
44	0294	2201	4107	6012	7916	9818	1719	3619	5518	7416	9312	1207	3101	4994	6885
45	0326	2233	4139	6044	7947	9850	1751	3651	5550	7447	9344	1239	3133	5025	6917
46	0358	2265	4171	6076	7979	9882	1783	3683	5581	7479	9375	1270	3164	5057	6948
47	0390	2297	4203	6107	8011	9913	1814	3714	5613	7510	9407	1302	3196	5088	6980
48	0422	2329	4234	6139	8043	9945	1846	3746	5645	7542	9438	1333	3227	5120	7012
49	0453	2360	4266	6171	8074	9977	1878	3778	5676	7574	9470	1365	3259	5152	7043
50	0485	2392	4298	6203	8106	0008	1909	3809	5708	7605	9502	1397	3290	5183	7075
51	0517	2424	4330	6234	8138	0040	1941	3841	5739	7637	9533	1428	3322	5215	7106
52	0549	2456	4361	6266	8169	0072	1973	3872	5771	7668	9565	1460	3354	5246	7138
53	0580	2487	4393	6298	8201	0103	2004	3904	5803	7700	9596	1491	3385	5278	7169
54	0612	2519	4425	6330	8233	0135	2036	3936	5834	7732	9628	1523	3417	5309	7201
55	0644	2551	4457	6361	8265	0167	2068	3967	5866	7763	9659	1554	3448	5341	7232
56	0676	2583	4489	6393	8296	0198	2099	3999	5898	7795	9691	1586	3480	5372	7264
57	0708	2615	4520	6425	8328	0230	2131	4031	5929	7827	9723	1618	3511	5404	7295
58	0739	2646	4552	6456	8360	0262	2163	4062	5961	7858	9754	1649	3543	5435	7327
59	0771	2678	4584	6488	8391	0294	2194	4094	5993	7890	9786	1681	3574	5467	7358
60	0803	2710	4616	6520	8423	0325	2226	4126	6024	7921	9817	1712	3606	5498	7390
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Sine Deg. 56

33 Deg. Co-Sine

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	″
9. 921	9. 921	9. 920	9. 920	9. 920	9. 920	9. 920	9. 920	9. 920	9. 920	9. 920	9. 920	9. 920	9. 920	9. 919	
1066	0229	9393	8555	7717	6878	6039	5200	4360	3519	2678	1836	0994	0151	9308	60
1052	0216	9379	8541	7703	6864	6025	5186	4346	3505	2664	1822	0980	0137	9294	59
1038	0202	9365	8527	7689	6850	6011	5172	4332	3491	2650	1808	0966	0123	9280	58
1024	0188	9351	8513	7675	6837	5997	5158	4318	3477	2636	1794	0952	0109	9265	57
1010	0174	9337	8499	7661	6823	5983	5144	4304	3463	2622	1780	0938	0095	9251	56
0996	0160	9323	8485	7647	6809	5969	5130	4290	3449	2608	1766	0924	0081	9237	55
0982	0146	9309	8471	7633	6795	5955	5116	4276	3435	2594	1752	0910	0067	9223	54
0968	0132	9295	8457	7619	6781	5941	5102	4262	3421	2580	1738	0895	0053	9209	53
0954	0118	9281	8443	7605	6767	5927	5088	4248	3407	2566	1724	0881	0039	9195	52
0940	0104	9267	8429	7591	6753	5913	5074	4234	3393	2552	1710	0867	0025	9181	51
0927	0090	9253	8415	7577	6739	5899	5060	4220	3379	2538	1696	0853	0010	9167	50
0913	0076	9239	8401	7563	6725	5885	5046	4206	3365	2523	1682	0839	9996	9153	49
0899	0062	9225	8387	7549	6711	5871	5032	4192	3351	2509	1668	0825	9982	9139	48
0885	0048	9211	8373	7535	6697	5858	5018	4178	3337	2495	1654	0811	9968	9125	47
0871	0034	9197	8360	7521	6683	5844	5004	4164	3323	2481	1640	0797	9954	9111	46
0857	0020	9183	8346	7507	6669	5830	4990	4150	3309	2467	1626	0783	9940	9097	45
0843	0006	9169	8332	7493	6655	5816	4976	4136	3295	2453	1611	0769	9926	9083	44
0829	9992	9155	8318	7479	6641	5802	4962	4121	3281	2439	1597	0755	9912	9069	43
0815	9978	9141	8304	7465	6627	5788	4948	4107	3267	2425	1583	0741	9898	9055	42
0801	9964	9127	8290	7452	6613	5774	4934	4093	3253	2411	1569	0727	9884	9041	41
0787	9951	9113	8276	7438	6599	5760	4920	4079	3239	2397	1555	0713	9870	9026	40
0773	9937	9099	8262	7424	6585	5746	4906	4065	3225	2383	1541	0699	9856	9012	39
0759	9923	9085	8248	7410	6571	5732	4892	4051	3211	2369	1527	0685	9842	8998	38
0745	9909	9072	8234	7396	6557	5718	4878	4037	3197	2355	1513	0671	9828	8984	37
0731	9895	9058	8220	7382	6543	5704	4864	4023	3183	2341	1499	0657	9814	8970	36
0717	9881	9044	8206	7368	6529	5690	4850	4009	3169	2327	1485	0643	9800	8956	35
0704	9867	9030	8192	7354	6515	5676	4836	3995	3155	2313	1471	0629	9786	8942	34
0690	9853	9016	8178	7340	6501	5662	4822	3981	3140	2299	1457	0615	9772	8928	33
0676	9839	9002	8164	7326	6487	5648	4808	3967	3126	2285	1443	0601	9758	8914	32
0662	9825	8988	8150	7312	6473	5634	4794	3953	3112	2271	1429	0586	9743	8900	31
0648	9811	8974	8136	7298	6459	5620	4780	3939	3098	2257	1415	0572	9729	8886	30
0634	9797	8960	8122	7284	6445	5606	4766	3925	3084	2243	1401	0558	9715	8872	29
0620	9783	8946	8108	7270	6431	5592	4752	3911	3070	2229	1387	0544	9701	8858	28
0606	9769	8932	8094	7256	6417	5578	4738	3897	3056	2215	1373	0530	9687	8844	27
0592	9755	8918	8080	7242	6403	5564	4724	3883	3042	2201	1359	0516	9673	8830	26
0578	9741	8904	8066	7228	6389	5550	4710	3869	3028	2187	1345	0502	9659	8815	25
0564	9727	8890	8052	7214	6375	5536	4696	3855	3014	2173	1331	0488	9645	8801	24
0550	9713	8876	8038	7200	6361	5522	4682	3841	3000	2159	1317	0474	9631	8787	23
0536	9699	8862	8024	7186	6347	5508	4668	3827	2986	2145	1303	0460	9617	8773	22
0522	9686	8848	8010	7172	6333	5494	4654	3813	2972	2131	1289	0446	9603	8759	21
0508	9672	8834	7996	7158	6319	5480	4640	3799	2958	2117	1275	0432	9589	8745	20
0494	9658	8820	7982	7144	6305	5466	4626	3785	2944	2103	1261	0418	9575	8731	19
0480	9644	8806	7968	7130	6291	5452	4612	3771	2930	2089	1247	0404	9561	8717	18
0467	9630	8792	7954	7116	6277	5438	4598	3757	2916	2075	1232	0390	9547	8703	17
0453	9616	8778	7941	7102	6263	5424	4584	3743	2902	2061	1218	0376	9533	8689	16
0439	9602	8764	7927	7088	6249	5410	4570	3729	2888	2047	1204	0362	9519	8675	15
0425	9588	8750	7913	7074	6235	5396	4556	3715	2874	2032	1190	0348	9504	8661	14
0411	9574	8737	7899	7060	6221	5382	4542	3701	2860	2018	1176	0334	9490	8647	13
0397	9560	8723	7885	7046	6207	5368	4528	3687	2846	2004	1162	0320	9476	8633	12
0383	9546	8709	7871	7032	6193	5354	4514	3673	2832	1990	1148	0306	9462	8619	11
0369	9532	8695	7857	7018	6179	5340	4500	3659	2818	1976	1134	0291	9448	8604	10
0355	9518	8681	7843	7004	6165	5326	4486	3645	2804	1962	1120	0277	9434	8590	9
0341	9504	8667	7829	6990	6151	5312	4472	3631	2790	1948	1106	0263	9420	8576	8
0327	9490	8653	7815	6976	6137	5298	4458	3617	2776	1934	1092	0249	9406	8562	7
0313	9476	8639	7801	6962	6123	5284	4444	3603	2762	1920	1078	0235	9392	8548	6
0299	9462	8625	7787	6948	6109	5270	4430	3589	2748	1906	1064	0221	9378	8534	5
0285	9448	8611	7773	6934	6095	5256	4416	3575	2734	1892	1050	0207	9364	8520	4
0271	9434	8597	7759	6920	6081	5242	4402	3561	2720	1878	1036	0193	9350	8506	3
0257	9420	8583	7745	6906	6067	5228	4388	3547	2706	1864	1022	0179	9336	8492	2
0243	9406	8569	7731	6892	6053	5214	4374	3533	2692	1850	1008	0165	9322	8478	1
0229	9393	8555	7717	6878	6039	5200	4360	3519	2678	1836	0994	0151	9308	8464	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Sine Deg. 56

33 Deg. Tangent

″	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.
	820	821	821	821	821	822	822	822	822	823	823	823	824	824	824
0	7829	0574	3317	6060	8803	1545	4286	7026	9766	2505	5244	7981	0719	3455	6191
1	7875	0619	3363	6106	8849	1590	4332	7072	9812	2551	5289	8027	0764	3501	6236
2	7921	0665	3409	6152	8894	1636	4377	7118	9857	2596	5335	8073	0810	3546	6282
3	7966	0711	3455	6198	8940	1682	4423	7163	9903	2642	5381	8118	0855	3592	6328
4	8012	0756	3500	6243	8986	1728	4469	7209	9949	2688	5426	8164	0901	3637	6373
5	8058	0802	3546	6289	9031	1773	4514	7255	9994	2733	5472	8210	0947	3683	6419
6	8104	0848	3592	6335	9077	1819	4560	7300	0040	2779	5517	8255	0992	3729	6464
7	8149	0894	3637	6380	9123	1865	4606	7346	0086	2825	5563	8301	1038	3774	6510
8	8195	0939	3683	6426	9169	1910	4651	7392	0131	2870	5609	8346	1083	3820	6555
9	8241	0985	3729	6472	9214	1956	4697	7437	0177	2916	5654	8392	1129	3865	6601
10	8287	1031	3775	6518	9260	2002	4743	7483	0223	2962	5700	8438	1175	3911	6647
11	8332	1077	3820	6563	9306	2047	4788	7529	0268	3007	5746	8483	1220	3957	6692
12	8378	1122	3866	6609	9351	2093	4834	7574	0314	3053	5791	8529	1266	4002	6738
13	8424	1168	3912	6655	9397	2139	4880	7620	0360	3099	5837	8574	1311	4048	6783
14	8470	1214	3957	6700	9443	2184	4925	7666	0405	3144	5882	8620	1357	4093	6829
15	8515	1260	4003	6746	9488	2230	4971	7711	0451	3190	5928	8666	1403	4139	6875
16	8561	1305	4049	6792	9534	2276	5017	7757	0497	3235	5974	8711	1448	4185	6920
17	8607	1351	4095	6838	9580	2321	5062	7803	0542	3281	6019	8757	1494	4230	6966
18	8652	1397	4140	6883	9626	2367	5108	7848	0588	3327	6065	8803	1540	4276	7011
19	8698	1442	4186	6929	9671	2413	5154	7894	0634	3372	6111	8848	1585	4321	7057
20	8744	1488	4232	6975	9717	2459	5199	7940	0679	3418	6156	8894	1631	4367	7103
21	8790	1534	4278	7020	9763	2504	5245	7985	0725	3464	6202	8939	1676	4413	7148
22	8835	1580	4323	7066	9808	2550	5291	8031	0770	3509	6248	8985	1722	4458	7194
23	8881	1625	4369	7112	9854	2596	5336	8077	0816	3555	6293	9031	1768	4504	7239
24	8927	1671	4415	7158	9900	2641	5382	8122	0862	3601	6339	9076	1813	4549	7285
25	8973	1717	4460	7203	9945	2687	5428	8168	0907	3646	6384	9122	1859	4595	7330
26	9018	1763	4506	7249	9991	2733	5473	8214	0953	3692	6430	9168	1904	4641	7376
27	9064	1808	4552	7295	0037	2778	5519	8259	0999	3738	6476	9213	1950	4686	7422
28	9110	1854	4598	7340	0083	2824	5565	8305	1044	3783	6521	9259	1996	4732	7467
29	9156	1900	4643	7386	0128	2870	5610	8351	1090	3829	6567	9304	2041	4777	7513
30	9201	1946	4689	7432	0174	2915	5656	8396	1136	3874	6613	9350	2087	4823	7558
31	9247	1991	4735	7478	0220	2961	5702	8442	1181	3920	6658	9396	2132	4869	7604
32	9293	2037	4780	7523	0265	3007	5748	8488	1227	3966	6704	9441	2178	4914	7650
33	9339	2083	4826	7569	0311	3052	5793	8533	1273	4011	6749	9487	2224	4960	7695
34	9384	2128	4872	7615	0357	3098	5839	8579	1318	4057	6795	9533	2269	5005	7741
35	9430	2174	4918	7660	0402	3144	5885	8625	1364	4103	6841	9578	2315	5051	7786
36	9476	2220	4963	7706	0448	3189	5930	8670	1410	4148	6886	9624	2360	5097	7832
37	9522	2266	5009	7752	0494	3235	5976	8716	1455	4194	6932	9669	2406	5142	7877
38	9567	2311	5055	7797	0539	3281	6022	8762	1501	4240	6978	9715	2452	5188	7923
39	9613	2357	5100	7843	0585	3327	6067	8807	1547	4285	7023	9761	2497	5233	7969
40	9659	2403	5146	7889	0631	3372	6113	8853	1592	4331	7069	9806	2543	5279	8014
41	9705	2449	5192	7935	0677	3418	6159	8899	1638	4377	7115	9852	2588	5324	8060
42	9750	2494	5238	7980	0722	3464	6204	8944	1684	4422	7160	9897	2634	5370	8105
43	9796	2540	5283	8026	0768	3509	6250	8990	1729	4468	7206	9943	2680	5416	8151
44	9842	2586	5329	8072	0814	3555	6296	9036	1775	4513	7251	9989	2725	5461	8197
45	9887	2631	5375	8117	0859	3601	6341	9081	1820	4559	7297	0034	2771	5507	8242
46	9933	2677	5420	8163	0905	3646	6387	9127	1866	4605	7343	0080	2817	5552	8288
47	9979	2723	5466	8209	0951	3692	6433	9173	1912	4650	7388	0126	2862	5598	8333
48	0025	2769	5512	8255	0996	3738	6478	9218	1957	4696	7434	0171	2908	5644	8379
49	0070	2814	5558	8300	1042	3783	6524	9264	2003	4742	7480	0217	2953	5689	8424
50	0116	2860	5603	8346	1088	3829	6570	9309	2049	4787	7525	0262	2999	5735	8470
51	0162	2906	5649	8392	1134	3875	6615	9355	2094	4833	7571	0308	3045	5780	8516
52	0208	2952	5695	8437	1179	3920	6661	9401	2140	4879	7616	0354	3090	5826	8561
53	0253	2997	5741	8483	1225	3966	6707	9446	2186	4924	7662	0399	3136	5872	8607
54	0299	3043	5786	8529	1271	4012	6752	9492	2231	4970	7708	0445	3181	5917	8652
55	0345	3089	5832	8574	1316	4057	6798	9538	2277	5015	7753	0490	3227	5963	8698
56	0391	3134	5878	8620	1362	4103	6844	9583	2323	5061	7799	0536	3273	6008	8744
57	0436	3180	5923	8666	1408	4149	6889	9629	2368	5107	7845	0582	3318	6054	8789
58	0482	3226	5969	8712	1453	4194	6935	9675	2414	5152	7890	0627	3364	6100	8835
59	0528	3272	6015	8757	1499	4240	6981	9720	2460	5198	7936	0673	3409	6145	8880
60	0574	3317	6060	8803	1545	4286	7026	9766	2505	5244	7981	0719	3455	6191	8926
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Tangent Deg. 56

33 Deg. Co-Tangent

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	″
10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	
179	178	178	178	178	177	177	177	177	176	176	176	175	175	175	
2171	9426	6683	3940	1197	8455	5714	2974	0234	7495	4756	2019	9281	6545	3809	60
2125	9381	6637	3894	1151	8410	5668	2928	0188	7449	4711	1973	9236	6499	3764	59
2079	9335	6591	3848	1106	8364	5623	2882	0143	7404	4665	1927	9190	6454	3718	58
2034	9289	6545	3802	1060	8318	5577	2837	0097	7358	4619	1882	9145	6408	3672	57
1988	9244	6500	3757	1014	8272	5531	2791	0051	7312	4574	1836	9099	6363	3627	56
1942	9198	6454	3711	0969	8227	5486	2745	0006	7267	4528	1790	9053	6317	3581	55
1896	9152	6408	3665	0923	8181	5440	2700	9960	7221	4483	1745	9008	6271	3536	54
1851	9106	6363	3620	0877	8135	5394	2654	9914	7175	4437	1699	8962	6226	3490	53
1805	9061	6317	3574	0831	8090	5349	2608	9869	7130	4391	1654	8917	6180	3445	52
1759	9015	6271	3528	0786	8044	5303	2563	9823	7084	4346	1608	8871	6135	3399	51
1713	8969	6225	3482	0740	7998	5257	2517	9777	7038	4300	1562	8825	6089	3353	50
1668	8923	6180	3437	0694	7953	5212	2471	9732	6993	4254	1517	8780	6043	3308	49
1622	8878	6134	3391	0649	7907	5166	2426	9686	6947	4209	1471	8734	5998	3262	48
1576	8832	6088	3345	0603	7861	5120	2380	9640	6901	4163	1426	8689	5952	3217	47
1530	8786	6043	3300	0557	7816	5075	2334	9595	6856	4118	1380	8643	5907	3171	46
1485	8740	5997	3254	0512	7770	5029	2289	9549	6810	4072	1334	8597	5861	3125	45
1439	8695	5951	3208	0466	7724	4983	2243	9503	6765	4026	1289	8552	5815	3080	44
1393	8649	5905	3162	0420	7679	4938	2197	9458	6719	3981	1243	8506	5770	3034	43
1348	8603	5860	3117	0374	7633	4892	2152	9412	6673	3935	1197	8460	5724	2989	42
1302	8558	5814	3071	0329	7587	4846	2106	9366	6628	3889	1152	8415	5679	2943	41
1256	8512	5768	3025	0283	7541	4801	2060	9321	6582	3844	1106	8369	5633	2897	40
1210	8466	5722	2980	0237	7496	4755	2015	9275	6536	3798	1061	8324	5587	2852	39
1165	8420	5677	2934	0192	7450	4709	1969	9230	6491	3752	1015	8278	5542	2806	38
1119	8375	5631	2888	0146	7404	4664	1923	9184	6445	3707	0969	8232	5496	2761	37
1073	8329	5585	2842	0100	7359	4618	1878	9138	6399	3661	0924	8187	5451	2715	36
1027	8283	5540	2797	0055	7313	4572	1832	9093	6354	3616	0878	8141	5405	2670	35
0982	8237	5494	2751	0009	7267	4527	1786	9047	6308	3570	0832	8096	5359	2624	34
0936	8192	5448	2705	9963	7222	4481	1741	9001	6262	3524	0787	8050	5314	2578	33
0890	8146	5402	2660	9917	7176	4435	1695	8956	6217	3479	0741	8004	5268	2533	32
0844	8100	5357	2614	9872	7130	4390	1649	8910	6171	3433	0696	7959	5223	2487	31
0799	8054	5311	2568	9826	7085	4344	1604	8864	6126	3387	0650	7913	5177	2442	30
0753	8009	5265	2522	9780	7039	4298	1558	8819	6080	3342	0604	7868	5131	2396	29
0707	7963	5220	2477	9735	6993	4252	1512	8773	6034	3296	0559	7822	5086	2350	28
0661	7917	5174	2431	9689	6948	4207	1467	8727	5989	3251	0513	7776	5040	2305	27
0616	7872	5128	2385	9643	6902	4161	1421	8682	5943	3205	0467	7731	4995	2259	26
0570	7826	5082	2340	9598	6856	4115	1375	8636	5897	3159	0422	7685	4949	2214	25
0524	7780	5037	2294	9552	6811	4070	1330	8590	5852	3114	0376	7640	4903	2168	24
0478	7734	4991	2248	9506	6765	4024	1284	8545	5806	3068	0331	7594	4858	2123	23
0432	7689	4945	2203	9461	6719	3978	1238	8499	5760	3022	0285	7548	4812	2077	22
0387	7643	4900	2157	9415	6673	3933	1193	8453	5715	2977	0239	7503	4767	2031	21
0341	7597	4854	2111	9369	6628	3887	1147	8408	5669	2931	0194	7457	4721	1986	20
0295	7551	4808	2065	9323	6582	3841	1101	8362	5623	2885	0148	7412	4676	1940	19
0250	7506	4762	2020	9278	6536	3796	1056	8316	5578	2840	0103	7366	4630	1895	18
0204	7460	4717	1974	9232	6491	3750	1010	8271	5532	2794	0057	7320	4584	1849	17
0158	7414	4671	1928	9186	6445	3704	0964	8225	5487	2749	0011	7275	4539	1803	16
0113	7369	4625	1883	9141	6399	3659	0919	8180	5441	2703	9966	7229	4493	1758	15
0067	7323	4580	1837	9095	6354	3613	0873	8134	5395	2657	9920	7183	4448	1712	14
0021	7277	4534	1791	9049	6308	3567	0827	8088	5350	2612	9874	7138	4402	1667	13
9975	7231	4488	1745	9004	6262	3522	0782	8043	5304	2566	9829	7092	4356	1621	12
9930	7186	4442	1700	8958	6217	3476	0736	7997	5258	2520	9783	7047	4311	1576	11
9884	7140	4397	1654	8912	6171	3430	0691	7951	5213	2475	9738	7001	4265	1530	10
9838	7094	4351	1608	8866	6125	3385	0645	7906	5167	2429	9692	6955	4220	1484	9
9792	7048	4305	1563	8821	6080	3339	0599	7860	5121	2384	9646	6910	4174	1439	8
9747	7003	4259	1517	8775	6034	3293	0554	7814	5076	2338	9601	6864	4128	1393	7
9701	6957	4214	1471	8729	5988	3248	0508	7769	5030	2292	9555	6819	4083	1348	6
9655	6911	4168	1426	8684	5943	3202	0462	7723	4985	2247	9510	6773	4037	1302	5
9609	6866	4122	1380	8638	5897	3156	0417	7677	4939	2201	9464	6727	3992	1256	4
9564	6820	4077	1334	8592	5851	3111	0371	7632	4893	2155	9418	6682	3946	1211	3
9518	6774	4031	1288	8547	5806	3065	0325	7586	4848	2110	9373	6636	3900	1165	2
9472	6728	3985	1243	8501	5760	3019	0280	7540	4802	2064	9327	6591	3855	1120	1
9426	6683	3940	1197	8455	5714	2974	0234	7495	4756	2019	9281	6545	3809	1074	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Tangent Deg. 56

33 Deg. Sine

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	9. 744	9. 744	9. 745	9. 745	9. 745	9. 745	9. 745	9. 746	9. 746	9. 746	9. 746	9. 746	9. 746	9. 747	9. 747
0	7390	9280	1169	3056	4943	6828	8712	0595	2477	4358	6237	8115	9992	1868	3743
1	7421	9311	1200	3088	4974	6860	8744	0627	2508	4389	6268	8147	0024	1900	3774
2	7453	9343	1232	3119	5006	6891	8775	0658	2540	4420	6300	8178	0055	1931	3805
3	7484	9374	1263	3151	5037	6922	8807	0689	2571	4452	6331	8209	0086	1962	3837
4	7516	9406	1295	3182	5069	6954	8838	0721	2603	4483	6362	8241	0118	1993	3868
5	7547	9437	1326	3214	5100	6985	8869	0752	2634	4514	6394	8272	0149	2025	3899
6	7579	9469	1357	3245	5131	7017	8901	0784	2665	4546	6425	8303	0180	2056	3930
7	7610	9500	1389	3277	5163	7048	8932	0815	2697	4577	6456	8334	0211	2087	3962
8	7642	9532	1420	3308	5194	7080	8963	0846	2728	4608	6488	8366	0243	2118	3993
9	7673	9563	1452	3339	5226	7111	8995	0878	2759	4640	6519	8397	0274	2150	4024
10	7705	9595	1483	3371	5257	7142	9026	0909	2791	4671	6550	8428	0305	2181	4055
11	7736	9626	1515	3402	5289	7174	9058	0940	2822	4702	6582	8460	0336	2212	4087
12	7768	9658	1546	3434	5320	7205	9089	0972	2853	4734	6613	8491	0368	2243	4118
13	7799	9689	1578	3465	5351	7237	9120	1003	2885	4765	6644	8522	0399	2275	4149
14	7831	9721	1609	3497	5383	7268	9152	1035	2916	4796	6675	8553	0430	2306	4180
15	7862	9752	1641	3528	5414	7299	9183	1066	2947	4828	6707	8585	0461	2337	4211
16	7894	9784	1672	3560	5446	7331	9215	1097	2979	4859	6738	8616	0493	2368	4243
17	7925	9815	1704	3591	5477	7362	9246	1129	3010	4890	6769	8647	0524	2400	4274
18	7957	9847	1735	3622	5509	7394	9277	1160	3041	4922	6801	8679	0555	2431	4305
19	7988	9878	1767	3654	5540	7425	9309	1191	3073	4953	6832	8710	0587	2462	4336
20	8020	9910	1798	3685	5571	7456	9340	1223	3104	4984	6863	8741	0618	2493	4368
21	8051	9941	1829	3717	5603	7488	9372	1254	3135	5016	6895	8772	0649	2525	4399
22	8083	9973	1861	3748	5634	7519	9403	1285	3167	5047	6926	8804	0680	2556	4430
23	8114	0004	1892	3780	5666	7551	9434	1317	3198	5078	6957	8835	0712	2587	4461
24	8146	0035	1924	3811	5697	7582	9466	1348	3229	5110	6989	8866	0743	2618	4493
25	8177	0067	1955	3843	5729	7613	9497	1380	3261	5141	7020	8898	0774	2650	4524
26	8209	0098	1987	3874	5760	7645	9528	1411	3292	5172	7051	8929	0805	2681	4555
27	8240	0130	2018	3905	5791	7676	9560	1442	3324	5204	7082	8960	0837	2712	4586
28	8272	0161	2050	3937	5823	7708	9591	1474	3355	5235	7114	8991	0868	2743	4617
29	8303	0193	2081	3968	5854	7739	9623	1505	3386	5266	7145	9023	0899	2775	4649
30	8335	0224	2113	4000	5886	7770	9654	1536	3418	5298	7176	9054	0930	2806	4680
31	8366	0256	2144	4031	5917	7802	9685	1568	3449	5329	7208	9085	0962	2837	4711
32	8398	0287	2176	4063	5949	7833	9717	1599	3480	5360	7239	9117	0993	2868	4742
33	8429	0319	2207	4094	5980	7865	9748	1630	3512	5392	7270	9148	1024	2900	4774
34	8461	0350	2239	4126	6011	7896	9780	1662	3543	5423	7302	9179	1056	2931	4805
35	8492	0382	2270	4157	6043	7927	9811	1693	3574	5454	7333	9210	1087	2962	4836
36	8524	0413	2301	4188	6074	7959	9842	1725	3606	5485	7364	9242	1118	2993	4867
37	8555	0445	2333	4220	6106	7990	9874	1756	3637	5517	7396	9273	1149	3024	4898
38	8587	0476	2364	4251	6137	8022	9905	1787	3668	5548	7427	9304	1181	3056	4930
39	8618	0508	2396	4283	6168	8053	9936	1819	3700	5579	7458	9336	1212	3087	4961
40	8650	0539	2427	4314	6200	8084	9968	1850	3731	5611	7489	9367	1243	3118	4992
41	8681	0571	2459	4346	6231	8116	9999	1881	3762	5642	7521	9398	1274	3149	5023
42	8713	0602	2490	4377	6263	8147	0031	1913	3794	5673	7552	9429	1306	3181	5055
43	8744	0634	2522	4408	6294	8179	0062	1944	3825	5705	7583	9461	1337	3212	5086
44	8776	0665	2553	4440	6326	8210	0093	1975	3856	5736	7615	9492	1368	3243	5117
45	8807	0697	2585	4471	6357	8241	0125	2007	3888	5767	7646	9523	1399	3274	5148
46	8839	0728	2616	4503	6388	8273	0156	2038	3919	5799	7677	9555	1431	3306	5179
47	8870	0760	2647	4534	6420	8304	0187	2069	3950	5830	7709	9586	1462	3337	5211
48	8902	0791	2679	4566	6451	8336	0219	2101	3982	5861	7740	9617	1493	3368	5242
49	8933	0822	2710	4597	6483	8367	0250	2132	4013	5893	7771	9648	1524	3399	5273
50	8965	0854	2742	4629	6514	8398	0282	2164	4044	5924	7802	9680	1556	3431	5304
51	8996	0885	2773	4660	6545	8430	0313	2195	4076	5955	7834	9711	1587	3462	5336
52	9028	0917	2805	4691	6577	8461	0344	2226	4107	5987	7865	9742	1618	3493	5367
53	9059	0948	2836	4723	6608	8493	0376	2258	4138	6018	7896	9773	1649	3524	5398
54	9091	0980	2868	4754	6640	8524	0407	2289	4170	6049	7928	9805	1681	3556	5429
55	9122	1011	2899	4786	6671	8555	0438	2320	4201	6081	7959	9836	1712	3587	5460
56	9154	1043	2931	4817	6703	8587	0470	2352	4232	6112	7990	9867	1743	3618	5492
57	9185	1074	2962	4849	6734	8618	0501	2383	4264	6143	8021	9899	1775	3649	5523
58	9217	1106	2993	4880	6765	8650	0533	2414	4295	6174	8053	9930	1806	3681	5554
59	9248	1137	3025	4911	6797	8681	0564	2446	4326	6206	8084	9961	1837	3712	5585
60	9280	1169	3056	4943	6828	8712	0595	2477	4358	6237	8115	9992	1868	3743	5617
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Sine Deg. 56

33 Deg. Co-Sine

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
	9. 919	9. 919	9. 919	9. 919	9. 919	9. 919	9. 919	9. 919	9. 919	9. 919	9. 918	9. 918	9. 918	9. 918	9. 918	″
	8464	7619	6775	5929	5083	4237	3390	2542	1694	0845	9996	9146	8296	7445	6594	60
	8450	7605	6760	5915	5069	4222	3375	2528	1680	0831	9982	9132	8282	7431	6580	59
	8436	7591	6746	5901	5055	4208	3361	2514	1666	0817	9968	9118	8268	7417	6566	58
	8422	7577	6732	5887	5041	4194	3347	2500	1651	0803	9954	9104	8254	7403	6551	57
	8408	7563	6718	5873	5027	4180	3333	2485	1637	0789	9939	9090	8239	7389	6537	56
	8393	7549	6704	5859	5013	4166	3319	2471	1623	0774	9925	9075	8225	7374	6523	55
	8379	7535	6690	5844	4998	4152	3305	2457	1609	0760	9911	9061	8211	7360	6509	54
	8365	7521	6676	5830	4984	4138	3291	2443	1595	0746	9897	9047	8197	7346	6495	53
	8351	7507	6662	5816	4970	4124	3277	2429	1581	0732	9883	9033	8183	7332	6480	52
	8337	7493	6648	5802	4956	4110	3262	2415	1567	0718	9869	9019	8168	7318	6466	51
	8323	7479	6634	5788	4942	4095	3248	2401	1552	0704	9854	9005	8154	7303	6452	50
	8309	7465	6620	5774	4928	4081	3234	2387	1538	0690	9840	8990	8140	7289	6438	49
	8295	7450	6605	5760	4914	4067	3220	2372	1524	0675	9826	8976	8126	7275	6424	48
	8281	7436	6591	5746	4900	4053	3206	2358	1510	0661	9812	8962	8112	7261	6409	47
	8267	7422	6577	5732	4886	4039	3192	2344	1496	0647	9798	8948	8098	7247	6395	46
	8253	7408	6563	5718	4872	4025	3178	2330	1482	0633	9784	8934	8083	7233	6381	45
	8239	7394	6549	5704	4857	4011	3164	2316	1468	0619	9769	8920	8069	7218	6367	44
	8225	7380	6535	5689	4843	3997	3149	2302	1453	0605	9755	8905	8055	7204	6353	43
	8211	7366	6521	5675	4829	3983	3135	2288	1439	0591	9741	8891	8041	7190	6338	42
	8196	7352	6507	5661	4815	3968	3121	2273	1425	0576	9727	8877	8027	7176	6324	41
	8182	7338	6493	5647	4801	3954	3107	2259	1411	0562	9713	8863	8013	7162	6310	40
	8168	7324	6479	5633	4787	3940	3093	2245	1397	0548	9699	8849	7998	7147	6296	39
	8154	7310	6465	5619	4773	3926	3079	2231	1383	0534	9685	8835	7984	7133	6282	38
	8140	7296	6450	5605	4759	3912	3065	2217	1369	0520	9670	8820	7970	7119	6268	37
	8126	7282	6436	5591	4745	3898	3051	2203	1354	0506	9656	8806	7956	7105	6253	36
	8112	7267	6422	5577	4730	3884	3036	2189	1340	0491	9642	8792	7942	7091	6239	35
	8098	7253	6408	5563	4716	3870	3022	2175	1326	0477	9628	8778	7927	7076	6225	34
	8084	7239	6394	5548	4702	3855	3008	2160	1312	0463	9614	8764	7913	7062	6211	33
	8070	7225	6380	5534	4688	3841	2994	2146	1298	0449	9600	8750	7899	7048	6197	32
	8056	7211	6366	5520	4674	3827	2980	2132	1284	0435	9585	8735	7885	7034	6182	31
	8042	7197	6352	5506	4660	3813	2966	2118	1270	0421	9571	8721	7871	7020	6168	30
	8028	7183	6338	5492	4646	3799	2952	2104	1255	0407	9557	8707	7857	7006	6154	29
	8014	7169	6324	5478	4632	3785	2938	2090	1241	0392	9543	8693	7842	6991	6140	28
	7999	7155	6310	5464	4618	3771	2923	2076	1227	0378	9529	8679	7828	6977	6126	27
	7985	7141	6295	5450	4603	3757	2909	2061	1213	0364	9515	8665	7814	6963	6111	26
	7971	7127	6281	5436	4589	3743	2895	2047	1199	0350	9500	8650	7800	6949	6097	25
	7957	7113	6267	5422	4575	3728	2881	2033	1185	0336	9486	8636	7786	6935	6083	24
	7943	7098	6253	5407	4561	3714	2867	2019	1171	0322	9472	8622	7771	6920	6069	23
	7929	7084	6239	5393	4547	3700	2853	2005	1156	0307	9458	8608	7757	6906	6055	22
	7915	7070	6225	5379	4533	3686	2839	1991	1142	0293	9444	8594	7743	6892	6040	21
	7901	7056	6211	5365	4519	3672	2825	1977	1128	0279	9430	8580	7729	6878	6026	20
	7887	7042	6197	5351	4505	3658	2810	1962	1114	0265	9415	8565	7715	6864	6012	19
	7873	7028	6183	5337	4491	3644	2796	1948	1100	0251	9401	8551	7701	6849	5998	18
	7859	7014	6169	5323	4476	3630	2782	1934	1086	0237	9387	8537	7686	6835	5984	17
	7845	7000	6155	5309	4462	3615	2768	1920	1072	0223	9373	8523	7672	6821	5969	16
	7831	6986	6140	5295	4448	3601	2754	1906	1057	0208	9359	8509	7658	6807	5955	15
	7817	6972	6126	5281	4434	3587	2740	1892	1043	0194	9345	8495	7644	6793	5941	14
	7802	6958	6112	5266	4420	3573	2726	1878	1029	0180	9330	8480	7630	6778	5927	13
	7788	6944	6098	5252	4406	3559	2712	1864	1015	0166	9316	8466	7615	6764	5913	12
	7774	6929	6084	5238	4392	3545	2697	1849	1001	0152	9302	8452	7601	6750	5898	11
	7760	6915	6070	5224	4378	3531	2683	1835	0987	0138	9288	8438	7587	6736	5884	10
	7746	6901	6056	5210	4364	3517	2669	1821	0973	0123	9274	8424	7573	6722	5870	9
	7732	6887	6042	5196	4349	3503	2655	1807	0958	0109	9260	8409	7559	6708	5856	8
	7718	6873	6028	5182	4335	3488	2641	1793	0944	0095	9245	8395	7545	6693	5842	7
	7704	6859	6014	5168	4321	3474	2627	1779	0930	0081	9231	8381	7530	6679	5827	6
	7690	6845	6000	5154	4307	3460	2613	1765	0916	0067	9217	8367	7516	6665	5813	5
	7676	6831	5985	5140	4293	3446	2598	1750	0902	0053	9203	8353	7502	6651	5799	4
	7662	6817	5971	5125	4279	3432	2584	1736	0888	0038	9189	8339	7488	6637	5785	3
	7648	6803	5957	5111	4265	3418	2570	1722	0874	0024	9175	8324	7474	6622	5771	2
	7634	6789	5943	5097	4251	3404	2556	1708	0859	0010	9160	8310	7459	6608	5756	1
	7619	6775	5929	5083	4237	3390	2542	1694	0845	9996	9146	8296	7445	6594	5742	0
	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Sine Deg. 56

33 Deg. Tangent

"	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9. 824	9. 825	9. 825	9. 825	9. 825	9. 826	9. 826	9. 826	9. 827	9. 827	9. 827	9. 827	9. 828	9. 828	9. 828
0	8926	1660	4394	7127	9860	2592	5323	8053	0783	3513	6241	8969	1696	4423	7149
1	8971	1706	4440	7173	9905	2637	5368	8099	0829	3558	6287	9014	1742	4468	7194
2	9017	1751	4485	7218	9951	2683	5414	8144	0874	3603	6332	9060	1787	4514	7240
3	9063	1797	4531	7264	9996	2728	5459	8190	0920	3649	6378	9105	1833	4559	7285
4	9108	1843	4576	7309	0042	2774	5505	8235	0965	3694	6423	9151	1878	4605	7331
5	9154	1888	4622	7355	0087	2819	5550	8281	1011	3740	6468	9196	1924	4650	7376
6	9199	1934	4667	7401	0133	2865	5596	8326	1056	3785	6514	9242	1969	4696	7422
7	9245	1979	4713	7446	0179	2910	5641	8372	1102	3831	6559	9287	2014	4741	7467
8	9291	2025	4759	7492	0224	2956	5687	8417	1147	3876	6605	9333	2060	4786	7512
9	9336	2070	4804	7537	0270	3001	5732	8463	1193	3922	6650	9378	2105	4832	7558
10	9382	2116	4850	7583	0315	3047	5778	8508	1238	3967	6696	9424	2151	4877	7603
11	9427	2162	4895	7628	0361	3092	5823	8554	1284	4013	6741	9469	2196	4923	7649
12	9473	2207	4941	7674	0406	3138	5869	8599	1329	4058	6787	9515	2242	4968	7694
13	9518	2253	4986	7719	0452	3183	5915	8645	1375	4104	6832	9560	2287	5014	7740
14	9564	2298	5032	7765	0497	3229	5960	8690	1420	4149	6878	9605	2333	5059	7785
15	9610	2344	5077	7810	0543	3275	6006	8736	1466	4195	6923	9651	2378	5105	7830
16	9655	2389	5123	7856	0588	3320	6051	8781	1511	4240	6969	9696	2424	5150	7876
17	9701	2435	5169	7902	0634	3366	6097	8827	1557	4286	7014	9742	2469	5195	7921
18	9746	2481	5214	7947	0679	3411	6142	8872	1602	4331	7060	9787	2514	5241	7967
19	9792	2526	5260	7993	0725	3457	6188	8918	1648	4377	7105	9833	2560	5286	8012
20	9837	2572	5305	8038	0770	3502	6233	8963	1693	4422	7150	9878	2605	5332	8058
21	9883	2617	5351	8084	0816	3548	6279	9009	1739	4468	7196	9924	2651	5377	8103
22	9929	2663	5396	8129	0862	3593	6324	9054	1784	4513	7241	9969	2696	5423	8148
23	9974	2708	5442	8175	0907	3639	6370	9100	1830	4559	7287	0015	2742	5468	8194
24	0020	2754	5487	8220	0953	3684	6415	9145	1875	4604	7332	0060	2787	5513	8239
25	0065	2800	5533	8266	0998	3730	6461	9191	1921	4649	7378	0105	2833	5559	8285
26	0111	2845	5579	8311	1044	3775	6506	9236	1966	4695	7423	0151	2878	5604	8330
27	0156	2891	5624	8357	1089	3821	6552	9282	2012	4740	7469	0196	2923	5650	8376
28	0202	2936	5670	8403	1135	3866	6597	9327	2057	4786	7514	0242	2969	5695	8421
29	0248	2982	5715	8448	1180	3912	6643	9373	2102	4831	7560	0287	3014	5741	8466
30	0293	3027	5761	8494	1226	3957	6688	9418	2148	4877	7605	0333	3060	5786	8512
31	0339	3073	5806	8539	1271	4003	6734	9464	2193	4922	7651	0378	3105	5832	8557
32	0384	3118	5852	8585	1317	4048	6779	9509	2239	4968	7696	0424	3151	5877	8603
33	0430	3164	5897	8630	1362	4094	6825	9555	2284	5013	7742	0469	3196	5922	8648
34	0475	3210	5943	8676	1408	4139	6870	9600	2330	5059	7787	0515	3242	5968	8693
35	0521	3255	5989	8721	1453	4185	6916	9646	2375	5104	7832	0560	3287	6013	8739
36	0567	3301	6034	8767	1499	4230	6961	9691	2421	5150	7878	0605	3332	6059	8784
37	0612	3346	6080	8812	1545	4276	7007	9737	2466	5195	7923	0651	3378	6104	8830
38	0658	3392	6125	8858	1590	4321	7052	9782	2512	5241	7969	0696	3423	6150	8875
39	0703	3437	6171	8903	1636	4367	7098	9828	2557	5286	8014	0742	3469	6195	8921
40	0749	3483	6216	8949	1681	4413	7143	9873	2603	5332	8060	0787	3514	6240	8966
41	0794	3529	6262	8995	1727	4458	7189	9919	2648	5377	8105	0833	3560	6286	9011
42	0840	3574	6307	9040	1772	4504	7234	9964	2694	5423	8151	0878	3605	6331	9057
43	0886	3620	6353	9086	1818	4549	7280	0010	2739	5468	8196	0924	3651	6377	9102
44	0931	3665	6399	9131	1863	4595	7325	0055	2785	5514	8242	0969	3696	6422	9148
45	0977	3711	6444	9177	1909	4640	7371	0101	2830	5559	8287	1015	3741	6468	9193
46	1022	3756	6490	9222	1954	4686	7416	0146	2876	5604	8333	1060	3787	6513	9239
47	1068	3802	6535	9268	2000	4731	7462	0192	2921	5650	8378	1105	3832	6558	9284
48	1113	3847	6581	9313	2045	4777	7507	0237	2967	5695	8424	1151	3878	6604	9329
49	1159	3893	6626	9359	2091	4822	7553	0283	3012	5741	8469	1196	3923	6649	9375
50	1205	3939	6672	9404	2136	4868	7598	0328	3058	5786	8514	1242	3969	6695	9420
51	1250	3984	6717	9450	2182	4913	7644	0374	3103	5832	8560	1287	4014	6740	9466
52	1296	4030	6763	9496	2227	4959	7689	0419	3149	5877	8605	1333	4059	6786	9511
53	1341	4075	6808	9541	2273	5004	7735	0465	3194	5923	8651	1378	4105	6831	9556
54	1387	4121	6854	9587	2318	5050	7780	0510	3240	5968	8696	1424	4150	6876	9602
55	1432	4166	6900	9632	2364	5095	7826	0556	3285	6014	8742	1469	4196	6922	9647
56	1478	4212	6945	9678	2410	5141	7871	0601	3331	6059	8787	1515	4241	6967	9693
57	1524	4257	6991	9723	2455	5186	7917	0647	3376	6105	8833	1560	4287	7013	9738
58	1569	4303	7036	9769	2501	5232	7962	0692	3422	6150	8878	1605	4332	7058	9784
59	1615	4349	7082	9814	2546	5277	8008	0738	3467	6196	8924	1651	4378	7104	9829
60	1660	4394	7127	9860	2592	5323	8053	0783	3513	6241	8969	1696	4423	7149	9874
"	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Tangent Deg. 56

33 Deg. Co-Tangent

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	"
10. 175	10. 174	10. 174	10. 174	10. 174	10. 173	10. 173	10. 173	10. 172	10. 172	10. 172	10. 172	10. 171	10. 171	10. 171	
1074	8340	5606	2873	0140	7408	4677	1947	9217	6487	3759	1031	8304	5577	2851	60
1029	8294	5560	2827	0095	7363	4632	1901	9171	6442	3713	0986	8258	5532	2806	59
0983	8249	5515	2782	0049	7317	4586	1856	9126	6397	3668	0940	8213	5486	2760	58
0937	8203	5469	2736	0004	7272	4541	1810	9080	6351	3622	0895	8167	5441	2715	57
0892	8157	5424	2691	9958	7226	4495	1765	9035	6306	3577	0849	8122	5395	2669	56
0846	8112	5378	2645	9913	7181	4450	1719	8989	6260	3532	0804	8076	5350	2624	55
0801	8066	5333	2599	9867	7135	4404	1674	8944	6215	3486	0758	8031	5304	2578	54
0755	8021	5287	2554	9821	7090	4359	1628	8898	6169	3441	0713	7986	5259	2533	53
0709	7975	5241	2508	9776	7044	4313	1583	8853	6124	3395	0667	7940	5214	2488	52
0664	7930	5196	2463	9730	6999	4268	1537	8807	6078	3350	0622	7895	5168	2442	51
0618	7884	5150	2417	9685	6953	4222	1492	8762	6033	3304	0576	7849	5123	2397	50
0573	7838	5105	2372	9639	6908	4177	1446	8716	5987	3259	0531	7804	5077	2351	49
0527	7793	5059	2326	9594	6862	4131	1401	8671	5942	3213	0485	7758	5032	2306	48
0482	7747	5014	2281	9548	6817	4085	1355	8625	5896	3168	0440	7713	4986	2260	47
0436	7702	4968	2235	9503	6771	4040	1310	8580	5851	3122	0395	7667	4941	2215	46
0390	7656	4923	2190	9457	6725	3994	1264	8534	5805	3077	0349	7622	4895	2170	45
0345	7611	4877	2144	9412	6680	3949	1219	8489	5760	3031	0304	7576	4850	2124	44
0299	7565	4831	2098	9366	6634	3903	1173	8443	5714	2986	0258	7531	4805	2079	43
0254	7519	4786	2053	9321	6589	3858	1128	8398	5669	2940	0213	7486	4759	2033	42
0208	7474	4740	2007	9275	6543	3812	1082	8352	5623	2895	0167	7440	4714	1988	41
0163	7428	4695	1962	9230	6498	3767	1037	8307	5578	2850	0122	7395	4668	1942	40
0117	7383	4649	1916	9184	6452	3721	0991	8261	5532	2804	0076	7349	4623	1897	39
0071	7337	4604	1871	9138	6407	3676	0946	8216	5487	2759	0031	7304	4577	1852	38
0026	7292	4558	1825	9093	6361	3630	0900	8170	5441	2713	9985	7258	4532	1806	37
9980	7246	4513	1780	9047	6316	3585	0855	8125	5396	2668	9940	7213	4487	1761	36
9935	7200	4467	1734	9002	6270	3539	0809	8079	5351	2622	9895	7167	4441	1715	35
9889	7155	4421	1689	8956	6225	3494	0764	8034	5305	2577	9849	7122	4396	1670	34
9844	7109	4376	1643	8911	6179	3448	0718	7988	5260	2531	9804	7077	4350	1624	33
9798	7064	4330	1597	8865	6134	3403	0673	7943	5214	2486	9758	7031	4305	1579	32
9752	7018	4285	1552	8820	6088	3357	0627	7898	5169	2440	9713	6986	4259	1534	31
9707	6973	4239	1506	8774	6043	3312	0582	7852	5123	2395	9667	6940	4214	1488	30
9661	6927	4194	1461	8729	5997	3266	0536	7807	5078	2349	9622	6895	4168	1443	29
9616	6882	4148	1415	8683	5952	3221	0491	7761	5032	2304	9576	6849	4123	1397	28
9570	6836	4103	1370	8638	5906	3175	0445	7716	4987	2258	9531	6804	4078	1352	27
9525	6790	4057	1324	8592	5861	3130	0400	7670	4941	2213	9485	6758	4032	1307	26
9479	6745	4011	1279	8547	5815	3084	0354	7625	4896	2168	9440	6713	3987	1261	25
9433	6699	3966	1233	8501	5770	3039	0309	7579	4850	2122	9395	6668	3941	1216	24
9388	6654	3920	1188	8455	5724	2993	0263	7534	4805	2077	9349	6622	3896	1170	23
9342	6608	3875	1142	8410	5679	2948	0218	7488	4759	2031	9304	6577	3850	1125	22
9297	6563	3829	1097	8364	5633	2902	0172	7443	4714	1986	9258	6531	3805	1079	21
9251	6517	3784	1051	8319	5587	2857	0127	7397	4668	1940	9213	6486	3760	1034	20
9206	6471	3738	1005	8273	5542	2811	0081	7352	4623	1895	9167	6440	3714	0989	19
9160	6426	3693	0960	8228	5496	2766	0036	7306	4577	1849	9122	6395	3669	0943	18
9114	6380	3647	0914	8182	5451	2720	9990	7261	4532	1804	9076	6349	3623	0898	17
9069	6335	3601	0869	8137	5405	2675	9945	7215	4486	1758	9031	6304	3578	0852	16
9023	6289	3556	0823	8091	5360	2629	9899	7170	4440	1713	8985	6259	3532	0807	15
8978	6244	3510	0778	8046	5314	2584	9854	7124	4396	1667	8940	6213	3487	0761	14
8932	6198	3465	0732	8000	5269	2538	9808	7079	4350	1622	8895	6168	3442	0716	13
8887	6153	3419	0687	7955	5223	2493	9763	7033	4305	1576	8849	6122	3396	0671	12
8841	6107	3374	0641	7909	5178	2447	9717	6988	4259	1531	8804	6077	3351	0625	11
8795	6061	3328	0596	7864	5132	2402	9672	6942	4214	1486	8758	6031	3305	0580	10
8750	6016	3283	0550	7818	5087	2356	9626	6897	4168	1440	8713	5986	3260	0534	9
8704	5970	3237	0504	7773	5041	2311	9581	6851	4123	1395	8667	5941	3214	0489	8
8659	5925	3192	0459	7727	4996	2265	9535	6806	4077	1349	8622	5895	3169	0444	7
8613	5879	3146	0413	7682	4950	2220	9490	6760	4032	1304	8576	5850	3124	0398	6
8568	5834	3100	0368	7636	4905	2174	9444	6715	3986	1258	8531	5804	3078	0353	5
8522	5788	3055	0322	7590	4859	2129	9399	6669	3941	1213	8485	5759	3033	0307	4
8476	5743	3009	0277	7545	4814	2083	9353	6624	3895	1167	8440	5713	2987	0262	3
8431	5697	2964	0231	7499	4768	2038	9308	6578	3850	1122	8395	5668	2942	0216	2
8385	5651	2918	0186	7454	4723	1992	9262	6533	3804	1076	8349	5622	2896	0171	1
8340	5606	2873	0140	7408	4677	1947	9217	6487	3759	1031	8304	5577	2851	0126	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	"

Tangent Deg. 56

"	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
	9.747	9.747	9.747	9.748	9.748	9.748	9.748	9.748	9.749	9.749	9.749	9.749	9.749	9.749	9.750
0	5617	7489	9360	1230	3099	4967	6833	8698	0562	2425	4287	6148	8007	9866	1723
1	5648	7520	9391	1261	3130	4998	6864	8729	0594	2457	4318	6179	8038	9897	1754
2	5679	7551	9422	1292	3161	5029	6895	8760	0625	2488	4349	6210	8069	9928	1785
3	5710	7582	9454	1324	3192	5060	6926	8792	0656	2519	4380	6241	8100	9959	1816
4	5741	7614	9485	1355	3223	5091	6957	8823	0687	2550	4411	6272	8131	9990	1847
5	5773	7645	9516	1386	3255	5122	6989	8854	0718	2581	4442	6303	8162	0021	1878
6	5804	7676	9547	1417	3286	5153	7020	8885	0749	2612	4473	6334	8193	0052	1909
7	5835	7707	9578	1448	3317	5184	7051	8916	0780	2643	4504	6365	8224	0082	1940
8	5866	7738	9609	1479	3348	5215	7082	8947	0811	2674	4535	6396	8255	0113	1970
9	5897	7770	9641	1510	3379	5247	7113	8978	0842	2705	4566	6427	8286	0144	2001
10	5929	7801	9672	1542	3410	5278	7144	9009	0873	2736	4597	6458	8317	0175	2032
11	5960	7832	9703	1573	3441	5309	7175	9040	0904	2767	4628	6489	8348	0206	2063
12	5991	7863	9734	1604	3472	5340	7206	9071	0935	2798	4660	6520	8379	0237	2094
13	6022	7894	9765	1635	3504	5371	7237	9102	0966	2829	4691	6551	8410	0268	2125
14	6054	7926	9796	1666	3535	5402	7268	9133	0997	2860	4722	6582	8441	0299	2156
15	6085	7957	9828	1697	3566	5433	7299	9164	1028	2891	4753	6613	8472	0330	2187
16	6116	7988	9859	1729	3597	5464	7331	9196	1059	2922	4784	6644	8503	0361	2218
17	6147	8019	9890	1760	3628	5495	7362	9227	1090	2953	4815	6675	8534	0392	2249
18	6178	8050	9921	1791	3659	5527	7393	9258	1122	2984	4846	6706	8565	0423	2280
19	6210	8082	9952	1822	3690	5558	7424	9289	1153	3015	4877	6737	8596	0454	2311
20	6241	8113	9984	1853	3722	5589	7455	9320	1184	3046	4908	6768	8627	0485	2342
21	6272	8144	0015	1884	3753	5620	7486	9351	1215	3077	4939	6799	8658	0516	2373
22	6303	8175	0046	1915	3784	5651	7517	9382	1246	3108	4970	6830	8689	0547	2404
23	6334	8206	0077	1947	3815	5682	7548	9413	1277	3139	5001	6861	8720	0578	2435
24	6366	8237	0108	1978	3846	5713	7579	9444	1308	3170	5032	6892	8751	0609	2465
25	6397	8269	0139	2009	3877	5744	7610	9475	1339	3201	5063	6923	8782	0640	2496
26	6428	8300	0171	2040	3908	5775	7641	9506	1370	3232	5094	6954	8813	0671	2527
27	6459	8331	0202	2071	3939	5807	7673	9537	1401	3263	5125	6985	8844	0702	2558
28	6490	8362	0233	2102	3971	5838	7704	9568	1432	3294	5156	7016	8875	0733	2589
29	6522	8393	0264	2133	4002	5869	7735	9599	1463	3325	5187	7047	8906	0764	2620
30	6553	8425	0295	2165	4033	5900	7766	9631	1494	3357	5218	7078	8937	0794	2651
31	6584	8456	0326	2196	4064	5931	7797	9662	1525	3388	5249	7109	8968	0825	2682
32	6615	8487	0358	2227	4095	5962	7828	9693	1556	3419	5280	7140	8999	0856	2713
33	6646	8518	0389	2258	4126	5993	7859	9724	1587	3450	5311	7171	9030	0887	2744
34	6678	8549	0420	2289	4157	6024	7890	9755	1618	3481	5342	7202	9061	0918	2775
35	6709	8581	0451	2320	4188	6055	7921	9786	1649	3512	5373	7233	9092	0949	2806
36	6740	8612	0482	2351	4220	6087	7952	9817	1680	3543	5404	7264	9123	0980	2837
37	6771	8643	0513	2383	4251	6118	7983	9848	1711	3574	5435	7295	9154	1011	2868
38	6802	8674	0545	2414	4282	6149	8015	9879	1743	3605	5466	7326	9184	1042	2899
39	6834	8705	0576	2445	4313	6180	8046	9910	1774	3636	5497	7357	9215	1073	2929
40	6865	8736	0607	2476	4344	6211	8077	9941	1805	3667	5528	7388	9246	1104	2960
41	6896	8768	0638	2507	4375	6242	8108	9972	1836	3698	5559	7419	9277	1135	2991
42	6927	8799	0669	2538	4406	6273	8139	0003	1867	3729	5590	7450	9308	1166	3022
43	6958	8830	0700	2569	4437	6304	8170	0034	1898	3760	5621	7481	9339	1197	3053
44	6990	8861	0731	2601	4469	6335	8201	0065	1929	3791	5652	7512	9370	1228	3084
45	7021	8892	0763	2632	4500	6366	8232	0097	1960	3822	5683	7543	9401	1259	3115
46	7052	8924	0794	2663	4531	6398	8263	0128	1991	3853	5714	7574	9432	1290	3146
47	7083	8955	0825	2694	4562	6429	8294	0159	2022	3884	5745	7605	9463	1321	3177
48	7114	8986	0856	2725	4593	6460	8325	0190	2053	3915	5776	7636	9494	1352	3208
49	7146	9017	0887	2756	4624	6491	8356	0221	2084	3946	5807	7667	9525	1383	3239
50	7177	9048	0918	2787	4655	6522	8388	0252	2115	3977	5838	7698	9556	1413	3270
51	7208	9079	0950	2819	4686	6553	8419	0283	2146	4008	5869	7729	9587	1444	3301
52	7239	9111	0981	2850	4718	6584	8450	0314	2177	4039	5900	7760	9618	1475	3332
53	7270	9142	1012	2881	4749	6615	8481	0345	2208	4070	5931	7791	9649	1506	3362
54	7302	9173	1043	2912	4780	6646	8512	0376	2239	4101	5962	7822	9680	1537	3393
55	7333	9204	1074	2943	4811	6678	8543	0407	2270	4132	5993	7853	9711	1568	3424
56	7364	9235	1105	2974	4842	6709	8574	0438	2301	4163	6024	7883	9742	1599	3455
57	7395	9267	1137	3005	4873	6740	8605	0469	2332	4194	6055	7914	9773	1630	3486
58	7426	9298	1168	3037	4904	6771	8636	0500	2363	4225	6086	7945	9804	1661	3517
59	7458	9329	1199	3068	4935	6802	8667	0531	2394	4256	6117	7976	9835	1692	3548
60	7489	9360	1230	3099	4967	6833	8698	0562	2425	4287	6148	8007	9866	1723	3579
"	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
9.918	9.918	9.918	9.918	9.918	9.918	9.918	9.917	9.917	9.917	9.917	9.917	9.917	9.917	9.917	"
5742	4890	4037	3183	2329	1475	0620	9764	8908	8051	7194	6336	5478	4619	3760	60
5728	4876	4023	3169	2315	1461	0606	9750	8894	8037	7180	6322	5464	4605	3746	59
5714	4861	4008	3155	2301	1446	0591	9736	8880	8023	7166	6308	5450	4591	3731	58
5700	4847	3994	3141	2287	1432	0577	9721	8865	8009	7151	6294	5435	4576	3717	57
5685	4833	3980	3126	2272	1418	0563	9707	8851	7994	7137	6279	5421	4562	3703	56
5671	4819	3966	3112	2258	1404	0549	9693	8837	7980	7123	6265	5407	4548	3688	55
5657	4804	3952	3098	2244	1389	0534	9679	8822	7966	7108	6251	5392	4533	3674	54
5643	4790	3937	3084	2230	1375	0520	9664	8808	7951	7094	6236	5378	4519	3660	53
5629	4776	3923	3070	2215	1361	0506	9650	8794	7937	7080	6222	5364	4505	3645	52
5614	4762	3909	3055	2201	1347	0492	9636	8780	7923	7066	6208	5349	4491	3631	51
5600	4748	3895	3041	2187	1332	0477	9622	8765	7909	7051	6193	5335	4476	3617	50
5586	4733	3880	3027	2173	1318	0463	9607	8751	7894	7037	6179	5321	4462	3602	49
5572	4719	3866	3013	2159	1304	0449	9593	8737	7880	7023	6165	5306	4448	3588	48
5557	4705	3852	2998	2144	1290	0434	9579	8723	7866	7008	6151	5292	4433	3574	47
5543	4691	3838	2984	2130	1275	0420	9565	8708	7851	6994	6136	5278	4419	3559	46
5529	4677	3824	2970	2116	1261	0406	9550	8694	7837	6980	6122	5264	4405	3545	45
5515	4662	3809	2956	2102	1247	0392	9536	8680	7823	6966	6108	5249	4390	3531	44
5501	4648	3795	2941	2087	1233	0377	9522	8665	7809	6951	6093	5235	4376	3516	43
5486	4634	3781	2927	2073	1218	0363	9507	8651	7794	6937	6079	5221	4362	3502	42
5472	4620	3767	2913	2059	1204	0349	9493	8637	7780	6923	6065	5206	4347	3488	41
5458	4606	3752	2899	2045	1190	0335	9479	8623	7766	6908	6050	5192	4333	3473	40
5444	4591	3738	2885	2030	1176	0320	9465	8608	7751	6894	6036	5178	4319	3459	39
5430	4577	3724	2870	2016	1161	0306	9450	8594	7737	6880	6022	5163	4304	3445	38
5415	4563	3710	2856	2002	1147	0292	9436	8580	7723	6865	6008	5149	4290	3430	37
5401	4549	3696	2842	1988	1133	0278	9422	8565	7709	6851	5993	5135	4276	3416	36
5387	4534	3681	2828	1973	1119	0263	9408	8551	7694	6837	5979	5120	4261	3402	35
5373	4520	3667	2813	1959	1104	0249	9393	8537	7680	6823	5965	5106	4247	3387	34
5359	4506	3653	2799	1945	1090	0235	9379	8523	7666	6808	5950	5092	4233	3373	33
5344	4492	3639	2785	1931	1076	0221	9365	8508	7651	6794	5936	5077	4218	3359	32
5330	4478	3624	2771	1916	1062	0206	9350	8494	7637	6780	5922	5063	4204	3344	31
5316	4463	3610	2756	1902	1047	0192	9336	8480	7623	6765	5907	5049	4190	3330	30
5302	4449	3596	2742	1888	1033	0178	9322	8466	7609	6751	5893	5035	4175	3316	29
5288	4435	3582	2728	1874	1019	0164	9308	8451	7594	6737	5879	5020	4161	3301	28
5273	4421	3568	2714	1859	1005	0149	9293	8437	7580	6723	5864	5006	4147	3287	27
5259	4407	3553	2700	1845	0990	0135	9279	8423	7566	6708	5850	4992	4132	3273	26
5245	4392	3539	2685	1831	0976	0121	9265	8408	7551	6694	5836	4977	4118	3259	25
5231	4378	3525	2671	1817	0962	0107	9251	8394	7537	6680	5822	4963	4104	3244	24
5217	4364	3511	2657	1803	0948	0092	9236	8380	7523	6665	5807	4949	4090	3230	23
5202	4350	3496	2643	1788	0933	0078	9222	8366	7509	6651	5793	4934	4075	3216	22
5188	4335	3482	2628	1774	0919	0064	9208	8351	7494	6637	5779	4920	4061	3201	21
5174	4321	3468	2614	1760	0905	0049	9194	8337	7480	6622	5764	4906	4047	3187	20
5160	4307	3454	2600	1746	0891	0035	9179	8323	7466	6608	5750	4891	4032	3173	19
5146	4293	3439	2586	1731	0876	0021	9165	8308	7451	6594	5736	4877	4018	3158	18
5131	4279	3425	2571	1717	0862	0007	9151	8294	7437	6580	5721	4863	4004	3144	17
5117	4264	3411	2557	1703	0848	9992	9136	8280	7423	6565	5707	4848	3989	3130	16
5103	4250	3397	2543	1689	0834	9978	9122	8266	7409	6551	5693	4834	3975	3115	15
5089	4236	3383	2529	1674	0819	9964	9108	8251	7394	6537	5679	4820	3961	3101	14
5074	4222	3368	2514	1660	0805	9950	9094	8237	7380	6522	5664	4806	3946	3087	13
5060	4207	3354	2500	1646	0791	9935	9079	8223	7366	6508	5650	4791	3932	3072	12
5046	4193	3340	2486	1632	0777	9921	9065	8209	7351	6494	5636	4777	3918	3058	11
5032	4179	3326	2472	1617	0762	9907	9051	8194	7337	6479	5621	4763	3903	3044	10
5018	4165	3311	2458	1603	0748	9893	9037	8180	7323	6465	5607	4748	3889	3029	9
5003	4151	3297	2443	1589	0734	9878	9022	8166	7309	6451	5593	4734	3875	3015	8
4989	4136	3283	2429	1575	0720	9864	9008	8151	7294	6437	5578	4720	3860	3000	7
4975	4122	3269	2415	1560	0705	9850	8994	8137	7280	6422	5564	4705	3846	2986	6
4961	4108	3255	2401	1546	0691	9836	8979	8123	7266	6408	5550	4691	3832	2972	5
4947	4094	3240	2386	1532	0677	9821	8965	8109	7251	6394	5535	4677	3817	2957	4
4932	4079	3226	2372	1518	0663	9807	8951	8094	7237	6379	5521	4662	3803	2943	3
4918	4065	3212	2358	1503	0648	9793	8937	8080	7223	6365	5507	4648	3789	2929	2
4904	4051	3198	2344	1489	0634	9778	8922	8066	7209	6351	5493	4634	3774	2914	1
4890	4037	3183	2329	1475	0620	9764	8908	8051	7194	6336	5478	4619	3760	2900	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	"

34 Deg. Tangent

″	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
	9. 828	9. 829	9. 829	9. 829	9. 830	9. 830	9. 830	9. 830	9. 831	9. 831	9. 831	9. 831	9. 832	9. 832	9. 832
0	9874	2599	5323	8047	0769	3492	6213	8934	1654	4374	7093	9811	2529	5246	7963
1	9920	2645	5369	8092	0815	3537	6259	8979	1700	4419	7138	9857	2575	5292	8008
2	9965	2690	5414	8137	0860	3582	6304	9025	1745	4465	7184	9902	2620	5337	8053
3	0011	2735	5459	8183	0906	3628	6349	9070	1790	4510	7229	9947	2665	5382	8099
4	0056	2781	5505	8228	0951	3673	6395	9115	1836	4555	7274	9993	2710	5427	8144
5	0101	2826	5550	8274	0996	3718	6440	9161	1881	4601	7320	0038	2756	5473	8189
6	0147	2872	5596	8319	1042	3764	6485	9206	1926	4646	7365	0083	2801	5518	8234
7	0192	2917	5641	8364	1087	3809	6531	9252	1972	4691	7410	0129	2846	5563	8280
8	0238	2962	5686	8410	1132	3855	6576	9297	2017	4737	7456	0174	2892	5609	8325
9	0283	3008	5732	8455	1178	3900	6621	9342	2062	4782	7501	0219	2937	5654	8370
10	0329	3053	5777	8500	1223	3945	6667	9388	2108	4827	7546	0264	2982	5699	8416
11	0374	3099	5823	8546	1269	3991	6712	9433	2153	4873	7591	0310	3027	5744	8461
12	0419	3144	5868	8591	1314	4036	6757	9478	2198	4918	7637	0355	3073	5790	8506
13	0465	3189	5913	8637	1359	4081	6803	9524	2244	4963	7682	0400	3118	5835	8551
14	0510	3235	5959	8682	1405	4127	6848	9569	2289	5009	7727	0446	3163	5880	8597
15	0556	3280	6004	8727	1450	4172	6893	9614	2334	5054	7773	0491	3209	5926	8642
16	0601	3326	6050	8773	1495	4217	6939	9660	2380	5099	7818	0536	3254	5971	8687
17	0646	3371	6095	8818	1541	4263	6984	9705	2425	5144	7863	0582	3299	6016	8732
18	0692	3416	6140	8864	1586	4308	7030	9750	2470	5190	7909	0627	3344	6061	8778
19	0737	3462	6186	8909	1632	4354	7075	9796	2516	5235	7954	0672	3390	6107	8823
20	0783	3507	6231	8954	1677	4399	7120	9841	2561	5280	7999	0717	3435	6152	8868
21	0828	3553	6276	9000	1722	4444	7166	9886	2606	5326	8045	0763	3480	6197	8914
22	0874	3598	6322	9045	1768	4490	7211	9932	2652	5371	8090	0808	3526	6242	8959
23	0919	3643	6367	9090	1813	4535	7256	9977	2697	5416	8135	0853	3571	6288	9004
24	0964	3689	6413	9136	1858	4580	7302	0022	2742	5462	8180	0899	3616	6333	9049
25	1010	3734	6458	9181	1904	4626	7347	0068	2788	5507	8226	0944	3661	6378	9095
26	1055	3780	6503	9227	1949	4671	7392	0113	2833	5552	8271	0989	3707	6424	9140
27	1101	3825	6549	9272	1995	4716	7438	0158	2878	5598	8316	1035	3752	6469	9185
28	1146	3870	6594	9317	2040	4762	7483	0204	2924	5643	8362	1080	3797	6514	9230
29	1191	3916	6640	9363	2085	4807	7528	0249	2969	5688	8407	1125	3843	6559	9276
30	1237	3961	6685	9408	2131	4853	7574	0294	3014	5734	8452	1170	3888	6605	9321
31	1282	4007	6730	9454	2176	4898	7619	0340	3060	5779	8498	1216	3933	6650	9366
32	1328	4052	6776	9499	2221	4943	7664	0385	3105	5824	8543	1261	3978	6695	9411
33	1373	4097	6821	9544	2267	4989	7710	0430	3150	5870	8588	1306	4024	6741	9457
34	1418	4143	6867	9590	2312	5034	7755	0476	3196	5915	8634	1352	4069	6786	9502
35	1464	4188	6912	9635	2357	5079	7800	0521	3241	5960	8679	1397	4114	6831	9547
36	1509	4234	6957	9680	2403	5125	7846	0566	3286	6006	8724	1442	4160	6876	9592
37	1555	4279	7003	9726	2448	5170	7891	0612	3332	6051	8769	1487	4205	6922	9638
38	1600	4324	7048	9771	2494	5215	7937	0657	3377	6096	8815	1533	4250	6967	9683
39	1646	4370	7094	9817	2539	5261	7982	0702	3422	6141	8860	1578	4295	7012	9728
40	1691	4415	7139	9862	2584	5306	8027	0748	3468	6187	8905	1623	4341	7057	9774
41	1736	4461	7184	9907	2630	5351	8073	0793	3513	6232	8951	1669	4386	7103	9819
42	1782	4506	7230	9953	2675	5397	8118	0838	3558	6277	8996	1714	4431	7148	9864
43	1827	4551	7275	9998	2720	5442	8163	0884	3604	6323	9041	1759	4477	7193	9909
44	1873	4597	7320	0043	2766	5488	8209	0929	3649	6368	9087	1805	4522	7239	9955
45	1918	4642	7366	0089	2811	5533	8254	0974	3694	6413	9132	1850	4567	7284	0000
46	1963	4688	7411	0134	2857	5578	8299	1020	3740	6459	9177	1895	4612	7329	0045
47	2009	4733	7457	0180	2902	5624	8345	1065	3785	6504	9223	1940	4658	7374	0090
48	2054	4778	7502	0225	2947	5669	8390	1110	3830	6549	9268	1986	4703	7420	0136
49	2100	4824	7547	0270	2993	5714	8435	1156	3875	6595	9313	2031	4748	7465	0181
50	2145	4869	7593	0316	3038	5760	8481	1201	3921	6640	9358	2076	4794	7510	0226
51	2190	4915	7638	0361	3083	5805	8526	1246	3966	6685	9404	2122	4839	7555	0271
52	2236	4960	7684	0406	3129	5850	8571	1292	4011	6731	9449	2167	4884	7601	0317
53	2281	5005	7729	0452	3174	5896	8617	1337	4057	6776	9494	2212	4929	7646	0362
54	2327	5051	7774	0497	3219	5941	8662	1382	4102	6821	9540	2257	4975	7691	0407
55	2372	5096	7820	0543	3265	5986	8707	1428	4147	6866	9585	2303	5020	7737	0452
56	2417	5142	7865	0588	3310	6032	8753	1473	4193	6912	9630	2348	5065	7782	0498
57	2463	5187	7910	0633	3356	6077	8798	1518	4238	6957	9676	2393	5111	7827	0543
58	2508	5232	7956	0679	3401	6122	8843	1564	4283	7002	9721	2439	5156	7872	0588
59	2554	5278	8001	0724	3446	6168	8889	1609	4329	7048	9766	2484	5201	7918	0634
60	2599	5323	8047	0769	3492	6213	8934	1654	4374	7093	9811	2529	5246	7963	0679
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Tangent Deg. 55

34 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	″
10. 171	10. 170	10. 170	10. 170	10. 169	10. 169	10. 169	10. 169	10. 168	10. 168	10. 168	10. 168	10. 167	10. 167	10. 167	
0126	7401	4677	1953	9231	6508	3787	1066	8346	5626	2907	0189	7471	4754	2037	60
0080	7355	4631	1908	9185	6463	3741	1021	8300	5581	2862	0143	7425	4708	1992	59
0035	7310	4586	1863	9140	6418	3696	0975	8255	5535	2816	0098	7380	4663	1947	58
9989	7265	4541	1817	9094	6372	3651	0930	8210	5490	2771	0053	7335	4618	1901	57
9944	7219	4495	1772	9049	6327	3605	0885	8164	5445	2726	0007	7290	4573	1856	56
9899	7174	4450	1726	9004	6282	3560	0839	8119	5399	2680	9962	7244	4527	1811	55
9853	7128	4404	1681	8958	6236	3515	0794	8074	5354	2635	9917	7199	4482	1766	54
9808	7083	4359	1636	8913	6191	3469	0748	8028	5309	2590	9871	7154	4437	1720	53
9762	7038	4314	1590	8868	6145	3424	0703	7983	5263	2544	9826	7108	4391	1675	52
9717	6992	4268	1545	8822	6100	3379	0658	7938	5218	2499	9781	7063	4346	1630	51
9671	6947	4223	1500	8777	6055	3333	0612	7892	5173	2454	9736	7018	4301	1584	50
9626	6901	4177	1454	8731	6009	3288	0567	7847	5127	2409	9690	6973	4256	1539	49
9581	6856	4132	1409	8686	5964	3243	0522	7802	5082	2363	9645	6927	4210	1494	48
9535	6811	4087	1363	8641	5919	3197	0476	7756	5037	2318	9600	6882	4165	1449	47
9490	6765	4041	1318	8595	5873	3152	0431	7711	4991	2273	9554	6837	4120	1403	46
9444	6720	3996	1273	8550	5828	3107	0386	7666	4946	2227	9509	6791	4074	1358	45
9399	6674	3950	1227	8505	5783	3061	0340	7620	4901	2182	9464	6746	4029	1313	44
9354	6629	3905	1182	8459	5737	3016	0295	7575	4856	2137	9418	6701	3984	1268	43
9308	6584	3860	1136	8414	5692	2970	0250	7530	4810	2091	9373	6656	3939	1222	42
9263	6538	3814	1091	8368	5646	2925	0204	7484	4765	2046	9328	6610	3893	1177	41
9217	6493	3769	1046	8323	5601	2880	0159	7439	4720	2001	9283	6565	3848	1132	40
9172	6447	3724	1000	8278	5556	2834	0114	7394	4674	1955	9237	6520	3803	1086	39
9126	6402	3678	0955	8232	5510	2789	0068	7348	4629	1910	9192	6474	3758	1041	38
9081	6357	3633	0910	8187	5465	2744	0023	7303	4584	1865	9147	6429	3712	0996	37
9036	6311	3587	0864	8142	5420	2698	9978	7258	4538	1820	9101	6384	3667	0951	36
8990	6266	3542	0819	8096	5374	2653	9932	7212	4493	1774	9056	6339	3622	0905	35
8945	6220	3497	0773	8051	5329	2608	9887	7167	4448	1729	9011	6293	3576	0860	34
8899	6175	3451	0728	8005	5284	2562	9842	7122	4402	1684	8965	6248	3531	0815	33
8854	6130	3406	0683	7960	5238	2517	9796	7076	4357	1638	8920	6203	3486	0770	32
8809	6084	3360	0637	7915	5193	2472	9751	7031	4312	1593	8875	6157	3441	0724	31
8763	6039	3315	0592	7869	5147	2426	9706	6986	4266	1548	8830	6112	3395	0679	30
8718	5993	3270	0546	7824	5102	2381	9660	6940	4221	1502	8784	6067	3350	0634	29
8672	5948	3224	0501	7779	5057	2336	9615	6895	4176	1457	8739	6022	3305	0589	28
8627	5903	3179	0456	7733	5011	2290	9570	6850	4130	1412	8694	5976	3259	0543	27
8582	5857	3133	0410	7688	4966	2245	9524	6804	4085	1366	8648	5931	3214	0498	26
8536	5812	3088	0365	7643	4921	2200	9479	6759	4040	1321	8603	5886	3169	0453	25
8491	5766	3043	0320	7597	4875	2154	9434	6714	3994	1276	8558	5840	3124	0408	24
8445	5721	2997	0274	7552	4830	2109	9388	6668	3949	1231	8513	5795	3078	0362	23
8400	5676	2952	0229	7506	4785	2063	9343	6623	3904	1185	8467	5750	3033	0317	22
8354	5630	2906	0183	7461	4739	2018	9298	6578	3859	1140	8422	5705	2988	0272	21
8309	5585	2861	0138	7416	4694	1973	9252	6532	3813	1095	8377	5659	2943	0226	20
8264	5539	2816	0093	7370	4649	1927	9207	6487	3768	1049	8331	5614	2897	0181	19
8218	5494	2770	0047	7325	4603	1882	9162	6442	3723	1004	8286	5569	2852	0136	18
8173	5449	2725	0002	7280	4558	1837	9116	6396	3677	0959	8241	5523	2807	0091	17
8127	5403	2680	9957	7234	4512	1791	9071	6351	3632	0913	8195	5478	2761	0045	16
8082	5358	2634	9911	7189	4467	1746	9026	6306	3587	0868	8150	5433	2716	0000	15
8037	5312	2589	9866	7143	4422	1701	8980	6260	3541	0823	8105	5388	2671	9955	14
7991	5267	2543	9820	7098	4376	1655	8935	6215	3496	0777	8060	5342	2626	9910	13
7946	5222	2498	9775	7053	4331	1610	8890	6170	3451	0732	8014	5297	2580	9864	12
7900	5176	2453	9730	7007	4286	1565	8844	6125	3405	0687	7969	5252	2535	9819	11
7855	5131	2407	9684	6962	4240	1519	8799	6079	3360	0642	7924	5206	2490	9774	10
7810	5085	2362	9639	6917	4195	1474	8754	6034	3315	0596	7878	5161	2445	9729	9
7764	5040	2316	9594	6871	4150	1429	8708	5989	3269	0551	7833	5116	2399	9683	8
7719	4995	2271	9548	6826	4104	1383	8663	5943	3224	0506	7788	5071	2354	9638	7
7673	4949	2226	9503	6781	4059	1338	8618	5898	3179	0460	7743	5025	2309	9593	6
7628	4904	2180	9457	6735	4014	1293	8572	5853	3134	0415	7697	4980	2263	9548	5
7583	4858	2135	9412	6690	3968	1247	8527	5807	3088	0370	7652	4935	2218	9502	4
7537	4813	2090	9367	6644	3923	1202	8482	5762	3043	0324	7607	4889	2173	9457	3
7492	4768	2044	9321	6599	3878	1157	8436	5717	2998	0279	7561	4844	2128	9412	2
7446	4722	1999	9276	6554	3832	1111	8391	5671	2952	0234	7516	4799	2082	9366	1
7401	4677	1953	9231	6508	3787	1066	8346	5626	2907	0189	7471	4754	2037	9321	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Tangent Deg. 55

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 750	9. 750	9. 750	9. 750	9. 751	9. 751	9. 751	9. 751	9. 751	9. 752	9. 752	9. 752	9. 752	9. 752	9. 752
0	3579	5434	7287	9140	0991	2842	4691	6538	8385	0231	2075	3919	5761	7602	9442
1	3610	5465	7318	9171	1022	2872	4721	6569	8416	0262	2106	3949	5791	7632	9472
2	3641	5496	7349	9202	1053	2903	4752	6600	8447	0292	2137	3980	5822	7663	9503
3	3672	5526	7380	9233	1084	2934	4783	6631	8478	0323	2167	4011	5853	7694	9534
4	3703	5557	7411	9263	1115	2965	4814	6662	8508	0354	2198	4041	5883	7724	9564
5	3734	5588	7442	9294	1146	2996	4845	6692	8539	0385	2229	4072	5914	7755	9595
6	3764	5619	7473	9325	1176	3026	4875	6723	8570	0415	2260	4103	5945	7786	9625
7	3795	5650	7504	9356	1207	3057	4906	6754	8601	0446	2290	4134	5976	7816	9656
8	3826	5681	7535	9387	1238	3088	4937	6785	8631	0477	2321	4164	6006	7847	9687
9	3857	5712	7565	9418	1269	3119	4968	6816	8662	0508	2352	4195	6037	7878	9717
10	3888	5743	7596	9449	1300	3150	4999	6846	8693	0538	2383	4226	6068	7908	9748
11	3919	5774	7627	9479	1331	3181	5029	6877	8724	0569	2413	4256	6098	7939	9779
12	3950	5805	7658	9510	1361	3211	5060	6908	8754	0600	2444	4287	6129	7970	9809
13	3981	5835	7689	9541	1392	3242	5091	6939	8785	0631	2475	4318	6160	8000	9840
14	4012	5866	7720	9572	1423	3273	5122	6970	8816	0661	2505	4349	6190	8031	9871
15	4043	5897	7751	9603	1454	3304	5153	7000	8847	0692	2536	4379	6221	8062	9901
16	4074	5928	7782	9634	1485	3335	5183	7031	8878	0723	2567	4410	6252	8092	9932
17	4105	5959	7812	9665	1516	3366	5214	7062	8908	0754	2598	4441	6282	8123	9963
18	4135	5990	7843	9695	1547	3396	5245	7093	8939	0784	2628	4471	6313	8154	9993
19	4166	6021	7874	9726	1577	3427	5276	7123	8970	0815	2659	4502	6344	8184	0024
20	4197	6052	7905	9757	1608	3458	5307	7154	9001	0846	2690	4533	6375	8215	0055
21	4228	6083	7936	9788	1639	3489	5337	7185	9031	0877	2721	4563	6405	8246	0085
22	4259	6114	7967	9819	1670	3520	5368	7216	9062	0907	2751	4594	6436	8276	0116
23	4290	6144	7998	9850	1701	3550	5399	7247	9093	0938	2782	4625	6467	8307	0147
24	4321	6175	8029	9881	1732	3581	5430	7277	9124	0969	2813	4656	6497	8338	0177
25	4352	6206	8059	9912	1762	3612	5461	7308	9154	0999	2843	4686	6528	8368	0208
26	4383	6237	8090	9942	1793	3643	5491	7339	9185	1030	2874	4717	6559	8399	0238
27	4414	6268	8121	9973	1824	3674	5522	7370	9216	1061	2905	4748	6589	8430	0269
28	4445	6299	8152	0004	1855	3705	5553	7400	9247	1092	2936	4778	6620	8460	0300
29	4476	6330	8183	0035	1886	3735	5584	7431	9277	1122	2966	4809	6651	8491	0330
30	4506	6361	8214	0066	1917	3766	5615	7462	9308	1153	2997	4840	6681	8522	0361
31	4537	6392	8245	0097	1947	3797	5645	7493	9339	1184	3028	4870	6712	8552	0392
32	4568	6423	8276	0128	1978	3828	5676	7524	9370	1215	3059	4901	6743	8583	0422
33	4599	6453	8306	0158	2009	3859	5707	7554	9400	1245	3089	4932	6773	8614	0453
34	4630	6484	8337	0189	2040	3889	5738	7585	9431	1276	3120	4963	6804	8644	0484
35	4661	6515	8368	0220	2071	3920	5769	7616	9462	1307	3151	4993	6835	8675	0514
36	4692	6546	8399	0251	2102	3951	5799	7647	9493	1338	3181	5024	6865	8706	0545
37	4723	6577	8430	0282	2132	3982	5830	7677	9523	1368	3212	5055	6896	8736	0576
38	4754	6608	8461	0313	2163	4013	5861	7708	9554	1399	3243	5085	6927	8767	0606
39	4785	6639	8492	0343	2194	4044	5892	7739	9585	1430	3274	5116	6957	8798	0637
40	4816	6670	8523	0374	2225	4074	5923	7770	9616	1461	3304	5147	6988	8828	0667
41	4847	6701	8553	0405	2256	4105	5953	7801	9647	1491	3335	5178	7019	8859	0698
42	4877	6731	8584	0436	2287	4136	5984	7831	9677	1522	3366	5208	7050	8890	0729
43	4908	6762	8615	0467	2317	4167	6015	7862	9708	1553	3396	5239	7080	8920	0759
44	4939	6793	8646	0498	2348	4198	6046	7893	9739	1584	3427	5270	7111	8951	0790
45	4970	6824	8677	0529	2379	4228	6077	7924	9770	1614	3458	5300	7142	8982	0821
46	5001	6855	8708	0559	2410	4259	6107	7954	9800	1645	3489	5331	7172	9012	0851
47	5032	6886	8739	0590	2441	4290	6138	7985	9831	1676	3519	5362	7203	9043	0882
48	5063	6917	8770	0621	2472	4321	6169	8016	9862	1706	3550	5392	7234	9074	0913
49	5094	6948	8800	0652	2502	4352	6200	8047	9893	1737	3581	5423	7264	9104	0943
50	5125	6979	8831	0683	2533	4382	6231	8078	9923	1768	3611	5454	7295	9135	0974
51	5156	7009	8862	0714	2564	4413	6261	8108	9954	1799	3642	5484	7326	9166	1005
52	5187	7040	8893	0745	2595	4444	6292	8139	9985	1829	3673	5515	7356	9196	1035
53	5217	7071	8924	0775	2626	4475	6323	8170	0016	1860	3704	5546	7387	9227	1066
54	5248	7102	8955	0806	2657	4506	6354	8201	0046	1891	3734	5577	7418	9258	1096
55	5279	7133	8986	0837	2687	4537	6385	8231	0077	1922	3765	5607	7448	9288	1127
56	5310	7164	9016	0868	2718	4567	6415	8262	0108	1952	3796	5638	7479	9319	1158
57	5341	7195	9047	0899	2749	4598	6446	8293	0139	1983	3826	5669	7510	9350	1188
58	5372	7226	9078	0930	2780	4629	6477	8324	0169	2014	3857	5699	7540	9380	1219
59	5403	7257	9109	0960	2811	4660	6508	8354	0200	2045	3888	5730	7571	9411	1250
60	5434	7287	9140	0991	2842	4691	6538	8385	0231	2075	3919	5761	7602	9442	1280
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9. 917	9. 917	9. 917	9. 917	9. 916	9. 916	9. 916	9. 916	9. 916	9. 916	9. 916	9. 916	9. 916	9. 916	9. 916
0	2900	2040	1179	0317	9455	8593	7730	6866	6002	5137	4272	3406	2539	1673	0805
1	2886	2025	1164	0303	9441	8578	7715	6851	5987	5123	4257	3391	2525	1658	0791
2	2871	2011	1150	0289	9426	8564	7701	6837	5973	5108	4243	3377	2511	1644	0776
3	2857	1997	1136	0274	9412	8549	7686	6823	5958	5094	4228	3363	2496	1629	0762
4	2843	1982	1121	0260	9398	8535	7672	6808	5944	5079	4214	3348	2482	1615	0747
5	2828	1968	1107	0245	9383	8521	7658	6794	5930	5065	4200	3334	2467	1600	0733
6	2814	1954	1093	0231	9369	8506	7643	6779	5915	5050	4185	3319	2453	1586	0718
7	2800	1939	1078	0217	9355	8492	7629	6765	5901	5036	4171	3305	2438	1571	0704
8	2785	1925	1064	0202	9340	8478	7614	6751	5886	5022	4156	3290	2424	1557	0689
9	2771	1911	1050	0188	9326	8463	7600	6736	5872	5007	4142	3276	2409	1542	0675
10	2757	1896	1035	0174	9311	8449	7586	6722	5858	4993	4127	3261	2395	1528	0661
11	2742	1882	1021	0159	9297	8434	7571	6707	5843	4978	4113	3247	2381	1514	0646
12	2728	1868	1007	0145	9283	8420	7557	6693	5829	4964	4099	3233	2366	1499	0632
13	2714	1853	0992	0131	9268	8406	7542	6679	5814	4949	4084	3218	2352	1485	0617
14	2699	1839	0978	0116	9254	8391	7528	6664	5800	4935	4070	3204	2337	1470	0603
15	2685	1825	0963	0102	9240	8377	7514	6650	5786	4921	4055	3189	2323	1456	0588
16	2671	1810	0949	0087	9225	8363	7499	6635	5771	4906	4041	3175	2308	1441	0574
17	2656	1796	0935	0073	9211	8348	7485	6621	5757	4892	4026	3160	2294	1427	0559
18	2642	1781	0920	0059	9196	8334	7470	6607	5742	4877	4012	3146	2279	1412	0545
19	2628	1767	0906	0044	9182	8319	7456	6592	5728	4863	3998	3132	2265	1398	0530
20	2613	1753	0892	0030	9168	8305	7442	6578	5713	4849	3983	3117	2251	1383	0516
21	2599	1738	0877	0016	9153	8291	7427	6563	5699	4834	3969	3103	2236	1369	0501
22	2585	1724	0863	0001	9139	8276	7413	6549	5685	4820	3954	3088	2222	1355	0487
23	2570	1710	0849	9987	9125	8262	7399	6535	5670	4805	3940	3074	2207	1340	0472
24	2556	1695	0834	9973	9110	8247	7384	6520	5656	4791	3925	3059	2193	1326	0458
25	2542	1681	0820	9958	9096	8233	7370	6506	5641	4776	3911	3045	2178	1311	0444
26	2527	1667	0806	9944	9081	8219	7355	6491	5627	4762	3897	3030	2164	1297	0429
27	2513	1652	0791	9929	9067	8204	7341	6477	5613	4748	3882	3016	2149	1282	0415
28	2499	1638	0777	9915	9053	8190	7327	6463	5598	4733	3868	3002	2135	1268	0400
29	2484	1624	0762	9901	9038	8176	7312	6448	5584	4719	3853	2987	2121	1253	0386
30	2470	1609	0748	9886	9024	8161	7298	6434	5569	4704	3839	2973	2106	1239	0371
31	2456	1595	0734	9872	9010	8147	7283	6419	5555	4690	3824	2958	2092	1224	0357
32	2441	1581	0719	9858	8995	8132	7269	6405	5541	4676	3810	2944	2077	1210	0342
33	2427	1566	0705	9843	8981	8118	7255	6391	5526	4661	3796	2929	2063	1196	0328
34	2413	1552	0691	9829	8966	8104	7240	6376	5512	4647	3781	2915	2048	1181	0313
35	2398	1538	0676	9814	8952	8089	7226	6362	5497	4632	3767	2901	2034	1167	0299
36	2384	1523	0662	9800	8938	8075	7211	6347	5483	4618	3752	2886	2019	1152	0284
37	2370	1509	0648	9786	8923	8060	7197	6333	5468	4603	3738	2872	2005	1138	0270
38	2355	1495	0633	9771	8909	8046	7183	6319	5454	4589	3723	2857	1990	1123	0255
39	2341	1480	0619	9757	8895	8032	7168	6304	5440	4575	3709	2843	1976	1109	0241
40	2327	1466	0604	9743	8880	8017	7154	6290	5425	4560	3694	2828	1962	1094	0227
41	2312	1451	0590	9728	8866	8003	7139	6275	5411	4546	3680	2814	1947	1080	0212
42	2298	1437	0576	9714	8851	7989	7125	6261	5396	4531	3666	2799	1933	1065	0198
43	2284	1423	0561	9700	8837	7974	7111	6247	5382	4517	3651	2785	1918	1051	0183
44	2269	1408	0547	9685	8823	7960	7096	6232	5368	4502	3637	2771	1904	1036	0169
45	2255	1394	0533	9671	8808	7945	7082	6218	5353	4488	3622	2756	1889	1022	0154
46	2241	1380	0518	9656	8794	7931	7067	6203	5339	4474	3608	2742	1875	1008	0140
47	2226	1365	0504	9642	8780	7917	7053	6189	5324	4459	3593	2727	1860	0993	0125
48	2212	1351	0490	9628	8765	7902	7039	6175	5310	4445	3579	2713	1846	0979	0111
49	2198	1337	0475	9613	8751	7888	7024	6160	5295	4430	3565	2698	1832	0964	0096
50	2183	1322	0461	9599	8736	7873	7010	6146	5281	4416	3550	2684	1817	0950	0082
51	2169	1308	0447	9585	8722	7859	6995	6131	5267	4401	3536	2669	1803	0935	0067
52	2154	1294	0432	9570	8708	7845	6981	6117	5252	4387	3521	2655	1788	0921	0053
53	2140	1279	0418	9556	8693	7830	6967	6103	5238	4373	3507	2641	1774	0906	0038
54	2126	1265	0403	9541	8679	7816	6952	6088	5223	4358	3492	2626	1759	0892	0024
55	2111	1251	0389	9527	8665	7801	6938	6074	5209	4344	3478	2612	1745	0877	0010
56	2097	1236	0375	9513	8650	7787	6923	6059	5195	4329	3464	2597	1730	0863	9995
57	2083	1222	0360	9498	8636	7773	6909	6045	5180	4315	3449	2583	1716	0849	9981
58	2068	1207	0346	9484	8621	7758	6895	6030	5166	4300	3435	2568	1701	0834	9966
59	2054	1193	0332	9470	8607	7744	6880	6016	5151	4286	3420	2554	1687	0820	9952
60	2040	1179	0317	9455	8593	7730	6866	6002	5137	4272	3406	2539	1673	0805	9937
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9.833	9.833	9.833	9.833	9.834	9.834	9.834	9.834	9.835	9.835	9.835	9.836	9.836	9.836	9.836
0	0679	3394	6109	8823	1536	4249	6961	9673	2384	5094	7804	0513	3221	5929	8636
1	0724	3439	6154	8868	1581	4294	7006	9718	2429	5139	7849	0558	3266	5974	8682
2	0769	3485	6199	8913	1627	4339	7051	9763	2474	5184	7894	0603	3312	6019	8727
3	0815	3530	6244	8958	1672	4385	7097	9808	2519	5229	7939	0648	3357	6065	8772
4	0860	3575	6290	9004	1717	4430	7142	9853	2564	5275	7984	0693	3402	6110	8817
5	0905	3620	6335	9049	1762	4475	7187	9899	2609	5320	8029	0738	3447	6155	8862
6	0950	3666	6380	9094	1807	4520	7232	9944	2655	5365	8075	0784	3492	6200	8907
7	0996	3711	6425	9139	1853	4565	7277	9989	2700	5410	8120	0829	3537	6245	8952
8	1041	3756	6471	9185	1898	4611	7323	0034	2745	5455	8165	0874	3582	6290	8997
9	1086	3801	6516	9230	1943	4656	7368	0079	2790	5500	8210	0919	3627	6335	9042
10	1131	3847	6561	9275	1988	4701	7413	0125	2835	5546	8255	0964	3673	6380	9088
11	1177	3892	6606	9320	2034	4746	7458	0170	2881	5591	8300	1009	3718	6426	9133
12	1222	3937	6652	9365	2079	4791	7503	0215	2926	5636	8346	1055	3763	6471	9178
13	1267	3982	6697	9411	2124	4837	7549	0260	2971	5681	8391	1100	3808	6516	9223
14	1312	4028	6742	9456	2169	4882	7594	0305	3016	5726	8436	1145	3853	6561	9268
15	1358	4073	6787	9501	2214	4927	7639	0350	3061	5771	8481	1190	3898	6606	9313
16	1403	4118	6832	9546	2260	4972	7684	0396	3106	5817	8526	1235	3943	6651	9358
17	1448	4163	6878	9592	2305	5017	7729	0441	3152	5862	8571	1280	3989	6696	9403
18	1493	4208	6923	9637	2350	5063	7775	0486	3197	5907	8616	1325	4034	6741	9449
19	1539	4254	6968	9682	2395	5108	7820	0531	3242	5952	8662	1371	4079	6787	9494
20	1584	4299	7013	9727	2440	5153	7865	0576	3287	5997	8707	1416	4124	6832	9539
21	1629	4344	7059	9772	2486	5198	7910	0622	3332	6042	8752	1461	4169	6877	9584
22	1674	4389	7104	9818	2531	5243	7955	0667	3377	6088	8797	1506	4214	6922	9629
23	1720	4435	7149	9863	2576	5289	8001	0712	3423	6133	8842	1551	4259	6967	9674
24	1765	4480	7194	9908	2621	5334	8046	0757	3468	6178	8887	1596	4304	7012	9719
25	1810	4525	7240	9953	2667	5379	8091	0802	3513	6223	8933	1641	4350	7057	9764
26	1855	4570	7285	9999	2712	5424	8136	0847	3558	6268	8978	1687	4395	7102	9809
27	1901	4616	7330	0044	2757	5469	8181	0893	3603	6313	9023	1732	4440	7148	9855
28	1946	4661	7375	0089	2802	5515	8227	0938	3648	6359	9068	1777	4485	7193	9900
29	1991	4706	7421	0134	2847	5560	8272	0983	3694	6404	9113	1822	4530	7238	9945
30	2036	4751	7466	0179	2893	5605	8317	1028	3739	6449	9158	1867	4575	7283	9990
31	2082	4797	7511	0225	2938	5650	8362	1073	3784	6494	9203	1912	4620	7328	0035
32	2127	4842	7556	0270	2983	5695	8407	1119	3829	6539	9249	1957	4666	7373	0080
33	2172	4887	7601	0315	3028	5741	8453	1164	3874	6584	9294	2003	4711	7418	0125
34	2217	4932	7647	0360	3073	5786	8498	1209	3920	6630	9339	2048	4756	7463	0170
35	2263	4978	7692	0406	3119	5831	8543	1254	3965	6675	9384	2093	4801	7508	0215
36	2308	5023	7737	0451	3164	5876	8588	1299	4010	6720	9429	2138	4846	7554	0261
37	2353	5068	7782	0496	3209	5921	8633	1344	4055	6765	9474	2183	4891	7599	0306
38	2399	5113	7828	0541	3254	5967	8678	1390	4100	6810	9519	2228	4936	7644	0351
39	2444	5159	7873	0586	3300	6012	8724	1435	4145	6855	9565	2273	4981	7689	0396
40	2489	5204	7918	0632	3345	6057	8769	1480	4191	6900	9610	2318	5027	7734	0441
41	2534	5249	7963	0677	3390	6102	8814	1525	4236	6946	9655	2364	5072	7779	0486
42	2580	5294	8009	0722	3435	6147	8859	1570	4281	6991	9700	2409	5117	7824	0531
43	2625	5340	8054	0767	3480	6193	8904	1616	4326	7036	9745	2454	5162	7869	0576
44	2670	5385	8099	0813	3526	6238	8950	1661	4371	7081	9790	2499	5207	7915	0621
45	2715	5430	8144	0858	3571	6283	8995	1706	4416	7126	9836	2544	5252	7960	0667
46	2761	5475	8189	0903	3616	6328	9040	1751	4462	7171	9881	2589	5297	8005	0712
47	2806	5521	8235	0948	3661	6373	9085	1796	4507	7217	9926	2634	5342	8050	0757
48	2851	5566	8280	0993	3706	6419	9130	1841	4552	7262	9971	2680	5388	8095	0802
49	2896	5611	8325	1039	3752	6464	9176	1887	4597	7307	0016	2725	5433	8140	0847
50	2942	5656	8370	1084	3797	6509	9221	1932	4642	7352	0061	2770	5478	8185	0892
51	2987	5702	8416	1129	3842	6554	9266	1977	4687	7397	0106	2815	5523	8230	0937
52	3032	5747	8461	1174	3887	6599	9311	2022	4733	7442	0152	2860	5568	8275	0982
53	3077	5792	8506	1220	3932	6645	9356	2067	4778	7488	0197	2905	5613	8321	1027
54	3123	5837	8551	1265	3978	6690	9402	2113	4823	7533	0242	2950	5658	8366	1072
55	3168	5882	8597	1310	4023	6735	9447	2158	4868	7578	0287	2996	5704	8411	1118
56	3213	5928	8642	1355	4068	6780	9492	2203	4913	7623	0332	3041	5749	8456	1163
57	3258	5973	8687	1400	4113	6825	9537	2248	4958	7668	0377	3086	5794	8501	1208
58	3304	6018	8732	1446	4158	6871	9582	2293	5004	7713	0422	3131	5839	8546	1253
59	3349	6063	8777	1491	4204	6916	9627	2338	5049	7758	0468	3176	5884	8591	1298
60	3394	6109	8823	1536	4249	6961	9673	2384	5094	7804	0513	3221	5929	8636	1343
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
	10.166	10.166	10.166	10.166	10.165	10.165	10.165	10.165	10.164	10.164	10.164	10.163	10.163	10.163	10.163	″
0	9321	6606	3891	1177	8464	5751	3039	0327	7616	4906	2196	9487	6779	4071	1364	60
1	9276	6561	3846	1132	8419	5706	2994	0282	7571	4861	2151	9442	6734	4026	1318	59
2	9231	6515	3801	1087	8373	5661	2949	0237	7526	4816	2106	9397	6688	3981	1273	58
3	9185	6470	3756	1042	8328	5615	2903	0192	7481	4771	2061	9352	6643	3935	1228	57
4	9140	6425	3710	0996	8283	5570	2858	0147	7436	4725	2016	9307	6598	3890	1183	56
5	9095	6380	3665	0951	8238	5525	2813	0101	7391	4680	1971	9262	6553	3845	1138	55
6	9050	6334	3620	0906	8193	5480	2768	0056	7345	4635	1925	9216	6508	3800	1093	54
7	9004	6289	3575	0861	8147	5435	2723	0011	7300	4590	1880	9171	6463	3755	1048	53
8	8959	6244	3529	0815	8102	5389	2677	9966	7255	4545	1835	9126	6418	3710	1003	52
9	8914	6199	3484	0770	8057	5344	2632	9921	7210	4500	1790	9081	6373	3665	0958	51
10	8869	6153	3439	0725	8012	5299	2587	9875	7165	4454	1745	9036	6327	3620	0912	50
11	8823	6108	3394	0680	7966	5254	2542	9830	7119	4409	1700	8991	6282	3574	0867	49
12	8778	6063	3348	0635	7921	5209	2497	9785	7074	4364	1654	8945	6237	3529	0822	48
13	8733	6018	3303	0589	7876	5163	2451	9740	7029	4319	1609	8900	6192	3484	0777	47
14	8688	5972	3258	0544	7831	5118	2406	9695	6984	4274	1564	8855	6147	3439	0732	46
15	8642	5927	3213	0499	7786	5073	2361	9650	6939	4229	1519	8810	6102	3394	0687	45
16	8597	5882	3168	0454	7740	5028	2316	9604	6894	4183	1474	8765	6057	3349	0642	44
17	8552	5837	3122	0408	7695	4983	2271	9559	6848	4138	1429	8720	6011	3304	0597	43
18	8507	5792	3077	0363	7650	4937	2225	9514	6803	4093	1384	8675	5966	3259	0551	42
19	8461	5746	3032	0318	7605	4892	2180	9469	6758	4048	1338	8629	5921	3213	0506	41
20	8416	5701	2987	0273	7560	4847	2135	9424	6713	4003	1293	8584	5876	3168	0461	40
21	8371	5656	2941	0228	7514	4802	2090	9378	6668	3958	1248	8539	5831	3123	0416	39
22	8326	5611	2896	0182	7469	4757	2045	9333	6623	3912	1203	8494	5786	3078	0371	38
23	8280	5565	2851	0137	7424	4711	1999	9288	6577	3867	1158	8449	5741	3033	0326	37
24	8235	5520	2806	0092	7379	4666	1954	9243	6532	3822	1113	8404	5696	2988	0281	36
25	8190	5475	2760	0047	7333	4621	1909	9198	6487	3777	1067	8359	5650	2943	0236	35
26	8145	5430	2715	0001	7288	4576	1864	9153	6442	3732	1022	8313	5605	2898	0191	34
27	8099	5384	2670	9956	7243	4531	1819	9107	6397	3687	0977	8268	5560	2852	0145	33
28	8054	5339	2625	9911	7198	4485	1773	9062	6352	3641	0932	8223	5515	2807	0100	32
29	8009	5294	2579	9866	7153	4440	1728	9017	6306	3596	0887	8178	5470	2762	0055	31
30	7964	5249	2534	9821	7107	4395	1683	8972	6261	3551	0842	8133	5425	2717	0010	30
31	7918	5203	2489	9775	7062	4350	1638	8927	6216	3506	0797	8088	5380	2672	9965	29
32	7873	5158	2444	9730	7017	4305	1593	8881	6171	3461	0751	8043	5334	2627	9920	28
33	7828	5113	2399	9685	6972	4259	1547	8836	6126	3416	0706	7997	5289	2582	9875	27
34	7783	5068	2353	9640	6927	4214	1502	8791	6080	3370	0661	7952	5244	2537	9830	26
35	7737	5022	2308	9594	6881	4169	1457	8746	6035	3325	0616	7907	5199	2492	9785	25
36	7692	4977	2263	9549	6836	4124	1412	8701	5990	3280	0571	7862	5154	2446	9739	24
37	7647	4932	2218	9504	6791	4079	1367	8656	5945	3235	0526	7817	5109	2401	9694	23
38	7601	4887	2172	9459	6746	4033	1322	8610	5900	3190	0481	7772	5064	2356	9649	22
39	7556	4841	2127	9414	6700	3988	1276	8565	5855	3145	0435	7727	5019	2311	9604	21
40	7511	4796	2082	9368	6655	3943	1231	8520	5809	3100	0390	7682	4973	2266	9559	20
41	7466	4751	2037	9323	6610	3898	1186	8475	5764	3054	0345	7636	4928	2221	9514	19
42	7420	4706	1991	9278	6565	3853	1141	8430	5719	3009	0300	7591	4883	2176	9469	18
43	7375	4660	1946	9233	6520	3807	1096	8384	5674	2964	0255	7546	4838	2131	9424	17
44	7330	4615	1901	9187	6474	3762	1050	8339	5629	2919	0210	7501	4793	2085	9379	16
45	7285	4570	1856	9142	6429	3717	1005	8294	5584	2874	0164	7456	4748	2040	9333	15
46	7239	4525	1811	9097	6384	3672	0960	8249	5538	2829	0119	7411	4703	1995	9288	14
47	7194	4479	1765	9052	6339	3627	0915	8204	5493	2783	0074	7366	4658	1950	9243	13
48	7149	4434	1720	9007	6294	3581	0870	8159	5448	2738	0029	7320	4612	1905	9198	12
49	7104	4389	1675	8961	6248	3536	0824	8113	5403	2693	9984	7275	4567	1860	9153	11
50	7058	4344	1630	8916	6203	3491	0779	8068	5358	2648	9939	7230	4522	1815	9108	10
51	7013	4298	1584	8871	6158	3446	0734	8023	5313	2603	9894	7185	4477	1770	9063	9
52	6968	4253	1539	8826	6113	3401	0689	7978	5267	2558	9848	7140	4432	1725	9018	8
53	6923	4208	1494	8780	6068	3355	0644	7933	5222	2512	9803	7095	4387	1679	8973	7
54	6877	4163	1449	8735	6022	3310	0598	7887	5177	2467	9758	7050	4342	1634	8928	6
55	6832	4118	1403	8690	5977	3265	0553	7842	5132	2422	9713	7004	4296	1589	8882	5
56	6787	4072	1358	8645	5932	3220	0508	7797	5087	2377	9668	6959	4251	1544	8837	4
57	6742	4027	1313	8600	5887	3175	0463	7752	5042	2332	9623	6914	4206	1499	8792	3
58	6696	3982	1268	8554	5842	3129	0418	7707	4996	2287	9578	6869	4161	1454	8747	2
59	6651	3937	1223	8509	5796	3084	0373	7662	4951	2242	9532	6824	4116	1409	8702	1
60	6606	3891	1177	8464	5751	3039	0327	7616	4906	2196	9487	6779	4071	1364	8657	0
	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

34 Deg. Sine

"	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9. 753	9. 753	9. 753	9. 753	9. 753	9. 754	9. 754	9. 754	9. 754	9. 754	9. 754	9. 755	9. 755	9. 755	9. 755
0	1280	3118	4954	6790	8624	0457	2288	4119	5949	7777	9604	1431	3256	5080	6902
1	1311	3148	4985	6820	8654	0487	2319	4150	5979	7808	9635	1461	3286	5110	6933
2	1342	3179	5015	6851	8685	0518	2350	4180	6010	7838	9665	1491	3316	5140	6963
3	1372	3210	5046	6881	8715	0548	2380	4211	6040	7869	9696	1522	3347	5171	6993
4	1403	3240	5077	6912	8746	0579	2411	4241	6071	7899	9726	1552	3377	5201	7024
5	1433	3271	5107	6942	8776	0609	2441	4272	6101	7929	9757	1583	3408	5231	7054
6	1464	3302	5138	6973	8807	0640	2472	4302	6132	7960	9787	1613	3438	5262	7084
7	1495	3332	5168	7004	8838	0670	2502	4333	6162	7990	9818	1644	3468	5292	7115
8	1525	3363	5199	7034	8868	0701	2533	4363	6193	8021	9848	1674	3499	5323	7145
9	1556	3393	5230	7065	8899	0731	2563	4394	6223	8051	9878	1704	3529	5353	7176
10	1587	3424	5260	7095	8929	0762	2594	4424	6254	8082	9909	1735	3560	5383	7206
11	1617	3455	5291	7126	8960	0793	2624	4455	6284	8112	9939	1765	3590	5414	7236
12	1648	3485	5321	7156	8990	0823	2655	4485	6315	8143	9970	1796	3620	5444	7267
13	1679	3516	5352	7187	9021	0854	2685	4516	6345	8173	0000	1826	3651	5475	7297
14	1709	3546	5383	7218	9051	0884	2716	4546	6375	8204	0031	1857	3681	5505	7327
15	1740	3577	5413	7248	9082	0915	2746	4577	6406	8234	0061	1887	3712	5535	7358
16	1770	3608	5444	7279	9113	0945	2777	4607	6436	8265	0092	1917	3742	5566	7388
17	1801	3638	5474	7309	9143	0976	2807	4638	6467	8295	0122	1948	3773	5596	7419
18	1832	3669	5505	7340	9174	1006	2838	4668	6497	8325	0152	1978	3803	5626	7449
19	1862	3699	5536	7370	9204	1037	2868	4699	6528	8356	0183	2009	3833	5657	7479
20	1893	3730	5566	7401	9235	1067	2899	4729	6558	8386	0213	2039	3864	5687	7510
21	1924	3761	5597	7432	9265	1098	2929	4760	6589	8417	0244	2069	3894	5718	7540
22	1954	3791	5627	7462	9296	1128	2960	4790	6619	8447	0274	2100	3925	5748	7570
23	1985	3822	5658	7493	9326	1159	2990	4821	6650	8478	0305	2130	3955	5778	7601
24	2015	3853	5688	7523	9357	1189	3021	4851	6680	8508	0335	2161	3985	5809	7631
25	2046	3883	5719	7554	9388	1220	3051	4882	6711	8539	0365	2191	4016	5839	7661
26	2077	3914	5750	7584	9418	1251	3082	4912	6741	8569	0396	2222	4046	5870	7692
27	2107	3944	5780	7615	9449	1281	3112	4943	6772	8600	0426	2252	4077	5900	7722
28	2138	3975	5811	7646	9479	1312	3143	4973	6802	8630	0457	2282	4107	5930	7752
29	2169	4006	5841	7676	9510	1342	3173	5004	6833	8660	0487	2313	4137	5961	7783
30	2199	4036	5872	7707	9540	1373	3204	5034	6863	8691	0518	2343	4168	5991	7813
31	2230	4067	5903	7737	9571	1403	3234	5065	6894	8721	0548	2374	4198	6021	7844
32	2260	4097	5933	7768	9601	1434	3265	5095	6924	8752	0579	2404	4229	6052	7874
33	2291	4128	5964	7798	9632	1464	3295	5126	6955	8782	0609	2435	4259	6082	7904
34	2322	4159	5994	7829	9662	1495	3326	5156	6985	8813	0639	2465	4289	6113	7935
35	2352	4189	6025	7860	9693	1525	3357	5187	7015	8843	0670	2495	4320	6143	7965
36	2383	4220	6056	7890	9724	1556	3387	5217	7046	8874	0700	2526	4350	6173	7995
37	2414	4250	6086	7921	9754	1586	3418	5248	7076	8904	0731	2556	4380	6204	8026
38	2444	4281	6117	7951	9785	1617	3448	5278	7107	8935	0761	2587	4411	6234	8056
39	2475	4312	6147	7982	9815	1647	3479	5309	7137	8965	0792	2617	4441	6264	8086
40	2505	4342	6178	8012	9846	1678	3509	5339	7168	8995	0822	2647	4472	6295	8117
41	2536	4373	6208	8043	9876	1709	3540	5369	7198	9026	0852	2678	4502	6325	8147
42	2567	4403	6239	8074	9907	1739	3570	5400	7229	9056	0883	2708	4532	6356	8178
43	2597	4434	6270	8104	9937	1770	3601	5430	7259	9087	0913	2739	4563	6386	8208
44	2628	4465	6300	8135	9968	1800	3631	5461	7290	9117	0944	2769	4593	6416	8238
45	2659	4495	6331	8165	9998	1831	3662	5491	7320	9148	0974	2799	4624	6447	8269
46	2689	4526	6361	8196	0029	1861	3692	5522	7351	9178	1005	2830	4654	6477	8299
47	2720	4556	6392	8226	0060	1892	3723	5552	7381	9209	1035	2860	4684	6507	8329
48	2750	4587	6423	8257	0090	1922	3753	5583	7412	9239	1065	2891	4715	6538	8360
49	2781	4618	6453	8287	0121	1953	3784	5613	7442	9270	1096	2921	4745	6568	8390
50	2812	4648	6484	8318	0151	1983	3814	5644	7473	9300	1126	2952	4776	6599	8420
51	2842	4679	6514	8349	0182	2014	3845	5674	7503	9330	1157	2982	4806	6629	8451
52	2873	4709	6545	8379	0212	2044	3875	5705	7533	9361	1187	3012	4836	6659	8481
53	2904	4740	6575	8410	0243	2075	3906	5735	7564	9391	1218	3043	4867	6690	8511
54	2934	4771	6606	8440	0273	2105	3936	5766	7594	9422	1248	3073	4897	6720	8542
55	2965	4801	6637	8471	0304	2136	3967	5796	7625	9452	1278	3104	4928	6750	8572
56	2995	4832	6667	8501	0334	2166	3997	5827	7655	9483	1309	3134	4958	6781	8602
57	3026	4862	6698	8532	0365	2197	4028	5857	7686	9513	1339	3164	4988	6811	8633
58	3057	4893	6728	8563	0396	2227	4058	5888	7716	9544	1370	3195	5019	6842	8663
59	3087	4924	6759	8593	0426	2258	4089	5918	7747	9574	1400	3225	5049	6872	8694
60	3118	4954	6790	8624	0457	2288	4119	5949	7777	9604	1431	3256	5080	6902	8724
"	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Sine Deg. 55

34 Deg. Co-Sine

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	"
9. 915	9. 915	9. 915	9. 915	9. 915	9. 915	9. 915	9. 915	9. 915	9. 915	9. 915	9. 915	9. 914	9. 914	9. 914	
9937	9069	8200	7330	6460	5589	4718	3846	2974	2101	1228	0354	9479	8604	7729	60
9923	9054	8185	7315	6445	5575	4703	3832	2959	2086	1213	0339	9465	8590	7714	59
9908	9040	8171	7301	6431	5560	4689	3817	2945	2072	1198	0324	9450	8575	7699	58
9894	9025	8156	7286	6416	5546	4674	3803	2930	2057	1184	0310	9435	8560	7685	57
9879	9011	8142	7272	6402	5531	4660	3788	2916	2043	1169	0295	9421	8546	7670	56
9865	8996	8127	7257	6387	5517	4645	3773	2901	2028	1155	0281	9406	8531	7656	55
9850	8982	8113	7243	6373	5502	4631	3759	2887	2014	1140	0266	9392	8517	7641	54
9836	8967	8098	7228	6358	5488	4616	3744	2872	1999	1126	0252	9377	8502	7626	53
9821	8953	8084	7214	6344	5473	4602	3730	2857	1985	1111	0237	9362	8487	7612	52
9807	8938	8069	7199	6329	5458	4587	3715	2843	1970	1097	0222	9348	8473	7597	51
9792	8924	8055	7185	6315	5444	4573	3701	2828	1955	1082	0208	9333	8458	7583	50
9778	8909	8040	7170	6300	5429	4558	3686	2814	1941	1067	0193	9319	8444	7568	49
9763	8895	8026	7156	6286	5415	4544	3672	2799	1926	1053	0179	9304	8429	7553	48
9749	8880	8011	7141	6271	5400	4529	3657	2785	1912	1038	0164	9290	8414	7539	47
9735	8866	7997	7127	6257	5386	4515	3643	2770	1897	1024	0150	9275	8400	7524	46
9720	8851	7982	7112	6242	5371	4500	3628	2756	1883	1009	0135	9260	8385	7510	45
9706	8837	7968	7098	6228	5357	4485	3614	2741	1868	0995	0120	9246	8371	7495	44
9691	8822	7953	7083	6213	5342	4471	3599	2727	1854	0980	0106	9231	8356	7480	43
9677	8808	7939	7069	6199	5328	4456	3584	2712	1839	0965	0091	9217	8341	7466	42
9662	8793	7924	7054	6184	5313	4442	3570	2697	1824	0951	0077	9202	8327	7451	41
9648	8779	7910	7040	6170	5299	4427	3555	2683	1810	0936	0062	9188	8312	7437	40
9633	8765	7895	7025	6155	5284	4413	3541	2668	1795	0922	0048	9173	8298	7422	39
9619	8750	7881	7011	6141	5270	4398	3526	2654	1781	0907	0033	9158	8283	7407	38
9604	8736	7866	6996	6126	5255	4384	3512	2639	1766	0893	0018	9144	8269	7393	37
9590	8721	7852	6982	6112	5241	4369	3497	2625	1752	0878	0004	9129	8254	7378	36
9575	8707	7837	6967	6097	5226	4355	3483	2610	1737	0863	9989	9115	8239	7364	35
9561	8692	7823	6953	6083	5212	4340	3468	2596	1723	0849	9975	9100	8225	7349	34
9546	8678	7808	6938	6068	5197	4326	3454	2581	1708	0834	9960	9085	8210	7334	33
9532	8663	7794	6924	6054	5183	4311	3439	2567	1693	0820	9946	9071	8196	7320	32
9517	8649	7779	6909	6039	5168	4297	3425	2552	1679	0805	9931	9056	8181	7305	31
9503	8634	7765	6895	6025	5154	4282	3410	2537	1664	0791	9916	9042	8166	7291	30
9488	8620	7750	6880	6010	5139	4268	3396	2523	1650	0776	9902	9027	8152	7276	29
9474	8605	7736	6866	5996	5125	4253	3381	2508	1635	0762	9887	9013	8137	7261	28
9460	8591	7721	6851	5981	5110	4238	3366	2494	1621	0747	9873	8998	8123	7247	27
9445	8576	7707	6837	5966	5096	4224	3352	2479	1606	0732	9858	8983	8108	7232	26
9431	8562	7692	6822	5952	5081	4209	3337	2465	1592	0718	9844	8969	8093	7218	25
9416	8547	7678	6808	5937	5066	4195	3323	2450	1577	0703	9829	8954	8079	7203	24
9402	8533	7663	6793	5923	5052	4180	3308	2436	1562	0689	9814	8940	8064	7188	23
9387	8518	7649	6779	5908	5037	4166	3294	2421	1548	0674	9800	8925	8050	7174	22
9373	8504	7634	6764	5894	5023	4151	3279	2407	1533	0660	9785	8910	8035	7159	21
9358	8489	7620	6750	5879	5008	4137	3265	2392	1519	0645	9771	8896	8020	7145	20
9344	8475	7605	6735	5865	4994	4122	3250	2377	1504	0630	9756	8881	8006	7130	19
9329	8460	7591	6721	5850	4979	4108	3236	2363	1490	0616	9742	8867	7991	7115	18
9315	8446	7576	6706	5836	4965	4093	3221	2348	1475	0601	9727	8852	7977	7101	17
9300	8431	7562	6692	5821	4950	4079	3206	2334	1461	0587	9712	8837	7962	7086	16
9286	8417	7547	6677	5807	4936	4064	3192	2319	1446	0572	9698	8823	7947	7071	15
9271	8402	7533	6663	5792	4921	4050	3177	2305	1431	0558	9683	8808	7933	7057	14
9257	8388	7518	6648	5778	4907	4035	3163	2290	1417	0543	9669	8794	7918	7042	13
9242	8373	7504	6634	5763	4892	4021	3148	2276	1402	0528	9654	8779	7904	7028	12
9228	8359	7489	6619	5749	4878	4006	3134	2261	1388	0514	9639	8765	7889	7013	11
9213	8344	7475	6605	5734	4863	3991	3119	2246	1373	0499	9625	8750	7874	6998	10
9199	8330	7460	6590	5720	4849	3977	3105	2232	1359	0485	9610	8735	7860	6984	9
9184	8315	7446	6576	5705	4834	3962	3090	2217	1344	0470	9596	8721	7845	6969	8
9170	8301	7431	6561	5691	4820	3948	3076	2203	1329	0456	9581	8706	7831	6955	7
9156	8286	7417	6547	5676	4805	3933	3061	2188	1315	0441	9567	8692	7816	6940	6
9141	8272	7402	6532	5662	4791	3919	3047	2174	1300	0426	9552	8677	7802	6925	5
9127	8258	7388	6518	5647	4776	3904	3032	2159	1286	0412	9537	8662	7787	6911	4
9112	8243	7373	6503	5633	4761	3890	3017	2145	1271	0397	9523	8648	7772	6896	3
9098	8229	7359	6489	5618	4747	3875	3003	2130	1257	0383	9508	8633	7758	6882	2
9083	8214	7344	6474	5604	4732	3861	2988	2116	1242	0368	9494	8619	7743	6867	1
9069	8200	7330	6460	5589	4718	3846	2974	2101	1228	0354	9479	8604	7729	6852	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	"

Sine Deg. 55

34 Deg. Tangent

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 837	9. 837	9. 837	9. 837	9. 838	9. 838	9. 838	9. 839	9. 839	9. 839	9. 839	9. 840	9. 840	9. 840	9. 840
0	1343	4049	6755	9460	2164	4867	7571	0273	2975	5676	8377	1077	3776	6475	9174
1	1388	4094	6800	9505	2209	4913	7616	0318	3020	5721	8422	1122	3821	6520	9219
2	1433	4139	6845	9550	2254	4958	7661	0363	3065	5766	8467	1167	3866	6565	9264
3	1478	4184	6890	9595	2299	5003	7706	0408	3110	5811	8512	1212	3911	6610	9309
4	1524	4230	6935	9640	2344	5048	7751	0453	3155	5856	8557	1257	3956	6655	9354
5	1569	4275	6980	9685	2389	5093	7796	0498	3200	5901	8602	1302	4001	6700	9399
6	1614	4320	7025	9730	2434	5138	7841	0543	3245	5946	8647	1347	4046	6745	9444
7	1659	4365	7070	9775	2479	5183	7886	0588	3290	5991	8692	1392	4091	6790	9489
8	1704	4410	7115	9820	2524	5228	7931	0633	3335	6036	8737	1437	4136	6835	9533
9	1749	4455	7160	9865	2569	5273	7976	0678	3380	6081	8782	1482	4181	6880	9578
10	1794	4500	7206	9910	2614	5318	8021	0723	3425	6126	8827	1527	4226	6925	9623
11	1839	4545	7251	9955	2660	5363	8066	0768	3470	6171	8872	1572	4271	6970	9668
12	1884	4590	7296	0000	2705	5408	8111	0813	3515	6216	8917	1617	4316	7015	9713
13	1929	4635	7341	0046	2750	5453	8156	0858	3560	6261	8962	1662	4361	7060	9758
14	1975	4681	7386	0091	2795	5498	8201	0904	3605	6306	9007	1707	4406	7105	9803
15	2020	4726	7431	0136	2840	5543	8246	0949	3650	6351	9052	1752	4451	7150	9848
16	2065	4771	7476	0181	2885	5588	8291	0994	3695	6396	9097	1797	4496	7195	9893
17	2110	4816	7521	0226	2930	5633	8336	1039	3740	6441	9142	1842	4541	7240	9938
18	2155	4861	7566	0271	2975	5678	8381	1084	3785	6486	9187	1887	4586	7285	9983
19	2200	4906	7611	0316	3020	5724	8426	1129	3830	6531	9232	1932	4631	7330	0028
20	2245	4951	7656	0361	3065	5769	8471	1174	3875	6576	9277	1977	4676	7375	0073
21	2290	4996	7701	0406	3110	5814	8516	1219	3920	6622	9322	2022	4721	7420	0118
22	2335	5041	7747	0451	3155	5859	8562	1264	3965	6667	9367	2067	4766	7465	0163
23	2381	5086	7792	0496	3200	5904	8607	1309	4010	6712	9412	2112	4811	7510	0208
24	2426	5131	7837	0541	3245	5949	8652	1354	4055	6757	9457	2157	4856	7555	0253
25	2471	5177	7882	0586	3290	5994	8697	1399	4101	6802	9502	2202	4901	7600	0298
26	2516	5222	7927	0631	3335	6039	8742	1444	4146	6847	9547	2247	4946	7645	0343
27	2561	5267	7972	0677	3381	6084	8787	1489	4191	6892	9592	2292	4991	7690	0388
28	2606	5312	8017	0722	3426	6129	8832	1534	4236	6937	9637	2337	5036	7735	0433
29	2651	5357	8062	0767	3471	6174	8877	1579	4281	6982	9682	2382	5081	7780	0478
30	2696	5402	8107	0812	3516	6219	8922	1624	4326	7027	9727	2427	5126	7825	0523
31	2741	5447	8152	0857	3561	6264	8967	1669	4371	7072	9772	2472	5171	7870	0568
32	2786	5492	8197	0902	3606	6309	9012	1714	4416	7117	9817	2517	5216	7915	0613
33	2832	5537	8242	0947	3651	6354	9057	1759	4461	7162	9862	2562	5261	7960	0658
34	2877	5582	8288	0992	3696	6399	9102	1804	4506	7207	9907	2607	5306	8005	0703
35	2922	5627	8333	1037	3741	6444	9147	1849	4551	7252	9952	2652	5351	8050	0747
36	2967	5673	8378	1082	3786	6489	9192	1894	4596	7297	9997	2697	5396	8094	0792
37	3012	5718	8423	1127	3831	6534	9237	1939	4641	7342	0042	2742	5441	8139	0837
38	3057	5763	8468	1172	3876	6580	9282	1984	4686	7387	0087	2787	5486	8184	0882
39	3102	5808	8513	1217	3921	6625	9327	2029	4731	7432	0132	2832	5531	8229	0927
40	3147	5853	8558	1262	3966	6670	9372	2074	4776	7477	0177	2877	5576	8274	0972
41	3192	5898	8603	1308	4011	6715	9417	2119	4821	7522	0222	2922	5621	8319	1017
42	3237	5943	8648	1353	4056	6760	9462	2164	4866	7567	0267	2967	5666	8364	1062
43	3283	5988	8693	1398	4102	6805	9507	2209	4911	7612	0312	3012	5711	8409	1107
44	3328	6033	8738	1443	4147	6850	9552	2254	4956	7657	0357	3057	5756	8454	1152
45	3373	6078	8783	1488	4192	6895	9597	2300	5001	7702	0402	3102	5801	8499	1197
46	3418	6123	8828	1533	4237	6940	9643	2345	5046	7747	0447	3147	5846	8544	1242
47	3463	6169	8874	1578	4282	6985	9688	2390	5091	7792	0492	3192	5891	8589	1287
48	3508	6214	8919	1623	4327	7030	9733	2435	5136	7837	0537	3237	5936	8634	1332
49	3553	6259	8964	1668	4372	7075	9778	2480	5181	7882	0582	3282	5981	8679	1377
50	3598	6304	9009	1713	4417	7120	9823	2525	5226	7927	0627	3327	6026	8724	1422
51	3643	6349	9054	1758	4462	7165	9868	2570	5271	7972	0672	3372	6071	8769	1467
52	3688	6394	9099	1803	4507	7210	9913	2615	5316	8017	0717	3417	6116	8814	1512
53	3734	6439	9144	1848	4552	7255	9958	2660	5361	8062	0762	3462	6161	8859	1557
54	3779	6484	9189	1893	4597	7300	0003	2705	5406	8107	0807	3507	6206	8904	1602
55	3824	6529	9234	1938	4642	7345	0048	2750	5451	8152	0852	3552	6251	8949	1647
56	3869	6574	9279	1984	4687	7390	0093	2795	5496	8197	0897	3597	6296	8994	1692
57	3914	6619	9324	2029	4732	7435	0138	2840	5541	8242	0942	3642	6340	9039	1737
58	3959	6664	9369	2074	4777	7480	0183	2885	5586	8287	0987	3687	6385	9084	1782
59	4004	6710	9414	2119	4822	7526	0228	2930	5631	8332	1032	3732	6430	9129	1827
60	4049	6755	9460	2164	4867	7571	0273	2975	5676	8377	1077	3776	6475	9174	1871
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Tangent Deg. 55

34 Deg. Co-Tangent

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
10. 162	10. 162	10. 162	10. 162	10. 161	10. 161	10. 161	10. 160	10. 160	10. 160	10. 160	10. 159	10. 159	10. 159	10. 159	″
8657	5951	3245	0540	7836	5133	2429	9727	7025	4324	1623	8923	6224	3525	0826	60
8612	5906	3200	0495	7791	5087	2384	9682	6980	4279	1578	8878	6179	3480	0781	59
8567	5861	3155	0450	7746	5042	2339	9637	6935	4234	1533	8833	6134	3435	0736	58
8522	5816	3110	0405	7701	4997	2294	9592	6890	4189	1488	8788	6089	3390	0691	57
8476	5770	3065	0360	7656	4952	2249	9547	6845	4144	1443	8743	6044	3345	0646	56
8431	5725	3020	0315	7611	4907	2204	9502	6800	4099	1398	8698	5999	3300	0601	55
8386	5680	2975	0270	7566	4862	2159	9457	6755	4054	1353	8653	5954	3255	0556	54
8341	5635	2930	0225	7521	4817	2114	9412	6710	4009	1308	8608	5909	3210	0511	53
8296	5590	2885	0180	7476	4772	2069	9367	6665	3964	1263	8563	5864	3165	0467	52
8251	5545	2840	0135	7431	4727	2024	9322	6620	3919	1218	8518	5819	3120	0422	51
8206	5500	2794	0090	7386	4682	1979	9277	6575	3874	1173	8473	5774	3075	0377	50
8161	5455	2749	0045	7340	4637	1934	9232	6530	3829	1128	8428	5729	3030	0332	49
8116	5410	2704	0000	7295	4592	1889	9187	6485	3784	1083	8383	5684	2985	0287	48
8071	5365	2659	9954	7250	4547	1844	9142	6440	3739	1038	8338	5639	2940	0242	47
8025	5319	2614	9909	7205	4502	1799	9096	6395	3694	0993	8293	5594	2895	0197	46
7980	5274	2569	9864	7160	4457	1754	9051	6350	3649	0948	8248	5549	2850	0152	45
7935	5229	2524	9819	7115	4412	1709	9006	6305	3604	0903	8203	5504	2805	0107	44
7890	5184	2479	9774	7070	4367	1664	8961	6260	3559	0858	8158	5459	2760	0062	43
7845	5139	2434	9729	7025	4322	1619	8916	6215	3514	0813	8113	5414	2715	0017	42
7800	5094	2389	9684	6980	4276	1574	8871	6170	3469	0768	8068	5369	2670	9972	41
7755	5049	2344	9639	6935	4231	1529	8826	6125	3424	0723	8023	5324	2625	9927	40
7710	5004	2299	9594	6890	4186	1484	8781	6080	3378	0678	7978	5279	2580	9882	39
7665	4959	2253	9549	6845	4141	1438	8736	6035	3333	0633	7933	5234	2535	9837	38
7619	4914	2208	9504	6800	4096	1393	8691	5990	3288	0588	7888	5189	2490	9792	37
7574	4869	2163	9459	6755	4051	1348	8646	5945	3243	0543	7843	5144	2445	9747	36
7529	4823	2118	9414	6710	4006	1303	8601	5899	3198	0498	7798	5099	2400	9702	35
7484	4778	2073	9369	6665	3961	1258	8556	5854	3153	0453	7753	5054	2355	9657	34
7439	4733	2028	9323	6619	3916	1213	8511	5809	3108	0408	7708	5009	2310	9612	33
7394	4688	1983	9278	6574	3871	1168	8466	5764	3063	0363	7663	4964	2265	9567	32
7349	4643	1938	9233	6529	3826	1123	8421	5719	3018	0318	7618	4919	2220	9522	31
7304	4598	1893	9188	6484	3781	1078	8376	5674	2973	0273	7573	4874	2175	9477	30
7259	4553	1848	9143	6439	3736	1033	8331	5629	2928	0228	7528	4829	2130	9432	29
7214	4508	1803	9098	6394	3691	0988	8286	5584	2883	0183	7483	4784	2085	9387	28
7168	4463	1758	9053	6349	3646	0943	8241	5539	2838	0138	7438	4739	2040	9342	27
7123	4418	1712	9008	6304	3601	0898	8196	5494	2793	0093	7393	4694	1995	9297	26
7078	4373	1667	8963	6259	3556	0853	8151	5449	2748	0048	7348	4649	1950	9253	25
7033	4327	1622	8918	6214	3511	0808	8106	5404	2703	0003	7303	4604	1906	9208	24
6988	4282	1577	8873	6169	3466	0763	8061	5359	2658	9958	7258	4559	1861	9163	23
6943	4237	1532	8828	6124	3420	0718	8016	5314	2613	9913	7213	4514	1816	9118	22
6898	4192	1487	8783	6079	3375	0673	7971	5269	2568	9868	7168	4469	1771	9073	21
6853	4147	1442	8738	6034	3330	0628	7926	5224	2523	9823	7123	4424	1726	9028	20
6808	4102	1397	8692	5989	3285	0583	7881	5179	2478	9778	7078	4379	1681	8983	19
6763	4057	1352	8647	5944	3240	0538	7836	5134	2433	9733	7033	4334	1636	8938	18
6717	4012	1307	8602	5898	3195	0493	7791	5089	2388	9688	6988	4289	1591	8893	17
6672	3967	1262	8557	5853	3150	0448	7746	5044	2343	9643	6943	4244	1546	8848	16
6627	3922	1217	8512	5808	3105	0403	7700	4999	2298	9598	6898	4199	1501	8803	15
6582	3877	1172	8467	5763	3060	0357	7655	4954	2253	9553	6853	4154	1456	8758	14
6537	3831	1126	8422	5718	3015	0312	7610	4909	2208	9508	6808	4109	1411	8713	13
6492	3786	1081	8377	5673	2970	0267	7565	4864	2163	9463	6763	4064	1366	8668	12
6447	3741	1036	8332	5628	2925	0222	7520	4819	2118	9418	6718	4019	1321	8623	11
6402	3696	0991	8287	5583	2880	0177	7475	4774	2073	9373	6673	3974	1276	8578	10
6357	3651	0946	8242	5538	2835	0132	7430	4729	2028	9328	6628	3929	1231	8533	9
6312	3606	0901	8197	5493	2790	0087	7385	4684	1983	9283	6583	3884	1186	8488	8
6266	3561	0856	8152	5448	2745	0042	7340	4639	1938	9238	6538	3839	1141	8443	7
6221	3516	0811	8107	5403	2700	9997	7295	4594	1893	9193	6493	3794	1096	8398	6
6176	3471	0766	8062	5358	2655	9952	7250	4549	1848	9148	6448	3749	1051	8353	5
6131	3426	0721	8016	5313	2610	9907	7205	4504	1803	9103	6403	3704	1006	8308	4
6086	3381	0676	7971	5268	2565	9862	7160	4459	1758	9058	6358	3660	0961	8263	3
6041	3336	0631	7926	5223	2520	9817	7115	4414	1713	9013	6313	3615	0916	8218	2
5996	3290	0586	7881	5178	2474	9772	7070	4369	1668	8968	6268	3570	0871	8173	1
5951	3245	0540	7836	5133	2429	9727	7025	4324	1623	8923	6224	3525	0826	8129	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Tangent Deg. 55

"	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9. 755	9. 756	9. 756	9. 756	9. 756	9. 756	9. 756	9. 757	9. 757	9. 757	9. 757	9. 757	9. 758	9. 758	9. 758
0	8724	0544	2364	4182	5999	7815	9630	1444	3256	5068	6878	8687	0495	2302	4108
1	8754	0575	2394	4212	6029	7845	9660	1474	3286	5098	6908	8717	0526	2332	4138
2	8785	0605	2424	4243	6060	7876	9690	1504	3317	5128	6938	8748	0556	2363	4168
3	8815	0635	2455	4273	6090	7906	9721	1534	3347	5158	6969	8778	0586	2393	4199
4	8845	0666	2485	4303	6120	7936	9751	1564	3377	5188	6999	8808	0616	2423	4229
5	8876	0696	2515	4333	6150	7966	9781	1595	3407	5219	7029	8838	0646	2453	4259
6	8906	0726	2546	4364	6181	7997	9811	1625	3437	5249	7059	8868	0676	2483	4289
7	8936	0757	2576	4394	6211	8027	9842	1655	3468	5279	7089	8898	0706	2513	4319
8	8967	0787	2606	4424	6241	8057	9872	1685	3498	5309	7119	8928	0736	2543	4349
9	8997	0817	2637	4455	6272	8087	9902	1716	3528	5339	7150	8959	0767	2573	4379
10	9027	0848	2667	4485	6302	8118	9932	1746	3558	5370	7180	8989	0797	2603	4409
11	9058	0878	2697	4515	6332	8148	9963	1776	3588	5400	7210	9019	0827	2634	4439
12	9088	0908	2727	4545	6362	8178	9993	1806	3619	5430	7240	9049	0857	2664	4469
13	9118	0939	2758	4576	6393	8208	0023	1836	3649	5460	7270	9079	0887	2694	4499
14	9149	0969	2788	4606	6423	8239	0053	1867	3679	5490	7300	9109	0917	2724	4529
15	9179	0999	2818	4636	6453	8269	0083	1897	3709	5520	7330	9139	0947	2754	4560
16	9209	1030	2849	4667	6483	8299	0114	1927	3739	5551	7361	9170	0977	2784	4590
17	9240	1060	2879	4697	6514	8329	0144	1957	3770	5581	7391	9200	1007	2814	4620
18	9270	1090	2909	4727	6544	8360	0174	1988	3800	5611	7421	9230	1038	2844	4650
19	9301	1121	2940	4758	6574	8390	0204	2018	3830	5641	7451	9260	1068	2874	4680
20	9331	1151	2970	4788	6605	8420	0235	2048	3860	5671	7481	9290	1098	2904	4710
21	9361	1181	3000	4818	6635	8450	0265	2078	3890	5701	7511	9320	1128	2935	4740
22	9392	1212	3031	4848	6665	8481	0295	2108	3921	5732	7542	9350	1158	2965	4770
23	9422	1242	3061	4879	6695	8511	0325	2139	3951	5762	7572	9381	1188	2995	4800
24	9452	1272	3091	4909	6726	8541	0356	2169	3981	5792	7602	9411	1218	3025	4830
25	9483	1303	3121	4939	6756	8571	0386	2199	4011	5822	7632	9441	1248	3055	4860
26	9513	1333	3152	4970	6786	8602	0416	2229	4041	5852	7662	9471	1279	3085	4890
27	9543	1363	3182	5000	6816	8632	0446	2259	4072	5882	7692	9501	1309	3115	4921
28	9574	1394	3212	5030	6847	8662	0476	2290	4102	5913	7723	9531	1339	3145	4951
29	9604	1424	3243	5060	6877	8692	0507	2320	4132	5943	7753	9561	1369	3175	4981
30	9634	1454	3273	5091	6907	8723	0537	2350	4162	5973	7783	9591	1399	3205	5011
31	9665	1485	3303	5121	6937	8753	0567	2380	4192	6003	7813	9622	1429	3236	5041
32	9695	1515	3334	5151	6968	8783	0597	2410	4222	6033	7843	9652	1459	3266	5071
33	9725	1545	3364	5182	6998	8813	0628	2441	4253	6064	7873	9682	1489	3296	5101
34	9756	1575	3394	5212	7028	8844	0658	2471	4283	6094	7903	9712	1519	3326	5131
35	9786	1606	3425	5242	7059	8874	0688	2501	4313	6124	7934	9742	1550	3356	5161
36	9816	1636	3455	5272	7089	8904	0718	2531	4343	6154	7964	9772	1580	3386	5191
37	9847	1666	3485	5303	7119	8934	0748	2562	4373	6184	7994	9802	1610	3416	5221
38	9877	1697	3515	5333	7149	8965	0779	2592	4404	6214	8024	9833	1640	3446	5251
39	9907	1727	3546	5363	7180	8995	0809	2622	4434	6245	8054	9863	1670	3476	5281
40	9938	1757	3576	5393	7210	9025	0839	2652	4464	6275	8084	9893	1700	3506	5312
41	9968	1788	3606	5424	7240	9055	0869	2682	4494	6305	8114	9923	1730	3537	5342
42	9998	1818	3637	5454	7270	9086	0900	2713	4524	6335	8145	9953	1760	3567	5372
43	0029	1848	3667	5484	7301	9116	0930	2743	4555	6365	8175	9983	1791	3597	5402
44	0059	1879	3697	5515	7331	9146	0960	2773	4585	6395	8205	0013	1821	3627	5432
45	0089	1909	3728	5545	7361	9176	0990	2803	4615	6426	8235	0043	1851	3657	5462
46	0120	1939	3758	5575	7391	9207	1021	2833	4645	6456	8265	0074	1881	3687	5492
47	0150	1970	3788	5605	7422	9237	1051	2864	4675	6486	8295	0104	1911	3717	5522
48	0180	2000	3818	5636	7452	9267	1081	2894	4705	6516	8326	0134	1941	3747	5552
49	0211	2030	3849	5666	7482	9297	1111	2924	4736	6546	8356	0164	1971	3777	5582
50	0241	2061	3879	5696	7512	9328	1141	2954	4766	6576	8386	0194	2001	3807	5612
51	0271	2091	3909	5727	7543	9358	1172	2984	4796	6607	8416	0224	2031	3837	5642
52	0302	2121	3940	5757	7573	9388	1202	3015	4826	6637	8446	0254	2062	3868	5672
53	0332	2152	3970	5787	7603	9418	1232	3045	4856	6667	8476	0285	2092	3898	5703
54	0362	2182	4000	5817	7634	9448	1262	3075	4887	6697	8506	0315	2122	3928	5733
55	0393	2212	4030	5848	7664	9479	1293	3105	4917	6727	8537	0345	2152	3958	5763
56	0423	2242	4061	5878	7694	9509	1323	3135	4947	6757	8567	0375	2182	3988	5793
57	0453	2273	4091	5908	7724	9539	1353	3166	4977	6788	8597	0405	2212	4018	5823
58	0484	2303	4121	5939	7755	9569	1383	3196	5007	6818	8627	0435	2242	4048	5853
59	0514	2333	4152	5969	7785	9600	1413	3226	5038	6848	8657	0465	2272	4078	5883
60	0544	2364	4182	5999	7815	9630	1444	3256	5068	6878	8687	0495	2302	4108	5913
"	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	"
9. 914	9. 914	9. 914	9. 914	9. 914	9. 914	9. 914	9. 914	9. 913	9. 913	9. 913	9. 913	9. 913	9. 913	9. 913	
6852	5976	5099	4221	3342	2464	1584	0704	9824	8943	8061	7179	6296	5413	4530	60
6838	5961	5084	4206	3328	2449	1570	0690	9809	8928	8047	7164	6282	5399	4515	59
6823	5947	5069	4192	3313	2434	1555	0675	9794	8913	8032	7150	6267	5384	4500	58
6809	5932	5055	4177	3299	2420	1540	0660	9780	8899	8017	7135	6252	5369	4485	57
6794	5917	5040	4162	3184	2405	1526	0646	9765	8884	8002	7120	6238	5354	4471	56
6779	5903	5025	4148	3269	2390	1511	0631	9750	8869	7988	7106	6223	5340	4456	55
6765	5888	5011	4133	3255	2376	1496	0616	9736	8855	7973	7091	6208	5325	4441	54
6750	5873	4996	4118	3240	2361	1482	0602	9721	8840	7958	7076	6193	5310	4426	53
6736	5859	4982	4104	3225	2346	1467	0587	9706	8825	7944	7061	6179	5295	4412	52
6721	5844	4967	4089	3211	2332	1452	0572	9692	8811	7929	7047	6164	5281	4397	51
6706	5830	4952	4074	3196	2317	1438	0558	9677	8796	7914	7032	6149	5266	4382	50
6692	5815	4938	4060	3181	2302	1423	0543	9662	8781	7900	7017	6135	5251	4367	49
6677	5800	4923	4045	3167	2288	1408	0528	9648	8767	7885	7003	6120	5237	4353	48
6663	5786	4908	4031	3152	2273	1394	0514	9633	8752	7870	6988	6105	5222	4338	47
6648	5771	4894	4016	3137	2259	1379	0499	9618	8737	7855	6973	6090	5207	4323	46
6633	5756	4879	4001	3123	2244	1364	0484	9604	8722	7841	6959	6076	5192	4308	45
6619	5742	4865	3987	3108	2229	1350	0470	9589	8708	7826	6944	6061	5178	4294	44
6604	5727	4850	3972	3094	2215	1335	0455	9574	8693	7811	6929	6046	5163	4279	43
6589	5713	4835	3957	3079	2200	1320	0440	9560	8678	7797	6914	6032	5148	4264	42
6575	5698	4821	3943	3064	2185	1306	0426	9545	8664	7782	6900	6017	5133	4250	41
6560	5683	4806	3928	3050	2171	1291	0411	9530	8649	7767	6885	6002	5119	4235	40
6546	5669	4791	3913	3035	2156	1276	0396	9516	8634	7753	6870	5987	5104	4220	39
6531	5654	4777	3899	3020	2141	1262	0382	9501	8620	7738	6856	5973	5089	4205	38
6516	5640	4762	3884	3006	2127	1247	0367	9486	8605	7723	6841	5958	5075	4191	37
6502	5625	4748	3870	2991	2112	1232	0352	9472	8590	7708	6826	5943	5060	4176	36
6487	5610	4733	3855	2976	2097	1218	0338	9457	8576	7694	6811	5929	5045	4161	35
6473	5596	4718	3840	2962	2083	1203	0323	9442	8561	7679	6797	5914	5030	4146	34
6458	5581	4704	3826	2947	2068	1188	0308	9427	8546	7664	6782	5899	5016	4132	33
6443	5566	4689	3811	2932	2053	1174	0294	9413	8531	7650	6767	5884	5001	4117	32
6429	5552	4674	3796	2918	2039	1159	0279	9398	8517	7635	6753	5870	4986	4102	31
6414	5537	4660	3782	2903	2024	1144	0264	9383	8502	7620	6738	5855	4971	4087	30
6400	5523	4645	3767	2888	2009	1130	0249	9369	8487	7606	6723	5840	4957	4073	29
6385	5508	4630	3752	2874	1995	1115	0235	9354	8473	7591	6708	5825	4942	4058	28
6370	5493	4616	3738	2859	1980	1100	0220	9339	8458	7576	6694	5811	4927	4043	27
6356	5479	4601	3723	2845	1965	1086	0205	9325	8443	7561	6679	5796	4913	4028	26
6341	5464	4587	3709	2830	1951	1071	0191	9310	8429	7547	6664	5781	4898	4014	25
6326	5449	4572	3694	2815	1936	1056	0176	9295	8414	7532	6650	5767	4883	3999	24
6312	5435	4557	3679	2801	1921	1042	0161	9281	8399	7517	6635	5752	4868	3984	23
6297	5420	4543	3665	2786	1907	1027	0147	9266	8385	7503	6620	5737	4854	3970	22
6283	5406	4528	3650	2771	1892	1012	0132	9251	8370	7488	6605	5722	4839	3955	21
6268	5391	4513	3635	2757	1877	0998	0117	9237	8355	7473	6591	5708	4824	3940	20
6253	5376	4499	3621	2742	1863	0983	0103	9222	8340	7459	6576	5693	4809	3925	19
6239	5362	4484	3606	2727	1848	0968	0088	9207	8326	7444	6561	5678	4795	3911	18
6224	5347	4470	3591	2713	1833	0954	0073	9193	8311	7429	6547	5664	4780	3896	17
6210	5333	4455	3577	2698	1819	0939	0059	9178	8296	7414	6532	5649	4765	3881	16
6195	5318	4440	3562	2683	1804	0924	0044	9163	8282	7400	6517	5634	4750	3866	15
6180	5303	4426	3547	2669	1790	0910	0029	9148	8267	7385	6502	5619	4736	3852	14
6166	5289	4411	3533	2654	1775	0895	0015	9134	8252	7370	6488	5605	4721	3837	13
6151	5274	4396	3518	2639	1760	0880	0000	9119	8238	7356	6473	5590	4706	3822	12
6137	5259	4382	3504	2625	1746	0866	9985	9104	8223	7341	6458	5575	4692	3807	11
6122	5245	4367	3489	2610	1731	0851	9971	9090	8208	7326	6444	5560	4677	3793	10
6107	5230	4352	3474	2596	1716	0836	9956	9075	8194	7311	6429	5546	4662	3778	9
6093	5216	4338	3460	2581	1702	0822	9941	9060	8179	7297	6414	5531	4647	3763	8
6078	5201	4323	3445	2566	1687	0807	9927	9046	8164	7282	6399	5516	4633	3748	7
6063	5186	4309	3430	2552	1672	0792	9912	9031	8149	7267	6385	5502	4618	3734	6
6049	5172	4294	3416	2537	1658	0778	9897	9016	8135	7253	6370	5487	4603	3719	5
6034	5157	4279	3401	2522	1643	0763	9883	9002	8120	7238	6355	5472	4588	3704	4
6020	5142	4265	3386	2508	1628	0748	9868	8987	8105	7223	6341	5457	4574	3689	3
6005	5128	4250	3372	2493	1614	0734	9853	8972	8091	7209	6326	5443	4559	3675	2
5990	5113	4235	3357	2478	1599	0719	9839	8958	8076	7194	6311	5428	4544	3660	1
5976	5099	4221	3342	2464	1584	0704	9824	8943	8061	7179	6296	5413	4530	3645	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	"

34 Deg. Tangent

"	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9. 841	9. 841	9. 841	9. 841	9. 842	9. 842	9. 842	9. 843	9. 843	9. 843	9. 843	9. 844	9. 844	9. 844	9. 844
0	1871	4569	7265	9961	2657	5351	8046	0739	3432	6125	8817	1508	4199	6889	9579
1	1916	4614	7310	0006	2702	5396	8091	0784	3477	6170	8862	1553	4244	6934	9624
2	1961	4659	7355	0051	2746	5441	8135	0829	3522	6215	8907	1598	4289	6979	9668
3	2006	4703	7400	0096	2791	5486	8180	0874	3567	6259	8951	1643	4333	7024	9713
4	2051	4748	7445	0141	2836	5531	8225	0919	3612	6304	8996	1688	4378	7068	9758
5	2096	4793	7490	0186	2881	5576	8270	0964	3657	6349	9041	1732	4423	7113	9803
6	2141	4838	7535	0231	2926	5621	8315	1009	3702	6394	9086	1777	4468	7158	9848
7	2186	4883	7580	0276	2971	5666	8360	1054	3747	6439	9131	1822	4513	7203	9893
8	2231	4928	7625	0321	3016	5711	8405	1098	3791	6484	9176	1867	4558	7248	9937
9	2276	4973	7670	0366	3061	5756	8450	1143	3836	6529	9221	1912	4602	7293	9982
10	2321	5018	7715	0410	3106	5800	8495	1188	3881	6574	9265	1957	4647	7337	0027
11	2366	5063	7760	0455	3151	5845	8540	1233	3926	6618	9310	2002	4692	7382	0072
12	2411	5108	7804	0500	3196	5890	8584	1278	3971	6663	9355	2046	4737	7427	0117
13	2456	5153	7849	0545	3241	5935	8629	1323	4016	6708	9400	2091	4782	7472	0161
14	2501	5198	7894	0590	3285	5980	8674	1368	4061	6753	9445	2136	4827	7517	0206
15	2546	5243	7939	0635	3330	6025	8719	1413	4106	6798	9490	2181	4872	7562	0251
16	2591	5288	7984	0680	3375	6070	8764	1458	4150	6843	9535	2226	4916	7606	0296
17	2636	5333	8029	0725	3420	6115	8809	1502	4195	6888	9579	2271	4961	7651	0341
18	2681	5378	8074	0770	3465	6160	8854	1547	4240	6933	9624	2315	5006	7696	0386
19	2726	5423	8119	0815	3510	6205	8899	1592	4285	6977	9669	2360	5051	7741	0430
20	2771	5468	8164	0860	3555	6250	8944	1637	4330	7022	9714	2405	5096	7786	0475
21	2816	5512	8209	0905	3600	6294	8988	1682	4375	7067	9759	2450	5141	7831	0520
22	2861	5557	8254	0950	3645	6339	9033	1727	4420	7112	9804	2495	5185	7875	0565
23	2905	5602	8299	0994	3690	6384	9078	1772	4465	7157	9849	2540	5230	7920	0610
24	2950	5647	8344	1039	3735	6429	9123	1817	4509	7202	9893	2585	5275	7965	0654
25	2995	5692	8389	1084	3779	6474	9168	1861	4554	7247	9938	2629	5320	8010	0699
26	3040	5737	8434	1129	3824	6519	9213	1906	4599	7291	9983	2674	5365	8055	0744
27	3085	5782	8478	1174	3869	6564	9258	1951	4644	7336	0028	2719	5410	8100	0789
28	3130	5827	8523	1219	3914	6609	9303	1996	4689	7381	0073	2764	5454	8144	0834
29	3175	5872	8568	1264	3959	6654	9348	2041	4734	7426	0118	2809	5499	8189	0879
30	3220	5917	8613	1309	4004	6699	9393	2086	4779	7471	0163	2854	5544	8234	0923
31	3265	5962	8658	1354	4049	6743	9437	2131	4824	7516	0207	2898	5589	8279	0968
32	3310	6007	8703	1399	4094	6788	9482	2176	4868	7561	0252	2943	5634	8324	1013
33	3355	6052	8748	1444	4139	6833	9527	2221	4913	7606	0297	2988	5679	8368	1058
34	3400	6097	8793	1489	4184	6878	9572	2265	4958	7650	0342	3033	5723	8413	1103
35	3445	6142	8838	1534	4229	6923	9617	2310	5003	7695	0387	3078	5768	8458	1147
36	3490	6187	8883	1578	4274	6968	9662	2355	5048	7740	0432	3123	5813	8503	1192
37	3535	6232	8928	1623	4318	7013	9707	2400	5093	7785	0477	3168	5858	8548	1237
38	3580	6277	8973	1668	4363	7058	9752	2445	5138	7830	0521	3212	5903	8593	1282
39	3625	6321	9018	1713	4408	7103	9797	2490	5183	7875	0566	3257	5948	8637	1327
40	3670	6366	9063	1758	4453	7148	9841	2535	5227	7920	0611	3302	5992	8682	1372
41	3715	6411	9108	1803	4498	7193	9886	2580	5272	7964	0656	3347	6037	8727	1416
42	3760	6456	9152	1848	4543	7237	9931	2625	5317	8009	0701	3392	6082	8772	1461
43	3804	6501	9197	1893	4588	7282	9976	2669	5362	8054	0746	3437	6127	8817	1506
44	3849	6546	9242	1938	4633	7327	0021	2714	5407	8099	0791	3481	6172	8862	1551
45	3894	6591	9287	1983	4678	7372	0066	2759	5452	8144	0835	3526	6217	8906	1596
46	3939	6636	9332	2028	4723	7417	0111	2804	5497	8189	0880	3571	6261	8951	1640
47	3984	6681	9377	2073	4768	7462	0156	2849	5542	8234	0925	3616	6306	8996	1685
48	4029	6726	9422	2118	4812	7507	0201	2894	5586	8278	0970	3661	6351	9041	1730
49	4074	6771	9467	2162	4857	7552	0246	2939	5631	8323	1015	3706	6396	9086	1775
50	4119	6816	9512	2207	4902	7597	0290	2984	5676	8368	1060	3751	6441	9131	1820
51	4164	6861	9557	2252	4947	7642	0335	3028	5721	8413	1104	3795	6486	9175	1864
52	4209	6906	9602	2297	4992	7686	0380	3073	5766	8458	1149	3840	6530	9220	1909
53	4254	6951	9647	2342	5037	7731	0425	3118	5811	8503	1194	3885	6575	9265	1954
54	4299	6996	9692	2387	5082	7776	0470	3163	5856	8548	1239	3930	6620	9310	1999
55	4344	7041	9737	2432	5127	7821	0515	3208	5901	8592	1284	3975	6665	9355	2044
56	4389	7085	9781	2477	5172	7866	0560	3253	5945	8637	1329	4020	6710	9399	2089
57	4434	7130	9826	2522	5217	7911	0605	3298	5990	8682	1374	4064	6755	9444	2133
58	4479	7175	9871	2567	5262	7956	0650	3343	6035	8727	1418	4109	6799	9489	2178
59	4524	7220	9916	2612	5306	8001	0694	3387	6080	8772	1463	4154	6844	9534	2223
60	4569	7265	9961	2657	5351	8046	0739	3432	6125	8817	1508	4199	6889	9579	2268
"	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Tangent Deg. 55

34 Deg. Co-Tangent

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	"
10. 158	10. 158	10. 158	10. 158	10. 157	10. 157	10. 157	10. 156	10. 156	10. 156	10. 156	10. 155	10. 155	10. 155	10. 155	
8129	5431	2735	0039	7343	4649	1954	9261	6568	3875	1183	8492	5801	3111	0421	60
8084	5386	2690	9994	7298	4604	1909	9216	6523	3830	1138	8447	5756	3066	0376	59
8039	5341	2645	9949	7254	4559	1865	9171	6478	3785	1093	8402	5711	3021	0332	58
7994	5297	2600	9904	7209	4514	1820	9126	6433	3741	1049	8357	5667	2976	0287	57
7949	5252	2555	9859	7164	4469	1775	9081	6388	3696	1004	8312	5622	2932	0242	56
7904	5207	2510	9814	7119	4424	1730	9036	6343	3651	0959	8268	5577	2887	0197	55
7859	5162	2465	9769	7074	4379	1685	8991	6298	3606	0914	8223	5532	2842	0152	54
7814	5117	2420	9724	7029	4334	1640	8946	6253	3561	0869	8178	5487	2797	0107	53
7769	5072	2375	9679	6984	4289	1595	8902	6209	3516	0824	8133	5442	2752	0063	52
7724	5027	2330	9634	6939	4244	1550	8857	6164	3471	0779	8088	5398	2707	0018	51
7679	4982	2285	9590	6894	4200	1505	8812	6119	3426	0735	8043	5353	2663	9973	50
7634	4937	2240	9545	6849	4155	1460	8767	6074	3382	0690	7998	5308	2618	9928	49
7589	4892	2196	9500	6804	4110	1416	8722	6029	3337	0645	7954	5263	2573	9883	48
7544	4847	2151	9455	6759	4065	1371	8677	5984	3292	0600	7909	5218	2528	9839	47
7499	4802	2106	9410	6715	4020	1326	8632	5939	3247	0555	7864	5173	2483	9794	46
7454	4757	2061	9365	6670	3975	1281	8587	5894	3202	0510	7819	5128	2438	9749	45
7409	4712	2016	9320	6625	3930	1236	8542	5850	3157	0465	7774	5084	2394	9704	44
7364	4667	1971	9275	6580	3885	1191	8498	5805	3112	0421	7729	5039	2349	9659	43
7319	4622	1926	9230	6535	3840	1146	8453	5760	3067	0376	7685	4994	2304	9614	42
7274	4577	1881	9185	6490	3795	1101	8408	5715	3023	0331	7640	4949	2259	9570	41
7229	4532	1836	9140	6445	3750	1056	8363	5670	2978	0286	7595	4904	2214	9525	40
7184	4488	1791	9095	6400	3706	1012	8318	5625	2933	0241	7550	4859	2169	9480	39
7139	4443	1746	9050	6355	3661	0967	8273	5580	2888	0196	7505	4815	2125	9435	38
7095	4398	1701	9006	6310	3616	0922	8228	5535	2843	0151	7460	4770	2080	9390	37
7050	4353	1656	8961	6265	3571	0877	8183	5491	2798	0107	7415	4725	2035	9346	36
7005	4308	1611	8916	6221	3526	0832	8139	5446	2753	0062	7371	4680	1990	9301	35
6960	4263	1566	8871	6176	3481	0787	8094	5401	2709	0017	7326	4635	1945	9256	34
6915	4218	1522	8826	6131	3436	0742	8049	5356	2664	9972	7281	4590	1900	9211	33
6870	4173	1477	8781	6086	3391	0697	8004	5311	2619	9927	7236	4546	1856	9166	32
6825	4128	1432	8736	6041	3346	0652	7959	5266	2574	9882	7191	4501	1811	9121	31
6780	4083	1387	8691	5996	3301	0607	7914	5221	2529	9837	7146	4456	1766	9077	30
6735	4038	1342	8646	5951	3257	0563	7869	5176	2484	9793	7102	4411	1721	9032	29
6690	3993	1297	8601	5906	3212	0518	7824	5132	2439	9748	7057	4366	1676	8987	28
6645	3948	1252	8556	5861	3167	0473	7779	5087	2394	9703	7012	4321	1632	8942	27
6600	3903	1207	8511	5816	3122	0428	7735	5042	2350	9658	6967	4277	1587	8897	26
6555	3858	1162	8466	5771	3077	0383	7690	4997	2305	9613	6922	4232	1542	8853	25
6510	3813	1117	8422	5726	3032	0338	7645	4952	2260	9568	6877	4187	1497	8808	24
6465	3768	1072	8377	5682	2987	0293	7600	4907	2215	9523	6832	4142	1452	8763	23
6420	3723	1027	8332	5637	2942	0248	7555	4862	2170	9479	6788	4097	1407	8718	22
6375	3679	0982	8287	5592	2897	0203	7510	4817	2125	9434	6743	4052	1363	8673	21
6330	3634	0937	8242	5547	2852	0159	7465	4773	2080	9389	6698	4008	1318	8628	20
6285	3589	0892	8197	5502	2807	0114	7420	4728	2036	9344	6653	3963	1273	8584	19
6240	3544	0848	8152	5457	2763	0069	7375	4683	1991	9299	6608	3918	1228	8539	18
6196	3499	0803	8107	5412	2718	0024	7331	4638	1946	9254	6563	3873	1183	8494	17
6151	3454	0758	8062	5367	2673	9979	7286	4593	1901	9209	6519	3828	1138	8449	16
6106	3409	0713	8017	5322	2628	9934	7241	4548	1856	9165	6474	3783	1094	8404	15
6061	3364	0668	7972	5277	2583	9889	7196	4503	1811	9120	6429	3739	1049	8360	14
6016	3319	0623	7927	5232	2538	9844	7151	4458	1766	9075	6384	3694	1004	8315	13
5971	3274	0578	7882	5188	2493	9799	7106	4414	1722	9030	6339	3649	0959	8270	12
5926	3229	0533	7838	5143	2448	9754	7061	4369	1677	8985	6294	3604	0914	8225	11
5881	3184	0488	7793	5098	2403	9710	7016	4324	1632	8940	6249	3559	0869	8180	10
5836	3139	0443	7748	5053	2358	9665	6972	4279	1587	8896	6205	3514	0825	8136	9
5791	3094	0398	7703	5008	2314	9620	6927	4234	1542	8851	6160	3470	0780	8091	8
5746	3049	0353	7658	4963	2269	9575	6882	4189	1497	8806	6115	3425	0735	8046	7
5701	3004	0308	7613	4918	2224	9530	6837	4144	1452	8761	6070	3380	0690	8001	6
5656	2959	0263	7568	4873	2179	9485	6792	4099	1408	8716	6025	3335	0645	7956	5
5611	2915	0219	7523	4828	2134	9440	6747	4055	1363	8671	5980	3290	0601	7911	4
5566	2870	0174	7478	4783	2089	9395	6702	4010	1318	8626	5936	3245	0556	7867	3
5521	2825	0129	7433	4738	2044	9350	6657	3965	1273	8582	5891	3201	0511	7822	2
5476	2780	0084	7388	4694	1999	9306	6613	3920	1228	8537	5846	3156	0466	7777	1
5431	2735	0039	7343	4649	1954	9261	6568	3875	1183	8492	5801	3111	0421	7732	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	"

Tangent Deg. 55

35 Deg. Sine

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.758	9.758	9.758	9.759	9.759	9.759	9.759	9.759	9.760	9.760	9.760	9.760	9.760	9.760	9.761
0	5913	7717	9519	1321	3121	4920	6718	8515	0311	2106	3899	5692	7483	9274	1063
1	5943	7747	9549	1351	3151	4950	6748	8545	0341	2136	3929	5722	7513	9303	1093
2	5973	7777	9579	1381	3181	4980	6778	8575	0371	2165	3959	5752	7543	9333	1122
3	6003	7807	9609	1411	3211	5010	6808	8605	0401	2195	3989	5781	7573	9363	1152
4	6033	7837	9639	1441	3241	5040	6838	8635	0431	2225	4019	5811	7603	9393	1182
5	6063	7867	9669	1471	3271	5070	6868	8665	0461	2255	4049	5841	7632	9423	1212
6	6093	7897	9699	1501	3301	5100	6898	8695	0491	2285	4079	5871	7662	9452	1242
7	6123	7927	9729	1531	3331	5130	6928	8725	0520	2315	4108	5901	7692	9482	1271
8	6154	7957	9759	1561	3361	5160	6958	8755	0550	2345	4138	5931	7722	9512	1301
9	6184	7987	9789	1591	3391	5190	6988	8785	0580	2375	4168	5961	7752	9542	1331
10	6214	8017	9819	1621	3421	5220	7018	8814	0610	2405	4198	5990	7782	9572	1361
11	6244	8047	9850	1651	3451	5250	7048	8844	0640	2435	4228	6020	7812	9602	1391
12	6274	8077	9880	1681	3481	5280	7078	8874	0670	2464	4258	6050	7841	9631	1420
13	6304	8107	9910	1711	3511	5310	7108	8904	0700	2494	4288	6080	7871	9661	1450
14	6334	8137	9940	1741	3541	5340	7138	8934	0730	2524	4318	6110	7901	9691	1480
15	6364	8167	9970	1771	3571	5370	7167	8964	0760	2554	4348	6140	7931	9721	1510
16	6394	8197	0000	1801	3601	5400	7197	8994	0790	2584	4377	6170	7961	9751	1540
17	6424	8227	0030	1831	3631	5430	7227	9024	0820	2614	4407	6199	7991	9781	1569
18	6454	8258	0060	1861	3661	5460	7257	9054	0849	2644	4437	6229	8020	9810	1599
19	6484	8288	0090	1891	3691	5490	7287	9084	0879	2674	4467	6259	8050	9840	1629
20	6514	8318	0120	1921	3721	5520	7317	9114	0909	2704	4497	6289	8080	9870	1659
21	6544	8348	0150	1951	3751	5549	7347	9144	0939	2734	4527	6319	8110	9900	1689
22	6574	8378	0180	1981	3781	5579	7377	9174	0969	2763	4557	6349	8140	9930	1718
23	6605	8408	0210	2011	3811	5609	7407	9204	0999	2793	4587	6379	8170	9960	1748
24	6635	8438	0240	2041	3841	5639	7437	9234	1029	2823	4616	6408	8199	9989	1778
25	6665	8468	0270	2071	3871	5669	7467	9263	1059	2853	4646	6438	8229	0019	1808
26	6695	8498	0300	2101	3901	5699	7497	9293	1089	2883	4676	6468	8259	0049	1838
27	6725	8528	0330	2131	3931	5729	7527	9323	1119	2913	4706	6498	8289	0079	1867
28	6755	8558	0360	2161	3961	5759	7557	9353	1149	2943	4736	6528	8319	0109	1897
29	6785	8588	0390	2191	3991	5789	7587	9383	1179	2973	4766	6558	8349	0138	1927
30	6815	8618	0420	2221	4021	5819	7617	9413	1208	3003	4796	6588	8378	0168	1957
31	6845	8648	0450	2251	4051	5849	7647	9443	1238	3032	4826	6617	8408	0198	1987
32	6875	8678	0480	2281	4081	5879	7677	9473	1268	3062	4855	6647	8438	0228	2016
33	6905	8708	0510	2311	4111	5909	7707	9503	1298	3092	4885	6677	8468	0258	2046
34	6935	8738	0540	2341	4141	5939	7737	9533	1328	3122	4915	6707	8498	0288	2076
35	6965	8768	0570	2371	4171	5969	7766	9563	1358	3152	4945	6737	8528	0317	2106
36	6995	8798	0600	2401	4201	5999	7796	9593	1388	3182	4975	6767	8558	0347	2136
37	7025	8828	0630	2431	4230	6029	7826	9623	1418	3212	5005	6797	8587	0377	2165
38	7055	8858	0660	2461	4260	6059	7856	9653	1448	3242	5035	6826	8617	0407	2195
39	7086	8888	0690	2491	4290	6089	7886	9682	1478	3272	5065	6856	8647	0437	2225
40	7116	8918	0720	2521	4320	6119	7916	9712	1508	3302	5094	6886	8677	0466	2255
41	7146	8948	0750	2551	4350	6149	7946	9742	1537	3331	5124	6916	8707	0496	2285
42	7176	8979	0780	2581	4380	6179	7976	9772	1567	3361	5154	6946	8737	0526	2314
43	7206	9009	0810	2611	4410	6209	8006	9802	1597	3391	5184	6976	8766	0556	2344
44	7236	9039	0840	2641	4440	6239	8036	9832	1627	3421	5214	7006	8796	0586	2374
45	7266	9069	0870	2671	4470	6269	8066	9862	1657	3451	5244	7035	8826	0616	2404
46	7296	9099	0900	2701	4500	6299	8096	9892	1687	3481	5274	7065	8856	0645	2434
47	7326	9129	0930	2731	4530	6329	8126	9922	1717	3511	5304	7095	8886	0675	2463
48	7356	9159	0960	2761	4560	6359	8156	9952	1747	3541	5333	7125	8916	0705	2493
49	7386	9189	0990	2791	4590	6389	8186	9982	1777	3571	5363	7155	8945	0735	2523
50	7416	9219	1020	2821	4620	6419	8216	0012	1807	3600	5393	7185	8975	0765	2553
51	7446	9249	1050	2851	4650	6448	8246	0042	1837	3630	5423	7215	9005	0794	2583
52	7476	9279	1080	2881	4680	6478	8276	0072	1866	3660	5453	7244	9035	0824	2612
53	7506	9309	1110	2911	4710	6508	8305	0101	1896	3690	5483	7274	9065	0854	2642
54	7536	9339	1140	2941	4740	6538	8335	0131	1926	3720	5513	7304	9095	0884	2672
55	7566	9369	1171	2971	4770	6568	8365	0161	1956	3750	5542	7334	9124	0914	2702
56	7596	9399	1201	3001	4800	6598	8395	0191	1986	3780	5572	7364	9154	0943	2732
57	7626	9429	1231	3031	4830	6628	8425	0221	2016	3810	5602	7394	9184	0973	2761
58	7657	9459	1261	3061	4860	6658	8455	0251	2046	3840	5632	7424	9214	1003	2791
59	7687	9489	1291	3091	4890	6688	8485	0281	2076	3869	5662	7453	9244	1033	2821
60	7717	9519	1321	3121	4920	6718	8515	0311	2106	3899	5692	7483	9274	1063	2851
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Sine Deg. 54

35 Deg. Co-Sine

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
	9.913	9.913	9.913	9.913	9.913	9.912	9.912	9.912	9.912	9.912	9.912	9.912	9.912	9.912	9.912	″
0	3645	2760	1875	0989	0102	9215	8328	7440	6551	5662	4772	3882	2991	2099	1207	60
1	3630	2746	1860	0974	0088	9201	8313	7425	6536	5647	4757	3867	2976	2084	1192	59
2	3616	2731	1845	0959	0073	9186	8298	7410	6521	5632	4742	3852	2961	2070	1178	58
3	3601	2716	1831	0945	0058	9171	8283	7395	6507	5617	4727	3837	2946	2055	1163	57
4	3586	2701	1816	0930	0043	9156	8269	7380	6492	5602	4713	3822	2931	2040	1148	56
5	3571	2687	1801	0915	0029	9141	8254	7366	6477	5588	4698	3807	2916	2025	1133	55
6	3557	2672	1786	0900	0014	9127	8239	7351	6462	5573	4683	3793	2902	2010	1118	54
7	3542	2657	1772	0886	9999	9112	8224	7336	6447	5558	4668	3778	2887	1995	1103	53
8	3527	2642	1757	0871	9984	9097	8209	7321	6432	5543	4653	3763	2872	1980	1088	52
9	3513	2628	1742	0856	9969	9082	8195	7306	6418	5528	4638	3748	2857	1966	1073	51
10	3498	2613	1727	0841	9955	9068	8180	7292	6403	5514	4624	3733	2842	1951	1059	50
11	3483	2598	1713	0827	9940	9053	8165	7277	6388	5499	4609	3718	2827	1936	1044	49
12	3468	2583	1698	0812	9925	9038	8150	7262	6373	5484	4594	3703	2812	1921	1029	48
13	3454	2569	1683	0797	9910	9023	8135	7247	6358	5469	4579	3689	2798	1906	1014	47
14	3439	2554	1668	0782	9896	9008	8121	7232	6344	5454	4564	3674	2783	1891	0999	46
15	3424	2539	1654	0767	9881	8994	8106	7218	6329	5439	4549	3659	2768	1876	0984	45
16	3409	2524	1639	0753	9866	8979	8091	7203	6314	5425	4535	3644	2753	1861	0969	44
17	3395	2510	1624	0738	9851	8964	8076	7188	6299	5410	4520	3629	2738	1847	0954	43
18	3380	2495	1609	0723	9836	8949	8061	7173	6284	5395	4505	3614	2723	1832	0940	42
19	3365	2480	1594	0708	9822	8934	8047	7158	6269	5380	4490	3600	2709	1817	0925	41
20	3350	2465	1580	0694	9807	8920	8032	7144	6255	5365	4475	3585	2694	1802	0910	40
21	3336	2451	1565	0679	9792	8905	8017	7129	6240	5350	4460	3570	2679	1787	0895	39
22	3321	2436	1550	0664	9777	8890	8002	7114	6225	5336	4446	3555	2664	1772	0880	38
23	3306	2421	1535	0649	9763	8875	7987	7099	6210	5321	4431	3540	2649	1757	0865	37
24	3291	2406	1521	0634	9748	8860	7973	7084	6195	5306	4416	3525	2634	1743	0850	36
25	3277	2391	1506	0620	9733	8846	7958	7069	6181	5291	4401	3510	2619	1728	0835	35
26	3262	2377	1491	0605	9718	8831	7943	7055	6166	5276	4386	3496	2605	1713	0821	34
27	3247	2362	1476	0590	9703	8816	7928	7040	6151	5261	4371	3481	2590	1698	0806	33
28	3232	2347	1462	0575	9689	8801	7913	7025	6136	5247	4357	3466	2575	1683	0791	32
29	3218	2332	1447	0561	9674	8787	7899	7010	6121	5232	4342	3451	2560	1668	0776	31
30	3203	2318	1432	0546	9659	8772	7884	6995	6106	5217	4327	3436	2545	1653	0761	30
31	3188	2303	1417	0531	9644	8757	7869	6981	6092	5202	4312	3421	2530	1638	0746	29
32	3173	2288	1402	0516	9629	8742	7854	6966	6077	5187	4297	3407	2515	1624	0731	28
33	3159	2273	1388	0501	9615	8727	7839	6951	6062	5172	4282	3392	2501	1609	0716	27
34	3144	2259	1373	0487	9600	8713	7825	6936	6047	5158	4268	3377	2486	1594	0702	26
35	3129	2244	1358	0472	9585	8698	7810	6921	6032	5143	4253	3362	2471	1579	0687	25
36	3114	2229	1343	0457	9570	8683	7795	6907	6018	5128	4238	3347	2456	1564	0672	24
37	3100	2214	1329	0442	9556	8668	7780	6892	6003	5113	4223	3332	2441	1549	0657	23
38	3085	2200	1314	0428	9541	8653	7765	6877	5988	5098	4208	3317	2426	1534	0642	22
39	3070	2185	1299	0413	9526	8639	7751	6862	5973	5083	4193	3303	2411	1520	0627	21
40	3055	2170	1284	0398	9511	8624	7736	6847	5958	5069	4178	3288	2397	1505	0612	20
41	3041	2155	1270	0383	9496	8609	7721	6832	5943	5054	4164	3273	2382	1490	0597	19
42	3026	2141	1255	0368	9482	8594	7706	6818	5929	5039	4149	3258	2367	1475	0583	18
43	3011	2126	1240	0354	9467	8579	7691	6803	5914	5024	4134	3243	2352	1460	0568	17
44	2996	2111	1225	0339	9452	8565	7677	6788	5899	5009	4119	3228	2337	1445	0553	16
45	2982	2096	1211	0324	9437	8550	7662	6773	5884	4994	4104	3214	2322	1430	0538	15
46	2967	2082	1196	0309	9422	8535	7647	6758	5869	4980	4089	3199	2307	1415	0523	14
47	2952	2067	1181	0295	9408	8520	7632	6744	5854	4965	4075	3184	2292	1401	0508	13
48	2937	2052	1166	0280	9393	8505	7617	6729	5840	4950	4060	3169	2278	1386	0493	12
49	2923	2037	1151	0265	9378	8491	7603	6714	5825	4935	4045	3154	2263	1371	0478	11
50	2908	2023	1137	0250	9363	8476	7588	6699	5810	4920	4030	3139	2248	1356	0464	10
51	2893	2008	1122	0235	9349	8461	7573	6684	5795	4905	4015	3124	2233	1341	0449	9
52	2878	1993	1107	0221	9334	8446	7558	6670	5780	4891	4000	3110	2218	1326	0434	8
53	2864	1978	1092	0206	9319	8431	7543	6655	5766	4876	3986	3095	2203	1311	0419	7
54	2849	1964	1078	0191	9304	8417	7529	6640	5751	4861	3971	3080	2188	1297	0404	6
55	2834	1949	1063	0176	9289	8402	7514	6625	5736	4846	3956	3065	2174	1282	0389	5
56	2819	1934	1048	0162	9275	8387	7499	6610	5721	4831	3941	3050	2159	1267	0374	4
57	2805	1919	1033	0147	9260	8372	7484	6595	5706	4816	3926	3035	2144	1252	0359	3
58	2790	1904	1019	0132	9245	8357	7469	6581	5691	4802	3911	3020	2129	1237	0345	2
59	2775	1890	1004	0117	9230	8343	7455	6566	5677	4787	3896	3006	2114	1222	0330	1
60	2760	1875	0989	0102	9215	8328	7440	6551	5662	4772	3882	2991	2099	1207	0315	0
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Sine Deg. 54

35 Deg. Tangent

"	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
	9.845	9.845	9.845	9.846	9.846	9.846	9.846	9.847	9.847	9.847	9.847	9.848	9.848	9.848	9.848
0	2268	4956	7644	0332	3018	5705	8390	1075	3760	6444	9127	1810	4492	7174	9855
1	2313	5001	7689	0376	3063	5749	8435	1120	3805	6489	9172	1855	4537	7219	9900
2	2357	5046	7734	0421	3108	5794	8480	1165	3849	6533	9217	1900	4582	7264	9945
3	2402	5091	7779	0466	3153	5839	8525	1210	3894	6578	9261	1944	4627	7308	9989
4	2447	5136	7823	0511	3197	5884	8569	1254	3939	6623	9306	1989	4671	7353	0034
5	2492	5180	7868	0556	3242	5928	8614	1299	3984	6668	9351	2034	4716	7398	0079
6	2537	5225	7913	0600	3287	5973	8659	1344	4028	6712	9396	2078	4761	7442	0123
7	2582	5270	7958	0645	3332	6018	8704	1389	4073	6757	9440	2123	4805	7487	0168
8	2626	5315	8003	0690	3377	6063	8748	1433	4118	6802	9485	2168	4850	7532	0213
9	2671	5360	8047	0735	3421	6107	8793	1478	4163	6846	9530	2213	4895	7576	0258
10	2716	5404	8092	0779	3466	6152	8838	1523	4207	6891	9574	2257	4939	7621	0302
11	2761	5449	8137	0824	3511	6197	8883	1568	4252	6936	9619	2302	4984	7666	0347
12	2806	5494	8182	0869	3556	6242	8927	1612	4297	6981	9664	2347	5029	7710	0392
13	2850	5539	8227	0914	3600	6287	8972	1657	4341	7025	9709	2391	5074	7755	0436
14	2895	5584	8271	0959	3645	6331	9017	1702	4386	7070	9753	2436	5118	7800	0481
15	2940	5628	8316	1003	3690	6376	9062	1747	4431	7115	9798	2481	5163	7845	0526
16	2985	5673	8361	1048	3735	6421	9106	1791	4476	7160	9843	2525	5208	7889	0570
17	3030	5718	8406	1093	3780	6466	9151	1836	4520	7204	9887	2570	5252	7934	0615
18	3074	5763	8451	1138	3824	6510	9196	1881	4565	7249	9932	2615	5297	7979	0660
19	3119	5808	8495	1182	3869	6555	9241	1926	4610	7294	9977	2660	5342	8023	0704
20	3164	5852	8540	1227	3914	6600	9285	1970	4655	7338	0022	2704	5386	8068	0749
21	3209	5897	8585	1272	3959	6645	9330	2015	4699	7383	0066	2749	5431	8113	0794
22	3254	5942	8630	1317	4003	6689	9375	2060	4744	7428	0111	2794	5476	8157	0838
23	3298	5987	8674	1362	4048	6734	9420	2105	4789	7473	0156	2838	5521	8202	0883
24	3343	6032	8719	1406	4093	6779	9464	2149	4834	7517	0201	2883	5565	8247	0928
25	3388	6076	8764	1451	4138	6824	9509	2194	4878	7562	0245	2928	5610	8291	0972
26	3433	6121	8809	1496	4182	6868	9554	2239	4923	7607	0290	2973	5655	8336	1017
27	3478	6166	8854	1541	4227	6913	9599	2283	4968	7651	0335	3017	5699	8381	1062
28	3523	6211	8898	1585	4272	6958	9643	2328	5012	7696	0379	3062	5744	8426	1106
29	3567	6256	8943	1630	4317	7003	9688	2373	5057	7741	0424	3107	5789	8470	1151
30	3612	6300	8988	1675	4362	7048	9733	2418	5102	7786	0469	3151	5833	8515	1196
31	3657	6345	9033	1720	4406	7092	9778	2462	5147	7830	0514	3196	5878	8560	1240
32	3702	6390	9078	1765	4451	7137	9822	2507	5191	7875	0558	3241	5923	8604	1285
33	3747	6435	9122	1809	4496	7182	9867	2552	5236	7920	0603	3285	5967	8649	1330
34	3791	6480	9167	1854	4541	7227	9912	2597	5281	7965	0648	3330	6012	8694	1375
35	3836	6524	9212	1899	4585	7271	9957	2641	5326	8009	0692	3375	6057	8738	1419
36	3881	6569	9257	1944	4630	7316	0001	2686	5370	8054	0737	3420	6102	8783	1464
37	3926	6614	9302	1989	4675	7361	0046	2731	5415	8099	0782	3464	6146	8828	1509
38	3971	6659	9346	2033	4720	7406	0091	2776	5460	8143	0827	3509	6191	8872	1553
39	4015	6704	9391	2078	4764	7450	0136	2820	5505	8188	0871	3554	6236	8917	1598
40	4060	6748	9436	2123	4809	7495	0180	2865	5549	8233	0916	3598	6280	8962	1643
41	4105	6793	9481	2168	4854	7540	0225	2910	5594	8278	0961	3643	6325	9006	1687
42	4150	6838	9525	2212	4899	7585	0270	2955	5639	8322	1005	3688	6370	9051	1732
43	4195	6883	9570	2257	4944	7629	0315	2999	5683	8367	1050	3733	6414	9096	1777
44	4239	6928	9615	2302	4988	7674	0359	3044	5728	8412	1095	3777	6459	9140	1821
45	4284	6972	9660	2347	5033	7719	0404	3089	5773	8456	1139	3822	6504	9185	1866
46	4329	7017	9705	2392	5078	7764	0449	3134	5818	8501	1184	3867	6549	9230	1911
47	4374	7062	9749	2436	5123	7808	0494	3178	5862	8546	1229	3911	6593	9275	1955
48	4419	7107	9794	2481	5167	7853	0538	3223	5907	8591	1274	3956	6638	9319	2000
49	4463	7151	9839	2526	5212	7898	0583	3268	5952	8635	1318	4001	6683	9364	2045
50	4508	7196	9884	2571	5257	7943	0628	3313	5997	8680	1363	4045	6727	9409	2089
51	4553	7241	9929	2615	5302	7987	0673	3357	6041	8725	1408	4090	6772	9453	2134
52	4598	7286	9973	2660	5346	8032	0717	3402	6086	8770	1452	4135	6817	9498	2179
53	4643	7331	0018	2705	5391	8077	0762	3447	6131	8814	1497	4180	6861	9543	2223
54	4687	7375	0063	2750	5436	8122	0807	3491	6176	8859	1542	4224	6906	9587	2268
55	4732	7420	0108	2795	5481	8166	0852	3536	6220	8904	1587	4269	6951	9632	2313
56	4777	7465	0152	2839	5526	8211	0896	3581	6265	8948	1631	4314	6995	9677	2357
57	4822	7510	0197	2884	5570	8256	0941	3626	6310	8993	1676	4358	7040	9721	2402
58	4867	7555	0242	2929	5615	8301	0986	3670	6354	9038	1721	4403	7085	9766	2447
59	4912	7599	0287	2974	5660	8346	1031	3715	6399	9083	1765	4448	7130	9811	2491
60	4956	7644	0332	3018	5705	8390	1075	3760	6444	9127	1810	4492	7174	9855	2536
"	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Tangent Deg. 54

35 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	"
10.154	10.154	10.154	10.153	10.153	10.153	10.153	10.152	10.152	10.152	10.152	10.151	10.151	10.151	10.151	
7732	5044	2356	9668	6982	4295	1610	8925	6240	3556	0873	8190	5508	2826	0145	60
7687	4999	2311	9624	6937	4251	1565	8880	6195	3511	0828	8145	5463	2781	0100	59
7643	4954	2266	9579	6892	4206	1520	8835	6151	3467	0783	8100	5418	2736	0055	58
7598	4909	2221	9534	6847	4161	1475	8790	6106	3422	0739	8056	5373	2692	0011	57
7553	4864	2177	9489	6803	4116	1431	8746	6061	3377	0694	8011	5329	2647	9966	56
7508	4820	2132	9444	6758	4072	1386	8701	6016	3332	0649	7966	5284	2602	9921	55
7463	4775	2087	9400	6713	4027	1341	8656	5972	3288	0604	7922	5239	2558	9877	54
7418	4730	2042	9355	6668	3982	1296	8611	5927	3243	0560	7877	5195	2513	9832	53
7374	4685	1997	9310	6623	3937	1252	8567	5882	3198	0515	7832	5150	2468	9787	52
7329	4640	1953	9265	6579	3893	1207	8522	5837	3154	0470	7787	5105	2424	9742	51
7284	4596	1908	9221	6534	3848	1162	8477	5793	3109	0426	7743	5061	2379	9698	50
7239	4551	1863	9176	6489	3803	1117	8432	5748	3064	0381	7698	5016	2334	9653	49
7194	4506	1818	9131	6444	3758	1073	8388	5703	3019	0336	7653	4971	2290	9608	48
7150	4461	1773	9086	6400	3713	1028	8343	5659	2975	0291	7609	4926	2245	9564	47
7105	4416	1729	9041	6355	3669	0983	8298	5614	2930	0247	7564	4882	2200	9519	46
7060	4372	1684	8997	6310	3624	0938	8253	5569	2885	0202	7519	4837	2155	9474	45
7015	4327	1639	8952	6265	3579	0894	8209	5524	2840	0157	7475	4792	2111	9430	44
6970	4282	1594	8907	6220	3534	0849	8164	5480	2796	0113	7430	4748	2066	9385	43
6926	4237	1549	8862	6176	3490	0804	8119	5435	2751	0068	7385	4703	2021	9340	42
6881	4192	1505	8818	6131	3445	0759	8074	5390	2706	0023	7340	4658	1977	9296	41
6836	4148	1460	8773	6086	3400	0715	8030	5345	2662	9978	7296	4614	1932	9251	40
6791	4103	1415	8728	6041	3355	0670	7985	5301	2617	9934	7251	4569	1887	9206	39
6746	4058	1370	8683	5997	3311	0625	7940	5256	2572	9889	7206	4524	1843	9162	38
6702	4013	1326	8638	5952	3266	0580	7895	5211	2527	9844	7162	4479	1798	9117	37
6657	3968	1281	8594	5907	3221	0536	7851	5166	2483	9799	7117	4435	1753	9072	36
6612	3924	1236	8549	5862	3176	0491	7806	5122	2438	9755	7072	4390	1709	9028	35
6567	3879	1191	8504	5818	3132	0446	7761	5077	2393	9710	7027	4345	1664	8983	34
6522	3834	1146	8459	5773	3087	0401	7717	5032	2349	9665	6983	4301	1619	8938	33
6477	3789	1102	8415	5728	3042	0357	7672	4988	2304	9621	6938	4256	1574	8894	32
6433	3744	1057	8370	5683	2997	0312	7627	4943	2259	9576	6893	4211	1530	8849	31
6388	3700	1012	8325	5638	2952	0267	7582	4898	2214	9531	6849	4167	1485	8804	30
6343	3655	0967	8280	5594	2908	0222	7538	4853	2170	9486	6804	4122	1440	8760	29
6298	3610	0922	8235	5549	2863	0178	7493	4809	2125	9442	6759	4077	1396	8715	28
6253	3565	0878	8191	5504	2818	0133	7448	4764	2080	9397	6715	4033	1351	8670	27
6209	3520	0833	8146	5459	2773	0088	7403	4719	2035	9352	6670	3988	1306	8625	26
6164	3476	0788	8101	5415	2729	0043	7359	4674	1991	9308	6625	3943	1262	8581	25
6119	3431	0743	8056	5370	2684	9999	7314	4630	1946	9263	6580	3898	1217	8536	24
6074	3386	0698	8011	5325	2639	9954	7269	4585	1901	9218	6536	3854	1172	8491	23
6029	3341	0654	7967	5280	2594	9909	7224	4540	1857	9173	6491	3809	1128	8447	22
5985	3296	0609	7922	5236	2550	9864	7180	4495	1812	9129	6446	3764	1083	8402	21
5940	3252	0564	7877	5191	2505	9820	7135	4451	1767	9084	6402	3720	1038	8357	20
5895	3207	0519	7832	5146	2460	9775	7090	4406	1722	9039	6357	3675	0994	8313	19
5850	3162	0475	7788	5101	2415	9730	7045	4361	1678	8995	6312	3630	0949	8268	18
5805	3117	0430	7743	5056	2371	9685	7001	4317	1633	8950	6267	3586	0904	8223	17
5761	3072	0385	7698	5012	2326	9641	6956	4272	1588	8905	6223	3541	0860	8179	16
5716	3028	0340	7653	4967	2281	9596	6911	4227	1544	8861	6178	3496	0815	8134	15
5671	2983	0295	7608	4922	2236	9551	6866	4182	1499	8816	6133	3451	0770	8089	14
5626	2938	0251	7564	4877	2192	9506	6822	4138	1454	8771	6089	3407	0725	8045	13
5581	2893	0206	7519	4833	2147	9462	6777	4093	1409	8726	6044	3362	0681	8000	12
5537	2849	0161	7474	4788	2102	9417	6732	4048	1365	8682	5999	3317	0636	7955	11
5492	2804	0116	7429	4743	2057	9372	6687	4003	1320	8637	5955	3273	0591	7911	10
5447	2759	0071	7385	4698	2013	9327	6643	3959	1275	8592	5910	3228	0547	7866	9
5402	2714	0027	7340	4654	1968	9283	6598	3914	1230	8548	5865	3183	0502	7821	8
5357	2669	9982	7295	4609	1923	9238	6553	3869	1186	8503	5820	3139	0457	7777	7
5313	2625	9937	7250	4564	1878	9193	6509	3824	1141	8458	5776	3094	0413	7732	6
5268	2580	9892	7205	4519	1834	9148	6464	3780	1096	8413	5731	3049	0368	7687	5
5223	2535	9848	7161	4474	1789	9104	6419	3735	1052	8369	5686	3005	0323	7643	4
5178	2490	9803	7116	4430	1744	9059	6374	3690	1007	8324	5642	2960	0279	7598	3
5133	2445	9758	7071	4385	1699	9014	6330	3646	0962	8279	5597	2915	0234	7553	2
5088	2401	9713	7026	4340	1654	8969	6285	3601	0917	8235	5552	2870	0189	7509	1
5044	2356	9668	6982	4295	1610	8925	6240	3556	0873	8190	5508	2826	0145	7464	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	"

Tangent Deg. 54

35 Deg. Sine

"	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9.761	9.761	9.761	9.761	9.761	9.762	9.762	9.762	9.762	9.762	9.763	9.763	9.763	9.763	9.763
0	2851	4638	6424	8208	9992	1775	3556	5337	7116	8894	0671	2447	4222	5996	7769
1	2881	4668	6453	8238	0022	1804	3586	5366	7146	8924	0701	2477	4252	6026	7798
2	2910	4697	6483	8268	0052	1834	3616	5396	7175	8953	0730	2506	4281	6055	7828
3	2940	4727	6513	8298	0081	1864	3645	5426	7205	8983	0760	2536	4311	6085	7857
4	2970	4757	6543	8327	0111	1894	3675	5455	7235	9013	0790	2566	4340	6114	7887
5	3000	4787	6572	8357	0141	1923	3705	5485	7264	9042	0819	2595	4370	6144	7916
6	3030	4816	6602	8387	0170	1953	3734	5515	7294	9072	0849	2625	4400	6173	7946
7	3059	4846	6632	8417	0200	1983	3764	5544	7323	9102	0878	2654	4429	6203	7975
8	3089	4876	6662	8446	0230	2012	3794	5574	7353	9131	0908	2684	4459	6232	8005
9	3119	4906	6691	8476	0260	2042	3823	5604	7383	9161	0938	2714	4488	6262	8035
10	3149	4936	6721	8506	0289	2072	3853	5633	7412	9190	0967	2743	4518	6292	8064
11	3179	4965	6751	8536	0319	2101	3883	5663	7442	9220	0997	2773	4547	6321	8094
12	3208	4995	6781	8565	0349	2131	3912	5693	7472	9250	1027	2802	4577	6351	8123
13	3238	5025	6810	8595	0378	2161	3942	5722	7501	9279	1056	2832	4607	6380	8153
14	3268	5055	6840	8625	0408	2191	3972	5752	7531	9309	1086	2861	4636	6410	8182
15	3298	5084	6870	8655	0438	2220	4001	5782	7561	9339	1115	2891	4666	6439	8212
16	3327	5114	6900	8684	0468	2250	4031	5811	7590	9368	1145	2921	4695	6469	8241
17	3357	5144	6929	8714	0497	2280	4061	5841	7620	9398	1175	2950	4725	6498	8271
18	3387	5174	6959	8744	0527	2309	4090	5871	7650	9427	1204	2980	4754	6528	8300
19	3417	5203	6989	8773	0557	2339	4120	5900	7679	9457	1234	3009	4784	6557	8330
20	3447	5233	7019	8803	0586	2369	4150	5930	7709	9487	1263	3039	4814	6587	8359
21	3476	5263	7048	8833	0616	2398	4180	5960	7738	9516	1293	3069	4843	6617	8389
22	3506	5293	7078	8863	0646	2428	4209	5989	7768	9546	1323	3098	4873	6646	8418
23	3536	5323	7108	8892	0676	2458	4239	6019	7798	9575	1352	3128	4902	6676	8448
24	3566	5352	7138	8922	0705	2487	4269	6048	7827	9605	1382	3157	4932	6705	8478
25	3596	5382	7167	8952	0735	2517	4298	6078	7857	9635	1411	3187	4961	6735	8507
26	3625	5412	7197	8982	0765	2547	4328	6108	7887	9664	1441	3217	4991	6764	8537
27	3655	5442	7227	9011	0794	2577	4358	6137	7916	9694	1471	3246	5021	6794	8566
28	3685	5471	7257	9041	0824	2606	4387	6167	7946	9724	1500	3276	5050	6823	8596
29	3715	5501	7286	9071	0854	2636	4417	6197	7976	9753	1530	3305	5080	6853	8625
30	3744	5531	7316	9100	0884	2666	4447	6226	8005	9783	1559	3335	5109	6882	8655
31	3774	5561	7346	9130	0913	2695	4476	6256	8035	9812	1589	3364	5139	6912	8684
32	3804	5590	7376	9160	0943	2725	4506	6286	8064	9842	1619	3394	5168	6942	8714
33	3834	5620	7405	9190	0973	2755	4536	6315	8094	9872	1648	3424	5198	6971	8743
34	3864	5650	7435	9219	1002	2784	4565	6345	8124	9901	1678	3453	5227	7001	8773
35	3893	5680	7465	9249	1032	2814	4595	6375	8153	9931	1707	3483	5257	7030	8802
36	3923	5709	7495	9279	1062	2844	4625	6404	8183	9961	1737	3512	5287	7060	8832
37	3953	5739	7524	9309	1092	2873	4654	6434	8213	9990	1767	3542	5316	7089	8861
38	3983	5769	7554	9338	1121	2903	4684	6464	8242	0020	1796	3571	5346	7119	8891
39	4012	5799	7584	9368	1151	2933	4714	6493	8272	0049	1826	3601	5375	7148	8920
40	4042	5829	7614	9398	1181	2963	4743	6523	8302	0079	1855	3631	5405	7178	8950
41	4072	5858	7643	9427	1210	2992	4773	6553	8331	0109	1885	3660	5434	7207	8979
42	4102	5888	7673	9457	1240	3022	4803	6582	8361	0138	1915	3690	5464	7237	9009
43	4132	5918	7703	9487	1270	3052	4832	6612	8390	0168	1944	3719	5494	7267	9039
44	4161	5948	7733	9517	1300	3081	4862	6642	8420	0197	1974	3749	5523	7296	9068
45	4191	5977	7762	9546	1329	3111	4892	6671	8450	0227	2003	3779	5553	7326	9098
46	4221	6007	7792	9576	1359	3141	4921	6701	8479	0257	2033	3808	5582	7355	9127
47	4251	6037	7822	9606	1389	3170	4951	6731	8509	0286	2063	3838	5612	7385	9157
48	4280	6067	7852	9636	1418	3200	4981	6760	8539	0316	2092	3867	5641	7414	9186
49	4310	6096	7881	9665	1448	3230	5010	6790	8568	0346	2122	3897	5671	7444	9216
50	4340	6126	7911	9695	1478	3259	5040	6819	8598	0375	2151	3926	5700	7473	9245
51	4370	6156	7941	9725	1507	3289	5070	6849	8627	0405	2181	3956	5730	7503	9275
52	4400	6186	7971	9754	1537	3319	5099	6879	8657	0434	2211	3986	5760	7532	9304
53	4429	6215	8000	9784	1567	3348	5129	6908	8687	0464	2240	4015	5789	7562	9334
54	4459	6245	8030	9814	1597	3378	5159	6938	8716	0494	2270	4045	5819	7591	9363
55	4489	6275	8060	9844	1626	3408	5188	6968	8746	0523	2299	4074	5848	7621	9393
56	4519	6305	8090	9873	1656	3438	5218	6997	8776	0553	2329	4104	5878	7651	9422
57	4548	6334	8119	9903	1686	3467	5248	7027	8805	0582	2358	4133	5907	7680	9452
58	4578	6364	8149	9933	1715	3497	5277	7057	8835	0612	2388	4163	5937	7710	9481
59	4608	6394	8179	9962	1745	3527	5307	7086	8865	0642	2418	4193	5966	7739	9511
60	4638	6424	8208	9992	1775	3556	5337	7116	8894	0671	2447	4222	5996	7769	9540
"	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Sine Deg. 54

35 Deg. Co-Sine

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	"
9.912	9.911	9.911	9.911	9.911	9.911	9.911	9.911	9.911	9.911	9.911	9.911	9.910	9.910	9.910	
0315	9422	8528	7634	6739	5844	4948	4051	3155	2257	1359	0460	9561	8661	7761	60
0300	9407	8513	7619	6724	5829	4933	4037	3140	2242	1344	0445	9546	8646	7746	59
0285	9392	8498	7604	6709	5814	4918	4022	3125	2227	1329	0430	9531	8631	7731	58
0270	9377	8483	7589	6694	5799	4903	4007	3110	2212	1314	0415	9516	8616	7716	57
0255	9362	8468	7574	6679	5784	4888	3992	3095	2197	1299	0400	9501	8601	7701	56
0240	9347	8454	7559	6664	5769	4873	3977	3080	2182	1284	0385	9486	8586	7686	55
0225	9332	8439	7544	6650	5754	4858	3962	3065	2167	1269	0370	9471	8571	7671	54
0211	9317	8424	7529	6635	5739	4843	3947	3050	2152	1254	0355	9456	8556	7656	53
0196	9303	8409	7515	6620	5724	4828	3932	3035	2137	1239	0340	9441	8541	7641	52
0181	9288	8394	7500	6605	5709	4813	3917	3020	2122	1224	0326	9426	8526	7626	51
0166	9273	8379	7485	6590	5694	4799	3902	3005	2107	1209	0311	9411	8511	7611	50
0151	9258	8364	7470	6575	5680	4784	3887	2990	2092	1194	0296	9396	8496	7596	49
0136	9243	8349	7455	6560	5665	4769	3872	2975	2077	1179	0281	9381	8481	7581	48
0121	9228	8334	7440	6545	5650	4754	3857	2960	2062	1164	0266	9366	8466	7566	47
0106	9213	8319	7425	6530	5635	4739	3842	2945	2048	1149	0251	9351	8451	7551	46
0092	9198	8305	7410	6515	5620	4724	3827	2930	2033	1134	0236	9336	8436	7536	45
0077	9183	8290	7395	6500	5605	4709	3812	2915	2018	1119	0221	9321	8421	7521	44
0062	9169	8275	7380	6485	5590	4694	3797	2900	2003	1104	0206	9306	8406	7506	43
0047	9154	8260	7365	6471	5575	4679	3782	2885	1988	1089	0191	9291	8391	7491	42
0032	9139	8245	7351	6456	5560	4664	3768	2870	1973	1074	0176	9276	8376	7476	41
0017	9124	8230	7336	6441	5545	4649	3753	2855	1958	1059	0161	9261	8361	7461	40
0002	9109	8215	7321	6426	5530	4634	3738	2840	1943	1045	0146	9246	8346	7446	39
9987	9094	8200	7306	6411	5515	4619	3723	2826	1928	1030	0131	9231	8331	7431	38
9972	9079	8185	7291	6396	5500	4604	3708	2811	1913	1015	0116	9216	8316	7416	37
9958	9064	8170	7276	6381	5485	4589	3693	2796	1898	1000	0101	9201	8301	7401	36
9943	9049	8155	7261	6366	5471	4574	3678	2781	1883	0985	0086	9186	8286	7386	35
9928	9034	8141	7246	6351	5456	4560	3663	2766	1868	0970	0071	9171	8271	7371	34
9913	9020	8126	7231	6336	5441	4545	3648	2751	1853	0955	0056	9156	8256	7356	33
9898	9005	8111	7216	6321	5426	4530	3633	2736	1838	0940	0041	9141	8241	7341	32
9883	8990	8096	7201	6306	5411	4515	3618	2721	1823	0925	0026	9126	8226	7326	31
9868	8975	8081	7187	6291	5396	4500	3603	2706	1808	0910	0011	9111	8211	7311	30
9853	8960	8066	7172	6277	5381	4485	3588	2691	1793	0895	9996	9096	8196	7296	29
9839	8945	8051	7157	6262	5366	4470	3573	2676	1778	0880	9981	9081	8181	7281	28
9824	8930	8036	7142	6247	5351	4455	3558	2661	1763	0865	9966	9066	8166	7266	27
9809	8915	8021	7127	6232	5336	4440	3543	2646	1748	0850	9951	9051	8151	7251	26
9794	8900	8006	7112	6217	5321	4425	3528	2631	1733	0835	9936	9036	8136	7236	25
9779	8886	7992	7097	6202	5306	4410	3513	2616	1718	0820	9921	9021	8121	7221	24
9764	8871	7977	7082	6187	5291	4395	3498	2601	1703	0805	9906	9006	8106	7206	23
9749	8856	7962	7067	6172	5276	4380	3483	2586	1688	0790	9891	8991	8091	7191	22
9734	8841	7947	7052	6157	5262	4365	3469	2571	1673	0775	9876	8976	8076	7176	21
9719	8826	7932	7037	6142	5247	4350	3454	2556	1658	0760	9861	8961	8061	7161	20
9705	8811	7917	7022	6127	5232	4335	3439	2541	1643	0745	9846	8946	8046	7146	19
9690	8796	7902	7008	6112	5217	4320	3424	2526	1628	0730	9831	8931	8031	7131	18
9675	8781	7887	6993	6097	5202	4306	3409	2511	1613	0715	9816	8916	8016	7116	17
9660	8766	7872	6978	6083	5187	4291	3394	2496	1598	0700	9801	8901	8001	7101	16
9645	8751	7857	6963	6068	5172	4276	3379	2481	1584	0685	9786	8886	7986	7086	15
9630	8737	7843	6948	6053	5157	4261	3364	2466	1569	0670	9771	8871	7971	7071	14
9615	8722	7828	6933	6038	5142	4246	3349	2452	1554	0655	9756	8856	7956	7056	13
9600	8707	7813	6918	6023	5127	4231	3334	2437	1539	0640	9741	8841	7941	7041	12
9585	8692	7798	6903	6008	5112	4216	3319	2422	1524	0625	9726	8826	7926	7026	11
9571	8677	7783	6888	5993	5097	4201	3304	2407	1509	0610	9711	8811	7911	7011	10
9556	8662	7768	6873	5978	5082	4186	3289	2392	1494	0595	9696	8796	7896	6995	9
9541	8647	7753	6858	5963	5067	4171	3274	2377	1479	0580	9681	8781	7881	6980	8
9526	8632	7738	6843	5948	5052	4156	3259	2362	1464	0565	9666	8766	7866	6965	7
9511	8617	7723	6829	5933	5038	4141	3244	2347	1449	0550	9651	8751	7851	6950	6
9496	8603	7708	6814	5918	5023	4126	3229	2332	1434	0535	9636	8736	7836	6935	5
9481	8588	7693	6799	5903	5008	4111	3214	2317	1419	0520	9621	8721	7821	6920	4
9466	8573	7679	6784	5889	4993	4096	3199	2302	1404	0505	9606	8706	7806	6905	3
9451	8558	7664	6769	5874	4978	4081	3184	2287	1389	0490	9591	8691	7791	6890	2
9437	8543	7649	6754	5859	4963	4066	3169	2272	1374	0475	9576	8676	7776	6875	1
9422	8528	7634	6739	5844	4948	4051	3155	2257	1359	0460	9561	8661	7761	6860	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	"

Sine Deg. 54

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9.849	9.849	9.849	9.850	9.850	9.850	9.850	9.851	9.851	9.851	9.851	9.852	9.852	9.852	9.853
0	2536	5216	7896	0575	3253	5931	8608	1285	3961	6637	9312	1987	4661	7335	0008
1	2581	5261	7940	0619	3298	5976	8653	1330	4006	6682	9357	2031	4706	7379	0052
2	2625	5305	7985	0664	3342	6020	8698	1374	4051	6726	9401	2076	4750	7424	0097
3	2670	5350	8030	0709	3387	6065	8742	1419	4095	6771	9446	2121	4795	7468	0141
4	2715	5395	8074	0753	3432	6110	8787	1464	4140	6815	9491	2165	4839	7513	0186
5	2759	5439	8119	0798	3476	6154	8831	1508	4184	6860	9535	2210	4884	7557	0230
6	2804	5484	8164	0843	3521	6199	8876	1553	4229	6905	9580	2254	4928	7602	0275
7	2849	5529	8208	0887	3566	6243	8921	1597	4274	6949	9624	2299	4973	7646	0319
8	2893	5573	8253	0932	3610	6288	8965	1642	4318	6994	9669	2343	5017	7691	0364
9	2938	5618	8298	0976	3655	6333	9010	1687	4363	7038	9714	2388	5062	7736	0408
10	2983	5663	8342	1021	3699	6377	9055	1731	4407	7083	9758	2433	5107	7780	0453
11	3027	5707	8387	1066	3744	6422	9099	1776	4452	7128	9803	2477	5151	7825	0498
12	3072	5752	8432	1110	3789	6467	9144	1820	4497	7172	9847	2522	5196	7869	0542
13	3117	5797	8476	1155	3833	6511	9188	1865	4541	7217	9892	2566	5240	7914	0587
14	3161	5841	8521	1200	3878	6556	9233	1910	4586	7261	9936	2611	5285	7958	0631
15	3206	5886	8565	1244	3923	6600	9278	1954	4630	7306	9981	2655	5329	8003	0676
16	3251	5931	8610	1289	3967	6645	9322	1999	4675	7351	0026	2700	5374	8047	0720
17	3295	5975	8655	1334	4012	6690	9367	2043	4720	7395	0070	2745	5419	8092	0765
18	3340	6020	8699	1378	4057	6734	9411	2088	4764	7440	0115	2789	5463	8137	0809
19	3385	6065	8744	1423	4101	6779	9456	2133	4809	7484	0159	2834	5508	8181	0854
20	3429	6109	8789	1468	4146	6824	9501	2177	4853	7529	0204	2878	5552	8226	0898
21	3474	6154	8833	1512	4190	6868	9545	2222	4898	7573	0248	2923	5597	8270	0943
22	3519	6199	8878	1557	4235	6913	9590	2266	4943	7618	0293	2967	5641	8315	0988
23	3563	6243	8923	1601	4280	6957	9635	2311	4987	7663	0338	3012	5686	8359	1032
24	3608	6288	8967	1646	4324	7002	9679	2356	5032	7707	0382	3057	5730	8404	1077
25	3653	6333	9012	1691	4369	7047	9724	2400	5076	7752	0427	3101	5775	8448	1121
26	3697	6377	9057	1735	4414	7091	9768	2445	5121	7796	0471	3146	5820	8493	1166
27	3742	6422	9101	1780	4458	7136	9813	2490	5166	7841	0516	3190	5864	8537	1210
28	3787	6467	9146	1825	4503	7180	9858	2534	5210	7886	0561	3235	5909	8582	1255
29	3831	6511	9191	1869	4547	7225	9902	2579	5255	7930	0605	3279	5953	8627	1299
30	3876	6556	9235	1914	4592	7270	9947	2623	5299	7975	0650	3324	5998	8671	1344
31	3921	6601	9280	1959	4637	7314	9991	2668	5344	8019	0694	3369	6042	8716	1388
32	3965	6645	9325	2003	4681	7359	0036	2713	5389	8064	0739	3413	6087	8760	1433
33	4010	6690	9369	2048	4726	7404	0081	2757	5433	8109	0783	3458	6132	8805	1477
34	4055	6735	9414	2093	4771	7448	0125	2802	5478	8153	0828	3502	6176	8849	1522
35	4100	6779	9458	2137	4815	7493	0170	2846	5522	8198	0873	3547	6221	8894	1567
36	4144	6824	9503	2182	4860	7537	0214	2891	5567	8242	0917	3591	6265	8938	1611
37	4189	6869	9548	2226	4905	7582	0259	2936	5611	8287	0962	3636	6310	8983	1656
38	4234	6913	9592	2271	4949	7627	0304	2980	5656	8331	1006	3681	6354	9028	1700
39	4278	6958	9637	2316	4994	7671	0348	3025	5701	8376	1051	3725	6399	9072	1745
40	4323	7003	9682	2360	5038	7716	0393	3069	5745	8421	1095	3770	6443	9117	1789
41	4368	7047	9726	2405	5083	7761	0438	3114	5790	8465	1140	3814	6488	9161	1834
42	4412	7092	9771	2450	5128	7805	0482	3159	5834	8510	1185	3859	6533	9206	1878
43	4457	7137	9816	2494	5172	7850	0527	3203	5879	8554	1229	3903	6577	9250	1923
44	4502	7181	9860	2539	5217	7894	0571	3248	5924	8599	1274	3948	6622	9295	1967
45	4546	7226	9905	2584	5262	7939	0616	3292	5968	8644	1318	3993	6666	9339	2012
46	4591	7270	9950	2628	5306	7984	0661	3337	6013	8688	1363	4037	6711	9384	2057
47	4636	7315	9994	2673	5351	8028	0705	3382	6057	8733	1407	4082	6755	9428	2101
48	4680	7360	0039	2717	5395	8073	0750	3426	6102	8777	1452	4126	6800	9473	2146
49	4725	7404	0084	2762	5440	8118	0794	3471	6147	8822	1497	4171	6844	9518	2190
50	4769	7449	0128	2807	5485	8162	0839	3515	6191	8866	1541	4215	6889	9562	2235
51	4814	7494	0173	2851	5529	8207	0884	3560	6236	8911	1586	4260	6934	9607	2279
52	4859	7538	0217	2896	5574	8251	0928	3605	6280	8956	1630	4304	6978	9651	2324
53	4903	7583	0262	2941	5619	8296	0973	3649	6325	9000	1675	4349	7023	9696	2368
54	4948	7628	0307	2985	5663	8341	1017	3694	6370	9045	1719	4394	7067	9740	2413
55	4993	7672	0351	3030	5708	8385	1062	3738	6414	9089	1764	4438	7112	9785	2457
56	5037	7717	0396	3075	5752	8430	1107	3783	6459	9134	1809	4483	7156	9829	2502
57	5082	7762	0441	3119	5797	8474	1151	3828	6503	9179	1853	4527	7201	9874	2546
58	5127	7806	0485	3164	5842	8519	1196	3872	6548	9223	1898	4572	7245	9918	2591
59	5171	7851	0530	3208	5886	8564	1241	3917	6593	9268	1942	4616	7290	9963	2635
60	5216	7896	0575	3253	5931	8608	1285	3961	6637	9312	1987	4661	7335	0008	2680
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
	10.150	10.150	10.150	10.149	10.149	10.149	10.149	10.148	10.148	10.148	10.148	10.147	10.147	10.147	10.146	″
	7464	4784	2104	9425	6747	4069	1392	8715	6039	3363	0688	8013	5339	2665	9992	60
	7419	4739	2060	9381	6702	4024	1347	8670	5994	3318	0643	7969	5294	2621	9948	59
	7375	4695	2015	9336	6658	3980	1302	8626	5949	3274	0599	7924	5250	2576	9903	58
	7330	4650	1970	9291	6613	3935	1258	8581	5905	3229	0554	7879	5205	2532	9859	57
	7285	4605	1926	9247	6568	3890	1213	8536	5860	3185	0509	7835	5161	2487	9814	56
	7241	4561	1881	9202	6524	3846	1169	8492	5816	3140	0465	7790	5116	2443	9770	55
	7196	4516	1836	9157	6479	3801	1124	8447	5771	3095	0420	7746	5072	2398	9725	54
	7151	4471	1792	9113	6434	3757	1079	8403	5726	3051	0376	7701	5027	2354	9681	53
	7107	4427	1747	9068	6390	3712	1035	8358	5682	3006	0331	7657	4983	2309	9636	52
	7062	4382	1702	9024	6345	3667	0990	8313	5637	2962	0286	7612	4938	2264	9592	51
	7017	4337	1658	8979	6301	3623	0945	8269	5593	2917	0242	7567	4893	2220	9547	50
	6973	4293	1613	8934	6256	3578	0901	8224	5548	2872	0197	7523	4849	2175	9502	49
	6928	4248	1568	8890	6211	3533	0856	8180	5503	2828	0153	7478	4804	2131	9458	48
	6883	4203	1524	8845	6167	3489	0812	8135	5459	2783	0108	7434	4760	2086	9413	47
	6839	4159	1479	8800	6122	3444	0767	8090	5414	2739	0064	7389	4715	2042	9369	46
	6794	4114	1435	8756	6077	3400	0722	8046	5370	2694	0019	7345	4671	1997	9324	45
	6749	4069	1390	8711	6033	3355	0678	8001	5325	2649	9974	7300	4626	1953	9280	44
	6705	4025	1345	8666	5988	3310	0633	7957	5280	2605	9930	7255	4581	1908	9235	43
	6660	3980	1301	8622	5943	3266	0589	7912	5236	2560	9885	7211	4537	1863	9191	42
	6615	3935	1256	8577	5899	3221	0544	7867	5191	2516	9841	7166	4492	1819	9146	41
	6571	3891	1211	8532	5854	3176	0499	7823	5147	2471	9796	7122	4448	1774	9102	40
	6526	3846	1167	8488	5810	3132	0455	7778	5102	2427	9752	7077	4403	1730	9057	39
	6481	3801	1122	8443	5765	3087	0410	7734	5057	2382	9707	7033	4359	1685	9012	38
	6437	3757	1077	8399	5720	3043	0365	7689	5013	2337	9662	6988	4314	1641	8968	37
	6392	3712	1033	8354	5676	2998	0321	7644	4968	2293	9618	6943	4270	1596	8923	36
	6347	3667	0988	8309	5631	2953	0276	7600	4924	2248	9573	6899	4225	1552	8879	35
	6303	3623	0943	8265	5586	2909	0232	7555	4879	2204	9529	6854	4180	1507	8834	34
	6258	3578	0899	8220	5542	2864	0187	7510	4834	2159	9484	6810	4136	1463	8790	33
	6213	3533	0854	8175	5497	2820	0142	7466	4790	2114	9439	6765	4091	1418	8745	32
	6169	3489	0809	8131	5453	2775	0098	7421	4745	2070	9395	6721	4047	1373	8701	31
	6124	3444	0765	8086	5408	2730	0053	7377	4701	2025	9350	6676	4002	1329	8656	30
	6079	3399	0720	8041	5363	2686	0009	7332	4656	1981	9306	6631	3958	1284	8612	29
	6035	3355	0675	7997	5319	2641	9964	7287	4611	1936	9261	6587	3913	1240	8567	28
	5990	3310	0631	7952	5274	2596	9919	7243	4567	1891	9217	6542	3868	1195	8523	27
	5945	3265	0586	7907	5229	2552	9875	7198	4522	1847	9172	6498	3824	1151	8478	26
	5900	3221	0542	7863	5185	2507	9830	7154	4478	1802	9127	6453	3779	1106	8433	25
	5856	3176	0497	7818	5140	2463	9786	7109	4433	1758	9083	6409	3735	1062	8389	24
	5811	3131	0452	7774	5095	2418	9741	7064	4389	1713	9038	6364	3690	1017	8344	23
	5766	3087	0408	7729	5051	2373	9696	7020	4344	1669	8994	6319	3646	0972	8300	22
	5722	3042	0363	7684	5006	2329	9652	6975	4299	1624	8949	6275	3601	0928	8255	21
	5677	2997	0318	7640	4962	2284	9607	6931	4255	1579	8905	6230	3557	0883	8211	20
	5632	2953	0274	7595	4917	2239	9562	6886	4210	1535	8860	6186	3512	0839	8166	19
	5588	2908	0229	7550	4872	2195	9518	6841	4166	1490	8815	6141	3467	0794	8122	18
	5543	2863	0184	7506	4828	2150	9473	6797	4121	1446	8771	6097	3423	0750	8077	17
	5498	2819	0140	7461	4783	2106	9429	6752	4076	1401	8726	6052	3378	0705	8033	16
	5454	2774	0095	7416	4738	2061	9384	6708	4032	1356	8682	6007	3334	0661	7988	15
	5409	2730	0050	7372	4694	2016	9339	6663	3987	1312	8637	5963	3289	0616	7943	14
	5364	2685	0006	7327	4649	1972	9295	6618	3943	1267	8593	5918	3245	0572	7899	13
	5320	2640	9961	7283	4605	1927	9250	6574	3898	1223	8548	5874	3200	0527	7854	12
	5275	2596	9916	7238	4560	1882	9206	6529	3853	1178	8503	5829	3156	0482	7810	11
	5231	2551	9872	7193	4515	1838	9161	6485	3809	1134	8459	5785	3111	0438	7765	10
	5186	2506	9827	7149	4471	1793	9116	6440	3764	1089	8414	5740	3066	0393	7721	9
	5141	2462	9783	7104	4426	1749	9072	6395	3720	1044	8370	5696	3022	0349	7676	8
	5097	2417	9738	7059	4381	1704	9027	6351	3675	1000	8325	5651	2977	0304	7632	7
	5052	2372	9693	7015	4337	1659	8983	6306	3630	0955	8281	5606	2933	0260	7587	6
	5007	2328	9649	6970	4292	1615	8938	6262	3586	0911	8236	5562	2888	0215	7543	5
	4963	2283	9604	6925	4248	1570	8893	6217	3541	0866	8191	5517	2844	0171	7498	4
	4918	2238	9559	6881	4203	1526	8849	6172	3497	0821	8147	5473	2799	0126	7454	3
	4873	2194	9515	6836	4158	1481	8804	6128	3452	0777	8102	5428	2755	0082	7409	2
	4829	2149	9470	6792	4114	1436	8759	6083	3407	0732	8058	5384	2710	0037	7365	1
	4784	2104	9425	6747	4069	1392	8715	6039	3363	0688	8013	5339	2665	9992	7320	0
	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

35 Deg. Sine

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 763	9. 764	9. 764	9. 764	9. 764	9. 764	9. 765	9. 765	9. 765	9. 765	9. 765	9. 765	9. 766	9. 766	9. 766
0	9540	1311	3080	4849	6616	8382	0147	1911	3674	5436	7197	8957	0715	2473	4229
1	9570	1340	3110	4878	6645	8412	0177	1941	3704	5466	7226	8986	0745	2502	4259
2	9599	1370	3139	4908	6675	8441	0206	1970	3733	5495	7256	9015	0774	2531	4288
3	9629	1399	3169	4937	6704	8471	0236	2000	3762	5524	7285	9045	0803	2561	4317
4	9658	1429	3198	4967	6734	8500	0265	2029	3792	5554	7314	9074	0833	2590	4346
5	9688	1458	3228	4996	6763	8529	0294	2058	3821	5583	7344	9103	0862	2619	4376
6	9717	1488	3257	5026	6793	8559	0324	2088	3851	5612	7373	9133	0891	2649	4405
7	9747	1517	3287	5055	6822	8588	0353	2117	3880	5642	7402	9162	0920	2678	4434
8	9777	1547	3316	5084	6852	8618	0383	2147	3909	5671	7432	9191	0950	2707	4463
9	9806	1576	3346	5114	6881	8647	0412	2176	3939	5700	7461	9221	0979	2736	4493
10	9836	1606	3375	5143	6910	8677	0441	2205	3968	5730	7490	9250	1008	2766	4522
11	9865	1635	3405	5173	6940	8706	0471	2235	3997	5759	7520	9279	1038	2795	4551
12	9895	1665	3434	5202	6969	8735	0500	2264	4027	5788	7549	9309	1067	2824	4580
13	9924	1694	3464	5232	6999	8765	0530	2293	4056	5818	7578	9338	1096	2854	4610
14	9954	1724	3493	5261	7028	8794	0559	2323	4086	5847	7608	9367	1126	2883	4639
15	9983	1753	3523	5291	7058	8824	0588	2352	4115	5877	7637	9396	1155	2912	4668
16	0013	1783	3552	5320	7087	8853	0618	2382	4144	5906	7666	9426	1184	2941	4698
17	0042	1812	3582	5350	7117	8882	0647	2411	4174	5935	7696	9455	1213	2971	4727
18	0072	1842	3611	5379	7146	8912	0677	2440	4203	5965	7725	9484	1243	3000	4756
19	0101	1871	3640	5409	7175	8941	0706	2470	4232	5994	7754	9514	1272	3029	4785
20	0131	1901	3670	5438	7205	8971	0735	2499	4262	6023	7784	9543	1301	3058	4815
21	0160	1930	3699	5467	7234	9000	0765	2529	4291	6053	7813	9572	1331	3088	4844
22	0190	1960	3729	5497	7264	9030	0794	2558	4320	6082	7842	9602	1360	3117	4873
23	0219	1989	3758	5526	7293	9059	0824	2587	4350	6111	7872	9631	1389	3146	4902
24	0249	2019	3788	5556	7323	9088	0853	2617	4379	6141	7901	9660	1418	3176	4932
25	0278	2048	3817	5585	7352	9118	0883	2646	4409	6170	7930	9690	1448	3205	4961
26	0308	2078	3847	5615	7382	9147	0912	2675	4438	6199	7960	9719	1477	3234	4990
27	0337	2107	3876	5644	7411	9177	0941	2705	4467	6229	7989	9748	1506	3263	5019
28	0367	2137	3906	5674	7440	9206	0971	2734	4497	6258	8018	9778	1536	3293	5049
29	0396	2166	3935	5703	7470	9236	1000	2764	4526	6287	8048	9807	1565	3322	5078
30	0426	2196	3965	5733	7499	9265	1030	2793	4555	6317	8077	9836	1594	3351	5107
31	0455	2225	3994	5762	7529	9294	1059	2822	4585	6346	8106	9865	1624	3381	5136
32	0485	2255	4024	5791	7558	9324	1088	2852	4614	6375	8136	9895	1653	3410	5166
33	0514	2284	4053	5821	7588	9353	1118	2881	4644	6405	8165	9924	1682	3439	5195
34	0544	2314	4083	5850	7617	9383	1147	2911	4673	6434	8194	9953	1711	3468	5224
35	0573	2343	4112	5880	7646	9412	1177	2940	4702	6463	8224	9983	1741	3498	5253
36	0603	2373	4142	5909	7676	9441	1206	2969	4732	6493	8253	0012	1770	3527	5283
37	0632	2402	4171	5939	7705	9471	1235	2999	4761	6522	8282	0041	1799	3556	5312
38	0662	2432	4200	5968	7735	9500	1265	3028	4790	6552	8312	0071	1829	3585	5341
39	0691	2461	4230	5998	7764	9530	1294	3057	4820	6581	8341	0100	1858	3615	5370
40	0721	2491	4259	6027	7794	9559	1324	3087	4849	6610	8370	0129	1887	3644	5400
41	0750	2520	4289	6057	7823	9589	1353	3116	4878	6640	8400	0159	1916	3673	5429
42	0780	2550	4318	6086	7853	9618	1382	3146	4908	6669	8429	0188	1946	3703	5458
43	0809	2579	4348	6115	7882	9647	1412	3175	4937	6698	8458	0217	1975	3732	5487
44	0839	2609	4377	6145	7911	9677	1441	3204	4966	6728	8488	0246	2004	3761	5517
45	0868	2638	4407	6174	7941	9706	1470	3234	4996	6757	8517	0276	2034	3790	5546
46	0898	2668	4436	6204	7970	9736	1500	3263	5025	6786	8546	0305	2063	3820	5575
47	0927	2697	4466	6233	8000	9765	1529	3292	5055	6816	8576	0334	2092	3849	5604
48	0957	2727	4495	6263	8029	9794	1559	3322	5084	6845	8605	0364	2121	3878	5634
49	0986	2756	4525	6292	8059	9824	1588	3351	5113	6874	8634	0393	2151	3907	5663
50	1016	2786	4554	6322	8088	9853	1617	3381	5143	6904	8663	0422	2180	3937	5692
51	1045	2815	4584	6351	8117	9883	1647	3410	5172	6933	8693	0452	2209	3966	5721
52	1075	2845	4613	6380	8147	9912	1676	3439	5201	6962	8722	0481	2239	3995	5751
53	1104	2874	4643	6410	8176	9941	1706	3469	5231	6992	8751	0510	2268	4024	5780
54	1134	2903	4672	6439	8206	9971	1735	3498	5260	7021	8781	0540	2297	4054	5809
55	1163	2933	4701	6469	8235	0000	1764	3527	5289	7050	8810	0569	2326	4083	5838
56	1193	2962	4731	6498	8265	0030	1794	3557	5319	7080	8839	0598	2356	4112	5868
57	1222	2992	4760	6528	8294	0059	1823	3586	5348	7109	8869	0627	2385	4142	5897
58	1252	3021	4790	6557	8323	0089	1853	3616	5378	7138	8898	0657	2414	4171	5926
59	1281	3051	4819	6587	8353	0118	1882	3645	5407	7168	8927	0686	2444	4200	5955
60	1311	3080	4849	6616	8382	0147	1911	3674	5436	7197	8957	0715	2473	4229	5985
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Sine Deg. 54

35 Deg. Co-Sine

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
	9. 910	9. 910	9. 910	9. 910	9. 910	9. 910	9. 910	9. 910	9. 909	9. 909	9. 909	9. 909	9. 909	9. 909	9. 909	″
	6860	5959	5057	4155	3251	2348	1444	0539	9634	8728	7821	6915	6007	5099	4190	60
	6845	5944	5042	4139	3236	2333	1429	0524	9619	8713	7806	6899	5992	5084	4175	59
	6830	5929	5027	4124	3221	2318	1414	0509	9603	8698	7791	6884	5977	5069	4160	58
	6815	5914	5012	4109	3206	2303	1398	0494	9588	8683	7776	6869	5962	5054	4145	57
	6800	5899	4997	4094	3191	2288	1383	0479	9573	8667	7761	6854	5946	5038	4130	56
	6785	5884	4982	4079	3176	2273	1368	0464	9558	8652	7746	6839	5931	5023	4115	55
	6770	5869	4967	4064	3161	2257	1353	0448	9543	8637	7731	6824	5916	5008	4099	54
	6755	5854	4952	4049	3146	2242	1338	0433	9528	8622	7716	6809	5901	4993	4084	53
	6740	5839	4937	4034	3131	2227	1323	0418	9513	8607	7701	6794	5886	4978	4069	52
	6725	5824	4922	4019	3116	2212	1308	0403	9498	8592	7685	6778	5871	4963	4054	51
	6710	5809	4907	4004	3101	2197	1293	0388	9483	8577	7670	6763	5856	4948	4039	50
	6695	5794	4892	3989	3086	2182	1278	0373	9468	8562	7655	6748	5841	4932	4024	49
	6680	5779	4877	3974	3071	2167	1263	0358	9453	8547	7640	6733	5825	4917	4009	48
	6665	5764	4862	3959	3056	2152	1248	0343	9437	8532	7625	6718	5810	4902	3993	47
	6650	5749	4846	3944	3041	2137	1233	0328	9422	8516	7610	6703	5795	4887	3978	46
	6635	5734	4831	3929	3026	2122	1218	0313	9407	8501	7595	6688	5780	4872	3963	45
	6620	5718	4816	3914	3011	2107	1202	0298	9392	8486	7580	6673	5765	4857	3948	44
	6605	5703	4801	3899	2995	2092	1187	0283	9377	8471	7565	6657	5750	4842	3933	43
	6590	5688	4786	3884	2980	2077	1172	0267	9362	8456	7549	6642	5735	4826	3918	42
	6575	5673	4771	3869	2965	2062	1157	0252	9347	8441	7534	6627	5720	4811	3902	41
	6560	5658	4756	3854	2950	2047	1142	0237	9332	8426	7519	6612	5704	4796	3887	40
	6545	5643	4741	3838	2935	2031	1127	0222	9317	8411	7504	6597	5689	4781	3872	39
	6530	5628	4726	3823	2920	2016	1112	0207	9302	8396	7489	6582	5674	4766	3857	38
	6515	5613	4711	3808	2905	2001	1097	0192	9287	8380	7474	6567	5659	4751	3842	37
	6500	5598	4696	3793	2890	1986	1082	0177	9271	8365	7459	6552	5644	4736	3827	36
	6485	5583	4681	3778	2875	1971	1067	0162	9256	8350	7444	6536	5629	4720	3812	35
	6470	5568	4666	3763	2860	1956	1052	0147	9241	8335	7429	6521	5614	4705	3796	34
	6455	5553	4651	3748	2845	1941	1037	0132	9226	8320	7413	6506	5598	4690	3781	33
	6440	5538	4636	3733	2830	1926	1022	0117	9211	8305	7398	6491	5583	4675	3766	32
	6425	5523	4621	3718	2815	1911	1006	0101	9196	8290	7383	6476	5568	4660	3751	31
	6410	5508	4606	3703	2800	1896	0991	0086	9181	8275	7368	6461	5553	4645	3736	30
	6395	5493	4591	3688	2785	1881	0976	0071	9166	8260	7353	6446	5538	4630	3721	29
	6380	5478	4576	3673	2770	1866	0961	0056	9151	8245	7338	6431	5523	4614	3706	28
	6365	5463	4561	3658	2755	1851	0946	0041	9136	8229	7323	6415	5508	4599	3690	27
	6350	5448	4546	3643	2739	1836	0931	0026	9120	8214	7308	6400	5493	4584	3675	26
	6335	5433	4531	3628	2724	1820	0916	0011	9105	8199	7292	6385	5477	4569	3660	25
	6320	5418	4516	3613	2709	1805	0901	9996	9090	8184	7277	6370	5462	4554	3645	24
	6305	5403	4501	3598	2694	1790	0886	9981	9075	8169	7262	6355	5447	4539	3630	23
	6290	5388	4485	3583	2679	1775	0871	9966	9060	8154	7247	6340	5432	4524	3615	22
	6274	5373	4470	3568	2664	1760	0856	9951	9045	8139	7232	6325	5417	4508	3599	21
	6259	5358	4455	3553	2649	1745	0841	9935	9030	8124	7217	6310	5402	4493	3584	20
	6244	5343	4440	3537	2634	1730	0826	9920	9015	8109	7202	6294	5387	4478	3569	19
	6229	5328	4425	3522	2619	1715	0810	9905	9000	8093	7187	6279	5371	4463	3554	18
	6214	5313	4410	3507	2604	1700	0795	9890	8985	8078	7172	6264	5356	4448	3539	17
	6199	5298	4395	3492	2589	1685	0780	9875	8969	8063	7156	6249	5341	4433	3524	16
	6184	5283	4380	3477	2574	1670	0765	9860	8954	8048	7141	6234	5326	4418	3509	15
	6169	5268	4365	3462	2559	1655	0750	9845	8939	8033	7126	6219	5311	4402	3493	14
	6154	5252	4350	3447	2544	1640	0735	9830	8924	8018	7111	6204	5296	4387	3478	13
	6139	5237	4335	3432	2529	1625	0720	9815	8909	8003	7096	6189	5281	4372	3463	12
	6124	5222	4320	3417	2514	1609	0705	9800	8894	7988	7081	6173	5265	4357	3448	11
	6109	5207	4305	3402	2498	1594	0690	9785	8879	7973	7066	6158	5250	4342	3433	10
	6094	5192	4290	3387	2483	1579	0675	9770	8864	7957	7051	6143	5235	4327	3418	9
	6079	5177	4275	3372	2468	1564	0660	9754	8849	7942	7035	6128	5220	4312	3402	8
	6064	5162	4260	3357	2453	1549	0645	9739	8834	7927	7020	6113	5205	4296	3387	7
	6049	5147	4245	3342	2438	1534	0629	9724	8818	7912	7005	6098	5190	4281	3372	6
	6034	5132	4230	3327	2423	1519	0614	9709	8803	7897	6990	6083	5175	4266	3357	5
	6019	5117	4215	3312	2408	1504	0599	9694	8788	7882	6975	6068	5160	4251	3342	4
	6004	5102	4200	3297	2393	1489	0584	9679	8773	7867	6960	6052	5144	4236	3327	3
	5989	5087	4185	3282	2378	1474	0569	9664	8758	7852	6945	6037	5129	4221	3311	2
	5974	5072	4170	3267	2363	1459	0554	9649	8743	7837	6930	6022	5114	4205	3296	1
	5959	5057	4155	3251	2348	1444	0539	9634	8728	7821	6915	6007	5099	4190	3281	0
	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Sine Deg. 54

35 Deg. Tangent

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 853	9. 853	9. 853	9. 854	9. 854	9. 854	9. 854	9. 855	9. 855	9. 855	9. 855	9. 856	9. 856	9. 856	9. 857
0	2680	5352	8023	0694	3365	6034	8704	1372	4041	6708	9376	2042	4708	7374	0039
1	2725	5397	8068	0739	3409	6079	8748	1417	4085	6753	9420	2087	4753	7418	0083
2	2769	5441	8112	0783	3454	6123	8793	1461	4130	6797	9464	2131	4797	7463	0128
3	2814	5486	8157	0828	3498	6168	8837	1506	4174	6842	9509	2176	4842	7507	0172
4	2858	5530	8201	0872	3543	6212	8882	1550	4219	6886	9553	2220	4886	7552	0217
5	2903	5575	8246	0917	3587	6257	8926	1595	4263	6931	9598	2264	4930	7596	0261
6	2947	5619	8290	0961	3632	6301	8971	1639	4307	6975	9642	2309	4975	7640	0305
7	2992	5664	8335	1006	3676	6346	9015	1684	4352	7020	9687	2353	5019	7685	0350
8	3036	5708	8380	1050	3721	6390	9060	1728	4396	7064	9731	2398	5064	7729	0894
9	3081	5753	8424	1095	3765	6435	9104	1773	4441	7108	9776	2442	5108	7774	0439
10	3125	5797	8469	1139	3810	6479	9149	1817	4485	7153	9820	2487	5153	7818	0483
11	3170	5842	8513	1184	3854	6524	9193	1862	4530	7197	9864	2531	5197	7863	0528
12	3214	5886	8558	1228	3899	6568	9237	1906	4574	7242	9909	2575	5241	7907	0572
13	3259	5931	8602	1273	3943	6613	9282	1951	4619	7286	9953	2620	5286	7951	0616
14	3304	5975	8647	1317	3988	6657	9326	1995	4663	7331	9998	2664	5330	7996	0661
15	3348	6020	8691	1362	4032	6702	9371	2040	4708	7375	0042	2709	5375	8040	0705
16	3393	6064	8736	1406	4077	6746	9415	2084	4752	7420	0087	2753	5419	8085	0750
17	3437	6109	8780	1451	4121	6791	9460	2128	4797	7464	0131	2798	5464	8129	0794
18	3482	6153	8825	1495	4166	6835	9504	2173	4841	7509	0176	2842	5508	8174	0838
19	3526	6198	8869	1540	4210	6880	9549	2217	4885	7553	0220	2887	5552	8218	0883
20	3571	6243	8914	1584	4255	6924	9593	2262	4930	7597	0264	2931	5597	8262	0927
21	3615	6287	8958	1629	4299	6969	9638	2306	4974	7642	0309	2975	5641	8307	0972
22	3660	6332	9003	1673	4344	7013	9682	2351	5019	7686	0353	3020	5686	8351	1016
23	3704	6376	9047	1718	4388	7058	9727	2395	5063	7731	0398	3064	5730	8396	1060
24	3749	6421	9092	1762	4433	7102	9771	2440	5108	7775	0442	3109	5775	8440	1105
25	3793	6465	9136	1807	4477	7147	9816	2484	5152	7820	0487	3153	5819	8484	1149
26	3838	6510	9181	1851	4522	7191	9860	2529	5197	7864	0531	3198	5863	8529	1194
27	3882	6554	9225	1896	4566	7236	9905	2573	5241	7909	0576	3242	5908	8573	1238
28	3927	6599	9270	1940	4611	7280	9949	2618	5286	7953	0620	3286	5952	8618	1283
29	3972	6643	9314	1985	4655	7325	9994	2662	5330	7998	0664	3331	5997	8662	1327
30	4016	6688	9359	2029	4700	7369	0038	2707	5375	8042	0709	3375	6041	8707	1371
31	4061	6732	9403	2074	4744	7414	0083	2751	5419	8086	0753	3420	6086	8751	1416
32	4105	6777	9448	2119	4789	7458	0127	2796	5464	8131	0798	3464	6130	8795	1460
33	4150	6821	9492	2163	4833	7503	0172	2840	5508	8175	0842	3509	6174	8840	1505
34	4194	6866	9537	2208	4878	7547	0216	2885	5552	8220	0887	3553	6219	8884	1549
35	4239	6910	9581	2252	4922	7592	0261	2929	5597	8264	0931	3597	6263	8929	1593
36	4283	6955	9626	2297	4967	7636	0305	2973	5641	8309	0976	3642	6308	8973	1638
37	4328	6999	9670	2341	5011	7681	0349	3018	5686	8353	1020	3686	6352	9017	1682
38	4372	7044	9715	2386	5056	7725	0394	3062	5730	8398	1064	3731	6397	9062	1727
39	4417	7088	9760	2430	5100	7769	0438	3107	5775	8442	1109	3775	6441	9106	1771
40	4461	7133	9804	2475	5145	7814	0483	3151	5819	8487	1153	3820	6485	9151	1815
41	4506	7177	9849	2519	5189	7858	0527	3196	5864	8531	1198	3864	6530	9195	1860
42	4550	7222	9893	2564	5234	7903	0572	3240	5908	8575	1242	3909	6574	9240	1904
43	4595	7267	9938	2608	5278	7947	0616	3285	5953	8620	1287	3953	6619	9284	1949
44	4640	7311	9982	2653	5323	7992	0661	3329	5997	8664	1331	3997	6663	9328	1993
45	4684	7356	0027	2697	5367	8036	0705	3374	6041	8709	1376	4042	6708	9373	2037
46	4729	7400	0071	2742	5411	8081	0750	3418	6086	8753	1420	4086	6752	9417	2082
47	4773	7445	0116	2786	5456	8125	0794	3463	6130	8798	1464	4131	6796	9462	2126
48	4818	7489	0160	2831	5500	8170	0839	3507	6175	8842	1509	4175	6841	9506	2171
49	4862	7534	0205	2875	5545	8214	0883	3552	6219	8887	1553	4220	6885	9550	2215
50	4907	7578	0249	2920	5589	8259	0928	3596	6264	8931	1598	4264	6930	9595	2260
51	4951	7623	0294	2964	5634	8303	0972	3640	6308	8975	1642	4308	6974	9639	2304
52	4996	7667	0338	3009	5678	8348	1017	3685	6353	9020	1687	4353	7019	9684	2348
53	5040	7712	0383	3053	5723	8392	1061	3729	6397	9064	1731	4397	7063	9728	2393
54	5085	7756	0427	3098	5767	8437	1106	3774	6442	9109	1776	4442	7107	9773	2437
55	5129	7801	0472	3142	5812	8481	1150	3818	6486	9153	1820	4486	7152	9817	2482
56	5174	7845	0516	3187	5856	8526	1195	3863	6531	9198	1864	4531	7196	9861	2526
57	5218	7890	0561	3231	5901	8570	1239	3907	6575	9242	1909	4575	7241	9906	2570
58	5263	7934	0605	3276	5945	8615	1283	3952	6619	9287	1953	4619	7285	9950	2615
59	5307	7979	0650	3320	5990	8659	1328	3996	6664	9331	1998	4664	7329	9995	2659
60	5352	8023	0694	3365	6034	8704	1372	4041	6708	9376	2042	4708	7374	0039	2704
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Tangent Deg. 54

35 Deg. Co-Tangent

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	″
10. 146	10. 146	10. 146	10. 145	10. 145	10. 145	10. 145	10. 144	10. 144	10. 144	10. 144	10. 143	10. 143	10. 143	10. 142	
7320	4648	1977	9306	6635	3966	1296	8628	5959	3292	0624	7958	5292	2626	9961	60
7275	4603	1932	9261	6591	3921	1252	8583	5915	3247	0580	7913	5247	2582	9917	59
7231	4559	1888	9217	6546	3877	1207	8539	5870	3203	0536	7869	5203	2537	9872	58
7186	4514	1843	9172	6502	3832	1163	8494	5826	3158	0491	7824	5158	2493	9828	57
7142	4470	1799	9128	6457	3788	1118	8450	5781	3114	0447	7780	5114	2448	9783	56
7097	4425	1754	9083	6413	3743	1074	8405	5737	3069	0402	7736	5070	2404	9739	55
7053	4381	1710	9039	6368	3699	1029	8361	5693	3025	0358	7691	5025	2360	9695	54
7008	4336	1665	8994	6324	3654	0985	8316	5648	2980	0313	7647	4981	2315	9650	53
6964	4292	1620	8950	6279	3610	0940	8272	5604	2936	0269	7602	4936	2271	9606	52
6919	4247	1576	8905	6235	3565	0896	8227	5559	2892	0224	7558	4892	2226	9561	51
6875	4203	1531	8861	6190	3521	0851	8183	5515	2847	0180	7513	4847	2182	9517	50
6830	4158	1487	8816	6146	3476	0807	8138	5470	2803	0136	7469	4803	2137	9472	49
6786	4114	1442	8772	6101	3432	0763	8094	5426	2758	0091	7425	4759	2093	9428	48
6741	4069	1398	8727	6057	3387	0718	8049	5381	2714	0047	7380	4714	2049	9384	47
6696	4025	1353	8683	6012	3343	0674	8005	5337	2669	0002	7336	4670	2004	9339	46
6652	3980	1309	8638	5968	3298	0629	7960	5292	2625	9958	7291	4625	1960	9295	45
6607	3936	1264	8594	5923	3254	0585	7916	5248	2580	9913	7247	4581	1915	9250	44
6563	3891	1220	8549	5879	3209	0540	7872	5203	2536	9869	7202	4536	1871	9206	43
6518	3847	1175	8505	5834	3165	0496	7827	5159	2491	9824	7158	4492	1826	9162	42
6474	3802	1131	8460	5790	3120	0451	7783	5115	2447	9780	7113	4448	1782	9117	41
6429	3757	1086	8416	5745	3076	0407	7738	5070	2403	9736	7069	4403	1738	9073	40
6385	3713	1042	8371	5701	3031	0362	7694	5026	2358	9691	7025	4359	1693	9028	39
6340	3668	0997	8327	5656	2987	0318	7649	4981	2314	9647	6980	4314	1649	8984	38
6296	3624	0953	8282	5612	2942	0273	7605	4937	2269	9602	6936	4270	1604	8940	37
6251	3579	0908	8238	5567	2898	0229	7560	4892	2225	9558	6891	4225	1560	8895	36
6207	3535	0864	8193	5523	2853	0184	7516	4848	2180	9513	6847	4181	1516	8851	35
6162	3490	0819	8149	5478	2809	0140	7471	4803	2136	9469	6802	4137	1471	8806	34
6118	3446	0775	8104	5434	2764	0095	7427	4759	2091	9424	6758	4092	1427	8762	33
6073	3401	0730	8060	5389	2720	0051	7382	4714	2047	9380	6714	4048	1382	8717	32
6028	3357	0686	8015	5345	2675	0006	7338	4670	2002	9336	6669	4003	1338	8673	31
5984	3312	0641	7971	5300	2631	9962	7293	4625	1958	9291	6625	3959	1293	8629	30
5939	3268	0597	7926	5256	2586	9917	7249	4581	1914	9247	6580	3914	1249	8584	29
5895	3223	0552	7881	5211	2542	9873	7204	4536	1869	9202	6536	3870	1205	8540	28
5850	3179	0508	7837	5167	2497	9828	7160	4492	1825	9158	6491	3826	1160	8495	27
5806	3134	0463	7792	5122	2453	9784	7115	4448	1780	9113	6447	3781	1116	8451	26
5761	3090	0419	7748	5078	2408	9739	7071	4403	1736	9069	6403	3737	1071	8407	25
5717	3045	0374	7703	5033	2364	9695	7027	4359	1691	9024	6358	3692	1027	8362	24
5672	3001	0330	7659	4989	2319	9651	6982	4314	1647	8980	6314	3648	0983	8318	23
5628	2956	0285	7614	4944	2275	9606	6938	4270	1602	8936	6269	3603	0938	8273	22
5583	2912	0240	7570	4900	2231	9562	6893	4225	1558	8891	6225	3559	0894	8229	21
5539	2867	0196	7525	4855	2186	9517	6849	4181	1513	8847	6180	3515	0849	8185	20
5494	2823	0151	7481	4811	2142	9473	6804	4136	1469	8802	6136	3470	0805	8140	19
5450	2778	0107	7436	4766	2097	9428	6760	4092	1425	8758	6091	3426	0760	8096	18
5405	2733	0062	7392	4722	2053	9384	6715	4047	1380	8713	6047	3381	0716	8051	17
5360	2689	0018	7347	4677	2008	9339	6671	4003	1336	8669	6003	3337	0672	8007	16
5316	2644	9973	7303	4633	1964	9295	6626	3959	1291	8624	5958	3292	0627	7963	15
5271	2600	9929	7258	4589	1919	9250	6582	3914	1247	8580	5914	3248	0583	7918	14
5227	2555	9884	7214	4544	1875	9206	6537	3870	1202	8536	5869	3204	0538	7874	13
5182	2511	9840	7169	4500	1830	9161	6493	3825	1158	8491	5825	3159	0494	7829	12
5138	2466	9795	7125	4455	1786	9117	6448	3781	1113	8447	5780	3115	0450	7785	11
5093	2422	9751	7080	4411	1741	9072	6404	3736	1069	8402	5736	3070	0405	7740	10
5049	2377	9706	7036	4366	1697	9028	6360	3692	1025	8358	5692	3026	0361	7696	9
5004	2333	9662	6991	4322	1652	8983	6315	3647	0980	8313	5647	2981	0316	7652	8
4960	2288	9617	6947	4277	1608	8939	6271	3603	0936	8269	5603	2937	0272	7607	7
4915	2244	9573	6902	4233	1563	8894	6226	3558	0891	8224	5558	2893	0227	7563	6
4871	2199	9528	6858	4188	1519	8850	6182	3514	0847	8180	5514	2848	0183	7518	5
4826	2155	9484	6813	4144	1474	8805	6137	3469	0802	8136	5469	2804	0139	7474	4
4782	2110	9439	6769	4099	1430	8761	6093	3425	0758	8091	5425	2759	0094	7430	3
4737	2066	9395	6724	4055	1385	8717	6048	3381	0713	8047	5381	2715	0050	7385	2
4693	2021	9350	6680	4010	1341	8672	6004	3336	0669	8002	5336	2671	0005	7341	1
4648	1977	9306	6635	3966	1296	8628	5959	3292	0624	7958	5292	2626	9961	7296	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Tangent Deg. 54

35 Deg. Sine

"	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58	59′
	9. 766	9. 766	9. 766	9. 767	9. 767	9. 767	9. 767	9. 767	9. 767	9. 768	9. 768	9. 768	9. 768	9. 768	9. 769
0	5985	7739	9492	1244	2996	4746	6494	8242	9989	1735	3480	5223	6966	8707	0448
1	6014	7768	9521	1274	3025	4775	6524	8271	0018	1764	3509	5252	6995	8736	0477
2	6043	7797	9551	1303	3054	4804	6553	8301	0047	1793	3538	5281	7024	8765	0506
3	6072	7827	9580	1332	3083	4833	6582	8330	0076	1822	3567	5310	7053	8794	0535
4	6102	7856	9609	1361	3112	4862	6611	8359	0106	1851	3596	5339	7082	8823	0564
5	6131	7885	9638	1390	3141	4891	6640	8388	0135	1880	3625	5368	7111	8852	0593
6	6160	7914	9668	1420	3171	4920	6669	8417	0164	1909	3654	5397	7140	8881	0622
7	6189	7944	9697	1449	3200	4950	6698	8446	0193	1938	3683	5426	7169	8910	0650
8	6219	7973	9726	1478	3229	4979	6728	8475	0222	1968	3712	5456	7198	8939	0679
9	6248	8002	9755	1507	3258	5008	6757	8504	0251	1997	3741	5485	7227	8968	0708
10	6277	8031	9784	1536	3287	5037	6786	8534	0280	2026	3770	5514	7256	8997	0737
11	6306	8061	9814	1566	3316	5066	6815	8563	0309	2055	3799	5543	7285	9026	0766
12	6336	8090	9843	1595	3346	5095	6844	8592	0338	2084	3828	5572	7314	9055	0795
13	6365	8119	9872	1624	3375	5125	6873	8621	0367	2113	3857	5601	7343	9084	0824
14	6394	8148	9901	1653	3404	5154	6902	8650	0397	2142	3886	5630	7372	9113	0853
15	6423	8177	9930	1682	3433	5183	6932	8679	0426	2171	3916	5659	7401	9142	0882
16	6453	8207	9960	1711	3462	5212	6961	8708	0455	2200	3945	5688	7430	9171	0911
17	6482	8236	9989	1741	3491	5241	6990	8737	0484	2229	3974	5717	7459	9200	0940
18	6511	8265	0018	1770	3521	5270	7019	8767	0513	2258	4003	5746	7488	9229	0969
19	6540	8294	0047	1799	3550	5299	7048	8796	0542	2287	4032	5775	7517	9258	0998
20	6570	8324	0076	1828	3579	5329	7077	8825	0571	2317	4061	5804	7546	9287	1027
21	6599	8353	0106	1857	3608	5358	7106	8854	0600	2346	4090	5833	7575	9316	1056
22	6628	8382	0135	1887	3637	5387	7135	8883	0629	2375	4119	5862	7604	9345	1085
23	6657	8411	0164	1916	3666	5416	7165	8912	0658	2404	4148	5891	7633	9374	1114
24	6687	8440	0193	1945	3696	5445	7194	8941	0688	2433	4177	5920	7662	9403	1143
25	6716	8470	0222	1974	3725	5474	7223	8970	0717	2462	4206	5949	7691	9432	1172
26	6745	8499	0252	2003	3754	5504	7252	8999	0746	2491	4235	5978	7720	9461	1201
27	6774	8528	0281	2033	3783	5533	7281	9029	0775	2520	4264	6007	7749	9490	1230
28	6804	8557	0310	2062	3812	5562	7310	9058	0804	2549	4293	6036	7778	9519	1259
29	6833	8587	0339	2091	3841	5591	7339	9087	0833	2578	4322	6065	7808	9548	1288
30	6862	8616	0368	2120	3871	5620	7369	9116	0862	2607	4351	6095	7837	9577	1317
31	6891	8645	0398	2149	3900	5649	7398	9145	0891	2636	4381	6124	7866	9606	1346
32	6920	8674	0427	2178	3929	5678	7427	9174	0920	2666	4410	6153	7895	9635	1375
33	6950	8703	0456	2208	3958	5708	7456	9203	0949	2695	4439	6182	7924	9664	1404
34	6979	8733	0485	2237	3987	5737	7485	9232	0979	2724	4468	6211	7953	9693	1433
35	7008	8762	0514	2266	4016	5766	7514	9261	1008	2753	4497	6240	7982	9722	1462
36	7037	8791	0544	2295	4046	5795	7543	9291	1037	2782	4526	6269	8011	9751	1491
37	7067	8820	0573	2324	4075	5824	7572	9320	1066	2811	4555	6298	8040	9780	1520
38	7096	8850	0602	2354	4104	5853	7602	9349	1095	2840	4584	6327	8069	9809	1549
39	7125	8879	0631	2383	4133	5882	7631	9378	1124	2869	4613	6356	8098	9839	1578
40	7154	8908	0661	2412	4162	5912	7660	9407	1153	2898	4642	6385	8127	9868	1607
41	7184	8937	0690	2441	4191	5941	7689	9436	1182	2927	4671	6414	8156	9897	1636
42	7213	8966	0719	2470	4221	5970	7718	9465	1211	2956	4700	6443	8185	9926	1665
43	7242	8996	0748	2499	4250	5999	7747	9494	1240	2985	4729	6472	8214	9955	1694
44	7271	9025	0777	2529	4279	6028	7776	9523	1269	3014	4758	6501	8243	9984	1723
45	7301	9054	0806	2558	4308	6057	7805	9553	1299	3043	4787	6530	8272	0013	1752
46	7330	9083	0836	2587	4337	6086	7835	9582	1328	3073	4816	6559	8301	0042	1781
47	7359	9112	0865	2616	4366	6116	7864	9611	1357	3102	4845	6588	8330	0071	1810
48	7388	9142	0894	2645	4396	6145	7893	9640	1386	3131	4875	6617	8359	0100	1839
49	7417	9171	0923	2675	4425	6174	7922	9669	1415	3160	4904	6646	8388	0129	1868
50	7447	9200	0952	2704	4454	6203	7951	9698	1444	3189	4933	6675	8417	0158	1897
51	7476	9229	0982	2733	4483	6232	7980	9727	1473	3218	4962	6704	8446	0187	1926
52	7505	9259	1011	2762	4512	6261	8009	9756	1502	3247	4991	6733	8475	0216	1955
53	7534	9288	1040	2791	4541	6290	8038	9785	1531	3276	5020	6762	8504	0245	1984
54	7564	9317	1069	2820	4571	6320	8068	9815	1560	3305	5049	6791	8533	0274	2013
55	7593	9346	1098	2850	4600	6349	8097	9844	1589	3334	5078	6820	8562	0303	2042
56	7622	9375	1128	2879	4629	6378	8126	9873	1619	3363	5107	6850	8591	0332	2071
57	7651	9405	1157	2908	4658	6407	8155	9902	1648	3392	5136	6879	8620	0361	2100
58	7681	9434	1186	2937	4687	6436	8184	9931	1677	3421	5165	6908	8649	0390	2129
59	7710	9463	1215	2966	4716	6465	8213	9960	1706	3450	5194	6937	8678	0419	2158
60	7739	9492	1244	2996	4746	6494	8242	9989	1735	3480	5223	6966	8707	0448	2187
"	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Sine Deg. 54

35 Deg. Co-Sine

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	"
9. 909	9. 909	9. 909	9. 909	9. 908	9. 908	9. 908	9. 908	9. 908	9. 908	9. 908	9. 908	9. 908	9. 908	9. 908	
3281	2371	1461	0550	9639	8727	7814	6901	5988	5073	4159	3243	2327	1411	0494	60
3266	2356	1446	0535	9624	8712	7799	6886	5972	5058	4143	3228	2312	1396	0479	59
3251	2341	1431	0520	9608	8696	7784	6871	5957	5043	4128	3213	2297	1380	0463	58
3236	2326	1416	0505	9593	8681	7769	6856	5942	5028	4113	3198	2282	1365	0448	57
3221	2311	1400	0490	9578	8666	7754	6840	5927	5012	4098	3182	2266	1350	0433	56
3205	2296	1385	0474	9563	8651	7738	6825	5911	4997	4082	3167	2251	1335	0418	55
3190	2280	1370	0459	9548	8636	7723	6810	5896	4982	4067	3152	2236	1319	0402	54
3175	2265	1355	0444	9533	8620	7708	6795	5881	4967	4052	3137	2221	1304	0387	53
3160	2250	1340	0429	9517	8605	7693	6780	5866	4952	4037	3121	2205	1289	0372	52
3145	2235	1325	0414	9502	8590	7677	6764	5851	4936	4021	3106	2190	1274	0356	51
3130	2220	1309	0398	9487	8575	7662	6749	5835	4921	4006	3091	2175	1258	0341	50
3114	2205	1294	0383	9472	8560	7647	6734	5820	4906	3991	3075	2159	1243	0326	49
3099	2189	1279	0368	9457	8544	7632	6719	5805	4891	3976	3060	2144	1228	0311	48
3084	2174	1264	0353	9441	8529	7617	6703	5790	4875	3960	3045	2129	1212	0295	47
3069	2159	1249	0338	9426	8514	7601	6688	5774	4860	3945	3030	2114	1197	0280	46
3054	2144	1233	0322	9411	8499	7586	6673	5759	4845	3930	3014	2098	1182	0265	45
3039	2129	1218	0307	9396	8484	7571	6658	5744	4830	3915	2999	2083	1167	0249	44
3023	2114	1203	0292	9381	8468	7556	6642	5729	4814	3899	2984	2068	1151	0234	43
3008	2098	1188	0277	9365	8453	7541	6627	5713	4799	3884	2969	2053	1136	0219	42
2993	2083	1173	0262	9350	8438	7525	6612	5698	4784	3869	2953	2037	1121	0204	41
2978	2068	1158	0247	9335	8423	7510	6597	5683	4769	3854	2938	2022	1105	0188	40
2963	2053	1142	0231	9320	8408	7495	6582	5668	4753	3838	2923	2007	1090	0173	39
2948	2038	1127	0216	9305	8392	7480	6566	5653	4738	3823	2908	1992	1075	0158	38
2932	2023	1112	0201	9289	8377	7464	6551	5637	4723	3808	2892	1976	1060	0142	37
2917	2007	1097	0186	9274	8362	7449	6536	5622	4708	3793	2877	1961	1044	0127	36
2902	1992	1082	0171	9259	8347	7434	6521	5607	4692	3777	2862	1946	1029	0112	35
2887	1977	1066	0155	9244	8332	7419	6505	5592	4677	3762	2847	1930	1014	0096	34
2872	1962	1051	0140	9229	8316	7404	6490	5576	4662	3747	2831	1915	0998	0081	33
2857	1947	1036	0125	9213	8301	7388	6475	5561	4647	3732	2816	1900	0983	0066	32
2842	1932	1021	0110	9198	8286	7373	6460	5546	4631	3716	2801	1885	0968	0051	31
2826	1916	1006	0095	9183	8271	7358	6445	5531	4616	3701	2785	1869	0953	0035	30
2811	1901	0991	0079	9168	8256	7343	6429	5515	4601	3686	2770	1854	0937	0020	29
2796	1886	0975	0064	9153	8240	7327	6414	5500	4586	3671	2755	1839	0922	0005	28
2781	1871	0960	0049	9137	8225	7312	6399	5485	4570	3655	2740	1823	0907	9989	27
2766	1856	0945	0034	9122	8210	7297	6384	5470	4555	3640	2724	1808	0891	9974	26
2751	1840	0930	0019	9107	8195	7282	6368	5454	4540	3625	2709	1793	0876	9959	25
2735	1825	0915	0004	9092	8179	7267	6353	5439	4525	3610	2694	1778	0861	9944	24
2720	1810	0900	9988	9077	8164	7251	6338	5424	4509	3594	2679	1762	0846	9928	23
2705	1795	0884	9973	9061	8149	7236	6323	5409	4494	3579	2663	1747	0830	9913	22
2690	1780	0869	9958	9046	8134	7221	6307	5393	4479	3564	2648	1732	0815	9898	21
2675	1765	0854	9943	9031	8119	7206	6292	5378	4464	3549	2633	1717	0800	9882	20
2660	1749	0839	9928	9016	8103	7190	6277	5363	4448	3533	2618	1701	0784	9867	19
2644	1734	0824	9912	9001	8088	7175	6262	5348	4433	3518	2602	1686	0769	9852	18
2629	1719	0808	9897	8985	8073	7160	6247	5333	4418	3503	2587	1671	0754	9836	17
2614	1704	0793	9882	8970	8058	7145	6231	5317	4403	3487	2572	1655	0739	9821	16
2599	1689	0778	9867	8955	8043	7130	6216	5302	4387	3472	2556	1640	0723	9806	15
2584	1674	0763	9852	8940	8027	7114	6201	5287	4372	3457	2541	1625	0708	9791	14
2569	1658	0748	9836	8925	8012	7099	6186	5272	4357	3442	2526	1610	0693	9775	13
2553	1643	0732	9821	8909	7997	7084	6170	5256	4342	3426	2511	1594	0677	9760	12
2538	1628	0717	9806	8894	7982	7069	6155	5241	4326	3411	2495	1579	0662	9745	11
2523	1613	0702	9791	8879	7967	7054	6140	5226	4311	3396	2480	1564	0647	9729	10
2508	1598	0687	9776	8864	7952	7038	6125	5211	4296	3381	2465	1549	0632	9714	9
2493	1583	0672	9760	8849	7936	7023	6110	5195	4281	3365	2450	1533	0616	9699	8
2478	1567	0657	9745	8833	7921	7008	6094	5180	4265	3350	2434	1518	0601	9684	7
2462	1552	0641	9730	8818	7906	6993	6079	5165	4250	3335	2419	1503	0586	9668	6
2447	1537	0626	9715	8803	7890	6977	6064	5150	4235	3320	2404	1487	0570	9653	5
2432	1522	0611	9700	8788	7875	6962	6049	5134	4220	3304	2389	1472	0555	9638	4
2417	1507	0596	9684	8773	7860	6947	6033	5119	4204	3289	2373	1457	0540	9622	3
2402	1491	0581	9669	8757	7845	6932	6018	5104	4189	3274	2358	1442	0525	9607	2
2387	1476	0565	9654	8742	7830	6917	6003	5089	4174	3259	2343	1426	0509	9592	1
2371	1461	0550	9639	8727	7814	6901	5988	5073	4159	3243	2327	1411	0494	9576	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	"

Sine Deg. 54

"	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9.857	9.857	9.857	9.858	9.858	9.858	9.858	9.859	9.859	9.859	9.859	9.860	9.860	9.860	9.860
0	2704	5368	8031	0694	3357	6019	8680	1341	4002	6661	9321	1980	4638	7296	9954
1	2748	5412	8076	0739	3401	6063	8724	1385	4046	6706	9365	2024	4682	7340	9998
2	2792	5456	8120	0783	3445	6107	8769	1430	4090	6750	9410	2068	4727	7385	0042
3	2837	5501	8164	0827	3490	6152	8813	1474	4135	6794	9454	2113	4771	7429	0086
4	2881	5545	8209	0872	3534	6196	8858	1518	4179	6839	9498	2157	4815	7473	0131
5	2926	5590	8253	0916	3579	6240	8902	1563	4223	6883	9542	2201	4860	7518	0175
6	2970	5634	8297	0960	3623	6285	8946	1607	4268	6927	9587	2246	4904	7562	0219
7	3014	5678	8342	1005	3667	6329	8991	1651	4312	6972	9631	2290	4948	7606	0264
8	3059	5723	8386	1049	3712	6374	9035	1696	4356	7016	9675	2334	4993	7650	0308
9	3103	5767	8431	1094	3756	6418	9079	1740	4401	7060	9720	2379	5037	7695	0352
10	3148	5812	8475	1138	3800	6462	9124	1784	4445	7105	9764	2423	5081	7739	0396
11	3192	5856	8519	1182	3845	6507	9168	1829	4489	7149	9808	2467	5126	7783	0441
12	3236	5900	8564	1227	3889	6551	9212	1873	4534	7193	9853	2512	5170	7828	0485
13	3281	5945	8608	1271	3933	6595	9257	1918	4578	7238	9897	2556	5214	7872	0529
14	3325	5989	8653	1315	3978	6640	9301	1962	4622	7282	9941	2600	5258	7916	0573
15	3370	6034	8697	1360	4022	6684	9345	2006	4667	7326	9986	2644	5303	7961	0618
16	3414	6078	8741	1404	4067	6728	9390	2051	4711	7371	0030	2689	5347	8005	0662
17	3458	6122	8786	1449	4111	6773	9434	2095	4755	7415	0074	2733	5391	8049	0706
18	3503	6167	8830	1493	4155	6817	9478	2139	4800	7459	0119	2777	5436	8093	0751
19	3547	6211	8874	1537	4200	6861	9523	2184	4844	7504	0163	2822	5480	8138	0795
20	3592	6256	8919	1582	4244	6906	9567	2228	4888	7548	0207	2866	5524	8182	0839
21	3636	6300	8963	1626	4288	6950	9611	2272	4933	7592	0252	2910	5569	8226	0883
22	3680	6344	9008	1670	4333	6995	9656	2317	4977	7637	0296	2955	5613	8271	0928
23	3725	6389	9052	1715	4377	7039	9700	2361	5021	7681	0340	2999	5657	8315	0972
24	3769	6433	9096	1759	4422	7083	9745	2405	5066	7725	0384	3043	5701	8359	1016
25	3814	6477	9141	1804	4466	7128	9789	2450	5110	7770	0429	3088	5746	8403	1061
26	3858	6522	9185	1848	4510	7172	9833	2494	5154	7814	0473	3132	5790	8448	1105
27	3902	6566	9230	1892	4555	7216	9878	2538	5199	7858	0517	3176	5834	8492	1149
28	3947	6611	9274	1937	4599	7261	9922	2583	5243	7903	0562	3220	5879	8536	1193
29	3991	6655	9318	1981	4643	7305	9966	2627	5287	7947	0606	3265	5923	8581	1238
30	4036	6699	9363	2025	4688	7349	0011	2671	5332	7991	0650	3309	5967	8625	1282
31	4080	6744	9407	2070	4732	7394	0055	2716	5376	8036	0695	3353	6012	8669	1326
32	4124	6788	9451	2114	4776	7438	0099	2760	5420	8080	0739	3398	6056	8713	1371
33	4169	6833	9496	2159	4821	7483	0144	2804	5465	8124	0783	3442	6100	8758	1415
34	4213	6877	9540	2203	4865	7527	0188	2849	5509	8169	0828	3486	6144	8802	1459
35	4258	6921	9585	2247	4910	7571	0232	2893	5553	8213	0872	3531	6189	8846	1503
36	4302	6966	9629	2292	4954	7616	0277	2937	5598	8257	0916	3575	6233	8891	1548
37	4346	7010	9673	2336	4998	7660	0321	2982	5642	8301	0961	3619	6277	8935	1592
38	4391	7055	9718	2380	5043	7704	0365	3026	5686	8346	1005	3664	6322	8979	1636
39	4435	7099	9762	2425	5087	7749	0410	3070	5731	8390	1049	3708	6366	9023	1681
40	4480	7143	9807	2469	5131	7793	0454	3115	5775	8434	1094	3752	6410	9068	1725
41	4524	7188	9851	2514	5176	7837	0498	3159	5819	8479	1138	3796	6454	9112	1769
42	4568	7232	9895	2558	5220	7882	0543	3203	5864	8523	1182	3841	6499	9156	1813
43	4613	7277	9940	2602	5264	7926	0587	3248	5908	8567	1226	3885	6543	9201	1858
44	4657	7321	9984	2647	5309	7970	0632	3292	5952	8612	1271	3929	6587	9245	1902
45	4702	7365	0028	2691	5353	8015	0676	3336	5997	8656	1315	3974	6632	9289	1946
46	4746	7410	0073	2735	5398	8059	0720	3381	6041	8700	1359	4018	6676	9333	1991
47	4790	7454	0117	2780	5442	8103	0765	3425	6085	8745	1404	4062	6720	9378	2035
48	4835	7498	0162	2824	5486	8148	0809	3469	6129	8789	1448	4107	6765	9422	2079
49	4879	7543	0206	2869	5531	8192	0853	3514	6174	8833	1492	4151	6809	9466	2123
50	4924	7587	0250	2913	5575	8237	0898	3558	6218	8878	1537	4195	6853	9511	2168
51	4968	7632	0295	2957	5619	8281	0942	3602	6262	8922	1681	4239	6897	9555	2212
52	5012	7676	0339	3002	5664	8325	0986	3647	6307	8966	1625	4284	6942	9599	2256
53	5057	7720	0383	3046	5708	8370	1031	3691	6351	9011	1670	4328	6986	9644	2300
54	5101	7765	0428	3090	5752	8414	1075	3735	6395	9055	1714	4372	7030	9688	2345
55	5146	7809	0472	3135	5797	8458	1119	3780	6440	9099	1758	4417	7075	9732	2389
56	5190	7854	0517	3179	5841	8503	1164	3824	6484	9144	1803	4461	7119	9776	2433
57	5234	7898	0561	3224	5886	8547	1208	3868	6528	9188	1847	4505	7163	9821	2478
58	5279	7942	0605	3268	5930	8591	1252	3913	6573	9232	1891	4550	7208	9865	2522
59	5323	7987	0650	3312	5974	8636	1297	3957	6617	9277	1935	4594	7252	9909	2566
60	5368	8031	0694	3357	6019	8680	1341	4002	6661	9321	1980	4638	7296	9954	2610
"	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	"
10.142	10.142	10.142	10.141	10.141	10.141	10.141	10.140	10.140	10.140	10.140	10.139	10.139	10.139	10.139	
7296	4632	1969	9306	6643	3981	1320	8659	5998	3339	0679	8020	5362	2704	0046	60
7252	4588	1924	9261	6599	3937	1276	8615	5954	3294	0635	7976	5318	2660	0002	59
7208	4544	1880	9217	6555	3893	1231	8570	5910	3250	0590	7932	5273	2615	9958	58
7163	4499	1836	9173	6510	3848	1187	8526	5865	3206	0546	7887	5229	2571	9914	57
7119	4455	1791	9128	6466	3804	1142	8482	5821	3161	0502	7843	5185	2527	9869	56
7074	4410	1747	9084	6421	3760	1098	8437	5777	3117	0458	7799	5140	2482	9825	55
7030	4366	1703	9040	6377	3715	1054	8393	5732	3073	0413	7754	5096	2438	9781	54
6986	4322	1658	8995	6333	3671	1009	8349	5688	3028	0369	7710	5052	2394	9736	53
6941	4277	1614	8951	6288	3626	0965	8304	5644	2984	0325	7666	5007	2350	9692	52
6897	4233	1569	8906	6244	3582	0921	8260	5599	2940	0280	7621	4963	2305	9648	51
6852	4188	1525	8862	6200	3538	0876	8216	5555	2895	0236	7577	4919	2261	9604	50
6808	4144	1481	8818	6155	3493	0832	8171	5511	2851	0192	7533	4874	2217	9559	49
6764	4100	1436	8773	6111	3449	0788	8127	5466	2807	0147	7488	4830	2172	9515	48
6719	4055	1392	8729	6067	3405	0743	8082	5422	2762	0103	7444	4786	2128	9471	47
6675	4011	1347	8685	6022	3360	0699	8038	5378	2718	0059	7400	4742	2084	9427	46
6630	3966	1303	8640	5978	3316	0655	7994	5333	2674	0014	7356	4697	2039	9382	45
6586	3922	1259	8596	5933	3272	0610	7949	5289	2629	9970	7311	4653	1995	9338	44
6542	3878	1214	8551	5889	3227	0566	7905	5245	2585	9926	7267	4609	1951	9294	43
6497	3833	1170	8507	5845	3183	0522	7861	5200	2541	9881	7223	4564	1907	9249	42
6453	3789	1126	8463	5800	3139	0477	7816	5156	2496	9837	7178	4520	1862	9205	41
6408	3744	1081	8418	5756	3094	0433	7772	5112	2452	9793	7134	4476	1818	9161	40
6364	3700	1037	8374	5712	3050	0389	7728	5067	2408	9748	7090	4431	1774	9117	39
6320	3656	0992	8330	5667	3005	0344	7683	5023	2363	9704	7045	4387	1729	9072	38
6275	3611	0948	8285	5623	2961	0300	7639	4979	2319	9660	7001	4343	1685	9028	37
6231	3567	0904	8241	5578	2917	0255	7595	4934	2275	9616	6957	4299	1641	8984	36
6186	3523	0859	8196	5534	2872	0211	7550	4890	2230	9571	6912	4254	1597	8939	35
6142	3478	0815	8152	5490	2828	0167	7506	4846	2186	9527	6868	4210	1552	8895	34
6098	3434	0770	8108	5445	2784	0122	7462	4801	2142	9483	6824	4166	1508	8851	33
6053	3389	0726	8063	5401	2739	0078	7417	4757	2097	9438	6780	4121	1464	8807	32
6009	3345	0682	8019	5357	2695	0034	7373	4713	2053	9394	6735	4077	1419	8762	31
5964	3301	0637	7975	5312	2651	9989	7329	4668	2009	9350	6691	4033	1375	8718	30
5920	3256	0592	7930	5268	2606	9945	7284	4624	1964	9305	6647	3988	1331	8674	29
5876	3212	0549	7886	5224	2562	9901	7240	4580	1920	9261	6602	3944	1287	8629	28
5831	3167	0504	7841	5179	2517	9856	7196	4535	1876	9217	6558	3900	1242	8585	27
5787	3123	0460	7797	5135	2473	9812	7151	4491	1831	9172	6514	3856	1198	8541	26
5742	3079	0415	7753	5090	2429	9768	7107	4447	1787	9128	6469	3811	1154	8497	25
5698	3034	0371	7708	5046	2384	9723	7063	4402	1743	9084	6425	3767	1109	8452	24
5654	2990	0327	7664	5002	2340	9679	7019	4358	1699	9039	6381	3723	1065	8408	23
5609	2945	0282	7620	4957	2296	9635	6974	4314	1654	8995	6336	3678	1021	8364	22
5565	2901	0238	7575	4913	2251	9590	6930	4269	1610	8951	6292	3634	0977	8319	21
5520	2857	0193	7531	4869	2207	9546	6885	4225	1566	8906	6248	3590	0932	8275	20
5476	2812	0149	7486	4824	2163	9502	6841	4181	1521	8862	6204	3546	0888	8231	19
5432	2768	0105	7442	4780	2118	9457	6797	4136	1477	8818	6159	3501	0844	8187	18
5387	2723	0060	7398	4736	2074	9413	6752	4092	1433	8774	6115	3457	0799	8142	17
5343	2679	0016	7353	4691	2030	9368	6708	4048	1388	8729	6071	3413	0755	8098	16
5298	2635	9972	7309	4647	1985	9324	6664	4003	1344	8685	6026	3368	0711	8054	15
5254	2590	9927	7265	4602	1941	9280	6619	3959	1300	8641	5982	3324	0667	8009	14
5210	2546	9883	7220	4558	1897	9235	6575	3915	1255	8596	5938	3280	0622	7965	13
5165	2502	9838	7176	4514	1852	9191	6531	3871	1211	8552	5893	3235	0578	7921	12
5121	2457	9794	7131	4469	1808	9147	6486	3826	1167	8508	5849	3191	0534	7877	11
5076	2413	9750	7087	4425	1763	9102	6442	3782	1122	8463	5805	3147	0489	7832	10
5032	2368	9705	7043	4381	1719	9058	6398	3738	1078	8419	5761	3103	0445	7788	9
4988	2324	9661	6998	4336	1675	9014	6353	3693	1034	8375	5716	3058	0401	7744	8
4943	2280	9617	6954	4292	1630	8969	6309	3649	0989	8330	5672	3014	0356	7700	7
4899	2235	9572	6910	4248	1586	8925	6265	3605	0945	8286	5628	2970	0312	7655	6
4854	2191	9528	6865	4203	1542	8881	6220	3560	0901	8242	5583	2925	0268	7611	5
4810	2146	9483	6821	4159	1497	8836	6176	3516	0856	8197	5539	2881	0224	7567	4
4766	2102	9439	6776	4114	1453	8792	6132	3472	0812	8153	5495	2837	0179	7522	3
4721	2058	9395	6732	4070	1409	8748	6087	3427	0768	8109	5450	2792	0135	7478	2
4677	2013	9350	6688	4026	1364	8703	6043	3383	0723	8065	5406	2748	0091	7434	1
4632	1969	9306	6643	3981	1320	8659	5998	3339	0679	8020	5362	2704	0046	7390	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	"

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9. 769	9. 769	9. 769	9. 769	9. 769	9. 770	9. 770	9. 770	9. 770	9. 770	9. 770	9. 771	9. 771	9. 771	9. 771
0	2187	3925	5662	7398	9134	0868	2601	4332	6063	7793	9522	1249	2976	4702	6426
1	2216	3954	5691	7427	9162	0896	2629	4361	6092	7822	9551	1278	3005	4730	6455
2	2245	3983	5720	7456	9191	0925	2658	4390	6121	7851	9579	1307	3034	4759	6484
3	2274	4012	5749	7485	9220	0954	2687	4419	6150	7880	9608	1336	3062	4788	6512
4	2303	4041	5778	7514	9249	0983	2716	4448	6179	7908	9637	1365	3091	4817	6541
5	2332	4070	5807	7543	9278	1012	2745	4477	6207	7937	9666	1393	3120	4845	6570
6	2361	4099	5836	7572	9307	1041	2774	4506	6236	7966	9695	1422	3149	4874	6599
7	2390	4128	5865	7601	9336	1070	2803	4534	6265	7995	9723	1451	3177	4903	6627
8	2419	4157	5894	7630	9365	1099	2832	4563	6294	8024	9752	1480	3206	4932	6656
9	2448	4186	5923	7659	9394	1128	2860	4592	6323	8052	9781	1509	3235	4960	6685
10	2477	4215	5952	7688	9423	1156	2889	4621	6352	8081	9810	1537	3264	4989	6714
11	2506	4244	5981	7717	9452	1185	2918	4650	6380	8110	9839	1566	3293	5018	6742
12	2535	4273	6010	7746	9480	1214	2947	4679	6409	8139	9867	1595	3321	5047	6771
13	2564	4302	6039	7774	9509	1243	2976	4708	6438	8168	9896	1624	3350	5075	6800
14	2593	4331	6068	7803	9538	1272	3005	4736	6467	8197	9925	1652	3379	5104	6828
15	2622	4360	6096	7832	9567	1301	3034	4765	6496	8225	9954	1681	3408	5133	6857
16	2650	4388	6125	7861	9596	1330	3062	4794	6525	8254	9983	1710	3436	5162	6886
17	2679	4417	6154	7890	9625	1359	3091	4823	6553	8283	0011	1739	3465	5190	6915
18	2708	4446	6183	7919	9654	1388	3120	4852	6582	8312	0040	1768	3494	5219	6943
19	2737	4475	6212	7948	9683	1416	3149	4881	6611	8341	0069	1796	3523	5248	6972
20	2766	4504	6241	7977	9712	1445	3178	4910	6640	8369	0098	1825	3551	5277	7001
21	2795	4533	6270	8006	9741	1474	3207	4938	6669	8398	0127	1854	3580	5305	7030
22	2824	4562	6299	8035	9769	1503	3236	4967	6698	8427	0155	1883	3609	5334	7058
23	2853	4591	6328	8064	9798	1532	3265	4996	6726	8456	0184	1911	3638	5363	7087
24	2882	4620	6357	8093	9827	1561	3293	5025	6755	8485	0213	1940	3666	5392	7116
25	2911	4649	6386	8122	9856	1590	3322	5054	6784	8514	0242	1969	3695	5420	7144
26	2940	4678	6415	8150	9885	1619	3351	5083	6813	8542	0271	1998	3724	5449	7173
27	2969	4707	6444	8179	9914	1648	3380	5111	6842	8571	0299	2027	3753	5478	7202
28	2998	4736	6473	8208	9943	1676	3409	5140	6871	8600	0328	2055	3781	5507	7231
29	3027	4765	6502	8237	9972	1705	3438	5169	6899	8629	0357	2084	3810	5535	7259
30	3056	4794	6531	8266	0001	1734	3467	5198	6928	8658	0386	2113	3839	5564	7288
31	3085	4823	6559	8295	0030	1763	3495	5227	6957	8686	0415	2142	3868	5593	7317
32	3114	4852	6588	8324	0058	1792	3524	5256	6986	8715	0443	2170	3897	5622	7346
33	3143	4881	6617	8353	0087	1821	3553	5285	7015	8744	0472	2199	3925	5650	7374
34	3172	4910	6646	8382	0116	1850	3582	5313	7044	8773	0501	2228	3954	5679	7403
35	3201	4939	6675	8411	0145	1879	3611	5342	7072	8802	0530	2257	3983	5708	7432
36	3230	4968	6704	8440	0174	1907	3640	5371	7101	8830	0559	2286	4012	5737	7460
37	3259	4997	6733	8469	0203	1936	3669	5400	7130	8859	0587	2314	4040	5765	7489
38	3288	5025	6762	8497	0232	1965	3698	5429	7159	8888	0616	2343	4069	5794	7518
39	3317	5054	6791	8526	0261	1994	3726	5458	7188	8917	0645	2372	4098	5823	7547
40	3346	5083	6820	8555	0290	2023	3755	5486	7217	8946	0674	2401	4127	5851	7575
41	3375	5112	6849	8584	0319	2052	3784	5515	7245	8974	0702	2429	4155	5880	7604
42	3404	5141	6878	8613	0347	2081	3813	5544	7274	9003	0731	2458	4184	5909	7633
43	3433	5170	6907	8642	0376	2110	3842	5573	7303	9032	0760	2487	4213	5938	7661
44	3462	5199	6936	8671	0405	2139	3871	5602	7332	9061	0789	2516	4242	5966	7690
45	3491	5228	6965	8700	0434	2167	3900	5631	7361	9090	0818	2545	4270	5995	7719
46	3520	5257	6993	8729	0463	2196	3928	5660	7390	9119	0846	2573	4299	6024	7748
47	3549	5286	7022	8758	0492	2225	3957	5688	7418	9147	0875	2602	4328	6053	7776
48	3578	5315	7051	8787	0521	2254	3986	5717	7447	9176	0904	2631	4357	6081	7805
49	3607	5344	7080	8816	0550	2283	4015	5746	7476	9205	0933	2660	4385	6110	7834
50	3635	5373	7109	8844	0579	2312	4044	5775	7505	9234	0962	2688	4414	6139	7862
51	3664	5402	7138	8873	0608	2341	4073	5804	7534	9263	0990	2717	4443	6168	7891
52	3693	5431	7167	8902	0636	2370	4102	5833	7562	9291	1019	2746	4472	6196	7920
53	3722	5460	7196	8931	0665	2398	4130	5861	7591	9320	1048	2775	4500	6225	7949
54	3751	5489	7225	8960	0694	2427	4159	5890	7620	9349	1077	2803	4529	6254	7977
55	3780	5518	7254	8989	0723	2456	4188	5919	7649	9378	1106	2832	4558	6283	8006
56	3809	5547	7283	9018	0752	2485	4217	5948	7678	9407	1134	2861	4587	6311	8035
57	3838	5575	7312	9047	0781	2514	4246	5977	7707	9435	1163	2890	4615	6340	8064
58	3867	5604	7341	9076	0810	2543	4275	6006	7735	9464	1192	2919	4644	6369	8092
59	3896	5633	7370	9105	0839	2572	4304	6034	7764	9493	1221	2947	4673	6397	8121
60	3925	5662	7398	9134	0868	2601	4332	6063	7793	9522	1249	2976	4702	6426	8150
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
	9. 907	9. 907	9. 907	9. 907	9. 907	9. 907	9. 907	9. 907	9. 907	9. 907	9. 907	9. 906	9. 906	9. 906	9. 906	″
0	9576	8658	7740	6820	5901	4980	4059	3138	2216	1293	0370	9446	8522	7597	6671	60
1	9561	8643	7724	6805	5885	4965	4044	3122	2200	1278	0354	9431	8506	7581	6656	59
2	9546	8628	7709	6790	5870	4949	4029	3107	2185	1262	0339	9415	8491	7566	6641	58
3	9531	8612	7694	6774	5855	4934	4013	3092	2170	1247	0324	9400	8476	7551	6625	57
4	9515	8597	7678	6759	5839	4919	3998	3076	2154	1232	0308	9384	8460	7535	6610	56
5	9500	8582	7663	6744	5824	4903	3982	3061	2139	1216	0293	9369	8445	7520	6594	55
6	9485	8566	7648	6728	5809	4888	3967	3046	2123	1201	0277	9354	8429	7504	6579	54
7	9469	8551	7632	6713	5793	4873	3952	3030	2108	1185	0262	9338	8414	7489	6563	53
8	9454	8536	7617	6698	5778	4857	3936	3015	2093	1170	0247	9323	8398	7474	6548	52
9	9439	8521	7602	6682	5763	4842	3921	2999	2077	1155	0231	9307	8383	7458	6533	51
10	9423	8505	7586	6667	5747	4827	3906	2984	2062	1139	0216	9292	8368	7443	6517	50
11	9408	8490	7571	6652	5732	4811	3890	2969	2047	1124	0201	9277	8352	7427	6502	49
12	9393	8475	7556	6636	5717	4796	3875	2953	2031	1108	0185	9261	8337	7412	6486	48
13	9378	8459	7540	6621	5701	4781	3860	2938	2016	1093	0170	9246	8321	7396	6471	47
14	9362	8444	7525	6606	5686	4765	3844	2923	2000	1078	0154	9230	8306	7381	6455	46
15	9347	8429	7510	6590	5671	4750	3829	2907	1985	1062	0139	9215	8291	7366	6440	45
16	9332	8413	7495	6575	5655	4735	3814	2892	1970	1047	0124	9200	8275	7350	6425	44
17	9316	8398	7479	6560	5640	4719	3798	2877	1954	1032	0108	9184	8260	7335	6409	43
18	9301	8383	7464	6544	5624	4704	3783	2861	1939	1016	0093	9169	8244	7319	6394	42
19	9286	8367	7449	6529	5609	4689	3767	2846	1924	1001	0077	9153	8229	7304	6378	41
20	9270	8352	7433	6514	5594	4673	3752	2830	1908	0985	0062	9138	8214	7288	6363	40
21	9255	8337	7418	6498	5578	4658	3737	2815	1893	0970	0047	9123	8198	7273	6347	39
22	9240	8322	7403	6483	5563	4643	3721	2800	1877	0955	0031	9107	8183	7258	6332	38
23	9225	8306	7387	6468	5548	4627	3706	2784	1862	0939	0016	9092	8167	7242	6317	37
24	9209	8291	7372	6453	5532	4612	3691	2769	1847	0924	0000	9076	8152	7227	6301	36
25	9194	8276	7357	6437	5517	4597	3675	2754	1831	0908	9985	9061	8136	7211	6286	35
26	9179	8260	7341	6422	5502	4581	3660	2738	1816	0893	9970	9046	8121	7196	6270	34
27	9163	8245	7326	6407	5486	4566	3645	2723	1801	0878	9954	9030	8106	7180	6255	33
28	9148	8230	7311	6391	5471	4550	3629	2708	1785	0862	9939	9015	8090	7165	6239	32
29	9133	8214	7295	6376	5456	4535	3614	2692	1770	0847	9923	8999	8075	7150	6224	31
30	9117	8199	7280	6361	5440	4520	3599	2677	1754	0832	9908	8984	8059	7134	6208	30
31	9102	8184	7265	6345	5425	4504	3583	2661	1739	0816	9893	8969	8044	7119	6193	29
32	9087	8168	7249	6330	5410	4489	3568	2646	1724	0801	9877	8953	8029	7103	6178	28
33	9072	8153	7234	6315	5394	4474	3552	2631	1708	0785	9862	8938	8013	7088	6162	27
34	9056	8138	7219	6299	5379	4458	3537	2615	1693	0770	9846	8922	7998	7073	6147	26
35	9041	8122	7203	6284	5364	4443	3522	2600	1678	0755	9831	8907	7982	7057	6131	25
36	9026	8107	7188	6269	5348	4428	3506	2585	1662	0739	9816	8892	7967	7042	6116	24
37	9010	8092	7173	6253	5333	4412	3491	2569	1647	0724	9800	8876	7951	7026	6100	23
38	8995	8077	7157	6238	5318	4397	3476	2554	1631	0708	9785	8861	7936	7011	6085	22
39	8980	8061	7142	6223	5302	4382	3460	2538	1616	0693	9769	8845	7921	6995	6070	21
40	8964	8046	7127	6207	5287	4366	3445	2523	1601	0678	9754	8830	7905	6980	6054	20
41	8949	8031	7112	6192	5272	4351	3430	2508	1585	0662	9739	8815	7890	6965	6039	19
42	8934	8015	7096	6177	5256	4336	3414	2492	1570	0647	9723	8799	7874	6949	6023	18
43	8919	8000	7081	6161	5241	4320	3399	2477	1555	0631	9708	8784	7859	6934	6008	17
44	8903	7985	7066	6146	5226	4305	3384	2462	1539	0616	9692	8768	7844	6918	5992	16
45	8888	7969	7050	6131	5210	4290	3368	2446	1524	0601	9677	8753	7828	6903	5977	15
46	8873	7954	7035	6115	5195	4274	3353	2431	1508	0585	9662	8737	7813	6887	5962	14
47	8857	7939	7020	6100	5180	4259	3337	2415	1493	0570	9646	8722	7797	6872	5946	13
48	8842	7923	7004	6085	5164	4243	3322	2400	1478	0555	9631	8707	7782	6857	5931	12
49	8827	7908	6989	6069	5149	4228	3307	2385	1462	0539	9615	8691	7766	6841	5915	11
50	8811	7893	6974	6054	5134	4213	3291	2369	1447	0524	9600	8676	7751	6826	5900	10
51	8796	7877	6958	6039	5118	4197	3276	2354	1431	0508	9585	8660	7736	6810	5884	9
52	8781	7862	6943	6023	5103	4182	3261	2339	1416	0493	9569	8645	7720	6795	5869	8
53	8765	7847	6928	6008	5088	4167	3245	2323	1401	0478	9554	8630	7705	6779	5853	7
54	8750	7832	6912	5993	5072	4151	3230	2308	1385	0462	9538	8614	7689	6764	5838	6
55	8735	7816	6897	5977	5057	4136	3215	2293	1370	0447	9523	8599	7674	6749	5823	5
56	8720	7801	6882	5962	5042	4121	3199	2277	1355	0431	9508	8583	7659	6733	5807	4
57	8704	7786	6866	5947	5026	4105	3184	2262	1339	0416	9492	8568	7643	6718	5792	3
58	8689	7770	6851	5931	5011	4090	3168	2246	1324	0401	9477	8553	7628	6702	5776	2
59	8674	7755	6836	5916	4996	4075	3153	2231	1308	0385	9461	8537	7612	6687	5761	1
60	8658	7740	6820	5901	4980	4059	3138	2216	1293	0370	9446	8522	7597	6671	5745	0
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

36 Deg. Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.861	9.861	9.861	9.862	9.862	9.862	9.862	9.863	9.863	9.863	9.863	9.864	9.864	9.864	9.864
0	2610	5267	7923	0578	3233	5887	8541	1195	3848	6500	9152	1803	4454	7105	9755
1	2655	5311	7967	0622	3277	5932	8586	1239	3892	6544	9196	1848	4499	7149	9799
2	2699	5355	8011	0667	3321	5976	8630	1283	3936	6588	9240	1892	4543	7193	9843
3	2743	5400	8055	0711	3366	6020	8674	1327	3980	6633	9285	1936	4587	7237	9887
4	2788	5444	8100	0755	3410	6064	8718	1372	4024	6677	9329	1980	4631	7281	9931
5	2832	5488	8144	0799	3454	6109	8762	1416	4069	6721	9373	2024	4675	7326	9976
6	2876	5532	8188	0844	3498	6153	8807	1460	4113	6765	9417	2069	4719	7370	0020
7	2920	5577	8233	0888	3543	6197	8851	1504	4157	6809	9461	2113	4764	7414	0064
8	2965	5621	8277	0932	3587	6241	8895	1548	4201	6854	9506	2157	4808	7458	0108
9	3009	5665	8321	0976	3631	6286	8939	1593	4246	6898	9550	2201	4852	7502	0152
10	3053	5709	8365	1021	3675	6330	8984	1637	4290	6942	9594	2245	4896	7546	0196
11	3097	5754	8410	1065	3720	6374	9028	1681	4334	6986	9638	2289	4940	7591	0241
12	3142	5798	8454	1109	3764	6418	9072	1725	4378	7030	9682	2334	4984	7635	0285
13	3186	5842	8498	1153	3808	6462	9116	1770	4422	7075	9726	2378	5029	7679	0329
14	3230	5887	8542	1198	3852	6507	9160	1814	4467	7119	9771	2422	5073	7723	0373
15	3275	5931	8587	1242	3897	6551	9205	1858	4511	7163	9815	2466	5117	7767	0417
16	3319	5975	8631	1286	3941	6595	9249	1902	4555	7207	9859	2510	5161	7812	0461
17	3363	6019	8675	1330	3985	6639	9293	1946	4599	7251	9903	2555	5205	7856	0506
18	3407	6064	8719	1375	4029	6684	9337	1991	4643	7296	9947	2599	5250	7900	0550
19	3452	6108	8764	1419	4074	6728	9382	2035	4688	7340	9992	2643	5294	7944	0594
20	3496	6152	8808	1463	4118	6772	9426	2079	4732	7384	0036	2687	5338	7988	0638
21	3540	6196	8852	1507	4162	6816	9470	2123	4776	7428	0080	2731	5382	8032	0682
22	3584	6241	8896	1552	4206	6861	9514	2167	4820	7472	0124	2775	5426	8077	0726
23	3629	6285	8941	1596	4251	6905	9558	2212	4864	7517	0168	2820	5470	8121	0770
24	3673	6329	8985	1640	4295	6949	9603	2256	4909	7561	0213	2864	5515	8165	0815
25	3717	6373	9029	1684	4339	6993	9647	2300	4953	7605	0257	2908	5559	8209	0859
26	3762	6418	9073	1729	4383	7037	9691	2344	4997	7649	0301	2952	5603	8253	0903
27	3806	6462	9118	1773	4428	7082	9735	2389	5041	7693	0345	2996	5647	8297	0947
28	3850	6506	9162	1817	4472	7126	9780	2433	5085	7738	0389	3041	5691	8342	0991
29	3894	6551	9206	1861	4516	7170	9824	2477	5130	7782	0434	3085	5735	8386	1035
30	3939	6595	9250	1906	4560	7214	9868	2521	5174	7826	0478	3129	5780	8430	1080
31	3983	6639	9295	1950	4604	7259	9912	2565	5218	7870	0522	3173	5824	8474	1124
32	4027	6683	9339	1994	4649	7303	9957	2610	5262	7914	0566	3217	5868	8518	1168
33	4071	6728	9383	2038	4693	7347	0001	2654	5307	7959	0610	3261	5912	8562	1212
34	4116	6772	9427	2083	4737	7391	0045	2698	5351	8003	0655	3306	5956	8607	1256
35	4160	6816	9472	2127	4781	7436	0089	2742	5395	8047	0699	3350	6001	8651	1300
36	4204	6860	9516	2171	4826	7480	0133	2787	5439	8091	0743	3394	6045	8695	1345
37	4249	6905	9560	2215	4870	7524	0178	2831	5483	8135	0787	3438	6089	8739	1389
38	4293	6949	9605	2260	4914	7568	0222	2875	5528	8180	0831	3482	6133	8783	1433
39	4337	6993	9649	2304	4958	7612	0266	2919	5572	8224	0875	3527	6177	8827	1477
40	4381	7037	9693	2348	5003	7657	0310	2963	5616	8268	0920	3571	6221	8872	1521
41	4426	7082	9737	2392	5047	7701	0355	3008	5660	8312	0964	3615	6266	8916	1565
42	4470	7126	9782	2437	5091	7745	0399	3052	5704	8356	1008	3659	6310	8960	1609
43	4514	7170	9826	2481	5135	7789	0443	3096	5749	8401	1052	3703	6354	9004	1654
44	4558	7215	9870	2525	5180	7834	0487	3140	5793	8445	1096	3747	6398	9048	1698
45	4603	7259	9914	2569	5224	7878	0531	3184	5837	8489	1141	3792	6442	9092	1742
46	4647	7303	9959	2614	5268	7922	0576	3229	5881	8533	1185	3836	6486	9136	1786
47	4691	7347	0003	2658	5312	7966	0620	3273	5925	8577	1229	3880	6531	9181	1830
48	4736	7392	0047	2702	5357	8011	0664	3317	5970	8622	1273	3924	6575	9225	1874
49	4780	7436	0091	2746	5401	8055	0708	3361	6014	8666	1317	3968	6619	9269	1919
50	4824	7480	0136	2791	5445	8099	0753	3405	6058	8710	1362	4013	6663	9313	1963
51	4868	7524	0180	2835	5489	8143	0797	3450	6102	8754	1406	4057	6707	9357	2007
52	4913	7569	0224	2879	5534	8187	0841	3494	6146	8798	1450	4101	6751	9401	2051
53	4957	7613	0268	2923	5578	8232	0885	3538	6191	8843	1494	4145	6796	9446	2095
54	5001	7657	0313	2968	5622	8276	0929	3582	6235	8887	1538	4189	6840	9490	2139
55	5045	7701	0357	3012	5666	8320	0974	3627	6279	8931	1582	4233	6884	9534	2183
56	5090	7746	0401	3056	5710	8364	1018	3671	6323	8975	1627	4278	6928	9578	2228
57	5134	7790	0445	3100	5755	8409	1062	3715	6367	9019	1671	4322	6972	9622	2272
58	5178	7834	0490	3145	5799	8453	1106	3759	6412	9064	1715	4366	7016	9666	2316
59	5223	7878	0534	3189	5843	8497	1150	3803	6456	9108	1759	4410	7061	9711	2360
60	5267	7923	0578	3233	5887	8541	1195	3848	6500	9152	1803	4454	7105	9755	2404
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Tangent Deg. 53

36 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
10.138	10.138	10.138	10.137	10.137	10.137	10.137	10.136	10.136	10.136	10.136	10.135	10.135	10.135	10.135	″
7390	4733	2077	9422	6767	4113	1459	8805	6152	3500	0848	8197	5546	2895	0245	60
7345	4689	2033	9378	6723	4068	1414	8761	6108	3456	0804	8152	5501	2851	0201	59
7301	4645	1989	9333	6679	4024	1370	8717	6064	3412	0760	8108	5457	2807	0157	58
7257	4600	1945	9289	6634	3980	1326	8673	6020	3367	0715	8064	5413	2763	0113	57
7212	4556	1900	9245	6590	3936	1282	8628	5976	3323	0671	8020	5369	2719	0069	56
7168	4512	1856	9201	6546	3891	1238	8584	5931	3279	0627	7976	5325	2674	0024	55
7124	4468	1812	9156	6502	3847	1193	8540	5887	3235	0583	7931	5281	2630	9980	54
7080	4423	1767	9112	6457	3803	1149	8496	5843	3191	0539	7887	5236	2586	9936	53
7035	4379	1723	9068	6413	3759	1105	8452	5799	3146	0494	7843	5192	2542	9892	52
6991	4335	1679	9024	6369	3714	1061	8407	5754	3102	0450	7799	5148	2498	9848	51
6947	4291	1635	8979	6325	3670	1016	8363	5710	3058	0406	7755	5104	2454	9804	50
6903	4246	1590	8935	6280	3626	0972	8319	5666	3014	0362	7711	5060	2409	9759	49
6858	4202	1546	8891	6236	3582	0928	8275	5622	2970	0318	7666	5016	2365	9715	48
6814	4158	1502	8847	6192	3538	0884	8230	5578	2925	0274	7622	4971	2321	9671	47
6770	4113	1458	8802	6148	3493	0840	8186	5533	2881	0229	7578	4927	2277	9627	46
6725	4069	1413	8758	6103	3449	0795	8142	5489	2837	0185	7534	4883	2233	9583	45
6681	4025	1369	8714	6059	3405	0751	8098	5445	2793	0141	7490	4839	2188	9539	44
6637	3981	1325	8670	6015	3361	0707	8054	5401	2749	0097	7445	4795	2144	9494	43
6593	3936	1281	8625	5971	3316	0663	8009	5357	2704	0053	7401	4750	2100	9450	42
6548	3892	1236	8581	5926	3272	0618	7965	5312	2660	0008	7357	4706	2056	9406	41
6504	3848	1192	8537	5882	3228	0574	7921	5268	2616	9964	7313	4662	2012	9362	40
6460	3804	1148	8493	5838	3184	0530	7877	5224	2572	9920	7269	4618	1968	9318	39
6416	3759	1104	8448	5794	3139	0486	7833	5180	2528	9876	7225	4574	1923	9274	38
6371	3715	1059	8404	5749	3095	0442	7788	5136	2483	9832	7180	4530	1879	9230	37
6327	3671	1015	8360	5705	3051	0397	7744	5091	2439	9787	7136	4485	1835	9185	36
6283	3627	0971	8316	5661	3007	0353	7700	5047	2395	9743	7092	4441	1791	9141	35
6238	3582	0927	8271	5617	2963	0309	7656	5003	2351	9699	7048	4397	1747	9097	34
6194	3538	0882	8227	5572	2918	0265	7611	4959	2307	9655	7004	4353	1703	9053	33
6150	3494	0838	8183	5528	2874	0220	7567	4915	2262	9611	6959	4309	1658	9009	32
6106	3449	0794	8139	5484	2830	0176	7523	4870	2218	9566	6915	4265	1614	8965	31
6061	3405	0750	8094	5440	2786	0132	7479	4826	2174	9522	6871	4220	1570	8920	30
6017	3361	0705	8050	5396	2741	0088	7435	4782	2130	9478	6827	4176	1526	8876	29
5973	3317	0661	8006	5351	2697	0043	7390	4738	2086	9434	6783	4132	1482	8832	28
5929	3272	0617	7962	5307	2653	9999	7346	4693	2041	9390	6739	4088	1438	8788	27
5884	3228	0573	7917	5263	2609	9955	7302	4649	1997	9345	6694	4044	1393	8744	26
5840	3184	0528	7873	5219	2564	9911	7258	4605	1953	9301	6650	3999	1349	8700	25
5796	3140	0484	7829	5174	2520	9867	7213	4561	1909	9257	6606	3955	1305	8655	24
5751	3095	0440	7785	5130	2476	9822	7169	4517	1865	9213	6562	3911	1261	8611	23
5707	3051	0395	7740	5086	2432	9778	7125	4472	1820	9169	6518	3867	1217	8567	22
5663	3007	0351	7696	5042	2388	9734	7081	4428	1776	9125	6473	3823	1173	8523	21
5619	2963	0307	7652	4997	2343	9690	7037	4384	1732	9080	6429	3779	1128	8479	20
5574	2918	0263	7608	4953	2299	9645	6992	4340	1688	9036	6385	3734	1084	8435	19
5530	2874	0218	7563	4909	2255	9601	6948	4296	1644	8992	6341	3690	1040	8391	18
5486	2830	0174	7519	4865	2211	9557	6904	4251	1599	8948	6297	3646	0996	8346	17
5442	2785	0130	7475	4820	2166	9513	6860	4207	1555	8904	6253	3602	0952	8302	16
5397	2741	0086	7431	4776	2122	9469	6816	4163	1511	8859	6208	3558	0908	8258	15
5353	2697	0041	7386	4732	2078	9424	6771	4119	1467	8815	6164	3514	0864	8214	14
5309	2653	9997	7342	4688	2034	9380	6727	4075	1423	8771	6120	3469	0819	8170	13
5264	2608	9953	7298	4643	1989	9336	6683	4030	1378	8727	6076	3425	0775	8126	12
5220	2564	9909	7254	4599	1945	9292	6639	3986	1334	8683	6032	3381	0731	8081	11
5176	2520	9864	7209	4555	1901	9247	6595	3942	1290	8638	5987	3337	0687	8037	10
5132	2476	9820	7165	4511	1857	9203	6550	3898	1246	8594	5943	3293	0643	7993	9
5087	2431	9776	7121	4466	1813	9159	6506	3854	1202	8550	5899	3249	0599	7949	8
5043	2387	9732	7077	4422	1768	9115	6462	3809	1157	8506	5855	3204	0554	7905	7
4999	2343	9687	7032	4378	1724	9071	6418	3765	1113	8462	5811	3160	0510	7861	6
4955	2299	9643	6988	4334	1680	9026	6373	3721	1069	8418	5767	3116	0466	7817	5
4910	2254	9599	6944	4290	1636	8982	6329	3677	1025	8373	5722	3072	0422	7772	4
4866	2210	9555	6900	4245	1591	8938	6285	3633	0981	8329	5678	3028	0378	7728	3
4822	2166	9510	6855	4201	1547	8894	6241	3588	0936	8285	5634	2984	0334	7684	2
4777	2122	9466	6811	4157	1503	8850	6197	3544	0892	8241	5590	2939	0289	7640	1
4733	2077	9422	6767	4113	1459	8805	6152	3500	0848	8197	5546	2895	0245	7596	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Tangent Deg. 53

"	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9. 771	9. 771	9. 772	9. 772	9. 772	9. 772	9. 772	9. 773	9. 773	9. 773	9. 773	9. 773	9. 773	9. 774	9. 774
0	8150	9872	1593	3314	5033	6751	8468	0185	1900	3614	5327	7039	8749	0459	2168
1	8178	9901	1622	3342	5062	6780	8497	0213	1928	3642	5355	7067	8778	0488	2197
2	8207	9929	1651	3371	5090	6808	8526	0242	1957	3671	5384	7096	8807	0516	2225
3	8236	9958	1679	3400	5119	6837	8554	0270	1985	3699	5412	7124	8835	0545	2254
4	8265	9987	1708	3428	5148	6866	8583	0299	2014	3728	5441	7153	8864	0573	2282
5	8293	0016	1737	3457	5176	6894	8611	0327	2042	3756	5469	7181	8892	0602	2311
6	8322	0044	1766	3486	5205	6923	8640	0356	2071	3785	5498	7210	8921	0630	2339
7	8351	0073	1794	3514	5234	6952	8669	0385	2100	3814	5526	7238	8949	0659	2367
8	8379	0102	1823	3543	5262	6980	8697	0413	2128	3842	5555	7267	8978	0687	2396
9	8408	0130	1852	3572	5291	7009	8726	0442	2157	3871	5583	7295	9006	0716	2424
10	8437	0159	1880	3600	5319	7037	8754	0470	2185	3899	5612	7324	9035	0744	2453
11	8466	0188	1909	3629	5348	7066	8783	0499	2214	3928	5641	7352	9063	0773	2481
12	8494	0216	1938	3658	5377	7095	8812	0528	2242	3956	5669	7381	9092	0801	2510
13	8523	0245	1966	3686	5405	7123	8840	0556	2271	3985	5698	7409	9120	0830	2538
14	8552	0274	1995	3715	5434	7152	8869	0585	2300	4013	5726	7438	9149	0858	2567
15	8580	0303	2024	3744	5463	7181	8898	0613	2328	4042	5755	7466	9177	0887	2595
16	8609	0331	2052	3772	5491	7209	8926	0642	2357	4071	5783	7495	9206	0915	2624
17	8638	0360	2081	3801	5520	7238	8955	0671	2385	4099	5812	7523	9234	0944	2652
18	8666	0389	2110	3830	5549	7266	8983	0699	2414	4128	5840	7552	9263	0972	2681
19	8695	0417	2138	3858	5577	7295	9012	0728	2442	4156	5869	7580	9291	1001	2709
20	8724	0446	2167	3887	5606	7324	9041	0756	2471	4185	5897	7609	9320	1029	2738
21	8753	0475	2196	3916	5635	7352	9069	0785	2500	4213	5926	7638	9348	1058	2766
22	8781	0503	2224	3944	5663	7381	9098	0814	2528	4242	5954	7666	9377	1086	2794
23	8810	0532	2253	3973	5692	7410	9126	0842	2557	4270	5983	7695	9405	1115	2823
24	8839	0561	2282	4002	5720	7438	9155	0871	2585	4299	6012	7723	9434	1143	2851
25	8867	0589	2310	4030	5749	7467	9184	0899	2614	4328	6040	7752	9462	1171	2880
26	8896	0618	2339	4059	5778	7495	9212	0928	2642	4356	6069	7780	9491	1200	2908
27	8925	0647	2368	4088	5806	7524	9241	0956	2671	4385	6097	7809	9519	1228	2937
28	8954	0676	2396	4116	5835	7553	9269	0985	2700	4413	6126	7837	9548	1257	2965
29	8982	0704	2425	4145	5864	7581	9298	1014	2728	4442	6154	7865	9576	1285	2994
30	9011	0733	2454	4174	5892	7610	9327	1042	2757	4470	6183	7894	9605	1314	3022
31	9040	0762	2482	4202	5921	7639	9355	1071	2785	4499	6211	7923	9633	1342	3051
32	9068	0790	2511	4231	5950	7667	9384	1099	2814	4527	6240	7951	9662	1371	3079
33	9097	0819	2540	4259	5978	7696	9412	1128	2842	4556	6268	7980	9690	1399	3108
34	9126	0848	2568	4288	6007	7724	9441	1157	2871	4584	6297	8008	9719	1428	3136
35	9155	0876	2597	4317	6035	7753	9470	1185	2900	4613	6325	8037	9747	1456	3165
36	9183	0905	2626	4345	6064	7782	9498	1214	2928	4642	6354	8065	9776	1485	3193
37	9212	0934	2654	4374	6093	7810	9527	1242	2957	4670	6382	8094	9804	1513	3221
38	9241	0962	2683	4403	6121	7839	9555	1271	2985	4699	6411	8122	9833	1542	3250
39	9269	0991	2712	4431	6150	7868	9584	1299	3014	4727	6440	8151	9861	1570	3278
40	9298	1020	2740	4460	6179	7896	9613	1328	3042	4756	6468	8179	9890	1599	3307
41	9327	1048	2769	4489	6207	7925	9641	1357	3071	4784	6497	8208	9918	1627	3335
42	9355	1077	2798	4517	6236	7953	9670	1385	3100	4813	6525	8236	9947	1656	3364
43	9384	1106	2826	4546	6265	7982	9698	1414	3128	4841	6554	8265	9975	1684	3392
44	9413	1135	2855	4575	6293	8011	9727	1442	3157	4870	6582	8293	0003	1713	3421
45	9442	1163	2884	4603	6322	8039	9756	1471	3185	4898	6611	8322	0032	1741	3449
46	9470	1192	2912	4632	6350	8068	9784	1500	3214	4927	6639	8350	0060	1770	3478
47	9499	1221	2941	4661	6379	8096	9813	1528	3242	4956	6668	8379	0089	1798	3506
48	9528	1249	2970	4689	6408	8125	9841	1557	3271	4984	6696	8407	0117	1827	3534
49	9556	1278	2998	4718	6436	8154	9870	1585	3299	5013	6725	8436	0146	1855	3563
50	9585	1307	3027	4747	6465	8182	9899	1614	3328	5041	6753	8464	0174	1883	3591
51	9614	1335	3056	4775	6494	8211	9927	1642	3357	5070	6782	8493	0203	1912	3620
52	9642	1364	3084	4804	6522	8240	9956	1671	3385	5098	6810	8521	0231	1940	3648
53	9671	1393	3113	4832	6551	8268	9984	1700	3414	5127	6839	8550	0260	1969	3677
54	9700	1421	3142	4861	6579	8297	0013	1728	3442	5155	6867	8578	0288	1997	3705
55	9729	1450	3170	4890	6608	8325	0042	1757	3471	5184	6896	8607	0317	2026	3734
56	9757	1479	3199	4918	6637	8354	0070	1785	3499	5212	6924	8635	0345	2054	3762
57	9786	1507	3228	4947	6665	8383	0099	1814	3528	5241	6953	8664	0374	2083	3791
58	9815	1536	3256	4976	6694	8411	0127	1842	3557	5270	6982	8692	0402	2111	3819
59	9843	1565	3285	5004	6723	8440	0156	1871	3585	5298	7010	8721	0431	2140	3848
60	9872	1593	3314	5033	6751	8468	0185	1900	3614	5327	7039	8749	0459	2168	3876
"	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	"
9. 906	9. 906	9. 906	9. 906	9. 906	9. 906	9. 906	9. 905	9. 905	9. 905	9. 905	9. 905	9. 905	9. 905	9. 905	
5745	4819	3892	2964	2036	1107	0177	9247	8317	7386	6454	5522	4589	3656	2722	60
5730	4803	3876	2948	2020	1091	0162	9232	8301	7370	6439	5506	4574	3640	2706	59
5715	4788	3861	2933	2005	1076	0146	9216	8286	7355	6423	5491	4558	3625	2691	58
5699	4772	3845	2918	1989	1060	0131	9201	8270	7339	6408	5475	4542	3609	2675	57
5684	4757	3830	2902	1974	1045	0115	9185	8255	7324	6392	5460	4527	3593	2659	56
5668	4742	3814	2887	1958	1029	0100	9170	8239	7308	6376	5444	4511	3578	2644	55
5653	4726	3799	2871	1943	1014	0084	9154	8224	7293	6361	5429	4496	3562	2628	54
5637	4711	3783	2856	1927	0998	0069	9139	8208	7277	6345	5413	4480	3547	2613	53
5622	4695	3768	2840	1912	0983	0053	9123	8193	7262	6330	5398	4465	3531	2597	52
5606	4680	3753	2825	1896	0967	0038	9108	8177	7246	6314	5382	4449	3516	2582	51
5591	4664	3737	2809	1881	0952	0022	9092	8162	7231	6299	5366	4434	3500	2566	50
5576	4649	3722	2794	1865	0936	0007	9077	8146	7215	6283	5351	4418	3485	2550	49
5560	4633	3706	2778	1850	0921	9991	9061	8131	7200	6268	5335	4402	3469	2535	48
5545	4618	3691	2763	1834	0906	9976	9046	8115	7184	6252	5320	4387	3453	2519	47
5529	4603	3675	2747	1819	0890	9960	9030	8100	7168	6237	5304	4371	3438	2504	46
5514	4587	3660	2732	1804	0875	9945	9015	8084	7153	6221	5289	4356	3422	2488	45
5498	4572	3644	2716	1788	0859	9929	8999	8069	7137	6206	5273	4340	3407	2473	44
5483	4556	3629	2701	1773	0844	9914	8984	8053	7122	6190	5258	4325	3391	2457	43
5467	4541	3613	2686	1757	0828	9899	8968	8038	7106	6175	5242	4309	3376	2441	42
5452	4525	3598	2670	1742	0813	9883	8953	8022	7091	6159	5227	4294	3360	2426	41
5437	4510	3583	2655	1726	0797	9868	8937	8007	7075	6143	5211	4278	3344	2410	40
5421	4494	3567	2639	1711	0782	9852	8922	7991	7060	6128	5195	4262	3329	2395	39
5406	4479	3552	2624	1695	0766	9837	8906	7976	7044	6112	5180	4247	3313	2379	38
5390	4463	3536	2608	1680	0751	9821	8891	7960	7029	6097	5164	4231	3298	2364	37
5375	4448	3521	2593	1664	0735	9806	8875	7945	7013	6081	5149	4216	3282	2348	36
5359	4433	3505	2577	1649	0720	9790	8860	7929	6998	6066	5133	4200	3267	2332	35
5344	4417	3490	2562	1633	0704	9775	8844	7914	6982	6050	5118	4185	3251	2317	34
5329	4402	3474	2546	1618	0689	9759	8829	7898	6967	6035	5102	4169	3235	2301	33
5313	4386	3459	2531	1602	0673	9744	8813	7882	6951	6019	5087	4154	3220	2286	32
5298	4371	3443	2515	1587	0658	9728	8798	7867	6936	6004	5071	4138	3204	2270	31
5282	4355	3428	2500	1571	0642	9713	8782	7851	6920	5988	5056	4122	3189	2255	30
5267	4340	3412	2484	1556	0627	9697	8767	7836	6905	5973	5040	4107	3173	2239	29
5251	4324	3397	2469	1540	0611	9682	8751	7820	6889	5957	5024	4091	3158	2223	28
5236	4309	3382	2453	1525	0596	9666	8736	7805	6873	5941	5009	4076	3142	2208	27
5220	4294	3366	2438	1509	0580	9651	8720	7789	6858	5926	4993	4060	3127	2192	26
5205	4278	3351	2423	1494	0565	9635	8705	7774	6842	5910	4978	4045	3111	2177	25
5190	4263	3335	2407	1478	0549	9620	8689	7758	6827	5895	4962	4029	3095	2161	24
5174	4247	3320	2392	1463	0534	9604	8674	7743	6811	5879	4947	4014	3080	2146	23
5159	4232	3304	2376	1447	0518	9589	8658	7727	6796	5864	4931	3998	3064	2130	22
5143	4216	3289	2361	1432	0503	9573	8643	7712	6780	5848	4916	3982	3049	2114	21
5128	4201	3273	2345	1417	0487	9558	8627	7696	6765	5833	4900	3967	3033	2099	20
5112	4185	3258	2330	1401	0472	9542	8612	7681	6749	5817	4885	3951	3018	2083	19
5097	4170	3242	2314	1386	0456	9527	8596	7665	6734	5802	4869	3936	3002	2068	18
5081	4154	3227	2299	1370	0441	9511	8581	7650	6718	5786	4853	3920	2986	2052	17
5066	4139	3211	2288	1355	0425	9496	8565	7634	6703	5771	4838	3905	2971	2036	16
5051	4124	3196	2268	1339	0410	9480	8550	7619	6687	5755	4822	3889	2955	2021	15
5035	4108	3180	2252	1324	0394	9465	8534	7603	6672	5739	4807	3874	2940	2005	14
5020	4093	3165	2237	1308	0379	9449	8519	7588	6656	5724	4791	3858	2924	1990	13
5004	4077	3150	2221	1293	0363	9434	8503	7572	6641	5708	4776	3842	2909	1974	12
4989	4062	3134	2206	1277	0348	9418	8488	7557	6625	5693	4760	3827	2893	1959	11
4973	4046	3119	2190	1262	0332	9402	8472	7541	6609	5677	4745	3811	2877	1943	10
4958	4031	3103	2175	1246	0317	9387	8457	7526	6594	5662	4729	3796	2862	1927	9
4942	4015	3088	2159	1231	0301	9371	8441	7510	6578	5646	4713	3780	2846	1912	8
4927	4000	3072	2144	1215	0286	9356	8426	7494	6563	5631	4698	3765	2831	1896	7
4912	3984	3057	2129	1200	0270	9340	8410	7479	6547	5615	4682	3749	2815	1881	6
4896	3969	3041	2113	1184	0255	9325	8394	7463	6532	5600	4667	3733	2800	1865	5
4881	3954	3026	2098	1169	0239	9309	8379	7448	6516	5584	4651	3718	2784	1850	4
4865	3938	3010	2082	1153	0224	9294	8363	7432	6501	5569	4636	3702	2768	1834	3
4850	3923	2995	2067	1138	0208	9278	8348	7417	6485	5553	4620	3687	2753	1818	2
4834	3907	2979	2051	1122	0193	9263	8332	7401	6470	5537	4605	3671	2737	1803	1
4819	3892	2964	2036	1107	0177	9247	8317	7386	6454	5522	4589	3656	2722	1787	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	"

36 Deg. Tangent

"	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9.865	9.865	9.865	9.866	9.866	9.866	9.866	9.867	9.867	9.867	9.867	9.868	9.868	9.868	9.868
0	2404	5053	7702	0350	2997	5644	8291	0937	3583	6228	8873	1517	4160	6804	9446
1	2448	5097	7746	0394	3041	5688	8335	0981	3627	6272	8917	1561	4204	6848	9490
2	2493	5142	7790	0438	3086	5733	8379	1025	3671	6316	8961	1605	4249	6892	9535
3	2537	5186	7834	0482	3130	5777	8423	1069	3715	6360	9005	1649	4293	6936	9579
4	2581	5230	7878	0526	3174	5821	8467	1113	3759	6404	9049	1693	4337	6980	9623
5	2625	5274	7922	0570	3218	5865	8511	1158	3803	6448	9093	1737	4381	7024	9667
6	2669	5318	7967	0615	3262	5909	8556	1202	3847	6492	9137	1781	4425	7068	9711
7	2713	5362	8011	0659	3306	5953	8600	1246	3891	6536	9181	1825	4469	7112	9755
8	2757	5406	8055	0703	3350	5997	8644	1290	3935	6580	9225	1869	4513	7156	9799
9	2802	5451	8099	0747	3394	6041	8688	1334	3979	6625	9269	1913	4557	7200	9843
10	2846	5495	8143	0791	3439	6086	8732	1378	4024	6669	9313	1957	4601	7244	9887
11	2890	5539	8187	0835	3483	6130	8776	1422	4068	6713	9357	2001	4645	7288	9931
12	2934	5583	8231	0879	3527	6174	8820	1466	4112	6757	9401	2045	4689	7332	9975
13	2978	5627	8276	0923	3571	6218	8864	1510	4156	6801	9445	2090	4733	7376	0019
14	3022	5671	8320	0968	3615	6262	8908	1554	4200	6845	9490	2134	4777	7420	0063
15	3067	5715	8364	1012	3659	6306	8953	1599	4244	6889	9534	2178	4821	7464	0107
16	3111	5760	8408	1056	3703	6350	8997	1643	4288	6933	9578	2222	4865	7508	0151
17	3155	5804	8452	1100	3747	6394	9041	1687	4332	6977	9622	2266	4909	7553	0195
18	3199	5848	8496	1144	3791	6438	9085	1731	4376	7021	9666	2310	4953	7597	0239
19	3243	5892	8540	1188	3836	6483	9129	1775	4420	7065	9710	2354	4997	7641	0283
20	3287	5936	8584	1232	3880	6527	9173	1819	4464	7109	9754	2398	5042	7685	0327
21	3331	5980	8629	1276	3924	6571	9217	1863	4509	7154	9798	2442	5086	7729	0371
22	3376	6024	8673	1321	3968	6615	9261	1907	4553	7198	9842	2486	5130	7773	0415
23	3420	6069	8717	1365	4012	6659	9305	1951	4597	7242	9886	2530	5174	7817	0459
24	3464	6113	8761	1409	4056	6703	9349	1995	4641	7286	9930	2574	5218	7861	0503
25	3508	6157	8805	1453	4100	6747	9394	2039	4685	7330	9974	2618	5262	7905	0547
26	3552	6201	8849	1497	4144	6791	9438	2084	4729	7374	0018	2662	5306	7949	0591
27	3596	6245	8893	1541	4189	6835	9482	2128	4773	7418	0062	2706	5350	7993	0636
28	3641	6289	8938	1585	4233	6880	9526	2172	4817	7462	0107	2750	5394	8037	0680
29	3685	6333	8982	1629	4277	6924	9570	2216	4861	7506	0151	2795	5438	8081	0724
30	3729	6378	9026	1674	4321	6968	9614	2260	4905	7550	0195	2839	5482	8125	0768
31	3773	6422	9070	1718	4365	7012	9658	2304	4949	7594	0239	2883	5526	8169	0812
32	3817	6466	9114	1762	4409	7056	9702	2348	4993	7638	0283	2927	5570	8213	0856
33	3861	6510	9158	1806	4453	7100	9746	2392	5038	7682	0327	2971	5614	8257	0900
34	3905	6554	9202	1850	4497	7144	9790	2436	5082	7727	0371	3015	5658	8301	0944
35	3950	6598	9246	1894	4542	7188	9835	2480	5126	7771	0415	3059	5702	8345	0988
36	3994	6642	9291	1938	4586	7232	9879	2524	5170	7815	0459	3103	5746	8389	1032
37	4038	6687	9335	1982	4630	7277	9923	2569	5214	7859	0503	3147	5790	8433	1076
38	4082	6731	9379	2027	4674	7321	9967	2613	5258	7903	0547	3191	5835	8477	1120
39	4126	6775	9423	2071	4718	7365	0011	2657	5302	7947	0591	3235	5879	8522	1164
40	4170	6819	9467	2115	4762	7409	0055	2701	5346	7991	0635	3279	5923	8566	1208
41	4214	6863	9511	2159	4806	7453	0099	2745	5390	8035	0679	3323	5967	8610	1252
42	4259	6907	9555	2203	4850	7497	0143	2789	5434	8079	0723	3367	6011	8654	1296
43	4303	6951	9600	2247	4894	7541	0187	2833	5478	8123	0768	3411	6055	8698	1340
44	4347	6996	9644	2291	4939	7585	0231	2877	5523	8167	0812	3455	6099	8742	1384
45	4391	7040	9688	2335	4983	7629	0276	2921	5567	8211	0856	3500	6143	8786	1428
46	4435	7084	9732	2380	5027	7673	0320	2965	5611	8255	0900	3544	6187	8830	1472
47	4479	7128	9776	2424	5071	7718	0364	3010	5655	8300	0944	3588	6231	8874	1516
48	4523	7172	9820	2468	5115	7762	0408	3054	5699	8344	0988	3632	6275	8918	1560
49	4568	7216	9864	2512	5159	7806	0452	3098	5743	8388	1032	3676	6319	8962	1604
50	4612	7260	9908	2556	5203	7850	0496	3142	5787	8432	1076	3720	6363	9006	1648
51	4656	7305	9953	2600	5247	7894	0540	3186	5831	8476	1120	3764	6407	9050	1692
52	4700	7349	9997	2644	5291	7938	0584	3230	5875	8520	1164	3808	6451	9094	1736
53	4744	7393	0041	2688	5336	7982	0628	3274	5919	8564	1208	3852	6495	9138	1781
54	4788	7437	0085	2733	5380	8026	0672	3318	5963	8608	1252	3896	6539	9182	1825
55	4833	7481	0129	2777	5424	8070	0717	3362	6007	8652	1296	3940	6583	9226	1869
56	4877	7525	0173	2821	5468	8115	0761	3406	6052	8696	1340	3984	6627	9270	1913
57	4921	7569	0217	2865	5512	8159	0805	3450	6096	8740	1385	4028	6672	9314	1957
58	4965	7613	0262	2909	5556	8203	0849	3495	6140	8784	1429	4072	6716	9358	2001
59	5009	7658	0306	2953	5600	8247	0893	3539	6184	8828	1473	4116	6760	9402	2045
60	5053	7702	0350	2997	5644	8291	0937	3583	6228	8873	1517	4160	6804	9446	2089
"	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Tangent Deg. 53

36 Deg. Co-Tangent

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
10.134	10.134	10.134	10.133	10.133	10.133	10.133	10.132	10.132	10.132	10.132	10.131	10.131	10.131	10.131	"
7596	4947	2298	9650	7003	4356	1709	9063	6417	3772	1127	8483	5840	3196	0554	60
7552	4903	2254	9606	6959	4312	1665	9019	6373	3728	1083	8439	5796	3152	0510	59
7507	4858	2210	9562	6914	4267	1621	8975	6329	3684	1039	8395	5751	3108	0465	58
7463	4814	2166	9518	6870	4223	1577	8931	6285	3640	0995	8351	5707	3064	0421	57
7419	4770	2122	9474	6826	4179	1533	8887	6241	3596	0951	8307	5663	3020	0377	56
7375	4726	2078	9430	6782	4135	1489	8842	6197	3552	0907	8263	5619	2976	0333	55
7331	4682	2033	9385	6738	4091	1444	8798	6153	3508	0863	8219	5575	2932	0289	54
7287	4638	1989	9341	6694	4047	1400	8754	6109	3464	0819	8175	5531	2888	0245	53
7243	4594	1945	9297	6650	4003	1356	8710	6065	3420	0775	8131	5487	2844	0201	52
7198	4549	1901	9253	6606	3959	1312	8666	6021	3375	0731	8087	5443	2800	0157	51
7154	4505	1857	9209	6561	3914	1268	8622	5976	3331	0687	8043	5399	2756	0113	50
7110	4461	1813	9165	6517	3870	1224	8578	5932	3287	0643	7999	5355	2712	0069	49
7066	4417	1769	9121	6473	3826	1180	8534	5888	3243	0599	7955	5311	2668	0025	48
7022	4373	1724	9077	6429	3782	1136	8490	5844	3199	0555	7910	5267	2624	9981	47
6978	4329	1680	9032	6385	3738	1092	8446	5800	3155	0510	7866	5223	2580	9937	46
6933	4285	1636	8988	6341	3694	1047	8401	5756	3111	0466	7822	5179	2536	9893	45
6889	4240	1592	8944	6297	3650	1003	8357	5712	3067	0422	7778	5135	2492	9849	44
6845	4196	1548	8900	6253	3606	0959	8313	5668	3023	0378	7734	5091	2447	9805	43
6801	4152	1504	8856	6209	3562	0915	8269	5624	2979	0334	7690	5047	2403	9761	42
6757	4108	1460	8812	6164	3517	0871	8225	5580	2935	0290	7646	5003	2359	9717	41
6713	4064	1416	8768	6120	3473	0827	8181	5536	2891	0246	7602	4958	2315	9673	40
6669	4020	1371	8724	6076	3429	0783	8137	5491	2846	0202	7558	4914	2271	9629	39
6624	3976	1327	8679	6032	3385	0739	8093	5447	2802	0158	7514	4870	2227	9585	38
6580	3931	1283	8635	5988	3341	0695	8049	5403	2758	0114	7470	4826	2183	9541	37
6536	3887	1239	8591	5944	3297	0651	8005	5359	2714	0070	7426	4782	2139	9497	36
6492	3843	1195	8547	5900	3253	0606	7961	5315	2670	0026	7382	4738	2095	9453	35
6448	3799	1151	8503	5856	3209	0562	7916	5271	2626	9982	7338	4694	2051	9409	34
6404	3755	1107	8459	5811	3165	0518	7872	5227	2582	9938	7294	4650	2007	9364	33
6359	3711	1062	8415	5767	3120	0474	7828	5183	2538	9893	7250	4606	1963	9320	32
6315	3667	1018	8371	5723	3076	0430	7784	5139	2494	9849	7205	4562	1919	9276	31
6271	3622	0974	8326	5679	3032	0386	7740	5095	2450	9805	7161	4518	1875	9232	30
6227	3578	0930	8282	5635	2988	0342	7696	5051	2406	9761	7117	4474	1831	9188	29
6183	3534	0886	8238	5591	2944	0298	7652	5007	2362	9717	7073	4430	1787	9144	28
6139	3490	0842	8194	5547	2900	0254	7608	4962	2318	9673	7029	4386	1743	9100	27
6095	3446	0798	8150	5503	2856	0210	7564	4918	2273	9629	6985	4342	1699	9056	26
6050	3402	0754	8106	5458	2812	0165	7520	4874	2229	9585	6941	4298	1655	9012	25
6006	3358	0709	8062	5414	2768	0121	7476	4830	2185	9541	6897	4254	1611	8968	24
5962	3313	0665	8018	5370	2723	0077	7431	4786	2141	9497	6853	4210	1567	8924	23
5918	3269	0621	7973	5326	2679	0033	7387	4742	2097	9453	6809	4165	1523	8880	22
5874	3225	0577	7929	5282	2635	9989	7343	4698	2053	9409	6765	4121	1478	8836	21
5830	3181	0533	7885	5238	2591	9945	7299	4654	2009	9365	6721	4077	1434	8792	20
5786	3137	0489	7841	5194	2547	9901	7255	4610	1965	9321	6677	4033	1390	8748	19
5741	3093	0445	7797	5150	2503	9857	7211	4566	1921	9277	6633	3989	1346	8704	18
5697	3049	0400	7753	5106	2459	9813	7167	4522	1877	9232	6589	3945	1302	8660	17
5653	3004	0356	7709	5061	2415	9769	7123	4477	1833	9188	6545	3901	1258	8616	16
5609	2960	0312	7665	5017	2371	9724	7079	4433	1789	9144	6500	3857	1214	8572	15
5565	2916	0268	7620	4973	2327	9680	7035	4389	1745	9100	6456	3813	1170	8528	14
5521	2872	0224	7576	4929	2282	9636	6990	4345	1700	9056	6412	3769	1126	8484	13
5477	2828	0180	7532	4885	2238	9592	6946	4301	1656	9012	6368	3725	1082	8440	12
5432	2784	0136	7488	4841	2194	9548	6902	4257	1612	8968	6324	3681	1038	8396	11
5388	2740	0092	7444	4797	2150	9504	6858	4213	1568	8924	6280	3637	0994	8352	10
5344	2695	0047	7400	4753	2106	9460	6814	4169	1524	8880	6236	3593	0950	8308	9
5300	2651	0003	7356	4709	2062	9416	6770	4125	1480	8836	6192	3549	0906	8264	8
5256	2607	9959	7312	4664	2018	9372	6726	4081	1436	8792	6148	3505	0862	8219	7
5212	2563	9915	7267	4620	1974	9328	6682	4037	1392	8748	6104	3461	0818	8175	6
5167	2519	9871	7223	4576	1930	9283	6638	3993	1348	8704	6060	3417	0774	8131	5
5123	2475	9827	7179	4532	1885	9239	6594	3948	1304	8660	6016	3373	0730	8087	4
5079	2431	9783	7135	4488	1841	9195	6550	3904	1260	8615	5972	3328	0686	8043	3
5035	2387	9738	7091	4444	1797	9151	6505	3860	1216	8571	5928	3284	0642	7999	2
4991	2342	9694	7047	4400	1753	9107	6461	3816	1172	8527	5884	3240	0598	7955	1
4947	2298	9650	7003	4356	1709	9063	6417	3772	1127	8483	5840	3196	0554	7911	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	"

Tangent Deg. 53

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 774	9. 774	9. 774	9. 774	9. 775	9. 775	9. 775	9. 775	9. 775	9. 775	9. 776	9. 776	9. 776	9. 776	9. 776
0	3876	5583	7288	8993	0697	2399	4101	5801	7501	9199	0897	2593	4289	5983	7676
1	3904	5611	7317	9022	0725	2428	4129	5830	7529	9228	0925	2622	4317	6011	7705
2	3933	5640	7345	9050	0754	2456	4158	5858	7558	9256	0953	2650	4345	6039	7733
3	3961	5668	7374	9078	0782	2484	4186	5886	7586	9284	0982	2678	4373	6068	7761
4	3990	5696	7402	9107	0810	2513	4214	5915	7614	9313	1010	2706	4402	6096	7789
5	4018	5725	7431	9135	0839	2541	4243	5943	7643	9341	1038	2735	4430	6124	7817
6	4047	5753	7459	9164	0867	2570	4271	5971	7671	9369	1067	2763	4458	6152	7846
7	4075	5782	7487	9192	0895	2598	4299	6000	7699	9398	1095	2791	4486	6181	7874
8	4104	5810	7516	9220	0924	2626	4328	6028	7727	9426	1123	2819	4515	6209	7902
9	4132	5839	7544	9249	0952	2655	4356	6056	7756	9454	1151	2848	4543	6237	7930
10	4161	5867	7573	9277	0981	2683	4384	6085	7784	9482	1180	2876	4571	6265	7958
11	4189	5896	7601	9306	1009	2711	4413	6113	7812	9511	1208	2904	4599	6294	7987
12	4217	5924	7629	9334	1037	2740	4441	6141	7841	9539	1236	2932	4628	6322	8015
13	4246	5952	7658	9362	1066	2768	4469	6170	7869	9567	1264	2961	4656	6350	8043
14	4274	5981	7686	9391	1094	2796	4498	6198	7897	9596	1293	2989	4684	6378	8071
15	4303	6009	7715	9419	1122	2825	4526	6226	7926	9624	1321	3017	4712	6406	8099
16	4331	6038	7743	9448	1151	2853	4554	6255	7954	9652	1349	3045	4741	6435	8128
17	4360	6066	7772	9476	1179	2882	4583	6283	7982	9680	1378	3074	4769	6463	8156
18	4388	6095	7800	9504	1208	2910	4611	6311	8011	9709	1406	3102	4797	6491	8184
19	4417	6123	7828	9533	1236	2938	4640	6340	8039	9737	1434	3130	4825	6519	8212
20	4445	6151	7857	9561	1264	2967	4668	6368	8067	9765	1462	3158	4854	6548	8241
21	4473	6180	7885	9589	1293	2995	4696	6396	8096	9794	1491	3187	4882	6576	8269
22	4502	6208	7914	9618	1321	3023	4725	6425	8124	9822	1519	3215	4910	6604	8297
23	4530	6237	7942	9646	1350	3052	4753	6453	8152	9850	1547	3243	4938	6632	8325
24	4559	6265	7970	9675	1378	3080	4781	6481	8180	9879	1576	3272	4966	6660	8353
25	4587	6294	7999	9703	1406	3108	4810	6510	8209	9907	1604	3300	4995	6689	8382
26	4616	6322	8027	9731	1435	3137	4838	6538	8237	9935	1632	3328	5023	6717	8410
27	4644	6350	8056	9760	1463	3165	4866	6566	8265	9963	1660	3356	5051	6745	8438
28	4673	6379	8084	9788	1491	3194	4895	6595	8294	9992	1689	3385	5079	6773	8466
29	4701	6407	8112	9817	1520	3222	4923	6623	8322	0020	1717	3413	5108	6802	8494
30	4729	6436	8141	9845	1548	3250	4951	6651	8350	0048	1745	3441	5136	6830	8523
31	4758	6464	8169	9873	1577	3279	4980	6680	8379	0077	1773	3469	5164	6858	8551
32	4786	6493	8198	9902	1605	3307	5008	6708	8407	0105	1802	3498	5192	6886	8579
33	4815	6521	8226	9930	1633	3335	5036	6736	8435	0133	1830	3526	5221	6914	8607
34	4843	6549	8255	9959	1662	3364	5065	6765	8464	0161	1858	3554	5249	6943	8635
35	4872	6578	8283	9987	1690	3392	5093	6793	8492	0190	1887	3582	5277	6971	8664
36	4900	6606	8311	0015	1718	3420	5121	6821	8520	0218	1915	3611	5305	6999	8692
37	4929	6635	8340	0044	1747	3449	5150	6850	8548	0246	1943	3639	5334	7027	8720
38	4957	6663	8368	0072	1775	3477	5178	6878	8577	0275	1971	3667	5362	7056	8748
39	4985	6692	8397	0101	1804	3505	5206	6906	8605	0303	2000	3695	5390	7084	8776
40	5014	6720	8425	0129	1832	3534	5235	6935	8633	0331	2028	3724	5418	7112	8805
41	5042	6748	8453	0157	1860	3562	5263	6963	8662	0359	2056	3752	5447	7140	8833
42	5071	6777	8482	0186	1889	3591	5291	6991	8690	0388	2084	3780	5475	7168	8861
43	5099	6805	8510	0214	1917	3619	5320	7020	8718	0416	2113	3808	5503	7197	8889
44	5128	6834	8539	0243	1945	3647	5348	7048	8747	0444	2141	3837	5531	7225	8917
45	5156	6862	8567	0271	1974	3676	5376	7076	8775	0473	2169	3865	5559	7253	8946
46	5185	6891	8595	0299	2002	3704	5405	7104	8803	0501	2198	3893	5588	7281	8974
47	5213	6919	8624	0328	2031	3732	5433	7133	8832	0529	2226	3921	5616	7310	9002
48	5241	6947	8652	0356	2059	3761	5461	7161	8860	0557	2254	3950	5644	7338	9030
49	5270	6976	8681	0384	2087	3789	5490	7189	8888	0586	2282	3978	5672	7366	9058
50	5298	7004	8709	0413	2116	3817	5518	7218	8916	0614	2311	4006	5701	7394	9087
51	5327	7033	8737	0441	2144	3846	5546	7246	8945	0642	2339	4034	5729	7422	9115
52	5355	7061	8766	0470	2172	3874	5575	7274	8973	0671	2367	4063	5757	7451	9143
53	5384	7089	8794	0498	2201	3902	5603	7303	9001	0699	2395	4091	5785	7479	9171
54	5412	7118	8823	0526	2229	3931	5631	7331	9030	0727	2424	4119	5814	7507	9199
55	5441	7146	8851	0555	2258	3959	5660	7359	9058	0755	2452	4147	5842	7535	9228
56	5469	7175	8879	0583	2286	3988	5688	7388	9086	0784	2480	4176	5870	7563	9256
57	5497	7203	8908	0612	2314	4016	5716	7416	9115	0812	2508	4204	5898	7592	9284
58	5526	7232	8936	0640	2343	4044	5745	7444	9143	0840	2537	4232	5927	7620	9312
59	5554	7260	8965	0668	2371	4073	5773	7473	9171	0869	2565	4260	5955	7648	9340
60	5583	7288	8993	0697	2399	4101	5801	7501	9199	0897	2593	4289	5983	7676	9369
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
	9. 905	9. 905	9. 904	9. 904	9. 904	9. 904	9. 904	9. 904	9. 904	9. 904	9. 904	9. 904	9. 904	9. 903	9. 903	″
0	1787	0852	9916	8980	8043	7106	6168	5230	4291	3351	2411	1470	0529	9587	8644	60
1	1772	0837	9901	8965	8028	7090	6153	5214	4275	3335	2395	1454	0513	9571	8628	59
2	1756	0821	9885	8949	8012	7075	6137	5198	4259	3320	2379	1439	0497	9555	8613	58
3	1740	0805	9870	8933	7997	7059	6121	5183	4244	3304	2364	1423	0482	9540	8597	57
4	1725	0790	9854	8918	7981	7044	6106	5167	4228	3288	2348	1407	0466	9524	8581	56
5	1709	0774	9838	8902	7965	7028	6090	5151	4212	3273	2332	1392	0450	9508	8566	55
6	1694	0759	9823	8887	7950	7012	6074	5136	4197	3257	2317	1376	0434	9492	8550	54
7	1678	0743	9807	8871	7934	6997	6059	5120	4181	3241	2301	1360	0419	9477	8534	53
8	1663	0727	9792	8855	7919	6981	6043	5104	4165	3226	2285	1344	0403	9461	8518	52
9	1647	0712	9776	8840	7903	6965	6027	5089	4150	3210	2270	1329	0387	9445	8503	51
10	1631	0696	9760	8824	7887	6950	6012	5073	4134	3194	2254	1313	0372	9430	8487	50
11	1616	0681	9745	8809	7872	6934	5996	5058	4118	3179	2238	1297	0356	9414	8471	49
12	1600	0665	9729	8793	7856	6919	5981	5042	4103	3163	2223	1282	0340	9398	8456	48
13	1585	0649	9714	8777	7840	6903	5965	5026	4087	3147	2207	1266	0325	9383	8440	47
14	1569	0634	9698	8762	7825	6887	5949	5011	4071	3132	2191	1250	0309	9367	8424	46
15	1554	0618	9682	8746	7809	6872	5934	4995	4056	3116	2176	1235	0293	9351	8408	45
16	1538	0603	9667	8731	7794	6856	5918	4979	4040	3100	2160	1219	0277	9335	8393	44
17	1522	0587	9651	8715	7778	6840	5902	4964	4024	3085	2144	1203	0262	9320	8377	43
18	1507	0572	9636	8699	7762	6825	5887	4948	4009	3069	2129	1188	0246	9304	8361	42
19	1491	0556	9620	8684	7747	6809	5871	4932	3993	3053	2113	1172	0230	9288	8346	41
20	1476	0540	9604	8668	7731	6794	5855	4917	3977	3038	2097	1156	0215	9273	8330	40
21	1460	0525	9589	8652	7715	6778	5840	4901	3962	3022	2082	1141	0199	9257	8314	39
22	1444	0509	9573	8637	7700	6762	5824	4885	3946	3006	2066	1125	0183	9241	8298	38
23	1429	0494	9558	8621	7684	6747	5808	4870	3930	2991	2050	1109	0168	9225	8283	37
24	1413	0478	9542	8606	7669	6731	5793	4854	3915	2975	2034	1093	0152	9210	8267	36
25	1398	0462	9526	8590	7653	6715	5777	4838	3899	2959	2019	1078	0136	9194	8251	35
26	1382	0447	9511	8574	7637	6700	5762	4823	3883	2944	2003	1062	0120	9178	8236	34
27	1367	0431	9495	8559	7622	6684	5746	4807	3868	2928	1987	1046	0105	9163	8220	33
28	1351	0416	9480	8543	7606	6668	5730	4792	3852	2912	1972	1031	0089	9147	8204	32
29	1335	0400	9464	8528	7590	6653	5715	4776	3837	2897	1956	1015	0073	9131	8188	31
30	1320	0384	9448	8512	7575	6637	5699	4760	3821	2881	1940	0999	0058	9115	8173	30
31	1304	0369	9433	8496	7559	6622	5683	4745	3805	2865	1925	0984	0042	9100	8157	29
32	1289	0353	9417	8481	7544	6606	5668	4729	3790	2850	1909	0968	0026	9084	8141	28
33	1273	0338	9402	8465	7528	6590	5652	4713	3774	2834	1893	0952	0011	9068	8126	27
34	1257	0322	9386	8449	7512	6575	5636	4698	3758	2818	1878	0937	9995	9053	8110	26
35	1242	0306	9370	8434	7497	6559	5621	4682	3743	2803	1862	0921	9979	9037	8094	25
36	1226	0291	9355	8418	7481	6543	5605	4666	3727	2787	1846	0905	9964	9021	8078	24
37	1211	0275	9339	8403	7465	6528	5589	4651	3711	2771	1831	0890	9948	9006	8063	23
38	1195	0260	9324	8387	7450	6512	5574	4635	3696	2756	1815	0874	9932	8990	8047	22
39	1179	0244	9308	8371	7434	6497	5558	4619	3680	2740	1799	0858	9916	8974	8031	21
40	1164	0228	9292	8356	7419	6481	5543	4604	3664	2724	1784	0842	9901	8958	8016	20
41	1148	0213	9277	8340	7403	6465	5527	4588	3649	2709	1768	0827	9885	8943	8000	19
42	1133	0197	9261	8325	7387	6450	5511	4572	3633	2693	1752	0811	9869	8927	7984	18
43	1117	0182	9246	8309	7372	6434	5496	4557	3617	2677	1737	0795	9854	8911	7968	17
44	1102	0166	9230	8293	7356	6418	5480	4541	3602	2662	1721	0780	9838	8896	7953	16
45	1086	0150	9214	8278	7341	6403	5464	4525	3586	2646	1705	0764	9822	8880	7937	15
46	1070	0135	9199	8262	7325	6387	5449	4510	3570	2630	1690	0748	9806	8864	7921	14
47	1055	0119	9183	8246	7309	6371	5433	4494	3555	2614	1674	0733	9791	8848	7905	13
48	1039	0104	9168	8231	7294	6356	5417	4478	3539	2599	1658	0717	9775	8833	7890	12
49	1024	0088	9152	8215	7278	6340	5402	4463	3523	2583	1642	0701	9759	8817	7874	11
50	1008	0072	9136	8200	7262	6325	5386	4447	3508	2567	1627	0686	9744	8801	7858	10
51	0992	0057	9121	8184	7247	6309	5370	4431	3492	2552	1611	0670	9728	8786	7843	9
52	0977	0041	9105	8168	7231	6293	5355	4416	3476	2536	1595	0654	9712	8770	7827	8
53	0961	0026	9090	8153	7215	6278	5339	4400	3461	2520	1580	0638	9697	8754	7811	7
54	0946	0010	9074	8137	7200	6262	5324	4385	3445	2505	1564	0623	9681	8738	7795	6
55	0930	9994	9058	8122	7184	6246	5308	4369	3429	2489	1548	0607	9665	8723	7780	5
56	0914	9979	9043	8106	7169	6231	5292	4353	3414	2473	1533	0591	9649	8707	7764	4
57	0899	9963	9027	8090	7153	6215	5277	4338	3398	2458	1517	0576	9634	8691	7748	3
58	0883	9948	9011	8075	7137	6199	5261	4322	3382	2442	1501	0560	9618	8676	7733	2
59	0868	9932	8996	8059	7122	6184	5245	4306	3367	2426	1486	0544	9602	8660	7717	1
60	0852	9916	8980	8043	7106	6168	5230	4291	3351	2411	1470	0529	9587	8644	7701	0
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

36 Deg. Tangent

″	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.
	869	869	869	870	870	870	870	871	871	871	871	872	872	872	872
0	2089	4731	7372	0013	2653	5293	7933	0572	3210	5848	8486	1123	3760	6396	9032
1	2133	4775	7416	0057	2697	5337	7977	0616	3254	5892	8530	1167	3804	6440	9076
2	2177	4819	7460	0101	2741	5381	8021	0660	3298	5936	8574	1211	3848	6484	9120
3	2221	4863	7504	0145	2785	5425	8065	0704	3342	5980	8618	1255	3892	6528	9164
4	2265	4907	7548	0189	2829	5469	8109	0748	3386	6024	8662	1299	3936	6572	9208
5	2309	4951	7592	0233	2873	5513	8153	0792	3430	6068	8706	1343	3980	6616	9252
6	2353	4995	7636	0277	2917	5557	8197	0836	3474	6112	8750	1387	4024	6660	9296
7	2397	5039	7680	0321	2961	5601	8241	0880	3518	6156	8794	1431	4068	6704	9340
8	2441	5083	7724	0365	3005	5645	8285	0924	3562	6200	8838	1475	4112	6748	9384
9	2485	5127	7768	0409	3049	5689	8329	0968	3606	6244	8882	1519	4156	6792	9427
10	2529	5171	7812	0453	3093	5733	8373	1012	3650	6288	8926	1563	4199	6836	9471
11	2573	5215	7856	0497	3137	5777	8417	1056	3694	6332	8970	1607	4243	6880	9515
12	2617	5259	7900	0541	3181	5821	8461	1100	3738	6376	9014	1651	4287	6924	9559
13	2661	5303	7944	0585	3225	5865	8505	1144	3782	6420	9058	1695	4331	6967	9603
14	2705	5347	7988	0629	3269	5909	8549	1187	3826	6464	9101	1739	4375	7011	9647
15	2749	5391	8032	0673	3313	5953	8593	1231	3870	6508	9145	1783	4419	7055	9691
16	2793	5435	8076	0717	3357	5997	8637	1275	3914	6552	9189	1826	4463	7099	9735
17	2837	5479	8120	0761	3401	6041	8681	1319	3958	6596	9233	1870	4507	7143	9779
18	2881	5523	8164	0805	3445	6085	8724	1363	4002	6640	9277	1914	4551	7187	9823
19	2925	5567	8208	0849	3489	6129	8768	1407	4046	6684	9321	1958	4595	7231	9867
20	2969	5611	8252	0893	3533	6173	8812	1451	4090	6728	9365	2002	4639	7275	9911
21	3013	5655	8296	0937	3577	6217	8856	1495	4134	6772	9409	2046	4683	7319	9955
22	3057	5699	8340	0981	3621	6261	8900	1539	4178	6816	9453	2090	4727	7363	9998
23	3102	5743	8384	1025	3665	6305	8944	1583	4222	6860	9497	2134	4771	7407	0042
24	3146	5787	8428	1069	3709	6349	8988	1627	4266	6904	9541	2178	4815	7451	0086
25	3190	5831	8472	1113	3753	6393	9032	1671	4310	6948	9585	2222	4859	7495	0130
26	3234	5875	8516	1157	3797	6437	9076	1715	4354	6992	9629	2266	4902	7539	0174
27	3278	5919	8560	1201	3841	6481	9120	1759	4398	7035	9673	2310	4946	7582	0218
28	3322	5963	8604	1245	3885	6525	9164	1803	4442	7079	9717	2354	4990	7626	0262
29	3366	6007	8648	1289	3929	6569	9208	1847	4485	7123	9761	2398	5034	7670	0306
30	3410	6051	8692	1333	3973	6613	9252	1891	4529	7167	9805	2442	5078	7714	0350
31	3454	6095	8736	1377	4017	6657	9296	1935	4573	7211	9849	2486	5122	7758	0394
32	3498	6139	8780	1421	4061	6701	9340	1979	4617	7255	9893	2530	5166	7802	0438
33	3542	6183	8824	1465	4105	6745	9384	2023	4661	7299	9937	2574	5210	7846	0482
34	3586	6227	8869	1509	4149	6789	9428	2067	4705	7343	9981	2618	5254	7890	0526
35	3630	6271	8913	1553	4193	6833	9472	2111	4749	7387	0025	2661	5298	7934	0569
36	3674	6315	8957	1597	4237	6877	9516	2155	4793	7431	0068	2705	5342	7978	0613
37	3718	6359	9001	1641	4281	6921	9560	2199	4837	7475	0112	2749	5386	8022	0657
38	3762	6404	9045	1685	4325	6965	9604	2243	4881	7519	0156	2793	5430	8066	0701
39	3806	6448	9089	1729	4369	7009	9648	2287	4925	7563	0200	2837	5474	8110	0745
40	3850	6492	9133	1773	4413	7053	9692	2331	4969	7607	0244	2881	5518	8154	0789
41	3894	6536	9177	1817	4457	7097	9736	2375	5013	7651	0288	2925	5562	8198	0833
42	3938	6580	9221	1861	4501	7141	9780	2419	5057	7695	0332	2969	5605	8241	0877
43	3982	6624	9265	1905	4545	7185	9824	2463	5101	7739	0376	3013	5649	8285	0921
44	4026	6668	9309	1949	4589	7229	9868	2507	5145	7783	0420	3057	5693	8329	0965
45	4070	6712	9353	1993	4633	7273	9912	2551	5189	7827	0464	3101	5737	8373	1009
46	4114	6756	9397	2037	4677	7317	9956	2595	5233	7871	0508	3145	5781	8417	1053
47	4158	6800	9441	2081	4721	7361	0000	2639	5277	7915	0552	3189	5825	8461	1097
48	4202	6844	9485	2125	4765	7405	0044	2683	5321	7959	0596	3233	5869	8505	1140
49	4246	6888	9529	2169	4809	7449	0088	2727	5365	8003	0640	3277	5913	8549	1184
50	4290	6932	9573	2213	4853	7493	0132	2771	5409	8047	0684	3321	5957	8593	1228
51	4334	6976	9617	2257	4897	7537	0176	2815	5453	8090	0728	3365	6001	8637	1272
52	4378	7020	9661	2301	4941	7581	0220	2859	5497	8134	0772	3409	6045	8681	1316
53	4422	7064	9705	2345	4985	7625	0264	2903	5541	8178	0816	3452	6089	8725	1360
54	4466	7108	9749	2389	5029	7669	0308	2947	5585	8222	0860	3496	6133	8769	1404
55	4510	7152	9793	2433	5073	7713	0352	2990	5629	8266	0904	3540	6177	8813	1448
56	4554	7196	9837	2477	5117	7757	0396	3034	5673	8310	0948	3584	6221	8856	1492
57	4598	7240	9881	2521	5161	7801	0440	3078	5717	8354	0991	3628	6265	8900	1536
58	4643	7284	9925	2565	5205	7845	0484	3122	5761	8398	1035	3672	6308	8944	1580
59	4687	7328	9969	2609	5249	7889	0528	3166	5804	8442	1079	3716	6352	8988	1624
60	4731	7372	0013	2653	5293	7933	0572	3210	5848	8486	1123	3760	6396	9032	1668
′	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Tangent Deg. 53

36 Deg. Co-Tangent

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	″
10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	
130	130	130	129	129	129	129	128	128	128	128	127	127	127	127	
7911	5269	2628	9987	7347	4707	2067	9428	6790	4152	1514	8877	6240	3604	0968	60
7867	5225	2584	9943	7303	4663	2023	9384	6746	4108	1470	8833	6196	3560	0924	59
7823	5181	2540	9899	7259	4619	1979	9340	6702	4064	1426	8789	6152	3516	0880	58
7779	5137	2496	9855	7215	4575	1935	9296	6658	4020	1382	8745	6108	3472	0836	57
7735	5093	2452	9811	7171	4531	1891	9252	6614	3976	1338	8701	6064	3428	0792	56
7691	5049	2408	9767	7127	4487	1847	9208	6570	3932	1294	8657	6020	3384	0748	55
7647	5005	2364	9723	7083	4443	1803	9164	6526	3888	1250	8613	5976	3340	0704	54
7603	4961	2320	9679	7039	4399	1759	9120	6482	3844	1206	8569	5932	3296	0660	53
7559	4917	2276	9635	6995	4355	1715	9076	6438	3800	1162	8525	5888	3252	0616	52
7515	4873	2232	9591	6951	4311	1671	9032	6394	3756	1118	8481	5844	3208	0573	51
7471	4829	2188	9547	6907	4267	1627	8988	6350	3712	1074	8437	5801	3164	0529	50
7427	4785	2144	9503	6863	4223	1583	8944	6306	3668	1030	8393	5757	3120	0485	49
7383	4741	2100	9459	6819	4179	1539	8900	6262	3624	0986	8349	5713	3076	0441	48
7339	4697	2056	9415	6775	4135	1495	8856	6218	3580	0942	8305	5669	3033	0397	47
7295	4653	2012	9371	6731	4091	1451	8813	6174	3536	0899	8261	5625	2989	0353	46
7251	4609	1968	9327	6687	4047	1407	8769	6130	3492	0855	8217	5581	2945	0309	45
7207	4565	1924	9283	6643	4003	1363	8725	6086	3448	0811	8174	5537	2901	0265	44
7163	4521	1880	9239	6599	3959	1319	8681	6042	3404	0767	8130	5493	2857	0221	43
7119	4477	1836	9195	6555	3915	1276	8637	5998	3360	0723	8086	5449	2813	0177	42
7075	4433	1792	9151	6511	3871	1232	8593	5954	3316	0679	8042	5405	2769	0133	41
7031	4389	1748	9107	6467	3827	1188	8549	5910	3272	0635	7998	5361	2725	0089	40
6987	4345	1704	9063	6423	3783	1144	8505	5866	3228	0591	7954	5317	2681	0045	39
6943	4301	1660	9019	6379	3739	1100	8461	5822	3184	0547	7910	5273	2637	0002	38
6898	4257	1616	8975	6335	3695	1056	8417	5778	3140	0503	7866	5229	2593	9958	37
6854	4213	1572	8931	6291	3651	1012	8373	5734	3096	0459	7822	5185	2549	9914	36
6810	4169	1528	8887	6247	3607	0968	8329	5690	3052	0415	7778	5141	2505	9870	35
6766	4125	1484	8843	6203	3563	0924	8285	5646	3008	0371	7734	5098	2461	9826	34
6722	4081	1440	8799	6159	3519	0880	8241	5602	2965	0327	7690	5054	2418	9782	33
6678	4037	1396	8755	6115	3475	0836	8197	5558	2921	0283	7646	5010	2374	9738	32
6634	3993	1352	8711	6071	3431	0792	8153	5515	2877	0239	7602	4966	2330	9694	31
6590	3949	1308	8667	6027	3387	0748	8109	5471	2833	0195	7558	4922	2286	9650	30
6546	3905	1264	8623	5983	3343	0704	8065	5427	2789	0151	7514	4878	2242	9606	29
6502	3861	1220	8579	5939	3299	0660	8021	5383	2745	0107	7470	4834	2198	9562	28
6458	3817	1176	8535	5895	3255	0616	7977	5339	2701	0063	7426	4790	2154	9518	27
6414	3773	1131	8491	5851	3211	0572	7933	5295	2657	0019	7382	4746	2110	9474	26
6370	3729	1087	8447	5807	3167	0528	7889	5251	2613	9975	7339	4702	2066	9431	25
6326	3685	1043	8403	5763	3123	0484	7845	5207	2569	9932	7295	4658	2022	9387	24
6282	3641	0999	8359	5719	3079	0440	7801	5163	2525	9888	7251	4614	1978	9343	23
6238	3596	0955	8315	5675	3035	0396	7757	5119	2481	9844	7207	4570	1934	9299	22
6194	3552	0911	8271	5631	2991	0352	7713	5075	2437	9800	7163	4526	1890	9255	21
6150	3508	0867	8227	5587	2947	0308	7669	5031	2393	9756	7119	4482	1846	9211	20
6106	3464	0823	8183	5543	2903	0264	7625	4987	2349	9712	7075	4438	1802	9167	19
6062	3420	0779	8139	5499	2859	0220	7581	4943	2305	9668	7031	4395	1759	9123	18
6018	3376	0735	8095	5455	2815	0176	7537	4899	2261	9624	6987	4351	1715	9079	17
5974	3332	0691	8051	5411	2771	0132	7493	4855	2217	9580	6943	4307	1671	9035	16
5930	3288	0647	8007	5367	2727	0088	7449	4811	2173	9536	6899	4263	1627	8991	15
5886	3244	0603	7963	5323	2683	0044	7405	4767	2129	9492	6855	4219	1583	8947	14
5842	3200	0559	7919	5279	2639	0000	7361	4723	2085	9448	6811	4175	1539	8903	13
5798	3156	0515	7875	5235	2595	9956	7317	4679	2041	9404	6767	4131	1495	8860	12
5754	3112	0471	7831	5191	2551	9912	7273	4635	1997	9360	6723	4087	1451	8816	11
5710	3068	0427	7787	5147	2507	9868	7229	4591	1953	9316	6679	4043	1407	8772	10
5666	3024	0383	7743	5103	2463	9824	7185	4547	1910	9272	6635	3999	1363	8728	9
5622	2980	0339	7699	5059	2419	9780	7141	4503	1866	9228	6591	3955	1319	8684	8
5578	2936	0295	7655	5015	2375	9736	7097	4459	1822	9184	6548	3911	1275	8640	7
5534	2892	0251	7611	4971	2331	9692	7053	4415	1778	9140	6504	3867	1231	8596	6
5490	2848	0207	7567	4927	2287	9648	7010	4371	1734	9096	6460	3823	1187	8552	5
5446	2804	0163	7523	4883	2243	9604	6966	4327	1690	9052	6416	3779	1144	8508	4
5402	2760	0119	7479	4839	2199	9560	6922	4283	1646	9009	6372	3735	1100	8464	3
5357	2716	0075	7435	4795	2155	9516	6878	4239	1602	8965	6328	3692	1056	8420	2
5313	2672	0031	7391	4751	2111	9472	6834	4196	1558	8921	6284	3648	1012	8376	1
5269	2628	9987	7347	4707	2067	9428	6790	4152	1514	8877	6240	3604	0968	8332	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Tangent Deg. 53

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	9.776	9.777	9.777	9.777	9.777	9.777	9.777	9.778	9.778	9.778	9.778	9.778	9.778	9.779	9.779
0	9369	1060	2750	4439	6128	7815	9501	1186	2870	4553	6235	7916	9596	1275	2953
1	9397	1088	2778	4467	6156	7843	9529	1214	2898	4581	6263	7944	9624	1303	2981
2	9425	1116	2806	4496	6184	7871	9557	1242	2926	4609	6291	7972	9652	1331	3009
3	9453	1144	2835	4524	6212	7899	9585	1270	2954	4637	6319	8000	9680	1359	3037
4	9481	1173	2863	4552	6240	7927	9613	1298	2982	4665	6347	8028	9708	1387	3065
5	9510	1201	2891	4580	6268	7955	9641	1326	3010	4693	6375	8056	9736	1415	3093
6	9538	1229	2919	4608	6296	7983	9669	1354	3038	4721	6403	8084	9764	1443	3121
7	9566	1257	2947	4636	6324	8011	9697	1382	3066	4749	6431	8112	9792	1471	3149
8	9594	1285	2975	4664	6353	8040	9726	1411	3095	4777	6459	8140	9820	1499	3177
9	9622	1313	3004	4693	6381	8068	9754	1439	3123	4806	6487	8168	9848	1527	3205
10	9651	1342	3032	4721	6409	8096	9782	1467	3151	4834	6515	8196	9876	1555	3233
11	9679	1370	3060	4749	6437	8124	9810	1495	3179	4861	6543	8224	9904	1583	3261
12	9707	1398	3088	4777	6465	8152	9838	1523	3207	4890	6571	8252	9932	1611	3289
13	9735	1426	3116	4805	6493	8180	9866	1551	3235	4918	6600	8280	9960	1639	3317
14	9763	1454	3144	4833	6521	8208	9894	1579	3263	4946	6628	8308	9988	1667	3345
15	9792	1483	3173	4861	6549	8236	9922	1607	3291	4974	6656	8336	0016	1695	3373
16	9820	1511	3201	4890	6578	8264	9950	1635	3319	5002	6684	8364	0044	1723	3401
17	9848	1539	3229	4918	6606	8293	9978	1663	3347	5030	6712	8392	0072	1751	3429
18	9876	1567	3257	4946	6634	8321	0006	1691	3375	5058	6740	8420	0100	1779	3456
19	9904	1595	3285	4974	6662	8349	0035	1719	3403	5086	6768	8448	0128	1807	3484
20	9932	1623	3313	5002	6690	8377	0063	1747	3431	5114	6796	8476	0156	1835	3512
21	9961	1652	3341	5030	6718	8405	0091	1775	3459	5142	6824	8504	0184	1863	3540
22	9989	1680	3370	5058	6746	8433	0119	1804	3487	5170	6852	8532	0212	1891	3568
23	0017	1708	3398	5087	6774	8461	0147	1832	3515	5198	6880	8560	0240	1919	3596
24	0045	1736	3426	5115	6802	8489	0175	1860	3543	5226	6908	8588	0268	1947	3624
25	0073	1764	3454	5143	6831	8517	0203	1888	3571	5254	6936	8616	0296	1975	3652
26	0102	1792	3482	5171	6859	8545	0231	1916	3600	5282	6964	8644	0324	2003	3680
27	0130	1821	3510	5199	6887	8574	0259	1944	3628	5310	6992	8672	0352	2030	3708
28	0158	1849	3539	5227	6915	8602	0287	1972	3656	5338	7020	8700	0380	2058	3736
29	0186	1877	3567	5255	6943	8630	0315	2000	3684	5366	7048	8728	0408	2086	3764
30	0214	1905	3595	5284	6971	8658	0344	2028	3712	5394	7076	8756	0436	2114	3792
31	0243	1933	3623	5312	6999	8686	0372	2056	3740	5422	7104	8784	0464	2142	3820
32	0271	1961	3651	5340	7027	8714	0400	2084	3768	5450	7132	8812	0492	2170	3848
33	0299	1990	3679	5368	7056	8742	0428	2112	3796	5478	7160	8840	0520	2198	3876
34	0327	2018	3707	5396	7084	8770	0456	2140	3824	5506	7188	8868	0548	2226	3904
35	0355	2046	3736	5424	7112	8798	0484	2168	3852	5534	7216	8896	0576	2254	3932
36	0383	2074	3764	5452	7140	8826	0512	2197	3880	5562	7244	8924	0604	2282	3960
37	0412	2102	3792	5480	7168	8855	0549	2225	3908	5591	7272	8952	0632	2310	3988
38	0440	2130	3820	5509	7196	8883	0568	2253	3936	5619	7300	8980	0660	2338	4015
39	0468	2159	3848	5537	7224	8911	0596	2281	3964	5647	7328	9008	0688	2366	4043
40	0496	2187	3876	5565	7252	8939	0624	2309	3992	5675	7356	9036	0716	2394	4071
41	0524	2215	3905	5593	7281	8967	0652	2337	4020	5703	7384	9064	0744	2422	4099
42	0553	2243	3933	5621	7309	8995	0681	2365	4048	5731	7412	9092	0772	2450	4127
43	0581	2271	3961	5649	7337	9023	0709	2393	4076	5759	7440	9120	0800	2478	4155
44	0609	2299	3989	5677	7365	9051	0737	2421	4104	5787	7468	9148	0828	2506	4183
45	0637	2328	4017	5706	7393	9079	0765	2449	4132	5815	7496	9176	0856	2534	4211
46	0665	2356	4045	5734	7421	9107	0793	2477	4161	5843	7524	9204	0884	2562	4239
47	0694	2384	4073	5762	7449	9136	0821	2505	4189	5871	7552	9232	0912	2590	4267
48	0722	2412	4102	5790	7477	9164	0849	2533	4217	5899	7580	9260	0940	2618	4295
49	0750	2440	4130	5818	7505	9192	0877	2561	4245	5927	7608	9288	0968	2646	4323
50	0778	2468	4158	5846	7534	9220	0905	2589	4273	5955	7636	9316	0996	2674	4351
51	0806	2497	4186	5874	7562	9248	0933	2617	4301	5983	7664	9344	1023	2702	4379
52	0834	2525	4214	5902	7590	9276	0961	2646	4329	6011	7692	9372	1051	2730	4407
53	0863	2553	4242	5931	7618	9304	0989	2674	4357	6039	7720	9400	1079	2758	4435
54	0891	2581	4270	5959	7646	9332	1017	2702	4385	6067	7748	9428	1107	2786	4463
55	0919	2609	4299	5987	7674	9360	1046	2730	4413	6095	7776	9456	1135	2813	4491
56	0947	2637	4327	6015	7702	9388	1074	2758	4441	6123	7804	9484	1163	2841	4518
57	0975	2666	4355	6043	7730	9417	1102	2786	4469	6151	7832	9512	1191	2869	4546
58	1004	2694	4383	6071	7758	9445	1130	2814	4497	6179	7860	9540	1219	2897	4574
59	1032	2722	4411	6099	7787	9473	1158	2842	4525	6207	7888	9568	1247	2925	4602
60	1060	2750	4439	6128	7815	9501	1186	2870	4553	6235	7916	9596	1275	2953	4630
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
	9.903	9.903	9.903	9.903	9.903	9.903	9.903	9.903	9.903	9.902	9.902	9.902	9.902	9.902	9.902	″
0	7701	6757	5813	4868	3923	2977	2031	1084	0136	9188	8239	7289	6339	5389	4438	60
1	7685	6742	5797	4853	3907	2961	2015	1068	0120	9172	8223	7274	6324	5373	4422	59
2	7670	6726	5782	4837	3892	2946	1999	1052	0104	9156	8207	7258	6308	5357	4406	58
3	7654	6710	5766	4821	3876	2930	1983	1036	0088	9140	8191	7242	6292	5341	4390	57
4	7638	6695	5750	4805	3860	2914	1968	1020	0073	9124	8176	7226	6276	5326	4374	56
5	7622	6679	5735	4790	3844	2898	1952	1005	0057	9109	8160	7210	6260	5310	4359	55
6	7607	6663	5719	4774	3829	2883	1936	0989	0041	9093	8144	7194	6244	5294	4343	54
7	7591	6647	5703	4758	3813	2867	1920	0973	0025	9077	8128	7179	6229	5278	4327	53
8	7575	6632	5687	4742	3797	2851	1904	0957	0009	9061	8112	7163	6213	5262	4311	52
9	7560	6616	5672	4727	3781	2835	1889	0941	9994	9045	8096	7147	6197	5246	4295	51
10	7544	6600	5656	4711	3765	2819	1873	0926	9978	9030	8081	7131	6181	5230	4279	50
11	7528	6584	5640	4695	3750	2804	1857	0910	9962	9014	8065	7115	6165	5215	4263	49
12	7512	6569	5624	4679	3734	2788	1841	0894	9946	8998	8049	7100	6149	5199	4248	48
13	7497	6553	5609	4664	3718	2772	1825	0878	9930	8982	8033	7084	6134	5183	4232	47
14	7481	6537	5593	4648	3702	2756	1810	0862	9915	8966	8017	7068	6118	5167	4216	46
15	7465	6521	5577	4632	3687	2741	1794	0847	9899	8950	8002	7052	6102	5151	4200	45
16	7450	6506	5561	4616	3671	2725	1778	0831	9883	8935	7986	7036	6086	5135	4184	44
17	7434	6490	5546	4601	3655	2709	1762	0815	9867	8919	7970	7020	6070	5120	4168	43
18	7418	6474	5530	4585	3639	2693	1747	0799	9851	8903	7954	7005	6054	5104	4152	42
19	7402	6459	5514	4569	3624	2677	1731	0784	9836	8887	7938	6989	6039	5088	4137	41
20	7387	6443	5498	4553	3608	2662	1715	0768	9820	8871	7922	6973	6023	5072	4121	40
21	7371	6427	5483	4538	3592	2646	1699	0752	9804	8856	7907	6957	6007	5056	4105	39
22	7355	6411	5467	4522	3576	2630	1683	0736	9788	8840	7891	6941	5991	5040	4089	38
23	7339	6396	5451	4506	3561	2614	1668	0720	9772	8824	7875	6925	5975	5024	4073	37
24	7324	6380	5435	4490	3545	2599	1652	0705	9757	8808	7859	6910	5959	5009	4057	36
25	7308	6364	5420	4475	3529	2583	1636	0689	9741	8792	7843	6894	5944	4993	4041	35
26	7292	6348	5404	4459	3513	2567	1620	0673	9725	8777	7828	6878	5928	4977	4026	34
27	7277	6333	5388	4443	3497	2551	1605	0657	9709	8761	7812	6862	5912	4961	4010	33
28	7261	6317	5372	4427	3482	2536	1589	0641	9693	8745	7796	6846	5896	4945	3994	32
29	7245	6301	5357	4412	3466	2520	1573	0626	9678	8729	7780	6830	5880	4929	3978	31
30	7229	6285	5341	4396	3450	2504	1557	0610	9662	8713	7764	6815	5864	4913	3962	30
31	7214	6270	5325	4380	3434	2488	1541	0594	9646	8697	7748	6799	5848	4898	3946	29
32	7198	6254	5309	4364	3419	2472	1526	0578	9630	8682	7733	6783	5833	4882	3930	28
33	7182	6238	5294	4349	3403	2457	1510	0562	9614	8666	7717	6767	5817	4866	3914	27
34	7166	6222	5278	4333	3387	2441	1494	0547	9599	8650	7701	6751	5801	4850	3899	26
35	7151	6207	5262	4317	3371	2425	1478	0531	9583	8634	7685	6735	5785	4834	3883	25
36	7135	6191	5246	4301	3356	2409	1462	0515	9567	8618	7669	6720	5769	4818	3867	24
37	7119	6175	5231	4286	3340	2394	1447	0499	9551	8603	7653	6704	5753	4803	3851	23
38	7104	6160	5215	4270	3324	2378	1431	0483	9535	8587	7638	6688	5738	4787	3835	22
39	7088	6144	5199	4254	3308	2362	1415	0468	9520	8571	7622	6672	5722	4771	3819	21
40	7072	6128	5183	4238	3293	2346	1399	0452	9504	8555	7606	6656	5706	4755	3803	20
41	7056	6112	5168	4222	3277	2330	1384	0436	9488	8539	7590	6640	5690	4739	3788	19
42	7041	6097	5152	4207	3261	2315	1368	0420	9472	8524	7574	6625	5674	4723	3772	18
43	7025	6081	5136	4191	3245	2299	1352	0404	9456	8508	7559	6609	5658	4707	3756	17
44	7009	6065	5120	4175	3229	2283	1336	0389	9441	8492	7543	6593	5642	4692	3740	16
45	6993	6049	5105	4159	3214	2267	1320	0373	9425	8476	7527	6577	5627	4676	3724	15
46	6978	6034	5089	4144	3198	2252	1305	0357	9409	8460	7511	6561	5611	4660	3708	14
47	6962	6018	5073	4128	3182	2236	1289	0341	9393	8444	7495	6545	5595	4644	3692	13
48	6946	6002	5057	4112	3166	2220	1273	0325	9377	8429	7479	6530	5579	4628	3677	12
49	6930	5986	5042	4096	3151	2204	1257	0310	9362	8413	7464	6514	5563	4612	3661	11
50	6915	5971	5026	4081	3135	2188	1241	0294	9346	8397	7448	6498	5547	4596	3645	10
51	6899	5955	5010	4065	3119	2173	1226	0278	9330	8381	7432	6482	5532	4581	3629	9
52	6883	5939	4994	4049	3103	2157	1210	0262	9314	8365	7416	6466	5516	4565	3613	8
53	6868	5923	4979	4033	3088	2141	1194	0246	9298	8350	7400	6450	5500	4549	3597	7
54	6852	5908	4963	4018	3072	2125	1178	0231	9282	8334	7384	6435	5484	4533	3581	6
55	6836	5892	4947	4002	3056	2110	1162	0215	9267	8318	7369	6419	5468	4517	3565	5
56	6820	5876	4931	3986	3040	2094	1147	0199	9251	8302	7353	6403	5452	4501	3550	4
57	6805	5860	4916	3970	3024	2078	1131	0183	9235	8286	7337	6387	5437	4485	3534	3
58	6789	5845	4900	3955	3009	2062	1115	0167	9219	8270	7321	6371	5421	4470	3518	2
59	6773	5829	4884	3939	2993	2046	1099	0152	9203	8255	7305	6355	5405	4454	3502	1
60	6757	5813	4868	3923	2977	2031	1084	0136	9188	8239	7289	6339	5389	4438	3486	0
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	9. 873	9. 873	9. 873	9. 873	9. 874	9. 874	9. 874	9. 875	9. 875	9. 875	9. 875	9. 876	9. 876	9. 876	9. 876
0	1668	4302	6937	9571	2204	4838	7470	0102	2734	5365	7996	0627	3257	5886	8515
1	1711	4346	6981	9615	2248	4881	7514	0146	2778	5409	8040	0671	3301	5930	8559
2	1755	4390	7025	9659	2292	4925	7558	0190	2822	5453	8084	0714	3344	5974	8603
3	1799	4434	7069	9703	2336	4969	7602	0234	2866	5497	8128	0758	3388	6018	8647
4	1843	4478	7112	9746	2380	5013	7646	0278	2910	5541	8172	0802	3432	6062	8691
5	1887	4522	7156	9790	2424	5057	7690	0322	2953	5585	8216	0846	3476	6105	8734
6	1931	4566	7200	9834	2468	5101	7733	0366	2997	5629	8259	0890	3520	6149	8778
7	1975	4610	7244	9878	2512	5145	7777	0409	3041	5672	8303	0934	3564	6193	8822
8	2019	4654	7288	9922	2556	5189	7821	0453	3085	5716	8347	0977	3607	6237	8866
9	2063	4698	7332	9966	2599	5232	7865	0497	3129	5760	8391	1021	3651	6281	8910
10	2107	4742	7376	0010	2643	5276	7909	0541	3173	5804	8435	1065	3695	6325	8954
11	2151	4785	7420	0054	2687	5320	7953	0585	3217	5848	8479	1109	3739	6368	8997
12	2195	4829	7464	0098	2731	5364	7997	0629	3260	5892	8522	1153	3783	6412	9041
13	2238	4873	7508	0142	2775	5408	8041	0673	3304	5936	8566	1197	3827	6456	9085
14	2282	4917	7552	0185	2819	5452	8084	0717	3348	5979	8610	1240	3870	6500	9129
15	2326	4961	7595	0229	2863	5496	8128	0760	3392	6023	8654	1284	3914	6544	9173
16	2370	5005	7639	0273	2907	5540	8172	0804	3436	6067	8698	1328	3958	6587	9216
17	2414	5049	7683	0317	2951	5584	8216	0848	3480	6111	8742	1372	4002	6631	9260
18	2458	5093	7727	0361	2994	5627	8260	0892	3524	6155	8786	1416	4046	6675	9304
19	2502	5137	7771	0405	3038	5671	8304	0936	3567	6199	8829	1460	4090	6719	9348
20	2546	5181	7815	0449	3082	5715	8348	0980	3611	6242	8873	1503	4133	6763	9392
21	2590	5225	7859	0493	3126	5759	8392	1024	3655	6286	8917	1547	4177	6807	9436
22	2634	5268	7903	0537	3170	5803	8435	1067	3699	6330	8961	1591	4221	6850	9479
23	2678	5312	7947	0580	3214	5847	8479	1111	3743	6374	9005	1635	4265	6894	9523
24	2722	5356	7991	0624	3258	5891	8523	1155	3787	6418	9049	1679	4309	6938	9567
25	2765	5400	8034	0668	3302	5935	8567	1199	3831	6462	9092	1723	4352	6982	9611
26	2809	5444	8078	0712	3346	5978	8611	1243	3874	6506	9136	1767	4396	7026	9655
27	2853	5488	8122	0756	3389	6022	8655	1287	3918	6549	9180	1810	4440	7069	9698
28	2897	5532	8166	0800	3433	6066	8699	1331	3962	6593	9224	1854	4484	7113	9742
29	2941	5576	8210	0844	3477	6110	8742	1374	4006	6637	9268	1898	4528	7157	9786
30	2985	5620	8254	0888	3521	6154	8786	1418	4050	6681	9312	1942	4572	7201	9830
31	3029	5664	8298	0932	3565	6198	8830	1462	4094	6725	9355	1986	4615	7245	9874
32	3073	5708	8342	0976	3609	6242	8874	1506	4138	6769	9399	2030	4659	7289	9917
33	3117	5751	8386	1019	3653	6286	8918	1550	4181	6813	9443	2073	4703	7332	9961
34	3161	5795	8430	1063	3697	6329	8962	1594	4225	6856	9487	2117	4747	7376	0005
35	3205	5839	8473	1107	3740	6373	9006	1638	4269	6900	9531	2161	4791	7420	0049
36	3249	5883	8517	1151	3784	6417	9050	1682	4313	6944	9575	2205	4835	7464	0093
37	3292	5927	8561	1195	3828	6461	9093	1725	4357	6988	9619	2249	4878	7508	0136
38	3336	5971	8605	1239	3872	6505	9137	1769	4401	7032	9662	2292	4922	7551	0180
39	3380	6015	8649	1283	3916	6549	9181	1813	4445	7076	9706	2336	4966	7595	0224
40	3424	6059	8693	1327	3960	6593	9225	1857	4488	7119	9750	2380	5010	7639	0268
41	3468	6103	8737	1371	4004	6637	9269	1901	4532	7163	9794	2424	5054	7683	0312
42	3512	6147	8781	1414	4048	6680	9313	1945	4576	7207	9838	2468	5097	7727	0356
43	3556	6190	8825	1458	4092	6724	9357	1989	4620	7251	9882	2512	5141	7771	0399
44	3600	6234	8869	1502	4135	6768	9401	2032	4664	7295	9925	2555	5185	7814	0443
45	3644	6278	8912	1546	4179	6812	9444	2076	4708	7339	9969	2599	5229	7858	0487
46	3688	6322	8956	1590	4223	6856	9488	2120	4752	7383	0013	2643	5273	7902	0531
47	3732	6366	9000	1634	4267	6900	9532	2164	4795	7426	0057	2687	5317	7946	0575
48	3775	6410	9044	1678	4311	6944	9576	2208	4839	7470	0101	2731	5360	7990	0618
49	3819	6454	9088	1722	4355	6988	9620	2252	4883	7514	0145	2775	5404	8033	0662
50	3863	6498	9132	1766	4399	7031	9664	2296	4927	7558	0188	2818	5448	8077	0706
51	3907	6542	9176	1809	4443	7075	9708	2339	4971	7602	0232	2862	5492	8121	0750
52	3951	6586	9220	1853	4486	7119	9751	2383	5015	7646	0276	2906	5536	8165	0794
53	3995	6630	9264	1897	4530	7163	9795	2427	5059	7689	0320	2950	5580	8209	0837
54	4039	6673	9308	1941	4574	7207	9839	2471	5102	7733	0364	2994	5623	8253	0881
55	4083	6717	9351	1985	4618	7251	9883	2515	5146	7777	0408	3038	5667	8296	0925
56	4127	6761	9395	2029	4662	7295	9927	2559	5190	7821	0451	3081	5711	8340	0969
57	4171	6805	9439	2073	4706	7339	9971	2603	5234	7865	0495	3125	5755	8384	1013
58	4215	6849	9483	2117	4750	7382	0015	2646	5278	7909	0539	3169	5799	8428	1056
59	4259	6893	9527	2161	4794	7426	0059	2690	5322	7953	0583	3213	5842	8472	1100
60	4302	6937	9571	2204	4838	7470	0102	2734	5365	7996	0627	3257	5886	8515	1144
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
	10. 126	10. 126	10. 126	10. 126	10. 125	10. 125	10. 125	10. 124	10. 124	10. 124	10. 124	10. 123	10. 123	10. 123	10. 123	″
	8332	5698	3063	0429	7796	5162	2530	9898	7266	4635	2004	9373	6743	4114	1485	60
	8289	5654	3019	0385	7752	5119	2486	9854	7222	4591	1960	9329	6699	4070	1441	59
	8245	5610	2975	0341	7708	5075	2442	9810	7178	4547	1916	9286	6656	4026	1397	58
	8201	5566	2931	0297	7664	5031	2398	9766	7134	4503	1872	9242	6612	3982	1353	57
	8157	5522	2888	0254	7620	4987	2354	9722	7090	4459	1828	9198	6568	3938	1309	56
	8113	5478	2844	0210	7576	4943	2310	9678	7047	4415	1784	9154	6524	3895	1266	55
	8069	5434	2800	0166	7532	4899	2267	9634	7003	4371	1741	9110	6480	3851	1222	54
	8025	5390	2756	0122	7488	4855	2223	9591	6959	4328	1697	9066	6436	3807	1178	53
	7981	5346	2712	0078	7444	4811	2179	9547	6915	4284	1653	9023	6393	3763	1134	52
	7937	5302	2668	0034	7401	4768	2135	9503	6871	4240	1609	8979	6349	3719	1090	51
	7893	5258	2624	9990	7357	4724	2091	9459	6827	4196	1565	8935	6305	3675	1046	50
	7849	5215	2580	9946	7313	4680	2047	9415	6783	4152	1521	8891	6261	3632	1003	49
	7805	5171	2536	9902	7269	4636	2003	9371	6740	4108	1478	8847	6217	3588	0959	48
	7762	5127	2492	9858	7225	4592	1959	9327	6696	4064	1434	8803	6173	3544	0915	47
	7718	5083	2448	9815	7181	4548	1916	9283	6652	4021	1390	8760	6130	3500	0871	46
	7674	5039	2405	9771	7137	4504	1872	9240	6608	3977	1346	8716	6086	3456	0827	45
	7630	4995	2361	9727	7093	4460	1828	9196	6564	3933	1302	8672	6042	3413	0784	44
	7586	4951	2317	9683	7049	4416	1784	9152	6520	3889	1258	8628	5998	3369	0740	43
	7542	4907	2273	9639	7006	4373	1740	9108	6476	3845	1214	8584	5954	3325	0696	42
	7498	4863	2229	9595	6962	4329	1696	9064	6433	3801	1171	8540	5910	3281	0652	41
	7454	4819	2185	9551	6918	4285	1652	9020	6389	3758	1127	8497	5867	3237	0608	40
	7410	4775	2141	9507	6874	4241	1608	8976	6345	3714	1083	8453	5823	3193	0564	39
	7366	4732	2097	9463	6830	4197	1565	8933	6301	3670	1039	8409	5779	3150	0521	38
	7322	4688	2053	9420	6786	4153	1521	8889	6257	3626	0995	8365	5735	3106	0477	37
	7278	4644	2009	9376	6742	4109	1477	8845	6213	3582	0951	8321	5691	3062	0433	36
	7235	4600	1966	9332	6698	4065	1433	8801	6169	3538	0908	8277	5648	3018	0389	35
	7191	4556	1922	9288	6654	4022	1389	8757	6126	3494	0864	8233	5604	2974	0345	34
	7147	4512	1878	9244	6611	3978	1345	8713	6082	3451	0820	8190	5560	2931	0302	33
	7103	4468	1834	9200	6567	3934	1301	8669	6038	3407	0776	8146	5516	2887	0258	32
	7059	4424	1790	9156	6523	3890	1258	8626	5994	3363	0732	8102	5472	2843	0214	31
	7015	4380	1746	9112	6479	3846	1214	8582	5950	3319	0688	8058	5428	2799	0170	30
	6971	4336	1702	9068	6435	3802	1170	8538	5906	3275	0645	8014	5385	2755	0126	29
	6927	4292	1658	9024	6391	3758	1126	8494	5862	3231	0601	7970	5341	2711	0083	28
	6883	4249	1614	8981	6347	3714	1082	8450	5819	3187	0557	7927	5297	2668	0039	27
	6839	4205	1570	8937	6303	3671	1038	8406	5775	3144	0513	7883	5253	2624	9995	26
	6795	4161	1527	8893	6260	3627	0994	8362	5731	3100	0469	7839	5209	2580	9951	25
	6751	4117	1483	8849	6216	3583	0950	8318	5687	3056	0425	7795	5165	2536	9907	24
	6708	4073	1439	8805	6172	3539	0907	8275	5643	3012	0381	7751	5122	2492	9864	23
	6664	4029	1395	8761	6128	3495	0863	8231	5599	2968	0338	7708	5078	2449	9820	22
	6620	3985	1351	8717	6084	3451	0819	8187	5555	2924	0294	7664	5034	2405	9776	21
	6576	3941	1307	8673	6040	3407	0775	8143	5512	2881	0250	7620	4990	2361	9732	20
	6532	3897	1263	8629	5996	3363	0731	8099	5468	2837	0206	7576	4946	2317	9688	19
	6488	3853	1219	8586	5952	3320	0687	8055	5424	2793	0162	7532	4903	2273	9644	18
	6444	3810	1175	8542	5908	3276	0643	8011	5380	2749	0118	7488	4859	2229	9601	17
	6400	3766	1131	8498	5865	3232	0599	7968	5336	2705	0075	7445	4815	2186	9557	16
	6356	3722	1088	8454	5821	3188	0556	7924	5292	2661	0031	7401	4771	2142	9513	15
	6312	3678	1044	8410	5777	3144	0512	7880	5248	2617	9987	7357	4727	2098	9469	14
	6268	3634	1000	8366	5733	3100	0468	7836	5205	2574	9943	7313	4683	2054	9425	13
	6225	3590	0956	8322	5689	3056	0424	7792	5161	2530	9899	7269	4640	2010	9382	12
	6181	3546	0912	8278	5645	3012	0380	7748	5117	2486	9855	7225	4596	1967	9338	11
	6137	3502	0868	8234	5601	2969	0336	7704	5073	2442	9812	7182	4552	1923	9294	10
	6093	3458	0824	8191	5557	2925	0292	7661	5029	2398	9768	7138	4508	1879	9250	9
	6049	3414	0780	8147	5514	2881	0249	7617	4985	2354	9724	7094	4464	1835	9206	8
	6005	3370	0736	8103	5470	2837	0205	7573	4941	2311	9680	7050	4420	1791	9163	7
	5961	3327	0692	8059	5426	2793	0161	7529	4898	2267	9636	7006	4377	1747	9119	6
	5917	3283	0649	8015	5382	2749	0117	7485	4854	2223	9592	6962	4333	1704	9075	5
	5873	3239	0605	7971	5338	2705	0073	7441	4810	2179	9549	6919	4289	1660	9031	4
	5829	3195	0561	7927	5294	2661	0029	7397	4766	2135	9505	6875	4245	1616	8987	3
	5785	3151	0517	7883	5250	2618	9985	7354	4722	2091	9461	6831	4201	1572	8944	2
	5741	3107	0473	7839	5206	2574	9941	7310	4678	2047	9417	6787	4158	1528	8900	1
	5698	3063	0429	7796	5162	2530	9898	7266	4635	2004	9373	6743	4114	1485	8856	0
	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

"	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
	9.779	9.779	9.779	9.779	9.780	9.780	9.780	9.780	9.780	9.780	9.781	9.781	9.781	9.781	9.781
0	4630	6306	7981	9655	1328	3000	4671	6341	8010	9677	1344	3010	4675	6339	8002
1	4658	6334	8009	9683	1356	3028	4699	6369	8037	9705	1372	3038	4703	6367	8029
2	4686	6362	8037	9711	1384	3056	4727	6396	8065	9733	1400	3066	4731	6394	8057
3	4714	6390	8065	9739	1412	3084	4754	6424	8093	9761	1428	3093	4758	6422	8085
4	4742	6418	8093	9767	1440	3111	4782	6452	8121	9789	1455	3121	4786	6450	8113
5	4770	6446	8121	9795	1467	3139	4810	6480	8149	9816	1483	3149	4814	6478	8140
6	4798	6474	8149	9822	1495	3167	4838	6508	8176	9844	1511	3177	4841	6505	8168
7	4826	6502	8177	9850	1523	3195	4866	6535	8204	9872	1539	3204	4869	6533	8196
8	4854	6530	8204	9878	1551	3223	4894	6563	8232	9900	1567	3232	4897	6561	8223
9	4882	6558	8232	9906	1579	3251	4921	6591	8260	9928	1594	3260	4925	6588	8251
10	4910	6585	8260	9934	1607	3278	4949	6619	8288	9955	1622	3288	4952	6616	8279
11	4938	6613	8288	9962	1635	3306	4977	6647	8315	9983	1650	3316	4980	6644	8307
12	4966	6641	8316	9990	1662	3334	5005	6675	8343	0011	1678	3343	5008	6672	8334
13	4993	6669	8344	0018	1690	3362	5033	6702	8371	0039	1705	3371	5036	6699	8362
14	5021	6697	8372	0046	1718	3390	5061	6730	8399	0067	1733	3399	5063	6727	8390
15	5049	6725	8400	0073	1746	3418	5088	6758	8427	0094	1761	3427	5091	6755	8417
16	5077	6753	8428	0101	1774	3446	5116	6786	8454	0122	1789	3454	5119	6782	8445
17	5105	6781	8456	0129	1802	3473	5144	6814	8482	0150	1816	3482	5147	6810	8473
18	5133	6809	8483	0157	1830	3501	5172	6842	8510	0178	1844	3510	5174	6838	8500
19	5161	6837	8511	0185	1858	3529	5200	6869	8538	0205	1872	3538	5202	6866	8528
20	5189	6865	8539	0213	1885	3557	5228	6897	8566	0233	1900	3565	5230	6893	8556
21	5217	6893	8567	0241	1913	3585	5255	6925	8593	0261	1928	3593	5258	6921	8584
22	5245	6920	8595	0269	1941	3613	5283	6953	8621	0289	1955	3621	5285	6949	8611
23	5273	6948	8623	0297	1969	3641	5311	6981	8649	0317	1983	3649	5313	6976	8639
24	5301	6976	8651	0324	1997	3668	5339	7008	8677	0344	2011	3676	5341	7004	8667
25	5329	7004	8679	0352	2025	3696	5367	7036	8705	0372	2039	3704	5368	7032	8694
26	5357	7032	8707	0380	2053	3724	5395	7064	8732	0400	2066	3732	5396	7060	8722
27	5385	7060	8735	0408	2081	3752	5422	7092	8760	0428	2094	3760	5424	7087	8750
28	5412	7088	8762	0436	2108	3780	5450	7120	8788	0455	2122	3787	5452	7115	8777
29	5440	7116	8790	0464	2136	3808	5478	7147	8816	0483	2150	3815	5479	7143	8805
30	5468	7144	8818	0492	2164	3836	5506	7175	8844	0511	2177	3843	5507	7170	8833
31	5496	7172	8846	0520	2192	3863	5534	7203	8871	0539	2205	3871	5535	7198	8861
32	5524	7200	8874	0547	2220	3891	5562	7231	8899	0567	2233	3898	5563	7226	8888
33	5552	7228	8902	0575	2248	3919	5589	7259	8927	0594	2261	3926	5590	7254	8916
34	5580	7255	8930	0603	2276	3947	5617	7287	8955	0622	2288	3954	5618	7281	8944
35	5608	7283	8958	0631	2303	3975	5645	7314	8983	0650	2316	3982	5646	7309	8971
36	5636	7311	8986	0659	2331	4003	5673	7342	9010	0678	2344	4009	5674	7337	8999
37	5664	7339	9014	0687	2359	4030	5701	7370	9038	0706	2372	4037	5701	7364	9027
38	5692	7367	9041	0715	2387	4058	5729	7398	9066	0733	2400	4065	5729	7392	9054
39	5720	7395	9069	0743	2415	4086	5756	7426	9094	0761	2427	4092	5757	7420	9082
40	5748	7423	9097	0770	2443	4114	5784	7453	9122	0789	2455	4120	5784	7448	9110
41	5776	7451	9125	0798	2471	4142	5812	7481	9149	0817	2483	4148	5812	7475	9137
42	5804	7479	9153	0826	2498	4170	5840	7509	9177	0844	2511	4176	5840	7503	9165
43	5831	7507	9181	0854	2526	4198	5868	7537	9205	0872	2538	4203	5868	7531	9193
44	5859	7535	9209	0882	2554	4225	5896	7565	9233	0900	2566	4231	5895	7558	9221
45	5887	7563	9237	0910	2582	4253	5923	7592	9261	0928	2594	4259	5923	7586	9248
46	5915	7590	9265	0938	2610	4281	5951	7620	9288	0956	2622	4287	5951	7614	9276
47	5943	7618	9292	0966	2638	4309	5979	7648	9316	0983	2649	4314	5979	7642	9304
48	5971	7646	9320	0994	2666	4337	6007	7676	9344	1011	2677	4342	6006	7669	9331
49	5999	7674	9348	1021	2693	4365	6035	7704	9372	1039	2705	4370	6034	7697	9359
50	6027	7702	9376	1049	2721	4392	6062	7732	9400	1067	2733	4398	6062	7725	9387
51	6055	7730	9404	1077	2749	4420	6090	7759	9427	1094	2760	4425	6089	7752	9414
52	6083	7758	9432	1105	2777	4448	6118	7787	9455	1122	2788	4453	6117	7780	9442
53	6111	7786	9460	1133	2805	4476	6146	7815	9483	1150	2816	4481	6145	7808	9470
54	6139	7814	9488	1161	2833	4504	6174	7843	9511	1178	2844	4509	6173	7836	9497
55	6167	7842	9516	1189	2861	4532	6202	7871	9539	1205	2871	4536	6200	7863	9525
56	6195	7870	9544	1217	2889	4559	6229	7898	9566	1233	2899	4564	6228	7891	9553
57	6222	7897	9571	1244	2916	4587	6257	7926	9594	1261	2927	4592	6256	7919	9581
58	6250	7925	9599	1272	2944	4615	6285	7954	9622	1289	2955	4620	6283	7946	9608
59	6278	7953	9627	1300	2972	4643	6313	7982	9650	1317	2982	4647	6311	7974	9636
60	6306	7981	9655	1328	3000	4671	6341	8010	9677	1344	3010	4675	6339	8002	9664
"	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	"
9.902	9.902	9.902	9.902	9.901	9.901	9.901	9.901	9.901	9.901	9.901	9.901	9.901	9.901	9.901	
3486	2534	1581	0628	9674	8719	7764	6808	5852	4895	3938	2980	2021	1062	0102	60
3470	2518	1565	0612	9658	8703	7748	6792	5836	4879	3922	2964	2005	1046	0086	59
3454	2502	1549	0596	9642	8687	7732	6776	5820	4863	3906	2948	1989	1030	0070	58
3439	2486	1533	0580	9626	8671	7716	6760	5804	4847	3890	2932	1973	1014	0054	57
3423	2470	1518	0564	9610	8655	7700	6744	5788	4831	3874	2916	1957	0998	0038	56
3407	2455	1502	0548	9594	8640	7684	6729	5772	4815	3858	2900	1941	0982	0022	55
3391	2439	1486	0532	9578	8624	7668	6713	5756	4799	3842	2884	1925	0966	0006	54
3375	2423	1470	0516	9562	8608	7652	6697	5740	4783	3826	2868	1909	0950	9990	53
3359	2407	1454	0500	9546	8592	7637	6681	5724	4767	3810	2852	1893	0934	9974	52
3343	2391	1438	0485	9531	8576	7621	6665	5708	4751	3794	2836	1877	0918	9958	51
3327	2375	1422	0469	9515	8560	7605	6649	5692	4736	3778	2820	1861	0902	9942	50
3312	2359	1406	0453	9499	8544	7589	6633	5677	4720	3762	2804	1845	0886	9926	49
3296	2343	1390	0437	9483	8528	7573	6617	5661	4704	3746	2788	1829	0870	9910	48
3280	2328	1375	0421	9467	8512	7557	6601	5645	4688	3730	2772	1813	0854	9894	47
3264	2312	1359	0405	9451	8496	7541	6585	5629	4672	3714	2756	1797	0838	9878	46
3248	2296	1343	0389	9435	8480	7525	6569	5613	4656	3698	2740	1781	0822	9862	45
3232	2280	1327	0373	9419	8464	7509	6553	5597	4640	3682	2724	1765	0806	9846	44
3216	2264	1311	0357	9403	8449	7493	6537	5581	4624	3666	2708	1749	0790	9830	43
3201	2248	1295	0342	9387	8433	7477	6521	5565	4608	3650	2692	1733	0774	9814	42
3185	2232	1279	0326	9371	8417	7461	6505	5549	4592	3634	2676	1717	0758	9798	41
3169	2216	1263	0310	9356	8401	7445	6490	5533	4576	3618	2660	1701	0742	9782	40
3153	2200	1247	0294	9340	8385	7430	6474	5517	4560	3602	2644	1685	0726	9766	39
3137	2185	1232	0278	9324	8369	7414	6458	5501	4544	3586	2628	1669	0710	9750	38
3121	2169	1216	0262	9308	8353	7398	6442	5485	4528	3570	2612	1653	0694	9734	37
3105	2153	1200	0246	9292	8337	7382	6426	5469	4512	3554	2596	1637	0678	9718	36
3089	2137	1184	0230	9276	8321	7366	6410	5453	4496	3538	2580	1621	0662	9702	35
3074	2121	1168	0214	9260	8305	7350	6394	5437	4480	3523	2564	1605	0646	9686	34
3058	2105	1152	0198	9244	8289	7334	6378	5421	4464	3507	2548	1589	0630	9670	33
3042	2089	1136	0183	9228	8273	7318	6362	5405	4448	3491	2532	1573	0614	9654	32
3026	2073	1120	0167	9212	8258	7302	6346	5389	4432	3475	2516	1557	0598	9638	31
3010	2058	1104	0151	9196	8242	7286	6330	5374	4416	3459	2500	1541	0582	9622	30
2994	2042	1089	0135	9181	8226	7270	6314	5358	4400	3443	2484	1525	0566	9606	29
2978	2026	1073	0119	9165	8210	7254	6298	5342	4384	3427	2468	1509	0550	9590	28
2962	2010	1057	0103	9149	8194	7238	6282	5326	4369	3411	2452	1493	0534	9574	27
2947	1994	1041	0087	9133	8178	7222	6266	5310	4353	3395	2436	1477	0518	9558	26
2931	1978	1025	0071	9117	8162	7207	6250	5294	4337	3379	2420	1461	0502	9542	25
2915	1962	1009	0055	9101	8146	7191	6235	5278	4321	3363	2404	1445	0486	9526	24
2899	1946	0993	0039	9085	8130	7175	6219	5262	4305	3347	2388	1429	0470	9510	23
2883	1931	0977	0024	9069	8114	7159	6203	5246	4289	3331	2372	1414	0454	9494	22
2867	1915	0961	0008	9053	8098	7143	6187	5230	4273	3315	2357	1398	0438	9478	21
2851	1899	0946	9992	9037	8082	7127	6171	5214	4257	3299	2341	1382	0422	9462	20
2836	1883	0930	9976	9021	8066	7111	6155	5198	4241	3283	2325	1366	0406	9446	19
2820	1867	0914	9960	9006	8051	7095	6139	5182	4225	3267	2309	1350	0390	9430	18
2804	1851	0898	9944	8990	8035	7079	6123	5166	4209	3251	2293	1334	0374	9414	17
2788	1835	0882	9928	8974	8019	7063	6107	5150	4193	3235	2277	1318	0358	9398	16
2772	1819	0866	9912	8958	8003	7047	6091	5134	4177	3219	2261	1302	0342	9382	15
2756	1803	0850	9896	8942	7987	7031	6075	5118	4161	3203	2245	1286	0326	9366	14
2740	1788	0834	9880	8926	7971	7015	6059	5102	4145	3187	2229	1270	0310	9350	13
2724	1772	0818	9865	8910	7955	6999	6043	5086	4129	3171	2213	1254	0294	9334	12
2709	1756	0802	9849	8894	7939	6983	6027	5071	4113	3155	2197	1238	0278	9318	11
2693	1740	0787	9833	8878	7923	6968	6011	5055	4097	3139	2181	1222	0262	9302	10
2677	1724	0771	9817	8862	7907	6952	5995	5039	4081	3123	2165	1206	0246	9286	9
2661	1708	0755	9801	8846	7891	6936	5979	5023	4065	3107	2149	1190	0230	9270	8
2645	1692	0739	9785	8830	7875	6920	5964	5007	4049	3091	2133	1174	0214	9254	7
2629	1676	0723	9769	8815	7859	6904	5948	4991	4033	3075	2117	1158	0198	9238	6
2613	1660	0707	9753	8799	7844	6888	5932	4975	4017	3059	2101	1142	0182	9222	5
2597	1645	0691	9737	8783	7828	6872	5916	4959	4001	3043	2085	1126	0166	9206	4
2582	1629	0675	9721	8767	7812	6856	5900	4943	3985	3027	2069	1110	0150	9190	3
2566	1613	0659	9705	8751	7796	6840	5884	4927	3970	3011	2053	1094	0134	9174	2
2550	1597	0644	9690	8735	7780	6824	5868	4911	3954	2996	2037	1078	0118	9158	1
2534	1581	0628	9674	8719	7764	6808	5852	4895	3938	2980	2021	1062	0102	9142	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	"

37 Deg. Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9. 877	9. 877	9. 877	9. 877	9. 878	9. 878	9. 878	9. 878	9. 879	9. 879	9. 879	9. 880	9. 880	9. 880	9. 880
0	1144	3772	6400	9027	1654	4281	6907	9533	2158	4782	7407	0031	2654	5277	7900
1	1188	3816	6444	9071	1698	4325	6951	9576	2201	4826	7451	0074	2698	5321	7944
2	1232	3860	6488	9115	1742	4368	6994	9620	2245	4870	7494	0118	2742	5365	7987
3	1276	3904	6531	9159	1786	4412	7038	9664	2289	4914	7538	0162	2785	5408	8031
4	1319	3948	6575	9203	1829	4456	7082	9708	2333	4957	7582	0206	2829	5452	8075
5	1363	3991	6619	9246	1873	4500	7126	9751	2376	5001	7625	0249	2873	5496	8118
6	1407	4035	6663	9290	1917	4543	7169	9795	2420	5045	7669	0293	2916	5539	8162
7	1451	4079	6707	9334	1961	4587	7213	9839	2464	5089	7713	0337	2960	5583	8206
8	1495	4123	6750	9378	2005	4631	7257	9883	2508	5132	7757	0380	3004	5627	8249
9	1538	4167	6794	9422	2048	4675	7301	9926	2551	5176	7800	0424	3048	5671	8293
10	1582	4210	6838	9465	2092	4719	7345	9970	2595	5220	7844	0468	3091	5714	8337
11	1626	4254	6882	9509	2136	4762	7388	0014	2639	5264	7888	0512	3135	5758	8381
12	1670	4298	6926	9553	2180	4806	7432	0058	2683	5307	7932	0555	3179	5802	8424
13	1714	4342	6969	9597	2223	4850	7476	0101	2726	5351	7975	0599	3223	5845	8468
14	1757	4385	7013	9640	2267	4894	7520	0145	2770	5395	8019	0643	3266	5889	8512
15	1801	4429	7057	9684	2311	4937	7563	0189	2814	5439	8063	0687	3310	5933	8555
16	1845	4473	7101	9728	2355	4981	7607	0233	2858	5482	8107	0730	3354	5977	8599
17	1889	4517	7145	9772	2399	5025	7651	0276	2901	5526	8150	0774	3397	6020	8643
18	1933	4561	7188	9816	2442	5069	7695	0320	2945	5570	8194	0818	3441	6064	8687
19	1976	4604	7232	9859	2486	5112	7738	0364	2989	5614	8238	0861	3485	6108	8730
20	2020	4648	7276	9903	2530	5156	7782	0408	3033	5657	8281	0905	3529	6151	8774
21	2064	4692	7320	9947	2574	5200	7826	0451	3076	5701	8325	0949	3572	6195	8818
22	2108	4736	7364	9991	2617	5244	7870	0495	3120	5745	8369	0993	3616	6239	8861
23	2152	4780	7407	0034	2661	5288	7913	0539	3164	5788	8413	1036	3660	6283	8905
24	2195	4823	7451	0078	2705	5331	7957	0583	3208	5832	8456	1080	3703	6326	8949
25	2239	4867	7495	0122	2749	5375	8001	0626	3251	5876	8500	1124	3747	6370	8992
26	2283	4911	7539	0166	2793	5419	8045	0670	3295	5920	8544	1168	3791	6414	9036
27	2327	4955	7582	0210	2836	5463	8088	0714	3339	5963	8588	1211	3835	6457	9080
28	2371	4999	7626	0253	2880	5506	8132	0758	3383	6007	8631	1255	3878	6501	9124
29	2414	5042	7670	0297	2924	5550	8176	0801	3426	6051	8675	1299	3922	6545	9167
30	2458	5086	7714	0341	2968	5594	8220	0845	3470	6095	8719	1342	3966	6589	9211
31	2502	5130	7758	0385	3011	5638	8264	0889	3514	6138	8763	1386	4009	6632	9255
32	2546	5174	7801	0429	3055	5681	8307	0933	3558	6182	8806	1430	4053	6676	9298
33	2590	5218	7845	0472	3099	5725	8351	0976	3601	6226	8850	1474	4097	6720	9342
34	2633	5261	7889	0516	3143	5769	8395	1020	3645	6270	8894	1517	4141	6763	9386
35	2677	5305	7933	0560	3187	5813	8439	1064	3689	6313	8937	1561	4184	6807	9429
36	2721	5349	7977	0604	3230	5857	8482	1108	3733	6357	8981	1605	4228	6851	9473
37	2765	5393	8020	0647	3274	5900	8526	1151	3776	6401	9025	1649	4272	6895	9517
38	2809	5437	8064	0691	3318	5944	8570	1195	3820	6445	9069	1692	4315	6938	9561
39	2852	5480	8108	0735	3362	5988	8614	1239	3864	6488	9112	1736	4359	6982	9604
40	2896	5524	8152	0779	3405	6032	8657	1283	3908	6532	9156	1780	4403	7026	9648
41	2940	5568	8196	0823	3449	6075	8701	1326	3951	6576	9200	1823	4447	7069	9692
42	2984	5612	8239	0866	3493	6119	8745	1370	3995	6620	9244	1867	4490	7113	9735
43	3028	5656	8283	0910	3537	6163	8789	1414	4039	6663	9287	1911	4534	7157	9779
44	3071	5699	8327	0954	3580	6207	8832	1458	4083	6707	9331	1955	4578	7200	9823
45	3115	5743	8371	0998	3624	6250	8876	1501	4126	6751	9375	1998	4621	7244	9866
46	3159	5787	8414	1041	3668	6294	8920	1545	4170	6794	9418	2042	4665	7288	9910
47	3203	5831	8458	1085	3712	6338	8964	1589	4214	6838	9462	2086	4709	7332	9954
48	3247	5875	8502	1129	3756	6382	9007	1633	4258	6882	9506	2129	4753	7375	9998
49	3291	5918	8546	1173	3799	6425	9051	1676	4301	6926	9550	2173	4796	7419	0041
50	3334	5962	8590	1217	3843	6469	9095	1720	4345	6969	9593	2217	4840	7463	0085
51	3378	6006	8633	1260	3887	6513	9139	1764	4389	7013	9637	2261	4884	7506	0129
52	3422	6050	8677	1304	3931	6557	9182	1808	4433	7057	9681	2304	4927	7550	0172
53	3466	6094	8721	1348	3974	6601	9226	1851	4476	7101	9725	2348	4971	7594	0216
54	3510	6137	8765	1392	4018	6644	9270	1895	4520	7144	9768	2392	5015	7638	0260
55	3553	6181	8809	1435	4062	6688	9314	1939	4564	7188	9812	2436	5059	7681	0304
56	3597	6225	8852	1479	4106	6732	9357	1983	4607	7232	9856	2479	5102	7725	0347
57	3641	6269	8896	1523	4150	6776	9401	2026	4651	7276	9899	2523	5146	7769	0391
58	3685	6313	8940	1567	4193	6819	9445	2070	4695	7319	9943	2567	5190	7812	0435
59	3729	6356	8984	1611	4237	6863	9489	2114	4739	7363	9987	2610	5233	7856	0478
60	3772	6400	9027	1654	4281	6907	9533	2158	4782	7407	0031	2654	5277	7900	0522
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Tangent Deg. 52

37 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
10. 122	10. 122	10. 122	10. 122	10. 121	10. 121	10. 121	10. 121	10. 120	10. 120	10. 120	10. 119	10. 119	10. 119	10. 119	″
8856	6228	3600	0973	8346	5719	3093	0467	7842	5218	2593	9969	7346	4723	2100	60
8812	6184	3556	0929	8302	5675	3049	0424	7799	5174	2549	9926	7302	4679	2056	59
8768	6140	3512	0885	8258	5632	3006	0380	7755	5130	2506	9882	7258	4635	2013	58
8724	6096	3469	0841	8214	5588	2962	0336	7711	5086	2462	9838	7215	4592	1969	57
8681	6052	3425	0797	8171	5544	2918	0292	7667	5043	2418	9794	7171	4548	1925	56
8637	6009	3381	0754	8127	5500	2874	0249	7624	4999	2375	9751	7127	4504	1882	55
8593	5965	3337	0710	8083	5457	2831	0205	7580	4955	2331	9707	7084	4461	1838	54
8549	5921	3293	0666	8039	5413	2787	0161	7536	4911	2287	9663	7040	4417	1794	53
8505	5877	3250	0622	7995	5369	2743	0117	7492	4868	2243	9620	6996	4373	1751	52
8462	5833	3206	0578	7952	5325	2699	0074	7449	4824	2200	9576	6952	4329	1707	51
8418	5790	3162	0535	7908	5281	2655	0030	7405	4780	2156	9532	6909	4286	1663	50
8374	5746	3118	0491	7864	5238	2612	9986	7361	4736	2112	9488	6865	4242	1619	49
8330	5702	3074	0447	7820	5194	2568	9942	7317	4693	2068	9445	6821	4198	1576	48
8286	5658	3031	0403	7777	5150	2524	9899	7274	4649	2025	9401	6777	4155	1532	47
8243	5615	2987	0360	7733	5106	2480	9855	7230	4605	1981	9357	6734	4111	1488	46
8199	5571	2943	0316	7689	5063	2437	9811	7186	4561	1937	9313	6690	4067	1445	45
8155	5527	2899	0272	7645	5019	2393	9767	7142	4518	1893	9270	6646	4023	1401	44
8111	5483	2855	0228	7601	4975	2349	9724	7099	4474	1850	9226	6603	3980	1357	43
8067	5439	2812	0184	7558	4931	2305	9680	7055	4430	1806	9182	6559	3936	1313	42
8024	5396	2768	0141	7514	4888	2262	9636	7011	4386	1762	9139	6515	3892	1270	41
7980	5352	2724	0097	7470	4844	2218	9592	6967	4343	1719	9095	6471	3849	1226	40
7936	5308	2680	0053	7426	4800	2174	9549	6924	4299	1675	9051	6428	3805	1182	39
7892	5264	2636	0009	7383	4756	2130	9505	6880	4255	1631	9007	6384	3761	1139	38
7848	5220	2593	9966	7339	4712	2087	9461	6836	4212	1587	8964	6340	3717	1095	37
7805	5177	2549	9922	7295	4669	2043	9417	6792	4168	1544	8920	6297	3674	1051	36
7761	5133	2505	9878	7251	4625	1999	9374	6749	4124	1500	8876	6253	3630	1008	35
7717	5089	2461	9834	7207	4581	1955	9330	6705	4080	1456	8832	6209	3586	0964	34
7673	5045	2418	9790	7164	4537	1912	9286	6661	4037	1412	8789	6165	3543	0920	33
7629	5001	2374	9747	7120	4494	1868	9242	6617	3993	1369	8745	6122	3499	0876	32
7586	4958	2330	9703	7076	4450	1824	9199	6574	3949	1325	8701	6078	3455	0833	31
7542	4914	2286	9659	7032	4406	1780	9155	6530	3905	1281	8658	6034	3411	0789	30
7498	4870	2242	9615	6989	4362	1736	9111	6486	3862	1237	8614	5991	3368	0745	29
7454	4826	2199	9571	6945	4319	1693	9067	6442	3818	1194	8570	5947	3324	0702	28
7410	4782	2155	9528	6901	4275	1649	9024	6399	3774	1150	8526	5903	3280	0658	27
7367	4739	2111	9484	6857	4231	1605	8980	6355	3730	1106	8483	5859	3237	0614	26
7323	4695	2067	9440	6813	4187	1561	8936	6311	3687	1063	8439	5816	3193	0571	25
7279	4651	2023	9396	6770	4143	1518	8892	6267	3643	1019	8395	5772	3149	0527	24
7235	4607	1980	9353	6726	4100	1474	8849	6224	3599	0975	8351	5728	3105	0483	23
7191	4563	1936	9309	6682	4056	1430	8805	6180	3555	0931	8308	5685	3062	0439	22
7148	4520	1892	9265	6638	4012	1386	8761	6136	3512	0888	8264	5641	3018	0396	21
7104	4476	1848	9221	6595	3968	1343	8717	6092	3468	0844	8220	5597	2974	0352	20
7060	4432	1804	9177	6551	3925	1299	8674	6049	3424	0800	8177	5553	2931	0308	19
7016	4388	1761	9134	6507	3881	1255	8630	6005	3380	0756	8133	5510	2887	0265	18
6972	4344	1717	9090	6463	3837	1211	8586	5961	3337	0713	8089	5466	2843	0221	17
6929	4301	1673	9046	6420	3793	1168	8542	5917	3293	0669	8045	5422	2800	0177	16
6885	4257	1629	9002	6376	3750	1124	8499	5874	3249	0625	8002	5379	2756	0134	15
6841	4213	1586	8959	6332	3706	1080	8455	5830	3206	0582	7958	5335	2712	0090	14
6797	4169	1542	8915	6288	3662	1036	8411	5786	3162	0538	7914	5291	2668	0046	13
6753	4125	1498	8871	6244	3618	0993	8367	5742	3118	0494	7871	5247	2625	0002	12
6709	4082	1454	8827	6201	3575	0949	8324	5699	3074	0450	7827	5204	2581	9959	11
6666	4038	1410	8783	6157	3531	0905	8280	5655	3031	0407	7783	5160	2537	9915	10
6622	3994	1367	8740	6113	3487	0861	8236	5611	2987	0363	7739	5116	2494	9871	9
6578	3950	1323	8696	6069	3443	0818	8192	5567	2943	0319	7696	5073	2450	9828	8
6534	3906	1279	8652	6026	3399	0774	8149	5524	2899	0275	7652	5029	2406	9784	7
6490	3863	1235	8608	5982	3356	0730	8105	5480	2856	0232	7608	4985	2362	9740	6
6447	3819	1191	8565	5938	3312	0686	8061	5436	2812	0188	7564	4941	2319	9696	5
6403	3775	1148	8521	5894	3268	0643	8017	5393	2768	0144	7521	4898	2275	9653	4
6359	3731	1104	8477	5850	3224	0599	7974	5349	2724	0101	7477	4854	2231	9609	3
6315	3687	1060	8433	5807	3181	0555	7930	5305	2681	0057	7433	4810	2188	9565	2
6271	3644	1016	8389	5763	3137	0511	7886	5261	2637	0013	7390	4767	2144	9522	1
6228	3600	0973	8346	5719	3093	0467	7842	5218	2593	9969	7346	4723	2100	9478	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Tangent Deg. 52

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 781	9. 782	9. 782	9. 782	9. 782	9. 782	9. 782	9. 783	9. 783	9. 783	9. 783	9. 783	9. 783	9. 784	9. 784
0	9664	1324	2984	4643	6301	7958	9614	1268	2922	4575	6227	7878	9528	1177	2824
1	9691	1352	3012	4671	6329	7985	9641	1296	2950	4603	6254	7905	9555	1204	2852
2	9719	1380	3040	4698	6356	8013	9669	1324	2977	4630	6282	7933	9583	1231	2879
3	9747	1407	3067	4726	6384	8041	9696	1351	3005	4658	6310	7960	9610	1259	2907
4	9774	1435	3095	4754	6411	8068	9724	1379	3033	4685	6337	7988	9638	1286	2934
5	9802	1463	3123	4781	6439	8096	9752	1406	3060	4713	6365	8015	9665	1314	2962
6	9830	1490	3150	4809	6467	8123	9779	1434	3088	4740	6392	8043	9693	1341	2989
7	9857	1518	3178	4837	6494	8151	9807	1461	3115	4768	6420	8070	9720	1369	3017
8	9885	1546	3206	4864	6522	8179	9834	1489	3143	4795	6447	8098	9748	1396	3044
9	9913	1573	3233	4892	6550	8206	9862	1517	3170	4823	6475	8125	9775	1424	3071
10	9940	1601	3261	4919	6577	8234	9889	1544	3198	4851	6502	8153	9803	1451	3099
11	9968	1629	3288	4947	6605	8261	9917	1572	3225	4878	6530	8180	9830	1479	3126
12	9996	1656	3316	4975	6632	8289	9945	1599	3253	4906	6557	8208	9858	1506	3154
13	0024	1684	3344	5002	6669	8317	9972	1627	3280	4933	6585	8235	9885	1534	3181
14	0051	1712	3371	5030	6688	8344	0000	1654	3308	4961	6612	8263	9912	1561	3209
15	0079	1739	3399	5058	6715	8372	0027	1682	3336	4988	6640	8290	9940	1589	3236
16	0107	1767	3427	5085	6743	8399	0055	1710	3363	5016	6667	8318	9967	1616	3264
17	0134	1795	3454	5113	6770	8427	0083	1737	3391	5043	6695	8345	9995	1644	3291
18	0162	1822	3482	5141	6798	8455	0110	1765	3418	5071	6722	8373	0022	1671	3319
19	0190	1850	3510	5168	6826	8482	0138	1792	3446	5098	6750	8400	0050	1698	3346
20	0217	1878	3537	5196	6853	8510	0165	1820	3473	5126	6777	8428	0077	1726	3373
21	0245	1905	3565	5223	6881	8537	0193	1847	3501	5153	6805	8455	0105	1753	3401
22	0273	1933	3593	5251	6909	8565	0220	1875	3528	5181	6832	8483	0132	1781	3428
23	0300	1961	3620	5279	6936	8593	0248	1903	3556	5208	6860	8510	0160	1808	3456
24	0328	1988	3648	5306	6964	8620	0276	1930	3584	5236	6887	8538	0187	1836	3483
25	0356	2016	3676	5334	6991	8648	0303	1958	3611	5264	6915	8565	0215	1863	3511
26	0383	2044	3703	5362	7019	8675	0331	1985	3639	5291	6942	8593	0242	1891	3538
27	0411	2071	3731	5389	7047	8703	0358	2013	3666	5319	6970	8620	0270	1918	3566
28	0439	2099	3759	5417	7074	8731	0386	2040	3694	5346	6997	8648	0297	1946	3593
29	0466	2127	3786	5445	7102	8758	0414	2068	3721	5374	7025	8675	0325	1973	3621
30	0494	2154	3814	5472	7129	8786	0441	2095	3749	5401	7053	8703	0352	2001	3648
31	0522	2182	3841	5500	7157	8813	0469	2123	3776	5429	7080	8730	0380	2028	3675
32	0550	2210	3869	5527	7185	8841	0496	2151	3804	5456	7108	8758	0407	2056	3703
33	0577	2237	3897	5555	7212	8869	0524	2178	3831	5484	7135	8785	0435	2083	3730
34	0605	2265	3924	5583	7240	8896	0551	2206	3859	5511	7163	8813	0462	2110	3758
35	0633	2293	3952	5610	7268	8924	0579	2233	3887	5539	7190	8840	0490	2138	3785
36	0660	2320	3980	5638	7295	8951	0607	2261	3914	5566	7218	8868	0517	2165	3813
37	0688	2348	4007	5666	7323	8979	0634	2288	3942	5594	7245	8895	0545	2193	3840
38	0716	2376	4035	5693	7350	9007	0662	2316	3969	5621	7273	8923	0572	2220	3868
39	0743	2403	4063	5721	7378	9034	0689	2344	3997	5649	7300	8950	0600	2248	3895
40	0771	2431	4090	5748	7406	9062	0717	2371	4024	5676	7328	8978	0627	2275	3922
41	0799	2459	4118	5776	7433	9089	0745	2399	4052	5704	7355	9005	0655	2303	3950
42	0826	2486	4146	5804	7461	9117	0772	2426	4079	5732	7383	9033	0682	2330	3977
43	0854	2514	4173	5831	7488	9145	0800	2454	4107	5759	7410	9060	0709	2358	4005
44	0882	2542	4201	5859	7516	9172	0827	2481	4134	5787	7438	9088	0737	2385	4032
45	0909	2569	4228	5887	7544	9200	0855	2509	4162	5814	7465	9115	0764	2413	4060
46	0937	2597	4256	5914	7571	9227	0882	2536	4190	5842	7493	9143	0792	2440	4087
47	0965	2625	4284	5942	7599	9255	0910	2564	4217	5869	7520	9170	0819	2467	4115
48	0992	2652	4311	5969	7626	9283	0938	2592	4245	5897	7548	9198	0847	2495	4142
49	1020	2680	4339	5997	7654	9310	0965	2619	4272	5924	7575	9225	0874	2522	4169
50	1048	2708	4367	6025	7682	9338	0993	2647	4300	5952	7603	9253	0902	2550	4197
51	1075	2735	4394	6052	7709	9365	1020	2674	4327	5979	7630	9280	0929	2577	4224
52	1103	2763	4422	6080	7737	9393	1048	2702	4355	6007	7658	9308	0957	2605	4252
53	1131	2791	4450	6108	7765	9420	1075	2729	4382	6034	7685	9335	0984	2632	4279
54	1158	2818	4477	6135	7792	9448	1103	2757	4410	6062	7713	9363	1012	2660	4307
55	1186	2846	4505	6163	7820	9476	1131	2785	4437	6089	7740	9390	1039	2687	4334
56	1214	2874	4533	6190	7847	9503	1158	2812	4465	6117	7768	9418	1067	2715	4362
57	1241	2901	4560	6218	7875	9531	1186	2840	4493	6144	7795	9445	1094	2742	4389
58	1269	2929	4588	6246	7903	9558	1213	2867	4520	6172	7823	9473	1122	2769	4416
59	1297	2957	4615	6273	7930	9586	1241	2895	4548	6199	7850	9500	1149	2797	4444
60	1324	2984	4643	6301	7958	9614	1268	2922	4575	6227	7878	9528	1177	2824	4471
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
	9. 900	9. 900	9. 900	9. 900	9. 900	9. 900	9. 900	9. 900	9. 900	9. 900	9. 899	9. 899	9. 899	9. 899	9. 899	″
0	9142	8181	7219	6257	5294	4331	3367	2403	1438	0472	9506	8539	7572	6604	5636	60
1	9126	8165	7203	6241	5278	4315	3351	2387	1422	0456	9490	8523	7556	6588	5619	59
2	9110	8149	7187	6225	5262	4299	3335	2371	1406	0440	9474	8507	7540	6572	5603	58
3	9094	8133	7171	6209	5246	4283	3319	2355	1390	0424	9458	8491	7524	6556	5587	57
4	9078	8117	7155	6193	5230	4267	3303	2339	1374	0408	9442	8475	7508	6540	5571	56
5	9062	8101	7139	6177	5214	4251	3287	2322	1357	0392	9426	8459	7491	6523	5555	55
6	9046	8085	7123	6161	5198	4235	3271	2306	1341	0376	9409	8443	7475	6507	5539	54
7	9030	8069	7107	6145	5182	4219	3255	2290	1325	0360	9393	8427	7459	6491	5523	53
8	9014	8052	7091	6129	5166	4203	3239	2274	1309	0343	9377	8410	7443	6475	5506	52
9	8997	8036	7075	6113	5150	4187	3223	2258	1293	0327	9361	8394	7427	6459	5490	51
10	8981	8020	7059	6097	5134	4171	3207	2242	1277	0311	9345	8378	7411	6443	5474	50
11	8965	8004	7043	6081	5118	4154	3191	2226	1261	0295	9329	8362	7395	6427	5458	49
12	8949	7988	7027	6065	5102	4138	3174	2210	1245	0279	9313	8346	7379	6410	5442	48
13	8933	7972	7011	6049	5086	4122	3158	2194	1229	0263	9297	8330	7362	6394	5426	47
14	8917	7956	6995	6032	5070	4106	3142	2178	1213	0247	9281	8314	7346	6378	5410	46
15	8901	7940	6979	6016	5054	4090	3126	2162	1197	0231	9264	8298	7330	6362	5393	45
16	8885	7924	6963	6000	5038	4074	3110	2146	1180	0215	9248	8281	7314	6346	5377	44
17	8869	7908	6947	5984	5022	4058	3094	2130	1164	0199	9232	8265	7298	6330	5361	43
18	8853	7892	6931	5968	5005	4042	3078	2113	1148	0182	9216	8249	7282	6314	5345	42
19	8837	7876	6915	5952	4989	4026	3062	2097	1132	0166	9200	8233	7266	6297	5329	41
20	8821	7860	6899	5936	4973	4010	3046	2081	1116	0150	9184	8217	7249	6281	5313	40
21	8805	7844	6882	5920	4957	3994	3030	2065	1100	0134	9168	8201	7233	6265	5297	39
22	8789	7828	6866	5904	4941	3978	3014	2049	1084	0118	9152	8185	7217	6249	5280	38
23	8773	7812	6850	5888	4925	3962	2998	2033	1068	0102	9136	8169	7201	6233	5264	37
24	8757	7796	6834	5872	4909	3946	2982	2017	1052	0086	9119	8153	7185	6217	5248	36
25	8741	7780	6818	5856	4893	3930	2966	2001	1036	0070	9103	8136	7169	6201	5232	35
26	8725	7764	6802	5840	4877	3914	2949	1985	1020	0054	9087	8120	7153	6185	5216	34
27	8709	7748	6786	5824	4861	3897	2933	1969	1003	0038	9071	8104	7137	6168	5200	33
28	8693	7732	6770	5808	4845	3881	2917	1953	0987	0021	9055	8088	7120	6152	5183	32
29	8677	7716	6754	5792	4829	3865	2901	1937	0971	0005	9039	8072	7104	6136	5167	31
30	8661	7700	6738	5776	4813	3849	2885	1920	0955	9989	9023	8056	7088	6120	5151	30
31	8645	7684	6722	5760	4797	3833	2869	1904	0939	9973	9007	8040	7072	6104	5135	29
32	8629	7668	6706	5744	4781	3817	2853	1888	0923	9957	8991	8024	7056	6088	5119	28
33	8613	7652	6690	5728	4765	3801	2837	1872	0907	9941	8974	8007	7040	6072	5103	27
34	8597	7636	6674	5712	4749	3785	2821	1856	0891	9925	8958	7991	7024	6055	5087	26
35	8581	7620	6658	5696	4733	3769	2805	1840	0875	9909	8942	7975	7007	6039	5070	25
36	8565	7604	6642	5680	4716	3753	2789	1824	0859	9893	8926	7959	6991	6023	5054	24
37	8549	7588	6626	5663	4700	3737	2773	1808	0842	9877	8910	7943	6975	6007	5038	23
38	8533	7572	6610	5647	4684	3721	2757	1792	0826	9860	8894	7927	6959	5991	5022	22
39	8517	7556	6594	5631	4668	3705	2740	1776	0810	9844	8878	7911	6943	5975	5006	21
40	8501	7540	6578	5615	4652	3689	2724	1760	0794	9828	8862	7895	6927	5959	4990	20
41	8485	7524	6562	5599	4636	3673	2708	1744	0778	9812	8846	7878	6911	5942	4973	19
42	8469	7508	6546	5583	4620	3657	2692	1727	0762	9796	8829	7862	6895	5926	4957	18
43	8453	7492	6530	5567	4604	3640	2676	1711	0746	9780	8813	7846	6878	5910	4941	17
44	8437	7476	6514	5551	4588	3624	2660	1695	0730	9764	8797	7830	6862	5894	4925	16
45	8421	7460	6498	5535	4572	3608	2644	1679	0714	9748	8781	7814	6846	5878	4909	15
46	8405	7444	6482	5519	4556	3592	2628	1663	0698	9732	8765	7798	6830	5862	4893	14
47	8389	7428	6466	5503	4540	3576	2612	1647	0682	9716	8749	7782	6814	5846	4877	13
48	8373	7412	6450	5487	4524	3560	2596	1631	0665	9699	8733	7766	6798	5829	4860	12
49	8357	7395	6433	5471	4508	3544	2580	1615	0649	9683	8717	7749	6782	5813	4844	11
50	8341	7379	6417	5455	4492	3528	2564	1599	0633	9667	8701	7733	6765	5797	4828	10
51	8325	7363	6401	5439	4476	3512	2548	1583	0617	9651	8684	7717	6749	5781	4812	9
52	8309	7347	6385	5423	4460	3496	2531	1567	0601	9635	8668	7701	6733	5765	4796	8
53	8293	7331	6369	5407	4444	3480	2515	1550	0585	9619	8652	7685	6717	5749	4780	7
54	8277	7315	6353	5391	4427	3464	2499	1534	0569	9603	8636	7669	6701	5733	4763	6
55	8261	7299	6337	5375	4411	3448	2483	1518	0553	9587	8620	7653	6685	5716	4747	5
56	8245	7283	6321	5359	4395	3432	2467	1502	0537	9571	8604	7637	6669	5700	4731	4
57	8229	7267	6305	5343	4379	3415	2451	1486	0521	9554	8588	7620	6653	5684	4715	3
58	8213	7251	6289	5326	4363	3399	2435	1470	0504	9538	8572	7604	6636	5668	4699	2
59	8197	7235	6273	5310	4347	3383	2419	1454	0488	9522	8555	7588	6620	5652	4683	1
60	8181	7219	6257	5294	4331	3367	2403	1438	0472	9506	8539	7572	6604	5636	4667	0
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

37 Deg. Tangent

"	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9.881	9.881	9.881	9.881	9.882	9.882	9.882	9.882	9.883	9.883	9.883	9.883	9.884	9.884	9.884
0	0522	3144	5765	8386	1007	3627	6246	8866	1484	4103	6721	9338	1956	4572	7189
1	0566	3187	5809	8430	1050	3670	6290	8909	1528	4146	6764	9382	1999	4616	7232
2	0609	3231	5852	8473	1094	3714	6334	8953	1572	4190	6808	9426	2043	4660	7276
3	0653	3275	5896	8517	1138	3758	6377	8997	1615	4234	6852	9469	2086	4703	7320
4	0697	3319	5940	8561	1181	3801	6421	9040	1659	4277	6895	9513	2130	4747	7363
5	0740	3362	5984	8604	1225	3845	6465	9084	1703	4321	6939	9557	2174	4790	7407
6	0784	3406	6027	8648	1269	3889	6508	9127	1746	4365	6983	9600	2217	4834	7450
7	0828	3450	6071	8692	1312	3932	6552	9171	1790	4408	7026	9644	2261	4878	7494
8	0872	3493	6115	8735	1356	3976	6596	9215	1834	4452	7070	9687	2305	4921	7538
9	0915	3537	6158	8779	1400	4020	6639	9258	1877	4496	7114	9731	2348	4965	7581
10	0959	3581	6202	8823	1443	4063	6683	9302	1921	4539	7157	9775	2392	5008	7625
11	1003	3624	6246	8867	1487	4107	6727	9346	1964	4583	7201	9818	2435	5052	7668
12	1046	3668	6289	8910	1531	4151	6770	9389	2008	4626	7244	9862	2479	5096	7712
13	1090	3712	6333	8954	1574	4194	6814	9433	2052	4670	7288	9906	2523	5139	7756
14	1134	3755	6377	8998	1618	4238	6858	9477	2095	4714	7332	9949	2566	5183	7799
15	1177	3799	6420	9041	1662	4282	6901	9520	2139	4757	7375	9993	2610	5227	7843
16	1221	3843	6464	9085	1705	4325	6945	9564	2183	4801	7419	0036	2653	5270	7886
17	1265	3887	6508	9129	1749	4369	6988	9608	2226	4845	7463	0080	2697	5314	7930
18	1309	3930	6551	9172	1793	4413	7032	9651	2270	4888	7506	0124	2741	5357	7974
19	1352	3974	6595	9216	1836	4456	7076	9695	2314	4932	7550	0167	2784	5401	8017
20	1396	4018	6639	9260	1880	4500	7119	9739	2357	4976	7593	0211	2828	5445	8061
21	1440	4061	6682	9303	1924	4544	7163	9782	2401	5019	7637	0255	2872	5488	8104
22	1483	4105	6726	9347	1967	4587	7207	9826	2445	5063	7681	0298	2915	5532	8148
23	1527	4149	6770	9391	2011	4631	7250	9870	2488	5106	7724	0342	2959	5575	8192
24	1571	4192	6814	9434	2055	4675	7294	9913	2532	5150	7768	0385	3002	5619	8235
25	1614	4236	6857	9478	2098	4718	7338	9957	2575	5194	7812	0429	3046	5663	8279
26	1658	4280	6901	9522	2142	4762	7381	0000	2619	5237	7855	0473	3090	5706	8322
27	1702	4323	6945	9565	2186	4806	7425	0044	2663	5281	7899	0516	3133	5750	8366
28	1746	4367	6988	9609	2229	4849	7469	0088	2706	5325	7942	0560	3177	5793	8410
29	1789	4411	7032	9653	2273	4893	7512	0131	2750	5368	7986	0603	3220	5837	8453
30	1833	4455	7076	9696	2317	4937	7556	0175	2794	5412	8030	0647	3264	5881	8497
31	1877	4498	7119	9740	2360	4980	7600	0219	2837	5456	8073	0691	3308	5924	8540
32	1920	4542	7163	9784	2404	5024	7643	0262	2881	5499	8117	0734	3351	5968	8584
33	1964	4586	7207	9827	2448	5068	7687	0306	2925	5543	8161	0778	3395	6011	8628
34	2008	4629	7250	9871	2491	5111	7731	0350	2968	5586	8204	0822	3439	6055	8671
35	2051	4673	7294	9915	2535	5155	7774	0393	3012	5630	8248	0865	3482	6099	8715
36	2095	4717	7338	9958	2579	5199	7818	0437	3056	5674	8291	0909	3526	6142	8758
37	2139	4760	7381	0002	2622	5242	7862	0481	3099	5717	8335	0952	3569	6186	8802
38	2183	4804	7425	0046	2666	5286	7905	0524	3143	5761	8379	0996	3613	6229	8846
39	2226	4848	7469	0089	2710	5329	7949	0568	3186	5805	8422	1040	3657	6273	8889
40	2270	4891	7512	0133	2753	5373	7993	0612	3230	5848	8466	1083	3700	6317	8933
41	2314	4935	7556	0177	2797	5417	8036	0655	3274	5892	8510	1127	3744	6360	8976
42	2357	4979	7600	0220	2841	5460	8080	0699	3317	5935	8553	1171	3787	6404	9020
43	2401	5022	7643	0264	2884	5504	8123	0742	3361	5979	8597	1214	3831	6448	9064
44	2445	5066	7687	0308	2928	5548	8167	0786	3405	6023	8640	1258	3875	6491	9107
45	2488	5110	7731	0351	2972	5591	8211	0830	3448	6066	8684	1301	3918	6535	9151
46	2532	5154	7775	0395	3015	5635	8254	0873	3492	6110	8728	1345	3962	6578	9194
47	2576	5197	7818	0439	3059	5679	8298	0917	3536	6154	8771	1389	4005	6622	9238
48	2619	5241	7862	0482	3103	5722	8342	0961	3579	6197	8815	1432	4049	6666	9282
49	2663	5285	7906	0526	3146	5766	8385	1004	3623	6241	8859	1476	4093	6709	9325
50	2707	5328	7949	0570	3190	5810	8429	1048	3666	6285	8902	1519	4136	6753	9369
51	2751	5372	7993	0614	3234	5853	8473	1092	3710	6328	8946	1563	4180	6796	9412
52	2794	5416	8037	0657	3277	5897	8516	1135	3754	6372	8989	1607	4224	6840	9456
53	2838	5459	8080	0701	3321	5941	8560	1179	3797	6415	9033	1650	4267	6884	9500
54	2882	5503	8124	0745	3365	5984	8604	1223	3841	6459	9077	1694	4311	6927	9543
55	2925	5547	8168	0788	3408	6028	8647	1266	3885	6503	9120	1738	4354	6971	9587
56	2969	5590	8211	0832	3452	6072	8691	1310	3928	6546	9164	1781	4398	7014	9630
57	3013	5634	8255	0876	3496	6115	8735	1353	3972	6590	9208	1825	4442	7058	9674
58	3056	5678	8299	0919	3539	6159	8778	1397	4016	6634	9251	1868	4485	7102	9718
59	3100	5721	8342	0963	3583	6203	8822	1441	4059	6677	9295	1912	4529	7145	9761
60	3144	5765	8386	1007	3627	6246	8866	1484	4103	6721	9338	1956	4572	7189	9805
"	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Tangent Deg. 52

37 Deg. Co-Tangent

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	"
10.118	10.118	10.118	10.118	10.117	10.117	10.117	10.117	10.116	10.116	10.116	10.116	10.115	10.115	10.115	
9478	6856	4235	1614	8993	6373	3754	1134	8516	5897	3279	0662	8044	5428	2811	60
9434	6813	4191	1570	8950	6330	3710	1091	8472	5854	3236	0618	8001	5384	2768	59
9391	6769	4148	1527	8906	6286	3666	1047	8428	5810	3192	0574	7957	5340	2724	58
9347	6725	4104	1483	8862	6242	3623	1003	8385	5766	3148	0531	7914	5297	2680	57
9303	6681	4060	1439	8819	6199	3579	0960	8341	5723	3105	0487	7870	5253	2637	56
9260	6638	4016	1396	8775	6155	3535	0916	8297	5679	3061	0443	7826	5210	2593	55
9216	6594	3973	1352	8731	6111	3492	0873	8254	5635	3017	0400	7783	5166	2550	54
9172	6550	3929	1308	8688	6068	3448	0829	8210	5592	2974	0356	7739	5122	2506	53
9128	6507	3885	1265	8644	6024	3404	0785	8166	5548	2930	0313	7695	5079	2462	52
9085	6463	3842	1221	8600	5980	3361	0742	8123	5504	2886	0269	7652	5035	2419	51
9041	6419	3798	1177	8557	5937	3317	0698	8079	5461	2843	0225	7608	4992	2375	50
8997	6376	3754	1133	8513	5893	3273	0654	8036	5417	2799	0182	7565	4948	2332	49
8954	6332	3711	1090	8469	5849	3230	0611	7992	5374	2756	0138	7521	4904	2288	48
8910	6288	3667	1046	8426	5806	3186	0567	7948	5330	2712	0094	7477	4861	2244	47
8866	6245	3623	1002	8382	5762	3142	0523	7905	5286	2668	0051	7434	4817	2201	46
8823	6201	3580	0959	8338	5718	3099	0480	7861	5243	2625	0007	7390	4773	2157	45
8779	6157	3536	0915	8295	5675	3055	0436	7817	5199	2581	9964	7347	4730	2114	44
8735	6113	3492	0871	8251	5631	3012	0392	7774	5155	2537	9920	7303	4686	2070	43
8691	6070	3449	0828	8207	5587	2968	0349	7730	5112	2494	9876	7259	4643	2026	42
8648	6026	3405	0784	8164	5544	2924	0305	7686	5068	2450	9833	7216	4599	1983	41
8604	5982	3361	0740	8120	5500	2881	0261	7643	5024	2407	9789	7172	4555	1939	40
8560	5939	3318	0697	8076	5456	2837	0218	7599	4981	2363	9745	7128	4512	1896	39
8517	5895	3274	0653	8033	5413	2793	0174	7555	4937	2319	9702	7085	4468	1852	38
8473	5851	3230	0609	7989	5369	2750	0130	7512	4894	2276	9658	7041	4425	1808	37
8429	5808	3186	0566	7945	5325	2706	0087	7468	4850	2232	9615	6998	4381	1765	36
8386	5764	3143	0522	7902	5282	2662	0043	7425	4806	2188	9571	6954	4337	1721	35
8342	5720	3099	0478	7858	5238	2619	0000	7381	4763	2145	9527	6910	4294	1678	34
8298	5677	3055	0435	7814	5194	2575	9956	7337	4719	2101	9484	6867	4250	1634	33
8254	5633	3012	0391	7771	5151	2531	9912	7294	4675	2058	9440	6823	4207	1590	32
8211	5589	2968	0347	7727	5107	2488	9869	7250	4632	2014	9397	6780	4163	1547	31
8167	5545	2924	0304	7683	5063	2444	9825	7206	4588	1970	9353	6736	4119	1503	30
8123	5502	2881	0260	7640	5020	2400	9781	7163	4544	1927	9309	6692	4076	1460	29
8080	5458	2837	0216	7596	4976	2357	9738	7119	4501	1883	9266	6649	4032	1416	28
8036	5414	2793	0173	7552	4932	2313	9694	7075	4457	1839	9222	6605	3989	1372	27
7992	5371	2750	0129	7509	4889	2269	9650	7032	4414	1796	9178	6561	3945	1329	26
7949	5327	2706	0085	7465	4845	2226	9607	6988	4370	1752	9135	6518	3901	1285	25
7905	5283	2662	0042	7421	4801	2182	9563	6944	4326	1709	9091	6474	3858	1242	24
7861	5240	2619	9998	7378	4758	2138	9519	6901	4283	1665	9048	6431	3814	1198	23
7817	5196	2575	9954	7334	4714	2095	9476	6857	4239	1621	9004	6387	3771	1154	22
7774	5152	2531	9911	7290	4671	2051	9432	6814	4195	1578	8960	6343	3727	1111	21
7730	5109	2488	9867	7247	4627	2007	9388	6770	4152	1534	8917	6300	3683	1067	20
7686	5065	2444	9823	7203	4583	1964	9345	6726	4108	1490	8873	6256	3640	1024	19
7643	5021	2400	9780	7159	4540	1920	9301	6683	4065	1447	8829	6213	3596	0980	18
7599	4978	2357	9736	7116	4496	1877	9258	6639	4021	1403	8786	6169	3552	0936	17
7555	4934	2313	9692	7072	4452	1833	9214	6595	3977	1360	8742	6125	3509	0893	16
7512	4890	2269	9649	7028	4409	1789	9170	6552	3934	1316	8699	6082	3465	0849	15
7468	4846	2225	9605	6985	4365	1746	9127	6508	3890	1272	8655	6038	3422	0806	14
7424	4803	2182	9561	6941	4321	1702	9083	6464	3846	1229	8611	5995	3378	0762	13
7381	4759	2138	9518	6897	4278	1658	9039	6421	3803	1185	8568	5951	3334	0718	12
7337	4715	2094	9474	6854	4234	1615	8996	6377	3759	1141	8524	5907	3291	0675	11
7293	4672	2051	9430	6810	4190	1571	8952	6334	3715	1098	8481	5864	3247	0631	10
7249	4628	2007	9386	6766	4147	1527	8908	6290	3672	1054	8437	5820	3204	0588	9
7206	4584	1963	9343	6723	4103	1484	8865	6246	3628	1011	8393	5776	3160	0544	8
7162	4541	1920	9299	6679	4059	1440	8821	6203	3585	0967	8350	5733	3116	0500	7
7118	4497	1876	9255	6635	4016	1396	8777	6159	3541	0923	8306	5689	3073	0457	6
7075	4453	1832	9212	6592	3972	1353	8734	6115	3497	0880	8262	5646	3029	0413	5
7031	4410	1789	9168	6548	3928	1309	8690	6072	3454	0836	8219	5602	2986	0370	4
6987	4366	1745	9124	6504	3885	1265	8647	6028	3410	0792	8175	5558	2942	0326	3
6944	4322	1701	9081	6461	3841	1222	8603	5984	3366	0749	8132	5515	2898	0282	2
6900	4279	1658	9037	6417	3797	1178	8559	5941	3323	0705	8088	5471	2855	0239	1
6856	4235	1614	8993	6373	3754	1134	8516	5897	3279	0662	8044	5428	2811	0195	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	"

Tangent Deg. 52

37 Deg. Sine

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9.784	9.784	9.784	9.784	9.785	9.785	9.785	9.785	9.785	9.785	9.786	9.786	9.786	9.786	9.786
0	4471	6117	7762	9406	1049	2691	4332	5972	7611	9249	0886	2522	4157	5791	7424
1	4499	6145	7789	9433	1076	2718	4359	5999	7638	9276	0913	2549	4184	5818	7451
2	4526	6172	7817	9461	1104	2746	4386	6026	7665	9303	0940	2576	4211	5845	7478
3	4554	6199	7844	9488	1131	2773	4414	6054	7693	9330	0967	2603	4238	5872	7505
4	4581	6227	7872	9516	1158	2800	4441	6081	7720	9358	0995	2631	4266	5900	7533
5	4608	6254	7899	9543	1186	2828	4468	6108	7747	9385	1022	2658	4293	5927	7560
6	4636	6282	7926	9570	1213	2855	4496	6136	7774	9412	1049	2685	4320	5954	7587
7	4663	6309	7954	9598	1240	2882	4523	6163	7802	9440	1077	2712	4347	5981	7614
8	4691	6337	7981	9625	1268	2910	4550	6190	7829	9467	1104	2740	4375	6008	7641
9	4718	6364	8009	9652	1295	2937	4578	6218	7856	9494	1131	2767	4402	6036	7669
10	4746	6391	8036	9680	1323	2964	4605	6245	7884	9522	1158	2794	4429	6063	7696
11	4773	6419	8064	9707	1350	2992	4632	6272	7911	9549	1186	2821	4456	6090	7723
12	4801	6446	8091	9735	1377	3019	4660	6300	7938	9576	1213	2849	4484	6117	7750
13	4828	6474	8118	9762	1405	3046	4687	6327	7966	9603	1240	2876	4511	6145	7777
14	4855	6501	8146	9789	1432	3074	4714	6354	7993	9631	1267	2903	4538	6172	7805
15	4883	6528	8173	9817	1459	3101	4742	6382	8020	9658	1295	2930	4565	6199	7832
16	4910	6556	8201	9844	1487	3128	4769	6409	8048	9685	1322	2958	4592	6226	7859
17	4938	6583	8228	9872	1514	3156	4796	6436	8075	9713	1349	2985	4620	6253	7886
18	4965	6611	8255	9899	1542	3183	4824	6463	8102	9740	1377	3012	4647	6281	7913
19	4993	6638	8283	9926	1569	3211	4851	6491	8129	9767	1404	3039	4674	6308	7941
20	5020	6666	8310	9954	1596	3238	4878	6518	8157	9794	1431	3067	4701	6335	7968
21	5047	6693	8338	9981	1624	3265	4906	6545	8184	9822	1458	3094	4729	6362	7995
22	5075	6720	8365	0008	1651	3293	4933	6573	8211	9849	1486	3121	4756	6390	8022
23	5102	6748	8392	0036	1678	3320	4960	6600	8239	9876	1513	3148	4783	6417	8050
24	5130	6775	8420	0063	1706	3347	4988	6627	8266	9904	1540	3176	4810	6444	8077
25	5157	6803	8447	0091	1733	3375	5015	6655	8293	9931	1567	3203	4838	6471	8104
26	5185	6830	8475	0118	1760	3402	5042	6682	8321	9958	1595	3230	4865	6498	8131
27	5212	6857	8502	0145	1788	3429	5070	6709	8348	9985	1622	3258	4892	6526	8158
28	5239	6885	8529	0173	1815	3457	5097	6737	8375	0013	1649	3285	4919	6553	8186
29	5267	6912	8557	0200	1843	3484	5124	6764	8402	0040	1676	3312	4947	6580	8213
30	5294	6940	8584	0228	1870	3511	5152	6791	8430	0067	1704	3339	4974	6607	8240
31	5322	6967	8612	0255	1897	3539	5179	6819	8457	0095	1731	3367	5001	6635	8267
32	5349	6995	8639	0282	1925	3566	5206	6846	8484	0122	1758	3394	5028	6662	8294
33	5377	7022	8666	0310	1952	3593	5234	6873	8512	0149	1786	3421	5055	6689	8322
34	5404	7049	8694	0337	1979	3621	5261	6901	8539	0176	1813	3448	5083	6716	8349
35	5431	7077	8721	0364	2007	3648	5288	6928	8566	0204	1840	3476	5110	6743	8376
36	5459	7104	8749	0392	2034	3675	5316	6955	8594	0231	1867	3503	5137	6771	8403
37	5486	7132	8776	0419	2062	3703	5343	6982	8621	0258	1895	3530	5164	6798	8430
38	5514	7159	8803	0447	2089	3730	5370	7010	8648	0286	1922	3557	5192	6825	8458
39	5541	7186	8831	0474	2116	3758	5398	7037	8675	0313	1949	3585	5219	6852	8485
40	5569	7214	8858	0501	2144	3785	5425	7064	8703	0340	1976	3612	5246	6880	8512
41	5596	7241	8885	0529	2171	3812	5452	7092	8730	0367	2004	3639	5273	6907	8539
42	5624	7269	8913	0556	2198	3840	5480	7119	8757	0395	2031	3666	5301	6934	8566
43	5651	7296	8940	0583	2226	3867	5507	7146	8785	0422	2058	3693	5328	6961	8594
44	5678	7324	8968	0611	2253	3894	5534	7174	8812	0449	2085	3721	5355	6988	8621
45	5706	7351	8995	0638	2280	3922	5562	7201	8839	0476	2113	3748	5382	7016	8648
46	5733	7378	9022	0666	2308	3949	5589	7228	8867	0504	2140	3775	5410	7043	8675
47	5761	7406	9050	0693	2335	3976	5616	7256	8894	0531	2167	3802	5437	7070	8702
48	5788	7433	9077	0720	2362	4004	5644	7283	8921	0558	2195	3830	5464	7097	8729
49	5815	7461	9105	0748	2390	4031	5671	7310	8948	0586	2222	3857	5491	7124	8757
50	5843	7488	9132	0775	2417	4058	5698	7338	8976	0613	2249	3884	5518	7152	8784
51	5870	7515	9159	0802	2445	4086	5726	7365	9003	0640	2276	3911	5546	7179	8811
52	5898	7543	9187	0830	2472	4113	5753	7392	9030	0667	2304	3939	5573	7206	8838
53	5925	7570	9214	0857	2499	4140	5780	7419	9058	0695	2331	3966	5600	7233	8865
54	5953	7598	9242	0885	2527	4168	5808	7447	9085	0722	2358	3993	5627	7260	8893
55	5980	7625	9269	0912	2554	4195	5835	7474	9112	0749	2385	4020	5655	7288	8920
56	6007	7652	9296	0939	2581	4222	5862	7501	9139	0777	2413	4048	5682	7315	8947
57	6035	7680	9324	0967	2609	4250	5890	7529	9167	0804	2440	4075	5709	7342	8974
58	6062	7707	9351	0994	2636	4277	5917	7556	9194	0831	2467	4102	5736	7369	9001
59	6090	7735	9379	1021	2663	4304	5944	7583	9221	0858	2494	4129	5763	7397	9029
60	6117	7762	9406	1049	2691	4332	5972	7611	9249	0886	2522	4157	5791	7424	9056
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Sine Deg. 52

37 Deg. Co-Sine

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9.899	9.899	9.899	9.899	9.899	9.898	9.898	9.898	9.898	9.898	9.898	9.898	9.898	9.898	9.898
″															
0	4667	3697	2727	1756	0784	9812	8840	7867	6893	5919	4944	3968	2992	2015	1038
1	4650	3681	2710	1740	0768	9796	8824	7850	6877	5902	4927	3952	2976	1999	1022
2	4634	3665	2694	1723	0752	9780	8807	7834	6860	5886	4911	3936	2959	1983	1005
3	4618	3648	2678	1707	0736	9764	8791	7818	6844	5870	4895	3919	2943	1966	0989
4	4602	3632	2662	1691	0720	9748	8775	7802	6828	5854	4879	3903	2927	1950	0973
5	4586	3616	2646	1675	0703	9731	8759	7785	6812	5837	4862	3887	2911	1934	0957
6	4570	3600	2630	1659	0687	9715	8742	7769	6795	5821	4846	3870	2894	1918	0940
7	4553	3584	2613	1642	0671	9699	8726	7753	6779	5805	4830	3854	2878	1901	0924
8	4537	3568	2597	1626	0655	9683	8710	7737	6763	5789	4814	3838	2862	1885	0908
9	4521	3551	2581	1610	0639	9667	8694	7721	6747	5772	4797	3822	2845	1869	0891
10	4505	3535	2565	1594	0622	9650	8678	7704	6731	5756	4781	3805	2829	1852	0875
11	4489	3519	2549	1578	0606	9634	8661	7688	6714	5740	4765	3789	2813	1836	0859
12	4473	3503	2533	1562	0590	9618	8645	7672	6698	5724	4749	3773	2797	1820	0842
13	4457	3487	2516	1545	0574	9602	8629	7656	6682	5707	4732	3757	2780	1804	0826
14	4440	3471	2500	1529	0558	9585	8613	7639	6666	5691	4716	3740	2764	1787	0810
15	4424	3454	2484	1513	0541	9569	8597	7623	6649	5675	4700	3724	2748	1771	0794
16	4408	3438	2468	1497	0525	9553	8580	7607	6633	5659	4684	3708	2732	1755	0777
17	4392	3422	2452	1481	0509	9537	8564	7591	6617	5642	4667	3692	2715	1738	0761
18	4376	3406	2435	1464	0493	9521	8548	7575	6601	5626	4651	3675	2699	1722	0745
19	4360	3390	2419	1448	0477	9504	8532	7558	6584	5610	4635	3659	2683	1706	0728
20	4343	3374	2403	1432	0460	9488	8515	7542	6568	5594	4618	3643	2666	1690	0712
21	4327	3357	2387	1416	0444	9472	8499	7526	6552	5577	4602	3626	2650	1673	0696
22	4311	3341	2371	1400	0428	9456	8483	7510	6536	5561	4586	3610	2634	1657	0680
23	4295	3325	2355	1383	0412	9440	8467	7493	6519	5545	4570	3594	2618	1641	0663
24	4279	3309	2338	1367	0396	9423	8451	7477	6503	5529	4553	3578	2601	1624	0647
25	4263	3293	2322	1351	0379	9407	8434	7461	6487	5512	4537	3561	2585	1608	0631
26	4246	3277	2306	1335	0363	9391	8418	7445	6471	5496	4521	3545	2569	1592	0614
27	4230	3260	2290	1319	0347	9375	8402	7428	6454	5480	4505	3529	2553	1576	0598
28	4214	3244	2274	1303	0331	9359	8386	7412	6438	5464	4488	3513	2536	1559	0582
29	4198	3228	2257	1286	0315	9342	8369	7396	6422	5447	4472	3496	2520	1543	0565
30	4182	3212	2241	1270	0298	9326	8353	7380	6406	5431	4456	3480	2504	1527	0549
31	4166	3196	2225	1254	0282	9310	8337	7364	6390	5415	4440	3464	2487	1510	0533
32	4149	3179	2209	1238	0266	9294	8321	7347	6373	5399	4423	3448	2471	1494	0517
33	4133	3163	2193	1222	0250	9278	8305	7331	6357	5382	4407	3431	2455	1478	0500
34	4117	3147	2177	1205	0234	9261	8288	7315	6341	5366	4391	3415	2439	1462	0484
35	4101	3131	2160	1189	0217	9245	8272	7299	6325	5350	4375	3399	2422	1445	0468
36	4085	3115	2144	1173	0201	9229	8256	7282	6308	5334	4358	3382	2406	1429	0451
37	4069	3099	2128	1157	0185	9213	8240	7266	6292	5317	4342	3366	2390	1413	0435
38	4052	3082	2112	1141	0169	9196	8224	7250	6276	5301	4326	3350	2373	1396	0419
39	4036	3066	2096	1124	0153	9180	8207	7234	6260	5285	4310	3334	2357	1380	0402
40	4020	3050	2079	1108	0136	9164	8191	7218	6243	5269	4293	3317	2341	1364	0386
41	4004	3034	2063	1092	0120	9148	8175	7201	6227	5252	4277	3301	2325	1348	0370
42	3988	3018	2047	1076	0104	9132	8159	7185	6211	5236	4261	3285	2308	1331	0354
43	3972	3002	2031	1060	0088	9115	8142	7169	6195	5220	4245	3269	2292	1315	0337
44	3956	2985	2015	1043	0072	9099	8126	7153	6178	5204	4228	3252	2276	1299	0321
45	3939	2969	1999	1027	0055	9083	8110	7136	6162	5187	4212	3236	2259	1282	0305
46	3923	2953	1982	1011	0039	9067	8094	7120	6146	5171	4196	3220	2243	1266	0288
47	3907	2937	1966	0995	0023	9051	8078	7104	6130	5155	4179	3203	2227	1250	0272
48	3891	2921	1950	0979	0007	9034	8061	7088	6113	5139	4163	3187	2211	1233	0256
49	3875	2905	1934	0963	9991	9018	8045	7071	6097	5122	4147	3171	2194	1217	0239
50	3859	2888	1918	0946	9974	9002	8029	7055	6081	5106	4131	3155	2178	1201	0223
51	3842	2872	1901	0930	9958	8986	8013	7039	6065	5090	4114	3138	2162	1185	0207
52	3826	2856	1885	0914	9942	8970	7996	7023	6048	5074	4098	3122	2146	1168	0191
53	3810	2840	1869	0898	9926	8953	7980	7006	6032	5057	4082	3106	2129	1152	0174
54	3794	2824	1853	0882	9910	8937	7964	6990	6016	5041	4066	3090	2113	1136	0158
55	3778	2808	1837	0865	9893	8921	7948	6974	6000	5025	4049	3073	2097	1119	0142
56	3762	2791	1821	0849	9877	8905	7932	6958	5983	5009	4033	3057	2080	1103	0125
57	3745	2775	1804	0833	9861	8888	7915	6942	5967	4992	4017	3041	2064	1087	0109
58	3729	2759	1788	0817	9845	8872	7899	6925	5951	4976	4001	3025	2048	1071	0093
59	3713	2743	1772	0801	9829	8856	7883	6909	5935	4960	3984	3008	2032	1054	0076
60	3697	2727	1756	0784	9812	8840	7867	6893	5919	4944	3968	2992	2015	1038	0060
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Sine Deg. 52

37 Deg. Tangent

″	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9. 884	9. 885	9. 885	9. 885	9. 886	9. 886	9. 886	9. 886	9. 887	9. 887	9. 887	9. 887	9. 888	9. 888	9. 888
0	9805	2420	5035	7650	0264	2878	5492	8105	0718	3330	5942	8554	1165	3775	6386
1	9848	2464	5079	7694	0308	2922	5535	8149	0761	3374	5986	8597	1208	3819	6429
2	9892	2507	5123	7737	0352	2966	5579	8192	0805	3417	6029	8641	1252	3862	6473
3	9936	2551	5166	7781	0395	3009	5623	8236	0848	3461	6073	8684	1295	3906	6516
4	9979	2595	5210	7824	0439	3053	5666	8279	0892	3504	6116	8728	1339	3949	6560
5	0023	2638	5253	7868	0482	3096	5710	8323	0935	3548	6160	8771	1382	3993	6603
6	0066	2682	5297	7912	0526	3140	5753	8366	0979	3591	6203	8815	1426	4036	6647
7	0110	2725	5340	7955	0569	3183	5797	8410	1023	3635	6247	8858	1469	4080	6690
8	0153	2769	5384	7999	0613	3227	5840	8453	1066	3678	6290	8902	1513	4123	6734
9	0197	2813	5428	8042	0657	3270	5884	8497	1110	3722	6334	8945	1556	4167	6777
10	0241	2856	5471	8086	0700	3314	5927	8541	1153	3765	6377	8989	1600	4211	6821
11	0284	2900	5515	8129	0744	3358	5971	8584	1197	3809	6421	9032	1643	4254	6864
12	0328	2943	5558	8173	0787	3401	6015	8628	1240	3853	6464	9076	1687	4298	6908
13	0371	2987	5602	8217	0831	3445	6058	8671	1284	3896	6508	9119	1730	4341	6951
14	0415	3031	5646	8260	0874	3488	6102	8715	1327	3940	6551	9163	1774	4385	6995
15	0459	3074	5689	8304	0918	3532	6145	8758	1371	3983	6595	9206	1817	4428	7038
16	0502	3118	5733	8347	0962	3575	6189	8802	1414	4027	6638	9250	1861	4472	7082
17	0546	3161	5776	8391	1005	3619	6232	8845	1458	4070	6682	9293	1904	4515	7125
18	0589	3205	5820	8435	1049	3663	6276	8889	1502	4114	6726	9337	1948	4559	7169
19	0633	3248	5863	8478	1092	3706	6319	8932	1545	4157	6769	9380	1991	4602	7212
20	0677	3292	5907	8522	1136	3750	6363	8976	1589	4201	6813	9424	2035	4646	7256
21	0720	3336	5951	8565	1179	3793	6407	9020	1632	4244	6856	9468	2078	4689	7299
22	0764	3379	5994	8609	1223	3837	6450	9063	1676	4288	6900	9511	2122	4733	7343
23	0807	3423	6038	8652	1267	3880	6494	9107	1719	4331	6943	9555	2166	4776	7386
24	0851	3466	6081	8696	1310	3924	6537	9150	1763	4375	6987	9598	2209	4820	7430
25	0895	3510	6125	8740	1354	3967	6581	9194	1806	4418	7030	9642	2253	4863	7473
26	0938	3554	6169	8783	1397	4011	6624	9237	1850	4462	7074	9685	2296	4907	7517
27	0982	3597	6212	8827	1441	4055	6668	9281	1893	4506	7117	9729	2340	4950	7560
28	1025	3641	6256	8870	1484	4098	6711	9324	1937	4549	7161	9772	2383	4994	7604
29	1069	3684	6299	8914	1528	4142	6755	9368	1980	4593	7204	9816	2427	5037	7647
30	1113	3728	6343	8957	1572	4185	6799	9411	2024	4636	7248	9859	2470	5081	7691
31	1156	3771	6386	9001	1615	4229	6842	9455	2068	4680	7291	9903	2514	5124	7734
32	1200	3815	6430	9045	1659	4272	6886	9499	2111	4723	7335	9946	2557	5168	7778
33	1243	3859	6474	9088	1702	4316	6929	9542	2155	4767	7378	9990	2601	5211	782:
34	1287	3902	6517	9132	1746	4359	6973	9586	2198	4810	7422	0033	2644	5255	7865
35	1331	3946	6561	9175	1789	4403	7016	9629	2242	4854	7465	0077	2688	5298	7908
36	1374	3989	6604	9219	1833	4447	7060	9673	2285	4897	7509	0120	2731	5342	7952
37	1418	4033	6648	9262	1876	4490	7103	9716	2329	4941	7553	0164	2775	5385	7995
38	1461	4077	6691	9306	1920	4534	7147	9760	2372	4984	7596	0207	2818	5429	8039
39	1505	4120	6735	9350	1964	4577	7191	9803	2416	5028	7640	0251	2862	5472	8082
40	1548	4164	6779	9393	2007	4621	7234	9847	2459	5071	7683	0294	2905	5516	8126
41	1592	4207	6822	9437	2051	4664	7278	9890	2503	5115	7727	0338	2949	5559	8169
42	1636	4251	6866	9480	2094	4708	7321	9934	2546	5159	7770	0381	2992	5603	8213
43	1679	4295	6909	9524	2138	4751	7365	9978	2590	5202	7814	0425	3036	5646	8256
44	1723	4338	6953	9567	2181	4795	7408	0021	2634	5246	7857	0468	3079	5690	8300
45	1766	4382	6997	9611	2225	4839	7452	0065	2677	5289	7901	0512	3123	5733	8343
46	1810	4425	7040	9655	2269	4882	7495	0108	2721	5333	7944	0555	3166	5777	8387
47	1854	4469	7084	9698	2312	4926	7539	0152	2764	5376	7988	0599	3210	5820	8430
48	1897	4512	7127	9742	2356	4969	7582	0195	2808	5420	8031	0643	3253	5864	8474
49	1941	4556	7171	9785	2399	5013	7626	0239	2851	5463	8075	0686	3297	5907	8517
50	1984	4600	7214	9829	2443	5056	7670	0282	2895	5507	8118	0730	3340	5951	8561
51	2028	4643	7258	9872	2486	5100	7713	0326	2938	5550	8162	0773	3384	5994	8604
52	2072	4687	7302	9916	2530	5143	7757	0369	2982	5594	8205	0817	3427	6038	8648
53	2115	4730	7345	9960	2573	5187	7800	0413	3025	5637	8249	0860	3471	6081	8691
54	2159	4774	7389	0003	2617	5231	7844	0457	3069	5681	8292	0904	3514	6125	8735
55	2202	4818	7432	0047	2661	5274	7887	0500	3112	5724	8336	0947	3558	6168	8778
56	2246	4861	7476	0090	2704	5318	7931	0544	3156	5768	8379	0991	3601	6212	8822
57	2290	4905	7519	0134	2748	5361	7974	0587	3200	5811	8423	1034	3645	6255	8865
58	2333	4948	7563	0177	2791	5405	8018	0631	3243	5855	8467	1078	3688	6299	8909
59	2377	4992	7607	0221	2835	5448	8062	0674	3287	5899	8510	1121	3732	6342	8952
60	2420	5035	7650	0264	2878	5492	8105	0718	3330	5942	8554	1165	3775	6386	8996
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Tangent Deg. 52

37 Deg. Co-Tangent

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	″
10. 115	10. 114	10. 114	10. 114	10. 113	10. 113	10. 113	10. 113	10. 112	10. 112	10. 112	10. 112	10. 111	10. 111	10. 111	
0195	7580	4965	2350	9736	7122	4508	1895	9282	6670	4058	1446	8835	6225	3614	60
0152	7536	4921	2306	9692	7078	4465	1851	9239	6626	4014	1403	8792	6181	3571	59
0108	7493	4877	2263	9648	7034	4421	1808	9195	6583	3971	1359	8748	6138	3527	58
0064	7449	4834	2219	9605	6991	4377	1764	9152	6539	3927	1316	8705	6094	3484	57
0021	7405	4790	2176	9561	6947	4334	1721	9108	6496	3884	1272	8661	6051	3440	56
9977	7362	4747	2132	9518	6904	4290	1677	9065	6452	3840	1229	8618	6007	3397	55
9934	7318	4703	2088	9474	6860	4247	1634	9021	6409	3797	1185	8574	5964	3353	54
9890	7275	4660	2045	9431	6817	4203	1590	8977	6365	3753	1142	8531	5920	3310	53
9847	7231	4616	2001	9387	6773	4160	1547	8934	6322	3710	1098	8487	5877	3266	52
9803	7187	4572	1958	9343	6730	4116	1503	8890	6278	3666	1055	8444	5833	3223	51
9759	7144	4529	1914	9300	6686	4073	1459	8847	6235	3623	1011	8400	5789	3179	50
9716	7100	4485	1871	9256	6642	4029	1416	8803	6191	3579	0968	8357	5746	3136	49
9672	7057	4442	1827	9213	6599	3985	1372	8760	6147	3536	0924	8313	5702	3092	48
9629	7013	4398	1783	9169	6555	3942	1329	8716	6104	3492	0881	8270	5659	3049	47
9585	6969	4354	1740	9126	6512	3898	1285	8673	6060	3449	0837	8226	5615	3005	46
9541	6926	4311	1696	9082	6468	3855	1242	8629	6017	3405	0794	8183	5572	2962	45
9498	6882	4267	1653	9038	6425	3811	1198	8586	5973	3362	0750	8139	5528	2918	44
9454	6839	4224	1609	8995	6381	3768	1155	8542	5930	3318	0707	8096	5485	2875	43
9411	6795	4180	1565	8951	6337	3724	1111	8498	5886	3274	0663	8052	5441	2831	42
9367	6752	4137	1522	8908	6294	3681	1068	8455	5843	3231	0620	8009	5398	2788	41
9323	6708	4093	1478	8864	6250	3637	1024	8411	5799	3187	0576	7965	5354	2744	40
9280	6664	4049	1435	8821	6207	3593	0980	8368	5756	3144	0532	7922	5311	2701	39
9236	6621	4006	1391	8777	6163	3550	0937	8324	5712	3100	0489	7878	5267	2657	38
9193	6577	3962	1348	8733	6120	3506	0893	8281	5669	3057	0445	7834	5224	2614	37
9149	6534	3919	1304	8690	6076	3463	0850	8237	5625	3013	0402	7791	5180	2570	36
9105	6490	3875	1260	8646	6033	3419	0806	8194	5582	2970	0358	7747	5137	2527	35
9062	6446	3831	1217	8603	5989	3376	0763	8150	5538	2926	0315	7704	5093	2483	34
9018	6403	3788	1173	8559	5945	3332	0719	8107	5494	2883	0271	7660	5050	2440	33
8975	6359	3744	1130	8516	5902	3289	0676	8063	5451	2839	0228	7617	5006	2396	32
8931	6316	3701	1086	8472	5858	3245	0632	8020	5407	2796	0184	7573	4963	2353	31
8887	6272	3657	1043	8428	5815	3201	0589	7976	5364	2752	0141	7530	4919	2309	30
8844	6229	3614	0999	8385	5771	3158	0545	7932	5320	2709	0097	7486	4876	2266	29
8800	6185	3570	0955	8341	5728	3114	0501	7889	5277	2665	0054	7443	4832	2222	28
8757	6141	3526	0912	8298	5684	3071	0458	7845	5233	2622	0010	7399	4789	2179	27
8713	6098	3483	0868	8254	5641	3027	0414	7802	5190	2578	9967	7356	4745	2135	26
8669	6054	3439	0825	8211	5597	2984	0371	7758	5146	2535	9923	7312	4702	2092	25
8626	6011	3396	0781	8167	5553	2940	0327	7715	5103	2491	9880	7269	4658	2048	24
8582	5967	3352	0738	8124	5510	2897	0284	7671	5059	2447	9836	7225	4615	2005	23
8539	5923	3309	0694	8080	5466	2853	0240	7628	5016	2404	9793	7182	4571	1961	22
8495	5880	3265	0650	8036	5423	2809	0197	7584	4972	2360	9749	7138	4528	1918	21
8452	5836	3221	0607	7993	5379	2766	0153	7541	4929	2317	9706	7095	4484	1874	20
8408	5793	3178	0563	7949	5336	2722	0110	7497	4885	2273	9662	7051	4441	1831	19
8364	5749	3134	0520	7906	5292	2679	0066	7454	4841	2230	9619	7008	4397	1787	18
8321	5705	3091	0476	7862	5249	2635	0022	7410	4798	2186	9575	6964	4354	1744	17
8277	5662	3047	0433	7819	5205	2592	9979	7366	4754	2143	9532	6921	4310	1700	16
8234	5618	3003	0389	7775	5161	2548	9935	7323	4711	2099	9488	6877	4267	1657	15
8190	5575	2960	0345	7731	5118	2505	9892	7279	4667	2056	9445	6834	4223	1613	14
8146	5531	2916	0302	7688	5074	2461	9848	7236	4624	2012	9401	6790	4180	1570	13
8103	5488	2873	0258	7644	5031	2418	9805	7192	4580	1969	9357	6747	4136	1526	12
8059	5444	2829	0215	7601	4987	2374	9761	7149	4537	1925	9314	6703	4093	1483	11
8016	5400	2786	0171	7557	4944	2330	9718	7105	4493	1882	9270	6660	4049	1439	10
7972	5357	2742	0128	7514	4900	2287	9674	7062	4450	1838	9227	6616	4006	1396	9
7928	5313	2698	0084	7470	4857	2243	9631	7018	4406	1795	9183	6573	3962	1352	8
7885	5270	2655	0040	7427	4813	2200	9587	6975	4363	1751	9140	6529	3919	1309	7
7841	5226	2611	9997	7383	4769	2156	9543	6931	4319	1708	9096	6486	3875	1265	6
7798	5182	2568	9953	7339	4726	2113	9500	6888	4276	1664	9053	6442	3832	1222	5
7754	5139	2524	9910	7296	4682	2069	9456	6844	4232	1621	9009	6399	3788	1178	4
7710	5095	2481	9866	7252	4639	2026	9413	6800	4189	1577	8966	6355	3745	1135	3
7667	5052	2437	9823	7209	4595	1982	9369	6757	4145	1533	8922	6312	3701	1091	2
7623	5008	2393	9779	7165	4552	1938	9326	6713	4101	1490	8879	6268	3658	1048	1
7580	4965	2350	9736	7122	4508	1895	9282	6670	4058	1446	8835	6225	3614	1004	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Tangent Deg. 52

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	9.786	9.787	9.787	9.787	9.787	9.787	9.787	9.788	9.788	9.788	9.788	9.788	9.788	9.789	9.789
0	9056	0687	2317	3946	5574	7202	8828	0453	2077	3701	5323	6944	8565	0184	1802
1	9083	0714	2344	3973	5601	7229	8855	0480	2104	3728	5350	6971	8592	0211	1829
2	9110	0741	2371	4000	5629	7256	8882	0507	2131	3755	5377	6998	8619	0238	1856
3	9137	0768	2399	4028	5656	7283	8909	0534	2158	3782	5404	7025	8646	0265	1883
4	9165	0796	2426	4055	5683	7310	8936	0561	2185	3809	5431	7052	8673	0292	1910
5	9192	0823	2453	4082	5710	7337	8963	0588	2213	3836	5458	7079	8700	0319	1937
6	9219	0850	2480	4109	5737	7364	8990	0615	2240	3863	5485	7106	8727	0346	1964
7	9246	0877	2507	4136	5764	7391	9017	0643	2267	3890	5512	7133	8754	0373	1991
8	9273	0904	2534	4163	5791	7418	9045	0670	2294	3917	5539	7160	8781	0400	2018
9	9301	0932	2561	4190	5818	7446	9072	0697	2321	3944	5566	7187	8807	0427	2045
10	9328	0959	2589	4218	5846	7473	9099	0724	2348	3971	5593	7214	8834	0454	2072
11	9355	0986	2616	4245	5873	7500	9126	0751	2375	3998	5620	7241	8861	0481	2099
12	9382	1013	2643	4272	5900	7527	9153	0778	2402	4025	5647	7268	8888	0508	2126
13	9409	1040	2670	4299	5927	7554	9180	0805	2429	4052	5674	7295	8915	0535	2153
14	9437	1067	2697	4326	5954	7581	9207	0832	2456	4079	5701	7322	8942	0562	2180
15	9464	1095	2724	4353	5981	7608	9234	0859	2483	4106	5728	7349	8969	0589	2207
16	9491	1122	2752	4380	6008	7635	9261	0886	2510	4133	5755	7376	8996	0616	2234
17	9518	1149	2779	4408	6035	7662	9288	0913	2537	4160	5782	7403	9023	0643	2261
18	9545	1176	2806	4435	6063	7690	9315	0940	2564	4187	5809	7430	9050	0670	2288
19	9572	1203	2833	4462	6090	7717	9343	0967	2591	4214	5836	7457	9077	0697	2315
20	9600	1230	2860	4489	6117	7744	9370	0995	2618	4241	5863	7484	9104	0723	2342
21	9627	1258	2887	4516	6144	7771	9397	1022	2645	4268	5890	7511	9131	0750	2369
22	9654	1285	2915	4543	6171	7798	9424	1049	2673	4295	5917	7538	9158	0777	2396
23	9681	1312	2942	4570	6198	7825	9451	1076	2700	4323	5944	7565	9185	0804	2422
24	9708	1339	2969	4598	6225	7852	9478	1103	2727	4350	5971	7592	9212	0831	2449
25	9736	1366	2996	4625	6252	7879	9505	1130	2754	4377	5999	7619	9239	0858	2476
26	9763	1393	3023	4652	6280	7906	9532	1157	2781	4404	6026	7646	9266	0885	2503
27	9790	1421	3050	4679	6307	7933	9559	1184	2808	4431	6053	7673	9293	0912	2530
28	9817	1448	3077	4706	6334	7961	9586	1211	2835	4458	6080	7700	9320	0939	2557
29	9844	1475	3105	4733	6361	7988	9613	1238	2862	4485	6107	7727	9347	0966	2584
30	9872	1502	3132	4760	6388	8015	9640	1265	2889	4512	6134	7754	9374	0993	2611
31	9899	1529	3159	4788	6415	8042	9668	1292	2916	4539	6161	7781	9401	1020	2638
32	9926	1556	3186	4815	6442	8069	9695	1319	2943	4566	6188	7808	9428	1047	2665
33	9953	1584	3213	4842	6469	8096	9722	1346	2970	4593	6215	7835	9455	1074	2692
34	9980	1611	3240	4869	6497	8123	9749	1374	2997	4620	6242	7862	9482	1101	2719
35	0007	1638	3268	4896	6524	8150	9776	1401	3024	4647	6269	7889	9509	1128	2746
36	0035	1665	3295	4923	6551	8177	9803	1428	3051	4674	6296	7916	9536	1155	2773
37	0062	1692	3322	4950	6578	8204	9830	1455	3078	4701	6323	7944	9563	1182	2800
38	0089	1719	3349	4977	6605	8232	9857	1482	3105	4728	6350	7971	9590	1209	2827
39	0116	1747	3376	5005	6632	8259	9884	1509	3132	4755	6377	7998	9617	1236	2854
40	0143	1774	3403	5032	6659	8286	9911	1536	3160	4782	6404	8025	9644	1263	2881
41	0171	1801	3430	5059	6686	8313	9938	1563	3187	4809	6431	8052	9671	1290	2908
42	0198	1828	3458	5086	6713	8340	9966	1590	3214	4836	6458	8079	9698	1317	2935
43	0225	1855	3485	5113	6741	8367	9993	1617	3241	4863	6485	8106	9725	1344	2962
44	0252	1882	3512	5140	6768	8394	0020	1644	3268	4890	6512	8133	9752	1371	2989
45	0279	1910	3539	5167	6795	8421	0047	1671	3295	4917	6539	8160	9779	1398	3016
46	0306	1937	3566	5195	6822	8448	0074	1698	3322	4944	6566	8187	9806	1425	3042
47	0334	1964	3593	5222	6849	8475	0101	1725	3349	4971	6593	8214	9833	1452	3069
48	0361	1991	3620	5249	6876	8503	0128	1752	3376	4998	6620	8241	9860	1479	3096
49	0388	2018	3648	5276	6903	8530	0155	1780	3403	5025	6647	8268	9887	1506	3123
50	0415	2045	3675	5303	6930	8557	0182	1807	3430	5053	6674	8295	9914	1533	3150
51	0442	2073	3702	5330	6958	8584	0209	1834	3457	5080	6701	8322	9941	1560	3177
52	0470	2100	3729	5357	6985	8611	0236	1861	3484	5107	6728	8349	9968	1587	3204
53	0497	2127	3756	5384	7012	8638	0263	1888	3511	5134	6755	8376	9995	1614	3231
54	0524	2154	3783	5412	7039	8665	0291	1915	3538	5161	6782	8403	0022	1641	3258
55	0551	2181	3810	5439	7066	8692	0318	1942	3565	5188	6809	8430	0049	1668	3285
56	9578	2208	3838	5466	7093	8719	0345	1969	3592	5215	6836	8457	0076	1694	3312
57	0605	2236	3865	5493	7120	8746	0372	1996	3619	5242	6863	8484	0103	1721	3339
58	0633	2263	3892	5520	7147	8774	0399	2023	3646	5269	6890	8511	0130	1748	3366
59	0660	2290	3919	5547	7174	8801	0426	2050	3673	5296	6917	8538	0157	1775	3393
60	0687	2317	3946	5574	7202	8828	0453	2077	3701	5323	6944	8565	0184	1802	3420
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
	9.898	9.897	9.897	9.897	9.897	9.897	9.897	9.897	9.897	9.897	9.897	9.896	9.896	9.896	9.896	″
0	0060	9082	8103	7123	6143	5162	4181	3199	2216	1233	0249	9265	8280	7294	6308	60
1	0044	9065	8086	7107	6126	5146	4164	3182	2200	1216	0233	9248	8263	7278	6292	59
2	0028	9049	8070	7090	6110	5129	4148	3166	2183	1200	0216	9232	8247	7261	6275	58
3	0011	9033	8054	7074	6094	5113	4131	3149	2167	1184	0200	9216	8231	7245	6259	57
4	9995	9016	8037	7058	6077	5097	4115	3133	2150	1167	0183	9199	8214	7229	6242	56
5	9979	9000	8021	7041	6061	5080	4099	3117	2134	1151	0167	9183	8198	7212	6226	55
6	9962	8984	8005	7025	6045	5064	4082	3100	2118	1134	0151	9166	8181	7196	6210	54
7	9946	8967	7988	7009	6028	5048	4066	3084	2101	1118	0134	9150	8165	7179	6193	53
8	9930	8951	7972	6992	6012	5031	4050	3068	2085	1102	0118	9133	8148	7163	6177	52
9	9913	8935	7956	6976	5996	5015	4033	3051	2069	1085	0101	9117	8132	7146	6160	51
10	9897	8919	7939	6960	5979	4998	4017	3035	2052	1069	0085	9101	8116	7130	6144	50
11	9881	8902	7923	6943	5963	4982	4001	3018	2036	1053	0069	9084	8099	7114	6127	49
12	9864	8886	7907	6927	5947	4966	3984	3002	2019	1036	0052	9068	8083	7097	6111	48
13	9848	8870	7890	6911	5930	4949	3968	2986	2003	1020	0036	9051	8066	7081	6094	47
14	9832	8853	7874	6894	5914	4933	3951	2969	1987	1003	0019	9035	8050	7064	6078	46
15	9816	8837	7858	6878	5898	4917	3935	2953	1970	0987	0003	9019	8033	7048	6062	45
16	9799	8821	7841	6862	5881	4900	3919	2937	1954	0971	9987	9002	8017	7031	6045	44
17	9783	8804	7825	6845	5865	4884	3902	2920	1938	0954	9970	8986	8001	7015	6029	43
18	9767	8788	7809	6829	5849	4868	3886	2904	1921	0938	9954	8969	7984	6998	6012	42
19	9750	8772	7792	6813	5832	4851	3870	2887	1905	0921	9937	8953	7968	6982	5996	41
20	9734	8755	7776	6796	5816	4835	3853	2871	1888	0905	9921	8936	7951	6966	5979	40
21	9718	8739	7760	6780	5800	4819	3837	2855	1872	0889	9905	8920	7935	6949	5963	39
22	9701	8723	7743	6764	5783	4802	3821	2838	1856	0872	9888	8904	7919	6933	5946	38
23	9685	8706	7727	6747	5767	4786	3804	2822	1839	0856	9872	8887	7902	6916	5930	37
24	9669	8690	7711	6731	5751	4769	3788	2806	1823	0839	9855	8871	7886	6900	5914	36
25	9653	8674	7695	6715	5734	4753	3771	2789	1806	0823	9839	8854	7869	6883	5897	35
26	9636	8657	7678	6698	5718	4737	3755	2773	1790	0807	9823	8838	7853	6867	5881	34
27	9620	8641	7662	6682	5701	4720	3739	2756	1774	0790	9806	8822	7836	6851	5864	33
28	9604	8625	7646	6666	5685	4704	3722	2740	1757	0774	9790	8805	7820	6834	5848	32
29	9587	8609	7629	6649	5669	4688	3706	2724	1741	0757	9773	8789	7804	6818	5831	31
30	9571	8592	7613	6633	5652	4671	3690	2707	1724	0741	9757	8772	7787	6801	5815	30
31	9555	8576	7597	6617	5636	4655	3673	2691	1708	0725	9741	8756	7771	6785	5798	29
32	9538	8560	7580	6600	5620	4639	3657	2675	1692	0708	9724	8740	7754	6768	5782	28
33	9522	8543	7564	6584	5603	4622	3641	2658	1675	0692	9708	8723	7738	6752	5766	27
34	9506	8527	7548	6568	5587	4606	3624	2642	1659	0675	9691	8707	7721	6736	5749	26
35	9489	8511	7531	6551	5571	4590	3608	2625	1643	0659	9675	8690	7705	6719	5733	25
36	9473	8494	7515	6535	5554	4573	3591	2609	1626	0643	9659	8674	7689	6703	5716	24
37	9457	8478	7499	6519	5538	4557	3575	2593	1610	0626	9642	8657	7672	6686	5700	23
38	9441	8462	7482	6502	5522	4540	3559	2576	1593	0610	9626	8641	7656	6670	5683	22
39	9424	8445	7466	6486	5505	4524	3542	2560	1577	0593	9609	8625	7639	6653	5667	21
40	9408	8429	7450	6470	5489	4508	3526	2544	1561	0577	9593	8608	7623	6637	5650	20
41	9392	8413	7433	6453	5473	4491	3510	2527	1544	0561	9577	8592	7606	6620	5634	19
42	9375	8396	7417	6437	5456	4475	3493	2511	1528	0544	9560	8575	7590	6604	5618	18
43	9359	8380	7401	6421	5440	4459	3477	2494	1511	0528	9544	8559	7574	6588	5601	17
44	9343	8364	7384	6404	5424	4442	3461	2478	1495	0511	9527	8543	7557	6571	5585	16
45	9326	8347	7368	6388	5407	4426	3444	2462	1479	0495	9511	8526	7541	6555	5568	15
46	9310	8331	7352	6372	5391	4410	3428	2445	1462	0479	9494	8510	7524	6538	5552	14
47	9294	8315	7335	6355	5375	4393	3411	2429	1446	0462	9478	8493	7508	6522	5535	13
48	9277	8298	7319	6339	5358	4377	3395	2413	1430	0446	9462	8477	7491	6505	5519	12
49	9261	8282	7303	6323	5342	4361	3379	2396	1413	0429	9445	8460	7475	6489	5502	11
50	9245	8266	7286	6306	5325	4344	3362	2380	1397	0413	9429	8444	7459	6473	5486	10
51	9228	8250	7270	6290	5309	4328	3346	2363	1380	0397	9412	8428	7442	6456	5469	9
52	9212	8233	7254	6274	5293	4311	3330	2347	1364	0380	9396	8411	7426	6440	5453	8
53	9196	8217	7237	6257	5276	4295	3313	2331	1348	0364	9380	8395	7409	6423	5437	7
54	9180	8201	7221	6241	5260	4279	3297	2314	1331	0347	9363	8378	7393	6407	5420	6
55	9163	8184	7205	6224	5244	4262	3280	2298	1315	0331	9347	8362	7376	6390	5404	5
56	9147	8168	7188	6208	5227	4246	3264	2282	1298	0315	9330	8345	7360	6374	5387	4
57	9131	8152	7172	6192	5211	4230	3248	2265	1282	0298	9314	8329	7344	6357	5371	3
58	9114	8135	7156	6175	5195	4213	3231	2249	1266	0282	9298	8313	7327	6341	5354	2
59	9098	8119	7139	6159	5178	4197	3215	2232	1249	0265	9281	8296	7311	6325	5338	1
60	9082	8103	7123	6143	5162	4181	3199	2216	1233	0249	9265	8280	7294	6308	5321	0
	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	9. 888	9. 889	9. 889	9. 889	9. 889	9. 890	9. 890	9. 890	9. 890	9. 891	9. 891	9. 891	9. 892	9. 892	9. 892
0	8996	1605	4214	6823	9432	2040	4647	7254	9861	2468	5074	7679	0285	2890	5494
1	9039	1649	4258	6867	9475	2083	4691	7298	9905	2511	5117	7723	0328	2933	5538
2	9083	1692	4301	6910	9519	2127	4734	7341	9948	2555	5161	7766	0372	2976	5581
3	9126	1736	4345	6954	9562	2170	4778	7385	9992	2598	5204	7810	0415	3020	5624
4	9170	1779	4388	6997	9605	2213	4821	7428	0035	2641	5247	7853	0458	3063	5668
5	9213	1823	4432	7041	9649	2257	4864	7472	0078	2685	5291	7897	0502	3107	5711
6	9257	1866	4475	7084	9692	2300	4908	7515	0122	2728	5334	7940	0545	3150	5755
7	9300	1910	4519	7128	9736	2344	4951	7559	0165	2772	5378	7983	0589	3194	5798
8	9344	1953	4562	7171	9779	2387	4995	7602	0209	2815	5421	8027	0632	3237	5841
9	9387	1997	4606	7214	9823	2431	5038	7645	0252	2859	5465	8070	0675	3280	5885
10	9431	2040	4649	7258	9866	2474	5082	7689	0296	2902	5508	8114	0719	3324	5928
11	9474	2084	4693	7301	9910	2518	5125	7732	0339	2945	5551	8157	0762	3367	5972
12	9518	2127	4736	7345	9953	2561	5169	7776	0383	2989	5595	8201	0806	3411	6015
13	9561	2171	4780	7388	9997	2605	5212	7819	0426	3032	5638	8244	0849	3454	6058
14	9605	2214	4823	7432	0040	2648	5256	7863	0469	3076	5682	8287	0893	3497	6102
15	9648	2258	4867	7475	0084	2692	5299	7906	0513	3119	5725	8331	0936	3541	6145
16	9692	2301	4910	7519	0127	2735	5342	7950	0556	3163	5769	8374	0979	3584	6189
17	9735	2345	4954	7562	0171	2778	5386	7993	0600	3206	5812	8418	1023	3628	6232
18	9779	2388	4997	7606	0214	2822	5429	8036	0643	3250	5855	8461	1066	3671	6275
19	9822	2432	5041	7649	0257	2865	5473	8080	0687	3293	5899	8504	1110	3714	6319
20	9866	2475	5084	7693	0301	2909	5516	8123	0730	3336	5942	8548	1153	3758	6362
21	9909	2519	5128	7736	0344	2952	5560	8167	0774	3380	5986	8591	1196	3801	6406
22	9953	2562	5171	7780	0388	2996	5603	8210	0817	3423	6029	8635	1240	3845	6449
23	9996	2605	5215	7823	0431	3039	5647	8254	0860	3467	6073	8678	1283	3888	6492
24	0040	2649	5258	7867	0475	3083	5690	8297	0904	3510	6116	8722	1327	3932	6536
25	0083	2692	5301	7910	0518	3126	5734	8341	0947	3554	6159	8765	1370	3975	6579
26	0127	2736	5345	7954	0562	3170	5777	8384	0991	3597	6203	8808	1414	4018	6623
27	0170	2779	5388	7997	0605	3213	5820	8428	1034	3640	6246	8852	1457	4062	6666
28	0214	2823	5432	8040	0649	3257	5864	8471	1078	3684	6290	8895	1500	4105	6710
29	0257	2866	5475	8084	0692	3300	5907	8514	1121	3727	6333	8939	1544	4149	6753
30	0301	2910	5519	8127	0736	3343	5951	8558	1165	3771	6377	8982	1587	4192	6796
31	0344	2953	5562	8171	0779	3387	5994	8601	1208	3814	6420	9026	1631	4235	6840
32	0388	2997	5606	8214	0823	3430	6038	8645	1251	3858	6463	9069	1674	4279	6883
33	0431	3040	5649	8258	0866	3474	6081	8688	1295	3901	6507	9112	1717	4322	6927
34	0475	3084	5693	8301	0909	3517	6125	8732	1338	3944	6550	9156	1761	4366	6970
35	0518	3127	5736	8345	0953	3561	6168	8775	1382	3988	6594	9199	1804	4409	7013
36	0561	3171	5780	8388	0996	3604	6212	8819	1425	4031	6637	9243	1848	4452	7057
37	0605	3214	5823	8432	1040	3648	6255	8862	1469	4075	6681	9286	1891	4496	7100
38	0648	3258	5867	8475	1083	3691	6298	8905	1512	4118	6724	9329	1935	4539	7144
39	0692	3301	5910	8519	1127	3735	6342	8949	1555	4162	6767	9373	1978	4583	7187
40	0735	3345	5954	8562	1170	3778	6385	8992	1599	4205	6811	9416	2021	4626	7230
41	0779	3388	5997	8606	1214	3821	6429	9036	1642	4249	6854	9460	2065	4669	7274
42	0822	3432	6041	8649	1257	3865	6472	9079	1686	4292	6898	9503	2108	4713	7317
43	0866	3475	6084	8693	1301	3908	6516	9123	1729	4335	6941	9547	2152	4756	7361
44	0909	3519	6128	8736	1344	3952	6559	9166	1773	4379	6985	9590	2195	4800	7404
45	0953	3562	6171	8780	1388	3995	6603	9210	1816	4422	7028	9633	2238	4843	7447
46	0996	3606	6215	8823	1431	4039	6646	9253	1860	4466	7071	9677	2282	4886	7491
47	1040	3649	6258	8866	1475	4082	6690	9296	1903	4509	7115	9720	2325	4930	7534
48	1083	3693	6301	8910	1518	4126	6733	9340	1946	4553	7158	9764	2369	4973	7578
49	1127	3736	6345	8953	1561	4169	6776	9383	1990	4596	7202	9807	2412	5017	7621
50	1170	3780	6388	8997	1605	4213	6820	9427	2033	4639	7245	9851	2456	5060	7664
51	1214	3823	6432	9040	1648	4256	6863	9470	2077	4683	7289	9894	2499	5104	7708
52	1257	3867	6475	9084	1692	4300	6907	9514	2120	4726	7332	9937	2542	5147	7751
53	1301	3910	6519	9127	1735	4343	6950	9557	2164	4770	7375	9981	2586	5190	7795
54	1344	3954	6562	9171	1779	4386	6994	9601	2207	4813	7419	0024	2629	5234	7838
55	1388	3997	6606	9214	1822	4430	7037	9644	2250	4857	7462	0068	2673	5277	7881
56	1431	4041	6649	9258	1866	4473	7081	9687	2294	4900	7506	0111	2716	5321	7925
57	1475	4084	6693	9301	1909	4517	7124	9731	2337	4943	7549	0154	2759	5364	7968
58	1518	4127	6736	9345	1953	4560	7167	9774	2381	4987	7593	0198	2803	5407	8012
59	1562	4171	6780	9388	1996	4604	7211	9818	2424	5030	7636	0241	2846	5451	8055
60	1605	4214	6823	9432	2040	4647	7254	9861	2468	5074	7679	0285	2890	5494	8098
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
	10. 111	10. 110	10. 110	10. 110	10. 110	10. 109	10. 109	10. 109	10. 109	10. 108	10. 108	10. 108	10. 107	10. 107	10. 107	″
	1004	8395	5786	3177	0568	7960	5353	2746	0139	7532	4926	2321	9715	7110	4506	60
	0961	8351	5742	3133	0525	7917	5309	2702	0095	7489	4883	2277	9672	7067	4462	59
	0917	8308	5699	3090	0481	7873	5266	2659	0052	7445	4839	2234	9628	7024	4419	58
	0874	8264	5655	3046	0438	7830	5222	2615	0008	7402	4796	2190	9585	6980	4376	57
	0830	8221	5612	3003	0395	7787	5179	2572	9965	7359	4753	2147	9542	6937	4332	56
	0787	8177	5568	2959	0351	7743	5136	2528	9922	7315	4709	2103	9498	6893	4289	55
	0743	8134	5525	2916	0308	7700	5092	2485	9878	7272	4666	2060	9455	6850	4245	54
	0700	8090	5481	2872	0264	7656	5049	2441	9835	7228	4622	2017	9411	6806	4202	53
	0656	8047	5438	2829	0221	7613	5005	2398	9791	7185	4579	1973	9368	6763	4159	52
	0613	8003	5394	2786	0177	7569	4962	2355	9748	7141	4535	1930	9325	6720	4115	51
	0569	7960	5351	2742	0134	7526	4918	2311	9704	7098	4492	1886	9281	6676	4072	50
	0526	7916	5307	2699	0090	7482	4875	2268	9661	7055	4449	1843	9238	6633	4028	49
	0482	7873	5264	2655	0047	7439	4831	2224	9617	7011	4405	1799	9194	6589	3985	48
	0439	7829	5220	2612	0003	7395	4788	2181	9574	6968	4362	1756	9151	6546	3942	47
	0395	7786	5177	2568	9960	7352	4744	2137	9531	6924	4318	1713	9107	6503	3898	46
	0352	7742	5133	2525	9916	7308	4701	2094	9487	6881	4275	1669	9064	6459	3855	45
	0308	7699	5090	2481	9873	7265	4658	2050	9444	6837	4231	1626	9021	6416	3811	44
	0265	7655	5046	2438	9829	7222	4614	2007	9400	6794	4188	1582	8977	6372	3768	43
	0221	7612	5003	2394	9786	7178	4571	1964	9357	6750	4145	1539	8934	6329	3725	42
	0178	7568	4959	2351	9743	7135	4527	1920	9313	6707	4101	1496	8890	6286	3681	41
	0134	7525	4916	2307	9699	7091	4484	1877	9270	6664	4058	1452	8847	6242	3638	40
	0091	7481	4872	2264	9656	7048	4440	1833	9226	6620	4014	1409	8804	6199	3594	39
	0047	7438	4829	2220	9612	7004	4397	1790	9183	6577	3971	1365	8760	6155	3551	38
	0004	7395	4785	2177	9569	6961	4353	1746	9140	6533	3927	1322	8717	6112	3508	37
	9961	7351	4742	2133	9525	6917	4310	1703	9096	6490	3884	1278	8673	6068	3464	36
	9917	7308	4699	2090	9482	6874	4266	1659	9053	6446	3841	1235	8630	6025	3421	35
	9873	7264	4655	2046	9438	6830	4223	1616	9009	6403	3797	1192	8586	5982	3377	34
	9830	7221	4612	2003	9395	6787	4180	1572	8966	6360	3754	1148	8543	5938	3334	33
	9786	7177	4568	1960	9351	6743	4136	1529	8922	6316	3710	1105	8500	5895	3290	32
	9743	7134	4525	1916	9308	6700	4093	1486	8879	6273	3667	1061	8456	5851	3247	31
	9699	7090	4481	1873	9264	6657	4049	1442	8835	6229	3623	1018	8413	5808	3204	30
	9656	7047	4438	1829	9221	6613	4006	1399	8792	6186	3580	0974	8369	5765	3160	29
	9612	7003	4394	1786	9177	6570	3962	1355	8749	6142	3537	0931	8326	5721	3117	28
	9569	6960	4351	1742	9134	6526	3919	1312	8705	6099	3493	0888	8283	5678	3073	27
	9525	6916	4307	1699	9091	6483	3875	1268	8662	6056	3450	0844	8239	5634	3030	26
	9482	6873	4264	1655	9047	6439	3832	1225	8618	6012	3406	0801	8196	5591	2987	25
	9439	6829	4220	1612	9004	6396	3788	1181	8575	5969	3363	0757	8152	5548	2943	24
	9395	6786	4177	1568	8960	6352	3745	1138	8531	5925	3319	0714	8109	5504	2900	23
	9352	6742	4133	1525	8917	6309	3702	1095	8488	5882	3276	0671	8065	5461	2856	22
	9308	6699	4090	1481	8873	6265	3658	1051	8445	5838	3233	0627	8022	5417	2813	21
	9265	6655	4046	1438	8830	6222	3615	1008	8401	5795	3189	0584	7979	5374	2770	20
	9221	6612	4003	1394	8786	6179	3571	0964	8358	5751	3146	0540	7935	5331	2726	19
	9178	6568	3959	1351	8743	6135	3528	0921	8314	5708	3102	0497	7892	5287	2683	18
	9134	6525	3916	1307	8699	6092	3484	0877	8271	5665	3059	0453	7848	5244	2639	17
	9091	6481	3872	1264	8656	6048	3441	0834	8227	5621	3015	0410	7805	5200	2596	16
	9047	6438	3829	1220	8612	6005	3397	0790	8184	5578	2972	0367	7762	5157	2553	15
	9004	6394	3785	1177	8569	5961	3354	0747	8140	5534	2929	0323	7718	5114	2509	14
	8960	6351	3742	1134	8525	5918	3310	0704	8097	5491	2885	0280	7675	5070	2466	13
	8917	6307	3699	1090	8482	5874	3267	0660	8054	5447	2842	0236	7631	5027	2422	12
	8873	6264	3655	1047	8439	5831	3224	0617	8010	5404	2798	0193	7588	4983	2379	11
	8830	6220	3612	1003	8395	5787	3180	0573	7967	5361	2755	0149	7544	4940	2336	10
	8786	6177	3568	0960	8352	5744	3137	0530	7923	5317	2711	0106	7501	4896	2292	9
	8743	6133	3525	0916	8308	5700	3093	0486	7880	5274	2668	0063	7458	4853	2249	8
	8699	6090	3481	0873	8265	5657	3050	0443	7836	5230	2625	0019	7414	4810	2205	7
	8656	6046	3438	0829	8221	5614	3006	0399	7793	5187	2581	9976	7371	4766	2162	6
	8612	6003	3394	0786	8178	5570	2963	0356	7750	5143	2538	9932	7327	4723	2119	5
	8569	5959	3351	0742	8134	5527	2919	0313	7706	5100	2494	9889	7284	4679	2075	4
	8525	5916	3307	0699	8091	5483	2876	0269	7663	5057	2451	9846	7241	4636	2032	3
	8482	5873	3264	0655	8047	5440	2833	0226	7619	5013	2407	9802	7197	4593	1988	2
	8438	5829	3220	0612	8004	5396	2789	0182	7576	4970	2364	9759	7154	4549	1945	1
	8395	5786	3177	0568	7960	5353	2746	0139	7532	4926	2321	9715	7110	4506	1902	0
	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.789	9.789	9.789	9.789	9.789	9.790	9.790	9.790	9.790	9.790	9.790	9.791	9.791	9.791	9.791
0	3420	5036	6652	8266	9880	1493	3104	4715	6325	7933	9541	1148	2754	4359	5963
1	3447	5063	6679	8293	9907	1519	3131	4742	6351	7960	9568	1175	2781	4385	5989
2	3474	5090	6706	8320	9934	1546	3158	4769	6378	7987	9595	1201	2807	4412	6016
3	3501	5117	6733	8347	9961	1573	3185	4795	6405	8014	9621	1228	2834	4439	6043
4	3528	5144	6759	8374	9987	1600	3212	4822	6432	8041	9648	1255	2861	4466	6070
5	3555	5171	6786	8401	0014	1627	3238	4849	6459	8067	9675	1282	2888	4492	6096
6	3581	5198	6813	8428	0041	1654	3265	4876	6485	8094	9702	1309	2914	4519	6123
7	3608	5225	6840	8455	0068	1681	3292	4903	6512	8121	9729	1335	2941	4546	6150
8	3635	5252	6867	8482	0095	1707	3319	4930	6539	8148	9755	1362	2968	4573	6176
9	3662	5279	6894	8508	0122	1734	3346	4956	6566	8175	9782	1389	2995	4599	6203
10	3689	5306	6921	8535	0149	1761	3373	4983	6593	8201	9809	1416	3021	4626	6230
11	3716	5333	6948	8562	0176	1788	3400	5010	6620	8228	9836	1442	3048	4653	6257
12	3743	5359	6975	8589	0202	1815	3426	5037	6646	8255	9863	1469	3075	4680	6283
13	3770	5386	7002	8616	0229	1842	3453	5064	6673	8282	9889	1496	3102	4706	6310
14	3797	5413	7029	8643	0256	1869	3480	5091	6700	8309	9916	1523	3128	4733	6337
15	3824	5440	7056	8670	0283	1896	3507	5117	6727	8335	9943	1549	3155	4760	6363
16	3851	5467	7082	8697	0310	1922	3534	5144	6754	8362	9970	1576	3182	4786	6390
17	3878	5494	7109	8724	0337	1949	3561	5171	6780	8389	9996	1603	3209	4813	6417
18	3905	5521	7136	8750	0364	1976	3587	5198	6807	8416	0023	1630	3235	4840	6444
19	3932	5548	7163	8777	0391	2003	3614	5225	6834	8443	0050	1657	3262	4867	6470
20	3959	5575	7190	8804	0418	2030	3641	5252	6861	8469	0077	1683	3289	4893	6497
21	3986	5602	7217	8831	0444	2057	3668	5278	6888	8496	0104	1710	3316	4920	6524
22	4013	5629	7244	8858	0471	2084	3695	5305	6915	8523	0130	1737	3342	4947	6550
23	4040	5656	7271	8885	0498	2110	3722	5332	6941	8550	0157	1764	3369	4974	6577
24	4066	5683	7298	8912	0525	2137	3749	5359	6968	8576	0184	1790	3396	5000	6604
25	4093	5710	7325	8939	0552	2164	3775	5386	6995	8603	0211	1817	3423	5027	6631
26	4120	5736	7352	8966	0579	2191	3802	5412	7022	8630	0237	1844	3449	5054	6657
27	4147	5763	7378	8993	0606	2218	3829	5439	7049	8657	0264	1871	3476	5081	6684
28	4174	5790	7405	9019	0633	2245	3856	5466	7075	8684	0291	1897	3503	5107	6711
29	4201	5817	7432	9046	0659	2272	3883	5493	7102	8711	0318	1924	3530	5134	6738
30	4228	5844	7459	9073	0686	2298	3910	5520	7129	8737	0345	1951	3556	5161	6764
31	4255	5871	7486	9100	0713	2325	3936	5547	7156	8764	0371	1978	3583	5187	6791
32	4282	5898	7513	9127	0740	2352	3963	5573	7183	8791	0398	2004	3610	5214	6818
33	4309	5925	7540	9154	0767	2379	3990	5600	7209	8818	0425	2031	3637	5241	6844
34	4336	5952	7567	9181	0794	2406	4017	5627	7236	8844	0452	2058	3663	5268	6871
35	4363	5979	7594	9208	0821	2433	4044	5654	7263	8871	0479	2085	3690	5294	6898
36	4390	6006	7621	9235	0848	2460	4071	5681	7290	8898	0505	2112	3717	5321	6925
37	4417	6033	7648	9261	0874	2486	4098	5708	7317	8925	0532	2138	3744	5348	6951
38	4444	6060	7674	9288	0901	2513	4124	5734	7344	8952	0559	2165	3770	5375	6978
39	4471	6086	7701	9315	0928	2540	4151	5761	7370	8978	0586	2192	3797	5401	7005
40	4498	6113	7728	9342	0955	2567	4178	5788	7397	9005	0612	2219	3824	5428	7031
41	4524	6140	7755	9369	0982	2594	4205	5815	7424	9032	0639	2245	3851	5455	7058
42	4551	6167	7782	9396	1009	2621	4232	5842	7451	9059	0666	2272	3877	5482	7085
43	4578	6194	7809	9423	1036	2648	4259	5869	7478	9086	0693	2299	3904	5508	7112
44	4605	6221	7836	9450	1063	2674	4285	5895	7504	9112	0720	2326	3931	5535	7138
45	4632	6248	7863	9477	1089	2701	4312	5922	7531	9139	0746	2352	3958	5562	7165
46	4659	6275	7890	9503	1116	2728	4339	5949	7558	9166	0773	2379	3984	5588	7192
47	4686	6302	7917	9530	1143	2755	4366	5976	7585	9193	0800	2406	4011	5615	7218
48	4713	6329	7943	9557	1170	2782	4393	6003	7612	9220	0827	2433	4038	5642	7245
49	4740	6356	7970	9584	1197	2809	4420	6029	7638	9246	0853	2459	4065	5669	7272
50	4767	6383	7997	9611	1224	2836	4446	6056	7665	9273	0880	2486	4091	5695	7298
51	4794	6410	8024	9638	1251	2862	4473	6083	7692	9300	0907	2513	4118	5722	7325
52	4821	6436	8051	9665	1278	2889	4500	6110	7719	9327	0934	2540	4145	5749	7352
53	4848	6463	8078	9692	1304	2916	4527	6137	7746	9354	0960	2566	4171	5776	7379
54	4875	6490	8105	9719	1331	2943	4554	6164	7772	9380	0987	2593	4198	5802	7405
55	4902	6517	8132	9745	1358	2970	4581	6190	7799	9407	1014	2620	4225	5829	7432
56	4929	6544	8159	9772	1385	2997	4607	6217	7826	9434	1041	2647	4252	5856	7459
57	4955	6571	8186	9799	1412	3024	4634	6244	7853	9461	1068	2673	4278	5882	7485
58	4982	6598	8213	9826	1439	3050	4661	6271	7880	9488	1094	2700	4305	5909	7512
59	5009	6625	8239	9853	1466	3077	4688	6298	7906	9514	1121	2727	4332	5936	7539
60	5036	6652	8266	9880	1493	3104	4715	6325	7933	9541	1148	2754	4359	5963	7566
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
	9.896	9.896	9.896	9.896	9.896	9.896	9.895	9.895	9.895	9.895	9.895	9.895	9.895	9.895	9.895	″
0	5321	4334	3346	2358	1369	0379	9389	8398	7406	6414	5422	4429	3435	2440	1445	60
1	5305	4318	3330	2341	1352	0363	9372	8381	7390	6398	5405	4412	3418	2424	1429	59
2	5289	4301	3313	2325	1336	0346	9356	8365	7373	6381	5389	4395	3402	2407	1412	58
3	5272	4285	3297	2308	1319	0330	9339	8348	7357	6365	5372	4379	3385	2391	1395	57
4	5256	4268	3280	2292	1303	0313	9323	8332	7340	6348	5356	4362	3368	2374	1379	56
5	5239	4252	3264	2275	1286	0297	9306	8315	7324	6332	5339	4346	3352	2357	1362	55
6	5223	4235	3247	2259	1270	0280	9290	8299	7307	6315	5322	4329	3335	2341	1346	54
7	5206	4219	3231	2242	1253	0264	9273	8282	7291	6299	5306	4313	3319	2324	1329	53
8	5190	4202	3214	2226	1237	0247	9257	8266	7274	6282	5289	4296	3302	2308	1313	52
9	5173	4186	3198	2209	1220	0230	9240	8249	7258	6266	5273	4279	3286	2291	1296	51
10	5157	4170	3182	2193	1204	0214	9224	8233	7241	6249	5256	4263	3269	2274	1279	50
11	5140	4153	3165	2176	1187	0197	9207	8216	7225	6232	5240	4246	3252	2258	1263	49
12	5124	4137	3149	2160	1171	0181	9191	8200	7208	6216	5223	4230	3236	2241	1246	48
13	5108	4120	3132	2144	1154	0164	9174	8183	7192	6199	5207	4213	3219	2225	1230	47
14	5091	4104	3116	2127	1138	0148	9158	8167	7175	6183	5190	4197	3203	2208	1213	46
15	5075	4087	3099	2111	1121	0131	9141	8150	7158	6166	5173	4180	3186	2192	1196	45
16	5058	4071	3083	2094	1105	0115	9125	8134	7142	6150	5157	4164	3170	2175	1180	44
17	5042	4054	3066	2078	1088	0098	9108	8117	7125	6133	5140	4147	3153	2158	1163	43
18	5025	4038	3050	2061	1072	0082	9092	8101	7109	6117	5124	4130	3136	2142	1147	42
19	5009	4021	3033	2045	1055	0065	9075	8084	7092	6100	5107	4114	3120	2125	1130	41
20	4992	4005	3017	2028	1039	0049	9059	8067	7076	6084	5091	4097	3103	2109	1113	40
21	4976	3988	3000	2012	1022	0032	9042	8051	7059	6067	5074	4081	3087	2092	1097	39
22	4959	3972	2984	1995	1006	0016	9025	8034	7043	6050	5058	4064	3070	2075	1080	38
23	4943	3956	2967	1979	0989	9999	9009	8018	7026	6034	5041	4048	3054	2059	1064	37
24	4927	3939	2951	1962	0973	9983	8992	8001	7010	6017	5025	4031	3037	2042	1047	36
25	4910	3923	2934	1946	0956	9966	8976	7985	6993	6001	5008	4014	3020	2026	1030	35
26	4894	3906	2918	1929	0940	9950	8959	7968	6977	5984	4991	3998	3004	2009	1014	34
27	4877	3890	2901	1913	0923	9933	8943	7952	6960	5968	4975	3981	2987	1993	0997	33
28	4861	3873	2885	1896	0907	9917	8926	7935	6944	5951	4958	3965	2971	1976	0981	32
29	4844	3857	2869	1880	0890	9900	8910	7919	6927	5935	4942	3948	2954	1959	0964	31
30	4828	3840	2852	1863	0874	9884	8893	7902	6910	5918	4925	3932	2938	1943	0947	30
31	4811	3824	2836	1847	0857	9867	8877	7886	6894	5902	4909	3915	2921	1926	0931	29
32	4795	3807	2819	1830	0841	9851	8860	7869	6877	5885	4892	3899	2904	1910	0914	28
33	4778	3791	2803	1814	0824	9834	8844	7853	6861	5868	4876	3882	2888	1893	0898	27
34	4762	3774	2786	1797	0808	9818	8827	7836	6844	5852	4859	3865	2871	1876	0881	26
35	4746	3758	2770	1781	0791	9801	8811	7820	6828	5835	4842	3849	2855	1860	0865	25
36	4729	3741	2753	1764	0775	9785	8794	7803	6811	5819	4826	3832	2838	1843	0848	24
37	4713	3725	2737	1748	0758	9768	8778	7787	6795	5802	4809	3816	2822	1827	0831	23
38	4696	3709	2720	1731	0742	9752	8761	7770	6778	5786	4793	3799	2805	1810	0815	22
39	4680	3692	2704	1715	0725	9735	8745	7754	6762	5769	4776	3783	2788	1794	0798	21
40	4663	3676	2687	1698	0709	9719	8728	7737	6745	5753	4760	3766	2772	1777	0782	20
41	4647	3659	2671	1682	0692	9702	8712	7720	6729	5736	4743	3749	2755	1760	0765	19
42	4630	3643	2654	1665	0676	9686	8695	7704	6712	5720	4727	3733	2739	1744	0748	18
43	4614	3626	2638	1649	0659	9669	8679	7687	6696	5703	4710	3716	2722	1727	0732	17
44	4597	3610	2621	1632	0643	9653	8662	7671	6679	5686	4693	3700	2705	1711	0715	16
45	4581	3593	2605	1616	0626	9636	8646	7654	6662	5670	4677	3683	2689	1694	0699	15
46	4565	3577	2588	1600	0610	9620	8629	7638	6646	5653	4660	3667	2672	1677	0682	14
47	4548	3560	2572	1583	0593	9603	8613	7621	6629	5637	4644	3650	2656	1661	0665	13
48	4532	3544	2556	1567	0577	9587	8596	7605	6613	5620	4627	3633	2639	1644	0649	12
49	4515	3527	2539	1550	0560	9570	8580	7588	6596	5604	4611	3617	2623	1628	0632	11
50	4499	3511	2523	1534	0544	9554	8563	7572	6580	5587	4594	3600	2606	1611	0616	10
51	4482	3494	2506	1517	0527	9537	8547	7555	6563	5571	4578	3584	2589	1595	0599	9
52	4466	3478	2490	1501	0511	9521	8530	7539	6547	5554	4561	3567	2573	1578	0582	8
53	4449	3462	2473	1484	0494	9504	8514	7522	6530	5538	4544	3551	2556	1561	0566	7
54	4433	3445	2457	1468	0478	9488	8497	7506	6514	5521	4528	3534	2540	1545	0549	6
55	4416	3429	2440	1451	0461	9471	8480	7489	6497	5504	4511	3518	2523	1528	0533	5
56	4400	3412	2424	1435	0445	9455	8464	7473	6481	5488	4495	3501	2507	1512	0516	4
57	4384	3396	2407	1418	0429	9438	8447	7456	6464	5471	4478	3484	2490	1495	0499	3
58	4367	3379	2391	1402	0412	9422	8431	7439	6447	5455	4462	3468	2473	1478	0483	2
59	4351	3363	2374	1385	0396	9405	8414	7423	6431	5438	4445	3451	2457	1462	0466	1
60	4334	3346	2358	1369	0379	9389	8398	7406	6414	5422	4429	3435	2440	1445	0450	0
	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

″	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
	9.892	9.893	9.893	9.893	9.893	9.894	9.894	9.894	9.894	9.895	9.895	9.895	9.895	9.896	9.896
0	8098	0702	3306	5909	8511	1114	3715	6317	8918	1519	4119	6719	9319	1918	4517
1	8142	0746	3349	5952	8555	1157	3759	6360	8961	1562	4163	6763	9362	1962	4561
2	8185	0789	3392	5995	8598	1200	3802	6404	9005	1606	4206	6806	9406	2005	4604
3	8229	0832	3436	6039	8641	1244	3845	6447	9048	1649	4249	6849	9449	2048	4647
4	8272	0876	3479	6082	8685	1287	3889	6490	9092	1692	4293	6893	9492	2092	4691
5	8315	0919	3522	6125	8728	1330	3932	6534	9135	1736	4336	6936	9536	2135	4734
6	8359	0962	3566	6169	8771	1374	3976	6577	9178	1779	4379	6979	9579	2178	4777
7	8402	1006	3609	6212	8815	1417	4019	6620	9222	1822	4423	7023	9622	2222	4821
8	8446	1049	3653	6256	8858	1460	4062	6664	9265	1866	4466	7066	9666	2265	4864
9	8489	1093	3696	6299	8902	1504	4106	6707	9308	1909	4509	7109	9709	2308	4907
10	8532	1136	3739	6342	8945	1547	4149	6751	9352	1952	4553	7153	9752	2352	4951
11	8576	1179	3783	6386	8988	1591	4192	6794	9395	1996	4596	7196	9796	2395	4994
12	8619	1223	3826	6429	9032	1634	4236	6837	9438	2039	4639	7239	9839	2438	5037
13	8663	1266	3870	6473	9075	1677	4279	6881	9482	2082	4683	7283	9882	2482	5080
14	8706	1310	3913	6516	9118	1721	4322	6924	9525	2126	4726	7326	9926	2525	5124
15	8749	1353	3956	6559	9162	1764	4366	6967	9568	2169	4769	7369	9969	2568	5167
16	8793	1396	4000	6603	9205	1807	4409	7011	9612	2212	4813	7413	0012	2612	5210
17	8836	1440	4043	6646	9249	1851	4453	7054	9655	2256	4856	7456	0056	2655	5254
18	8880	1483	4086	6689	9292	1894	4496	7097	9698	2299	4899	7499	0099	2698	5297
19	8923	1527	4130	6733	9335	1937	4539	7141	9742	2342	4943	7543	0142	2741	5340
20	8966	1570	4173	6776	9379	1981	4583	7184	9785	2386	4986	7586	0186	2785	5384
21	9010	1613	4217	6820	9422	2024	4626	7227	9828	2429	5029	7629	0229	2828	5427
22	9053	1657	4260	6863	9465	2068	4669	7271	9872	2472	5073	7673	0272	2871	5470
23	9097	1700	4303	6906	9509	2111	4713	7314	9915	2516	5116	7716	0316	2915	5514
24	9140	1744	4347	6950	9552	2154	4756	7357	9958	2559	5159	7759	0359	2958	5557
25	9183	1787	4390	6993	9596	2198	4799	7401	0002	2602	5203	7803	0402	3001	5600
26	9227	1830	4434	7036	9639	2241	4843	7444	0045	2646	5246	7846	0446	3045	5643
27	9270	1874	4477	7080	9682	2284	4886	7488	0089	2689	5289	7889	0489	3088	5687
28	9313	1917	4520	7123	9726	2328	4930	7531	0132	2732	5333	7933	0532	3131	5730
29	9357	1960	4564	7167	9769	2371	4973	7574	0175	2776	5376	7976	0575	3175	5773
30	9400	2004	4607	7210	9812	2415	5016	7618	0219	2819	5419	8019	0619	3218	5817
31	9444	2047	4650	7253	9856	2458	5060	7661	0262	2863	5463	8063	0662	3261	5860
32	9487	2091	4694	7297	9899	2501	5103	7704	0305	2906	5506	8106	0705	3305	5903
33	9530	2134	4737	7340	9943	2545	5146	7748	0349	2949	5549	8149	0749	3348	5947
34	9574	2177	4781	7383	9986	2588	5190	7791	0392	2993	5593	8193	0792	3391	5990
35	9617	2221	4824	7427	0029	2631	5233	7834	0435	3036	5636	8236	0835	3435	6033
36	9661	2264	4867	7470	0073	2675	5276	7878	0479	3079	5679	8279	0879	3478	6077
37	9704	2308	4911	7514	0116	2718	5320	7921	0522	3123	5723	8323	0922	3521	6120
38	9747	2351	4954	7557	0159	2761	5363	7964	0565	3166	5766	8366	0965	3564	6163
39	9791	2394	4998	7600	0203	2805	5406	8008	0609	3209	5809	8409	1009	3608	6207
40	9834	2438	5041	7644	0246	2848	5450	8051	0652	3253	5853	8453	1052	3651	6250
41	9878	2481	5084	7687	0289	2892	5493	8094	0695	3296	5896	8496	1095	3694	6293
42	9921	2525	5128	7730	0333	2935	5537	8138	0739	3339	5939	8539	1139	3738	6336
43	9964	2568	5171	7774	0376	2978	5580	8181	0782	3383	5983	8583	1182	3781	6380
44	0008	2611	5214	7817	0420	3022	5623	8225	0825	3426	6026	8626	1225	3824	6423
45	0051	2655	5258	7861	0463	3065	5667	8268	0869	3469	6069	8669	1269	3868	6466
46	0095	2698	5301	7904	0506	3108	5710	8311	0912	3513	6113	8713	1312	3911	6510
47	0138	2741	5345	7947	0550	3152	5753	8355	0955	3556	6156	8756	1355	3954	6553
48	0181	2785	5388	7991	0593	3195	5797	8398	0999	3599	6199	8799	1399	3998	6596
49	0225	2828	5431	8034	0636	3238	5840	8441	1042	3643	6243	8843	1442	4041	6640
50	0268	2872	5475	8077	0680	3282	5883	8485	1085	3686	6286	8886	1485	4084	6683
51	0312	2915	5518	8121	0723	3325	5927	8528	1129	3729	6329	8929	1529	4128	6726
52	0355	2958	5562	8164	0767	3369	5970	8571	1172	3773	6373	8972	1572	4171	6770
53	0398	3002	5605	8208	0810	3412	6013	8615	1216	3816	6416	9016	1615	4214	6813
54	0442	3045	5648	8251	0853	3455	6057	8658	1259	3859	6459	9059	1659	4258	6856
55	0485	3089	5692	8294	0897	3499	6100	8701	1302	3903	6503	9102	1702	4301	6899
56	0529	3132	5735	8338	0940	3542	6144	8745	1346	3946	6546	9146	1745	4344	6943
57	0572	3175	5778	8381	0983	3585	6187	8788	1389	3989	6589	9189	1788	4387	6986
58	0615	3219	5822	8424	1027	3629	6230	8831	1432	4033	6633	9232	1832	4431	7029
59	0659	3262	5865	8468	1070	3672	6274	8875	1476	4076	6676	9276	1875	4474	7073
60	0702	3306	5909	8511	1114	3715	6317	8918	1519	4119	6719	9319	1918	4517	7116
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	″
10.107	10.106	10.106	10.106	10.106	10.105	10.105	10.105	10.105	10.104	10.104	10.104	10.104	10.103	10.103	
1902	9298	6694	4091	1489	8886	6285	3683	1082	8481	5881	3281	0681	8082	5483	60
1858	9254	6651	4048	1445	8843	6241	3640	1039	8438	5837	3237	0638	8038	5439	59
1815	9211	6608	4005	1402	8800	6198	3596	0995	8394	5794	3194	0594	7995	5396	58
1771	9168	6564	3961	1359	8756	6155	3553	0952	8351	5751	3151	0551	7952	5353	57
1728	9124	6521	3918	1315	8713	6111	3510	0908	8308	5707	3107	0508	7908	5309	56
1685	9081	6478	3875	1272	8670	6068	3466	0865	8264	5664	3064	0464	7865	5266	55
1641	9038	6434	3831	1229	8626	6024	3423	0822	8221	5621	3021	0421	7822	5223	54
1598	8994	6391	3788	1185	8583	5981	3380	0778	8178	5577	2977	0378	7778	5179	53
1554	8951	6347	3744	1142	8540	5938	3336	0735	8134	5534	2934	0334	7735	5136	52
1511	8907	6304	3701	1098	8496	5894	3293	0692	8091	5491	2891	0291	7692	5093	51
1468	8864	6261	3658	1055	8453	5851	3249	0648	8048	5447	2847	0248	7648	5049	50
1424	8821	6217	3614	1012	8409	5808	3206	0605	8004	5404	2804	0204	7605	5006	49
1381	8777	6174	3571	0968	8366	5764	3163	0562	7961	5361	2761	0161	7562	4963	48
1337	8734	6130	3527	0925	8323	5721	3119	0518	7918	5317	2717	0118	7518	4920	47
1294	8690	6087	3484	0882	8279	5678	3076	0475	7874	5274	2674	0074	7475	4876	46
1251	8647	6044	3441	0838	8236	5634	3033	0432	7831	5231	2631	0031	7432	4833	45
1207	8604	6000	3397	0795	8193	5591	2989	0388	7788	5187	2587	9988	7388	4790	44
1164	8560	5957	3354	0751	8149	5547	2946	0345	7744	5144	2544	9944	7345	4746	43
1120	8517	5914	3311	0708	8106	5504	2903	0302	7701	5101	2501	9901	7302	4703	42
1077	8473	5870	3267	0665	8063	5461	2859	0258	7658	5057	2457	9858	7259	4660	41
1034	8430	5827	3224	0621	8019	5417	2816	0215	7614	5014	2414	9814	7215	4616	40
0990	8387	5783	3180	0578	7976	5374	2773	0172	7571	4971	2371	9771	7172	4573	39
0947	8343	5740	3137	0535	7932	5331	2729	0128	7528	4927	2327	9728	7129	4530	38
0903	8300	5697	3094	0491	7889	5287	2686	0085	7484	4884	2284	9684	7085	4486	37
0860	8256	5653	3050	0448	7846	5244	2643	0042	7441	4841	2241	9641	7042	4443	36
0817	8213	5610	3007	0404	7802	5201	2599	9998	7398	4797	2197	9598	6999	4400	35
0773	8170	5566	2964	0361	7759	5157	2556	9955	7354	4754	2154	9554	6955	4357	34
0730	8126	5523	2920	0318	7716	5114	2512	9911	7311	4711	2111	9511	6912	4313	33
0687	8083	5480	2877	0274	7672	5070	2469	9868	7268	4667	2067	9468	6869	4270	32
0643	8040	5436	2833	0231	7629	5027	2426	9825	7224	4624	2024	9425	6825	4227	31
0600	7996	5393	2790	0188	7585	4984	2382	9781	7181	4581	1981	9381	6782	4183	30
0556	7953	5350	2747	0144	7542	4940	2339	9738	7137	4537	1937	9338	6739	4140	29
0513	7909	5306	2703	0101	7499	4897	2296	9695	7094	4494	1894	9295	6695	4097	28
0470	7866	5263	2660	0057	7455	4854	2252	9651	7051	4451	1851	9251	6652	4053	27
0426	7823	5219	2617	0014	7412	4810	2209	9608	7007	4407	1807	9208	6609	4010	26
0383	7779	5176	2573	9971	7369	4767	2166	9565	6964	4364	1764	9165	6565	3967	25
0339	7736	5133	2530	9927	7325	4724	2122	9521	6921	4321	1721	9121	6522	3923	24
0296	7692	5089	2486	9884	7282	4680	2079	9478	6877	4277	1677	9078	6479	3880	23
0253	7649	5046	2443	9841	7239	4637	2036	9435	6834	4234	1634	9035	6436	3837	22
0209	7606	5002	2400	9797	7195	4594	1992	9391	6791	4191	1591	8991	6392	3793	21
0166	7562	4959	2356	9754	7152	4550	1949	9348	6747	4147	1547	8948	6349	3750	20
0122	7519	4916	2313	9711	7108	4507	1906	9305	6704	4104	1504	8905	6306	3707	19
0079	7475	4872	2270	9667	7065	4463	1862	9261	6661	4061	1461	8861	6262	3664	18
0036	7432	4829	2226	9624	7022	4420	1819	9218	6617	4017	1417	8818	6219	3620	17
9992	7389	4786	2183	9580	6978	4377	1775	9175	6574	3974	1374	8775	6176	3577	16
9949	7345	4742	2139	9537	6935	4333	1732	9131	6531	3931	1331	8731	6132	3534	15
9905	7302	4699	2096	9494	6892	4290	1689	9088	6487	3887	1287	8688	6089	3490	14
9862	7259	4655	2053	9450	6848	4247	1645	9045	6444	3844	1244	8645	6046	3447	13
9819	7215	4612	2009	9407	6805	4203	1602	9001	6401	3801	1201	8601	6002	3404	12
9775	7172	4569	1966	9364	6762	4160	1559	8958	6357	3757	1157	8558	5959	3360	11
9732	7128	4525	1923	9320	6718	4117	1515	8915	6314	3714	1114	8515	5916	3317	10
9688	7085	4482	1879	9277	6675	4073	1472	8871	6271	3671	1071	8471	5872	3274	9
9645	7042	4438	1836	9233	6631	4030	1429	8828	6227	3627	1028	8428	5829	3230	8
9602	6998	4395	1792	9190	6588	3987	1385	8784	6184	3584	0984	8385	5786	3187	7
9558	6955	4352	1749	9147	6545	3943	1342	8741	6141	3541	0941	8341	5742	3144	6
9515	6911	4308	1706	9103	6501	3900	1299	8698	6097	3497	0898	8298	5699	3101	5
9471	6868	4265	1662	9060	6458	3856	1255	8654	6054	3454	0854	8255	5656	3057	4
9428	6825	4222	1619	9017	6415	3813	1212	8611	6011	3411	0811	8212	5613	3014	3
9385	6781	4178	1576	8973	6371	3770	1169	8568	5967	3367	0768	8168	5569	2971	2
9341	6738	4135	1532	8930	6328	3726	1125	8524	5924	3324	0724	8125	5526	2927	1
9298	6694	4091	1489	8886	6285	3683	1082	8481	5881	3281	0681	8082	5483	2884	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

″	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9.791	9.791	9.792	9.792	9.792	9.792	9.792	9.792	9.793	9.793	9.793	9.793	9.793	9.793	9.793
0	7566	9168	0769	2369	3968	5566	7163	8760	0355	1949	3543	5135	6727	8317	9907
1	7592	9194	0795	2395	3995	5593	7190	8786	0382	1976	3569	5162	6753	8344	9933
2	7619	9221	0822	2422	4021	5619	7217	8813	0408	2003	3596	5188	6780	8370	9960
3	7646	9248	0849	2449	4048	5646	7243	8839	0435	2029	3622	5215	6806	8397	9986
4	7672	9274	0875	2475	4075	5673	7270	8866	0461	2056	3649	5241	6833	8423	0013
5	7699	9301	0902	2502	4101	5699	7296	8893	0488	2082	3676	5268	6859	8450	0039
6	7726	9328	0929	2529	4128	5726	7323	8919	0514	2109	3702	5294	6886	8476	0066
7	7753	9354	0955	2555	4154	5753	7350	8946	0541	2135	3729	5321	6912	8503	0092
8	7779	9381	0982	2582	4181	5779	7376	8972	0568	2162	3755	5348	6939	8529	0119
9	7806	9408	1009	2609	4208	5806	7403	8999	0594	2188	3782	5374	6965	8556	0145
10	7833	9435	1035	2635	4234	5832	7429	9026	0621	2215	3808	5401	6992	8582	0172
11	7859	9461	1062	2662	4261	5859	7456	9052	0647	2242	3835	5427	7018	8609	0198
12	7886	9488	1089	2689	4288	5886	7483	9079	0674	2268	3861	5454	7045	8635	0225
13	7913	9515	1115	2715	4314	5912	7509	9105	0701	2295	3888	5480	7072	8662	0251
14	7939	9541	1142	2742	4341	5939	7536	9132	0727	2321	3914	5507	7098	8688	0278
15	7966	9568	1169	2769	4368	5966	7563	9159	0754	2348	3941	5533	7125	8715	0304
16	7993	9595	1195	2795	4394	5992	7589	9185	0780	2374	3968	5560	7151	8741	0331
17	8020	9621	1222	2822	4421	6019	7616	9212	0807	2401	3994	5586	7178	8768	0357
18	8046	9648	1249	2849	4448	6045	7642	9238	0833	2428	4021	5613	7204	8794	0384
19	8073	9675	1275	2875	4474	6072	7669	9265	0860	2454	4047	5639	7231	8821	0410
20	8100	9701	1302	2902	4501	6099	7696	9292	0887	2481	4074	5666	7257	8847	0437
21	8126	9728	1329	2929	4527	6125	7722	9318	0913	2507	4100	5692	7284	8874	0463
22	8153	9755	1356	2955	4554	6152	7749	9345	0940	2534	4127	5719	7310	8900	0490
23	8180	9781	1382	2982	4581	6179	7775	9371	0966	2560	4153	5745	7337	8927	0516
24	8207	9808	1409	3009	4607	6205	7802	9398	0993	2587	4180	5772	7363	8953	0543
25	8233	9835	1436	3035	4634	6232	7829	9425	1019	2613	4206	5799	7390	8980	0569
26	8260	9862	1462	3062	4661	6258	7855	9451	1046	2640	4233	5825	7416	9006	0596
27	8287	9888	1489	3089	4687	6285	7882	9478	1073	2667	4260	5852	7443	9033	0622
28	8313	9915	1516	3115	4714	6312	7908	9504	1099	2693	4286	5878	7469	9059	0648
29	8340	9942	1542	3142	4741	6338	7935	9531	1126	2720	4313	5905	7496	9086	0675
30	8367	9968	1569	3168	4767	6365	7962	9557	1152	2746	4339	5931	7522	9112	0701
31	8393	9995	1596	3195	4794	6391	7988	9584	1179	2773	4366	5958	7549	9139	0728
32	8420	0022	1622	3222	4820	6418	8015	9611	1205	2799	4392	5984	7575	9165	0754
33	8447	0048	1649	3248	4847	6445	8041	9637	1232	2826	4419	6011	7602	9192	0781
34	8474	0075	1676	3275	4874	6471	8068	9664	1259	2852	4445	6037	7628	9218	0807
35	8500	0102	1702	3302	4900	6498	8095	9690	1285	2879	4472	6064	7655	9245	0834
36	8527	0128	1729	3328	4927	6525	8121	9717	1312	2906	4498	6090	7681	9271	0860
37	8554	0155	1756	3355	4954	6551	8148	9744	1338	2932	4525	6117	7708	9298	0887
38	8580	0182	1782	3382	4980	6578	8174	9770	1365	2959	4551	6143	7734	9324	0913
39	8607	0208	1809	3408	5007	6604	8201	9797	1391	2985	4578	6170	7761	9351	0940
40	8634	0235	1836	3435	5034	6631	8228	9823	1418	3012	4605	6196	7787	9377	0966
41	8660	0262	1862	3462	5060	6658	8254	9850	1445	3038	4631	6223	7814	9404	0993
42	8687	0288	1889	3488	5087	6684	8281	9876	1471	3065	4658	6249	7840	9430	1019
43	8714	0315	1916	3515	5113	6711	8307	9903	1498	3091	4684	6276	7867	9457	1046
44	8741	0342	1942	3542	5140	6738	8334	9930	1524	3118	4711	6302	7893	9483	1072
45	8767	0369	1969	3568	5167	6764	8361	9956	1551	3145	4737	6329	7920	9510	1099
46	8794	0395	1996	3595	5193	6791	8387	9983	1577	3171	4764	6356	7946	9536	1125
47	8821	0422	2022	3622	5220	6817	8414	0009	1604	3198	4790	6382	7973	9563	1152
48	8847	0449	2049	3648	5247	6844	8440	0036	1631	3224	4817	6409	7999	9589	1178
49	8874	0475	2076	3675	5273	6871	8467	0063	1657	3251	4843	6435	8026	9616	1204
50	8901	0502	2102	3701	5300	6897	8494	0089	1684	3277	4870	6462	8052	9642	1231
51	8927	0529	2129	3728	5326	6924	8520	0116	1710	3304	4896	6488	8079	9669	1257
52	8954	0555	2155	3755	5353	6950	8547	0142	1737	3330	4923	6515	8105	9695	1284
53	8981	0582	2182	3781	5380	6977	8573	0169	1763	3357	4950	6541	8132	9722	1310
54	9007	0609	2209	3808	5406	7004	8600	0196	1790	3384	4976	6568	8158	9748	1337
55	9034	0635	2235	3835	5433	7030	8627	0222	1817	3410	5003	6594	8185	9775	1363
56	9061	0662	2262	3861	5460	7057	8653	0249	1843	3437	5029	6621	8211	9801	1390
57	9088	0689	2289	3888	5486	7084	8680	0275	1870	3463	5056	6647	8238	9828	1416
58	9114	0715	2315	3915	5513	7110	8706	0302	1896	3490	5082	6674	8264	9854	1443
59	9141	0742	2342	3941	5540	7137	8733	0328	1923	3516	5109	6700	8291	9881	1469
60	9168	0769	2369	3968	5566	7163	8760	0355	1949	3543	5135	6727	8317	9907	1496
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	″
9.895	9.894	9.894	9.894	9.894	9.894	9.894	9.894	9.894	9.894	9.894	9.893	9.893	9.893	9.893	
0450	9453	8457	7459	6461	5463	4463	3464	2463	1462	0461	9458	8456	7452	6448	60
0433	9437	8440	7443	6445	5446	4447	3447	2447	1446	0444	9442	8439	7436	6432	59
0416	9420	8423	7426	6428	5429	4430	3430	2430	1429	0427	9425	8422	7419	6415	58
0400	9404	8407	7409	6411	5413	4413	3414	2413	1412	0411	9408	8405	7402	6398	57
0383	9387	8390	7393	6395	5396	4397	3397	2396	1395	0394	9392	8389	7385	6381	56
0367	9370	8373	7376	6378	5379	4380	3380	2380	1379	0377	9375	8372	7369	6365	55
0350	9354	8357	7359	6361	5363	4363	3364	2363	1362	0360	9358	8355	7352	6348	54
0333	9337	8340	7343	6345	5346	4347	3347	2346	1345	0344	9341	8339	7335	6331	53
0317	9321	8324	7326	6328	5329	4330	3330	2330	1329	0327	9325	8322	7318	6314	52
0300	9304	8307	7310	6311	5313	4313	3314	2313	1312	0310	9308	8305	7302	6298	51
0284	9287	8290	7293	6295	5296	4297	3297	2296	1295	0294	9291	8288	7285	6281	50
0267	9271	8274	7276	6278	5279	4280	3280	2280	1279	0277	9275	8272	7268	6264	49
0250	9254	8257	7260	6262	5263	4263	3264	2263	1262	0260	9258	8255	7252	6247	48
0234	9237	8241	7243	6245	5246	4247	3247	2246	1245	0244	9241	8238	7235	6231	47
0217	9221	8224	7226	6228	5229	4230	3230	2230	1229	0227	9225	8222	7218	6214	46
0201	9204	8207	7210	6212	5213	4213	3214	2213	1212	0210	9208	8205	7201	6197	45
0184	9188	8191	7193	6195	5196	4197	3197	2196	1195	0193	9191	8188	7185	6180	44
0167	9171	8174	7176	6178	5180	4180	3180	2180	1178	0177	9174	8171	7168	6164	43
0151	9154	8157	7160	6162	5163	4164	3164	2163	1162	0160	9158	8155	7151	6147	42
0134	9138	8141	7143	6145	5146	4147	3147	2146	1145	0143	9141	8138	7134	6130	41
0118	9121	8124	7127	6128	5130	4130	3130	2130	1128	0127	9124	8121	7118	6113	40
0101	9105	8108	7110	6112	5113	4114	3114	2113	1112	0110	9108	8105	7101	6097	39
0084	9088	8091	7093	6095	5096	4097	3097	2096	1095	0093	9091	8088	7084	6080	38
0068	9071	8074	7077	6078	5080	4080	3080	2080	1078	0077	9074	8071	7067	6063	37
0051	9055	8058	7060	6062	5063	4064	3064	2063	1062	0060	9057	8054	7051	6047	36
0035	9038	8041	7043	6045	5046	4047	3047	2046	1045	0043	9041	8038	7034	6030	35
0018	9022	8024	7027	6029	5030	4030	3030	2030	1028	0026	9024	8021	7017	6013	34
0001	9005	8008	7010	6012	5013	4014	3013	2013	1012	0010	9007	8004	7001	5996	33
9985	8988	7991	6994	5995	4996	3997	2997	1996	0995	9993	8991	7987	6984	5980	32
9968	8972	7975	6977	5979	4980	3980	2980	1979	0978	9976	8974	7971	6967	5963	31
9952	8955	7958	6960	5962	4963	3964	2963	1963	0961	9960	8957	7954	6950	5946	30
9935	8938	7941	6944	5945	4946	3947	2947	1946	0945	9943	8940	7937	6934	5929	29
9918	8922	7925	6927	5929	4930	3930	2930	1929	0928	9926	8924	7921	6917	5913	28
9902	8905	7908	6910	5912	4913	3914	2913	1913	0911	9909	8907	7904	6900	5896	27
9885	8889	7891	6894	5895	4896	3897	2897	1896	0895	9893	8890	7887	6883	5879	26
9869	8872	7875	6877	5879	4880	3880	2880	1879	0878	9876	8874	7870	6867	5862	25
9852	8855	7858	6860	5862	4863	3864	2863	1863	0861	9859	8857	7854	6850	5846	24
9835	8839	7842	6844	5845	4846	3847	2847	1846	0845	9843	8840	7837	6833	5829	23
9819	8822	7825	6827	5829	4830	3830	2830	1829	0828	9826	8823	7820	6816	5812	22
9802	8806	7808	6811	5812	4813	3814	2813	1813	0811	9809	8807	7804	6800	5795	21
9786	8789	7792	6794	5796	4797	3797	2797	1796	0795	9793	8790	7787	6783	5779	20
9769	8772	7775	6777	5779	4780	3780	2780	1779	0778	9776	8773	7770	6766	5762	19
9752	8756	7758	6761	5762	4763	3764	2763	1763	0761	9759	8757	7753	6750	5745	18
9736	8739	7742	6744	5746	4747	3747	2747	1746	0744	9742	8740	7737	6733	5728	17
9719	8722	7725	6727	5729	4730	3730	2730	1729	0728	9726	8723	7720	6716	5712	16
9703	8706	7709	6711	5712	4713	3714	2713	1713	0711	9709	8706	7703	6699	5695	15
9686	8689	7692	6694	5696	4697	3697	2697	1696	0694	9692	8690	7686	6683	5678	14
9669	8673	7675	6677	5679	4680	3680	2680	1679	0678	9676	8673	7670	6666	5661	13
9653	8656	7659	6661	5662	4663	3664	2663	1662	0661	9659	8656	7653	6649	5645	12
9636	8639	7642	6644	5646	4647	3647	2647	1646	0644	9642	8640	7636	6632	5628	11
9619	8623	7625	6628	5629	4630	3630	2630	1629	0628	9626	8623	7620	6616	5611	10
9602	8606	7609	6611	5612	4613	3614	2613	1612	0611	9609	8606	7603	6599	5594	9
9586	8590	7592	6594	5596	4597	3597	2597	1596	0594	9592	8589	7586	6582	5578	8
9570	8573	7576	6578	5579	4580	3580	2580	1579	0578	9575	8573	7569	6565	5561	7
9553	8556	7559	6561	5562	4563	3564	2563	1562	0561	9559	8556	7553	6549	5544	6
9536	8540	7542	6544	5546	4547	3547	2547	1546	0544	9542	8539	7536	6532	5527	5
9520	8523	7526	6528	5529	4530	3530	2530	1529	0527	9525	8523	7519	6515	5511	4
9503	8506	7509	6511	5513	4513	3514	2513	1512	0511	9509	8506	7502	6498	5494	3
9487	8490	7492	6494	5496	4497	3497	2497	1496	0494	9492	8489	7486	6482	5477	2
9470	8473	7476	6478	5479	4480	3480	2480	1479	0477	9475	8472	7469	6465	5460	1
9453	8457	7459	6461	5463	4463	3464	2463	1462	0461	9458	8456	7452	6448	5444	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

″	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.
	896	896	897	897	897	898	898	898	898	899	899	899	899	900	900
0	7116	9714	2312	4910	7507	0104	2700	5296	7892	0487	3082	5677	8271	0865	3459
1	7159	9758	2355	4953	7550	0147	2743	5339	7935	0530	3125	5720	8314	0908	3502
2	7203	9801	2399	4996	7593	0190	2787	5383	7978	0574	3169	5763	8358	0952	3545
3	7246	9844	2442	5039	7637	0233	2830	5426	8022	0617	3212	5807	8401	0995	3588
4	7289	9887	2485	5083	7680	0277	2873	5469	8065	0660	3255	5850	8444	1038	3632
5	7333	9931	2529	5126	7723	0320	2916	5512	8108	0703	3298	5893	8487	1081	3675
6	7376	9974	2572	5169	7766	0363	2960	5556	8151	0747	3342	5936	8531	1124	3718
7	7419	0017	2615	5213	7810	0406	3003	5599	8195	0790	3385	5980	8574	1168	3761
8	7462	0061	2658	5256	7853	0450	3046	5642	8238	0833	3428	6023	8617	1211	3805
9	7506	0104	2702	5299	7896	0493	3089	5685	8281	0876	3471	6066	8660	1254	3848
10	7549	0147	2745	5342	7940	0536	3133	5729	8324	0920	3515	6109	8703	1297	3891
11	7592	0191	2788	5386	7983	0580	3176	5772	8368	0963	3558	6152	8747	1341	3934
12	7636	0234	2832	5429	8026	0623	3219	5815	8411	1006	3601	6196	8790	1384	3977
13	7679	0277	2875	5472	8069	0666	3263	5859	8454	1049	3644	6239	8833	1427	4021
14	7722	0320	2918	5516	8113	0709	3306	5902	8497	1093	3688	6282	8876	1470	4064
15	7766	0364	2962	5559	8156	0753	3349	5945	8541	1136	3731	6325	8920	1514	4107
16	7809	0407	3005	5602	8199	0796	3392	5988	8584	1179	3774	6369	8963	1557	4150
17	7852	0450	3048	5646	8243	0839	3436	6032	8627	1222	3817	6412	9006	1600	4194
18	7895	0494	3091	5689	8286	0883	3479	6075	8670	1266	3861	6455	9049	1643	4237
19	7939	0537	3135	5732	8329	0926	3522	6118	8714	1309	3904	6498	9093	1686	4280
20	7982	0580	3178	5775	8372	0969	3565	6161	8757	1352	3947	6542	9136	1730	4323
21	8025	0624	3221	5819	8416	1012	3609	6205	8800	1395	3990	6585	9179	1773	4366
22	8069	0667	3265	5862	8459	1056	3652	6248	8843	1439	4034	6628	9222	1816	4410
23	8112	0710	3308	5905	8502	1099	3695	6291	8887	1482	4077	6671	9266	1859	4453
24	8155	0753	3351	5949	8546	1142	3738	6334	8930	1525	4120	6715	9309	1903	4496
25	8199	0797	3394	5992	8589	1185	3782	6378	8973	1568	4163	6758	9352	1946	4539
26	8242	0840	3438	6035	8632	1229	3825	6421	9017	1612	4207	6801	9395	1989	4583
27	8285	0883	3481	6078	8675	1272	3868	6464	9060	1655	4250	6844	9438	2032	4626
28	8329	0927	3524	6122	8719	1315	3912	6507	9103	1698	4293	6888	9482	2076	4669
29	8372	0970	3568	6165	8762	1359	3955	6551	9146	1741	4336	6931	9525	2119	4712
30	8415	1013	3611	6208	8805	1402	3998	6594	9190	1785	4380	6974	9568	2162	4755
31	8458	1057	3654	6252	8848	1445	4041	6637	9233	1828	4423	7017	9611	2205	4799
32	8502	1100	3697	6295	8892	1488	4085	6681	9276	1871	4466	7061	9655	2248	4842
33	8545	1143	3741	6338	8935	1532	4128	6724	9319	1914	4509	7104	9698	2292	4885
34	8588	1186	3784	6381	8978	1575	4171	6767	9363	1958	4553	7147	9741	2335	4928
35	8632	1230	3827	6425	9022	1618	4214	6810	9406	2001	4596	7190	9784	2378	4971
36	8675	1273	3871	6468	9065	1661	4258	6854	9449	2044	4639	7233	9828	2421	5015
37	8718	1316	3914	6511	9108	1705	4301	6897	9492	2087	4682	7277	9871	2465	5058
38	8762	1360	3957	6555	9151	1748	4344	6940	9536	2131	4726	7320	9914	2508	5101
39	8805	1403	4001	6598	9195	1791	4387	6983	9579	2174	4769	7363	9957	2551	5144
40	8848	1446	4044	6641	9238	1835	4431	7027	9622	2217	4812	7406	0000	2594	5188
41	8891	1489	4087	6684	9281	1878	4474	7070	9665	2260	4855	7450	0044	2637	5231
42	8935	1533	4130	6728	9325	1921	4517	7113	9709	2304	4898	7493	0087	2681	5274
43	8978	1576	4174	6771	9368	1964	4561	7156	9752	2347	4942	7536	0130	2724	5317
44	9021	1619	4217	6814	9411	2008	4604	7200	9795	2390	4985	7579	0173	2767	5360
45	9065	1663	4260	6858	9454	2051	4647	7243	9838	2433	5028	7623	0217	2810	5404
46	9108	1706	4304	6901	9498	2094	4690	7286	9882	2477	5071	7666	0260	2854	5447
47	9151	1749	4347	6944	9541	2137	4734	7329	9925	2520	5115	7709	0303	2897	5490
48	9195	1793	4390	6987	9584	2181	4777	7373	9968	2563	5158	7752	0346	2940	5533
49	9238	1836	4433	7031	9628	2224	4820	7416	0011	2606	5201	7796	0390	2983	5577
50	9281	1879	4477	7074	9671	2267	4863	7459	0055	2650	5244	7839	0433	3026	5620
51	9325	1922	4520	7117	9714	2311	4907	7502	0098	2693	5288	7882	0476	3070	5663
52	9368	1966	4563	7161	9757	2354	4950	7546	0141	2736	5331	7925	0519	3113	5706
53	9411	2009	4607	7204	9801	2397	4993	7589	0184	2779	5374	7968	0562	3156	5749
54	9454	2052	4650	7247	9844	2440	5036	7632	0228	2823	5417	8012	0606	3199	5793
55	9498	2096	4693	7290	9887	2484	5080	7676	0271	2866	5461	8055	0649	3243	5836
56	9541	2139	4736	7334	9930	2527	5123	7719	0314	2909	5504	8098	0692	3286	5879
57	9584	2182	4780	7377	9974	2570	5166	7762	0357	2952	5547	8141	0735	3329	5922
58	9628	2226	4823	7420	0017	2613	5210	7805	0401	2996	5590	8185	0779	3372	5966
59	9671	2269	4866	7463	0060	2657	5253	7849	0444	3039	5634	8228	0822	3415	6009
60	9714	2312	4910	7507	0104	2700	5296	7892	0487	3082	5677	8271	0865	3459	6052
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	″
10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10	
103	103	102	102	102	101	101	101	101	100	100	100	100	099	099	
2884	0286	7688	5090	2493	9896	7300	4704	2108	9513	6918	4323	1729	9135	6541	60
2841	0242	7645	5047	2450	9853	7257	4661	2065	9470	6875	4280	1686	9092	6498	59
2797	0199	7601	5004	2407	9810	7213	4617	2022	9426	6831	4237	1642	9048	6455	58
2754	0156	7558	4961	2363	9767	7170	4574	1978	9383	6788	4193	1599	9005	6412	57
2711	0113	7515	4917	2320	9723	7127	4531	1935	9340	6745	4150	1556	8962	6368	56
2667	0069	7471	4874	2277	9680	7084	4488	1892	9297	6702	4107	1513	8919	6325	55
2624	0026	7428	4831	2234	9637	7040	4444	1849	9253	6658	4064	1469	8876	6282	54
2581	9983	7385	4787	2190	9594	6997	4401	1805	9210	6615	4020	1426	8832	6239	53
2538	9939	7342	4744	2147	9550	6954	4358	1762	9167	6572	3977	1383	8789	6195	52
2494	9896	7298	4701	2104	9507	6911	4315	1719	9124	6529	3934	1340	8746	6152	51
2451	9853	7255	4658	2060	9464	6867	4271	1676	9080	6485	3891	1297	8703	6109	50
2408	9809	7212	4614	2017	9420	6824	4228	1632	9037	6442	3848	1253	8659	6066	49
2364	9766	7168	4571	1974	9377	6781	4185	1589	8994	6399	3804	1210	8616	6023	48
2321	9723	7125	4528	1931	9334	6737	4141	1546	8951	6356	3761	1167	8573	5979	47
2278	9680	7082	4484	1887	9291	6694	4098	1503	8907	6312	3718	1124	8530	5936	46
2234	9636	7038	4441	1844	9247	6651	4055	1459	8864	6269	3675	1080	8486	5893	45
2191	9593	6995	4398	1801	9204	6608	4012	1416	8821	6226	3631	1037	8443	5850	44
2148	9550	6952	4354	1757	9161	6564	3968	1373	8778	6183	3588	0994	8400	5806	43
2105	9506	6909	4311	1714	9117	6521	3925	1330	8734	6139	3545	0951	8357	5763	42
2061	9463	6865	4268	1671	9074	6478	3882	1286	8691	6096	3502	0907	8314	5720	41
2018	9420	6822	4225	1628	9031	6435	3839	1243	8648	6053	3458	0864	8270	5677	40
1975	9376	6779	4181	1584	8988	6391	3795	1200	8605	6010	3415	0821	8227	5634	39
1931	9333	6735	4138	1541	8944	6348	3752	1157	8561	5966	3372	0778	8184	5590	38
1888	9290	6692	4095	1498	8901	6305	3709	1113	8518	5923	3329	0734	8141	5547	37
1845	9247	6649	4051	1454	8858	6262	3666	1070	8475	5880	3285	0691	8097	5504	36
1801	9203	6606	4008	1411	8815	6218	3622	1027	8432	5837	3242	0648	8054	5461	35
1758	9160	6562	3965	1368	8771	6175	3579	0983	8388	5793	3199	0605	8011	5417	34
1715	9117	6519	3922	1325	8728	6132	3536	0940	8345	5750	3156	0562	7968	5374	33
1671	9073	6476	3878	1281	8685	6088	3493	0897	8302	5707	3112	0518	7924	5331	32
1628	9030	6432	3835	1238	8641	6045	3449	0854	8259	5664	3069	0475	7881	5288	31
1585	8987	6389	3792	1195	8598	6002	3406	0810	8215	5620	3026	0432	7838	5245	30
1542	8943	6346	3748	1152	8555	5959	3363	0767	8172	5577	2983	0389	7795	5201	29
1498	8900	6303	3705	1108	8512	5915	3319	0724	8129	5534	2939	0345	7752	5158	28
1455	8857	6259	3662	1065	8468	5872	3276	0681	8086	5491	2896	0302	7708	5115	27
1412	8814	6216	3619	1022	8425	5829	3233	0637	8042	5447	2853	0259	7665	5072	26
1368	8770	6173	3575	0978	8382	5786	3190	0594	7999	5404	2810	0216	7622	5029	25
1325	8727	6129	3532	0935	8339	5742	3146	0551	7956	5361	2767	0172	7579	4985	24
1282	8684	6086	3489	0892	8295	5699	3103	0508	7913	5318	2723	0129	7535	4942	23
1238	8640	6043	3445	0849	8252	5656	3060	0464	7869	5274	2680	0086	7492	4899	22
1195	8597	5999	3402	0805	8209	5613	3017	0421	7826	5231	2637	0043	7449	4856	21
1152	8554	5956	3359	0762	8165	5569	2973	0378	7783	5188	2594	0000	7406	4812	20
1109	8511	5913	3316	0719	8122	5526	2930	0335	7740	5145	2550	9956	7363	4769	19
1065	8467	5870	3272	0675	8079	5483	2887	0291	7696	5102	2507	9913	7319	4726	18
1022	8424	5826	3229	0632	8036	5439	2844	0248	7653	5058	2464	9870	7276	4683	17
0979	8381	5783	3186	0589	7992	5396	2800	0205	7610	5015	2421	9827	7233	4640	16
0935	8337	5740	3142	0546	7949	5353	2757	0162	7567	4972	2377	9783	7190	4596	15
0892	8294	5696	3099	0502	7906	5310	2714	0118	7523	4929	2334	9740	7146	4553	14
0849	8251	5653	3056	0459	7863	5266	2671	0075	7480	4885	2291	9697	7103	4510	13
0805	8207	5610	3013	0416	7819	5223	2627	0032	7437	4842	2248	9654	7060	4467	12
0762	8164	5567	2969	0372	7776	5180	2584	9989	7394	4799	2204	9610	7017	4423	11
0719	8121	5523	2926	0329	7733	5137	2541	9945	7350	4756	2161	9567	6974	4380	10
0675	8078	5480	2883	0286	7689	5093	2498	9902	7307	4712	2118	9524	6930	4337	9
0632	8034	5437	2839	0243	7646	5050	2454	9859	7264	4669	2075	9481	6887	4294	8
0589	7991	5393	2796	0199	7603	5007	2411	9816	7221	4626	2032	9438	6844	4251	7
0546	7948	5350	2753	0156	7560	4964	2368	9772	7177	4583	1988	9394	6801	4207	6
0502	7904	5307	2710	0113	7516	4920	2324	9729	7134	4539	1945	9351	6757	4164	5
0459	7861	5264	2666	0070	7473	4877	2281	9686	7091	4496	1902	9308	6714	4121	4
0416	7818	5220	2623	0026	7430	4834	2238	9643	7048	4453	1859	9265	6671	4078	3
0372	7774	5177	2580	9983	7387	4790	2195	9599	7004	4410	1815	9221	6628	4034	2
0329	7731	5134	2537	9940	7343	4747	2151	9556	6961	4366	1772	9178	6585	3991	1
0286	7688	5090	2493	9896	7300	4704	2108	9513	6918	4323	1729	9135	6541	3948	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

38 Deg. Sine

″	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9. 794	9. 794	9. 794	9. 794	9. 794	9. 794	9. 795	9. 795	9. 795	9. 795	9. 795	9. 795	9. 796	9. 796	9. 796
0	1496	3083	4670	6256	7841	9425	1008	2590	4171	5751	7330	8909	0486	2062	3638
1	1522	3110	4697	6282	7867	9451	1034	2616	4197	5777	7357	8935	0512	2089	3664
2	1549	3136	4723	6309	7894	9478	1061	2643	4224	5804	7383	8961	0539	2115	3690
3	1575	3163	4749	6335	7920	9504	1087	2669	4250	5830	7409	8988	0565	2141	3717
4	1602	3189	4776	6362	7947	9530	1113	2695	4276	5856	7436	9014	0591	2167	3743
5	1628	3216	4802	6388	7973	9557	1140	2722	4303	5883	7462	9040	0617	2194	3769
6	1654	3242	4829	6415	7999	9583	1166	2748	4329	5909	7488	9066	0644	2220	3795
7	1681	3269	4855	6441	8026	9610	1192	2774	4355	5935	7515	9093	0670	2246	3822
8	1707	3295	4882	6467	8052	9636	1219	2801	4382	5962	7541	9119	0696	2273	3848
9	1734	3321	4908	6494	8079	9662	1245	2827	4408	5988	7567	9145	0723	2299	3874
10	1760	3348	4935	6520	8105	9689	1272	2853	4434	6014	7593	9172	0749	2325	3900
11	1787	3374	4961	6547	8131	9715	1298	2880	4461	6041	7620	9198	0775	2351	3927
12	1813	3401	4987	6573	8158	9742	1324	2906	4487	6067	7646	9224	0801	2378	3953
13	1840	3427	5014	6599	8184	9768	1351	2933	4513	6093	7672	9250	0828	2404	3979
14	1866	3454	5040	6626	8211	9794	1377	2959	4540	6120	7699	9277	0854	2430	4005
15	1893	3480	5067	6652	8237	9821	1403	2985	4566	6146	7725	9303	0880	2456	4032
16	1919	3507	5093	6679	8263	9847	1430	3012	4592	6172	7751	9329	0906	2483	4058
17	1946	3533	5120	6705	8290	9873	1456	3038	4619	6199	7778	9356	0933	2509	4084
18	1972	3560	5146	6732	8316	9900	1483	3064	4645	6225	7804	9382	0959	2535	4110
19	1999	3586	5172	6758	8343	9926	1509	3091	4671	6251	7830	9408	0985	2561	4137
20	2025	3612	5199	6784	8369	9953	1535	3117	4698	6278	7857	9435	1012	2588	4163
21	2051	3639	5225	6811	8395	9979	1562	3143	4724	6304	7883	9461	1038	2614	4189
22	2078	3665	5252	6837	8422	0005	1588	3170	4750	6330	7909	9487	1064	2640	4215
23	2104	3692	5278	6864	8448	0032	1614	3196	4777	6357	7935	9513	1090	2666	4242
24	2131	3718	5305	6890	8475	0058	1641	3222	4803	6383	7962	9540	1117	2693	4268
25	2157	3745	5331	6916	8501	0085	1667	3249	4830	6409	7988	9566	1143	2719	4294
26	2184	3771	5357	6943	8527	0111	1693	3275	4856	6436	8014	9592	1169	2745	4320
27	2210	3798	5384	6969	8554	0137	1720	3301	4882	6462	8041	9619	1195	2771	4347
28	2237	3824	5410	6996	8580	0164	1746	3328	4909	6488	8067	9645	1222	2798	4373
29	2263	3850	5437	7022	8607	0190	1773	3354	4935	6515	8093	9671	1248	2824	4399
30	2290	3877	5463	7049	8633	0216	1799	3381	4961	6541	8120	9697	1274	2850	4425
31	2316	3903	5490	7075	8659	0243	1825	3407	4988	6567	8146	9724	1301	2877	4451
32	2343	3930	5516	7101	8686	0269	1852	3433	5014	6594	8172	9750	1327	2903	4478
33	2369	3956	5543	7128	8712	0296	1878	3460	5040	6620	8199	9776	1353	2929	4504
34	2395	3983	5569	7154	8739	0322	1904	3486	5067	6646	8225	9803	1379	2955	4530
35	2422	4009	5595	7181	8765	0348	1931	3512	5093	6672	8251	9829	1406	2982	4556
36	2448	4036	5622	7207	8791	0375	1957	3539	5119	6699	8277	9855	1432	3008	4583
37	2475	4062	5648	7233	8818	0401	1984	3565	5146	6725	8304	9881	1458	3034	4609
38	2501	4088	5675	7260	8844	0428	2010	3591	5172	6751	8330	9908	1484	3060	4635
39	2528	4115	5701	7286	8871	0454	2036	3618	5198	6778	8356	9934	1511	3087	4661
40	2554	4141	5728	7313	8897	0480	2063	3644	5225	6804	8383	9960	1537	3113	4688
41	2581	4168	5754	7339	8923	0507	2089	3670	5251	6830	8409	9987	1563	3139	4714
42	2607	4194	5780	7366	8950	0533	2115	3697	5277	6857	8435	0013	1590	3165	4740
43	2634	4221	5807	7392	8976	0559	2142	3723	5304	6883	8462	0039	1616	3192	4766
44	2660	4247	5833	7418	9003	0586	2168	3749	5330	6909	8488	0065	1642	3218	4793
45	2687	4274	5860	7445	9029	0612	2194	3776	5356	6936	8514	0092	1668	3244	4819
46	2713	4300	5886	7471	9055	0639	2221	3802	5383	6962	8540	0118	1695	3270	4845
47	2739	4326	5912	7498	9082	0665	2247	3828	5409	6988	8567	0144	1721	3297	4871
48	2766	4353	5939	7524	9108	0691	2274	3855	5435	7015	8593	0171	1747	3323	4898
49	2792	4379	5965	7550	9135	0718	2300	3881	5462	7041	8619	0197	1773	3349	4924
50	2819	4406	5992	7577	9161	0744	2326	3908	5488	7067	8646	0223	1800	3375	4950
51	2845	4432	6018	7603	9187	0770	2353	3934	5514	7094	8672	0249	1826	3402	4976
52	2872	4459	6045	7630	9214	0797	2379	3960	5541	7120	8698	0276	1852	3428	5002
53	2898	4485	6071	7656	9240	0823	2405	3987	5567	7146	8725	0302	1879	3454	5029
54	2925	4512	6097	7682	9266	0850	2432	4013	5593	7172	8751	0328	1905	3480	5055
55	2951	4538	6124	7709	9293	0876	2458	4039	5620	7199	8777	0355	1931	3507	5081
56	2978	4564	6150	7735	9319	0902	2484	4066	5646	7225	8803	0381	1957	3533	5107
57	3004	4591	6177	7762	9346	0929	2511	4092	5672	7251	8830	0407	1984	3559	5134
58	3030	4617	6203	7788	9372	0955	2537	4118	5698	7278	8856	0433	2010	3585	5160
59	3057	4644	6230	7814	9398	0981	2564	4145	5725	7304	8882	0460	2036	3612	5186
60	3083	4670	6256	7841	9425	1008	2590	4171	5751	7330	8909	0486	2062	3638	5212
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Sine Deg. 51

38 Deg. Co-Sine

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	″
9. 893	9. 893	9. 893	9. 893	9. 893	9. 893	9. 892	9. 892	9. 892	9. 892	9. 892	9. 892	9. 892	9. 892	9. 892	
5444	4439	3433	2426	1419	0412	9404	8395	7385	6375	5365	4354	3342	2329	1316	60
5427	4422	3416	2410	1403	0395	9387	8378	7369	6359	5348	4337	3325	2313	1300	59
5410	4405	3399	2393	1386	0378	9370	8361	7352	6342	5331	4320	3308	2296	1283	58
5393	4388	3382	2376	1369	0361	9353	8344	7335	6325	5314	4303	3291	2279	1266	57
5377	4371	3366	2359	1352	0345	9336	8328	7318	6308	5297	4286	3274	2262	1249	56
5360	4355	3349	2342	1335	0328	9320	8311	7301	6291	5281	4269	3257	2245	1232	55
5343	4338	3332	2326	1319	0311	9303	8294	7284	6274	5264	4252	3241	2228	1215	54
5326	4321	3315	2309	1302	0294	9286	8277	7268	6258	5247	4236	3224	2211	1198	53
5310	4304	3299	2292	1285	0277	9269	8260	7251	6241	5230	4219	3207	2194	1181	52
5293	4288	3282	2275	1268	0261	9252	8243	7234	6224	5213	4202	3190	2178	1164	51
5276	4271	3265	2259	1251	0244	9236	8227	7217	6207	5196	4185	3173	2161	1148	50
5259	4254	3248	2242	1235	0227	9219	8210	7200	6190	5179	4168	3156	2144	1131	49
5243	4237	3232	2225	1218	0210	9202	8193	7183	6173	5163	4151	3139	2127	1114	48
5226	4221	3215	2208	1201	0193	9185	8176	7167	6157	5146	4134	3123	2110	1097	47
5209	4204	3198	2191	1184	0177	9168	8159	7150	6140	5129	4118	3106	2093	1080	46
5192	4187	3181	2175	1168	0160	9151	8143	7133	6123	5112	4101	3089	2076	1063	45
5176	4170	3164	2158	1151	0143	9135	8126	7116	6106	5095	4084	3072	2059	1046	44
5159	4154	3148	2141	1134	0126	9118	8109	7099	6089	5078	4067	3055	2042	1029	43
5142	4137	3131	2124	1117	0109	9101	8092	7082	6072	5062	4050	3038	2026	1012	42
5125	4120	3114	2108	1100	0093	9084	8075	7066	6055	5045	4033	3021	2009	0995	41
5109	4103	3097	2091	1084	0076	9067	8058	7049	6039	5028	4016	3004	1992	0979	40
5092	4087	3081	2074	1067	0059	9051	8042	7032	6022	5011	4000	2988	1975	0962	39
5075	4070	3064	2057	1050	0042	9034	8025	7015	6005	4994	3983	2971	1958	0945	38
5058	4053	3047	2040	1033	0025	9017	8008	6998	5988	4977	3966	2954	1941	0928	37
5042	4036	3030	2024	1016	0009	9000	7991	6981	5971	4960	3949	2937	1924	0911	36
5025	4020	3013	2007	1000	9992	8983	7974	6965	5954	4944	3932	2920	1907	0894	35
5008	4003	2997	1990	0983	9975	8967	7957	6948	5938	4927	3915	2903	1891	0877	34
4991	3986	2980	1973	0966	9958	8950	7941	6931	5921	4910	3898	2886	1874	0860	33
4975	3969	2963	1956	0949	9941	8933	7924	6914	5904	4893	3882	2869	1857	0843	32
4958	3952	2946	1940	0932	9925	8916	7907	6897	5887	4876	3865	2853	1840	0827	31
4941	3936	2930	1923	0916	9908	8899	7890	6880	5870	4859	3848	2836	1823	0810	30
4924	3919	2913	1906	0899	9891	8882	7873	6864	5853	4842	3831	2819	1806	0793	29
4908	3902	2896	1889	0882	9874	8866	7857	6847	5837	4826	3814	2802	1789	0776	28
4891	3885	2879	1873	0865	9857	8849	7840	6830	5820	4809	3797	2785	1772	0759	27
4874	3869	2863	1856	0848	9841	8832	7823	6813	5803	4792	3780	2768	1755	0742	26
4857	3852	2846	1839	0832	9824	8815	7806	6796	5786	4775	3763	2751	1739	0725	25
4841	3835	2829	1822	0815	9807	8798	7789	6779	5769	4758	3747	2734	1722	0708	24
4824	3818	2812	1805	0798	9790	8782	7772	6763	5752	4741	3730	2718	1705	0691	23
4807	3802	2795	1789	0781	9773	8765	7756	6746	5735	4724	3713	2701	1688	0675	22
4790	3785	2779	1772	0765	9757	8748	7739	6729	5719	4708	3696	2684	1671	0658	21
4774	3768	2762	1755	0748	9740	8731	7722	6712	5702	4691	3679	2667	1654	0641	20
4757	3751	2745	1738	0731	9723	8714	7705	6695	5685	4674	3662	2650	1637	0624	19
4740	3735	2728	1722	0714	9706	8698	7688	6678	5668	4657	3645	2633	1620	0607	18
4723	3718	2712	1705	0697	9689	8681	7671	6662	5651	4640	3629	2616	1603	0590	17
4707	3701	2695	1688	0681	9672	8664	7655	6645	5634	4623	3612	2599	1587	0573	16
4690	3684	2678	1671	0664	9656	8647	7638	6628	5618	4606	3595	2583	1570	0556	15
4673	3667	2661	1654	0647	9639	8630	7621	6611	5601	4590	3578	2566	1553	0539	14
4656	3651	2644	1638	0630	9622	8613	7604	6594	5584	4573	3561	2549	1536	0522	13
4640	3634	2628	1621	0613	9605	8597	7587	6577	5567	4556	3544	2532	1519	0506	12
4623	3617	2611	1604	0597	9588	8580	7571	6561	5550	4539	3527	2515	1502	0489	11
4606	3600	2594	1587	0580	9572	8563	7554	6544	5533	4522	3510	2498	1485	0472	10
4589	3584	2577	1570	0563	9555	8546	7537	6527	5516	4505	3494	2481	1468	0455	9
4573	3567	2561	1554	0546	9538	8529	7520	6510	5500	4488	3477	2464	1452	0438	8
4556	3550	2544	1537	0529	9521	8513	7503	6493	5483	4472	3460	2448	1435	0421	7
4539	3533	2527	1520	0513	9504	8496	7486	6476	5466	4455	3443	2431	1418	0404	6
4522	3517	2510	1503	0496	9488	8479	7470	6460	5449	4438	3426	2414	1401	0387	5
4506	3500	2493	1487	0479	9471	8462	7453	6443	5432	4421	3409	2397	1384	0370	4
4489	3483	2477	1470	0462	9454	8445	7436	6426	5415	4404	3392	2380	1367	0353	3
4472	3466	2460	1453	0445	9437	8428	7419	6409	5399	4387	3376	2363	1350	0337	2
4455	3450	2443	1436	0429	9420	8412	7402	6392	5382	4370	3359	2346	1333	0320	1
4439	3433	2426	1419	0412	9404	8395	7385	6375	5365	4354	3342	2329	1316	0303	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Sine Deg. 51

38 Deg. Tangent

″	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9.900	9.900	9.901	9.901	9.901	9.901	9.902	9.902	9.902	9.902	9.903	9.903	9.903	9.903	9.904
0	6052	8645	1237	3830	6422	9013	1604	4195	6786	9376	1966	4555	7144	9733	2321
1	6095	8688	1281	3873	6465	9056	1647	4238	6829	9419	2009	4598	7187	9776	2365
2	6138	8731	1324	3916	6508	9099	1691	4281	6872	9462	2052	4641	7230	9819	2408
3	6182	8775	1367	3959	6551	9143	1734	4325	6915	9505	2095	4684	7274	9862	2451
4	6225	8818	1410	4002	6594	9186	1777	4368	6958	9548	2138	4728	7317	9906	2494
5	6268	8861	1453	4046	6638	9229	1820	4411	7001	9592	2181	4771	7360	9949	2537
6	6311	8904	1497	4089	6681	9272	1863	4454	7045	9635	2225	4814	7403	9992	2580
7	6354	8947	1540	4132	6724	9315	1907	4497	7088	9678	2268	4857	7446	0035	2623
8	6398	8991	1583	4175	6767	9359	1950	4540	7131	9721	2311	4900	7489	0078	2667
9	6441	9034	1626	4218	6810	9402	1993	4584	7174	9764	2354	4943	7533	0121	2710
10	6484	9077	1670	4262	6853	9445	2036	4627	7217	9807	2397	4987	7576	0164	2753
11	6527	9120	1713	4305	6897	9488	2079	4670	7260	9851	2440	5030	7619	0208	2796
12	6571	9163	1756	4348	6940	9531	2122	4713	7304	9894	2483	5073	7662	0251	2839
13	6614	9207	1799	4391	6983	9575	2166	4756	7347	9937	2527	5116	7705	0294	2882
14	6657	9250	1842	4434	7026	9618	2209	4800	7390	9980	2570	5159	7748	0337	2925
15	6700	9293	1886	4478	7069	9661	2252	4843	7433	0023	2613	5202	7791	0380	2969
16	6743	9336	1929	4521	7113	9704	2295	4886	7476	0066	2656	5246	7835	0423	3012
17	6787	9379	1972	4564	7156	9747	2338	4929	7519	0110	2699	5289	7878	0466	3055
18	6830	9423	2015	4607	7199	9790	2382	4972	7563	0153	2742	5332	7921	0510	3098
19	6873	9466	2058	4650	7242	9834	2425	5015	7606	0196	2786	5375	7964	0553	3141
20	6916	9509	2102	4694	7285	9877	2468	5059	7649	0239	2829	5418	8007	0596	3184
21	6960	9552	2145	4737	7329	9920	2511	5102	7692	0282	2872	5461	8050	0639	3227
22	7003	9596	2188	4780	7372	9963	2554	5145	7735	0325	2915	5504	8093	0682	3270
23	7046	9639	2231	4823	7415	0006	2597	5188	7779	0369	2958	5548	8137	0725	3314
24	7089	9682	2274	4866	7458	0050	2641	5231	7822	0412	3001	5591	8180	0768	3357
25	7132	9725	2318	4910	7501	0093	2684	5274	7865	0455	3045	5634	8223	0812	3400
26	7176	9768	2361	4953	7545	0136	2727	5318	7908	0498	3088	5677	8266	0855	3443
27	7219	9812	2404	4996	7588	0179	2770	5361	7951	0541	3131	5720	8309	0898	3486
28	7262	9855	2447	5039	7631	0222	2813	5404	7994	0584	3174	5763	8352	0941	3529
29	7305	9898	2490	5082	7674	0266	2857	5447	8038	0628	3217	5806	8395	0984	3572
30	7348	9941	2534	5126	7717	0309	2900	5490	8081	0671	3260	5850	8439	1027	3616
31	7392	9984	2577	5169	7761	0352	2943	5534	8124	0714	3303	5893	8482	1070	3659
32	7435	0028	2620	5212	7804	0395	2986	5577	8167	0757	3347	5936	8525	1114	3702
33	7478	0071	2663	5255	7847	0438	3029	5620	8210	0800	3390	5979	8568	1157	3745
34	7521	0114	2706	5298	7890	0481	3072	5663	8253	0843	3433	6022	8611	1200	3788
35	7565	0157	2750	5342	7933	0525	3116	5706	8297	0887	3476	6065	8654	1243	3831
36	7608	0200	2793	5385	7976	0568	3159	5749	8340	0930	3519	6109	8697	1286	3874
37	7651	0244	2836	5428	8020	0611	3202	5793	8383	0973	3562	6152	8741	1329	3918
38	7694	0287	2879	5471	8063	0654	3245	5836	8426	1016	3606	6195	8784	1372	3961
39	7737	0330	2922	5514	8106	0697	3288	5879	8469	1059	3649	6238	8827	1416	4004
40	7781	0373	2966	5558	8149	0741	3332	5922	8512	1102	3692	6281	8870	1459	4047
41	7824	0417	3009	5601	8192	0784	3375	5965	8556	1145	3735	6324	8913	1502	4090
42	7867	0460	3052	5644	8236	0827	3418	6008	8599	1189	3778	6367	8956	1545	4133
43	7910	0503	3095	5687	8279	0870	3461	6052	8642	1232	3821	6411	9000	1588	4176
44	7953	0546	3138	5730	8322	0913	3504	6095	8685	1275	3865	6454	9043	1631	4219
45	7997	0589	3182	5774	8365	0956	3547	6138	8728	1318	3908	6497	9086	1674	4263
46	8040	0633	3225	5817	8408	1000	3591	6181	8771	1361	3951	6540	9129	1718	4306
47	8083	0676	3268	5860	8452	1043	3634	6224	8815	1404	3994	6583	9172	1761	4349
48	8126	0719	3311	5903	8495	1086	3677	6268	8858	1448	4037	6626	9215	1804	4392
49	8170	0762	3354	5946	8538	1129	3720	6311	8901	1491	4080	6670	9258	1847	4435
50	8213	0805	3398	5990	8581	1172	3763	6354	8944	1534	4123	6713	9302	1890	4478
51	8256	0849	3441	6033	8624	1216	3806	6397	8987	1577	4167	6756	9345	1933	4521
52	8299	0892	3484	6076	8668	1259	3850	6440	9030	1620	4210	6799	9388	1976	4565
53	8342	0935	3527	6119	8711	1302	3893	6483	9074	1663	4253	6842	9431	2019	4608
54	8386	0978	3570	6162	8754	1345	3936	6527	9117	1707	4296	6885	9474	2063	4651
55	8429	1021	3614	6206	8797	1388	3979	6570	9160	1750	4339	6928	9517	2106	4694
56	8472	1065	3657	6249	8840	1432	4022	6613	9203	1793	4382	6972	9560	2149	4737
57	8515	1108	3700	6292	8883	1475	4066	6656	9246	1836	4426	7015	9604	2192	4780
58	8558	1151	3743	6335	8927	1518	4109	6699	9289	1879	4469	7058	9647	2235	4823
59	8602	1194	3786	6378	8970	1561	4152	6742	9333	1922	4512	7101	9690	2278	4866
60	8645	1237	3830	6422	9013	1604	4195	6786	9376	1966	4555	7144	9733	2321	4910
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Tangent Deg. 51

38 Deg. Co-Tangent

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	″
10.099	10.099	10.098	10.098	10.098	10.098	10.097	10.097	10.097	10.097	10.096	10.096	10.096	10.096	10.095	
3948	1355	8763	6170	3578	0987	8396	5805	3214	0624	8034	5445	2856	0267	7679	60
3905	1312	8719	6127	3535	0944	8353	5762	3171	0581	7991	5402	2813	0224	7635	59
3862	1269	8676	6084	3492	0901	8309	5719	3128	0538	7948	5359	2770	0181	7592	58
3818	1225	8633	6041	3449	0857	8266	5675	3085	0495	7905	5316	2726	0138	7549	57
3775	1182	8590	5998	3406	0814	8223	5632	3042	0452	7862	5272	2683	0094	7506	56
3732	1139	8547	5954	3362	0771	8180	5589	2999	0408	7819	5229	264[illegible]	0051	7463	55
3689	1096	8503	5911	3319	0728	8137	5546	2955	0365	7775	5186	2597	0008	7420	54
3646	1053	8460	5868	3276	0685	8093	5503	2912	0322	7732	5143	2554	9965	7377	53
3602	1009	8417	5825	3233	0641	8050	5460	2869	0279	7689	5100	2511	9922	7333	52
3559	0966	8374	5782	3190	0598	8007	5416	2826	0236	7646	5057	2467	9879	7290	51
3516	0923	8330	5738	3147	0555	7964	5373	2783	0193	7603	5013	2424	9836	7247	50
3473	0880	8287	5695	3103	0512	7921	5330	2740	0149	7560	4970	2381	9792	7204	49
3429	0837	8244	5652	3060	0469	7878	5287	2696	0106	7517	4927	2338	9749	7161	48
3386	0793	8201	5609	3017	0425	7834	5244	2653	0063	7473	4884	2295	9706	7118	47
3343	0750	8158	5566	2974	0382	7791	5200	2610	0020	7430	4841	2252	9663	7075	46
3300	0707	8114	5522	2931	0339	7748	5157	2567	9977	7387	4798	2209	9620	7031	45
3257	0664	8071	5479	2887	0296	7705	5114	2524	9934	7344	4754	2165	9577	6988	44
3213	0621	8028	5436	2844	0253	7662	5071	2481	9890	7301	4711	2122	9534	6945	43
3170	0577	7985	5393	2801	0210	7618	5028	2437	9847	7258	4668	2079	9490	6902	42
3127	0534	7942	5350	2758	0166	7575	4985	2394	9804	7214	4625	2036	9447	6859	41
3084	0491	7898	5306	2715	0123	7532	4941	2351	9761	7171	4582	1993	9404	6816	40
3040	0448	7855	5263	2671	0080	7489	4898	2308	9718	7128	4539	1950	9361	6773	39
2997	0404	7812	5220	2628	0037	7446	4855	2265	9675	7085	4496	1907	9318	6730	38
2954	0361	7769	5177	2585	9994	7403	4812	2221	9631	7042	4452	1863	9275	6686	37
2911	0318	7726	5134	2542	9950	7359	4769	2178	9588	6999	4409	1820	9232	6643	36
2868	0275	7682	5090	2499	9907	7316	4726	2135	9545	6955	4366	1777	9188	6600	35
2824	0232	7639	5047	2455	9864	7273	4682	2092	9502	6912	4323	1734	9145	6557	34
2781	0188	7596	5004	2412	9821	7230	4639	2049	9459	6869	4280	1691	9102	6514	33
2738	0145	7553	4961	2369	9778	7187	4596	2006	9416	6826	4237	1648	9059	6471	32
2695	0102	7510	4918	2326	9734	7143	4553	1962	9372	6783	4194	1605	9016	6428	31
2652	0059	7466	4874	2283	9691	7100	4510	1919	9329	6740	4150	1561	8973	6384	30
2608	0016	7423	4831	2239	9648	7057	4466	1876	9286	6697	4107	1518	8930	6341	29
2565	9972	7380	4788	2196	9605	7014	4423	1833	9243	6653	4064	1475	8886	6298	28
2522	9929	7337	4745	2153	9562	6971	4380	1790	9200	6610	4021	1432	8843	6255	27
2479	9886	7294	4702	2110	9519	6928	4337	1747	9157	6567	3978	1389	8800	6212	26
2435	9843	7250	4658	2067	9475	6884	4294	1703	9113	6524	3935	1346	8757	6169	25
2392	9800	7207	4615	2024	9432	6841	4251	1660	9070	6481	3891	1303	8714	6126	24
2349	9756	7164	4572	1980	9389	6798	4207	1617	9027	6438	3848	1259	8671	6082	23
2306	9713	7121	4529	1937	9346	6755	4164	1574	8984	6394	3805	1216	8628	6039	22
2263	9670	7078	4486	1894	9303	6712	4121	1531	8941	6351	3762	1173	8584	5996	21
2219	9627	7034	4442	1851	9259	6668	4078	1488	8898	6308	3719	1130	8541	5953	20
2176	9583	6991	4399	1808	9216	6625	4035	1444	8855	6265	3676	1087	8498	5910	19
2133	9540	6948	4356	1764	9173	6582	3992	1401	8811	6222	3633	1044	8455	5867	18
2090	9497	6905	4313	1721	9130	6539	3948	1358	8768	6179	3589	1000	8412	5824	17
2047	9454	6862	4270	1678	9087	6496	3905	1315	8725	6135	3546	0957	8369	5781	16
2003	9411	6818	4226	1635	9044	6453	3862	1272	8682	6092	3503	0914	8326	5737	15
1960	9367	6775	4183	1592	9000	6409	3819	1229	8639	6049	3460	0871	8282	5694	14
1917	9324	6732	4140	1548	8957	6366	3776	1185	8596	6006	3417	0828	8239	5651	13
1874	9281	6689	4097	1505	8914	6323	3732	1142	8552	5963	3374	0785	8196	5608	12
1830	9238	6646	4054	1462	8871	6280	3689	1099	8509	5920	3330	0742	8153	5565	11
1787	9195	6602	4010	1419	8828	6237	3646	1056	8466	5877	3287	0698	8110	5522	10
1744	9151	6559	3967	1376	8784	6194	3603	1013	8423	5833	3244	0655	8067	5479	9
1701	9108	6516	3924	1332	8741	6150	3560	0970	8380	5790	3201	0612	8024	5435	8
1658	9065	6473	3881	1289	8698	6107	3517	0926	8337	5747	3158	0569	7981	5392	7
1614	9022	6430	3838	1246	8655	6064	3473	0883	8293	5704	3115	0526	7937	5349	6
1571	8979	6386	3794	1203	8612	6021	3430	0840	8250	5661	3072	0483	7894	5306	5
1528	8935	6343	3751	1160	8568	5978	3387	0797	8207	5618	3028	0440	7851	5263	4
1485	8892	6300	3708	1117	8525	5934	3344	0754	8164	5574	2985	0396	7808	5220	3
1442	8849	6257	3665	1073	8482	5891	3301	0711	8121	5531	2942	0353	7765	5177	2
1398	8806	6214	3622	1030	8439	5848	3258	0667	8078	5488	2899	0310	7722	5134	1
1355	8763	6170	3578	0987	8396	5805	3214	0624	8034	5445	2856	0267	7679	5090	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Tangent Deg. 51

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	9. 796	9. 796	9. 796	9. 796	9. 797	9. 797	9. 797	9. 797	9. 797	9. 797	9. 798	9. 798	9. 798	9. 798	9. 798
0	5212	6786	8359	9930	1501	3071	4640	6208	7775	9341	0906	2470	4034	5596	7158
1	5239	6812	8385	9957	1527	3097	4666	6234	7801	9367	0932	2496	4060	5622	7184
2	5265	6838	8411	9983	1553	3123	4692	6260	7827	9393	0958	2522	4086	5648	7210
3	5291	6865	8437	0009	1580	3149	4718	6286	7853	9419	0984	2549	4112	5674	7236
4	5317	6891	8463	0035	1606	3176	4744	6312	7879	9445	1010	2575	4138	5700	7262
5	5344	6917	8490	0061	1632	3202	4771	6338	7905	9471	1037	2601	4164	5726	7288
6	5370	6943	8516	0087	1658	3228	4797	6365	7932	9498	1063	2627	4190	5752	7314
7	5396	6969	8542	0114	1684	3254	4823	6391	7958	9524	1089	2653	4216	5778	7340
8	5422	6996	8568	0140	1710	3280	4849	6417	7984	9550	1115	2679	4242	5804	7366
9	5448	7022	8594	0166	1737	3306	4875	6443	8010	9576	1141	2705	4268	5830	7392
10	5475	7048	8621	0192	1763	3332	4901	6469	8036	9602	1167	2731	4294	5856	7418
11	5501	7074	8647	0218	1789	3359	4927	6495	8062	9628	1193	2757	4320	5882	7444
12	5527	7101	8673	0245	1815	3385	4954	6521	8088	9654	1219	2783	4346	5908	7470
13	5553	7127	8699	0271	1841	3411	4980	6547	8114	9680	1245	2809	4372	5934	7496
14	5580	7153	8725	0297	1867	3437	5006	6574	8140	9706	1271	2835	4398	5960	7522
15	5606	7179	8752	0323	1894	3463	5032	6600	8166	9732	1297	2861	4424	5987	7548
16	5632	7205	8778	0349	1920	3489	5058	6626	8193	9758	1323	2887	4450	6013	7574
17	5658	7232	8804	0375	1946	3516	5084	6652	8219	9785	1349	2913	4476	6039	7600
18	5685	7258	8830	0402	1972	3542	5110	6678	8245	9811	1375	2939	4502	6065	7626
19	5711	7284	8856	0428	1998	3568	5136	6704	8271	9837	1402	2966	4529	6091	7652
20	5737	7310	8883	0454	2024	3594	5163	6730	8297	9863	1428	2992	4555	6117	7678
21	5763	7336	8909	0480	2051	3620	5189	6756	8323	9889	1454	3018	4581	6143	7704
22	5789	7363	8935	0506	2077	3646	5215	6782	8349	9915	1480	3044	4607	6169	7730
23	5816	7389	8961	0533	2103	3672	5241	6809	8375	9941	1506	3070	4633	6195	7756
24	5842	7415	8987	0559	2129	3699	5267	6835	8401	9967	1532	3096	4659	6221	7782
25	5868	7441	9014	0585	2155	3725	5293	6861	8428	9993	1558	3122	4685	6247	7808
26	5894	7468	9040	0611	2181	3751	5319	6887	8454	0019	1584	3148	4711	6273	7834
27	5921	7494	9066	0637	2208	3777	5346	6913	8480	0045	1610	3174	4737	6299	7860
28	5947	7520	9092	0663	2234	3803	5372	6939	8506	0071	1636	3200	4763	6325	7886
29	5973	7546	9118	0690	2260	3829	5398	6965	8532	0098	1662	3226	4789	6351	7912
30	5999	7572	9145	0716	2286	3856	5424	6991	8558	0124	1688	3252	4815	6377	7938
31	6026	7599	9171	0742	2312	3882	5450	7018	8584	0150	1714	3278	4841	6403	7964
32	6052	7625	9197	0768	2338	3908	5476	7044	8610	0176	1741	3304	4867	6429	7990
33	6078	7651	9223	0794	2365	3934	5502	7070	8636	0202	1767	3330	4893	6455	8016
34	6104	7677	9249	0821	2391	3960	5528	7096	8662	0228	1793	3356	4919	6481	8042
35	6130	7703	9276	0847	2417	3986	5555	7122	8689	0254	1819	3382	4945	6507	8068
36	6157	7730	9302	0873	2443	4012	5581	7148	8715	0280	1845	3408	4971	6533	8094
37	6183	7756	9328	0899	2469	4039	5607	7174	8741	0306	1871	3435	4997	6559	8120
38	6209	7782	9354	0925	2495	4065	5633	7200	8767	0332	1897	3461	5023	6585	8146
39	6235	7808	9380	0951	2522	4091	5659	7226	8793	0358	1923	3487	5049	6611	8172
40	6262	7834	9407	0978	2548	4117	5685	7253	8819	0385	1949	3513	5075	6637	8198
41	6288	7861	9433	1004	2574	4143	5711	7279	8845	0411	1975	3539	5101	6663	8224
42	6314	7887	9459	1030	2600	4169	5738	7305	8871	0437	2001	3565	5127	6689	8250
43	6340	7913	9485	1056	2626	4195	5764	7331	8897	0463	2027	3591	5153	6715	8276
44	6366	7939	9511	1082	2652	4222	5790	7357	8923	0489	2053	3617	5180	6741	8302
45	6393	7966	9537	1108	2679	4248	5816	7383	8950	0515	2079	3643	5206	6767	8328
46	6419	7992	9564	1135	2705	4274	5842	7409	8976	0541	2105	3669	5232	6793	8354
47	6445	8018	9590	1161	2731	4300	5868	7435	9002	0567	2132	3695	5258	6819	8380
48	6471	8044	9616	1187	2757	4326	5894	7462	9028	0593	2158	3721	5284	6845	8406
49	6498	8070	9642	1213	2783	4352	5920	7488	9054	0619	2184	3747	5310	6871	8432
50	6524	8097	9668	1239	2809	4378	5947	7514	9080	0645	2210	3773	5336	6897	8458
51	6550	8123	9695	1266	2836	4405	5973	7540	9106	0671	2236	3799	5362	6923	8484
52	6576	8149	9721	1292	2862	4431	5999	7566	9132	0697	2262	3825	5388	6949	8510
53	6602	8175	9747	1318	2888	4457	6025	7592	9158	0724	2288	3851	5414	6975	8536
54	6629	8201	9773	1344	2914	4483	6051	7618	9184	0750	2314	3877	5440	7001	8562
55	6655	8228	9799	1370	2940	4509	6077	7644	9210	0776	2340	3903	5466	7027	8588
56	6681	8254	9826	1396	2966	4535	6103	7670	9237	0802	2366	3929	5492	7053	8614
57	6707	8280	9852	1423	2992	4561	6129	7697	9263	0828	2392	3956	5518	7079	8640
58	6734	8306	9878	1449	3019	4588	6156	7723	9289	0854	2418	3982	5544	7105	8666
59	6760	8332	9904	1475	3045	4614	6182	7749	9315	0880	2444	4008	5570	7131	8692
60	6786	8359	9930	1501	3071	4640	6208	7775	9341	0906	2470	4034	5596	7158	8718
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9. 892	9. 891	9. 891	9. 891	9. 891	9. 891	9. 891	9. 891	9. 891	9. 891	9. 891	9. 890	9. 890	9. 890	9. 890
0	0303	9289	8274	7258	6242	5226	4208	3191	2172	1153	0133	9113	8092	7071	6049
1	0286	9272	8257	7241	6225	5209	4191	3174	2155	1136	0116	9096	8075	7054	6032
2	0269	9255	8240	7224	6208	5192	4175	3157	2138	1119	0099	9079	8058	7037	6015
3	0252	9238	8223	7208	6191	5175	4158	3140	2121	1102	0082	9062	8041	7020	5998
4	0235	9221	8206	7191	6175	5158	4141	3123	2104	1085	0065	9045	8024	7003	5980
5	0218	9204	8189	7174	6158	5141	4124	3106	2087	1068	0048	9028	8007	6986	5963
6	0201	9187	8172	7157	6141	5124	4107	3089	2070	1051	0031	9011	7990	6969	5946
7	0184	9170	8155	7140	6124	5107	4090	3072	2053	1034	0014	8994	7973	6952	5929
8	0168	9153	8138	7123	6107	5090	4073	3055	2036	1017	9997	8977	7956	6935	5912
9	0151	9136	8121	7106	6090	5073	4056	3038	2019	1000	9980	8960	7939	6917	5895
10	0134	9119	8105	7089	6073	5056	4039	3021	2002	0983	9963	8943	7922	6900	5878
11	0117	9103	8088	7072	6056	5039	4022	3004	1985	0966	9946	8926	7905	6883	5861
12	0100	9086	8071	7055	6039	5022	4005	2987	1968	0949	9929	8909	7888	6866	5844
13	0083	9069	8054	7038	6022	5005	3988	2970	1951	0932	9912	8892	7871	6849	5827
14	0066	9052	8037	7021	6005	4988	3971	2953	1934	0915	9895	8875	7854	6832	5810
15	0049	9035	8020	7004	5988	4971	3954	2936	1917	0898	9878	8858	7837	6815	5793
16	0032	9018	8003	6987	5971	4954	3937	2919	1900	0881	9861	8841	7820	6798	5776
17	0015	9001	7986	6971	5954	4938	3920	2902	1883	0864	9844	8824	7803	6781	5759
18	9999	8984	7969	6954	5937	4921	3903	2885	1866	0847	9827	8807	7786	6764	5742
19	9982	8967	7952	6937	5920	4904	3886	2868	1849	0830	9810	8790	7769	6747	5725
20	9965	8950	7935	6920	5903	4887	3869	2851	1833	0813	9793	8773	7752	6730	5708
21	9948	8933	7918	6903	5887	4870	3852	2834	1816	0796	9776	8756	7735	6713	5691
22	9931	8917	7902	6886	5870	4853	3835	2817	1799	0779	9759	8739	7718	6696	5674
23	9914	8900	7885	6869	5853	4836	3818	2800	1782	0762	9742	8722	7701	6679	5657
24	9897	8883	7868	6852	5836	4819	3801	2783	1765	0745	9725	8705	7684	6662	5640
25	9880	8866	7851	6835	5819	4802	3784	2766	1748	0728	9708	8688	7667	6645	5623
26	9863	8849	7834	6818	5802	4785	3767	2749	1731	0711	9691	8671	7650	6628	5606
27	9846	8832	7817	6801	5785	4768	3750	2732	1714	0694	9674	8654	7633	6611	5589
28	9830	8815	7800	6784	5768	4751	3734	2715	1697	0677	9657	8637	7616	6594	5571
29	9813	8798	7783	6767	5751	4734	3717	2698	1680	0660	9640	8620	7599	6577	5554
30	9796	8781	7766	6750	5734	4717	3700	2681	1663	0643	9623	8603	7582	6560	5537
31	9779	8764	7749	6733	5717	4700	3683	2664	1646	0626	9606	8586	7565	6543	5520
32	9762	8747	7732	6717	5700	4683	3666	2647	1629	0609	9589	8569	7548	6526	5503
33	9745	8731	7715	6700	5683	4666	3649	2631	1612	0592	9572	8552	7530	6509	5486
34	9728	8714	7698	6683	5666	4649	3632	2614	1595	0575	9555	8535	7513	6492	5469
35	9711	8697	7681	6666	5649	4632	3615	2597	1578	0558	9538	8518	7496	6475	5452
36	9694	8680	7665	6649	5632	4615	3598	2580	1561	0541	9521	8501	7479	6458	5435
37	9677	8663	7648	6632	5615	4598	3581	2563	1544	0524	9504	8484	7462	6441	5418
38	9661	8646	7631	6615	5599	4581	3564	2546	1527	0507	9487	8467	7445	6423	5401
39	9644	8629	7614	6598	5582	4565	3547	2529	1510	0490	9470	8450	7428	6406	5384
40	9627	8612	7597	6581	5565	4548	3530	2512	1493	0473	9453	8433	7411	6389	5367
41	9610	8595	7580	6564	5548	4531	3513	2495	1476	0456	9436	8416	7394	6372	5350
42	9593	8578	7563	6547	5531	4514	3496	2478	1459	0439	9419	8399	7377	6355	5333
43	9576	8561	7546	6530	5514	4497	3479	2461	1442	0422	9402	8382	7360	6338	5316
44	9559	8544	7529	6513	5497	4480	3462	2444	1425	0405	9385	8365	7343	6321	5299
45	9542	8528	7512	6496	5480	4463	3445	2427	1408	0388	9368	8348	7326	6304	5282
46	9525	8511	7495	6479	5463	4446	3428	2410	1391	0371	9351	8330	7309	6287	5265
47	9508	8494	7478	6462	5446	4429	3411	2393	1374	0354	9334	8313	7292	6270	5248
48	9491	8477	7461	6446	5429	4412	3394	2376	1357	0337	9317	8296	7275	6253	5231
49	9475	8460	7445	6429	5412	4395	3377	2359	1340	0320	9300	8279	7258	6236	5213
50	9458	8443	7428	6412	5395	4378	3360	2342	1323	0303	9283	8262	7241	6219	5196
51	9441	8426	7411	6395	5378	4361	3343	2325	1306	0286	9266	8245	7224	6202	5179
52	9424	8409	7394	6378	5361	4344	3326	2308	1289	0269	9249	8228	7207	6185	5162
53	9407	8392	7377	6361	5344	4327	3309	2291	1272	0252	9232	8211	7190	6168	5145
54	9390	8375	7360	6344	5327	4310	3292	2274	1255	0235	9215	8194	7173	6151	5128
55	9373	8358	7343	6327	5310	4293	3275	2257	1238	0218	9198	8177	7156	6134	5111
56	9356	8341	7326	6310	5293	4276	3258	2240	1221	0201	9181	8160	7139	6117	5094
57	9339	8325	7309	6293	5277	4259	3241	2223	1204	0184	9164	8143	7122	6100	5077
58	9322	8308	7292	6276	5260	4242	3225	2206	1187	0167	9147	8126	7105	6083	5060
59	9305	8291	7275	6259	5243	4225	3208	2189	1170	0150	9130	8109	7088	6066	5043
60	9289	8274	7258	6242	5226	4208	3191	2172	1153	0133	9113	8092	7071	6049	5026
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

″	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9.904	9.904	9.905	9.905	9.905	9.905	9.906	9.906	9.906	9.906	9.907	9.907	9.907	9.907	9.908
0	4910	7497	0085	2672	5259	7845	0431	3017	5603	8188	0773	3357	5941	8525	1109
1	4953	7541	0128	2715	5302	7888	0475	3060	5646	8231	0816	3400	5985	8568	1152
2	4996	7584	0171	2758	5345	7931	0518	3103	5689	8274	0859	3443	6028	8611	1195
3	5039	7627	0214	2801	5388	7975	0561	3147	5732	8317	0902	3486	6071	8654	1238
4	5082	7670	0257	2844	5431	8018	0604	3190	5775	8360	0945	3530	6114	8698	1281
5	5125	7713	0300	2888	5474	8061	0647	3233	5818	8403	0988	3573	6157	8741	1324
6	5168	7756	0344	2931	5517	8104	0690	3276	5861	8446	1031	3616	6200	8784	1367
7	5212	7799	0387	2974	5561	8147	0733	3319	5904	8489	1074	3659	6243	8827	1410
8	5255	7842	0430	3017	5604	8190	0776	3362	5947	8533	1117	3702	6286	8870	1453
9	5298	7886	0473	3060	5647	8233	0819	3405	5991	8576	1160	3745	6329	8913	1496
10	5341	7929	0516	3103	5690	8276	0862	3448	6034	8619	1204	3788	6372	8956	1539
11	5384	7972	0559	3146	5733	8319	0906	3491	6077	8662	1247	3831	6415	8999	1582
12	5427	8015	0602	3189	5776	8363	0949	3534	6120	8705	1290	3874	6458	9042	1626
13	5470	8058	0645	3232	5819	8406	0992	3577	6163	8748	1333	3917	6501	9085	1669
14	5513	8101	0689	3276	5862	8449	1035	3621	6206	8791	1376	3960	6544	9128	1712
15	5557	8144	0732	3319	5905	8492	1078	3664	6249	8834	1419	4003	6587	9171	1755
16	5600	8187	0775	3362	5949	8535	1121	3707	6292	8877	1462	4046	6631	9214	1798
17	5643	8231	0818	3405	5992	8578	1164	3750	6335	8920	1505	4089	6674	9257	1841
18	5686	8274	0861	3448	6035	8621	1207	3793	6378	8963	1548	4133	6717	9300	1884
19	5729	8317	0904	3491	6078	8664	1250	3836	6421	9006	1591	4176	6760	9343	1927
20	5772	8360	0947	3534	6121	8707	1293	3879	6464	9050	1634	4219	6803	9387	1970
21	5815	8403	0990	3577	6164	8750	1336	3922	6508	9093	1677	4262	6846	9430	2013
22	5858	8446	1034	3621	6207	8794	1380	3965	6551	9136	1720	4305	6889	9473	2056
23	5902	8489	1077	3664	6250	8837	1423	4008	6594	9179	1764	4348	6932	9516	2099
24	5945	8532	1120	3707	6293	8880	1466	4051	6637	9222	1807	4391	6975	9559	2142
25	5988	8576	1163	3750	6337	8923	1509	4095	6680	9265	1850	4434	7018	9602	2185
26	6031	8619	1206	3793	6380	8966	1552	4138	6723	9308	1893	4477	7061	9645	2228
27	6074	8662	1249	3836	6423	9009	1595	4181	6766	9351	1936	4520	7104	9688	2271
28	6117	8705	1292	3879	6466	9052	1638	4224	6809	9394	1979	4563	7147	9731	2314
29	6160	8748	1335	3922	6509	9095	1681	4267	6852	9437	2022	4606	7190	9774	2357
30	6204	8791	1378	3965	6552	9138	1724	4310	6895	9480	2065	4649	7233	9817	2401
31	6247	8834	1422	4009	6595	9181	1767	4353	6938	9523	2108	4692	7276	9860	2444
32	6290	8877	1465	4052	6638	9225	1811	4396	6982	9567	2151	4736	7320	9903	2487
33	6333	8921	1508	4095	6681	9268	1854	4439	7025	9610	2194	4779	7363	9946	2530
34	6376	8964	1551	4138	6725	9311	1897	4482	7068	9653	2237	4822	7406	9989	2573
35	6419	9007	1594	4181	6768	9354	1940	4525	7111	9696	2280	4865	7449	0032	2616
36	6462	9050	1637	4224	6811	9397	1983	4569	7154	9739	2323	4908	7492	0075	2659
37	6505	9093	1680	4267	6854	9440	2026	4612	7197	9782	2367	4951	7535	0119	2702
38	6549	9136	1723	4310	6897	9483	2069	4655	7240	9825	2410	4994	7578	0162	2745
39	6592	9179	1767	4353	6940	9526	2112	4698	7283	9868	2453	5037	7621	0205	2788
40	6635	9222	1810	4397	6983	9569	2155	4741	7326	9911	2496	5080	7664	0248	2831
41	6678	9266	1853	4440	7026	9613	2198	4784	7369	9954	2539	5123	7707	0291	2874
42	6721	9309	1896	4483	7069	9656	2242	4827	7412	9997	2582	5166	7750	0334	2917
43	6764	9352	1939	4526	7112	9699	2285	4870	7455	0040	2625	5209	7793	0377	2960
44	6807	9395	1982	4569	7156	9742	2328	4913	7499	0083	2668	5252	7836	0420	3003
45	6850	9438	2025	4612	7199	9785	2371	4956	7542	0127	2711	5295	7879	0463	3046
46	6894	9481	2068	4655	7242	9828	2414	4999	7585	0170	2754	5338	7922	0506	3089
47	6937	9524	2111	4698	7285	9871	2457	5043	7628	0213	2797	5382	7966	0549	3132
48	6980	9567	2155	4741	7328	9914	2500	5086	7671	0256	2840	5425	8009	0592	3175
49	7023	9611	2198	4785	7371	9957	2543	5129	7714	0299	2883	5468	8052	0635	3219
50	7066	9654	2241	4828	7414	0000	2586	5172	7757	0342	2927	5511	8095	0678	3262
51	7109	9697	2284	4871	7457	0044	2629	5215	7800	0385	2970	5554	8138	0721	3305
52	7152	9740	2327	4914	7500	0087	2672	5258	7843	0428	3013	5597	8181	0764	3348
53	7195	9783	2370	4957	7544	0130	2716	5301	7886	0471	3056	5640	8224	0807	3391
54	7239	9826	2413	5000	7587	0173	2759	5344	7929	0514	3099	5683	8267	0851	3434
55	7282	9869	2456	5043	7630	0216	2802	5387	7972	0557	3142	5726	8310	0894	3477
56	7325	9912	2500	5086	7673	0259	2845	5430	8016	0600	3185	5769	8353	0937	3520
57	7368	9955	2543	5129	7716	0302	2888	5473	8059	0644	3228	5812	8396	0980	3563
58	7411	9999	2586	5173	7759	0345	2931	5517	8102	0687	3271	5855	8439	1023	3606
59	7454	0042	2629	5216	7802	0388	2974	5560	8145	0730	3314	5898	8482	1066	3649
60	7497	0085	2672	5259	7845	0431	3017	5603	8188	0773	3357	5941	8525	1109	3692
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	″
10.095	10.095	10.094	10.094	10.094	10.094	10.093	10.093	10.093	10.093	10.092	10.092	10.092	10.092	10.091	
5090	2503	9915	7328	4741	2155	9569	6983	4397	1812	9227	6643	4059	1475	8891	60
5047	2459	9872	7285	4698	2112	9525	6940	4354	1769	9184	6600	4015	1432	8848	59
5004	2416	9829	7242	4655	2069	9482	6897	4311	1726	9141	6557	3972	1389	8805	58
4961	2373	9786	7199	4612	2025	9439	6853	4268	1683	9098	6514	3929	1346	8762	57
4918	2330	9743	7156	4569	1982	9396	6810	4225	1640	9055	6470	3886	1302	8719	56
4875	2287	9700	7112	4526	1939	9353	6767	4182	1597	9012	6427	3843	1259	8676	55
4832	2244	9656	7069	4483	1896	9310	6724	4139	1554	8969	6384	3800	1216	8633	54
4788	2201	9613	7026	4439	1853	9267	6681	4096	1511	8926	6341	3757	1173	8590	53
4745	2158	9570	6983	4396	1810	9224	6638	4053	1467	8883	6298	3714	1130	8547	52
4702	2114	9527	6940	4353	1767	9181	6595	4009	1424	8840	6255	3671	1087	8504	51
4659	2071	9484	6897	4310	1724	9138	6552	3966	1381	8796	6212	3628	1044	8461	50
4616	2028	9441	6854	4267	1681	9094	6509	3923	1338	8753	6169	3585	1001	8418	49
4573	1985	9398	6811	4224	1637	9051	6466	3880	1295	8710	6126	3542	0958	8374	48
4530	1942	9355	6768	4181	1594	9008	6423	3837	1252	8667	6083	3499	0915	8331	47
4487	1899	9311	6724	4138	1551	8965	6379	3794	1209	8624	6040	3456	0872	8288	46
4443	1856	9268	6681	4095	1508	8922	6336	3751	1166	8581	5997	3413	0829	8245	45
4400	1813	9225	6638	4051	1465	8879	6293	3708	1123	8538	5954	3369	0786	8202	44
4357	1769	9182	6595	4008	1422	8836	6250	3665	1080	8495	5911	3326	0743	8159	43
4314	1726	9139	6552	3965	1379	8793	6207	3622	1037	8452	5867	3283	0700	8116	42
4271	1683	9096	6509	3922	1336	8750	6164	3579	0994	8409	5824	3240	0657	8073	41
4228	1640	9053	6466	3879	1293	8707	6121	3536	0950	8366	5781	3197	0613	8030	40
4185	1597	9010	6423	3836	1250	8664	6078	3492	0907	8323	5738	3154	0570	7987	39
4142	1554	8966	6379	3793	1206	8620	6035	3449	0864	8280	5695	3111	0527	7944	38
4098	1511	8923	6336	3750	1163	8577	5992	3406	0821	8236	5652	3068	0484	7901	37
4055	1468	8880	6293	3707	1120	8534	5949	3363	0778	8193	5609	3025	0441	7858	36
4012	1424	8837	6250	3663	1077	8491	5905	3320	0735	8150	5566	2982	0398	7815	35
3969	1381	8794	6207	3620	1034	8448	5862	3277	0692	8107	5523	2939	0355	7772	34
3926	1338	8751	6164	3577	0991	8405	5819	3234	0649	8064	5480	2896	0312	7729	33
3883	1295	8708	6121	3534	0948	8362	5776	3191	0606	8021	5437	2853	0269	7686	32
3840	1252	8665	6078	3491	0905	8319	5733	3148	0563	7978	5394	2810	0226	7643	31
3796	1209	8622	6035	3448	0862	8276	5690	3105	0520	7935	5351	2767	0183	7599	30
3753	1166	8578	5991	3405	0819	8233	5647	3062	0477	7892	5308	2724	0140	7556	29
3710	1123	8535	5948	3362	0775	8189	5604	3018	0433	7849	5264	2680	0097	7513	28
3667	1079	8492	5905	3319	0732	8146	5561	2975	0390	7806	5221	2637	0054	7470	27
3624	1036	8449	5862	3275	0689	8103	5518	2932	0347	7763	5178	2594	0011	7427	26
3581	0993	8406	5819	3232	0646	8060	5475	2889	0304	7720	5135	2551	9968	7384	25
3538	0950	8363	5776	3189	0603	8017	5431	2846	0261	7677	5092	2508	9925	7341	24
3495	0907	8320	5733	3146	0560	7974	5388	2803	0218	7633	5049	2465	9881	7298	23
3451	0864	8277	5690	3103	0517	7931	5345	2760	0175	7590	5006	2422	9838	7255	22
3408	0821	8233	5647	3060	0474	7888	5302	2717	0132	7547	4963	2379	9795	7212	21
3365	0778	8190	5603	3017	0431	7845	5259	2674	0089	7504	4920	2336	9752	7169	20
3322	0734	8147	5560	2974	0387	7802	5216	2631	0046	7461	4877	2293	9709	7126	19
3279	0691	8104	5517	2931	0344	7758	5173	2588	0003	7418	4834	2250	9666	7083	18
3236	0648	8061	5474	2888	0301	7715	5130	2545	9960	7375	4791	2207	9623	7040	17
3193	0605	8018	5431	2844	0258	7672	5087	2501	9917	7332	4748	2164	9580	6997	16
3150	0562	7975	5388	2801	0215	7629	5044	2458	9873	7289	4705	2121	9537	6954	15
3106	0519	7932	5345	2758	0172	7586	5001	2415	9830	7246	4662	2078	9494	6911	14
3063	0476	7889	5302	2715	0129	7543	4957	2372	9787	7203	4618	2034	9451	6868	13
3020	0433	7845	5259	2672	0086	7500	4914	2329	9744	7160	4575	1991	9408	6825	12
2977	0389	7802	5215	2629	0043	7457	4871	2286	9701	7117	4532	1948	9365	6781	11
2934	0346	7759	5172	2586	0000	7414	4828	2243	9658	7073	4489	1905	9322	6738	10
2891	0303	7716	5129	2543	9956	7371	4785	2200	9615	7030	4446	1862	9279	6695	9
2848	0260	7673	5086	2500	9913	7328	4742	2157	9572	6987	4403	1819	9236	6652	8
2805	0217	7630	5043	2456	9870	7284	4699	2114	9529	6944	4360	1776	9193	6609	7
2761	0174	7587	5000	2413	9827	7241	4656	2071	9486	6901	4317	1733	9149	6566	6
2718	0131	7544	4957	2370	9784	7198	4613	2028	9443	6858	4274	1690	9106	6523	5
2675	0088	7500	4914	2327	9741	7155	4570	1984	9400	6815	4231	1647	9063	6480	4
2632	0045	7457	4871	2284	9698	7112	4527	1941	9356	6772	4188	1604	9020	6437	3
2589	0001	7414	4827	2241	9655	7069	4483	1898	9313	6729	4145	1561	8977	6394	2
2546	9958	7371	4784	2198	9612	7026	4440	1855	9270	6686	4102	1518	8934	6351	1
2503	9915	7328	4741	2155	9569	6983	4397	1812	9227	6643	4059	1475	8891	6308	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

39 Deg. Sine

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.798	9.799	9.799	9.799	9.799	9.799	9.799	9.799	9.800	9.800	9.800	9.800	9.800	9.800	9.801
0	8718	0278	1836	3394	4951	6507	8062	9616	1169	2721	4272	5823	7372	8921	0468
1	8744	0304	1862	3420	4977	6533	8088	9642	1195	2747	4298	5849	7398	8946	0494
2	8770	0330	1888	3446	5003	6559	8114	9668	1221	2773	4324	5874	7424	8972	0520
3	8796	0356	1914	3472	5029	6585	8139	9693	1247	2799	4350	5900	7450	8998	0546
4	8822	0382	1940	3498	5055	6610	8165	9719	1272	2825	4376	5926	7475	9024	0571
5	8848	0408	1966	3524	5081	6636	8191	9745	1298	2850	4402	5952	7501	9050	0597
6	8874	0434	1992	3550	5106	6662	8217	9771	1324	2876	4427	5978	7527	9075	0623
7	8900	0460	2018	3576	5132	6688	8243	9797	1350	2902	4453	6004	7553	9101	0649
8	8926	0486	2044	3602	5158	6714	8269	9823	1376	2928	4479	6029	7579	9127	0675
9	8952	0511	2070	3628	5184	6740	8295	9849	1402	2954	4505	6055	7604	9153	0700
10	8978	0537	2096	3654	5210	6766	8321	9875	1428	2980	4531	6081	7630	9179	0726
11	9004	0563	2122	3680	5236	6792	8347	9901	1454	3006	4557	6107	7656	9204	0752
12	9030	0589	2148	3705	5262	6818	8373	9926	1479	3031	4582	6133	7682	9230	0778
13	9056	0615	2174	3731	5288	6844	8399	9952	1505	3057	4608	6158	7708	9256	0803
14	9082	0641	2200	3757	5314	6870	8424	9978	1531	3083	4634	6184	7734	9282	0829
15	9108	0667	2226	3783	5340	6896	8450	0004	1557	3109	4660	6210	7759	9308	0855
16	9134	0693	2252	3809	5366	6922	8476	0030	1583	3135	4686	6236	7785	9333	0881
17	9160	0719	2278	3835	5392	6947	8502	0056	1609	3161	4712	6262	7811	9359	0907
18	9186	0745	2304	3861	5418	6973	8528	0082	1635	3187	4738	6288	7837	9385	0932
19	9212	0771	2330	3887	5444	6999	8554	0108	1661	3212	4763	6313	7863	9411	0958
20	9238	0797	2356	3913	5470	7025	8580	0134	1686	3238	4789	6339	7888	9437	0984
21	9264	0823	2382	3939	5496	7051	8606	0159	1712	3264	4815	6365	7914	9462	1010
22	9290	0849	2408	3965	5521	7077	8632	0185	1738	3290	4841	6391	7940	9488	1035
23	9316	0875	2434	3991	5547	7103	8658	0211	1764	3316	4867	6417	7966	9514	1061
24	9342	0901	2460	4017	5573	7129	8683	0237	1790	3342	4893	6443	7992	9540	1087
25	9368	0927	2485	4043	5599	7155	8709	0263	1816	3368	4918	6468	8017	9566	1113
26	9394	0953	2511	4069	5625	7181	8735	0289	1842	3393	4944	6494	8043	9591	1139
27	9420	0979	2537	4095	5651	7207	8761	0315	1867	3419	4970	6520	8069	9617	1164
28	9446	1005	2563	4121	5677	7233	8787	0341	1893	3445	4996	6546	8095	9643	1190
29	9472	1031	2589	4147	5703	7258	8813	0367	1919	3471	5022	6572	8121	9669	1216
30	9498	1057	2615	4173	5729	7284	8839	0392	1945	3497	5048	6598	8147	9695	1242
31	9524	1083	2641	4199	5755	7310	8865	0418	1971	3523	5073	6623	8172	9720	1267
32	9550	1109	2667	4224	5781	7336	8891	0444	1997	3549	5099	6649	8198	9746	1293
33	9576	1135	2693	4250	5807	7362	8917	0470	2023	3574	5125	6675	8224	9772	1319
34	9602	1161	2719	4276	5833	7388	8942	0496	2049	3600	5151	6701	8250	9798	1345
35	9628	1187	2745	4302	5859	7414	8968	0522	2074	3626	5177	6727	8276	9824	1371
36	9654	1213	2771	4328	5885	7440	8994	0548	2100	3652	5203	6752	8301	9849	1396
37	9680	1239	2797	4354	5910	7466	9020	0574	2126	3678	5229	6778	8327	9875	1422
38	9706	1265	2823	4380	5936	7492	9046	0600	2152	3704	5254	6804	8353	9901	1448
39	9732	1291	2849	4406	5962	7518	9072	0625	2178	3730	5280	6830	8379	9927	1474
40	9758	1317	2875	4432	5988	7543	9098	0651	2204	3755	5306	6856	8405	9952	1499
41	9784	1343	2901	4458	6014	7569	9124	0677	2230	3781	5332	6882	8430	9978	1525
42	9810	1369	2927	4484	6040	7595	9150	0703	2256	3807	5358	6907	8456	0004	1551
43	9836	1395	2953	4510	6066	7621	9176	0729	2281	3833	5384	6933	8482	0030	1577
44	9862	1421	2979	4536	6092	7647	9201	0755	2307	3859	5409	6959	8508	0056	1603
45	9888	1447	3005	4562	6118	7673	9227	0781	2333	3885	5435	6985	8534	0081	1628
46	9914	1473	3031	4588	6144	7699	9253	0807	2359	3910	5461	7011	8559	0107	1654
47	9940	1499	3057	4614	6170	7725	9279	0832	2385	3936	5487	7037	8585	0133	1680
48	9966	1525	3083	4640	6196	7751	9305	0858	2411	3962	5513	7062	8611	0159	1706
49	9992	1551	3109	4666	6222	7777	9331	0884	2437	3988	5539	7088	8637	0185	1731
50	0018	1577	3134	4691	6248	7803	9357	0910	2462	4014	5564	7114	8663	0210	1757
51	0044	1603	3160	4717	6273	7829	9383	0936	2488	4040	5590	7140	8688	0236	1783
52	0070	1629	3186	4743	6299	7854	9409	0962	2514	4066	5616	7166	8714	0262	1809
53	0096	1655	3212	4769	6325	7880	9435	0988	2540	4091	5642	7191	8740	0288	1835
54	0122	1680	3238	4795	6351	7906	9460	1014	2566	4117	5668	7217	8766	0314	1860
55	0148	1706	3264	4821	6377	7932	9486	1039	2592	4143	5694	7243	8792	0339	1886
56	0174	1732	3290	4847	6403	7958	9512	1065	2618	4169	5719	7269	8817	0365	1912
57	0200	1758	3316	4873	6429	7984	9538	1091	2643	4195	5745	7295	8843	0391	1938
58	0226	1784	3342	4899	6455	8010	9564	1117	2669	4221	5771	7321	8869	0417	1963
59	0252	1810	3368	4925	6481	8036	9590	1143	2695	4247	5797	7346	8895	0442	1989
60	0278	1836	3394	4951	6507	8062	9616	1169	2721	4272	5823	7372	8921	0468	2015
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Sine Deg. 50

39 Deg. Co-Sine

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
9.890	9.890	9.890	9.890	9.890	9.889	9.889	9.889	9.889	9.889	9.889	9.889	9.889	9.889	9.889	″
5026	4003	2979	1954	0929	9903	8877	7850	6822	5794	4765	3736	2706	1675	0644	60
5009	3986	2962	1937	0912	9886	8860	7833	6805	5777	4748	3719	2689	1658	0627	59
4992	3969	2945	1920	0895	9869	8843	7816	6788	5760	4731	3702	2672	1641	0610	58
4975	3951	2927	1903	0878	9852	8826	7799	6771	5743	4714	3684	2654	1624	0592	57
4958	3934	2910	1886	0861	9835	8808	7781	6754	5726	4697	3667	2637	1607	0575	56
4941	3917	2893	1869	0844	9818	8791	7764	6737	5708	4680	3650	2620	1589	0558	55
4924	3900	2876	1852	0826	9801	8774	7747	6720	5691	4662	3633	2603	1572	0541	54
4907	3883	2859	1835	0809	9784	8757	7730	6702	5674	4645	3616	2586	1555	0524	53
4890	3866	2842	1818	0792	9766	8740	7713	6685	5657	4628	3599	2569	1538	0507	52
4872	3849	2825	1800	0775	9749	8723	7696	6668	5640	4611	3582	2551	1521	0489	51
4855	3832	2808	1783	0758	9732	8706	7679	6651	5623	4594	3564	2534	1503	0472	50
4838	3815	2791	1766	0741	9715	8689	7662	6634	5606	4577	3547	2517	1486	0455	49
4821	3798	2774	1749	0724	9698	8672	7644	6617	5588	4560	3530	2500	1469	0438	48
4804	3781	2757	1732	0707	9681	8654	7627	6600	5571	4542	3513	2483	1452	0421	47
4787	3764	2740	1715	0690	9664	8637	7610	6583	5554	4525	3496	2466	1435	0403	46
4770	3747	2723	1698	0673	9647	8620	7593	6565	5537	4508	3479	2448	1418	0386	45
4753	3730	2706	1681	0656	9630	8603	7576	6548	5520	4491	3461	2431	1400	0369	44
4736	3713	2688	1664	0638	9613	8586	7559	6531	5503	4474	3444	2414	1383	0352	43
4719	3696	2671	1647	0621	9595	8569	7542	6514	5486	4457	3427	2397	1366	0335	42
4702	3678	2654	1630	0604	9578	8552	7525	6497	5468	4439	3410	2380	1349	0317	41
4685	3661	2637	1613	0587	9561	8535	7507	6480	5451	4422	3393	2362	1332	0300	40
4668	3644	2620	1595	0570	9544	8518	7490	6463	5434	4405	3376	2345	1314	0283	39
4651	3627	2603	1578	0553	9527	8500	7473	6445	5417	4388	3358	2328	1297	0266	38
4634	3610	2586	1561	0536	9510	8483	7456	6428	5400	4371	3341	2311	1280	0249	37
4617	3593	2569	1544	0519	9493	8466	7439	6411	5383	4354	3324	2294	1263	0231	36
4600	3576	2552	1527	0502	9476	8449	7422	6394	5366	4337	3307	2277	1246	0214	35
4583	3559	2535	1510	0485	9459	8432	7405	6377	5348	4319	3290	2259	1229	0197	34
4566	3542	2518	1493	0468	9441	8415	7388	6360	5331	4302	3273	2242	1211	0180	33
4548	3525	2501	1476	0450	9424	8398	7370	6343	5314	4285	3255	2225	1194	0163	32
4531	3508	2484	1459	0433	9407	8381	7353	6325	5297	4268	3238	2208	1177	0145	31
4514	3491	2467	1442	0416	9390	8364	7336	6308	5280	4251	3221	2191	1160	0128	30
4497	3474	2449	1425	0399	9373	8346	7319	6291	5263	4234	3204	2174	1143	0111	29
4480	3457	2432	1408	0382	9356	8329	7302	6274	5246	4216	3187	2156	1125	0094	28
4463	3440	2415	1390	0365	9339	8312	7285	6257	5228	4199	3170	2139	1108	0077	27
4446	3422	2398	1373	0348	9322	8295	7268	6240	5211	4182	3152	2122	1091	0059	26
4429	3405	2381	1356	0331	9305	8278	7251	6223	5194	4165	3135	2105	1074	0042	25
4412	3388	2364	1339	0314	9288	8261	7233	6206	5177	4148	3118	2088	1057	0025	24
4395	3371	2347	1322	0297	9270	8244	7216	6188	5160	4131	3101	2070	1039	0008	23
4378	3354	2330	1305	0279	9253	8227	7199	6171	5143	4113	3084	2053	1022	9991	22
4361	3337	2313	1288	0262	9236	8209	7182	6154	5126	4096	3067	2036	1005	9973	21
4344	3320	2296	1271	0245	9219	8192	7165	6137	5108	4079	3049	2019	0988	9956	20
4327	3303	2279	1254	0228	9202	8175	7148	6120	5091	4062	3032	2002	0971	9939	19
4310	3286	2262	1237	0211	9185	8158	7131	6103	5074	4045	3015	1985	0953	9922	18
4293	3269	2245	1220	0194	9168	8141	7114	6086	5057	4028	2998	1967	0936	9905	17
4276	3252	2227	1202	0177	9151	8124	7096	6068	5040	4011	2981	1950	0919	9887	16
4259	3235	2210	1185	0160	9134	8107	7079	6051	5023	3993	2964	1933	0902	9870	15
4241	3218	2193	1168	0143	9116	8090	7062	6034	5005	3976	2946	1916	0885	9853	14
4224	3201	2176	1151	0126	9099	8073	7045	6017	4988	3959	2929	1899	0868	9836	13
4207	3184	2159	1134	0108	9082	8055	7028	6000	4971	3942	2912	1881	0850	9819	12
4190	3166	2142	1117	0091	9065	8038	7011	5983	4954	3925	2895	1864	0833	9801	11
4173	3149	2125	1100	0074	9048	8021	6994	5966	4937	3908	2878	1847	0816	9784	10
4156	3132	2108	1083	0057	9031	8004	6977	5948	4920	3890	2860	1830	0799	9767	9
4139	3115	2091	1066	0040	9014	7987	6959	5931	4903	3873	2843	1813	0782	9750	8
4122	3098	2074	1049	0023	8997	7970	6942	5914	4885	3856	2826	1796	0764	9733	7
4105	3081	2057	1032	0006	8980	7953	6925	5897	4868	3839	2809	1778	0747	9715	6
4088	3064	2040	1014	9989	8962	7936	6908	5880	4851	3822	2792	1761	0730	9698	5
4071	3047	2022	0997	9972	8945	7918	6891	5863	4834	3805	2775	1744	0713	9681	4
4054	3030	2005	0980	9955	8928	7901	6874	5846	4817	3787	2757	1727	0696	9664	3
4037	3013	1988	0963	9937	8911	7884	6857	5828	4800	3770	2740	1710	0678	9647	2
4020	2996	1971	0946	9920	8894	7867	6840	5811	4783	3753	2723	1692	0661	9629	1
4003	2979	1954	0929	9903	8877	7850	6822	5794	4765	3736	2706	1675	0644	9612	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Sine Deg. 50

39 Deg. Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.908	9.908	9.908	9.909	9.909	9.909	9.909	9.910	9.910	9.910	9.910	9.911	9.911	9.911	9.911
0	3692	6275	8858	1440	4022	6603	9185	1766	4347	6927	9507	2087	4666	7245	9824
1	3735	6318	8901	1483	4065	6646	9228	1809	4390	6970	9550	2130	4709	7288	9867
2	3778	6361	8944	1526	4108	6690	9271	1852	4433	7013	9593	2173	4752	7331	9910
3	3821	6404	8987	1569	4151	6733	9314	1895	4476	7056	9636	2216	4795	7374	9953
4	3864	6447	9030	1612	4194	6776	9357	1938	4519	7099	9679	2259	4838	7417	9996
5	3907	6490	9073	1655	4237	6819	9400	1981	4562	7142	9722	2302	4881	7460	0039
6	3950	6533	9116	1698	4280	6862	9443	2024	4605	7185	9765	2345	4924	7503	0082
7	3993	6576	9159	1741	4323	6905	9486	2067	4648	7228	9808	2388	4967	7546	0125
8	4036	6619	9202	1784	4366	6948	9529	2110	4691	7271	9851	2431	5010	7589	0168
9	4080	6662	9245	1827	4409	6991	9572	2153	4734	7314	9894	2474	5053	7632	0211
10	4123	6705	9288	1870	4452	7034	9615	2196	4777	7357	9937	2517	5096	7675	0254
11	4166	6749	9331	1913	4495	7077	9658	2239	4820	7400	9980	2560	5139	7718	0297
12	4209	6792	9374	1956	4538	7120	9701	2282	4863	7443	0023	2603	5182	7761	0340
13	4252	6835	9417	1999	4581	7163	9744	2325	4906	7486	0066	2646	5225	7804	0383
14	4295	6878	9460	2042	4624	7206	9787	2368	4949	7529	0109	2689	5268	7847	0426
15	4338	6921	9503	2085	4667	7249	9830	2411	4992	7572	0152	2732	5311	7890	0469
16	4381	6964	9546	2128	4710	7292	9873	2454	5035	7615	0195	2775	5354	7933	0512
17	4424	7007	9589	2171	4753	7335	9916	2497	5078	7658	0238	2818	5397	7976	0555
18	4467	7050	9632	2214	4796	7378	9959	2540	5121	7701	0281	2861	5440	8019	0598
19	4510	7093	9675	2258	4839	7421	0002	2583	5164	7744	0324	2904	5483	8062	0641
20	4553	7136	9718	2301	4882	7464	0045	2626	5207	7787	0367	2947	5526	8105	0684
21	4596	7179	9761	2344	4925	7507	0088	2669	5250	7830	0410	2990	5569	8148	0727
22	4639	7222	9804	2387	4968	7550	0131	2712	5293	7873	0453	3033	5612	8191	0770
23	4682	7265	9848	2430	5011	7593	0174	2755	5336	7916	0496	3076	5655	8234	0813
24	4725	7308	9891	2473	5055	7636	0217	2798	5379	7959	0539	3119	5698	8277	0856
25	4768	7351	9934	2516	5098	7679	0260	2841	5422	8002	0582	3162	5741	8320	0899
26	4811	7394	9977	2559	5141	7722	0303	2884	5465	8045	0625	3205	5784	8363	0942
27	4854	7437	0020	2602	5184	7765	0346	2927	5508	8088	0668	3248	5827	8406	0985
28	4897	7480	0063	2645	5227	7808	0389	2970	5551	8131	0711	3291	5870	8449	1028
29	4941	7523	0106	2688	5270	7851	0432	3013	5594	8174	0754	3334	5913	8492	1071
30	4984	7566	0149	2731	5313	7894	0475	3056	5637	8217	0797	3377	5956	8535	1114
31	5027	7609	0192	2774	5356	7937	0518	3099	5680	8260	0840	3419	5999	8578	1156
32	5070	7652	0235	2817	5399	7980	0561	3142	5723	8303	0883	3462	6042	8621	1199
33	5113	7695	0278	2860	5442	8023	0604	3185	5766	8346	0926	3505	6085	8664	1242
34	5156	7739	0321	2903	5485	8066	0647	3228	5809	8389	0969	3548	6128	8707	1285
35	5199	7782	0364	2946	5528	8109	0690	3271	5852	8432	1012	3591	6171	8750	1328
36	5242	7825	0407	2989	5571	8152	0733	3314	5895	8475	1055	3634	6214	8793	1371
37	5285	7868	0450	3032	5614	8195	0776	3357	5938	8518	1098	3677	6257	8836	1414
38	5328	7911	0493	3075	5657	8238	0819	3400	5981	8561	1141	3720	6300	8879	1457
39	5371	7954	0536	3118	5700	8281	0862	3443	6024	8604	1184	3763	6343	8922	1500
40	5414	7997	0579	3161	5743	8324	0906	3486	6067	8647	1227	3806	6386	8965	1543
41	5457	8040	0622	3204	5786	8367	0949	3529	6110	8690	1270	3849	6429	9008	1586
42	5500	8083	0665	3247	5829	8410	0992	3572	6153	8733	1313	3892	6472	9051	1629
43	5543	8126	0708	3290	5872	8453	1035	3615	6196	8776	1356	3935	6515	9094	1672
44	5586	8169	0751	3333	5915	8496	1078	3658	6239	8819	1399	3978	6558	9137	1715
45	5629	8212	0794	3376	5958	8539	1121	3701	6282	8862	1442	4021	6601	9180	1758
46	5672	8255	0837	3419	6001	8583	1164	3744	6325	8905	1485	4064	6644	9222	1801
47	5715	8298	0880	3462	6044	8626	1207	3787	6368	8948	1528	4107	6687	9265	1844
48	5758	8341	0923	3505	6087	8669	1250	3830	6411	8991	1571	4150	6730	9308	1887
49	5801	8384	0966	3548	6130	8712	1293	3873	6454	9034	1614	4193	6773	9351	1930
50	5845	8427	1010	3592	6173	8755	1336	3916	6497	9077	1657	4236	6816	9394	1973
51	5888	8470	1053	3635	6216	8798	1379	3959	6540	9120	1700	4279	6858	9437	2016
52	5931	8513	1096	3678	6259	8841	1422	4002	6583	9163	1743	4322	6901	9480	2059
53	5974	8556	1139	3721	6302	8884	1465	4045	6626	9206	1786	4365	6944	9523	2102
54	6017	8599	1182	3764	6345	8927	1508	4088	6669	9249	1829	4408	6987	9566	2145
55	6060	8642	1225	3807	6388	8970	1551	4131	6712	9292	1872	4451	7030	9609	2188
56	6103	8685	1268	3850	6431	9013	1594	4174	6755	9335	1915	4494	7073	9652	2231
57	6146	8728	1311	3893	6474	9056	1637	4217	6798	9378	1958	4537	7116	9695	2274
58	6189	8772	1354	3936	6517	9099	1680	4260	6841	9421	2001	4580	7159	9738	2317
59	6232	8815	1397	3979	6560	9142	1723	4303	6884	9464	2044	4623	7202	9781	2360
60	6275	8858	1440	4022	6603	9185	1766	4347	6927	9507	2087	4666	7245	9824	2403
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Tangent Deg. 50

39 Deg. Co-Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
	10.091	10.091	10.091	10.090	10.090	10.090	10.090	10.089	10.089	10.089	10.089	10.088	10.088	10.088	10.088	″
0	6308	3725	1142	8560	5978	3397	0815	8234	5653	3073	0493	7913	5334	2755	0176	60
1	6265	3682	1099	8517	5935	3354	0772	8191	5610	3030	0450	7870	5291	2712	0133	59
2	6222	3639	1056	8474	5892	3310	0729	8148	5567	2987	0407	7827	5248	2669	0090	58
3	6179	3596	1013	8431	5849	3267	0686	8105	5524	2944	0364	7784	5205	2626	0047	57
4	6136	3553	0970	8388	5806	3224	0643	8062	5481	2901	0321	7741	5162	2583	0004	56
5	6093	3510	0927	8345	5763	3181	0600	8019	5438	2858	0278	7698	5119	2540	9961	55
6	6050	3467	0884	8302	5720	3138	0557	7976	5395	2815	0235	7655	5076	2497	9918	54
7	6007	3424	0841	8259	5677	3095	0514	7933	5352	2772	0192	7612	5033	2454	9875	53
8	5964	3381	0798	8216	5634	3052	0471	7890	5309	2729	0149	7569	4990	2411	9832	52
9	5920	3338	0755	8173	5591	3009	0428	7847	5266	2686	0106	7526	4947	2368	9789	51
10	5877	3295	0712	8130	5548	2966	0385	7804	5223	2643	0063	7483	4904	2325	9746	50
11	5834	3251	0669	8087	5505	2923	0342	7761	5180	2600	0020	7440	4861	2282	9703	49
12	5791	3208	0626	8044	5462	2880	0299	7718	5137	2557	9977	7397	4818	2239	9660	48
13	5748	3165	0583	8001	5419	2837	0256	7675	5094	2514	9934	7354	4775	2196	9617	47
14	5705	3122	0540	7958	5376	2794	0213	7632	5051	2471	9891	7311	4732	2153	9574	46
15	5662	3079	0497	7915	5333	2751	0170	7589	5008	2428	9848	7268	4689	2110	9531	45
16	5619	3036	0454	7872	5290	2708	0127	7546	4965	2385	9805	7225	4646	2067	9488	44
17	5576	2993	0411	7829	5247	2665	0084	7503	4922	2342	9762	7182	4603	2024	9445	43
18	5533	2950	0368	7786	5204	2622	0041	7460	4879	2299	9719	7139	4560	1981	9402	42
19	5490	2907	0325	7742	5161	2579	9998	7417	4836	2256	9676	7096	4517	1938	9359	41
20	5447	2864	0282	7699	5118	2536	9955	7374	4793	2213	9633	7053	4474	1895	9316	40
21	5404	2821	0239	7656	5075	2493	9912	7331	4750	2170	9590	7010	4431	1852	9273	39
22	5361	2778	0196	7613	5032	2450	9869	7288	4707	2127	9547	6967	4388	1809	9230	38
23	5318	2735	0152	7570	4989	2407	9826	7245	4664	2084	9504	6924	4345	1766	9187	37
24	5275	2692	0109	7527	4945	2364	9783	7202	4621	2041	9461	6881	4302	1723	9144	36
25	5232	2649	0066	7484	4902	2321	9740	7159	4578	1998	9418	6838	4259	1680	9101	35
26	5189	2606	0023	7441	4859	2278	9697	7116	4535	1955	9375	6795	4216	1637	9058	34
27	5146	2563	9980	7398	4816	2235	9654	7073	4492	1912	9332	6752	4173	1594	9015	33
28	5103	2520	9937	7355	4773	2192	9611	7030	4449	1869	9289	6709	4130	1551	8972	32
29	5059	2477	9894	7312	4730	2149	9568	6987	4406	1826	9246	6666	4087	1508	8929	31
30	5016	2434	9851	7269	4687	2106	9525	6944	4363	1783	9203	6623	4044	1465	8886	30
31	4973	2391	9808	7226	4644	2063	9482	6901	4320	1740	9160	6581	4001	1422	8844	29
32	4930	2348	9765	7183	4601	2020	9439	6858	4277	1697	9117	6538	3958	1379	8801	28
33	4887	2305	9722	7140	4558	1977	9396	6815	4234	1654	9074	6495	3915	1336	8758	27
34	4844	2261	9679	7097	4515	1934	9353	6772	4191	1611	9031	6452	3872	1293	8715	26
35	4801	2218	9636	7054	4472	1891	9310	6729	4148	1568	8988	6409	3829	1250	8672	25
36	4758	2175	9593	7011	4429	1848	9267	6686	4105	1525	8945	6366	3786	1207	8629	24
37	4715	2132	9550	6968	4386	1805	9224	6643	4062	1482	8902	6323	3743	1164	8586	23
38	4672	2089	9507	6925	4343	1762	9181	6600	4019	1439	8859	6280	3700	1121	8543	22
39	4629	2046	9464	6882	4300	1719	9138	6557	3976	1396	8816	6237	3657	1078	8500	21
40	4586	2003	9421	6839	4257	1676	9094	6514	3933	1353	8773	6194	3614	1035	8457	20
41	4543	1960	9378	6796	4214	1633	9051	6471	3890	1310	8730	6151	3571	0992	8414	19
42	4500	1917	9335	6753	4171	1590	9008	6428	3847	1267	8687	6108	3528	0949	8371	18
43	4457	1874	9292	6710	4128	1547	8965	6385	3804	1224	8644	6065	3485	0906	8328	17
44	4414	1831	9249	6667	4085	1504	8922	6342	3761	1181	8601	6022	3442	0863	8285	16
45	4371	1788	9206	6624	4042	1461	8879	6299	3718	1138	8558	5979	3399	0820	8242	15
46	4328	1745	9163	6581	3999	1417	8836	6256	3675	1095	8515	5936	3356	0778	8199	14
47	4285	1702	9120	6538	3956	1374	8793	6213	3632	1052	8472	5893	3313	0735	8156	13
48	4242	1659	9077	6495	3913	1331	8750	6170	3589	1009	8429	5850	3270	0692	8113	12
49	4199	1616	9034	6452	3870	1288	8707	6127	3546	0966	8386	5807	3227	0649	8070	11
50	4155	1573	8990	6408	3827	1245	8664	6084	3503	0923	8343	5764	3184	0606	8027	10
51	4112	1530	8947	6365	3784	1202	8621	6041	3460	0880	8300	5721	3142	0563	7984	9
52	4069	1487	8904	6322	3741	1159	8578	5998	3417	0837	8257	5678	3099	0520	7941	8
53	4026	1444	8861	6279	3698	1116	8535	5955	3374	0794	8214	5635	3056	0477	7898	7
54	3983	1401	8818	6236	3655	1073	8492	5912	3331	0751	8171	5592	3013	0434	7855	6
55	3940	1358	8775	6193	3612	1030	8449	5869	3288	0708	8128	5549	2970	0391	7812	5
56	3897	1315	8732	6150	3569	0987	8406	5826	3245	0665	8085	5506	2927	0348	7769	4
57	3854	1272	8689	6107	3526	0944	8363	5783	3202	0622	8042	5463	2884	0305	7726	3
58	3811	1228	8646	6064	3483	0901	8320	5740	3159	0579	7999	5420	2841	0262	7683	2
59	3768	1185	8603	6021	3440	0858	8277	5697	3116	0536	7956	5377	2798	0219	7640	1
60	3725	1142	8560	5978	3397	0815	8234	5653	3073	0493	7913	5334	2755	0176	7597	0
	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Tangent Deg. 50

39 Deg. Sine

″	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9. 801	9. 801	9. 801	9. 801	9. 801	9. 801	9. 802	9. 802	9. 802	9. 802	9. 802	9. 802	9. 803	9. 803	9. 803
0	2015	3561	5106	6649	8192	9735	1276	2816	4355	5894	7431	8968	0504	2038	3572
1	2041	3586	5131	6675	8218	9760	1301	2842	4381	5919	7457	8994	0529	2064	3598
2	2066	3612	5157	6701	8244	9786	1327	2867	4407	5945	7483	9019	0555	2090	3623
3	2092	3638	5183	6727	8270	9812	1353	2893	4432	5971	7508	9045	0580	2115	3649
4	2118	3664	5208	6752	8295	9837	1378	2919	4458	5996	7534	9070	0606	2141	3675
5	2144	3689	5234	6778	8321	9863	1404	2944	4484	6022	7559	9096	0632	2166	3700
6	2170	3715	5260	6804	8347	9889	1430	2970	4509	6048	7585	9122	0657	2192	3726
7	2195	3741	5286	6830	8372	9914	1455	2996	4535	6073	7611	9147	0683	2217	3751
8	2221	3767	5311	6855	8398	9940	1481	3021	4561	6099	7636	9173	0708	2243	3777
9	2247	3792	5337	6881	8424	9966	1507	3047	4586	6124	7662	9198	0734	2269	3802
10	2273	3818	5363	6907	8450	9991	1532	3073	4612	6150	7687	9224	0759	2294	3828
11	2298	3844	5389	6932	8475	0017	1558	3098	4637	6176	7713	9250	0785	2320	3853
12	2324	3870	5414	6958	8501	0043	1584	3124	4663	6201	7739	9275	0811	2345	3879
13	2350	3895	5440	6984	8527	0069	1610	3150	4689	6227	7764	9301	0836	2371	3904
14	2376	3921	5466	7010	8552	0094	1635	3175	4714	6253	7790	9326	0862	2396	3930
15	2401	3947	5492	7035	8578	0120	1661	3201	4740	6278	7816	9352	0887	2422	3956
16	2427	3973	5517	7061	8604	0146	1687	3227	4766	6304	7841	9378	0913	2448	3981
17	2453	3998	5543	7087	8629	0171	1712	3252	4791	6329	7867	9403	0939	2473	4007
18	2479	4024	5569	7112	8655	0197	1738	3278	4817	6355	7892	9429	0964	2499	4032
19	2505	4050	5595	7138	8681	0223	1764	3304	4843	6381	7918	9454	0990	2524	4058
20	2530	4076	5620	7164	8707	0248	1789	3329	4868	6406	7944	9480	1015	2550	4083
21	2556	4101	5646	7190	8732	0274	1815	3355	4894	6432	7969	9506	1041	2575	4109
22	2582	4127	5672	7215	8758	0300	1841	3381	4920	6458	7995	9531	1066	2601	4134
23	2608	4153	5697	7241	8784	0325	1866	3406	4945	6483	8020	9557	1092	2626	4160
24	2633	4179	5723	7267	8809	0351	1892	3432	4971	6509	8046	9582	1118	2652	4186
25	2659	4204	5749	7292	8835	0377	1918	3457	4996	6535	8072	9608	1143	2678	4211
26	2685	4230	5775	7318	8861	0402	1943	3483	5022	6560	8097	9633	1169	2703	4237
27	2711	4256	5800	7344	8887	0428	1969	3509	5048	6586	8123	9659	1194	2729	4262
28	2736	4282	5826	7370	8912	0454	1995	3534	5073	6611	8148	9685	1220	2754	4288
29	2762	4307	5852	7395	8938	0480	2020	3560	5099	6637	8174	9710	1246	2780	4313
30	2788	4333	5878	7421	8964	0505	2046	3586	5125	6663	8200	9736	1271	2805	4339
31	2814	4359	5903	7447	8989	0531	2072	3611	5150	6688	8225	9761	1297	2831	4364
32	2839	4385	5929	7472	9015	0557	2097	3637	5176	6714	8251	9787	1322	2857	4390
33	2865	4410	5955	7498	9041	0582	2123	3663	5202	6740	8277	9813	1348	2882	4416
34	2891	4436	5981	7524	9066	0608	2149	3688	5227	6765	8302	9838	1373	2908	4441
35	2917	4462	6006	7550	9092	0634	2174	3714	5253	6791	8328	9864	1399	2933	4467
36	2942	4488	6032	7575	9118	0659	2200	3740	5278	6816	8353	9889	1425	2959	4492
37	2968	4513	6058	7601	9144	0685	2226	3765	5304	6842	8379	9915	1450	2984	4518
38	2994	4539	6083	7627	9169	0711	2251	3791	5330	6868	8405	9941	1476	3010	4543
39	3020	4565	6109	7652	9195	0736	2277	3817	5355	6893	8430	9966	1501	3036	4569
40	3046	4591	6135	7678	9221	0762	2303	3842	5381	6919	8456	9992	1527	3061	4594
41	3071	4616	6161	7704	9246	0788	2328	3868	5407	6945	8481	0017	1552	3087	4620
42	3097	4642	6186	7730	9272	0813	2354	3894	5432	6970	8507	0043	1578	3112	4645
43	3123	4668	6212	7755	9298	0839	2380	3919	5458	6996	8533	0069	1604	3138	4671
44	3149	4694	6238	7781	9323	0865	2405	3945	5484	7021	8558	0094	1629	3163	4697
45	3174	4719	6264	7807	9349	0891	2431	3971	5509	7047	8584	0120	1655	3189	4722
46	3200	4745	6289	7832	9375	0916	2457	3996	5535	7073	8609	0145	1680	3214	4748
47	3226	4771	6315	7858	9400	0942	2482	4022	5561	7098	8635	0171	1706	3240	4773
48	3252	4797	6341	7884	9426	0968	2508	4048	5586	7124	8661	0197	1732	3266	4799
49	3277	4822	6366	7910	9452	0993	2534	4073	5612	7149	8686	0222	1757	3291	4824
50	3303	4848	6392	7935	9478	1019	2559	4099	5637	7175	8712	0248	1783	3317	4850
51	3329	4874	6418	7961	9503	1045	2585	4124	5663	7201	8737	0273	1808	3342	4875
52	3355	4900	6444	7987	9529	1070	2611	4150	5689	7226	8763	0299	1834	3368	4901
53	3380	4925	6469	8012	9555	1096	2636	4176	5714	7252	8789	0324	1859	3393	4926
54	3406	4951	6495	8038	9580	1122	2662	4201	5740	7278	8814	0350	1885	3419	4952
55	3432	4977	6521	8064	9606	1147	2688	4227	5766	7303	8840	0376	1911	3444	4978
56	3458	5003	6547	8090	9632	1173	2713	4253	5791	7329	8865	0401	1936	3470	5003
57	3483	5028	6572	8115	9657	1199	2739	4278	5817	7354	8891	0427	1962	3496	5029
58	3509	5054	6598	8141	9683	1224	2765	4304	5842	7380	8917	0452	1987	3521	5054
59	3535	5080	6624	8167	9709	1250	2790	4330	5868	7406	8942	0478	2013	3547	5080
60	3561	5106	6649	8192	9735	1276	2816	4355	5894	7431	8968	0504	2038	3572	5105
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Sine Deg. 50

39 Deg. Co-Sine

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	″
9. 888	9. 888	9. 888	9. 888	9. 888	9. 888	9. 888	9. 888	9. 888	9. 888	9. 887	9. 887	9. 887	9. 887	9. 887	
9612	8580	7547	6513	5479	4444	3408	2372	1335	0298	9260	8221	7182	6142	5102	60
9595	8563	7529	6496	5461	4426	3391	2355	1318	0281	9243	8204	7165	6125	5084	59
9578	8545	7512	6478	5444	4409	3374	2337	1301	0263	9225	8187	7147	6107	5067	58
9561	8528	7495	6461	5427	4392	3356	2320	1283	0246	9208	8169	7130	6090	5050	57
9543	8511	7478	6444	5410	4375	3339	2303	1266	0229	9191	8152	7113	6073	5032	56
9526	8494	7461	6427	5392	4357	3322	2286	1249	0211	9173	8135	7095	6055	5015	55
9509	8476	7443	6410	5375	4340	3305	2268	1231	0194	9156	8117	7078	6038	4998	54
9492	8459	7426	6392	5358	4323	3287	2251	1214	0177	9139	8100	7061	6021	4980	53
9475	8442	7409	6375	5341	4306	3270	2234	1197	0159	9121	8083	7043	6003	4963	52
9457	8425	7392	6358	5323	4288	3253	2217	1180	0142	9104	8065	7026	5986	4946	51
9440	8408	7374	6341	5306	4271	3235	2199	1162	0125	9087	8048	7009	5969	4928	50
9423	8390	7357	6323	5289	4254	3218	2182	1145	0108	9069	8031	6991	5951	4911	49
9406	8373	7340	6306	5272	4237	3201	2165	1128	0090	9052	8013	6974	5934	4893	48
9389	8356	7323	6289	5254	4219	3184	2147	1110	0073	9035	7996	6957	5917	4876	47
9371	8339	7305	6272	5237	4202	3166	2130	1093	0056	9018	7979	6939	5899	4859	46
9354	8321	7288	6254	5220	4185	3149	2113	1076	0038	9000	7961	6922	5882	4841	45
9337	8304	7271	6237	5203	4168	3132	2096	1059	0021	8983	7944	6905	5865	4824	44
9320	8287	7254	6220	5185	4150	3115	2078	1041	0004	8966	7927	6887	5847	4807	43
9303	8270	7237	6203	5168	4133	3097	2061	1024	9986	8948	7909	6870	5830	4789	42
9285	8253	7219	6185	5151	4116	3080	2044	1007	9969	8931	7892	6853	5813	4772	41
9268	8235	7202	6168	5134	4099	3063	2026	0989	9952	8914	7875	6835	5795	4755	40
9251	8218	7185	6151	5116	4081	3046	2009	0972	9935	8896	7858	6818	5778	4737	39
9234	8201	7168	6134	5099	4064	3028	1992	0955	9917	8879	7840	6801	5761	4720	38
9216	8184	7150	6117	5082	4047	3011	1975	0938	9900	8862	7823	6783	5743	4703	37
9199	8167	7133	6099	5065	4030	2994	1957	0920	9883	8844	7806	6766	5726	4685	36
9182	8149	7116	6082	5047	4012	2976	1940	0903	9865	8827	7788	6749	5709	4668	35
9165	8132	7099	6065	5030	3995	2959	1923	0886	9848	8810	7771	6731	5691	4651	34
9148	8115	7082	6048	5013	3978	2942	1906	0868	9831	8793	7754	6714	5674	4633	33
9130	8098	7064	6030	4996	3961	2925	1888	0851	9813	8775	7736	6697	5657	4616	32
9113	8080	7047	6013	4978	3943	2907	1871	0834	9796	8758	7719	6679	5639	4599	31
9096	8063	7030	5996	4961	3926	2890	1854	0817	9779	8741	7702	6662	5622	4581	30
9079	8046	7013	5979	4944	3909	2873	1836	0799	9762	8723	7684	6645	5605	4564	29
9062	8029	6995	5961	4927	3891	2856	1819	0782	9744	8706	7667	6627	5587	4546	28
9044	8012	6978	5944	4909	3874	2838	1802	0765	9727	8689	7650	6610	5570	4529	27
9027	7994	6961	5927	4892	3857	2821	1785	0747	9710	8671	7632	6593	5553	4512	26
9010	7977	6944	5910	4875	3840	2804	1767	0730	9692	8654	7615	6575	5535	4494	25
8993	7960	6926	5892	4858	3822	2787	1750	0713	9675	8637	7598	6558	5518	4477	24
8976	7943	6909	5875	4840	3805	2769	1733	0696	9658	8619	7580	6541	5501	4460	23
8958	7925	6892	5858	4823	3788	2752	1715	0678	9640	8602	7563	6523	5483	4442	22
8941	7908	6875	5841	4806	3771	2735	1698	0661	9623	8585	7546	6506	5466	4425	21
8924	7891	6858	5823	4789	3753	2717	1681	0644	9606	8567	7528	6489	5449	4408	20
8907	7874	6840	5806	4771	3736	2700	1664	0626	9589	8550	7511	6471	5431	4390	19
8890	7857	6823	5789	4754	3719	2683	1646	0609	9571	8533	7494	6454	5414	4373	18
8872	7839	6806	5772	4737	3702	2666	1629	0592	9554	8516	7476	6437	5397	4356	17
8855	7822	6789	5754	4720	3684	2648	1612	0575	9537	8498	7459	6419	5379	4338	16
8838	7805	6771	5737	4702	3667	2631	1594	0557	9519	8481	7442	6402	5362	4320	15
8821	7788	6754	5720	4685	3650	2614	1577	0540	9502	8464	7425	6385	5344	4304	14
8803	7771	6737	5703	4668	3633	2597	1560	0523	9485	8446	7407	6367	5327	4286	13
8786	7753	6720	5686	4651	3615	2579	1543	0505	9467	8429	7390	6350	5310	4269	12
8769	7736	6702	5668	4633	3598	2562	1525	0488	9450	8412	7373	6333	5292	4251	11
8752	7719	6685	5651	4616	3581	2545	1508	0471	9433	8394	7355	6315	5275	4234	10
8735	7702	6668	5634	4599	3564	2527	1491	0453	9416	8377	7338	6298	5258	4217	9
8717	7684	6651	5617	4582	3546	2510	1473	0436	9398	8360	7321	6281	5240	4199	8
8700	7667	6634	5599	4564	3529	2493	1456	0419	9381	8342	7303	6263	5223	4182	7
8683	7650	6616	5582	4547	3512	2476	1439	0402	9364	8325	7286	6246	5206	4165	6
8666	7633	6599	5565	4530	3494	2458	1422	0384	9346	8308	7269	6229	5188	4147	5
8649	7616	6582	5548	4513	3477	2441	1404	0367	9329	8290	7251	6211	5171	4130	4
8631	7598	6565	5530	4495	3460	2424	1387	0350	9312	8273	7234	6194	5154	4113	3
8614	7581	6547	5513	4478	3443	2407	1370	0332	9294	8256	7217	6177	5136	4095	2
8597	7564	6530	5496	4461	3425	2389	1352	0315	9277	8239	7199	6159	5119	4078	1
8580	7547	6513	5479	4444	3408	2372	1335	0298	9260	8221	7182	6142	5102	4061	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Sine Deg. 50

39 Deg. Tangent

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9.912	9.912	9.912	9.913	9.913	9.913	9.913	9.914	9.914	9.914	9.914	9.915	9.915	9.915	9.915
0	2403	4981	7559	0137	2714	5291	7868	0444	3020	5596	8171	0747	3322	5896	8471
1	2446	5024	7602	0179	2757	5334	7911	0487	3063	5639	8214	0790	3365	5939	8514
2	2489	5067	7645	0222	2800	5377	7953	0530	3106	5682	8257	0833	3407	5982	8556
3	2532	5110	7688	0265	2843	5420	7996	0573	3149	5725	8300	0875	3450	6025	8599
4	2575	5153	7731	0308	2886	5463	8039	0616	3192	5768	8343	0918	3493	6068	8642
5	2618	5196	7774	0351	2929	5506	8082	0659	3235	5811	8386	0961	3536	6111	8685
6	2661	5239	7817	0394	2972	5549	8125	0702	3278	5854	8429	1004	3579	6154	8728
7	2704	5282	7860	0437	3015	5591	8168	0745	3321	5896	8472	1047	3622	6197	8771
8	2747	5325	7903	0480	3057	5634	8211	0788	3364	5939	8515	1090	3665	6240	8814
9	2789	5368	7946	0523	3100	5677	8254	0830	3407	5982	8558	1133	3708	6282	8857
10	2832	5411	7989	0566	3143	5720	8297	0873	3449	6025	8601	1176	3751	6325	8900
11	2875	5454	8031	0609	3186	5763	8340	0916	3492	6068	8644	1219	3794	6368	8943
12	2918	5497	8074	0652	3229	5806	8383	0959	3535	6111	8687	1262	3837	6411	8985
13	2961	5540	8117	0695	3272	5849	8426	1002	3578	6154	8729	1305	3880	6454	9028
14	3004	5583	8160	0738	3315	5892	8469	1045	3621	6197	8772	1348	3922	6497	9071
15	3047	5625	8203	0781	3358	5935	8512	1088	3664	6240	8815	1390	3965	6540	9114
16	3090	5668	8246	0824	3401	5978	8555	1131	3707	6283	8858	1433	4008	6583	9157
17	3133	5711	8289	0867	3444	6021	8598	1174	3750	6326	8901	1476	4051	6626	9200
18	3176	5754	8332	0910	3487	6064	8641	1217	3793	6369	8944	1519	4094	6669	9243
19	3219	5797	8375	0953	3530	6107	8683	1260	3836	6412	8987	1562	4137	6712	9286
20	3262	5840	8418	0996	3573	6150	8726	1303	3879	6454	9030	1605	4180	6754	9329
21	3305	5883	8461	1039	3616	6193	8769	1346	3922	6497	9073	1648	4223	6797	9372
22	3348	5926	8504	1082	3659	6236	8812	1389	3965	6540	9116	1691	4266	6840	9414
23	3391	5969	8547	1125	3702	6279	8855	1432	4008	6583	9159	1734	4309	6883	9457
24	3434	6012	8590	1167	3745	6322	8898	1474	4050	6626	9202	1777	4352	6926	9500
25	3477	6055	8633	1210	3788	6365	8941	1517	4093	6669	9245	1820	4394	6969	9543
26	3520	6098	8676	1253	3831	6407	8984	1560	4136	6712	9287	1863	4437	7012	9586
27	3563	6141	8719	1296	3874	6450	9027	1603	4179	6755	9330	1905	4480	7055	9629
28	3606	6184	8762	1339	3916	6493	9070	1646	4222	6798	9373	1948	4523	7098	9672
29	3649	6227	8805	1382	3959	6536	9113	1689	4265	6841	9416	1991	4566	7141	9715
30	3692	6270	8848	1425	4002	6579	9156	1732	4308	6884	9459	2034	4609	7184	9758
31	3735	6313	8891	1468	4045	6622	9199	1775	4351	6927	9502	2077	4652	7226	9801
32	3778	6356	8934	1511	4088	6665	9242	1818	4394	6970	9545	2120	4695	7269	9844
33	3821	6399	8977	1554	4131	6708	9285	1861	4437	7013	9588	2163	4738	7312	9886
34	3864	6442	9020	1597	4174	6751	9328	1904	4480	7055	9631	2206	4781	7355	9929
35	3907	6485	9063	1640	4217	6794	9371	1947	4523	7098	9674	2249	4824	7398	9972
36	3950	6528	9106	1683	4260	6837	9413	1990	4566	7141	9717	2292	4866	7441	0015
37	3993	6571	9148	1726	4303	6880	9456	2033	4609	7184	9760	2335	4909	7484	0058
38	4036	6614	9191	1769	4346	6923	9499	2076	4652	7227	9802	2378	4952	7527	0101
39	4079	6657	9234	1812	4389	6966	9542	2119	4694	7270	9845	2420	4995	7570	0144
40	4122	6700	9277	1855	4432	7009	9585	2161	4737	7313	9888	2463	5038	7613	0187
41	4165	6743	9320	1898	4475	7052	9628	2204	4780	7356	9931	2506	5081	7655	0230
42	4208	6786	9363	1941	4518	7095	9671	2247	4823	7399	9974	2549	5124	7698	0273
43	4250	6829	9406	1984	4561	7138	9714	2290	4866	7442	0017	2592	5167	7741	0315
44	4293	6871	9449	2027	4604	7180	9757	2333	4909	7485	0060	2635	5210	7784	0358
45	4336	6914	9492	2070	4647	7223	9800	2376	4952	7528	0103	2678	5253	7827	0401
46	4379	6957	9535	2112	4690	7266	9843	2419	4995	7571	0146	2721	5296	7870	0444
47	4422	7000	9578	2155	4733	7309	9886	2462	5038	7613	0189	2764	5338	7913	0487
48	4465	7043	9621	2198	4775	7352	9929	2505	5081	7656	0232	2807	5381	7956	0530
49	4508	7086	9664	2241	4818	7395	9972	2548	5124	7699	0275	2850	5424	7999	0573
50	4551	7129	9707	2284	4861	7438	0015	2591	5167	7742	0318	2893	5467	8042	0616
51	4594	7172	9750	2327	4904	7481	0058	2634	5210	7785	0360	2935	5510	8085	0659
52	4637	7215	9793	2370	4947	7524	0100	2677	5253	7828	0403	2978	5553	8127	0702
53	4680	7258	9836	2413	4990	7567	0143	2720	5295	7871	0446	3021	5596	8170	0744
54	4723	7301	9879	2456	5033	7610	0186	2763	5338	7914	0489	3064	5639	8213	0787
55	4766	7344	9922	2499	5076	7653	0229	2805	5381	7957	0532	3107	5682	8256	0830
56	4809	7387	9965	2542	5119	7696	0272	2848	5424	8000	0575	3150	5725	8299	0873
57	4852	7430	0008	2585	5162	7739	0315	2891	5467	8043	0618	3193	5768	8342	0916
58	4895	7473	0051	2628	5205	7782	0358	2934	5510	8086	0661	3236	5810	8385	0959
59	4938	7516	0094	2671	5248	7825	0401	2977	5553	8129	0704	3279	5853	8428	1002
60	4981	7559	0137	2714	5291	7868	0444	3020	5596	8171	0747	3322	5896	8471	1045
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Tangent Deg. 50

39 Deg. Co-Tangent

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
	10.087	10.087	10.087	10.086	10.086	10.086	10.086	10.085	10.085	10.085	10.085	10.084	10.084	10.084	10.084	″
	7597	5019	2441	9863	7286	4709	2132	9556	6980	4404	1829	9253	6678	4104	1529	60
	7554	4976	2398	9821	7243	4666	2089	9513	6937	4361	1786	9210	6635	4061	1486	59
	7511	4933	2355	9778	7200	4623	2047	9470	6894	4318	1743	9167	6593	4018	1444	58
	7468	4890	2312	9735	7157	4580	2004	9427	6851	4275	1700	9125	6550	3975	1401	57
	7425	4847	2269	9692	7114	4537	1961	9384	6808	4232	1657	9082	6507	3932	1358	56
	7382	4804	2226	9649	7071	4494	1918	9341	6765	4189	1614	9039	6464	3889	1315	55
	7339	4761	2183	9606	7028	4451	1875	9298	6722	4146	1571	8996	6421	3846	1272	54
	7296	4718	2140	9563	6985	4409	1832	9255	6679	4104	1528	8953	6378	3803	1229	53
	7253	4675	2097	9520	6943	4366	1789	9212	6636	4061	1485	8910	6335	3760	1186	52
	7211	4632	2054	9477	6900	4323	1746	9170	6593	4018	1442	8867	6292	3718	1143	51
	7168	4589	2011	9434	6857	4280	1703	9127	6551	3975	1399	8824	6249	3675	1100	50
	7125	4546	1969	9391	6814	4237	1660	9084	6508	3932	1356	8781	6206	3632	1057	49
	7082	4503	1926	9348	6771	4194	1617	9041	6465	3889	1313	8738	6163	3589	1015	48
	7039	4460	1883	9305	6728	4151	1574	8998	6422	3846	1271	8695	6120	3546	0972	47
	6996	4417	1840	9262	6685	4108	1531	8955	6379	3803	1228	8652	6078	3503	0929	46
	6953	4375	1797	9219	6642	4065	1488	8912	6336	3760	1185	8610	6035	3460	0886	45
	6910	4332	1754	9176	6599	4022	1445	8869	6293	3717	1142	8567	5992	3417	0843	44
	6867	4289	1711	9133	6556	3979	1402	8826	6250	3674	1099	8524	5949	3374	0800	43
	6824	4246	1668	9090	6513	3936	1359	8783	6207	3631	1056	8481	5906	3331	0757	42
	6781	4203	1625	9047	6470	3893	1317	8740	6164	3588	1013	8438	5863	3288	0714	41
	6738	4160	1582	9004	6427	3850	1274	8697	6121	3546	0970	8395	5820	3246	0671	40
	6695	4117	1539	8961	6384	3807	1231	8654	6078	3503	0927	8352	5777	3203	0628	39
	6652	4074	1496	8918	6341	3764	1188	8611	6035	3460	0884	8309	5734	3160	0586	38
	6609	4031	1453	8875	6298	3721	1145	8568	5992	3417	0841	8266	5691	3117	0543	37
	6566	3988	1410	8833	6255	3678	1102	8526	5950	3374	0798	8223	5648	3074	0500	36
	6523	3945	1367	8790	6212	3635	1059	8483	5907	3331	0755	8180	5606	3031	0457	35
	6480	3902	1324	8747	6169	3593	1016	8440	5864	3288	0713	8137	5563	2988	0414	34
	6437	3859	1281	8704	6126	3550	0973	8397	5821	3245	0670	8095	5520	2945	0371	33
	6394	3816	1238	8661	6084	3507	0930	8354	5778	3202	0627	8052	5477	2902	0328	32
	6351	3773	1195	8618	6041	3464	0887	8311	5735	3159	0584	8009	5434	2859	0285	31
	6308	3730	1152	8575	5998	3421	0844	8268	5692	3116	0541	7966	5391	2816	0242	30
	6265	3687	1109	8532	5955	3378	0801	8225	5649	3073	0498	7923	5348	2774	0199	29
	6222	3644	1066	8489	5912	3335	0758	8182	5606	3030	0455	7880	5305	2731	0156	28
	6179	3601	1023	8446	5869	3292	0715	8139	5563	2987	0412	7837	5262	2688	0114	27
	6136	3558	0980	8403	5826	3249	0672	8096	5520	2945	0369	7794	5219	2645	0071	26
	6093	3515	0937	8360	5783	3206	0629	8053	5477	2902	0326	7751	5176	2602	0028	25
	6050	3472	0894	8317	5740	3163	0587	8010	5434	2859	0283	7708	5134	2559	9985	24
	6007	3429	0852	8274	5697	3120	0544	7967	5391	2816	0240	7665	5091	2516	9942	23
	5964	3386	0809	8231	5654	3077	0501	7924	5348	2773	0198	7622	5048	2473	9899	22
	5921	3343	0766	8188	5611	3034	0458	7881	5306	2730	0155	7580	5005	2430	9856	21
	5878	3300	0723	8145	5568	2991	0415	7839	5263	2687	0112	7537	4962	2387	9813	20
	5835	3257	0680	8102	5525	2948	0372	7796	5220	2644	0069	7494	4919	2345	9770	19
	5792	3214	0637	8059	5482	2905	0329	7753	5177	2601	0026	7451	4876	2302	9727	18
	5750	3171	0594	8016	5439	2862	0286	7710	5134	2558	9983	7408	4833	2259	9685	17
	5707	3129	0551	7973	5396	2820	0243	7667	5091	2515	9940	7365	4790	2216	9642	16
	5664	3086	0508	7930	5353	2777	0200	7624	5048	2472	9897	7322	4747	2173	9599	15
	5621	3043	0465	7888	5310	2734	0157	7581	5005	2429	9854	7279	4704	2130	9556	14
	5578	3000	0422	7845	5267	2691	0114	7538	4962	2387	9811	7236	4662	2087	9513	13
	5535	2957	0379	7802	5225	2648	0071	7495	4919	2344	9768	7193	4619	2044	9470	12
	5492	2914	0336	7759	5182	2605	0028	7452	4876	2301	9725	7150	4576	2001	9427	11
	5449	2871	0293	7716	5139	2562	9985	7409	4833	2258	9682	7107	4533	1958	9384	10
	5406	2828	0250	7673	5096	2519	9942	7366	4790	2215	9640	7065	4490	1915	9341	9
	5363	2785	0207	7630	5053	2476	9900	7323	4747	2172	9597	7022	4447	1873	9298	8
	5320	2742	0164	7587	5010	2433	9857	7280	4705	2129	9554	6979	4404	1830	9256	7
	5277	2699	0121	7544	4967	2390	9814	7237	4662	2086	9511	6936	4361	1787	9213	6
	5234	2656	0078	7501	4924	2347	9771	7195	4619	2043	9468	6893	4318	1744	9170	5
	5191	2613	0035	7458	4881	2304	9728	7152	4576	2000	9425	6850	4275	1701	9127	4
	5148	2570	9992	7415	4838	2261	9685	7109	4533	1957	9382	6807	4232	1658	9084	3
	5105	2527	9949	7372	4795	2218	9642	7066	4490	1914	9339	6764	4190	1615	9041	2
	5062	2484	9906	7329	4752	2175	9599	7023	4447	1871	9296	6721	4147	1572	8998	1
	5019	2441	9863	7286	4709	2132	9556	6980	4404	1829	9253	6678	4104	1529	8955	0
	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Tangent Deg. 50

39 Deg. Sine

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9.803	9.803	9.803	9.803	9.804	9.804	9.804	9.804	9.804	9.804	9.805	9.805	9.805	9.805	9.805
0	5105	6637	8168	9699	1228	2757	4284	5811	7336	8861	0385	1908	3430	4951	6472
1	5131	6663	8194	9724	1254	2782	4309	5836	7362	8887	0411	1934	3456	4977	6497
2	5156	6688	8219	9750	1279	2807	4335	5862	7387	8912	0436	1959	3481	5002	6522
3	5182	6714	8245	9775	1305	2833	4360	5887	7413	8937	0461	1984	3506	5028	6548
4	5207	6739	8271	9801	1330	2858	4386	5912	7438	8963	0487	2010	3532	5053	6573
5	5233	6765	8296	9826	1355	2884	4411	5938	7464	8988	0512	2035	3557	5078	6598
6	5258	6790	8322	9852	1381	2909	4437	5963	7489	9014	0537	2060	3582	5104	6624
7	5284	6816	8347	9877	1406	2935	4462	5989	7514	9039	0563	2086	3608	5129	6649
8	5310	6842	8373	9903	1432	2960	4488	6014	7540	9064	0588	2111	3633	5154	6674
9	5335	6867	8398	9928	1457	2986	4513	6040	7565	9090	0614	2137	3659	5180	6700
10	5361	6893	8424	9954	1483	3011	4539	6065	7591	9115	0639	2162	3684	5205	6725
11	5386	6918	8449	9979	1508	3037	4564	6090	7616	9141	0664	2187	3709	5230	6750
12	5412	6944	8475	0005	1534	3062	4589	6116	7641	9166	0690	2213	3735	5256	6776
13	5437	6969	8500	0030	1559	3088	4615	6141	7667	9191	0715	2238	3760	5281	6801
14	5463	6995	8526	0056	1585	3113	4640	6167	7692	9217	0741	2263	3785	5306	6826
15	5488	7020	8551	0081	1610	3138	4666	6192	7718	9242	0766	2289	3811	5332	6852
16	5514	7046	8577	0107	1636	3164	4691	6218	7743	9268	0791	2314	3836	5357	6877
17	5539	7071	8602	0132	1661	3189	4717	6243	7769	9293	0817	2340	3861	5382	6902
18	5565	7097	8628	0158	1687	3215	4742	6268	7794	9318	0842	2365	3887	5408	6928
19	5591	7122	8653	0183	1712	3240	4768	6294	7819	9344	0868	2390	3912	5433	6953
20	5616	7148	8679	0209	1738	3266	4793	6319	7845	9369	0893	2416	3937	5458	6978
21	5642	7173	8704	0234	1763	3291	4818	6345	7870	9395	0918	2441	3963	5484	7004
22	5667	7199	8730	0260	1789	3317	4844	6370	7896	9420	0944	2466	3988	5509	7029
23	5693	7224	8755	0285	1814	3342	4869	6396	7921	9445	0969	2492	4014	5534	7054
24	5718	7250	8781	0311	1840	3368	4895	6421	7946	9471	0994	2517	4039	5560	7080
25	5744	7275	8806	0336	1865	3393	4920	6447	7972	9496	1020	2542	4064	5585	7105
26	5769	7301	8832	0362	1891	3419	4946	6472	7997	9522	1045	2568	4090	5610	7130
27	5795	7326	8857	0387	1916	3444	4971	6497	8023	9547	1071	2593	4115	5636	7156
28	5820	7352	8883	0413	1941	3469	4997	6523	8048	9572	1096	2619	4140	5661	7181
29	5846	7377	8908	0438	1967	3495	5022	6548	8074	9598	1121	2644	4166	5686	7206
30	5871	7403	8934	0464	1992	3520	5047	6574	8099	9623	1147	2669	4191	5712	7232
31	5897	7429	8959	0489	2018	3546	5073	6599	8124	9649	1172	2695	4216	5737	7257
32	5922	7454	8985	0514	2043	3571	5098	6625	8150	9674	1198	2720	4242	5762	7282
33	5948	7480	9010	0540	2069	3597	5124	6650	8175	9699	1223	2745	4267	5788	7308
34	5974	7505	9036	0565	2094	3622	5149	6675	8201	9725	1248	2771	4292	5813	7333
35	5999	7531	9061	0591	2120	3648	5175	6701	8226	9750	1274	2796	4318	5838	7358
36	6025	7556	9087	0616	2145	3673	5200	6726	8251	9776	1299	2822	4343	5864	7384
37	6050	7582	9112	0642	2171	3699	5226	6752	8277	9801	1324	2847	4368	5889	7409
38	6076	7607	9138	0667	2196	3724	5251	6777	8302	9826	1350	2872	4394	5914	7434
39	6101	7633	9163	0693	2222	3750	5276	6802	8328	9852	1375	2898	4419	5940	7460
40	6127	7658	9189	0718	2247	3775	5302	6828	8353	9877	1401	2923	4445	5965	7485
41	6152	7684	9214	0744	2273	3800	5327	6853	8378	9903	1426	2948	4470	5990	7510
42	6178	7709	9240	0769	2298	3826	5353	6879	8404	9928	1451	2974	4495	6016	7535
43	6203	7735	9265	0795	2324	3851	5378	6904	8429	9953	1477	2999	4521	6041	7561
44	6229	7760	9291	0820	2349	3877	5404	6930	8455	9979	1502	3024	4546	6066	7586
45	6254	7786	9316	0846	2374	3902	5429	6955	8480	0004	1527	3050	4571	6092	7611
46	6280	7811	9342	0871	2400	3928	5455	6980	8506	0030	1553	3075	4597	6117	7637
47	6305	7837	9367	0897	2425	3953	5480	7006	8531	0055	1578	3101	4622	6142	7662
48	6331	7862	9393	0922	2451	3979	5505	7031	8556	0080	1604	3126	4647	6168	7687
49	6357	7888	9418	0948	2476	4004	5531	7057	8582	0106	1629	3151	4673	6193	7713
50	6382	7913	9444	0973	2502	4030	5556	7082	8607	0131	1654	3177	4698	6218	7738
51	6408	7939	9469	0999	2527	4055	5582	7108	8633	0157	1680	3202	4723	6244	7763
52	6433	7964	9495	1024	2553	4080	5607	7133	8658	0182	1705	3227	4749	6269	7789
53	6459	7990	9520	1050	2578	4106	5633	7158	8683	0207	1731	3253	4774	6294	7814
54	6484	8015	9546	1075	2604	4131	5658	7184	8709	0233	1756	3278	4799	6320	7839
55	6510	8041	9571	1101	2629	4157	5683	7209	8734	0258	1781	3303	4825	6345	7865
56	6535	8066	9597	1126	2655	4182	5709	7235	8760	0284	1807	3329	4850	6370	7890
57	6561	8092	9622	1152	2680	4208	5734	7260	8785	0309	1832	3354	4875	6396	7915
58	6586	8117	9648	1177	2706	4233	5760	7286	8810	0334	1857	3380	4901	6421	7941
59	6612	8143	9673	1203	2731	4259	5785	7311	8836	0360	1883	3405	4926	6446	7966
60	6637	8168	9699	1228	2757	4284	5811	7336	8861	0385	1908	3430	4951	6472	7991
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Sine Deg. 50

39 Deg. Co-Sine

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
″	9.887	9.887	9.887	9.887	9.886	9.886	9.886	9.886	9.886	9.886	9.886	9.886	9.886	9.886	9.885	″
0	4061	3019	1977	0934	9890	8846	7801	6756	5710	4663	3616	2568	1519	0470	9420	60
1	4043	3001	1959	0916	9873	8828	7784	6738	5692	4646	3598	2550	1502	0453	9403	59
2	4026	2984	1942	0899	9855	8811	7766	6721	5675	4628	3581	2533	1484	0435	9385	58
3	4008	2967	1924	0881	9838	8794	7749	6703	5657	4611	3563	2515	1467	0418	9368	57
4	3991	2949	1907	0864	9820	8776	7731	6686	5640	4593	3546	2498	1449	0400	9350	56
5	3974	2932	1890	0847	9803	8759	7714	6669	5622	4576	3528	2480	1432	0383	9333	55
6	3956	2915	1872	0829	9786	8741	7697	6651	5605	4558	3511	2463	1414	0365	9315	54
7	3939	2897	1855	0812	9768	8724	7679	6634	5588	4541	3493	2446	1397	0348	9298	53
8	3922	2880	1838	0794	9751	8707	7662	6616	5570	4523	3476	2428	1379	0330	9280	52
9	3904	2863	1820	0777	9733	8689	7644	6599	5553	4506	3459	2411	1362	0313	9263	51
10	3887	2845	1803	0760	9716	8672	7627	6581	5535	4488	3441	2393	1344	0295	9245	50
11	3870	2828	1785	0742	9699	8654	7609	6564	5518	4471	3424	2376	1327	0278	9228	49
12	3852	2810	1768	0725	9681	8637	7592	6547	5500	4454	3406	2358	1310	0260	9210	48
13	3835	2793	1751	0708	9664	8620	7575	6529	5483	4436	3389	2341	1292	0243	9193	47
14	3818	2776	1733	0690	9646	8602	7557	6512	5465	4419	3371	2323	1275	0225	9175	46
15	3800	2758	1716	0673	9629	8585	7540	6494	5448	4401	3354	2306	1257	0208	9158	45
16	3783	2741	1698	0655	9612	8567	7522	6477	5431	4384	3336	2288	1240	0190	9140	44
17	3765	2724	1681	0638	9594	8550	7505	6459	5413	4366	3319	2271	1222	0173	9123	43
18	3748	2706	1664	0621	9577	8532	7488	6442	5396	4349	3301	2253	1205	0155	9105	42
19	3731	2689	1646	0603	9559	8515	7470	6424	5378	4331	3284	2236	1187	0138	9088	41
20	3713	2671	1629	0586	9542	8498	7453	6407	5361	4314	3266	2218	1170	0120	9070	40
21	3696	2654	1612	0568	9525	8480	7435	6390	5343	4297	3249	2201	1152	0103	9053	39
22	3679	2637	1594	0551	9507	8463	7418	6372	5326	4279	3232	2183	1135	0085	9035	38
23	3661	2619	1577	0534	9490	8445	7400	6355	5308	4262	3214	2166	1117	0068	9018	37
24	3644	2602	1559	0516	9472	8428	7383	6337	5291	4244	3197	2148	1100	0050	9000	36
25	3627	2585	1542	0499	9455	8411	7366	6320	5274	4227	3179	2131	1082	0033	8983	35
26	3609	2567	1525	0481	9438	8393	7348	6302	5256	4209	3162	2114	1065	0015	8965	34
27	3592	2550	1507	0464	9420	8376	7331	6285	5239	4192	3144	2096	1047	9998	8948	33
28	3575	2533	1490	0447	9403	8358	7313	6268	5221	4174	3127	2079	1030	9980	8930	32
29	3557	2515	1473	0429	9385	8341	7296	6250	5204	4157	3109	2061	1012	9963	8913	31
30	3540	2498	1455	0412	9368	8324	7278	6233	5186	4139	3092	2044	0995	9945	8895	30
31	3522	2480	1438	0395	9351	8306	7261	6215	5169	4122	3074	2026	0977	9928	8878	29
32	3505	2463	1420	0377	9333	8289	7244	6198	5151	4105	3057	2009	0960	9910	8860	28
33	3488	2446	1403	0360	9316	8271	7226	6180	5134	4087	3039	1991	0942	9893	8843	27
34	3470	2428	1386	0342	9298	8254	7209	6163	5117	4070	3022	1974	0925	9875	8825	26
35	3453	2411	1368	0325	9281	8236	7191	6146	5099	4052	3005	1956	0907	9858	8808	25
36	3436	2394	1351	0308	9264	8219	7174	6128	5082	4035	2987	1939	0890	9840	8790	24
37	3418	2376	1333	0290	9246	8202	7156	6111	5064	4017	2970	1921	0872	9823	8773	23
38	3401	2359	1316	0273	9229	8184	7139	6093	5047	4000	2952	1904	0855	9805	8755	22
39	3384	2341	1299	0255	9211	8167	7122	6076	5029	3982	2935	1886	0837	9788	8738	21
40	3366	2324	1281	0238	9194	8149	7104	6058	5012	3965	2917	1869	0820	9770	8720	20
41	3349	2307	1264	0221	9177	8132	7087	6041	4994	3947	2900	1851	0802	9753	8703	19
42	3331	2289	1247	0203	9159	8115	7069	6024	4977	3930	2882	1834	0785	9735	8685	18
43	3314	2272	1229	0186	9142	8097	7052	6006	4960	3912	2865	1816	0767	9718	8668	17
44	3297	2255	1212	0168	9124	8080	7034	5989	4942	3895	2847	1799	0750	9700	8650	16
45	3279	2237	1194	0151	9107	8062	7017	5971	4925	3878	2830	1781	0733	9683	8633	15
46	3262	2220	1177	0134	9090	8045	7000	5954	4907	3860	2812	1764	0715	9665	8615	14
47	3245	2202	1160	0116	9072	8027	6982	5936	4890	3843	2795	1747	0698	9648	8598	13
48	3227	2185	1142	0099	9055	8010	6965	5919	4872	3825	2777	1729	0680	9630	8580	12
49	3210	2168	1125	0081	9037	7993	6947	5901	4855	3808	2760	1712	0663	9613	8563	11
50	3193	2150	1107	0064	9020	7975	6930	5884	4837	3790	2743	1694	0645	9595	8545	10
51	3175	2133	1090	0047	9003	7958	6913	5867	4820	3773	2725	1677	0628	9578	8528	9
52	3158	2116	1073	0029	8985	7940	6895	5849	4803	3755	2708	1659	0610	9560	8510	8
53	3140	2098	1055	0012	8968	7923	6878	5832	4785	3738	2690	1642	0593	9543	8493	7
54	3123	2081	1038	9994	8950	7906	6860	5814	4768	3720	2673	1624	0575	9525	8475	6
55	3106	2063	1021	9977	8933	7888	6843	5797	4750	3703	2655	1607	0558	9508	8458	5
56	3088	2046	1003	9960	8915	7871	6825	5779	4733	3686	2638	1589	0540	9490	8440	4
57	3071	2029	0986	9942	8898	7853	6808	5762	4715	3668	2620	1572	0523	9473	8423	3
58	3054	2011	0968	9925	8881	7836	6791	5745	4698	3651	2603	1554	0505	9455	8405	2
59	3036	1994	0951	9907	8863	7818	6773	5727	4680	3633	2585	1537	0488	9438	8388	1
60	3019	1977	0934	9890	8846	7801	6756	5710	4663	3616	2568	1519	0470	9420	8370	0
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Sine Deg. 50

39 Deg. Tangent — 39 Deg. Co-Tangent

″	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	″
	9.916	9.916	9.916	9.916	9.917	9.917	9.917	9.917	9.918	9.918	9.918	9.918	9.919	9.919	9.919	10.083	10.083	10.083	10.083	10.082	10.082	10.082	10.082	10.081	10.081	10.081	10.081	10.080	10.080	10.080	
0	1045	3618	6192	8765	1338	3911	6483	9055	1627	4198	6769	9340	1911	4481	7051	8955	6382	3808	1235	8662	6089	3517	0945	8373	5802	3231	0660	8089	5519	2949	60
1	1088	3661	6235	8808	1381	3954	6526	9098	1670	4241	6812	9383	1954	4524	7094	8912	6339	3765	1192	8619	6046	3474	0902	8330	5759	3188	0617	8046	5476	2906	59
2	1130	3704	6278	8851	1424	3996	6569	9141	1712	4284	6855	9426	1997	4567	7137	8870	6296	3722	1149	8576	6004	3431	0859	8288	5716	3145	0574	8003	5433	2863	58
3	1173	3747	6321	8894	1467	4039	6612	9184	1755	4327	6898	9469	2039	4610	7180	8827	6253	3679	1106	8533	5961	3388	0816	8245	5673	3102	0531	7961	5390	2820	57
4	1216	3790	6363	8937	1510	4082	6654	9226	1798	4370	6941	9512	2082	4653	7223	8784	6210	3637	1063	8490	5918	3346	0774	8202	5630	3059	0488	7918	5347	2777	56
5	1259	3833	6406	8980	1552	4125	6697	9269	1841	4413	6984	9555	2125	4695	7266	8741	6167	3594	1020	8448	5875	3303	0731	8159	5587	3016	0445	7875	5305	2734	55
6	1302	3876	6449	9022	1595	4168	6740	9312	1884	4455	7027	9597	2168	4738	7308	8698	6124	3551	0978	8405	5832	3260	0688	8116	5545	2973	0403	7832	5262	2692	54
7	1345	3919	6492	9065	1638	4211	6783	9355	1927	4498	7069	9640	2211	4781	7351	8655	6081	3508	0935	8362	5789	3217	0645	8073	5502	2931	0360	7789	5219	2649	53
8	1388	3962	6535	9108	1681	4254	6826	9398	1970	4541	7112	9683	2254	4824	7394	8612	6038	3465	0892	8319	5746	3174	0602	8030	5459	2888	0317	7746	5176	2606	52
9	1431	4005	6578	9151	1724	4297	6869	9441	2013	4584	7155	9726	2297	4867	7437	8569	5995	3422	0849	8276	5703	3131	0559	7987	5416	2845	0274	7703	5133	2563	51
10	1474	4047	6621	9194	1767	4339	6912	9484	2055	4627	7198	9769	2339	4910	7480	8526	5953	3379	0806	8233	5661	3088	0516	7945	5373	2802	0231	7661	5090	2520	50
11	1517	4090	6664	9237	1810	4382	6955	9527	2098	4670	7241	9812	2382	4953	7523	8483	5910	3336	0763	8190	5618	3045	0473	7902	5330	2759	0188	7618	5047	2477	49
12	1559	4133	6707	9280	1853	4425	6997	9569	2141	4712	7284	9854	2425	4995	7565	8441	5867	3293	0720	8147	5575	3003	0431	7859	5288	2716	0146	7575	5005	2435	48
13	1602	4176	6749	9323	1895	4468	7040	9612	2184	4755	7326	9897	2468	5038	7608	8398	5824	3251	0677	8105	5532	2960	0388	7816	5245	2674	0103	7532	4962	2392	47
14	1645	4219	6792	9365	1938	4511	7083	9655	2227	4798	7369	9940	2511	5081	7651	8355	5781	3208	0635	8062	5489	2917	0345	7773	5202	2631	0060	7489	4919	2349	46
15	1688	4262	6835	9408	1981	4554	7126	9698	2270	4841	7412	9983	2554	5124	7694	8312	5738	3165	0592	8019	5446	2874	0302	7730	5159	2588	0017	7446	4876	2306	45
16	1731	4305	6878	9451	2024	4597	7169	9741	2313	4884	7455	0026	2596	5167	7737	8269	5695	3122	0549	7976	5403	2831	0259	7687	5116	2545	9974	7404	4833	2263	44
17	1774	4348	6921	9494	2067	4639	7212	9784	2355	4927	7498	0069	2639	5210	7780	8226	5652	3079	0506	7933	5361	2788	0216	7645	5073	2502	9931	7361	4790	2220	43
18	1817	4391	6964	9537	2110	4682	7255	9827	2398	4970	7541	0112	2682	5252	7822	8183	5609	3036	0463	7890	5318	2745	0173	7602	5030	2459	9888	7318	4748	2178	42
19	1860	4433	7007	9580	2153	4725	7297	9869	2441	5012	7584	0154	2725	5295	7865	8140	5567	2993	0420	7847	5275	2703	0131	7559	4988	2416	9846	7275	4705	2135	41
20	1903	4476	7050	9623	2196	4768	7340	9912	2484	5055	7626	0197	2768	5338	7908	8097	5524	2950	0377	7804	5232	2660	0088	7516	4945	2374	9803	7232	4662	2092	40
21	1946	4519	7093	9666	2238	4811	7383	9955	2527	5098	7669	0240	2811	5381	7951	8054	5481	2907	0334	7762	5189	2617	0045	7473	4902	2331	9760	7189	4619	2049	39
22	1988	4562	7135	9709	2281	4854	7426	9998	2570	5141	7712	0283	2853	5424	7994	8012	5438	2865	0291	7719	5146	2574	0002	7430	4859	2288	9717	7147	4576	2006	38
23	2031	4605	7178	9751	2324	4897	7469	0041	2613	5184	7755	0326	2896	5467	8037	7969	5395	2822	0249	7676	5103	2531	9959	7387	4816	2245	9674	7104	4533	1963	37
24	2074	4648	7221	9794	2367	4940	7512	0084	2655	5227	7798	0369	2939	5509	8079	7926	5352	2779	0206	7633	5060	2488	9916	7345	4773	2202	9631	7061	4491	1921	36
25	2117	4691	7264	9837	2410	4982	7555	0127	2698	5270	7841	0411	2982	5552	8122	7883	5309	2736	0163	7590	5018	2445	9873	7302	4730	2159	9589	7018	4448	1878	35
26	2160	4734	7307	9880	2453	5025	7598	0169	2741	5312	7884	0454	3025	5595	8165	7840	5266	2693	0120	7547	4975	2402	9831	7259	4688	2116	9546	6975	4405	1835	34
27	2203	4777	7350	9923	2496	5068	7640	0212	2784	5355	7926	0497	3068	5638	8208	7797	5223	2650	0077	7504	4932	2360	9788	7216	4645	2074	9503	6932	4362	1792	33
28	2246	4819	7393	9966	2539	5111	7683	0255	2827	5398	7969	0540	3110	5681	8251	7754	5181	2607	0034	7461	4889	2317	9745	7173	4602	2031	9460	6890	4319	1749	32
29	2289	4862	7436	0009	2581	5154	7726	0298	2870	5441	8012	0583	3153	5724	8293	7711	5138	2564	9991	7419	4846	2274	9702	7130	4559	1988	9417	6847	4276	1707	31
30	2332	4905	7479	0052	2624	5197	7769	0341	2913	5484	8055	0626	3196	5766	8336	7668	5095	2521	9948	7376	4803	2231	9659	7087	4516	1945	9374	6804	4234	1664	30
31	2375	4948	7521	0094	2667	5240	7812	0384	2955	5527	8098	0669	3239	5809	8379	7625	5052	2479	9906	7333	4760	2188	9616	7045	4473	1902	9331	6761	4191	1621	29
32	2417	4991	7564	0137	2710	5283	7855	0427	2998	5570	8141	0711	3282	5852	8422	7583	5009	2436	9863	7290	4717	2145	9573	7002	4430	1859	9289	6718	4148	1578	28
33	2460	5034	7607	0180	2753	5325	7898	0470	3041	5612	8183	0754	3325	5895	8465	7540	4966	2393	9820	7247	4675	2102	9530	6959	4388	1817	9246	6675	4105	1535	27
34	2503	5077	7650	0223	2796	5368	7940	0512	3084	5655	8226	0797	3368	5938	8508	7497	4923	2350	9777	7204	4632	2060	9488	6916	4345	1774	9203	6632	4062	1492	26
35	2546	5120	7693	0266	2839	5411	7983	0555	3127	5698	8269	0840	3410	5981	8550	7454	4880	2307	9734	7161	4589	2017	9445	6873	4302	1731	9160	6590	4019	1450	25
36	2589	5163	7736	0309	2882	5454	8026	0598	3170	5741	8312	0883	3453	6023	8593	7411	4837	2264	9691	7118	4546	1974	9402	6830	4259	1688	9117	6547	3977	1407	24
37	2632	5205	7779	0352	2925	5497	8069	0641	3213	5784	8355	0926	3496	6066	8636	7368	4795	2221	9648	7075	4503	1931	9359	6787	4216	1645	9074	6504	3934	1364	23
38	2675	5248	7822	0395	2967	5540	8112	0684	3255	5827	8398	0968	3539	6109	8679	7325	4752	2178	9605	7033	4460	1888	9316	6745	4173	1602	9032	6461	3891	1321	22
39	2718	5291	7865	0438	3010	5583	8155	0727	3298	5870	8441	1011	3582	6152	8722	7282	4709	2135	9562	6990	4417	1845	9273	6702	4130	1559	8989	6418	3848	1278	21
40	2761	5334	7907	0480	3053	5626	8198	0770	3341	5912	8483	1054	3625	6195	8765	7239	4666	2093	9520	6947	4374	1802	9230	6659	4088	1517	8946	6375	3805	1235	20
41	2803	5377	7950	0523	3096	5668	8241	0812	3384	5955	8526	1097	3667	6238	8807	7197	4623	2050	9477	6904	4332	1759	9188	6616	4045	1474	8903	6333	3762	1193	19
42	2846	5420	7993	0566	3139	5711	8283	0855	3427	5998	8569	1140	3710	6280	8850	7154	4580	2007	9434	6861	4289	1717	9145	6573	4002	1431	8860	6290	3720	1150	18
43	2889	5463	8036	0609	3182	5754	8326	0898	3470	6041	8612	1183	3753	6323	8893	7111	4537	1964	9391	6818	4246	1674	9102	6530	3959	1388	8817	6247	3677	1107	17
44	2932	5506	8079	0652	3225	5797	8369	0941	3513	6084	8655	1225	3796	6366	8936	7068	4494	1921	9348	6775	4203	1631	9059	6487	3916	1345	8775	6204	3634	1064	16
45	2975	5549	8122	0695	3268	5840	8412	0984	3555	6127	8698	1268	3839	6409	8979	7025	4451	1878	9305	6732	4160	1588	9016	6445	3873	1302	8732	6161	3591	1021	15
46	3018	5591	8165	0738	3310	5883	8455	1027	3598	6170	8740	1311	3882	6452	9022	6982	4409	1835	9262	6690	4117	1545	8973	6402	3830	1260	8689	6118	3548	0978	14
47	3061	5634	8208	0781	3353	5926	8498	1070	3641	6212	8783	1354	3924	6495	9064	6939	4366	1792	9219	6647	4074	1502	8930	6359	3788	1217	8646	6076	3505	0936	13
48	3104	5677	8251	0823	3396	5969	8541	1112	3684	6255	8826	1397	3967	6537	9107	6896	4323	1749	9177	6604	4031	1459	8888	6316	3745	1174	8603	6033	3463	0893	12
49	3147	5720	8293	0866	3439	6011	8583	1155	3727	6298	8869	1440	4010	6580	9150	6853	4280	1707	9134	6561	3989	1417	8845	6273	3702	1131	8560	5990	3420	0850	11
50	3190	5763	8336	0909	3482	6054	8626	1198	3770	6341	8912	1483	4053	6623	9193	6810	4237	1664	9091	6518	3946	1374	8802	6230	3659	1088	8517	5947	3377	0807	10
51	3232	5806	8379	0952	3525	6097	8669	1241	3813	6384	8955	1525	4096	6666	9236	6768	4194	1621	9048	6475	3903	1331	8759	6187	3616	1045	8475	5904	3334	0764	9
52	3275	5849	8422	0995	3568	6140	8712	1284	3855	6427	8998	1568	4139	6709	9279	6725	4151	1578	9005	6432	3860	1288	8716	6145	3573	1002	8432	5861	3291	0721	8
53	3318	5892	8465	1038	3611	6183	8755	1327	3898	6469	9040	1611	4181	6752	9321	6682	4108	1535	8962	6389	3817	1245	8673	6102	3531	0960	8389	5819	3248	0679	7
54	3361	5935	8508	1081	3653	6226	8798	1370	3941	6512	9083	1654	4224	6794	9364	6639	4065	1492	8919	6347	3774	1202	8630	6059	3488	0917	8346	5776	3206	0636	6
55	3404	5977	8551	1124	3696	6269	8841	1412	3984	6555	9126	1697	4267	6837	9407	6596	4023	1449	8876	6304	3731	1159	8588	6016	3445	0874	8303	5733	3163	0593	5
56	3447	6020	8594	1167	3739	6311	8884	1455	4027	6598	9169	1740	4310	6880	9450	6553	3980	1406	8833	6261	3689	1116	8545	5973	3402	0831	8260	5690	3120	0550	4
57	3490	6063	8636	1209	3782	6354	8926	1498	4070	6641	9212	1782	4353	6923	9493	6510	3937	1364	8791	6218	3646	1074	8502	5930	3359	0788	8218	5647	3077	0507	3
58	3533	6106	8679	1252	3825	6397	8969	1541	4113	6684	9255	1825	4396	6966	9536	6467	3894	1321	8748	6175	3603	1031	8459	5887	3316	0745	8175	5604	3034	0464	2
59	3576	6149	8722	1295	3868	6440	9012	1584	4155	6727	9297	1868	4438	7009	9578	6424	3851	1278	8705	6132	3560	0988	8416	5845	3273	0703	8132	5562	2991	0422	1
60	3618	6192	8765	1338	3911	6483	9055	1627	4198	6769	9340	1911	4481	7051	9621	6382	3808	1235	8662	6089	3517	0945	8373	5802	3231	0660	8089	5519	2949	0379	0
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Co-Tangent Deg. 50 — Tangent Deg. 50

39 Deg. Sine

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58	59′
″	9. 805	9. 805	9. 806	9. 806	9. 806	9. 806	9. 806	9. 806	9. 807	9. 807	9. 807	9. 807	9. 807	9. 807	9. 807
0	7991	9510	1027	2544	4060	5575	7089	8602	0114	1626	3136	4646	6154	7662	9169
1	8017	9535	1053	2569	4085	5600	7114	8627	0139	1651	3161	4671	6179	7687	9194
2	8042	9560	1078	2595	4110	5625	7139	8652	0165	1676	3186	4696	6205	7712	9219
3	8067	9586	1103	2620	4136	5651	7165	8678	0190	1701	3212	4721	6230	7737	9244
4	8092	9611	1128	2645	4161	5676	7190	8703	0215	1726	3237	4746	6255	7763	9269
5	8118	9636	1154	2670	4186	5701	7215	8728	0240	1752	3262	4771	6280	7788	9295
6	8143	9662	1179	2696	4211	5726	7240	8753	0265	1777	3287	4797	6305	7813	9320
7	8168	9687	1204	2721	4237	5752	7265	8778	0291	1802	3312	4822	6330	7838	9345
8	8194	9712	1230	2746	4262	5777	7291	8804	0316	1827	3337	4847	6355	7863	9370
9	8219	9737	1255	2772	4287	5802	7316	8829	0341	1852	3363	4872	6381	7888	9395
10	8244	9763	1280	2797	4312	5827	7341	8854	0366	1877	3388	4897	6406	7913	9420
11	8270	9788	1305	2822	4338	5852	7366	8879	0391	1903	3413	4922	6431	7938	9445
12	8295	9813	1331	2847	4363	5878	7392	8905	0417	1928	3438	4947	6456	7964	9470
13	8320	9839	1356	2873	4388	5903	7417	8930	0442	1953	3463	4973	6481	7989	9495
14	8346	9864	1381	2898	4413	5928	7442	8955	0467	1978	3488	4998	6506	8014	9520
15	8371	9889	1407	2923	4439	5953	7467	8980	0492	2003	3514	5023	6531	8039	9546
16	8396	9915	1432	2948	4464	5979	7492	9005	0517	2028	3539	5048	6556	8064	9571
17	8422	9940	1457	2974	4489	6004	7518	9031	0543	2054	3564	5073	6582	8089	9596
18	8447	9965	1482	2999	4514	6029	7543	9056	0568	2079	3589	5098	6607	8114	9621
19	8472	9990	1508	3024	4540	6054	7568	9081	0593	2104	3614	5123	6632	8139	9646
20	8497	0016	1533	3049	4565	6080	7593	9106	0618	2129	3639	5149	6657	8164	9671
21	8523	0041	1558	3075	4590	6105	7619	9131	0643	2154	3665	5174	6682	8190	9696
22	8548	0066	1584	3100	4615	6130	7644	9157	0669	2180	3690	5199	6707	8215	9721
23	8573	0092	1609	3125	4641	6155	7669	9182	0694	2205	3715	5224	6732	8240	9746
24	8599	0117	1634	3151	4666	6181	7694	9207	0719	2230	3740	5249	6758	8265	9771
25	8624	0142	1659	3176	4691	6206	7719	9232	0744	2255	3765	5274	6783	8290	9797
26	8649	0167	1685	3201	4716	6231	7745	9257	0769	2280	3790	5299	6808	8315	9822
27	8675	0193	1710	3226	4742	6256	7770	9283	0794	2305	3815	5325	6833	8340	9847
28	8700	0218	1735	3252	4767	6281	7795	9308	0820	2331	3841	5350	6858	8365	9872
29	8725	0243	1761	3277	4792	6307	7820	9333	0845	2356	3866	5375	6883	8391	9897
30	8751	0269	1786	3302	4817	6332	7846	9358	0870	2381	3891	5400	6908	8416	9922
31	8776	0294	1811	3327	4843	6357	7871	9383	0895	2406	3916	5425	6933	8441	9947
32	8801	0319	1836	3353	4868	6382	7896	9409	0920	2431	3941	5450	6959	8466	9972
33	8827	0345	1862	3378	4893	6408	7921	9434	0946	2456	3966	5476	6984	8491	9997
34	8852	0370	1887	3403	4918	6433	7946	9459	0971	2482	3992	5501	7009	8516	0022
35	8877	0395	1912	3428	4944	6458	7972	9484	0996	2507	4017	5526	7034	8541	0048
36	8902	0420	1937	3454	4969	6483	7997	9509	1021	2532	4042	5551	7059	8566	0073
37	8928	0446	1963	3479	4994	6509	8022	9535	1046	2557	4067	5576	7084	8591	0098
38	8953	0471	1988	3504	5019	6534	8047	9560	1072	2582	4092	5601	7109	8617	0123
39	8978	0496	2013	3529	5045	6559	8073	9585	1097	2607	4117	5626	7134	8642	0148
40	9004	0522	2039	3555	5070	6584	8098	9610	1122	2633	4143	5652	7160	8667	0173
41	9029	0547	2064	3580	5095	6610	8123	9635	1147	2658	4168	5676	7185	8692	0198
42	9054	0572	2089	3605	5120	6635	8148	9661	1172	2683	4193	5702	7210	8717	0223
43	9080	0597	2114	3631	5146	6660	8173	9686	1197	2708	4218	5727	7235	8742	0248
44	9105	0623	2140	3656	5171	6685	8199	9711	1223	2733	4243	5752	7260	8767	0273
45	9130	0648	2165	3681	5196	6710	8224	9736	1248	2759	4268	5777	7285	8792	0299
46	9155	0673	2190	3706	5221	6736	8249	9761	1273	2784	4293	5802	7310	8817	0324
47	9181	0699	2216	3732	5247	6761	8274	9787	1298	2809	4319	5827	7335	8843	0349
48	9206	0724	2241	3757	5272	6786	8299	9812	1323	2834	4344	5853	7361	8868	0374
49	9231	0749	2266	3782	5297	6811	8325	9837	1349	2859	4369	5878	7386	8893	0399
50	9257	0774	2291	3807	5322	6837	8350	9862	1374	2884	4394	5903	7411	8918	0424
51	9282	0800	2317	3833	5348	6862	8375	9887	1399	2910	4419	5928	7436	8943	0449
52	9307	0825	2342	3858	5373	6887	8400	9913	1424	2935	4444	5953	7461	8968	0474
53	9333	0850	2367	3883	5398	6912	8426	9938	1449	2960	4470	5978	7486	8993	0499
54	9358	0876	2392	3908	5423	6938	8451	9963	1475	2985	4495	6003	7511	9018	0524
55	9383	0901	2418	3934	5449	6963	8476	9988	1500	3010	4520	6029	7536	9043	0550
56	9409	0926	2443	3959	5474	6988	8501	0013	1525	3035	4545	6054	7562	9069	0575
57	9434	0951	2468	3984	5499	7013	8526	0039	1550	3061	4570	6079	7587	9094	0600
58	9459	0977	2494	4009	5524	7038	8552	0064	1575	3086	4595	6104	7612	9119	0625
59	9484	1002	2519	4035	5550	7064	8577	0089	1600	3111	4620	6129	7637	9144	0650
60	9510	1027	2544	4060	5575	7089	8602	0114	1626	3136	4646	6154	7662	9169	0675
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Sine Deg. 50

39 Deg. Co-Sine

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
	9. 885	9. 885	9. 885	9. 885	9. 885	9. 885	9. 885	9. 885	9. 884	9. 884	9. 884	9. 884	9. 884	9. 884	9. 884	″
	8370	7319	6267	5215	4162	3109	2055	1000	9945	8889	7832	6775	5717	4659	3599	60
	8353	7302	6250	5198	4145	3091	2037	0982	9927	8871	7814	6757	5699	4641	3582	59
	8335	7284	6232	5180	4127	3074	2020	0965	9909	8853	7797	6740	5682	4623	3564	58
	8318	7266	6215	5163	4110	3056	2002	0947	9892	8836	7779	6722	5664	4606	3546	57
	8300	7249	6197	5145	4092	3039	1984	0930	9874	8818	7762	6704	5646	4588	3529	56
	8282	7231	6180	5127	4075	3021	1967	0912	9857	8801	7744	6687	5629	4570	3511	55
	8265	7214	6162	5110	4057	3003	1949	0894	9839	8783	7726	6669	5611	4553	3493	54
	8247	7196	6145	5092	4039	2986	1932	0877	9821	8765	7709	6651	5594	4535	3476	53
	8230	7179	6127	5075	4022	2968	1914	0859	9804	8748	7691	6634	5576	4517	3458	52
	8212	7161	6110	5057	4004	2951	1897	0842	9786	8730	7674	6616	5558	4500	3440	51
	8195	7144	6092	5040	3987	2933	1879	0824	9769	8713	7656	6599	5541	4482	3423	50
	8177	7126	6075	5022	3969	2916	1861	0807	9751	8695	7638	6581	5523	4464	3405	49
	8160	7109	6057	5005	3952	2898	1844	0789	9734	8677	7621	6563	5505	4447	3388	48
	8142	7091	6040	4987	3934	2881	1826	0771	9716	8660	7603	6546	5488	4429	3370	47
	8125	7074	6022	4970	3917	2863	1809	0754	9698	8642	7585	6528	5470	4411	3352	46
	8107	7056	6004	4952	3899	2845	1791	0736	9681	8625	7568	6510	5452	4394	3335	45
	8090	7039	5987	4934	3881	2828	1774	0719	9663	8607	7550	6493	5435	4376	3317	44
	8072	7021	5969	4917	3864	2810	1756	0701	9646	8589	7533	6475	5417	4358	3299	43
	8055	7004	5952	4899	3846	2793	1738	0683	9628	8572	7515	6458	5400	4341	3282	42
	8037	6986	5934	4882	3829	2775	1721	0666	9610	8554	7497	6440	5382	4323	3264	41
	8020	6969	5917	4864	3811	2758	1703	0648	9593	8537	7480	6422	5364	4306	3246	40
	8002	6951	5899	4847	3794	2740	1686	0631	9575	8519	7462	6405	5347	4288	3229	39
	7985	6934	5882	4829	3776	2722	1668	0613	9558	8501	7444	6387	5329	4270	3211	38
	7967	6916	5864	4812	3759	2705	1650	0596	9540	8484	7427	6369	5311	4253	3193	37
	7950	6898	5847	4794	3741	2687	1633	0578	9522	8466	7409	6352	5294	4235	3176	36
	7932	6881	5829	4777	3723	2670	1615	0560	9505	8448	7392	6334	5276	4217	3158	35
	7915	6863	5812	4759	3706	2652	1598	0543	9487	8431	7374	6317	5258	4200	3140	34
	7897	6846	5794	4741	3688	2635	1580	0525	9470	8413	7356	6299	5241	4182	3123	33
	7880	6828	5776	4724	3671	2617	1563	0508	9452	8396	7339	6281	5223	4164	3105	32
	7862	6811	5759	4706	3653	2599	1545	0490	9434	8378	7321	6264	5205	4147	3087	31
	7845	6793	5741	4689	3636	2582	1527	0472	9417	8360	7304	6246	5188	4129	3070	30
	7827	6776	5724	4671	3618	2564	1510	0455	9399	8343	7286	6228	5170	4111	3052	29
	7810	6758	5706	4654	3601	2547	1492	0437	9382	8325	7268	6211	5153	4094	3034	28
	7792	6741	5689	4636	3583	2529	1475	0420	9364	8308	7251	6193	5135	4076	3017	27
	7775	6723	5671	4619	3565	2512	1457	0402	9346	8290	7233	6175	5117	4058	2999	26
	7757	6706	5654	4601	3548	2494	1440	0384	9329	8272	7215	6158	5100	4041	2981	25
	7740	6688	5636	4584	3530	2476	1422	0367	9311	8255	7198	6140	5082	4023	2964	24
	7722	6671	5619	4566	3513	2459	1404	0349	9294	8237	7180	6123	5064	4005	2946	23
	7704	6653	5601	4548	3495	2441	1387	0332	9276	8220	7163	6105	5047	3988	2928	22
	7687	6636	5584	4531	3478	2424	1369	0314	9258	8202	7145	6087	5029	3970	2911	21
	7669	6618	5566	4513	3460	2406	1352	0297	9241	8184	7127	6070	5011	3953	2893	20
	7652	6601	5548	4496	3443	2389	1334	0279	9223	8167	7110	6052	4994	3935	2875	19
	7634	6583	5531	4478	3425	2371	1316	0261	9206	8149	7092	6034	4976	3917	2858	18
	7617	6565	5513	4461	3407	2353	1299	0244	9188	8132	7074	6017	4958	3900	2840	17
	7599	6548	5496	4443	3390	2336	1281	0226	9170	8114	7057	5999	4941	3882	2822	16
	7582	6530	5478	4426	3372	2318	1264	0209	9153	8096	7039	5982	4923	3864	2805	15
	7564	6513	5461	4408	3355	2301	1246	0191	9135	8079	7022	5964	4906	3847	2787	14
	7547	6495	5443	4391	3337	2283	1229	0173	9118	8061	7004	5946	4888	3829	2769	13
	7529	6478	5426	4373	3320	2266	1211	0156	9100	8043	6986	5929	4870	3811	2752	12
	7512	6460	5408	4355	3302	2248	1193	0138	9082	8026	6969	5911	4853	3794	2734	11
	7494	6443	5391	4338	3284	2230	1176	0121	9065	8008	6951	5893	4835	3776	2716	10
	7477	6425	5373	4320	3267	2213	1158	0103	9047	7991	6933	5876	4817	3758	2699	9
	7459	6408	5356	4303	3249	2195	1141	0085	9030	7973	6916	5858	4800	3741	2681	8
	7442	6390	5338	4285	3232	2178	1123	0068	9012	7955	6898	5840	4782	3723	2663	7
	7424	6373	5320	4268	3214	2160	1106	0050	8994	7938	6881	5823	4764	3705	2646	6
	7407	6355	5303	4250	3197	2143	1088	0033	8977	7920	6863	5805	4747	3688	2628	5
	7389	6338	5285	4233	3179	2125	1070	0015	8959	7903	6845	5788	4729	3670	2610	4
	7372	6320	5268	4215	3162	2107	1053	9997	8941	7885	6828	5770	4711	3652	2593	3
	7354	6302	5250	4197	3144	2090	1035	9980	8924	7867	6810	5752	4694	3635	2575	2
	7337	6285	5233	4180	3126	2072	1018	9962	8906	7850	6792	5735	4676	3617	2557	1
	7319	6267	5215	4162	3109	2055	1000	9945	8889	7832	6775	5717	4659	3599	2540	0
	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Sine Deg. 50

39 Deg. Tangent

"	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9. 919	9. 920	9. 920	9. 920	9. 920	9. 921	9. 921	9. 921	9. 922	9. 922	9. 922	9. 922	9. 923	9. 923	9. 923
0	9621	2191	4760	7329	9898	2466	5034	7602	0170	2737	5304	7871	0437	3004	5570
1	9664	2234	4803	7372	9940	2509	5077	7645	0212	2780	5347	7914	0480	3046	5612
2	9707	2276	4846	7415	9983	2552	5120	7688	0255	2823	5390	7956	0523	3089	5655
3	9750	2319	4888	7457	0026	2594	5163	7730	0298	2865	5432	7999	0566	3132	5698
4	9792	2362	4931	7500	0069	2637	5205	7773	0341	2908	5475	8042	0608	3175	5741
5	9835	2405	4974	7543	0112	2680	5248	7816	0384	2951	5518	8085	0651	3217	5783
6	9878	2448	5017	7586	0154	2723	5291	7859	0426	2994	5561	8127	0694	3260	5826
7	9921	2490	5060	7629	0197	2766	5334	7902	0469	3036	5603	8170	0737	3303	5869
8	9964	2533	5102	7671	0240	2808	5377	7944	0512	3079	5646	8213	0779	3346	5912
9	0007	2576	5145	7714	0283	2851	5419	7987	0555	3122	5689	8256	0822	3388	5954
10	0049	2619	5188	7757	0326	2894	5462	8030	0598	3165	5732	8299	0865	3431	5997
11	0092	2662	5231	7800	0368	2937	5505	8073	0640	3208	5775	8341	0908	3474	6040
12	0135	2705	5274	7843	0411	2980	5548	8116	0683	3250	5817	8384	0951	3517	6083
13	0178	2747	5317	7885	0454	3022	5591	8158	0726	3293	5860	8427	0993	3560	6126
14	0221	2790	5359	7928	0497	3065	5633	8201	0769	3336	5903	8470	1036	3602	6168
15	0264	2833	5402	7971	0540	3108	5676	8244	0811	3379	5946	8512	1079	3645	6211
16	0306	2876	5445	8014	0583	3151	5719	8287	0854	3422	5988	8555	1122	3688	6254
17	0349	2919	5488	8057	0625	3194	5762	8330	0897	3464	6031	8598	1164	3731	6297
18	0392	2961	5531	8100	0668	3236	5805	8372	0940	3507	6074	8641	1207	3773	6339
19	0435	3004	5573	8142	0711	3279	5847	8415	0983	3550	6117	8684	1250	3816	6382
20	0478	3047	5616	8185	0754	3322	5890	8458	1025	3593	6160	8726	1293	3859	6425
21	0521	3090	5659	8228	0797	3365	5933	8501	1068	3635	6202	8769	1336	3902	6468
22	0563	3133	5702	8271	0839	3408	5976	8543	1111	3678	6245	8812	1378	3944	6510
23	0606	3176	5745	8314	0882	3450	6019	8586	1154	3721	6288	8855	1421	3987	6553
24	0649	3218	5788	8356	0925	3493	6061	8629	1197	3764	6331	8897	1464	4030	6596
25	0692	3261	5830	8399	0968	3536	6104	8672	1239	3807	6374	8940	1507	4073	6639
26	0735	3304	5873	8442	1011	3579	6147	8715	1282	3849	6416	8983	1549	4116	6681
27	0777	3347	5916	8485	1053	3622	6190	8757	1325	3892	6459	9026	1592	4158	6724
28	0820	3390	5959	8528	1096	3664	6233	8800	1368	3935	6502	9069	1635	4201	6767
29	0863	3433	6002	8570	1139	3707	6275	8843	1411	3978	6545	9111	1678	4244	6810
30	0906	3475	6044	8613	1182	3750	6318	8886	1453	4020	6587	9154	1720	4287	6852
31	0949	3518	6087	8656	1225	3793	6361	8929	1496	4063	6630	9197	1763	4329	6895
32	0992	3561	6130	8699	1267	3836	6404	8971	1539	4106	6673	9240	1806	4372	6938
33	1034	3604	6173	8742	1310	3878	6446	9014	1582	4149	6716	9282	1849	4415	6981
34	1077	3647	6216	8785	1353	3921	6489	9057	1624	4192	6759	9325	1892	4458	7024
35	1120	3689	6259	8827	1396	3964	6532	9100	1667	4234	6801	9368	1934	4500	7066
36	1163	3732	6301	8870	1439	4007	6575	9143	1710	4277	6844	9411	1977	4543	7109
37	1206	3775	6344	8913	1481	4050	6618	9185	1753	4320	6887	9454	2020	4586	7152
38	1249	3818	6387	8956	1524	4093	6660	9228	1796	4363	6930	9496	2063	4629	7195
39	1291	3861	6430	8999	1567	4135	6703	9271	1838	4406	6972	9539	2105	4672	7237
40	1334	3904	6473	9041	1610	4178	6746	9314	1881	4448	7015	9582	2148	4714	7280
41	1377	3946	6515	9084	1653	4221	6789	9357	1924	4491	7058	9625	2191	4757	7323
42	1420	3989	6558	9127	1695	4264	6832	9399	1967	4534	7101	9667	2234	4800	7366
43	1463	4032	6601	9170	1738	4307	6874	9442	2010	4577	7144	9710	2276	4843	7408
44	1506	4075	6644	9213	1781	4349	6917	9485	2052	4619	7186	9753	2319	4885	7451
45	1548	4118	6687	9255	1824	4392	6960	9528	2095	4662	7229	9796	2362	4928	7494
46	1591	4160	6729	9298	1867	4435	7003	9571	2138	4705	7272	9838	2405	4971	7537
47	1634	4203	6772	9341	1910	4478	7046	9613	2181	4748	7315	9881	2448	5014	7579
48	1677	4246	6815	9384	1952	4521	7088	9656	2223	4791	7357	9924	2490	5056	7622
49	1720	4289	6858	9427	1995	4563	7131	9699	2266	4833	7400	9967	2533	5099	7665
50	1762	4332	6901	9469	2038	4606	7174	9742	2309	4876	7443	0010	2576	5142	7708
51	1805	4375	6944	9512	2081	4649	7217	9784	2352	4919	7486	0052	2619	5185	7750
52	1848	4417	6986	9555	2124	4692	7260	9827	2395	4962	7529	0095	2661	5227	7793
53	1891	4460	7029	9598	2166	4735	7302	9870	2437	5005	7571	0138	2704	5270	7836
54	1934	4503	7072	9641	2209	4777	7345	9913	2480	5047	7614	0181	2747	5313	7879
55	1977	4546	7115	9684	2252	4820	7388	9956	2523	5090	7657	0223	2790	5356	7922
56	2019	4589	7158	9726	2295	4863	7431	9998	2566	5133	7700	0266	2832	5399	7964
57	2062	4631	7200	9769	2338	4906	7474	0041	2609	5176	7742	0309	2875	5441	8007
58	2105	4674	7243	9812	2380	4949	7516	0084	2651	5218	7785	0352	2918	5484	8050
59	2148	4717	7286	9855	2423	4991	7559	0127	2694	5261	7828	0395	2961	5527	8093
60	2191	4760	7329	9898	2466	5034	7602	0170	2737	5304	7871	0437	3004	5570	8135
"	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

39 Deg. Co-Tangent

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	"
10. 080	10. 079	10. 079	10. 079	10. 079	10. 078	10. 078	10. 078	10. 077	10. 077	10. 077	10. 077	10. 076	10. 076	10. 076	
0379	7809	5240	2671	0102	7534	4966	2398	9830	7263	4696	2129	9563	6996	4430	60
0336	7766	5197	2628	0060	7491	4923	2355	9788	7220	4653	2086	9520	6954	4388	59
0293	7724	5154	2585	0017	7448	4880	2312	9745	7177	4610	2044	9477	6911	4345	58
0250	7681	5112	2543	9974	7406	4837	2270	9702	7135	4568	2001	9434	6868	4302	57
0208	7638	5069	2500	9931	7363	4795	2227	9659	7092	4525	1958	9392	6825	4259	56
0165	7595	5026	2457	9888	7320	4752	2184	9616	7049	4482	1915	9349	6783	4217	55
0122	7552	4983	2414	9846	7277	4709	2141	9574	7006	4439	1873	9306	6740	4174	54
0079	7510	4940	2371	9803	7234	4666	2098	9531	6964	4397	1830	9263	6697	4131	53
0036	7467	4898	2329	9760	7192	4623	2056	9488	6921	4354	1787	9221	6654	4088	52
9993	7424	4855	2286	9717	7149	4581	2013	9445	6878	4311	1744	9178	6612	4046	51
9951	7381	4812	2243	9674	7106	4538	1970	9402	6835	4268	1701	9135	6569	4003	50
9908	7338	4769	2200	9632	7063	4495	1927	9360	6792	4225	1659	9092	6526	3960	49
9865	7295	4726	2157	9589	7020	4452	1884	9317	6750	4183	1616	9049	6483	3917	48
9822	7253	4683	2115	9546	6978	4409	1842	9274	6707	4140	1573	9007	6440	3874	47
9779	7210	4641	2072	9503	6935	4367	1799	9231	6664	4097	1530	8964	6398	3832	46
9736	7167	4598	2029	9460	6892	4324	1756	9189	6621	4054	1488	8921	6355	3789	45
9694	7124	4555	1986	9417	6849	4281	1713	9146	6578	4012	1445	8878	6312	3746	44
9651	7081	4512	1943	9375	6806	4238	1670	9103	6536	3969	1402	8836	6269	3703	43
9608	7039	4469	1900	9332	6764	4195	1628	9060	6493	3926	1359	8793	6227	3661	42
9565	6996	4427	1858	9289	6721	4153	1585	9017	6450	3883	1316	8750	6184	3618	41
9522	6953	4384	1815	9246	6678	4110	1542	8975	6407	3840	1274	8707	6141	3575	40
9479	6910	4341	1772	9203	6635	4067	1499	8932	6365	3798	1231	8664	6098	3532	39
9437	6867	4298	1729	9161	6592	4024	1457	8889	6322	3755	1188	8622	6056	3490	38
9394	6824	4255	1686	9118	6550	3981	1414	8846	6279	3712	1145	8579	6013	3447	37
9351	6782	4212	1644	9075	6507	3939	1371	8803	6236	3669	1103	8536	5970	3404	36
9308	6739	4170	1601	9032	6464	3896	1328	8761	6193	3626	1060	8493	5927	3361	35
9265	6696	4127	1558	8989	6421	3853	1285	8718	6151	3584	1017	8451	5884	3319	34
9223	6653	4084	1515	8947	6378	3810	1243	8675	6108	3541	0974	8408	5842	3276	33
9180	6610	4041	1472	8904	6336	3767	1200	8632	6065	3498	0931	8365	5799	3233	32
9137	6567	3998	1430	8861	6293	3725	1157	8589	6022	3455	0889	8322	5756	3190	31
9094	6525	3956	1387	8818	6250	3682	1114	8547	5980	3413	0846	8280	5713	3148	30
9051	6482	3913	1344	8775	6207	3639	1071	8504	5937	3370	0803	8237	5671	3105	29
9008	6439	3870	1301	8733	6164	3596	1029	8461	5894	3327	0760	8194	5628	3062	28
8966	6396	3827	1258	8690	6122	3554	0986	8418	5851	3284	0718	8151	5585	3019	27
8923	6353	3784	1215	8647	6079	3511	0943	8376	5808	3241	0675	8108	5542	2976	26
8880	6311	3741	1173	8604	6036	3468	0900	8333	5766	3199	0632	8066	5500	2934	25
8837	6268	3699	1130	8561	5993	3425	0857	8290	5723	3156	0589	8023	5457	2891	24
8794	6225	3656	1087	8519	5950	3382	0815	8247	5680	3113	0546	7980	5414	2848	23
8751	6182	3613	1044	8476	5907	3340	0772	8204	5637	3070	0504	7937	5371	2805	22
8709	6139	3570	1001	8433	5865	3297	0729	8162	5594	3028	0461	7895	5328	2763	21
8666	6096	3527	0959	8390	5822	3254	0686	8119	5552	2985	0418	7852	5286	2720	20
8623	6054	3485	0916	8347	5779	3211	0643	8076	5509	2942	0375	7809	5243	2677	19
8580	6011	3442	0873	8305	5736	3168	0601	8033	5466	2899	0333	7766	5200	2634	18
8537	5968	3399	0830	8262	5693	3126	0558	7990	5423	2856	0290	7724	5157	2592	17
8494	5925	3356	0787	8219	5651	3083	0515	7948	5381	2814	0247	7681	5115	2549	16
8452	5882	3313	0745	8176	5608	3040	0472	7905	5338	2771	0204	7638	5072	2506	15
8409	5840	3271	0702	8133	5565	2997	0429	7862	5295	2728	0162	7595	5029	2463	14
8366	5797	3228	0659	8090	5522	2954	0387	7819	5252	2685	0119	7552	4986	2421	13
8323	5754	3185	0616	8048	5479	2912	0344	7777	5209	2643	0076	7510	4944	2378	12
8280	5711	3142	0573	8005	5437	2869	0301	7734	5167	2600	0033	7467	4901	2335	11
8238	5668	3099	0531	7962	5394	2826	0258	7691	5124	2557	9990	7424	4858	2292	10
8195	5625	3056	0488	7919	5351	2783	0216	7648	5081	2514	9948	7381	4815	2250	9
8152	5583	3014	0445	7876	5308	2740	0173	7605	5038	2471	9905	7339	4773	2207	8
8109	5540	2971	0402	7834	5265	2698	0130	7563	4995	2429	9862	7296	4730	2164	7
8066	5497	2928	0359	7791	5223	2655	0087	7520	4953	2386	9819	7253	4687	2121	6
8023	5454	2885	0316	7748	5180	2612	0044	7477	4910	2343	9777	7210	4644	2078	5
7981	5411	2842	0274	7705	5137	2569	0002	7434	4867	2300	9734	7168	4601	2036	4
7938	5369	2800	0231	7662	5094	2526	9959	7391	4824	2258	9691	7125	4559	1993	3
7895	5326	2757	0188	7620	5051	2484	9916	7349	4782	2215	9648	7082	4516	1950	2
7852	5283	2714	0145	7577	5009	2441	9873	7306	4739	2172	9605	7039	4473	1907	1
7809	5240	2671	0102	7534	4966	2398	9830	7263	4696	2129	9563	6996	4430	1865	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	"

Co-Tangent Deg. 50

Tangent Deg. 50

40 Deg. Sine

″	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
	9.808	9.808	9.808	9.808	9.808	9.808	9.808	9.809	9.809	9.809	9.809	9.809	9.809	9.810	9.810
0	0675	2180	3684	5188	6690	8192	9692	1192	2691	4189	5686	7182	8678	0172	1666
1	0700	2205	3709	5213	6715	8217	9717	1217	2716	4214	5711	7207	8703	0197	1691
2	0725	2230	3734	5238	6740	8242	9742	1242	2741	4239	5736	7232	8728	0222	1716
3	0750	2255	3759	5263	6765	8267	9767	1267	2766	4264	5761	7257	8753	0247	1741
4	0775	2280	3785	5288	6790	8292	9792	1292	2791	4289	5786	7282	8777	0272	1765
5	0800	2305	3810	5313	6815	8317	9817	1317	2816	4314	5811	7307	8802	0297	1790
6	0826	2331	3835	5338	6840	8342	9842	1342	2841	4339	5836	7332	8827	0322	1815
7	0851	2356	3860	5363	6865	8367	9867	1367	2866	4364	5861	7357	8852	0347	1840
8	0876	2381	3885	5388	6890	8392	9892	1392	2891	4389	5886	7382	8877	0371	1865
9	0901	2406	3910	5413	6915	8417	9917	1417	2916	4414	5911	7407	8902	0396	1890
10	0926	2431	3935	5438	6940	8442	9942	1442	2941	4439	5936	7432	8927	0421	1915
11	0951	2456	3960	5463	6965	8467	9967	1467	2966	4464	5961	7457	8952	0446	1940
12	0976	2481	3985	5488	6990	8492	9992	1492	2991	4489	5985	7482	8977	0471	1964
13	1001	2506	4010	5513	7015	8517	0017	1517	3016	4513	6010	7506	9002	0496	1989
14	1026	2531	4035	5538	7041	8542	0042	1542	3041	4538	6035	7531	9027	0521	2014
15	1051	2556	4060	5563	7066	8567	0067	1567	3066	4563	6060	7556	9051	0546	2039
16	1076	2581	4085	5588	7091	8592	0092	1592	3091	4588	6085	7581	9076	0571	2064
17	1102	2606	4110	5613	7116	8617	0117	1617	3116	4613	6110	7606	9101	0596	2089
18	1127	2631	4135	5638	7141	8642	0142	1642	3141	4638	6135	7631	9126	0620	2114
19	1152	2657	4160	5664	7166	8667	0167	1667	3165	4663	6160	7656	9151	0645	2139
20	1177	2682	4186	5689	7191	8692	0192	1692	3190	4688	6185	7681	9176	0670	2164
21	1202	2707	4211	5714	7216	8717	0217	1717	3215	4713	6210	7706	9201	0695	2188
22	1227	2732	4236	5739	7241	8742	0242	1742	3240	4738	6235	7731	9226	0720	2213
23	1252	2757	4261	5764	7266	8767	0267	1767	3265	4763	6260	7756	9251	0745	2238
24	1277	2782	4286	5789	7291	8792	0292	1792	3290	4788	6285	7781	9276	0770	2263
25	1302	2807	4311	5814	7316	8817	0317	1817	3315	4813	6310	7806	9301	0795	2288
26	1327	2832	4336	5839	7341	8842	0342	1842	3340	4838	6335	7831	9325	0820	2313
27	1352	2857	4361	5864	7366	8867	0367	1867	3365	4863	6360	7855	9350	0844	2338
28	1377	2882	4386	5889	7391	8892	0392	1892	3390	4888	6385	7880	9375	0869	2363
29	1403	2907	4411	5914	7416	8917	0417	1917	3415	4913	6409	7905	9400	0894	2387
30	1428	2932	4436	5939	7441	8942	0442	1942	3440	4938	6434	7930	9425	0919	2412
31	1453	2957	4461	5964	7466	8967	0467	1967	3465	4963	6459	7955	9450	0944	2437
32	1478	2982	4486	5989	7491	8992	0492	1992	3490	4988	6484	7980	9475	0969	2462
33	1503	3008	4511	6014	7516	9017	0517	2017	3515	5013	6509	8005	9500	0994	2487
34	1528	3033	4536	6039	7541	9042	0542	2042	3540	5038	6534	8030	9525	1019	2512
35	1553	3058	4561	6064	7566	9067	0567	2067	3565	5062	6559	8055	9550	1044	2537
36	1578	3083	4586	6089	7591	9092	0592	2092	3590	5087	6584	8080	9575	1069	2562
37	1603	3108	4611	6114	7616	9117	0617	2117	3615	5112	6609	8105	9599	1093	2586
38	1628	3133	4637	6139	7641	9142	0642	2142	3640	5137	6634	8130	9624	1118	2611
39	1653	3158	4662	6164	7666	9167	0667	2166	3665	5162	6659	8154	9649	1143	2636
40	1678	3183	4687	6189	7691	9192	0692	2191	3690	5187	6684	8179	9674	1168	2661
41	1704	3208	4712	6214	7716	9217	0717	2216	3715	5212	6709	8204	9699	1193	2686
42	1729	3233	4737	6239	7741	9242	0742	2241	3740	5237	6734	8229	9724	1218	2711
43	1754	3258	4762	6264	7766	9267	0767	2266	3765	5262	6759	8254	9749	1243	2736
44	1779	3283	4787	6290	7791	9292	0792	2291	3790	5287	6783	8279	9774	1268	2761
45	1804	3308	4812	6315	7816	9317	0817	2316	3815	5312	6808	8304	9799	1293	2785
46	1829	3333	4837	6340	7841	9342	0842	2341	3840	5337	6833	8329	9824	1317	2810
47	1854	3358	4862	6365	7866	9367	0867	2366	3865	5362	6858	8354	9849	1342	2835
48	1879	3384	4887	6390	7891	9392	0892	2391	3889	5387	6883	8379	9873	1367	2860
49	1904	3409	4912	6415	7916	9417	0917	2416	3914	5412	6908	8404	9898	1392	2885
50	1929	3434	4937	6440	7941	9442	0942	2441	3939	5437	6933	8429	9923	1417	2910
51	1954	3459	4962	6465	7966	9467	0967	2466	3964	5462	6958	8454	9948	1442	2935
52	1979	3484	4987	6490	7991	9492	0992	2491	3989	5487	6983	8478	9973	1467	2960
53	2005	3509	5012	6515	8017	9517	1017	2516	4014	5512	7008	8503	9998	1492	2984
54	2030	3534	5037	6540	8042	9542	1042	2541	4039	5536	7033	8528	0023	1517	3009
55	2055	3559	5062	6565	8067	9567	1067	2566	4064	5561	7058	8553	0048	1541	3034
56	2080	3584	5087	6590	8092	9592	1092	2591	4089	5586	7083	8578	0073	1566	3059
57	2105	3609	5112	6615	8117	9617	1117	2616	4114	5611	7108	8603	0098	1591	3084
58	2130	3634	5138	6640	8142	9642	1142	2641	4139	5636	7133	8628	0122	1616	3109
59	2155	3659	5163	6665	8167	9667	1167	2666	4164	5661	7157	8653	0147	1641	3134
60	2180	3684	5188	6690	8192	9692	1192	2691	4189	5686	7182	8678	0172	1666	3159
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Sine Deg. 49

40 Deg. Co-Sine

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	″
9.884	9.884	9.884	9.883	9.883	9.883	9.883	9.883	9.883	9.883	9.883	9.883	9.882	9.882	9.882	
2540	1479	0418	9357	8294	7232	6168	5104	4039	2974	1908	0841	9774	8706	7638	60
2522	1462	0401	9339	8277	7214	6150	5086	4021	2956	1890	0823	9756	8688	7620	59
2504	1444	0383	9321	8259	7196	6133	5069	4004	2938	1872	0806	9738	8670	7602	58
2487	1426	0365	9304	8241	7178	6115	5051	3986	2921	1855	0788	9721	8653	7584	57
2469	1409	0348	9286	8224	7161	6097	5033	3968	2903	1837	0770	9703	8635	7566	56
2451	1391	0330	9268	8206	7143	6079	5015	3950	2885	1819	0752	9685	8617	7548	55
2434	1373	0312	9251	8188	7125	6062	4998	3933	2867	1801	0735	9667	8599	7531	54
2416	1356	0295	9233	8171	7108	6044	4980	3915	2850	1783	0717	9649	8581	7513	53
2398	1338	0277	9215	8153	7090	6026	4962	3897	2832	1766	0699	9632	8564	7495	52
2381	1320	0259	9197	8135	7072	6009	4944	3879	2814	1748	0681	9614	8546	7477	51
2363	1303	0241	9180	8117	7054	5991	4927	3862	2796	1730	0663	9596	8528	7459	50
2345	1285	0224	9162	8100	7037	5973	4909	3844	2778	1712	0646	9578	8510	7442	49
2328	1267	0206	9144	8082	7019	5955	4891	3826	2761	1695	0628	9560	8492	7424	48
2310	1249	0188	9127	8064	7001	5938	4873	3808	2743	1677	0610	9543	8475	7406	47
2292	1232	0171	9109	8047	6984	5920	4856	3791	2725	1659	0592	9525	8457	7388	46
2275	1214	0153	9091	8029	6966	5902	4838	3773	2707	1641	0574	9507	8439	7370	45
2257	1196	0135	9074	8011	6948	5884	4820	3755	2690	1623	0557	9489	8421	7352	44
2239	1179	0118	9056	7993	6930	5867	4802	3737	2672	1606	0539	9471	8403	7335	43
2222	1161	0100	9038	7976	6913	5849	4785	3720	2654	1588	0521	9454	8386	7317	42
2204	1143	0082	9020	7958	6895	5831	4767	3702	2636	1570	0503	9436	8368	7299	41
2186	1126	0065	9003	7940	6877	5813	4749	3684	2619	1552	0486	9418	8350	7281	40
2169	1108	0047	8985	7923	6859	5796	4731	3666	2601	1535	0468	9400	8332	7263	39
2151	1090	0029	8967	7905	6842	5778	4714	3649	2583	1517	0450	9382	8314	7246	38
2133	1073	0011	8950	7887	6824	5760	4696	3631	2565	1499	0432	9365	8297	7228	37
2116	1055	9994	8932	7869	6806	5743	4678	3613	2548	1481	0414	9347	8279	7210	36
2098	1037	9976	8914	7852	6789	5725	4660	3595	2530	1464	0397	9329	8261	7192	35
2080	1020	9958	8896	7834	6771	5707	4643	3578	2512	1446	0379	9311	8243	7174	34
2063	1002	9941	8879	7816	6753	5689	4625	3560	2494	1428	0361	9293	8225	7156	33
2045	0984	9923	8861	7799	6735	5672	4607	3542	2476	1410	0343	9276	8207	7139	32
2027	0967	9905	8843	7781	6718	5654	4589	3524	2459	1392	0325	9258	8190	7121	31
2010	0949	9888	8826	7763	6700	5636	4572	3507	2441	1375	0308	9240	8172	7103	30
1992	0931	9870	8808	7745	6682	5618	4554	3489	2423	1357	0290	9222	8154	7085	29
1974	0914	9852	8790	7728	6664	5601	4536	3471	2405	1339	0272	9204	8136	7067	28
1957	0896	9835	8773	7710	6647	5583	4518	3453	2388	1321	0254	9187	8118	7050	27
1939	0878	9817	8755	7692	6629	5565	4501	3436	2370	1304	0237	9169	8101	7032	26
1921	0860	9799	8737	7675	6611	5547	4483	3418	2352	1286	0219	9151	8083	7014	25
1904	0843	9781	8719	7657	6594	5530	4465	3400	2334	1268	0201	9133	8065	6996	24
1886	0825	9764	8702	7639	6576	5512	4447	3382	2317	1250	0183	9115	8047	6978	23
1868	0807	9746	8684	7621	6558	5494	4430	3365	2299	1232	0165	9098	8029	6960	22
1851	0790	9728	8666	7604	6540	5477	4412	3347	2281	1215	0148	9080	8012	6943	21
1833	0772	9711	8649	7586	6523	5459	4394	3329	2263	1197	0130	9062	7994	6925	20
1815	0754	9693	8631	7568	6505	5441	4376	3311	2245	1179	0112	9044	7976	6907	19
1797	0737	9675	8613	7551	6487	5423	4359	3294	2228	1161	0094	9026	7958	6889	18
1780	0719	9658	8596	7533	6470	5406	4341	3276	2210	1144	0076	9009	7940	6871	17
1762	0701	9640	8578	7515	6452	5388	4323	3258	2192	1126	0059	8991	7923	6854	16
1744	0684	9622	8560	7497	6434	5370	4305	3240	2174	1108	0041	8973	7905	6836	15
1727	0666	9604	8542	7480	6416	5352	4288	3223	2157	1090	0023	8955	7887	6818	14
1709	0648	9587	8525	7462	6399	5335	4270	3205	2139	1072	0005	8937	7869	6800	13
1691	0631	9569	8507	7444	6381	5317	4252	3187	2121	1055	9987	8920	7851	6782	12
1674	0613	9551	8489	7427	6363	5299	4234	3169	2103	1037	9970	8902	7833	6764	11
1656	0595	9534	8472	7409	6345	5281	4217	3151	2086	1019	9952	8884	7816	6747	10
1638	0578	9516	8454	7391	6328	5264	4199	3134	2068	1001	9934	8866	7798	6729	9
1621	0560	9498	8436	7373	6310	5246	4181	3116	2050	0983	9916	8848	7780	6711	8
1603	0542	9481	8418	7356	6292	5228	4163	3098	2032	0966	9899	8831	7762	6693	7
1585	0524	9463	8401	7338	6274	5210	4146	3080	2014	0948	9881	8813	7744	6675	6
1568	0507	9445	8383	7320	6257	5193	4128	3063	1997	0930	9863	8795	7727	6658	5
1550	0489	9428	8365	7302	6239	5175	4110	3045	1979	0912	9845	8777	7709	6640	4
1532	0471	9410	8348	7285	6221	5157	4092	3027	1961	0895	9827	8759	7691	6622	3
1515	0454	9392	8330	7267	6204	5139	4075	3009	1943	0877	9810	8742	7673	6604	2
1497	0436	9374	8312	7249	6186	5122	4057	2992	1926	0859	9792	8724	7655	6586	1
1479	0418	9357	8294	7232	6168	5104	4039	2974	1908	0841	9774	8706	7638	6568	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Sine Deg. 49

40 Deg. Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.923	9.924	9.924	9.924	9.924	9.925	9.925	9.925	9.925	9.926	9.926	9.926	9.926	9.927	9.927
0	8135	0701	3266	5831	8396	0960	3524	6088	8652	1215	3778	6341	8904	1466	4028
1	8178	0744	3309	5874	8438	1003	3567	6131	8694	1258	3821	6384	8947	1509	4071
2	8221	0786	3351	5916	8481	1046	3610	6174	8737	1301	3864	6427	8989	1552	4114
3	8264	0829	3394	5959	8524	1088	3652	6216	8780	1343	3906	6469	9032	1594	4156
4	8306	0872	3437	6002	8567	1131	3695	6259	8823	1386	3949	6512	9075	1637	4199
5	8349	0915	3480	6045	8609	1174	3738	6302	8865	1429	3992	6555	9117	1680	4242
6	8392	0957	3522	6087	8652	1216	3781	6344	8908	1471	4035	6597	9160	1722	4285
7	8435	1000	3565	6130	8695	1259	3823	6387	8951	1514	4077	6640	9203	1765	4327
8	8477	1043	3608	6173	8738	1302	3866	6430	8994	1557	4120	6683	9245	1808	4370
9	8520	1086	3651	6216	8780	1345	3909	6473	9036	1600	4163	6726	9288	1851	4413
10	8563	1128	3693	6258	8823	1387	3952	6515	9079	1642	4205	6768	9331	1893	4455
11	8606	1171	3736	6301	8866	1430	3994	6558	9122	1685	4248	6811	9374	1936	4498
12	8648	1214	3779	6344	8909	1473	4037	6601	9164	1728	4291	6854	9416	1979	4541
13	8691	1257	3822	6387	8951	1516	4080	6644	9207	1771	4334	6896	9459	2021	4583
14	8734	1299	3864	6429	8994	1558	4122	6686	9250	1813	4376	6939	9502	2064	4626
15	8777	1342	3907	6472	9037	1601	4165	6729	9293	1856	4419	6982	9544	2107	4669
16	8819	1385	3950	6515	9079	1644	4208	6772	9335	1899	4462	7025	9587	2149	4712
17	8862	1428	3993	6558	9122	1687	4251	6815	9378	1941	4504	7067	9630	2192	4754
18	8905	1470	4035	6600	9165	1729	4293	6857	9421	1984	4547	7110	9673	2235	4797
19	8948	1513	4078	6643	9208	1772	4336	6900	9464	2027	4590	7153	9715	2278	4840
20	8990	1556	4121	6686	9250	1815	4379	6943	9506	2070	4633	7195	9758	2320	4882
21	9033	1599	4164	6729	9293	1858	4422	6985	9549	2112	4675	7238	9801	2363	4925
22	9076	1641	4206	6771	9336	1900	4464	7028	9592	2155	4718	7281	9843	2406	4968
23	9119	1684	4249	6814	9379	1943	4507	7071	9634	2198	4761	7324	9886	2448	5010
24	9162	1727	4292	6857	9421	1986	4550	7114	9677	2240	4803	7366	9929	2491	5053
25	9204	1770	4335	6900	9464	2028	4593	7156	9720	2283	4846	7409	9972	2534	5096
26	9247	1812	4377	6942	9507	2071	4635	7199	9763	2326	4889	7452	0014	2576	5139
27	9290	1855	4420	6985	9550	2114	4678	7242	9805	2369	4932	7494	0057	2619	5181
28	9333	1898	4463	7028	9592	2157	4721	7285	9848	2411	4974	7537	0100	2662	5224
29	9375	1941	4506	7071	9635	2199	4763	7327	9891	2454	5017	7580	0142	2705	5267
30	9418	1983	4548	7113	9678	2242	4806	7370	9933	2497	5060	7623	0185	2747	5309
31	9461	2026	4591	7156	9721	2285	4849	7413	9976	2539	5102	7665	0228	2790	5352
32	9504	2069	4634	7199	9763	2328	4892	7455	0019	2582	5145	7708	0270	2833	5395
33	9546	2112	4677	7242	9806	2370	4934	7498	0062	2625	5188	7751	0313	2875	5437
34	9589	2154	4719	7284	9849	2413	4977	7541	0104	2668	5231	7793	0356	2918	5480
35	9632	2197	4762	7327	9892	2456	5020	7584	0147	2710	5273	7836	0399	2961	5523
36	9675	2240	4805	7370	9934	2499	5063	7626	0190	2753	5316	7879	0441	3004	5565
37	9717	2283	4848	7413	9977	2541	5105	7669	0233	2796	5359	7922	0484	3046	5608
38	9760	2325	4890	7455	0020	2584	5148	7712	0275	2839	5401	7964	0527	3089	5651
39	9803	2368	4933	7498	0063	2627	5191	7755	0318	2881	5444	8007	0569	3132	5694
40	9846	2411	4976	7541	0105	2670	5233	7797	0361	2924	5487	8050	0612	3174	5736
41	9888	2454	5019	7583	0148	2712	5276	7840	0403	2967	5530	8092	0655	3217	5779
42	9931	2496	5061	7626	0191	2755	5319	7883	0446	3009	5572	8135	0698	3260	5822
43	9974	2539	5104	7669	0233	2798	5362	7925	0489	3052	5615	8178	0740	3302	5864
44	0017	2582	5147	7712	0276	2840	5404	7968	0532	3095	5658	8220	0783	3345	5907
45	0059	2625	5190	7754	0319	2883	5447	8011	0574	3138	5700	8263	0826	3388	5950
46	0102	2667	5232	7797	0362	2926	5490	8054	0617	3180	5743	8306	0868	3431	5992
47	0145	2710	5275	7840	0404	2969	5533	8096	0660	3223	5786	8349	0911	3473	6035
48	0188	2753	5318	7883	0447	3011	5575	8139	0702	3266	5829	8391	0954	3516	6078
49	0230	2796	5361	7925	0490	3054	5618	8182	0745	3308	5871	8434	0996	3559	6121
50	0273	2838	5403	7968	0533	3097	5661	8225	0788	3351	5914	8477	1039	3601	6163
51	0316	2881	5446	8011	0575	3140	5704	8267	0831	3394	5957	8519	1082	3644	6206
52	0359	2924	5489	8054	0618	3182	5746	8310	0873	3437	5999	8562	1125	3687	6249
53	0401	2967	5532	8096	0661	3225	5789	8353	0916	3479	6042	8605	1167	3729	6291
54	0444	3009	5574	8139	0704	3268	5832	8395	0959	3522	6085	8648	1210	3772	6334
55	0487	3052	5617	8182	0746	3311	5874	8438	1002	3565	6128	8690	1253	3815	6377
56	0530	3095	5660	8225	0789	3353	5917	8481	1044	3607	6170	8733	1295	3858	6419
57	0573	3138	5703	8267	0832	3396	5960	8524	1087	3650	6213	8776	1338	3900	6462
58	0615	3180	5745	8310	0875	3439	6003	8566	1130	3693	6256	8818	1381	3943	6505
59	0658	3223	5788	8353	0917	3481	6045	8609	1172	3736	6298	8861	1423	3986	6548
60	0701	3266	5831	8396	0960	3524	6088	8652	1215	3778	6341	8904	1466	4028	6590
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Tangent Deg. 49

40 Deg. Co-Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
	10.076	10.075	10.075	10.075	10.075	10.074	10.074	10.074	10.074	10.073	10.073	10.073	10.073	10.072	10.072
60	1865	9299	6734	4169	1604	9040	6476	3912	1348	8785	6222	3659	1096	8534	5972
59	1822	9256	6691	4126	1562	8997	6433	3869	1306	8742	6179	3616	1053	8491	5929
58	1779	9214	6649	4084	1519	8954	6390	3826	1263	8699	6136	3573	1011	8448	5886
57	1736	9171	6606	4041	1476	8912	6348	3784	1220	8657	6094	3531	0968	8406	5844
56	1694	9128	6563	3998	1433	8869	6305	3741	1177	8614	6051	3488	0925	8363	5801
55	1651	9085	6520	3955	1391	8826	6262	3698	1135	8571	6008	3445	0883	8320	5758
54	1608	9043	6478	3913	1348	8784	6219	3656	1092	8529	5965	3403	0840	8278	5715
53	1565	9000	6435	3870	1305	8741	6177	3613	1049	8486	5923	3360	0797	8235	5673
52	1523	8957	6392	3827	1262	8698	6134	3570	1006	8443	5880	3317	0755	8192	5630
51	1480	8914	6349	3784	1220	8655	6091	3527	0964	8400	5837	3274	0712	8149	5587
50	1437	8872	6307	3742	1177	8613	6048	3485	0921	8358	5795	3232	0669	8107	5545
49	1394	8829	6264	3699	1134	8570	6006	3442	0878	8315	5752	3189	0626	8064	5502
48	1352	8786	6221	3656	1091	8527	5963	3399	0836	8272	5709	3146	0584	8021	5459
47	1309	8743	6178	3613	1049	8484	5920	3356	0793	8229	5666	3104	0541	7979	5417
46	1266	8701	6136	3571	1006	8442	5878	3314	0750	8187	5624	3061	0498	7936	5374
45	1223	8658	6093	3528	0963	8399	5835	3271	0707	8144	5581	3018	0456	7893	5331
44	1181	8615	6050	3485	0921	8356	5792	3228	0665	8101	5538	2975	0413	7851	5288
43	1138	8572	6007	3442	0878	8313	5749	3185	0622	8059	5496	2933	0370	7808	5246
42	1095	8530	5965	3400	0835	8271	5707	3143	0579	8016	5453	2890	0327	7765	5203
41	1052	8487	5922	3357	0792	8228	5664	3100	0536	7973	5410	2847	0285	7722	5160
40	1010	8444	5879	3314	0750	8185	5621	3057	0494	7930	5367	2805	0242	7680	5118
39	0967	8401	5836	3271	0707	8142	5578	3015	0451	7888	5325	2762	0199	7637	5075
38	0924	8359	5794	3229	0664	8100	5536	2972	0408	7845	5282	2719	0157	7594	5032
37	0881	8316	5751	3186	0621	8057	5493	2929	0366	7802	5239	2676	0114	7552	4990
36	0838	8273	5708	3143	0579	8014	5450	2886	0323	7760	5197	2634	0071	7509	4947
35	0796	8230	5665	3100	0536	7972	5407	2844	0280	7717	5154	2591	0028	7466	4904
34	0753	8188	5623	3058	0493	7929	5365	2801	0237	7674	5111	2548	9986	7424	4861
33	0710	8145	5580	3015	0450	7886	5322	2758	0195	7631	5068	2506	9943	7381	4819
32	0667	8102	5537	2972	0408	7843	5279	2715	0152	7589	5026	2463	9900	7338	4776
31	0625	8059	5494	2929	0365	7801	5237	2673	0109	7546	4983	2420	9858	7295	4733
30	0582	8017	5452	2887	0322	7758	5194	2630	0067	7503	4940	2377	9815	7253	4691
29	0539	7974	5409	2844	0279	7715	5151	2587	0024	7461	4898	2335	9772	7210	4648
28	0496	7931	5366	2801	0237	7672	5108	2545	9981	7418	4855	2292	9730	7167	4605
27	0454	7888	5323	2758	0194	7630	5066	2502	9938	7375	4812	2249	9687	7125	4563
26	0411	7846	5281	2716	0151	7587	5023	2459	9896	7332	4769	2207	9644	7082	4520
25	0368	7803	5238	2673	0108	7544	4980	2416	9853	7290	4727	2164	9601	7039	4477
24	0325	7760	5195	2630	0066	7501	4937	2374	9810	7247	4684	2121	9559	6996	4435
23	0283	7717	5152	2587	0023	7459	4895	2331	9767	7204	4641	2078	9516	6954	4392
22	0240	7675	5110	2545	9980	7416	4852	2288	9725	7161	4599	2036	9473	6911	4349
21	0197	7632	5067	2502	9937	7373	4809	2245	9682	7119	4556	1993	9431	6868	4306
20	0154	7589	5024	2459	9895	7330	4767	2203	9639	7076	4513	1950	9388	6826	4264
19	0112	7546	4981	2417	9852	7288	4724	2160	9597	7033	4470	1908	9345	6783	4221
18	0069	7504	4939	2374	9809	7245	4681	2117	9554	6991	4428	1865	9302	6740	4178
17	0026	7461	4896	2331	9767	7202	4638	2075	9511	6948	4385	1822	9260	6698	4136
16	9983	7418	4853	2288	9724	7160	4596	2032	9468	6905	4342	1780	9217	6655	4093
15	9941	7375	4810	2246	9681	7117	4553	1989	9426	6862	4300	1737	9174	6612	4050
14	9898	7333	4768	2203	9638	7074	4510	1946	9383	6820	4257	1694	9132	6569	4008
13	9855	7290	4725	2160	9596	7031	4467	1904	9340	6777	4214	1651	9089	6527	3965
12	9812	7247	4682	2117	9553	6989	4425	1861	9298	6734	4171	1609	9046	6484	3922
11	9770	7204	4639	2075	9510	6946	4382	1818	9255	6692	4129	1566	9004	6441	3879
10	9727	7162	4597	2032	9467	6903	4339	1775	9212	6649	4086	1523	8961	6399	3837
9	9684	7119	4554	1989	9425	6860	4296	1733	9169	6606	4043	1481	8918	6356	3794
8	9641	7076	4511	1946	9382	6818	4254	1690	9127	6563	4001	1438	8875	6313	3751
7	9599	7033	4468	1904	9339	6775	4211	1647	9084	6521	3958	1395	8833	6271	3709
6	9556	6991	4426	1861	9296	6732	4168	1605	9041	6478	3915	1352	8790	6228	3666
5	9513	6948	4383	1818	9254	6689	4126	1562	8998	6435	3872	1310	8747	6185	3623
4	9470	6905	4340	1775	9211	6647	4083	1519	8956	6393	3830	1267	8705	6142	3581
3	9427	6862	4297	1733	9168	6604	4040	1476	8913	6350	3787	1224	8662	6100	3538
2	9385	6820	4255	1690	9125	6561	3997	1434	8870	6307	3744	1182	8619	6057	3495
1	9342	6777	4212	1647	9083	6519	3955	1391	8828	6264	3702	1139	8577	6014	3452
0	9299	6734	4169	1604	9040	6476	3912	1348	8785	6222	3659	1096	8534	5972	3410
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Tangent Deg. 49

"	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9. 810	9. 810	9. 810	9. 810	9. 810	9. 811	9. 811	9. 811	9. 811	9. 811	9. 811	9. 811	9. 812	9. 812	9. 812
0	3159	4650	6141	7631	9121	0609	2096	3583	5069	6554	8038	9521	1003	2484	3965
1	3183	4675	6166	7656	9146	0634	2121	3608	5094	6578	8062	9545	1027	2509	3989
2	3208	4700	6191	7681	9170	0659	2146	3633	5118	6603	8087	9570	1052	2533	4014
3	3233	4725	6216	7706	9195	0683	2171	3657	5143	6628	8112	9595	1077	2558	4039
4	3258	4750	6241	7731	9220	0708	2196	3682	5168	6653	8136	9619	1102	2583	4063
5	3283	4775	6266	7756	9245	0733	2220	3707	5193	6677	8161	9644	1126	2608	4088
6	3308	4800	6290	7780	9270	0758	2245	3732	5217	6702	8186	9669	1151	2632	4113
7	3333	4824	6315	7805	9294	0783	2270	3756	5242	6727	8211	9694	1176	2657	4137
8	3358	4849	6340	7830	9319	0807	2295	3781	5267	6751	8235	9718	1200	2682	4162
9	3382	4874	6365	7855	9344	0832	2320	3806	5292	6776	8260	9743	1225	2706	4187
10	3407	4899	6390	7880	9369	0857	2344	3831	5316	6801	8285	9768	1250	2731	4211
11	3432	4924	6415	7905	9394	0882	2369	3855	5341	6826	8309	9792	1274	2756	4236
12	3457	4949	6439	7929	9418	0907	2394	3880	5366	6850	8334	9817	1299	2780	4261
13	3482	4974	6464	7954	9443	0931	2419	3905	5391	6875	8359	9842	1324	2805	4285
14	3507	4998	6489	7979	9468	0956	2443	3930	5415	6900	8384	9867	1349	2830	4310
15	3532	5023	6514	8004	9493	0981	2468	3955	5440	6925	8408	9891	1373	2854	4335
16	3557	5048	6539	8029	9518	1006	2493	3979	5465	6949	8433	9916	1398	2879	4359
17	3581	5073	6564	8054	9542	1031	2518	4004	5490	6974	8458	9941	1423	2904	4384
18	3606	5098	6589	8078	9567	1055	2543	4029	5514	6999	8483	9965	1447	2928	4409
19	3631	5123	6613	8103	9592	1080	2567	4054	5539	7024	8507	9990	1472	2953	4433
20	3656	5148	6638	8128	9617	1105	2592	4078	5564	7048	8532	0015	1497	2978	4458
21	3681	5172	6663	8153	9642	1130	2617	4103	5589	7073	8557	0039	1521	3002	4483
22	3706	5197	6688	8178	9667	1155	2642	4128	5613	7098	8581	0064	1546	3027	4507
23	3731	5222	6713	8202	9691	1179	2666	4153	5638	7123	8606	0089	1571	3052	4532
24	3755	5247	6738	8227	9716	1204	2691	4177	5663	7147	8631	0114	1595	3076	4557
25	3780	5272	6762	8252	9741	1229	2716	4202	5688	7172	8656	0138	1620	3101	4581
26	3805	5297	6787	8277	9766	1254	2741	4227	5712	7197	8680	0163	1645	3126	4606
27	3830	5321	6812	8302	9791	1278	2766	4252	5737	7221	8705	0188	1669	3151	4630
28	3855	5346	6837	8327	9815	1303	2790	4276	5762	7246	8730	0212	1694	3175	4655
29	3880	5371	6862	8351	9840	1328	2815	4301	5787	7271	8754	0237	1719	3200	4680
30	3905	5396	6887	8376	9865	1353	2840	4326	5811	7296	8779	0262	1744	3224	4704
31	3929	5421	6911	8401	9890	1378	2865	4351	5836	7320	8804	0287	1768	3249	4729
32	3954	5446	6936	8426	9915	1402	2889	4376	5861	7345	8829	0311	1793	3274	4754
33	3979	5471	6961	8451	9939	1427	2914	4400	5886	7370	8853	0336	1818	3298	4778
34	4004	5495	6986	8475	9964	1452	2939	4425	5910	7395	8878	0361	1842	3323	4803
35	4029	5520	7011	8500	9989	1477	2964	4450	5935	7419	8903	0385	1867	3348	4828
36	4054	5545	7036	8525	0014	1502	2989	4475	5960	7444	8927	0410	1892	3373	4852
37	4079	5570	7060	8550	0039	1526	3013	4499	5984	7469	8952	0435	1916	3397	4877
38	4104	5595	7085	8575	0063	1551	3038	4524	6009	7494	8977	0459	1941	3422	4902
39	4128	5620	7110	8600	0088	1576	3063	4549	6034	7518	9002	0484	1966	3447	4926
40	4153	5645	7135	8624	0113	1601	3088	4574	6059	7543	9026	0509	1990	3471	4951
41	4178	5669	7160	8649	0138	1626	3112	4598	6083	7568	9051	0534	2015	3496	4976
42	4203	5694	7185	8674	0163	1650	3137	4623	6108	7592	9076	0558	2040	3521	5000
43	4228	5719	7209	8699	0187	1675	3162	4648	6133	7617	9100	0583	2065	3545	5025
44	4253	5744	7234	8724	0212	1700	3187	4673	6158	7642	9125	0608	2089	3570	5050
45	4278	5769	7259	8748	0237	1725	3211	4697	6182	7667	9150	0632	2114	3595	5074
46	4302	5794	7284	8773	0262	1749	3236	4722	6207	7691	9175	0657	2139	3619	5099
47	4327	5818	7309	8798	0287	1774	3261	4747	6232	7716	9199	0682	2163	3644	5124
48	4352	5843	7334	8823	0311	1799	3286	4772	6257	7741	9224	0706	2188	3669	5148
49	4377	5868	7358	8848	0336	1824	3311	4796	6281	7766	9249	0731	2213	3693	5173
50	4402	5893	7383	8873	0361	1849	3335	4821	6306	7790	9273	0756	2237	3718	5198
51	4427	5918	7408	8897	0386	1873	3360	4846	6331	7815	9298	0781	2262	3743	5222
52	4452	5943	7433	8922	0411	1898	3385	4871	6356	7840	9323	0805	2287	3767	5247
53	4476	5968	7458	8947	0435	1923	3410	4895	6380	7864	9348	0830	2311	3792	5272
54	4501	5992	7483	8972	0460	1948	3434	4920	6405	7889	9372	0855	2336	3817	5296
55	4526	6017	7507	8997	0485	1973	3459	4945	6430	7914	9397	0879	2361	3841	5321
56	4551	6042	7532	9021	0510	1997	3484	4970	6455	7939	9422	0904	2385	3866	5346
57	4576	6067	7557	9046	0535	2022	3509	4994	6479	7963	9446	0929	2410	3891	5370
58	4601	6092	7582	9071	0559	2047	3534	5019	6504	7988	9471	0953	2435	3915	5395
59	4626	6117	7607	9096	0584	2072	3558	5044	6529	8013	9496	0978	2459	3940	5420
60	4650	6141	7631	9121	0609	2096	3583	5069	6554	8038	9521	1003	2484	3965	5444
"	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

"	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9. 882	9. 882	9. 882	9. 882	9. 882	9. 882	9. 882	9. 881	9. 881	9. 881	9. 881	9. 881	9. 881	9. 881	9. 881
0	6568	5499	4428	3357	2285	1213	0140	9067	7992	6918	5842	4766	3689	2612	1534
1	6551	5481	4410	3339	2268	1195	0122	9049	7974	6900	5824	4748	3671	2594	1516
2	6533	5463	4392	3321	2250	1177	0104	9031	7957	6882	5806	4730	3653	2576	1498
3	6515	5445	4375	3304	2232	1159	0087	9013	7939	6864	5788	4712	3635	2558	1480
4	6497	5427	4357	3286	2214	1142	0069	8995	7921	6846	5770	4694	3617	2540	1462
5	6479	5409	4339	3268	2196	1124	0051	8977	7903	6828	5752	4676	3599	2522	1444
6	6461	5392	4321	3250	2178	1106	0033	8959	7885	6810	5734	4658	3581	2504	1426
7	6444	5374	4303	3232	2160	1088	0015	8941	7867	6792	5717	4640	3564	2486	1408
8	6426	5356	4285	3214	2143	1070	9997	8923	7849	6774	5699	4622	3546	2468	1390
9	6408	5338	4268	3196	2125	1052	9979	8906	7831	6756	5681	4604	3528	2450	1372
10	6390	5320	4250	3179	2107	1034	9961	8888	7813	6738	5663	4587	3510	2432	1354
11	6372	5302	4232	3161	2089	1016	9943	8870	7795	6720	5645	4569	3492	2414	1336
12	6354	5285	4214	3143	2071	0999	9926	8852	7777	6702	5627	4551	3474	2396	1318
13	6337	5267	4196	3125	2053	0981	9908	8834	7760	6685	5609	4533	3456	2378	1300
14	6319	5249	4178	3107	2035	0963	9890	8816	7742	6667	5591	4515	3438	2360	1282
15	6301	5231	4160	3089	2017	0945	9872	8798	7724	6649	5573	4497	3420	2342	1264
16	6283	5213	4143	3071	2000	0927	9854	8780	7706	6631	5555	4479	3402	2324	1246
17	6265	5195	4125	3054	1982	0909	9836	8762	7688	6613	5537	4461	3384	2306	1228
18	6248	5178	4107	3036	1964	0891	9818	8744	7670	6595	5519	4443	3366	2288	1210
19	6230	5160	4089	3018	1946	0873	9800	8727	7652	6577	5501	4425	3348	2271	1192
20	6212	5142	4071	3000	1928	0856	9782	8709	7634	6559	5483	4407	3330	2253	1174
21	6194	5124	4053	2982	1910	0838	9765	8691	7616	6541	5465	4389	3312	2235	1156
22	6176	5106	4036	2964	1892	0820	9747	8673	7598	6523	5448	4371	3294	2217	1138
23	6158	5088	4018	2946	1874	0802	9729	8655	7580	6505	5430	4353	3276	2199	1120
24	6141	5071	4000	2929	1857	0784	9711	8637	7563	6487	5412	4335	3258	2181	1102
25	6123	5053	3982	2911	1839	0766	9693	8619	7545	6470	5394	4317	3240	2163	1084
26	6105	5035	3964	2893	1821	0748	9675	8601	7527	6452	5376	4299	3222	2145	1066
27	6087	5017	3946	2875	1803	0730	9657	8583	7509	6434	5358	4281	3204	2127	1048
28	6069	4999	3928	2857	1785	0712	9639	8565	7491	6416	5340	4264	3187	2109	1031
29	6051	4981	3911	2839	1767	0695	9621	8547	7473	6398	5322	4246	3169	2091	1013
30	6034	4963	3893	2821	1749	0677	9603	8530	7455	6380	5304	4228	3151	2073	0995
31	6016	4946	3875	2804	1731	0659	9586	8512	7437	6362	5286	4210	3133	2055	0977
32	5998	4928	3857	2786	1714	0641	9568	8494	7419	6344	5268	4192	3115	2037	0959
33	5980	4910	3839	2768	1696	0623	9550	8476	7401	6326	5250	4174	3097	2019	0941
34	5962	4892	3821	2750	1678	0605	9532	8458	7383	6308	5232	4156	3079	2001	0923
35	5944	4874	3803	2732	1660	0587	9514	8440	7365	6290	5214	4138	3061	1983	0905
36	5927	4856	3786	2714	1642	0569	9496	8422	7348	6272	5196	4120	3043	1965	0887
37	5909	4839	3768	2696	1624	0552	9478	8404	7330	6254	5179	4102	3025	1947	0869
38	5891	4821	3750	2678	1606	0534	9460	8386	7312	6236	5161	4084	3007	1929	0851
39	5873	4803	3732	2661	1589	0516	9442	8368	7294	6219	5143	4066	2989	1911	0833
40	5855	4785	3714	2643	1571	0498	9425	8351	7276	6201	5125	4048	2971	1893	0815
41	5837	4767	3696	2625	1553	0480	9407	8333	7258	6183	5107	4030	2953	1875	0797
42	5820	4749	3679	2607	1535	0462	9389	8315	7240	6165	5089	4012	2935	1857	0779
43	5802	4732	3661	2589	1517	0444	9371	8297	7222	6147	5071	3994	2917	1839	0761
44	5784	4714	3643	2571	1499	0426	9353	8279	7204	6129	5053	3976	2899	1821	0743
45	5766	4696	3625	2553	1481	0408	9335	8261	7186	6111	5035	3958	2881	1803	0725
46	5748	4678	3607	2536	1463	0391	9317	8243	7168	6093	5017	3941	2863	1785	0707
47	5730	4660	3589	2518	1446	0373	9299	8225	7150	6075	4999	3923	2845	1767	0689
48	5713	4642	3571	2500	1428	0355	9281	8207	7133	6057	4981	3905	2827	1749	0671
49	5695	4624	3554	2482	1410	0337	9263	8189	7115	6039	4963	3887	2809	1731	0653
50	5677	4607	3536	2464	1392	0319	9246	8171	7097	6021	4945	3869	2791	1714	0635
51	5659	4589	3518	2446	1374	0301	9228	8154	7079	6003	4927	3851	2773	1696	0617
52	5641	4571	3500	2428	1356	0283	9210	8136	7061	5985	4909	3833	2756	1678	0599
53	5623	4553	3482	2411	1338	0265	9192	8118	7043	5968	4892	3815	2738	1660	0581
54	5606	4535	3464	2393	1320	0248	9174	8100	7025	5950	4874	3797	2720	1642	0563
55	5588	4517	3446	2375	1303	0230	9156	8082	7007	5932	4856	3779	2702	1624	0545
56	5570	4500	3429	2357	1285	0212	9138	8064	6989	5914	4838	3761	2684	1606	0527
57	5552	4482	3411	2339	1267	0194	9120	8046	6971	5896	4820	3743	2666	1588	0509
58	5534	4464	3393	2321	1249	0176	9102	8028	6953	5878	4802	3725	2648	1570	0491
59	5516	4446	3375	2303	1231	0158	9085	8010	6935	5860	4784	3707	2630	1552	0473
60	5499	4428	3357	2285	1213	0140	9067	7992	6918	5842	4766	3689	2612	1534	0455
"	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 927	9. 927	9. 928	9. 928	9. 928	9. 928	9. 929	9. 929	9. 929	9. 929	9. 930	9. 930	9. 930	9. 930	9. 931
0	6590	9152	1713	4274	6835	9396	1956	4516	7076	9636	2195	4755	7314	9872	2431
1	6633	9195	1756	4317	6878	9439	1999	4559	7119	9679	2238	4797	7356	9915	2473
2	6676	9237	1799	4360	6921	9481	2042	4602	7162	9721	2281	4840	7399	9958	2516
3	6718	9280	1841	4402	6963	9524	2084	4644	7204	9764	2323	4883	7442	0000	2559
4	6761	9323	1884	4445	7006	9567	2127	4687	7247	9807	2366	4925	7484	0043	2601
5	6804	9365	1927	4488	7049	9609	2170	4730	7290	9849	2409	4968	7527	0086	2644
6	6846	9408	1969	4530	7091	9652	2212	4772	7332	9892	2451	5011	7569	0128	2687
7	6889	9451	2012	4573	7134	9695	2255	4815	7375	9935	2494	5053	7612	0171	2729
8	6932	9493	2055	4616	7177	9737	2298	4858	7418	9977	2537	5096	7655	0213	2772
9	6974	9536	2097	4659	7219	9780	2340	4900	7460	0020	2579	5138	7697	0256	2815
10	7017	9579	2140	4701	7262	9823	2383	4943	7503	0063	2622	5181	7740	0299	2857
11	7060	9621	2183	4744	7305	9865	2426	4986	7546	0105	2665	5224	7783	0341	2900
12	7103	9664	2225	4787	7347	9908	2468	5028	7588	0148	2707	5266	7825	0384	2942
13	7145	9707	2268	4829	7390	9951	2511	5071	7631	0191	2750	5309	7868	0427	2985
14	7188	9750	2311	4872	7433	9993	2554	5114	7674	0233	2793	5352	7911	0469	3028
15	7231	9792	2354	4915	7475	0036	2596	5156	7716	0276	2835	5394	7953	0512	3070
16	7273	9835	2396	4957	7518	0079	2639	5199	7759	0319	2878	5437	7996	0555	3113
17	7316	9878	2439	5000	7561	0121	2682	5242	7802	0361	2921	5480	8039	0597	3156
18	7359	9920	2482	5043	7603	0164	2724	5284	7844	0404	2963	5522	8081	0640	3198
19	7401	9963	2524	5085	7646	0207	2767	5327	7887	0447	3006	5565	8124	0683	3241
20	7444	0006	2567	5128	7689	0249	2810	5370	7930	0489	3049	5608	8167	0725	3284
21	7487	0048	2610	5171	7732	0292	2852	5412	7972	0532	3091	5650	8209	0768	3326
22	7530	0091	2652	5213	7774	0335	2895	5455	8015	0575	3134	5693	8252	0810	3369
23	7572	0134	2695	5256	7817	0377	2938	5498	8058	0617	3177	5736	8294	0853	3411
24	7615	0176	2738	5299	7860	0420	2980	5540	8100	0660	3219	5778	8337	0896	3454
25	7658	0219	2780	5341	7902	0463	3023	5583	8143	0702	3262	5821	8380	0938	3497
26	7700	0262	2823	5384	7945	0505	3066	5626	8186	0745	3304	5864	8422	0981	3539
27	7743	0304	2866	5427	7988	0548	3108	5668	8228	0788	3347	5906	8465	1024	3582
28	7786	0347	2908	5469	8030	0591	3151	5711	8271	0830	3390	5949	8508	1066	3625
29	7828	0390	2951	5512	8073	0633	3194	5754	8314	0873	3432	5991	8550	1109	3667
30	7871	0433	2994	5555	8116	0676	3236	5796	8356	0916	3475	6034	8593	1152	3710
31	7914	0475	3037	5598	8158	0719	3279	5839	8399	0958	3518	6077	8636	1194	3753
32	7956	0518	3079	5640	8201	0761	3322	5882	8442	1001	3560	6119	8678	1237	3795
33	7999	0561	3122	5683	8244	0804	3364	5924	8484	1044	3603	6162	8721	1279	3838
34	8042	0603	3165	5726	8286	0847	3407	5967	8527	1086	3646	6205	8764	1322	3880
35	8085	0646	3207	5768	8329	0889	3450	6010	8570	1129	3688	6247	8806	1365	3923
36	8127	0689	3250	5811	8372	0932	3492	6052	8612	1172	3731	6290	8849	1407	3966
37	8170	0731	3293	5854	8414	0975	3535	6095	8655	1214	3774	6333	8891	1450	4008
38	8213	0774	3335	5896	8457	1018	3578	6138	8698	1257	3816	6375	8934	1493	4051
39	8255	0817	3378	5939	8500	1060	3620	6180	8740	1300	3859	6418	8977	1535	4094
40	8298	0859	3421	5982	8542	1103	3663	6223	8783	1342	3902	6461	9019	1578	4136
41	8341	0902	3463	6024	8585	1146	3706	6266	8825	1385	3944	6503	9062	1621	4179
42	8383	0945	3506	6067	8628	1188	3748	6308	8868	1428	3987	6546	9105	1663	4222
43	8426	0988	3549	6110	8670	1231	3791	6351	8911	1470	4030	6589	9147	1706	4264
44	8469	1030	3591	6152	8713	1274	3834	6394	8953	1513	4072	6631	9190	1749	4307
45	8511	1073	3634	6195	8756	1316	3876	6436	8996	1556	4115	6674	9233	1791	4349
46	8554	1116	3677	6238	8798	1359	3919	6479	9039	1598	4158	6717	9275	1834	4392
47	8597	1158	3719	6280	8841	1402	3962	6522	9081	1641	4200	6759	9318	1876	4435
48	8640	1201	3762	6323	8884	1444	4004	6564	9124	1684	4243	6802	9361	1919	4477
49	8682	1244	3805	6366	8926	1487	4047	6607	9167	1726	4285	6844	9403	1962	4520
50	8725	1286	3848	6408	8969	1530	4090	6650	9209	1769	4328	6887	9446	2004	4563
51	8768	1329	3890	6451	9012	1572	4132	6692	9252	1812	4371	6930	9489	2047	4605
52	8810	1372	3933	6494	9054	1615	4175	6735	9295	1854	4413	6972	9531	2090	4648
53	8853	1414	3976	6536	9097	1658	4218	6778	9337	1897	4456	7015	9574	2132	4691
54	8896	1457	4018	6579	9140	1700	4260	6820	9380	1940	4499	7058	9616	2175	4733
55	8938	1500	4061	6622	9183	1743	4303	6863	9423	1982	4541	7100	9659	2218	4776
56	8981	1542	4104	6665	9225	1786	4346	6906	9465	2025	4584	7143	9702	2260	4818
57	9024	1585	4146	6707	9268	1828	4388	6948	9508	2067	4627	7186	9744	2303	4861
58	9066	1628	4189	6750	9311	1871	4431	6991	9551	2110	4669	7228	9787	2345	4904
59	9109	1671	4232	6793	9353	1914	4474	7034	9593	2153	4712	7271	9830	2388	4946
60	9152	1713	4274	6835	9396	1956	4516	7076	9636	2195	4755	7314	9872	2431	4989
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
	10. 072	10. 072	10. 071	10. 071	10. 071	10. 071	10. 070	10. 070	10. 070	10. 070	10. 069	10. 069	10. 069	10. 069	10. 068	″
0	3410	0848	8287	5726	3165	0604	8044	5484	2924	0364	7805	5245	2686	0128	7569	60
1	3367	0805	8244	5683	3122	0561	8001	5441	2881	0321	7762	5203	2644	0085	7527	59
2	3324	0763	8201	5640	3079	0519	7958	5398	2838	0279	7719	5160	2601	0042	7484	58
3	3282	0720	8159	5598	3037	0476	7916	5356	2796	0236	7677	5117	2558	0000	7441	57
4	3239	0677	8116	5555	2994	0433	7873	5313	2753	0193	7634	5075	2516	9957	7399	56
5	3196	0635	8073	5512	2951	0391	7830	5270	2710	0151	7591	5032	2473	9914	7356	55
6	3154	0592	8031	5470	2909	0348	7788	5228	2668	0108	7549	4989	2431	9872	7313	54
7	3111	0549	7988	5427	2866	0305	7745	5185	2625	0065	7506	4947	2388	9829	7271	53
8	3068	0507	7945	5384	2823	0263	7702	5142	2582	0023	7463	4904	2345	9787	7228	52
9	3026	0464	7903	5341	2781	0220	7660	5100	2540	9980	7421	4862	2303	9744	7185	51
10	2983	0421	7860	5299	2738	0177	7617	5057	2497	9937	7378	4819	2260	9701	7143	50
11	2940	0379	7817	5256	2695	0135	7574	5014	2454	9895	7335	4776	2217	9659	7100	49
12	2897	0336	7775	5213	2653	0092	7532	4972	2412	9852	7293	4734	2175	9616	7058	48
13	2855	0293	7732	5171	2610	0049	7489	4929	2369	9809	7250	4691	2132	9573	7015	47
14	2812	0250	7689	5128	2567	0007	7446	4886	2326	9767	7207	4648	2089	9531	6972	46
15	2769	0208	7646	5085	2525	9964	7404	4844	2284	9724	7165	4606	2047	9488	6930	45
16	2727	0165	7604	5043	2482	9921	7361	4801	2241	9681	7122	4563	2004	9445	6887	44
17	2684	0122	7561	5000	2439	9879	7318	4758	2198	9639	7079	4520	1961	9403	6844	43
18	2641	0080	7518	4957	2397	9836	7276	4716	2156	9596	7037	4478	1919	9360	6802	42
19	2599	0037	7476	4915	2354	9793	7233	4673	2113	9553	6994	4435	1876	9317	6759	41
20	2556	9994	7433	4872	2311	9751	7190	4630	2070	9511	6951	4392	1833	9275	6716	40
21	2513	9952	7390	4829	2268	9708	7148	4588	2028	9468	6909	4350	1791	9232	6674	39
22	2470	9909	7348	4787	2226	9665	7105	4545	1985	9425	6866	4307	1748	9190	6631	38
23	2428	9866	7305	4744	2183	9623	7062	4502	1942	9383	6823	4264	1706	9147	6589	37
24	2385	9824	7262	4701	2140	9580	7020	4460	1900	9340	6781	4222	1663	9104	6546	36
25	2342	9781	7220	4659	2098	9537	6977	4417	1857	9298	6738	4179	1620	9062	6503	35
26	2300	9738	7177	4616	2055	9495	6934	4374	1814	9255	6696	4136	1578	9019	6461	34
27	2257	9696	7134	4573	2012	9452	6892	4332	1772	9212	6653	4094	1535	8976	6418	33
28	2214	9653	7092	4531	1970	9409	6849	4289	1729	9170	6610	4051	1492	8934	6375	32
29	2172	9610	7049	4488	1927	9367	6806	4246	1686	9127	6568	4009	1450	8891	6333	31
30	2129	9567	7006	4445	1884	9324	6764	4204	1644	9084	6525	3966	1407	8848	6290	30
31	2086	9525	6963	4402	1842	9281	6721	4161	1601	9042	6482	3923	1364	8806	6247	29
32	2044	9482	6921	4360	1799	9239	6678	4118	1558	8999	6440	3881	1322	8763	6205	28
33	2001	9439	6878	4317	1756	9196	6636	4076	1516	8956	6397	3838	1279	8721	6162	27
34	1958	9397	6835	4274	1714	9153	6593	4033	1473	8914	6354	3795	1236	8678	6120	26
35	1915	9354	6793	4232	1671	9111	6550	3990	1430	8871	6312	3753	1194	8635	6077	25
36	1873	9311	6750	4189	1628	9068	6508	3948	1388	8828	6269	3710	1151	8593	6034	24
37	1830	9269	6707	4146	1586	9025	6465	3905	1345	8786	6226	3667	1109	8550	5992	23
38	1787	9226	6665	4104	1543	8982	6422	3862	1302	8743	6184	3625	1066	8507	5949	22
39	1745	9183	6622	4061	1500	8940	6380	3820	1260	8700	6141	3582	1023	8465	5906	21
40	1702	9141	6579	4018	1458	8897	6337	3777	1217	8658	6098	3539	0981	8422	5864	20
41	1659	9098	6537	3976	1415	8854	6294	3734	1175	8615	6056	3497	0938	8379	5821	19
42	1617	9055	6494	3933	1372	8812	6252	3692	1132	8572	6013	3454	0895	8337	5778	18
43	1574	9012	6451	3890	1330	8769	6209	3649	1089	8530	5970	3411	0853	8294	5736	17
44	1531	8970	6409	3848	1287	8726	6166	3606	1047	8487	5928	3369	0810	8251	5693	16
45	1489	8927	6366	3805	1244	8684	6124	3564	1004	8444	5885	3326	0767	8209	5651	15
46	1446	8884	6323	3762	1202	8641	6081	3521	0961	8402	5842	3283	0725	8166	5608	14
47	1403	8842	6281	3720	1159	8598	6038	3478	0919	8359	5800	3241	0682	8124	5565	13
48	1360	8799	6238	3677	1116	8556	5996	3436	0876	8316	5757	3198	0639	8081	5523	12
49	1318	8756	6195	3634	1074	8513	5953	3393	0833	8274	5715	3156	0597	8038	5480	11
50	1275	8714	6152	3592	1031	8470	5910	3350	0791	8231	5672	3113	0554	7996	5437	10
51	1232	8671	6110	3549	0988	8428	5868	3308	0748	8188	5629	3070	0511	7953	5395	9
52	1190	8628	6067	3506	0946	8385	5825	3265	0705	8146	5587	3028	0469	7910	5352	8
53	1147	8586	6024	3464	0903	8342	5782	3222	0663	8103	5544	2985	0426	7868	5309	7
54	1104	8543	5982	3421	0860	8300	5740	3180	0620	8060	5501	2942	0384	7825	5267	6
55	1062	8500	5939	3378	0817	8257	5697	3137	0577	8018	5459	2900	0341	7782	5224	5
56	1019	8458	5896	3335	0775	8214	5654	3094	0535	7975	5416	2857	0298	7740	5182	4
57	0976	8415	5854	3293	0732	8172	5612	3052	0492	7933	5373	2814	0256	7697	5139	3
58	0934	8372	5811	3250	0689	8129	5569	3009	0449	7890	5331	2772	0213	7655	5096	2
59	0891	8329	5768	3207	0647	8086	5526	2966	0407	7847	5288	2729	0170	7612	5054	1
60	0848	8287	5726	3165	0604	8044	5484	2924	0364	7805	5245	2686	0128	7569	5011	0
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

"	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9.812	9.812	9.812	9.812	9.813	9.813	9.813	9.813	9.813	9.813	9.814	9.814	9.814	9.814	9.814
0	5444	6923	8401	9878	1354	2829	4303	5777	7250	8721	0192	1662	3131	4600	6067
1	5469	6948	8425	9902	1378	2854	4328	5801	7274	8746	0217	1687	3156	4624	6092
2	5493	6972	8450	9927	1403	2878	4353	5826	7299	8770	0241	1711	3180	4649	6116
3	5518	6997	8475	9952	1428	2903	4377	5851	7323	8795	0266	1736	3205	4673	6140
4	5543	7021	8499	9976	1452	2927	4402	5875	7348	8819	0290	1760	3229	4698	6165
5	5567	7046	8524	0001	1477	2952	4426	5900	7372	8844	0315	1785	3254	4722	6189
6	5592	7071	8548	0025	1501	2976	4451	5924	7397	8868	0339	1809	3278	4746	6214
7	5617	7095	8573	0050	1526	3001	4475	5949	7421	8893	0364	1834	3303	4771	6238
8	5641	7120	8598	0075	1551	3026	4500	5973	7446	8917	0388	1858	3327	4795	6263
9	5666	7145	8622	0099	1575	3050	4524	5998	7470	8942	0413	1883	3352	4820	6287
10	5691	7169	8647	0124	1600	3075	4549	6022	7495	8966	0437	1907	3376	4844	6312
11	5715	7194	8672	0148	1624	3099	4574	6047	7519	8991	0462	1932	3401	4869	6336
12	5740	7219	8696	0173	1649	3124	4598	6071	7544	9016	0486	1956	3425	4893	6360
13	5765	7243	8721	0198	1673	3149	4623	6096	7568	9040	0511	1981	3450	4918	6385
14	5789	7268	8745	0222	1698	3173	4647	6121	7593	9065	0535	2005	3474	4942	6409
15	5814	7292	8770	0247	1723	3198	4672	6145	7618	9089	0560	2030	3499	4967	6434
16	5839	7317	8795	0271	1747	3222	4696	6170	7642	9114	0584	2054	3523	4991	6458
17	5863	7342	8819	0296	1772	3247	4721	6194	7667	9138	0609	2079	3547	5016	6483
18	5888	7366	8844	0321	1796	3271	4746	6219	7691	9163	0633	2103	3572	5040	6507
19	5913	7391	8869	0345	1821	3296	4770	6243	7716	9187	0658	2128	3596	5064	6532
20	5937	7416	8893	0370	1846	3321	4795	6268	7740	9212	0682	2152	3621	5089	6556
21	5962	7440	8918	0394	1870	3345	4819	6292	7765	9236	0707	2177	3645	5113	6581
22	5986	7465	8942	0419	1895	3370	4844	6317	7789	9261	0731	2201	3670	5138	6605
23	6011	7489	8967	0444	1919	3394	4868	6341	7814	9285	0756	2225	3694	5162	6629
24	6036	7514	8992	0468	1944	3419	4893	6366	7838	9310	0780	2250	3719	5187	6654
25	6060	7539	9016	0493	1969	3443	4917	6391	7863	9334	0805	2274	3743	5211	6678
26	6085	7563	9041	0517	1993	3468	4942	6415	7887	9359	0829	2299	3768	5236	6703
27	6110	7588	9065	0542	2018	3493	4967	6440	7912	9383	0854	2323	3792	5260	6727
28	6134	7613	9090	0567	2042	3517	4991	6464	7936	9408	0878	2348	3817	5285	6752
29	6159	7637	9115	0591	2067	3542	5016	6489	7961	9432	0903	2372	3841	5309	6776
30	6184	7662	9139	0616	2092	3566	5040	6513	7986	9457	0927	2397	3866	5334	6801
31	6208	7687	9164	0640	2116	3591	5065	6538	8010	9481	0952	2421	3890	5358	6825
32	6233	7711	9189	0665	2141	3615	5089	6562	8035	9506	0976	2446	3915	5382	6849
33	6258	7736	9213	0690	2165	3640	5114	6587	8059	9530	1001	2470	3939	5407	6874
34	6282	7760	9238	0714	2190	3665	5138	6611	8084	9555	1025	2495	3964	5431	6898
35	6307	7785	9262	0739	2214	3689	5163	6636	8108	9579	1050	2519	3988	5456	6923
36	6331	7810	9287	0763	2239	3714	5188	6661	8133	9604	1074	2544	4012	5480	6947
37	6356	7834	9312	0788	2264	3738	5212	6685	8157	9628	1099	2568	4037	5505	6972
38	6381	7859	9336	0813	2288	3763	5237	6710	8182	9653	1123	2593	4061	5529	6996
39	6405	7884	9361	0837	2313	3787	5261	6734	8206	9677	1148	2617	4086	5554	7020
40	6430	7908	9385	0862	2337	3812	5286	6759	8231	9702	1172	2642	4110	5578	7045
41	6455	7933	9410	0886	2362	3837	5310	6783	8255	9726	1197	2666	4135	5603	7069
42	6479	7957	9435	0911	2387	3861	5335	6808	8280	9751	1221	2691	4159	5627	7094
43	6504	7982	9459	0936	2411	3886	5359	6832	8304	9776	1246	2715	4184	5651	7118
44	6529	8007	9484	0960	2436	3910	5384	6857	8329	9800	1270	2740	4208	5676	7143
45	6553	8031	9509	0985	2460	3935	5409	6881	8353	9825	1295	2764	4233	5700	7167
46	6578	8056	9533	1009	2485	3959	5433	6906	8378	9849	1319	2789	4257	5725	7192
47	6603	8081	9558	1034	2509	3984	5458	6931	8402	9874	1344	2813	4282	5749	7216
48	6627	8105	9582	1059	2534	4009	5482	6955	8427	9898	1368	2838	4306	5774	7240
49	6652	8130	9607	1083	2559	4033	5507	6980	8452	9923	1393	2862	4331	5798	7265
50	6676	8154	9632	1108	2583	4058	5531	7004	8476	9947	1417	2887	4355	5823	7289
51	6701	8179	9656	1132	2608	4082	5556	7029	8501	9972	1442	2911	4379	5847	7314
52	6726	8204	9681	1157	2632	4107	5580	7053	8525	9996	1466	2936	4404	5872	7338
53	6750	8228	9705	1182	2657	4131	5605	7078	8550	0021	1491	2960	4428	5896	7363
54	6775	8253	9730	1206	2682	4156	5630	7102	8574	0045	1515	2984	4453	5920	7387
55	6800	8278	9755	1231	2706	4181	5654	7127	8599	0070	1540	3009	4477	5945	7412
56	6824	8302	9779	1255	2731	4205	5679	7151	8623	0094	1564	3033	4502	5969	7436
57	6849	8327	9804	1280	2755	4230	5703	7176	8648	0119	1589	3058	4526	5994	7460
58	6874	8351	9828	1305	2780	4254	5728	7200	8672	0143	1613	3082	4551	6018	7485
59	6898	8376	9853	1329	2804	4279	5752	7225	8697	0168	1638	3107	4575	6043	7509
60	6923	8401	9878	1354	2829	4303	5777	7250	8721	0192	1662	3131	4600	6067	7534
"	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	"
9.881	9.880	9.880	9.880	9.880	9.880	9.880	9.880	9.880	9.880	9.879	9.879	9.879	9.879	9.879	
0455	9376	8296	7215	6134	5052	3970	2887	1803	0719	9634	8548	7462	6375	5287	60
0437	9358	8278	7197	6116	5034	3952	2869	1785	0701	9616	8530	7444	6357	5269	59
0419	9340	8260	7179	6098	5016	3934	2851	1767	0682	9597	8512	7425	6338	5251	58
0401	9322	8242	7161	6080	4998	3916	2833	1749	0664	9579	8494	7407	6320	5233	57
0383	9304	8224	7143	6062	4980	3898	2815	1731	0646	9561	8476	7389	6302	5215	56
0365	9286	8206	7125	6044	4962	3880	2796	1713	0628	9543	8457	7371	6284	5196	55
0347	9268	8188	7107	6026	4944	3862	2778	1695	0610	9525	8439	7353	6266	5178	54
0329	9250	8170	7089	6008	4926	3844	2760	1677	0592	9507	8421	7335	6248	5160	53
0311	9232	8152	7071	5990	4908	3826	2742	1658	0574	9489	8403	7317	6230	5142	52
0293	9214	8134	7053	5972	4890	3807	2724	1640	0556	9471	8385	7299	6212	5124	51
0275	9196	8116	7035	5954	4872	3789	2706	1622	0538	9453	8367	7281	6194	5106	50
0257	9178	8098	7017	5936	4854	3771	2688	1604	0520	9435	8349	7262	6175	5088	49
0239	9160	8080	6999	5918	4836	3753	2670	1586	0502	9417	8331	7244	6157	5070	48
0221	9142	8062	6981	5900	4818	3735	2652	1568	0484	9398	8313	7226	6139	5051	47
0203	9124	8044	6963	5882	4800	3717	2634	1550	0466	9380	8295	7208	6121	5033	46
0185	9106	8026	6945	5864	4782	3699	2616	1532	0447	9362	8276	7190	6103	5015	45
0167	9088	8008	6927	5846	4764	3681	2598	1514	0429	9344	8258	7172	6085	4997	44
0149	9070	7990	6909	5828	4746	3663	2580	1496	0411	9326	8240	7154	6067	4979	43
0131	9052	7972	6891	5810	4728	3645	2562	1478	0393	9308	8222	7136	6049	4961	42
0113	9034	7954	6873	5792	4710	3627	2544	1460	0375	9290	8204	7118	6030	4943	41
0095	9016	7936	6855	5774	4692	3609	2526	1442	0357	9272	8186	7099	6012	4924	40
0077	8998	7918	6837	5756	4674	3591	2508	1424	0339	9254	8168	7081	5994	4906	39
0059	8980	7900	6819	5738	4656	3573	2489	1405	0321	9236	8150	7063	5976	4888	38
0042	8962	7882	6801	5720	4637	3555	2471	1387	0303	9218	8132	7045	5958	4870	37
0024	8944	7864	6783	5702	4619	3537	2453	1369	0285	9199	8114	7027	5940	4852	36
0006	8926	7846	6765	5684	4601	3519	2435	1351	0267	9181	8095	7009	5922	4834	35
9988	8908	7828	6747	5665	4583	3501	2417	1333	0249	9163	8077	6991	5904	4816	34
9970	8890	7810	6729	5647	4565	3483	2399	1315	0230	9145	8059	6973	5885	4798	33
9952	8872	7792	6711	5629	4547	3465	2381	1297	0212	9127	8041	6955	5867	4779	32
9934	8854	7774	6693	5611	4529	3446	2363	1279	0194	9109	8023	6936	5849	4761	31
9916	8836	7756	6675	5593	4511	3428	2345	1261	0176	9091	8005	6918	5831	4743	30
9898	8818	7738	6657	5575	4493	3410	2327	1243	0158	9073	7987	6900	5813	4725	29
9880	8800	7720	6639	5557	4475	3392	2309	1225	0140	9055	7969	6882	5795	4707	28
9862	8782	7702	6621	5539	4457	3374	2291	1207	0122	9037	7951	6864	5777	4689	27
9844	8764	7684	6603	5521	4439	3356	2273	1189	0104	9018	7932	6846	5759	4671	26
9826	8746	7666	6585	5503	4421	3338	2255	1171	0086	9000	7914	6828	5740	4652	25
9808	8728	7648	6567	5485	4403	3320	2237	1152	0068	8982	7896	6810	5722	4634	24
9790	8710	7630	6549	5467	4385	3302	2219	1134	0050	8964	7878	6791	5704	4616	23
9772	8692	7612	6531	5449	4367	3284	2200	1116	0032	8946	7860	6773	5686	4598	22
9754	8674	7594	6513	5431	4349	3266	2182	1098	0013	8928	7842	6755	5668	4580	21
9736	8656	7576	6495	5413	4331	3248	2164	1080	9995	8910	7824	6737	5650	4562	20
9718	8638	7558	6477	5395	4313	3230	2146	1062	9977	8892	7806	6719	5632	4544	19
9700	8620	7540	6459	5377	4295	3212	2128	1044	9959	8874	7788	6701	5613	4525	18
9682	8602	7522	6441	5359	4277	3194	2110	1026	9941	8856	7770	6683	5595	4507	17
9664	8584	7504	6423	5341	4259	3176	2092	1008	9923	8838	7751	6665	5577	4489	16
9646	8566	7486	6405	5323	4241	3158	2074	0990	9905	8819	7733	6647	5559	4471	15
9628	8548	7468	6387	5305	4223	3140	2056	0972	9887	8801	7715	6628	5541	4453	14
9610	8530	7450	6368	5287	4204	3122	2038	0954	9869	8783	7697	6610	5523	4435	13
9592	8512	7432	6350	5269	4186	3103	2020	0936	9851	8765	7679	6592	5505	4417	12
9574	8494	7414	6332	5251	4168	3085	2002	0917	9833	8747	7661	6574	5487	4398	11
9556	8476	7396	6314	5233	4150	3067	1984	0899	9815	8729	7643	6556	5468	4380	10
9538	8458	7378	6296	5215	4132	3049	1966	0881	9796	8711	7625	6538	5450	4362	9
9520	8440	7359	6278	5197	4114	3031	1948	0863	9778	8693	7607	6520	5432	4344	8
9502	8422	7341	6260	5179	4096	3013	1929	0845	9760	8675	7588	6502	5414	4326	7
9484	8404	7323	6242	5161	4078	2995	1911	0827	9742	8657	7570	6483	5396	4308	6
9466	8386	7305	6224	5143	4060	2977	1893	0809	9724	8638	7552	6465	5378	4290	5
9448	8368	7287	6206	5124	4042	2959	1875	0791	9706	8620	7534	6447	5360	4271	4
9430	8350	7269	6188	5106	4024	2941	1857	0773	9688	8602	7516	6429	5342	4253	3
9412	8332	7251	6170	5088	4006	2923	1839	0755	9670	8584	7498	6411	5323	4235	2
9394	8314	7233	6152	5070	3988	2905	1821	0737	9652	8566	7480	6393	5305	4217	1
9376	8296	7215	6134	5052	3970	2887	1803	0719	9634	8548	7462	6375	5287	4199	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	"

40 Deg. Tangent

″	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.
	931	931	932	932	932	932	933	933	933	933	934	934	934	934	935
0	4989	7547	0105	2662	5220	7777	0334	2890	5446	8003	0559	3114	5670	8225	0780
1	5032	7590	0147	2705	5262	7819	0376	2933	5489	8045	0601	3157	5712	8268	0823
2	5074	7632	0190	2748	5305	7862	0419	2975	5532	8088	0644	3199	5755	8310	0865
3	5117	7675	0233	2790	5347	7905	0461	3018	5574	8130	0686	3242	5797	8353	0908
4	5160	7718	0275	2833	5390	7947	0504	3061	5617	8173	0729	3285	5840	8395	0950
5	5202	7760	0318	2875	5433	7990	0547	3103	5660	8216	0772	3327	5883	8438	0993
6	5245	7803	0361	2918	5475	8032	0589	3146	5702	8258	0814	3370	5925	8480	1035
7	5287	7845	0403	2961	5518	8075	0632	3188	5745	8301	0857	3412	5968	8523	1078
8	5330	7888	0446	3003	5561	8118	0674	3231	5787	8343	0899	3455	6010	8566	1121
9	5373	7931	0488	3046	5603	8160	0717	3274	5830	8386	0942	3498	6053	8608	1163
10	5415	7973	0531	3089	5646	8203	0760	3316	5873	8429	0985	3540	6096	8651	1206
11	5458	8016	0574	3131	5688	8245	0802	3359	5915	8471	1027	3583	6138	8693	1248
12	5501	8059	0616	3174	5731	8288	0845	3401	5958	8514	1070	3625	6181	8736	1291
13	5543	8101	0659	3216	5774	8331	0887	3444	6000	8556	1112	3668	6223	8779	1334
14	5586	8144	0702	3259	5816	8373	0930	3487	6043	8599	1155	3711	6266	8821	1376
15	5629	8186	0744	3302	5859	8416	0973	3529	6086	8642	1197	3753	6309	8864	1419
16	5671	8229	0787	3344	5902	8459	1015	3572	6128	8684	1240	3796	6351	8906	1461
17	5714	8272	0829	3387	5944	8501	1058	3614	6171	8727	1283	3838	6394	8949	1504
18	5756	8314	0872	3430	5987	8544	1101	3657	6213	8769	1325	3881	6436	8991	1546
19	5799	8357	0915	3472	6029	8586	1143	3700	6256	8812	1368	3923	6479	9034	1589
20	5842	8400	0957	3515	6072	8629	1186	3742	6299	8855	1410	3966	6521	9077	1632
21	5884	8442	1000	3557	6115	8672	1228	3785	6341	8897	1453	4009	6564	9119	1674
22	5927	8485	1043	3600	6157	8714	1271	3827	6384	8940	1496	4051	6607	9162	1717
23	5970	8528	1085	3643	6200	8757	1314	3870	6426	8982	1538	4094	6649	9204	1759
24	6012	8570	1128	3685	6242	8799	1356	3913	6469	9025	1581	4136	6692	9247	1802
25	6055	8613	1170	3728	6285	8842	1399	3955	6512	9068	1623	4179	6734	9290	1844
26	6098	8655	1213	3770	6328	8885	1441	3998	6554	9110	1666	4222	6777	9332	1887
27	6140	8698	1256	3813	6370	8927	1484	4041	6597	9153	1709	4264	6820	9375	1930
28	6183	8741	1298	3856	6413	8970	1527	4083	6639	9195	1751	4307	6862	9417	1972
29	6225	8783	1341	3898	6456	9013	1569	4126	6682	9238	1794	4349	6905	9460	2015
30	6268	8826	1384	3941	6498	9055	1612	4168	6725	9281	1836	4392	6947	9502	2057
31	6311	8869	1426	3984	6541	9098	1654	4211	6767	9323	1879	4435	6990	9545	2100
32	6353	8911	1469	4026	6583	9140	1697	4254	6810	9366	1922	4477	7033	9588	2143
33	6396	8954	1511	4069	6626	9183	1740	4296	6852	9408	1964	4520	7075	9630	2185
34	6439	8996	1554	4111	6669	9226	1782	4339	6895	9451	2007	4562	7118	9673	2228
35	6481	9039	1597	4154	6711	9268	1825	4381	6938	9494	2049	4605	7160	9715	2270
36	6524	9082	1639	4197	6754	9311	1867	4424	6980	9536	2092	4648	7203	9758	2313
37	6566	9124	1682	4239	6796	9353	1910	4467	7023	9579	2135	4690	7245	9801	2355
38	6609	9167	1725	4282	6839	9396	1953	4509	7065	9621	2177	4733	7288	9843	2398
39	6652	9210	1767	4325	6882	9439	1995	4552	7108	9664	2220	4775	7331	9886	2441
40	6694	9252	1810	4367	6924	9481	2038	4594	7151	9707	2262	4818	7373	9928	2483
41	6737	9295	1852	4410	6967	9524	2081	4637	7193	9749	2305	4861	7416	9971	2526
42	6780	9337	1895	4452	7010	9566	2123	4680	7236	9792	2348	4903	7458	0013	2568
43	6822	9380	1938	4495	7052	9609	2166	4722	7278	9834	2390	4946	7501	0056	2611
44	6865	9423	1980	4538	7095	9652	2208	4765	7321	9877	2433	4988	7544	0099	2654
45	6908	9465	2023	4580	7137	9694	2251	4807	7364	9920	2475	5031	7586	0141	2696
46	6950	9508	2066	4623	7180	9737	2294	4850	7406	9962	2518	5073	7629	0184	2739
47	6993	9551	2108	4666	7223	9780	2336	4893	7449	0005	2561	5116	7671	0226	2781
48	7035	9593	2151	4708	7265	9822	2379	4935	7491	0047	2603	5159	7714	0269	2824
49	7078	9636	2193	4751	7308	9865	2421	4978	7534	0090	2646	5201	7757	0312	2866
50	7121	9678	2236	4793	7351	9907	2464	5020	7577	0133	2688	5244	7799	0354	2909
51	7163	9721	2279	4836	7393	9950	2507	5063	7619	0175	2731	5286	7842	0397	2952
52	7206	9764	2321	4879	7436	9993	2549	5106	7662	0218	2773	5329	7884	0439	2994
53	7249	9806	2364	4921	7478	0035	2592	5148	7704	0260	2816	5372	7927	0482	3037
54	7291	9849	2407	4964	7521	0078	2634	5191	7747	0303	2859	5414	7969	0524	3079
55	7334	9892	2449	5007	7564	0120	2677	5233	7790	0346	2901	5457	8012	0567	3122
56	7376	9934	2492	5049	7606	0163	2720	5276	7832	0388	2944	5499	8055	0610	3164
57	7419	9977	2534	5092	7649	0206	2762	5319	7875	0431	2986	5542	8097	0652	3207
58	7462	0020	2577	5134	7691	0248	2805	5361	7917	0473	3029	5585	8140	0695	3250
59	7504	0062	2620	5177	7734	0291	2847	5404	7960	0516	3072	5627	8182	0737	3292
60	7547	0105	2662	5220	7777	0334	2890	5446	8003	0559	3114	5670	8225	0780	3335
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

40 Deg. Co-Tangent

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	″
10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	
068	068	067	067	067	067	066	066	066	066	065	065	065	065	064	
5011	2453	9895	7338	4780	2223	9666	7110	4554	1997	9441	6886	4330	1775	9220	60
4968	2410	9853	7295	4738	2181	9624	7067	4511	1955	9399	6843	4288	1732	9177	59
4926	2368	9810	7252	4695	2138	9581	7025	4468	1912	9356	6801	4245	1690	9135	58
4883	2325	9767	7210	4653	2095	9539	6982	4426	1870	9314	6758	4203	1647	9092	57
4840	2282	9725	7167	4610	2053	9496	6939	4383	1827	9271	6715	4160	1605	9050	56
4798	2240	9682	7125	4567	2010	9453	6897	4340	1784	9228	6673	4117	1562	9007	55
4755	2197	9639	7082	4525	1968	9411	6854	4298	1742	9186	6630	4075	1520	8965	54
4713	2155	9597	7039	4482	1925	9368	6812	4255	1699	9143	6588	4032	1477	8922	53
4670	2112	9554	6997	4439	1882	9326	6769	4213	1657	9101	6545	3990	1434	8879	52
4627	2069	9512	6954	4397	1840	9283	6726	4170	1614	9058	6502	3947	1392	8837	51
4585	2027	9469	6911	4354	1797	9240	6684	4127	1571	9015	6460	3904	1349	8794	50
4542	1984	9426	6869	4312	1755	9198	6641	4085	1529	8973	6417	3862	1307	8752	49
4499	1941	9384	6826	4269	1712	9155	6599	4042	1486	8930	6375	3819	1264	8709	48
4457	1899	9341	6784	4226	1669	9113	6556	4000	1444	8888	6332	3777	1221	8666	47
4414	1856	9298	6741	4184	1627	9070	6513	3957	1401	8845	6289	3734	1179	8624	46
4371	1814	9256	6698	4141	1584	9027	6471	3914	1358	8803	6247	3691	1136	8581	45
4329	1771	9213	6656	4098	1541	8985	6428	3872	1316	8760	6204	3649	1094	8539	44
4286	1728	9171	6613	4056	1499	8942	6386	3829	1273	8717	6162	3606	1051	8496	43
4244	1686	9128	6570	4013	1456	8899	6343	3787	1231	8675	6119	3564	1009	8454	42
4201	1643	9085	6528	3971	1414	8857	6300	3744	1188	8632	6077	3521	0966	8411	41
4158	1600	9043	6485	3928	1371	8814	6258	3701	1145	8590	6034	3479	0923	8368	40
4116	1558	9000	6443	3885	1328	8772	6215	3659	1103	8547	5991	3436	0881	8326	39
4073	1515	8957	6400	3843	1286	8729	6173	3616	1060	8504	5949	3393	0838	8283	38
4030	1472	8915	6357	3800	1243	8686	6130	3574	1018	8462	5906	3351	0796	8241	37
3988	1430	8872	6315	3758	1201	8644	6087	3531	0975	8419	5864	3308	0753	8198	36
3945	1387	8830	6272	3715	1158	8601	6045	3488	0932	8377	5821	3266	0710	8156	35
3902	1345	8787	6230	3672	1115	8559	6002	3446	0890	8334	5778	3223	0668	8113	34
3860	1302	8744	6187	3630	1073	8516	5959	3403	0847	8291	5736	3180	0625	8070	33
3817	1259	8702	6144	3587	1030	8473	5917	3361	0805	8249	5693	3138	0583	8028	32
3775	1217	8659	6102	3544	0987	8431	5874	3318	0762	8206	5651	3095	0540	7985	31
3732	1174	8616	6059	3502	0945	8388	5832	3275	0719	8164	5608	3053	0498	7943	30
3689	1131	8574	6016	3459	0902	8346	5789	3233	0677	8121	5565	3010	0455	7900	29
3647	1089	8531	5974	3417	0860	8303	5746	3190	0634	8078	5523	2967	0412	7857	28
3604	1046	8489	5931	3374	0817	8260	5704	3148	0592	8036	5480	2925	0370	7815	27
3561	1004	8446	5889	3331	0774	8218	5661	3105	0549	7993	5438	2882	0327	7772	26
3519	0961	8403	5846	3289	0732	8175	5619	3062	0506	7951	5395	2840	0285	7730	25
3476	0918	8361	5803	3246	0689	8133	5576	3020	0464	7908	5352	2797	0242	7687	24
3434	0876	8318	5761	3204	0647	8090	5533	2977	0421	7865	5310	2755	0199	7645	23
3391	0833	8275	5718	3161	0604	8047	5491	2935	0379	7823	5267	2712	0157	7602	22
3348	0790	8233	5675	3118	0561	8005	5448	2892	0336	7780	5225	2669	0114	7559	21
3306	0748	8190	5633	3076	0519	7962	5406	2849	0293	7738	5182	2627	0072	7517	20
3263	0705	8148	5590	3033	0476	7919	5363	2807	0251	7695	5139	2584	0029	7474	19
3220	0663	8105	5548	2990	0434	7877	5320	2764	0208	7652	5097	2542	9987	7432	18
3178	0620	8062	5505	2948	0391	7834	5278	2722	0166	7610	5054	2499	9944	7389	17
3135	0577	8020	5462	2905	0348	7792	5235	2679	0123	7567	5012	2456	9901	7346	16
3092	0535	7977	5420	2863	0306	7749	5193	2636	0080	7525	4969	2414	9859	7304	15
3050	0492	7934	5377	2820	0263	7706	5150	2594	0038	7482	4927	2371	9816	7261	14
3007	0449	7892	5334	2777	0220	7664	5107	2551	9995	7439	4884	2329	9774	7219	13
2965	0407	7849	5292	2735	0178	7621	5065	2509	9953	7397	4841	2286	9731	7176	12
2922	0364	7807	5249	2692	0135	7579	5022	2466	9910	7354	4799	2243	9688	7134	11
2879	0322	7764	5207	2649	0093	7536	4980	2423	9867	7312	4756	2201	9646	7091	10
2837	0279	7721	5164	2607	0050	7493	4937	2381	9825	7269	4714	2158	9603	7048	9
2794	0236	7679	5121	2564	0007	7451	4894	2338	9782	7227	4671	2116	9561	7006	8
2751	0194	7636	5079	2522	9965	7408	4852	2296	9740	7184	4628	2073	9518	6963	7
2709	0151	7593	5036	2479	9922	7366	4809	2253	9697	7141	4586	2031	9476	6921	6
2666	0108	7551	4993	2436	9880	7323	4767	2210	9654	7099	4543	1988	9433	6878	5
2624	0066	7508	4951	2394	9837	7280	4724	2168	9612	7056	4501	1945	9390	6836	4
2581	0023	7466	4908	2351	9794	7238	4681	2125	9569	7014	4458	1903	9348	6793	3
2538	9980	7423	4866	2309	9752	7195	4639	2083	9527	6971	4415	1860	9305	6750	2
2496	9938	7380	4823	2266	9709	7153	4596	2040	9484	6928	4373	1818	9263	6708	1
2453	9895	7338	4780	2223	9666	7110	4554	1997	9441	6886	4330	1775	9220	6665	0
29′	28′	27′	26′	25″	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

Co-Tangent Deg. 49

Tangent Deg. 49

40 Deg. Sine

″	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9.814	9.814	9.815	9.815	9.815	9.815	9.815	9.815	9.815	9.816	9.816	9.816	9.816	9.816	9.816
0	7534	8999	0464	1928	3391	4854	6315	7776	9235	0694	2152	3609	5066	6521	7975
1	7558	9024	0489	1953	3416	4878	6339	7800	9260	0718	2176	3634	5090	6545	8000
2	7583	9048	0513	1977	3440	4902	6364	7824	9284	0743	2201	3658	5114	6569	8024
3	7607	9073	0537	2001	3465	4927	6388	7849	9308	0767	2225	3682	5138	6594	8048
4	7631	9097	0562	2026	3489	4951	6412	7873	9333	0791	2249	3706	5163	6618	8072
5	7656	9122	0586	2050	3513	4975	6437	7897	9357	0816	2274	3731	5187	6642	8097
6	7680	9146	0611	2075	3538	5000	6461	7922	9381	0840	2298	3755	5211	6666	8121
7	7705	9170	0635	2099	3562	5024	6485	7946	9406	0864	2322	3779	5235	6691	8145
8	7729	9195	0660	2123	3586	5049	6510	7970	9430	0889	2346	3803	5260	6715	8169
9	7754	9219	0684	2148	3611	5073	6534	7995	9454	0913	2371	3828	5284	6739	8194
10	7778	9244	0708	2172	3635	5097	6559	8019	9479	0937	2395	3852	5308	6763	8218
11	7802	9268	0733	2197	3660	5122	6583	8043	9503	0961	2419	3876	5332	6788	8242
12	7827	9292	0757	2221	3684	5146	6607	8068	9527	0986	2444	3901	5357	6812	8266
13	7851	9317	0782	2245	3708	5170	6632	8092	9551	1010	2468	3925	5381	6836	8291
14	7876	9341	0806	2270	3733	5195	6656	8116	9576	1034	2492	3949	5405	6860	8315
15	7900	9366	0830	2294	3757	5219	6680	8141	9600	1059	2516	3973	5429	6885	8339
16	7925	9390	0855	2318	3781	5243	6705	8165	9624	1083	2541	3998	5454	6909	8363
17	7949	9415	0879	2343	3806	5268	6729	8189	9649	1107	2565	4022	5478	6933	8387
18	7973	9439	0904	2367	3830	5292	6753	8214	9673	1132	2589	4046	5502	6957	8412
19	7998	9463	0928	2392	3855	5317	6778	8238	9697	1156	2614	4070	5526	6982	8436
20	8022	9488	0952	2416	3879	5341	6802	8262	9722	1180	2638	4095	5551	7006	8460
21	8047	9512	0977	2440	3903	5365	6826	8287	9746	1205	2662	4119	5575	7030	8484
22	8071	9537	1001	2465	3928	5390	6851	8311	9770	1229	2686	4143	5599	7054	8509
23	8096	9561	1026	2489	3952	5414	6875	8335	9795	1253	2711	4168	5624	7079	8533
24	8120	9585	1050	2514	3976	5438	6899	8360	9819	1277	2735	4192	5648	7103	8557
25	8145	9610	1074	2538	4001	5463	6924	8384	9843	1302	2759	4216	5672	7127	8581
26	8169	9634	1099	2562	4025	5487	6948	8408	9868	1326	2784	4240	5696	7151	8606
27	8193	9659	1123	2587	4050	5511	6972	8433	9892	1350	2808	4265	5721	7176	8630
28	8218	9683	1148	2611	4074	5536	6997	8457	9916	1375	2832	4289	5745	7200	8654
29	8242	9708	1172	2636	4098	5560	7021	8481	9941	1399	2856	4313	5769	7224	8678
30	8267	9732	1196	2660	4123	5584	7045	8506	9965	1423	2881	4337	5793	7248	8702
31	8291	9756	1221	2684	4147	5609	7070	8530	9989	1448	2905	4362	5818	7273	8727
32	8316	9781	1245	2709	4171	5633	7094	8554	0013	1472	2929	4386	5842	7297	8751
33	8340	9805	1270	2733	4196	5658	7118	8579	0038	1496	2954	4410	5866	7321	8775
34	8364	9830	1294	2757	4220	5682	7143	8603	0062	1520	2978	4435	5890	7345	8799
35	8389	9854	1318	2782	4244	5706	7167	8627	0086	1545	3002	4459	5915	7370	8824
36	8413	9878	1343	2806	4269	5731	7191	8652	0111	1569	3026	4483	5939	7394	8848
37	8438	9903	1367	2831	4293	5755	7216	8676	0135	1593	3051	4507	5963	7418	8872
38	8462	9927	1392	2855	4318	5779	7240	8700	0159	1618	3075	4532	5987	7442	8896
39	8487	9952	1416	2879	4342	5804	7265	8725	0184	1642	3099	4556	6012	7466	8920
40	8511	9976	1440	2904	4366	5828	7289	8749	0208	1666	3124	4580	6036	7491	8945
41	8535	0000	1465	2928	4391	5852	7313	8773	0232	1691	3148	4604	6060	7515	8969
42	8560	0025	1489	2953	4415	5877	7338	8797	0257	1715	3172	4629	6084	7539	8993
43	8584	0049	1514	2977	4439	5901	7362	8822	0281	1739	3196	4653	6109	7563	9017
44	8609	0074	1538	3001	4464	5925	7386	8846	0305	1763	3221	4677	6133	7588	9042
45	8633	0098	1562	3026	4488	5950	7411	8870	0330	1788	3245	4702	6157	7612	9066
46	8657	0123	1587	3050	4513	5974	7435	8895	0354	1812	3269	4726	6181	7636	9090
47	8682	0147	1611	3074	4537	5998	7459	8919	0378	1836	3294	4750	6206	7660	9114
48	8706	0171	1636	3099	4561	6023	7484	8943	0402	1861	3318	4774	6230	7685	9138
49	8731	0196	1660	3123	4586	6047	7508	8968	0427	1885	3342	4799	6254	7709	9163
50	8755	0220	1684	3148	4610	6072	7532	8992	0451	1909	3366	4823	6278	7733	9187
51	8780	0245	1709	3172	4634	6096	7557	9016	0475	1933	3391	4847	6303	7757	9211
52	8804	0269	1733	3196	4659	6120	7581	9041	0500	1958	3415	4871	6327	7782	9235
53	8828	0293	1757	3221	4683	6145	7605	9065	0524	1982	3439	4896	6351	7806	9260
54	8853	0318	1782	3245	4707	6169	7630	9089	0548	2006	3464	4920	6375	7830	9284
55	8877	0342	1806	3269	4732	6193	7654	9114	0573	2031	3488	4944	6400	7854	9308
56	8902	0367	1831	3294	4756	6218	7678	9138	0597	2055	3512	4968	6424	7879	9332
57	8926	0391	1855	3318	4781	6242	7703	9162	0621	2079	3536	4993	6448	7903	9357
58	8951	0415	1879	3343	4805	6266	7727	9187	0646	2104	3561	5017	6472	7927	9381
59	8975	0440	1904	3367	4829	6291	7751	9211	0670	2128	3585	5041	6497	7951	9405
60	8999	0464	1928	3391	4854	6315	7776	9235	0694	2152	3609	5066	6521	7975	9429
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

Co-Sine Deg. 49

40 Deg. Co-Sine

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	″
9.879	9.879	9.879	9.879	9.878	9.878	9.878	9.878	9.878	9.878	9.878	9.878	9.878	9.877	9.877	
4199	3110	2021	0930	9840	8748	7656	6563	5470	4376	3281	2186	1090	9994	8896	60
4181	3092	2002	0912	9821	8730	7638	6545	5452	4358	3263	2168	1072	9975	8878	59
4163	3074	1984	0894	9803	8712	7620	6527	5434	4340	3245	2150	1054	9957	8860	58
4145	3056	1966	0876	9785	8694	7602	6509	5415	4321	3227	2131	1035	9939	8842	57
4126	3037	1948	0858	9767	8675	7583	6491	5397	4303	3208	2113	1017	9921	8823	56
4108	3019	1930	0840	9749	8657	7565	6472	5379	4285	3190	2095	0999	9902	8805	55
4090	3001	1912	0821	9731	8639	7547	6454	5361	4267	3172	2077	0981	9884	8787	54
4072	2983	1893	0803	9712	8621	7529	6436	5342	4248	3154	2058	0962	9866	8768	53
4054	2965	1875	0785	9694	8603	7510	6418	5324	4230	3135	2040	0944	9847	8750	52
4036	2947	1857	0767	9676	8584	7492	6399	5306	4212	3117	2022	0926	9829	8732	51
4017	2929	1839	0749	9658	8566	7474	6381	5288	4194	3099	2004	0908	9811	8714	50
3999	2910	1821	0731	9640	8548	7456	6363	5270	4175	3081	1985	0889	9793	8695	49
3981	2892	1803	0712	9621	8530	7438	6345	5251	4157	3062	1967	0871	9774	8677	48
3963	2874	1784	0694	9603	8512	7419	6327	5233	4139	3044	1949	0853	9756	8659	47
3945	2856	1766	0676	9585	8493	7401	6308	5215	4121	3026	1931	0834	9738	8640	46
3927	2838	1748	0658	9567	8475	7383	6290	5197	4103	3008	1912	0816	9719	8622	45
3909	2820	1730	0640	9549	8457	7365	6272	5178	4084	2989	1894	0798	9701	8604	44
3890	2801	1712	0621	9530	8439	7347	6254	5160	4066	2971	1876	0780	9683	8585	43
3872	2783	1694	0603	9512	8421	7328	6236	5142	4048	2953	1857	0761	9665	8567	42
3854	2765	1675	0585	9494	8402	7310	6217	5124	4030	2935	1839	0743	9646	8549	41
3836	2747	1657	0567	9476	8384	7292	6199	5106	4011	2916	1821	0725	9628	8531	40
3818	2729	1639	0549	9458	8366	7274	6181	5087	3993	2898	1803	0707	9610	8512	39
3800	2711	1621	0531	9440	8348	7256	6163	5069	3975	2880	1784	0688	9591	8494	38
3782	2693	1603	0512	9421	8330	7237	6144	5051	3957	2862	1766	0670	9573	8476	37
3763	2674	1585	0494	9403	8311	7219	6126	5033	3938	2843	1748	0652	9555	8457	36
3745	2656	1566	0476	9385	8293	7201	6108	5014	3920	2825	1730	0633	9537	8439	35
3727	2638	1548	0458	9367	8275	7183	6090	4996	3902	2807	1711	0615	9518	8421	34
3709	2620	1530	0440	9349	8257	7165	6072	4978	3884	2789	1693	0597	9500	8403	33
3691	2602	1512	0421	9330	8239	7146	6053	4960	3865	2770	1675	0579	9482	8384	32
3673	2584	1494	0403	9312	8220	7128	6035	4941	3847	2752	1657	0560	9463	8366	31
3655	2565	1476	0385	9294	8202	7110	6017	4923	3829	2734	1638	0542	9445	8348	30
3636	2547	1457	0367	9276	8184	7092	5999	4905	3811	2716	1620	0524	9427	8329	29
3618	2529	1439	0349	9258	8166	7073	5980	4887	3792	2697	1602	0506	9409	8311	28
3600	2511	1421	0331	9239	8148	7055	5962	4868	3774	2679	1584	0487	9390	8293	27
3582	2493	1403	0312	9221	8129	7037	5944	4850	3756	2661	1565	0469	9372	8274	26
3564	2475	1385	0294	9203	8111	7019	5926	4832	3738	2643	1547	0451	9354	8256	25
3546	2456	1367	0276	9185	8093	7001	5908	4814	3719	2624	1529	0432	9335	8238	24
3528	2438	1348	0258	9167	8075	6982	5889	4796	3701	2606	1510	0414	9317	8220	23
3509	2420	1330	0240	9148	8057	6964	5871	4777	3683	2588	1492	0396	9299	8201	22
3491	2402	1312	0221	9130	8038	6946	5853	4759	3665	2570	1474	0378	9281	8183	21
3473	2384	1294	0203	9112	8020	6928	5835	4741	3646	2551	1456	0359	9262	8165	20
3455	2366	1276	0185	9094	8002	6910	5816	4723	3628	2533	1437	0341	9244	8146	19
3437	2347	1258	0167	9076	7984	6891	5798	4704	3610	2515	1419	0323	9226	8128	18
3419	2329	1239	0149	9058	7966	6873	5780	4686	3592	2497	1401	0304	9207	8110	17
3400	2311	1221	0131	9039	7947	6855	5762	4668	3573	2478	1383	0286	9189	8091	16
3382	2293	1203	0112	9021	7929	6837	5743	4650	3555	2460	1364	0268	9171	8073	15
3364	2275	1185	0094	9003	7911	6818	5725	4631	3537	2442	1346	0250	9153	8055	14
3346	2257	1167	0076	8985	7893	6800	5707	4613	3519	2424	1328	0231	9134	8037	13
3328	2239	1149	0058	8967	7875	6782	5689	4595	3500	2405	1310	0213	9116	8018	12
3310	2220	1130	0040	8948	7856	6764	5671	4577	3482	2387	1291	0195	9098	8000	11
3292	2202	1112	0021	8930	7838	6746	5652	4558	3464	2369	1273	0177	9079	7982	10
3273	2184	1094	0003	8912	7820	6727	5634	4540	3446	2351	1255	0158	9061	7963	9
3255	2166	1076	9985	8894	7802	6709	5616	4522	3427	2332	1236	0140	9043	7945	8
3237	2148	1058	9967	8876	7784	6691	5598	4504	3409	2314	1218	0122	9025	7927	7
3219	2130	1039	9949	8857	7765	6673	5579	4486	3391	2296	1200	0103	9006	7908	6
3201	2111	1021	9931	8839	7747	6655	5561	4467	3373	2277	1182	0085	8988	7890	5
3183	2093	1003	9912	8821	7729	6636	5543	4449	3354	2259	1163	0067	8970	7872	4
3165	2075	0985	9894	8803	7711	6618	5525	4431	3336	2241	1145	0049	8951	7854	3
3146	2057	0967	9876	8785	7693	6600	5507	4413	3318	2223	1127	0030	8933	7835	2
3128	2039	0949	9858	8766	7674	6582	5488	4394	3300	2204	1109	0012	8915	7817	1
3110	2021	0930	9840	8748	7656	6563	5470	4376	3281	2186	1090	9994	8896	7799	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Sine Deg. 49

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	9. 935	9. 935	9. 935	9. 936	9. 936	9. 936	9. 936	9. 937	9. 937	9. 937	9. 937	9. 938	9. 938	9. 938	9. 938
0	3335	5889	8444	0998	3552	6105	8659	1212	3765	6318	8871	1423	3975	6527	9079
1	3377	5932	8486	1040	3594	6148	8701	1255	3808	6361	8913	1466	4018	6570	9122
2	3420	5974	8529	1083	3637	6191	8744	1297	3850	6403	8956	1508	4060	6612	9164
3	3462	6017	8571	1126	3679	6233	8787	1340	3893	6446	8998	1551	4103	6655	9207
4	3505	6060	8614	1168	3722	6276	8829	1382	3935	6488	9041	1593	4145	6697	9249
5	3548	6102	8657	1211	3765	6318	8872	1425	3978	6531	9083	1636	4188	6740	9292
6	3590	6145	8699	1253	3807	6361	8914	1467	4020	6573	9126	1678	4230	6782	9334
7	3633	6187	8742	1296	3850	6403	8957	1510	4063	6616	9168	1721	4273	6825	9377
8	3675	6230	8784	1338	3892	6446	8999	1553	4106	6658	9211	1763	4316	6867	9419
9	3718	6273	8827	1381	3935	6488	9042	1595	4148	6701	9254	1806	4358	6910	9462
10	3761	6315	8869	1423	3977	6531	9084	1638	4191	6743	9296	1848	4401	6953	9504
11	3803	6358	8912	1466	4020	6574	9127	1680	4233	6786	9339	1891	4443	6995	9547
12	3846	6400	8955	1509	4062	6616	9170	1723	4276	6829	9381	1934	4486	7038	9589
13	3888	6443	8997	1551	4105	6659	9212	1765	4318	6871	9424	1976	4528	7080	9632
14	3931	6485	9040	1594	4148	6701	9255	1808	4361	6914	9466	2019	4571	7123	9674
15	3973	6528	9082	1636	4190	6744	9297	1850	4403	6956	9509	2061	4613	7165	9717
16	4016	6571	9125	1679	4233	6786	9340	1893	4446	6999	9551	2104	4656	7208	9759
17	4059	6613	9167	1721	4275	6829	9382	1936	4489	7041	9594	2146	4698	7250	9802
18	4101	6656	9210	1764	4318	6871	9425	1978	4531	7084	9636	2189	4741	7293	9844
19	4144	6698	9253	1807	4360	6914	9467	2021	4574	7126	9679	2231	4783	7335	9887
20	4186	6741	9295	1849	4403	6957	9510	2063	4616	7169	9721	2274	4826	7378	9930
21	4229	6783	9338	1892	4446	6999	9553	2106	4659	7211	9764	2316	4868	7420	9972
22	4271	6826	9380	1934	4488	7042	9595	2148	4701	7254	9807	2359	4911	7463	0015
23	4314	6869	9423	1977	4531	7084	9638	2191	4744	7297	9849	2401	4954	7505	0057
24	4357	6911	9465	2019	4573	7127	9680	2233	4786	7339	9892	2444	4996	7548	0100
25	4399	6954	9508	2062	4616	7169	9723	2276	4829	7382	9934	2486	5039	7590	0142
26	4442	6996	9551	2105	4658	7212	9765	2319	4871	7424	9977	2529	5081	7633	0185
27	4484	7039	9593	2147	4701	7255	9808	2361	4914	7467	0019	2572	5124	7676	0227
28	4527	7081	9636	2190	4743	7297	9850	2404	4957	7509	0062	2614	5166	7718	0270
29	4570	7124	9678	2232	4786	7340	9893	2446	4999	7552	0104	2657	5209	7761	0312
30	4612	7167	9721	2275	4829	7382	9936	2489	5042	7594	0147	2699	5251	7803	0355
31	4655	7209	9763	2317	4871	7425	9978	2531	5084	7637	0189	2742	5294	7846	0397
32	4697	7252	9806	2360	4914	7467	0021	2574	5127	7679	0232	2784	5336	7888	0440
33	4740	7294	9848	2402	4956	7510	0063	2616	5169	7722	0274	2827	5379	7931	0482
34	4782	7337	9891	2445	4999	7552	0106	2659	5212	7765	0317	2869	5421	7973	0525
35	4825	7379	9934	2488	5041	7595	0148	2701	5254	7807	0360	2912	5464	8016	0567
36	4868	7422	9976	2530	5084	7638	0191	2744	5297	7850	0402	2954	5506	8058	0610
37	4910	7465	0019	2573	5127	7680	0233	2787	5339	7892	0445	2997	5549	8101	0652
38	4953	7507	0061	2615	5169	7723	0276	2829	5382	7935	0487	3039	5592	8143	0695
39	4995	7550	0104	2658	5212	7765	0319	2872	5425	7977	0530	3082	5634	8186	0738
40	5038	7592	0146	2700	5254	7808	0361	2914	5467	8020	0572	3125	5677	8228	0780
41	5080	7635	0189	2743	5297	7850	0404	2957	5510	8062	0615	3167	5719	8271	0823
42	5123	7677	0232	2786	5339	7893	0446	2999	5552	8105	0657	3210	5762	8313	0865
43	5166	7720	0274	2828	5382	7935	0489	3042	5595	8147	0700	3252	5804	8356	0908
44	5208	7763	0317	2871	5424	7978	0531	3084	5637	8190	0742	3295	5847	8399	0950
45	5251	7805	0359	2913	5467	8021	0574	3127	5680	8233	0785	3337	5889	8441	0993
46	5293	7848	0402	2956	5510	8063	0616	3170	5722	8275	0828	3380	5932	8484	1035
47	5336	7890	0444	2998	5552	8106	0659	3212	5765	8318	0870	3422	5974	8526	1078
48	5378	7933	0487	3041	5595	8148	0702	3255	5807	8360	0913	3465	6017	8569	1120
49	5421	7975	0530	3084	5637	8191	0744	3297	5850	8403	0955	3507	6059	8611	1163
50	5464	8018	0572	3126	5680	8233	0787	3340	5893	8445	0998	3550	6102	8654	1205
51	5506	8061	0615	3169	5722	8276	0829	3382	5935	8488	1040	3592	6144	8696	1248
52	5549	8103	0657	3211	5765	8318	0872	3425	5978	8530	1083	3635	6187	8739	1290
53	5591	8146	0700	3254	5808	8361	0914	3467	6020	8573	1125	3677	6229	8781	1333
54	5634	8188	0742	3296	5850	8404	0957	3510	6063	8615	1168	3720	6272	8824	1375
55	5676	8231	0785	3339	5893	8446	0999	3552	6105	8658	1210	3763	6315	8866	1418
56	5719	8273	0828	3381	5935	8489	1042	3595	6148	8700	1253	3805	6357	8909	1460
57	5762	8316	0870	3424	5978	8531	1085	3638	6190	8743	1295	3848	6400	8951	1503
58	5804	8359	0913	3467	6020	8574	1127	3680	6233	8786	1338	3890	6442	8994	1545
59	5847	8401	0955	3509	6063	8616	1170	3723	6275	8828	1381	3933	6485	9036	1588
60	5889	8444	0998	3552	6105	8659	1212	3765	6318	8871	1423	3975	6527	9079	1631
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
	10. 064	10. 064	10. 064	10. 063	10. 063	10. 063	10. 063	10. 062	10. 062	10. 062	10. 062	10. 061	10. 061	10. 061	10. 061	″
0	6665	4111	1556	9002	6448	3895	1341	8788	6235	3682	1129	8577	6025	3473	0921	60
1	6623	4068	1514	8960	6406	3852	1299	8745	6192	3639	1087	8534	5982	3430	0878	59
2	6580	4026	1471	8917	6363	3809	1256	8703	6150	3597	1044	8492	5940	3388	0836	58
3	6538	3983	1429	8874	6321	3767	1213	8660	6107	3554	1002	8449	5897	3345	0793	57
4	6495	3940	1386	8832	6278	3724	1171	8618	6065	3512	0959	8407	5855	3303	0751	56
5	6452	3898	1343	8789	6235	3682	1128	8575	6022	3469	0917	8364	5812	3260	0708	55
6	6410	3855	1301	8747	6193	3639	1086	8533	5980	3427	0874	8322	5770	3218	0666	54
7	6367	3813	1258	8704	6150	3597	1043	8490	5937	3384	0832	8279	5727	3175	0623	53
8	6325	3770	1216	8662	6108	3554	1001	8447	5894	3342	0789	8237	5684	3133	0581	52
9	6282	3727	1173	8619	6065	3512	0958	8405	5852	3299	0746	8194	5642	3090	0538	51
10	6239	3685	1131	8577	6023	3469	0916	8362	5809	3257	0704	8152	5599	3047	0496	50
11	6197	3642	1088	8534	5980	3426	0873	8320	5767	3214	0661	8109	5557	3005	0453	49
12	6154	3600	1045	8491	5938	3384	0830	8277	5724	3171	0619	8066	5514	2962	0411	48
13	6112	3557	1003	8449	5895	3341	0788	8235	5682	3129	0576	8024	5472	2920	0368	47
14	6069	3515	0960	8406	5852	3299	0745	8192	5639	3086	0534	7981	5429	2877	0326	46
15	6027	3472	0918	8364	5810	3256	0703	8150	5597	3044	0491	7939	5387	2835	0283	45
16	5984	3429	0875	8321	5767	3214	0660	8107	5554	3001	0449	7896	5344	2792	0241	44
17	5941	3387	0833	8279	5725	3171	0618	8064	5511	2959	0406	7854	5302	2750	0198	43
18	5899	3344	0790	8236	5682	3129	0575	8022	5469	2916	0364	7811	5259	2707	0156	42
19	5856	3302	0747	8193	5640	3086	0533	7979	5426	2874	0321	7769	5217	2665	0113	41
20	5814	3259	0705	8151	5597	3043	0490	7937	5384	2831	0279	7726	5174	2622	0070	40
21	5771	3217	0662	8108	5554	3001	0447	7894	5341	2789	0236	7684	5132	2580	0028	39
22	5729	3174	0620	8066	5512	2958	0405	7852	5299	2746	0193	7641	5089	2537	9985	38
23	5686	3131	0577	8023	5469	2916	0362	7809	5256	2703	0151	7599	5046	2495	9943	37
24	5643	3089	0535	7981	5427	2873	0320	7767	5214	2661	0108	7556	5004	2452	9900	36
25	5601	3046	0492	7938	5384	2831	0277	7724	5171	2618	0066	7514	4961	2410	9858	35
26	5558	3004	0449	7895	5342	2788	0235	7681	5129	2576	0023	7471	4919	2367	9815	34
27	5516	2961	0407	7853	5299	2745	0192	7639	5086	2533	9981	7428	4876	2324	9773	33
28	5473	2919	0364	7810	5257	2703	0150	7596	5043	2491	9938	7386	4834	2282	9730	32
29	5430	2876	0322	7768	5214	2660	0107	7554	5001	2448	9896	7343	4791	2239	9688	31
30	5388	2833	0279	7725	5171	2618	0064	7511	4958	2406	9853	7301	4749	2197	9645	30
31	5345	2791	0237	7683	5129	2575	0022	7469	4916	2363	9811	7258	4706	2154	9603	29
32	5303	2748	0194	7640	5086	2533	9979	7426	4873	2321	9768	7216	4664	2112	9560	28
33	5260	2706	0152	7598	5044	2490	9937	7384	4831	2278	9726	7173	4621	2069	9518	27
34	5218	2663	0109	7555	5001	2448	9894	7341	4788	2235	9683	7131	4579	2027	9475	26
35	5175	2621	0066	7512	4959	2405	9852	7299	4746	2193	9640	7088	4536	1984	9433	25
36	5132	2578	0024	7470	4916	2362	9809	7256	4703	2150	9598	7046	4494	1942	9390	24
37	5090	2535	9981	7427	4873	2320	9767	7213	4661	2108	9555	7003	4451	1899	9348	23
38	5047	2493	9939	7385	4831	2277	9724	7171	4618	2065	9513	6961	4408	1857	9305	22
39	5005	2450	9896	7342	4788	2235	9681	7128	4575	2023	9470	6918	4366	1814	9262	21
40	4962	2408	9854	7300	4746	2192	9639	7086	4533	1980	9428	6875	4323	1772	9220	20
41	4920	2365	9811	7257	4703	2150	9596	7043	4490	1938	9385	6833	4281	1729	9177	19
42	4877	2323	9768	7214	4661	2107	9554	7001	4448	1895	9343	6790	4238	1687	9135	18
43	4834	2280	9726	7172	4618	2065	9511	6958	4405	1853	9300	6748	4196	1644	9092	17
44	4792	2237	9683	7129	4576	2022	9469	6916	4363	1810	9258	6705	4153	1601	9050	16
45	4749	2195	9641	7087	4533	1979	9426	6873	4320	1767	9215	6663	4111	1559	9007	15
46	4707	2152	9598	7044	4490	1937	9384	6830	4278	1725	9172	6620	4068	1516	8965	14
47	4664	2110	9556	7002	4448	1894	9341	6788	4235	1682	9130	6578	4026	1474	8922	13
48	4622	2067	9513	6959	4405	1852	9298	6745	4193	1640	9087	6535	3983	1431	8880	12
49	4579	2025	9470	6916	4363	1809	9256	6703	4150	1597	9045	6493	3941	1389	8837	11
50	4536	1982	9428	6874	4320	1767	9213	6660	4107	1555	9002	6450	3898	1346	8795	10
51	4494	1939	9385	6831	4278	1724	9171	6618	4065	1512	8960	6408	3856	1304	8752	9
52	4451	1897	9343	6789	4235	1682	9128	6575	4022	1470	8917	6365	3813	1261	8710	8
53	4409	1854	9300	6746	4192	1639	9086	6533	3980	1427	8875	6323	3771	1219	8667	7
54	4366	1812	9258	6704	4150	1596	9043	6490	3937	1385	8832	6280	3728	1176	8625	6
55	4324	1769	9215	6661	4107	1554	9001	6448	3895	1342	8790	6237	3685	1134	8582	5
56	4281	1727	9172	6619	4065	1511	8958	6405	3852	1300	8747	6195	3643	1091	8540	4
57	4238	1684	9130	6576	4022	1469	8915	6362	3810	1257	8705	6152	3600	1049	8497	3
58	4196	1641	9087	6533	3980	1426	8873	6320	3767	1214	8662	6110	3558	1006	8455	2
59	4153	1599	9045	6491	3937	1384	8830	6277	3725	1172	8619	6067	3515	0964	8412	1
60	4111	1556	9002	6448	3895	1341	8788	6235	3682	1129	8577	6025	3473	0921	8369	0
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.816	9.817	9.817	9.817	9.817	9.817	9.817	9.817	9.818	9.818	9.818	9.818	9.818	9.818	9.818
0	9429	0882	2334	3785	5235	6685	8133	9581	1028	2474	3919	5364	6807	8250	9692
1	9453	0906	2358	3809	5260	6709	8158	9605	1052	2498	3943	5388	6831	8274	9716
2	9478	0930	2382	3834	5284	6733	8182	9629	1076	2522	3967	5412	6855	8298	9740
3	9502	0955	2407	3858	5308	6757	8206	9654	1100	2546	3992	5436	6879	8322	9764
4	9526	0979	2431	3882	5332	6781	8230	9678	1125	2570	4016	5460	6903	8346	9788
5	9550	1003	2455	3906	5356	6806	8254	9702	1149	2595	4040	5484	6927	8370	9812
6	9574	1027	2479	3930	5380	6830	8278	9726	1173	2619	4064	5508	6951	8394	9836
7	9599	1051	2503	3954	5405	6854	8302	9750	1197	2643	4088	5532	6975	8418	9860
8	9623	1076	2528	3979	5429	6878	8327	9774	1221	2667	4112	5556	7000	8442	9884
9	9647	1100	2552	4003	5453	6902	8351	9798	1245	2691	4136	5580	7024	8466	9908
10	9671	1124	2576	4027	5477	6926	8375	9822	1269	2715	4160	5604	7048	8490	9932
11	9696	1148	2600	4051	5501	6951	8399	9847	1293	2739	4184	5628	7072	8514	9956
12	9720	1172	2624	4075	5525	6975	8423	9871	1317	2763	4208	5652	7096	8538	9980
13	9744	1197	2648	4099	5550	6999	8447	9895	1341	2787	4232	5676	7120	8562	0004
14	9768	1221	2673	4124	5574	7023	8471	9919	1366	2811	4256	5701	7144	8586	0028
15	9792	1245	2697	4148	5598	7047	8495	9943	1390	2835	4280	5725	7168	8610	0052
16	9817	1269	2721	4172	5622	7071	8520	9967	1414	2860	4305	5749	7192	8634	0076
17	9841	1294	2745	4196	5646	7095	8544	9991	1438	2884	4329	5773	7216	8658	0100
18	9865	1318	2769	4220	5670	7120	8568	0015	1462	2908	4353	5797	7240	8682	0124
19	9889	1342	2794	4244	5695	7144	8592	0039	1486	2932	4377	5821	7264	8706	0148
20	9914	1366	2818	4269	5719	7168	8616	0064	1510	2956	4401	5845	7288	8730	0172
21	9938	1390	2842	4293	5743	7192	8640	0088	1534	2980	4425	5869	7312	8755	0196
22	9962	1415	2866	4317	5767	7216	8664	0112	1558	3004	4449	5893	7336	8779	0220
23	9986	1439	2890	4341	5791	7240	8689	0136	1582	3028	4473	5917	7360	8803	0244
24	0010	1463	2915	4365	5815	7264	8713	0160	1607	3052	4497	5941	7384	8827	0268
25	0035	1487	2939	4390	5839	7289	8737	0184	1631	3076	4521	5965	7408	8851	0292
26	0059	1511	2963	4414	5864	7313	8761	0208	1655	3100	4545	5989	7432	8875	0316
27	0083	1536	2987	4438	5888	7337	8785	0232	1679	3125	4569	6013	7456	8899	0340
28	0107	1560	3011	4462	5912	7361	8809	0257	1703	3149	4593	6037	7480	8923	0364
29	0131	1584	3035	4486	5936	7385	8833	0281	1727	3173	4618	6061	7505	8947	0388
30	0156	1608	3060	4510	5960	7409	8857	0305	1751	3197	4642	6086	7529	8971	0412
31	0180	1632	3084	4535	5984	7433	8882	0329	1775	3221	4666	6110	7553	8995	0436
32	0204	1657	3108	4559	6009	7458	8906	0353	1799	3245	4690	6134	7577	9019	0460
33	0228	1681	3132	4583	6033	7482	8930	0377	1824	3269	4714	6158	7601	9043	0484
34	0253	1705	3156	4607	6057	7506	8954	0401	1848	3293	4738	6182	7625	9067	0508
35	0277	1729	3181	4631	6081	7530	8978	0425	1872	3317	4762	6206	7649	9091	0532
36	0301	1753	3205	4655	6105	7554	9002	0449	1896	3341	4786	6230	7673	9115	0556
37	0325	1778	3229	4680	6129	7578	9026	0474	1920	3365	4810	6254	7697	9139	0580
38	0349	1802	3253	4704	6154	7602	9050	0498	1944	3390	4834	6278	7721	9163	0604
39	0374	1826	3277	4728	6178	7627	9075	0522	1968	3414	4858	6302	7745	9187	0628
40	0398	1850	3302	4752	6202	7651	9099	0546	1992	3438	4882	6326	7769	9211	0652
41	0422	1874	3326	4776	6226	7675	9123	0570	2016	3462	4906	6350	7793	9235	0676
42	0446	1899	3350	4800	6250	7699	9147	0594	2040	3486	4930	6374	7817	9259	0700
43	0470	1923	3374	4825	6274	7723	9171	0618	2064	3510	4955	6398	7841	9283	0724
44	0495	1947	3398	4849	6298	7747	9195	0642	2089	3534	4979	6422	7865	9307	0748
45	0519	1971	3422	4873	6323	7771	9219	0666	2113	3558	5003	6446	7889	9331	0772
46	0543	1995	3447	4897	6347	7796	9243	0691	2137	3582	5027	6470	7913	9355	0796
47	0567	2019	3471	4921	6371	7820	9268	0715	2161	3606	5051	6494	7937	9379	0820
48	0592	2044	3495	4945	6395	7844	9292	0739	2185	3630	5075	6519	7961	9403	0844
49	0616	2068	3519	4970	6419	7868	9316	0763	2209	3654	5099	6543	7985	9427	0868
50	0640	2092	3543	4994	6443	7892	9340	0787	2233	3679	5123	6567	8009	9451	0892
51	0664	2116	3568	5018	6468	7916	9364	0811	2257	3703	5147	6591	8033	9475	0916
52	0688	2140	3592	5042	6492	7940	9388	0835	2281	3727	5171	6615	8057	9499	0940
53	0713	2165	3616	5066	6516	7965	9412	0859	2305	3751	5195	6639	8082	9523	0964
54	0737	2189	3640	5090	6540	7989	9436	0883	2330	3775	5219	6663	8106	9547	0988
55	0761	2213	3664	5115	6564	8013	9461	0908	2354	3799	5243	6687	8130	9571	1012
56	0785	2237	3688	5139	6588	8037	9485	0932	2378	3823	5267	6711	8154	9595	1037
57	0809	2261	3713	5163	6612	8061	9509	0956	2402	3847	5291	6735	8178	9620	1061
58	0834	2286	3737	5187	6637	8085	9533	0980	2426	3871	5316	6759	8202	9644	1085
59	0858	2310	3761	5211	6661	8109	9557	1004	2450	3895	5340	6783	8226	9668	1109
60	0882	2334	3785	5235	6685	8133	9581	1028	2474	3919	5364	6807	8250	9692	1133
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
	9.877	9.877	9.877	9.877	9.877	9.877	9.877	9.877	9.876	9.876	9.876	9.876	9.876	9.876	9.876
0	7799	6700	5601	4501	3401	2300	1198	0096	8993	7889	6785	5680	4574	3468	2361
1	7780	6682	5583	4483	3382	2281	1180	0077	8974	7870	6766	5661	4555	3449	2342
2	7762	6663	5564	4465	3364	2263	1161	0059	8956	7852	6748	5643	4537	3431	2324
3	7744	6645	5546	4446	3346	2245	1143	0040	8937	7834	6729	5624	4519	3412	2305
4	7725	6627	5528	4428	3327	2226	1124	0022	8919	7815	6711	5606	4500	3394	2287
5	7707	6609	5509	4410	3309	2208	1106	0004	8901	7797	6692	5587	4482	3375	2268
6	7689	6590	5491	4391	3291	2190	1088	9985	8882	7778	6674	5569	4463	3357	2250
7	7671	6572	5473	4373	3272	2171	1069	9967	8864	7760	6656	5551	4445	3339	2232
8	7652	6554	5454	4354	3254	2153	1051	9949	8845	7742	6637	5532	4426	3320	2213
9	7634	6535	5436	4336	3236	2134	1033	9930	8827	7723	6619	5514	4408	3302	2195
10	7616	6517	5418	4318	3217	2116	1014	9912	8809	7705	6600	5495	4390	3283	2176
11	7597	6499	5399	4299	3199	2098	0996	9893	8790	7686	6582	5477	4371	3265	2158
12	7579	6480	5381	4281	3181	2079	0977	9875	8772	7668	6564	5458	4353	3246	2139
13	7561	6462	5363	4263	3162	2061	0959	9857	8753	7650	6545	5440	4334	3228	2121
14	7542	6444	5344	4244	3144	2043	0941	9838	8735	7631	6527	5422	4316	3209	2102
15	7524	6425	5326	4226	3126	2024	0922	9820	8717	7613	6508	5403	4297	3191	2084
16	7506	6407	5308	4208	3107	2006	0904	9801	8698	7594	6490	5385	4279	3173	2065
17	7487	6389	5289	4189	3089	1988	0886	9783	8680	7576	6472	5366	4261	3154	2047
18	7469	6370	5271	4171	3070	1969	0867	9765	8661	7558	6453	5348	4242	3136	2029
19	7451	6352	5253	4153	3052	1951	0849	9746	8643	7539	6435	5330	4224	3117	2010
20	7433	6334	5234	4134	3034	1932	0831	9728	8625	7521	6416	5311	4205	3099	1992
21	7414	6315	5216	4116	3015	1914	0812	9710	8606	7502	6398	5293	4187	3080	1973
22	7396	6297	5198	4098	2997	1896	0794	9691	8588	7484	6379	5274	4168	3062	1955
23	7378	6279	5179	4079	2979	1877	0775	9673	8570	7466	6361	5256	4150	3043	1936
24	7359	6261	5161	4061	2960	1859	0757	9654	8551	7447	6343	5237	4131	3025	1918
25	7341	6242	5143	4043	2942	1841	0739	9636	8533	7429	6324	5219	4113	3007	1899
26	7323	6224	5124	4024	2924	1822	0720	9618	8514	7410	6306	5201	4095	2988	1881
27	7304	6206	5106	4006	2905	1804	0702	9599	8496	7392	6287	5182	4076	2970	1862
28	7286	6187	5088	3988	2887	1786	0684	9581	8478	7374	6269	5164	4058	2951	1844
29	7268	6169	5069	3969	2869	1768	0665	9562	8459	7355	6251	5145	4039	2933	1825
30	7249	6151	5051	3951	2850	1749	0647	9544	8441	7337	6232	5127	4021	2914	1807
31	7231	6132	5033	3933	2832	1731	0628	9526	8422	7318	6214	5108	4002	2896	1789
32	7213	6114	5015	3914	2814	1712	0610	9507	8404	7300	6195	5090	3984	2877	1770
33	7195	6096	4996	3896	2795	1694	0592	9489	8386	7282	6177	5072	3966	2859	1752
34	7176	6077	4978	3878	2777	1675	0573	9471	8367	7263	6158	5053	3947	2840	1733
35	7158	6059	4960	3859	2759	1657	0555	9452	8349	7245	6140	5035	3929	2822	1715
36	7140	6041	4941	3841	2740	1639	0537	9434	8330	7226	6122	5016	3910	2804	1696
37	7121	6022	4923	3823	2722	1620	0518	9415	8312	7208	6103	4998	3892	2785	1678
38	7103	6004	4905	3804	2703	1602	0500	9397	8294	7190	6085	4979	3873	2767	1659
39	7085	5986	4886	3786	2685	1584	0481	9379	8275	7171	6066	4961	3855	2748	1641
40	7066	5967	4868	3768	2667	1565	0463	9360	8257	7153	6048	4943	3836	2730	1622
41	7048	5949	4850	3749	2648	1547	0445	9342	8238	7134	6030	4924	3818	2711	1604
42	7030	5931	4831	3731	2630	1529	0426	9323	8220	7116	6011	4906	3800	2693	1586
43	7011	5912	4813	3713	2612	1510	0408	9305	8202	7097	5993	4887	3781	2674	1567
44	6993	5894	4795	3694	2593	1492	0390	9287	8183	7079	5974	4869	3763	2656	1549
45	6975	5876	4776	3676	2575	1473	0371	9268	8165	7061	5956	4850	3744	2638	1530
46	6957	5858	4758	3658	2557	1455	0353	9250	8146	7042	5937	4832	3726	2619	1512
47	6938	5839	4740	3639	2538	1437	0334	9232	8128	7024	5919	4814	3707	2601	1493
48	6920	5821	4721	3621	2520	1418	0316	9213	8110	7005	5901	4795	3689	2582	1475
49	6902	5803	4703	3603	2502	1400	0298	9195	8091	6987	5882	4777	3671	2564	1456
50	6883	5784	4685	3584	2483	1382	0279	9176	8073	6969	5864	4758	3652	2545	1438
51	6865	5766	4666	3566	2465	1363	0261	9158	8054	6950	5845	4740	3634	2527	1419
52	6847	5748	4648	3548	2447	1345	0243	9140	8036	6932	5827	4721	3615	2508	1401
53	6828	5729	4630	3529	2428	1326	0224	9121	8018	6913	5808	4703	3597	2490	1382
54	6810	5711	4611	3511	2410	1308	0206	9103	7999	6895	5790	4685	3578	2471	1364
55	6792	5693	4593	3492	2391	1290	0187	9084	7981	6877	5772	4666	3560	2453	1345
56	6773	5674	4575	3474	2373	1271	0169	9066	7962	6858	5753	4648	3541	2435	1327
57	6755	5656	4556	3456	2355	1253	0151	9048	7944	6840	5735	4629	3523	2416	1309
58	6737	5638	4538	3437	2336	1235	0132	9029	7926	6821	5716	4611	3505	2398	1290
59	6718	5619	4520	3419	2318	1216	0114	9011	7907	6803	5698	4592	3486	2379	1272
60	6700	5601	4501	3401	2300	1198	0096	8993	7889	6785	5680	4574	3468	2361	1253
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

41 Deg. Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.939	9.939	9.939	9.939	9.940	9.940	9.940	9.940	9.941	9.941	9.941	9.941	9.942	9.942	9.942
0	1631	4182	6733	9284	1835	4385	6936	9486	2036	4585	7135	9684	2233	4782	7331
1	1673	4224	6776	9326	1877	4428	6978	9528	2078	4628	7177	9727	2276	4825	7373
2	1716	4267	6818	9369	1920	4470	7021	9571	2121	4670	7220	9769	2318	4867	7416
3	1758	4309	6861	9412	1962	4513	7063	9613	2163	4713	7262	9812	2361	4910	7458
4	1801	4352	6903	9454	2005	4555	7106	9656	2206	4755	7305	9854	2403	4952	7501
5	1843	4394	6946	9497	2047	4598	7148	9698	2248	4798	7347	9897	2446	4995	7543
6	1886	4437	6988	9539	2090	4640	7191	9741	2291	4840	7390	9939	2488	5037	7586
7	1928	4480	7031	9582	2132	4683	7233	9783	2333	4883	7432	9982	2531	5079	7628
8	1971	4522	7073	9624	2175	4725	7276	9826	2376	4925	7475	0024	2573	5122	7671
9	2013	4565	7116	9667	2217	4768	7318	9868	2418	4968	7517	0066	2616	5164	7713
10	2056	4607	7158	9709	2260	4810	7361	9911	2461	5010	7560	0109	2658	5207	7756
11	2098	4650	7201	9752	2302	4853	7403	9953	2503	5053	7602	0151	2701	5249	7798
12	2141	4692	7243	9794	2345	4895	7446	9996	2546	5095	7645	0194	2743	5292	7841
13	2183	4735	7286	9837	2387	4938	7488	0038	2588	5138	7687	0236	2786	5334	7883
14	2226	4777	7328	9879	2430	4980	7531	0081	2631	5180	7730	0279	2828	5377	7926
15	2268	4820	7371	9922	2472	5023	7573	0123	2673	5223	7772	0321	2870	5419	7968
16	2311	4862	7413	9964	2515	5065	7616	0166	2716	5265	7815	0364	2913	5462	8010
17	2353	4905	7456	0007	2557	5108	7658	0208	2758	5308	7857	0406	2955	5504	8053
18	2396	4947	7498	0049	2600	5150	7701	0251	2801	5350	7900	0449	2998	5547	8095
19	2438	4990	7541	0092	2642	5193	7743	0293	2843	5393	7942	0491	3040	5589	8138
20	2481	5032	7583	0134	2685	5235	7786	0336	2885	5435	7985	0534	3083	5632	8180
21	2524	5075	7626	0177	2727	5278	7828	0378	2928	5478	8027	0576	3125	5674	8223
22	2566	5117	7668	0219	2770	5320	7871	0421	2970	5520	8070	0619	3168	5717	8265
23	2609	5160	7711	0262	2812	5363	7913	0463	3013	5563	8112	0661	3210	5759	8308
24	2651	5202	7753	0304	2855	5405	7956	0506	3055	5605	8155	0704	3253	5802	8350
25	2694	5245	7796	0347	2897	5448	7998	0548	3098	5648	8197	0746	3295	5844	8393
26	2736	5287	7838	0389	2940	5490	8041	0591	3140	5690	8240	0789	3338	5887	8435
27	2779	5330	7881	0432	2982	5533	8083	0633	3183	5733	8282	0831	3380	5929	8478
28	2821	5372	7923	0474	3025	5575	8126	0676	3225	5775	8324	0874	3423	5972	8520
29	2864	5415	7966	0517	3067	5618	8168	0718	3268	5818	8367	0916	3465	6014	8563
30	2906	5457	8009	0559	3110	5660	8211	0761	3310	5860	8409	0959	3508	6057	8605
31	2949	5500	8051	0602	3152	5703	8253	0803	3353	5903	8452	1001	3550	6099	8648
32	2991	5543	8094	0644	3195	5745	8296	0846	3395	5945	8494	1044	3593	6141	8690
33	3034	5585	8136	0687	3238	5788	8338	0888	3438	5988	8537	1086	3635	6184	8733
34	3076	5628	8179	0729	3280	5830	8381	0931	3480	6030	8579	1129	3678	6226	8775
35	3119	5670	8221	0772	3323	5873	8423	0973	3523	6073	8622	1171	3720	6269	8818
36	3161	5713	8264	0814	3365	5915	8466	1016	3565	6115	8664	1214	3763	6311	8860
37	3204	5755	8306	0857	3408	5958	8508	1058	3608	6158	8707	1256	3805	6354	8902
38	3246	5798	8349	0899	3450	6000	8551	1101	3650	6200	8749	1299	3848	6396	8945
39	3289	5840	8391	0942	3493	6043	8593	1143	3693	6242	8792	1341	3890	6439	8987
40	3331	5883	8434	0984	3535	6085	8636	1186	3735	6285	8834	1384	3933	6481	9030
41	3374	5925	8476	1027	3578	6128	8678	1228	3778	6327	8877	1426	3975	6524	9072
42	3417	5968	8519	1069	3620	6170	8721	1271	3820	6370	8919	1469	4017	6566	9115
43	3459	6010	8561	1112	3663	6213	8763	1313	3863	6412	8962	1511	4060	6609	9157
44	3502	6053	8604	1155	3705	6255	8806	1356	3905	6455	9004	1553	4102	6651	9200
45	3544	6095	8646	1197	3748	6298	8848	1398	3948	6497	9047	1596	4145	6694	9242
46	3587	6138	8689	1240	3790	6340	8891	1441	3990	6540	9089	1638	4187	6736	9285
47	3629	6180	8731	1282	3833	6383	8933	1483	4033	6582	9132	1681	4230	6779	9327
48	3672	6223	8774	1325	3875	6425	8976	1526	4075	6625	9174	1723	4272	6821	9370
49	3714	6265	8816	1367	3918	6468	9018	1568	4118	6667	9217	1766	4315	6864	9412
50	3757	6308	8859	1410	3960	6510	9061	1611	4160	6710	9259	1808	4357	6906	9455
51	3799	6350	8901	1452	4003	6553	9103	1653	4203	6752	9302	1851	4400	6949	9497
52	3842	6393	8944	1495	4045	6596	9146	1696	4245	6795	9344	1893	4442	6991	9540
53	3884	6435	8986	1537	4088	6638	9188	1738	4288	6837	9387	1936	4485	7034	9582
54	3927	6478	9029	1580	4130	6681	9231	1781	4330	6880	9429	1978	4527	7076	9625
55	3969	6520	9071	1622	4173	6723	9273	1823	4373	6922	9472	2021	4570	7118	9667
56	4012	6563	9114	1665	4215	6766	9316	1866	4415	6965	9514	2063	4612	7161	9709
57	4054	6605	9156	1707	4258	6808	9358	1908	4458	7007	9557	2106	4655	7203	9752
58	4097	6648	9199	1750	4300	6851	9401	1951	4500	7050	9599	2148	4697	7246	9794
59	4139	6691	9241	1792	4343	6893	9443	1993	4543	7092	9642	2191	4740	7288	9837
60	4182	6733	9284	1835	4385	6936	9486	2036	4585	7135	9684	2233	4782	7331	9879
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

41 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
10.060	10.060	10.060	10.060	10.059	10.059	10.059	10.059	10.058	10.058	10.058	10.058	10.057	10.057	10.057	″
8369	5818	3267	0716	8165	5615	3064	0514	7964	5415	2865	0316	7767	5218	2669	60
8327	5776	3224	0674	8123	5572	3022	0472	7922	5372	2823	0273	7724	5175	2627	59
8284	5733	3182	0631	8080	5530	2979	0429	7879	5330	2780	0231	7682	5133	2584	58
8242	5691	3139	0588	8038	5487	2937	0387	7837	5287	2738	0188	7639	5090	2542	57
8199	5648	3097	0546	7995	5445	2894	0344	7794	5245	2695	0146	7597	5048	2499	56
8157	5606	3054	0503	7953	5402	2852	0302	7752	5202	2653	0103	7554	5005	2457	55
8114	5563	3012	0461	7910	5360	2809	0259	7709	5160	2610	0061	7512	4963	2414	54
8072	5520	2969	0418	7868	5317	2767	0217	7667	5117	2568	0018	7469	4921	2372	53
8029	5478	2927	0376	7825	5275	2724	0174	7624	5075	2525	9976	7427	4878	2329	52
7987	5435	2884	0333	7783	5232	2682	0132	7582	5032	2483	9934	7384	4836	2287	51
7944	5393	2842	0291	7740	5190	2639	0089	7539	4990	2440	9891	7342	4793	2244	50
7902	5350	2799	0248	7698	5147	2597	0047	7497	4947	2398	9849	7299	4751	2202	49
7859	5308	2757	0206	7655	5105	2554	0004	7454	4905	2355	9806	7257	4708	2159	48
7817	5265	2714	0163	7613	5062	2512	9962	7412	4862	2313	9764	7214	4666	2117	47
7774	5223	2672	0121	7570	5020	2469	9919	7369	4820	2270	9721	7172	4623	2074	46
7732	5180	2629	0078	7528	4977	2427	9877	7327	4777	2228	9679	7130	4581	2032	45
7689	5138	2587	0036	7485	4935	2384	9834	7284	4735	2185	9636	7087	4538	1990	44
7647	5095	2544	9993	7443	4892	2342	9792	7242	4692	2143	9594	7045	4496	1947	43
7604	5053	2502	9951	7400	4850	2299	9749	7199	4650	2100	9551	7002	4453	1905	42
7562	5010	2459	9908	7358	4807	2257	9707	7157	4607	2058	9509	6960	4411	1862	41
7519	4968	2417	9866	7315	4765	2214	9664	7115	4565	2015	9466	6917	4368	1820	40
7476	4925	2374	9823	7273	4722	2172	9622	7072	4522	1973	9424	6875	4326	1777	39
7434	4883	2332	9781	7230	4680	2129	9579	7030	4480	1930	9381	6832	4283	1735	38
7391	4840	2289	9738	7188	4637	2087	9537	6987	4437	1888	9339	6790	4241	1692	37
7349	4798	2247	9696	7145	4595	2044	9494	6945	4395	1845	9296	6747	4198	1650	36
7306	4755	2204	9653	7103	4552	2002	9452	6902	4352	1803	9254	6705	4156	1607	35
7264	4713	2162	9611	7060	4510	1959	9409	6860	4310	1760	9211	6662	4113	1565	34
7221	4670	2119	9568	7018	4467	1917	9367	6817	4267	1718	9169	6620	4071	1522	33
7179	4628	2077	9526	6975	4425	1874	9324	6775	4225	1676	9126	6577	4028	1480	32
7136	4585	2034	9483	6933	4382	1832	9282	6732	4182	1633	9084	6535	3986	1437	31
7094	4543	1991	9441	6890	4340	1789	9239	6690	4140	1591	9041	6492	3943	1395	30
7051	4500	1949	9398	6848	4297	1747	9197	6647	4097	1548	8999	6450	3901	1352	29
7009	4457	1906	9356	6805	4255	1704	9154	6605	4055	1506	8956	6407	3859	1310	28
6966	4415	1864	9313	6762	4212	1662	9112	6562	4012	1463	8914	6365	3816	1267	27
6924	4372	1821	9271	6720	4170	1619	9069	6520	3970	1421	8871	6322	3774	1225	26
6881	4330	1779	9228	6677	4127	1577	9027	6477	3927	1378	8829	6280	3731	1182	25
6839	4287	1736	9186	6635	4085	1534	8984	6435	3885	1336	8786	6237	3689	1140	24
6796	4245	1694	9143	6592	4042	1492	8942	6392	3842	1293	8744	6195	3646	1098	23
6754	4202	1651	9101	6550	4000	1449	8899	6350	3800	1251	8701	6152	3604	1055	22
6711	4160	1609	9058	6507	3957	1407	8857	6307	3758	1208	8659	6110	3561	1013	21
6669	4117	1566	9016	6465	3915	1364	8814	6265	3715	1166	8616	6067	3519	0970	20
6626	4075	1524	8973	6422	3872	1322	8772	6222	3673	1123	8574	6025	3476	0928	19
6583	4032	1481	8931	6380	3830	1279	8729	6180	3630	1081	8531	5983	3434	0885	18
6541	3990	1439	8888	6337	3787	1237	8687	6137	3588	1038	8489	5940	3391	0843	17
6498	3947	1396	8845	6295	3745	1194	8644	6095	3545	0996	8447	5898	3349	0800	16
6456	3905	1354	8803	6252	3702	1152	8602	6052	3503	0953	8404	5855	3306	0758	15
6413	3862	1311	8760	6210	3660	1109	8559	6010	3460	0911	8362	5813	3264	0715	14
6371	3820	1269	8718	6167	3617	1067	8517	5967	3418	0868	8319	5770	3221	0673	13
6328	3777	1226	8675	6125	3575	1024	8474	5925	3375	0826	8277	5728	3179	0630	12
6286	3735	1184	8633	6082	3532	0982	8432	5882	3333	0783	8234	5685	3136	0588	11
6243	3692	1141	8590	6040	3490	0939	8389	5840	3290	0741	8192	5643	3094	0545	10
6201	3650	1099	8548	5997	3447	0897	8347	5797	3248	0698	8149	5600	3051	0503	9
6158	3607	1056	8505	5955	3404	0854	8304	5755	3205	0656	8107	5558	3009	0460	8
6116	3565	1014	8463	5912	3362	0812	8262	5712	3163	0613	8064	5515	2966	0418	7
6073	3522	0971	8420	5870	3319	0769	8219	5670	3120	0571	8022	5473	2924	0375	6
6031	3480	0929	8378	5827	3277	0727	8177	5627	3078	0528	7979	5430	2882	0333	5
5988	3437	0886	8335	5785	3234	0684	8134	5585	3035	0486	7937	5388	2839	0291	4
5946	3395	0844	8293	5742	3192	0642	8092	5542	2993	0443	7894	5345	2797	0248	3
5903	3352	0801	8250	5700	3149	0599	8049	5500	2950	0401	7852	5303	2754	0206	2
5861	3309	0759	8208	5657	3107	0557	8007	5457	2908	0358	7809	5260	2712	0163	1
5818	3267	0716	8165	5615	3064	0514	7964	5415	2865	0316	7767	5218	2669	0121	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Co-Tangent Deg. 48

Tangent Deg. 48

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9.819	9.819	9.819	9.819	9.819	9.819	9.819	9.820	9.820	9.820	9.820	9.820	9.820	9.820	9.821
0	1133	2573	4012	5450	6888	8325	9761	1196	2630	4063	5496	6927	8358	9788	1217
1	1157	2597	4036	5474	6912	8349	9784	1219	2654	4087	5520	6951	8382	9812	1241
2	1181	2621	4060	5498	6936	8373	9808	1243	2678	4111	5543	6975	8406	9836	1265
3	1205	2645	4084	5522	6960	8396	9832	1267	2701	4135	5567	6999	8430	9860	1289
4	1229	2669	4108	5546	6984	8420	9856	1291	2725	4159	5591	7023	8454	9884	1313
5	1253	2693	4132	5570	7008	8444	9880	1315	2749	4183	5615	7047	8477	9907	1336
6	1277	2717	4156	5594	7032	8468	9904	1339	2773	4206	5639	7070	8501	9931	1360
7	1301	2741	4180	5618	7056	8492	9928	1363	2797	4230	5663	7094	8525	9955	1384
8	1325	2765	4204	5642	7080	8516	9952	1387	2821	4254	5687	7118	8549	9979	1408
9	1349	2789	4228	5666	7103	8540	9976	1411	2845	4278	5710	7142	8573	0003	1432
10	1373	2813	4252	5690	7127	8564	0000	1435	2869	4302	5734	7166	8597	0026	1455
11	1397	2837	4276	5714	7151	8588	0024	1459	2893	4326	5758	7190	8620	0050	1479
12	1421	2861	4300	5738	7175	8612	0048	1482	2917	4350	5782	7214	8644	0074	1503
13	1445	2885	4324	5762	7199	8636	0072	1506	2940	4374	5806	7237	8668	0098	1527
14	1469	2909	4348	5786	7223	8660	0095	1530	2964	4397	5830	7261	8692	0122	1551
15	1493	2933	4372	5810	7247	8684	0119	1554	2988	4421	5854	7285	8716	0146	1575
16	1517	2957	4396	5834	7271	8708	0143	1578	3012	4445	5878	7309	8740	0169	1598
17	1541	2981	4420	5858	7295	8732	0167	1602	3036	4469	5901	7333	8763	0193	1622
18	1565	3005	4444	5882	7319	8755	0191	1626	3060	4493	5925	7357	8787	0217	1646
19	1589	3029	4468	5906	7343	8779	0215	1650	3084	4517	5949	7381	8811	0241	1670
20	1613	3052	4491	5930	7367	8803	0239	1674	3108	4541	5973	7404	8835	0265	1694
21	1637	3076	4515	5954	7391	8827	0263	1698	3132	4565	5997	7428	8859	0289	1717
22	1661	3100	4539	5978	7415	8851	0287	1722	3155	4589	6021	7452	8883	0312	1741
23	1685	3124	4563	6002	7439	8875	0311	1745	3179	4612	6045	7476	8906	0336	1765
24	1709	3148	4587	6025	7463	8899	0335	1769	3203	4636	6068	7500	8930	0360	1789
25	1733	3172	4611	6049	7487	8923	0359	1793	3227	4660	6092	7524	8954	0384	1813
26	1757	3196	4635	6073	7511	8947	0382	1817	3251	4684	6116	7547	8978	0408	1836
27	1781	3220	4659	6097	7535	8971	0406	1841	3275	4708	6140	7571	9002	0431	1860
28	1805	3244	4683	6121	7558	8995	0430	1865	3299	4732	6164	7595	9026	0455	1884
29	1829	3268	4707	6145	7582	9019	0454	1889	3323	4756	6188	7619	9049	0479	1908
30	1853	3292	4731	6169	7606	9043	0478	1913	3347	4780	6212	7643	9073	0503	1932
31	1877	3316	4755	6193	7630	9067	0502	1937	3370	4803	6235	7667	9097	0527	1955
32	1901	3340	4779	6217	7654	9091	0526	1961	3394	4827	6259	7691	9121	0551	1979
33	1925	3364	4803	6241	7678	9114	0550	1984	3418	4851	6283	7714	9145	0574	2003
34	1949	3388	4827	6265	7702	9138	0574	2008	3442	4875	6307	7738	9169	0598	2027
35	1973	3412	4851	6289	7726	9162	0598	2032	3466	4899	6331	7762	9192	0622	2051
36	1997	3436	4875	6313	7750	9186	0622	2056	3490	4923	6355	7786	9216	0646	2074
37	2021	3460	4899	6337	7774	9210	0646	2080	3514	4947	6379	7810	9240	0670	2098
38	2045	3484	4923	6361	7798	9234	0669	2104	3538	4971	6403	7834	9264	0693	2122
39	2069	3508	4947	6385	7822	9258	0693	2128	3562	4994	6426	7858	9288	0717	2146
40	2093	3532	4971	6409	7846	9282	0717	2152	3585	5018	6450	7881	9312	0741	2170
41	2117	3556	4995	6433	7870	9306	0741	2176	3609	5042	6474	7905	9335	0765	2194
42	2141	3580	5019	6457	7894	9330	0765	2200	3633	5066	6498	7929	9359	0789	2217
43	2165	3604	5043	6481	7918	9354	0789	2224	3657	5090	6522	7953	9383	0813	2241
44	2189	3628	5067	6505	7942	9378	0813	2247	3681	5114	6546	7977	9407	0836	2265
45	2213	3652	5091	6529	7966	9402	0837	2271	3705	5138	6570	8001	9431	0860	2289
46	2237	3676	5115	6553	7989	9426	0861	2295	3729	5161	6593	8024	9455	0884	2313
47	2261	3700	5139	6577	8013	9449	0885	2319	3753	5185	6617	8048	9478	0908	2336
48	2285	3724	5163	6600	8037	9473	0909	2343	3777	5209	6641	8072	9502	0932	2360
49	2309	3748	5187	6624	8061	9497	0933	2367	3800	5233	6665	8096	9526	0955	2384
50	2333	3772	5211	6648	8085	9521	0956	2391	3824	5257	6689	8120	9550	0979	2408
51	2357	3796	5235	6672	8109	9545	0980	2415	3848	5281	6713	8144	9574	1003	2432
52	2381	3820	5259	6696	8133	9569	1004	2439	3872	5305	6737	8167	9598	1027	2455
53	2405	3844	5283	6720	8157	9593	1028	2463	3896	5329	6760	8191	9621	1051	2479
54	2429	3868	5307	6744	8181	9617	1052	2486	3920	5352	6784	8215	9645	1075	2503
55	2453	3892	5330	6768	8205	9641	1076	2510	3944	5376	6808	8239	9669	1098	2527
56	2477	3916	5354	6792	8229	9665	1100	2534	3968	5400	6832	8263	9693	1122	2551
57	2501	3940	5378	6816	8253	9689	1124	2558	3992	5424	6856	8287	9717	1146	2574
58	2525	3964	5402	6840	8277	9713	1148	2582	4015	5448	6880	8311	9741	1170	2598
59	2549	3988	5426	6864	8301	9737	1172	2606	4039	5472	6904	8334	9764	1194	2622
60	2573	4012	5450	6888	8325	9761	1196	2630	4063	5496	6927	8358	9788	1217	2646
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
	9.876	9.876	9.875	9.875	9.875	9.875	9.875	9.875	9.875	9.875	9.875	9.874	9.874	9.874	9.874	″
0	1253	0145	9036	7927	6816	5706	4594	3482	2369	1256	0142	9027	7912	6795	5679	60
1	1235	0126	9018	7908	6798	5687	4576	3463	2351	1237	0123	9008	7893	6777	5660	59
2	1216	0108	8999	7890	6779	5669	4557	3445	2332	1219	0105	8990	7874	6758	5642	58
3	1198	0090	8981	7871	6761	5650	4538	3426	2314	1200	0086	8971	7856	6740	5623	57
4	1179	0071	8962	7853	6742	5631	4520	3408	2295	1181	0067	8953	7837	6721	5604	56
5	1161	0053	8944	7834	6724	5613	4501	3389	2276	1163	0049	8934	7819	6702	5586	55
6	1142	0034	8925	7816	6705	5594	4483	3371	2258	1144	0030	8915	7800	6684	5567	54
7	1124	0016	8907	7797	6687	5576	4464	3352	2239	1126	0012	8897	7781	6665	5548	53
8	1105	9997	8888	7779	6668	5557	4446	3334	2221	1107	9993	8878	7763	6647	5530	52
9	1087	9979	8870	7760	6650	5539	4427	3315	2202	1089	9974	8860	7744	6628	5511	51
10	1069	9960	8851	7742	6631	5520	4409	3297	2184	1070	9956	8841	7726	6609	5493	50
11	1050	9942	8833	7723	6613	5502	4390	3278	2165	1052	9937	8822	7707	6591	5474	49
12	1032	9923	8814	7705	6594	5483	4372	3259	2147	1033	9919	8804	7688	6572	5455	48
13	1013	9905	8796	7686	6576	5465	4353	3241	2128	1014	9900	8785	7670	6554	5437	47
14	0995	9886	8777	7668	6557	5446	4335	3222	2109	0996	9882	8767	7651	6535	5418	46
15	0976	9868	8759	7649	6539	5428	4316	3204	2091	0977	9863	8748	7633	6516	5400	45
16	0958	9849	8740	7631	6520	5409	4298	3185	2072	0959	9844	8730	7614	6498	5381	44
17	0939	9831	8722	7612	6502	5391	4279	3167	2054	0940	9826	8711	7595	6479	5362	43
18	0921	9812	8703	7594	6483	5372	4261	3148	2035	0922	9807	8692	7577	6461	5344	42
19	0902	9794	8685	7575	6465	5354	4242	3130	2017	0903	9789	8674	7558	6442	5325	41
20	0884	9775	8666	7557	6446	5335	4223	3111	1998	0884	9770	8655	7540	6423	5306	40
21	0865	9757	8648	7538	6428	5317	4205	3093	1980	0866	9752	8637	7521	6405	5288	39
22	0847	9738	8629	7520	6409	5298	4186	3074	1961	0847	9733	8618	7502	6386	5269	38
23	0828	9720	8611	7501	6391	5280	4168	3055	1942	0829	9714	8599	7484	6367	5251	37
24	0810	9701	8592	7483	6372	5261	4149	3037	1924	0810	9696	8581	7465	6349	5232	36
25	0791	9683	8574	7464	6354	5243	4131	3018	1905	0792	9677	8562	7447	6330	5213	35
26	0773	9665	8555	7446	6335	5224	4112	3000	1887	0773	9659	8544	7428	6312	5195	34
27	0755	9646	8537	7427	6317	5205	4094	2981	1868	0754	9640	8525	7409	6293	5176	33
28	0736	9628	8518	7409	6298	5187	4075	2963	1850	0736	9622	8506	7391	6274	5157	32
29	0718	9609	8500	7390	6280	5168	4057	2944	1831	0717	9603	8488	7372	6256	5139	31
30	0699	9591	8481	7372	6261	5150	4038	2926	1813	0699	9584	8469	7354	6237	5120	30
31	0681	9572	8463	7353	6243	5131	4020	2907	1794	0680	9566	8451	7335	6219	5102	29
32	0662	9554	8444	7335	6224	5113	4001	2889	1775	0662	9547	8432	7316	6200	5083	28
33	0644	9535	8426	7316	6206	5094	3982	2870	1757	0643	9529	8414	7298	6181	5064	27
34	0625	9517	8407	7298	6187	5076	3964	2851	1738	0625	9510	8395	7279	6163	5046	26
35	0607	9498	8389	7279	6168	5057	3945	2833	1720	0606	9491	8376	7261	6144	5027	25
36	0588	9480	8370	7261	6150	5039	3927	2814	1701	0587	9473	8358	7242	6126	5008	24
37	0570	9461	8352	7242	6131	5020	3908	2796	1683	0569	9454	8339	7223	6107	4990	23
38	0551	9443	8333	7224	6113	5002	3890	2777	1664	0550	9436	8321	7205	6088	4971	22
39	0533	9424	8315	7205	6094	4983	3871	2759	1646	0532	9417	8302	7186	6070	4953	21
40	0514	9406	8296	7187	6076	4965	3853	2740	1627	0513	9399	8283	7168	6051	4934	20
41	0496	9387	8278	7168	6057	4946	3834	2722	1608	0495	9380	8265	7149	6032	4915	19
42	0477	9369	8259	7150	6039	4928	3816	2703	1590	0476	9361	8246	7130	6014	4897	18
43	0459	9350	8241	7131	6020	4909	3797	2685	1571	0457	9343	8228	7112	5995	4878	17
44	0441	9332	8222	7112	6002	4891	3779	2666	1553	0439	9324	8209	7093	5977	4859	16
45	0422	9313	8204	7094	5983	4872	3760	2647	1534	0420	9306	8190	7075	5958	4841	15
46	0404	9295	8185	7075	5965	4853	3742	2629	1516	0402	9287	8172	7056	5939	4822	14
47	0385	9276	8167	7057	5946	4835	3723	2610	1497	0383	9269	8153	7037	5921	4804	13
48	0367	9258	8149	7038	5928	4816	3704	2592	1478	0365	9250	8135	7019	5902	4785	12
49	0348	9239	8130	7020	5909	4798	3686	2573	1460	0346	9231	8116	7000	5884	4766	11
50	0330	9221	8112	7001	5891	4779	3667	2555	1441	0327	9213	8097	6982	5865	4748	10
51	0312	9202	8093	6983	5872	4761	3649	2536	1423	0309	9194	8079	6963	5846	4729	9
52	0293	9184	8075	6964	5854	4742	3630	2518	1404	0290	9176	8060	6944	5828	4710	8
53	0274	9165	8056	6946	5835	4724	3612	2499	1386	0272	9157	8042	6926	5809	4692	7
54	0256	9147	8038	6927	5817	4705	3593	2480	1367	0253	9138	8023	6907	5790	4673	6
55	0237	9129	8019	6909	5798	4687	3575	2462	1349	0235	9120	8005	6889	5772	4655	5
56	0219	9110	8001	6890	5780	4668	3556	2443	1330	0216	9101	7986	6870	5753	4636	4
57	0200	9092	7982	6872	5761	4650	3538	2425	1311	0197	9083	7967	6851	5735	4617	3
58	0182	9073	7964	6853	5743	4631	3519	2406	1293	0179	9064	7949	6833	5716	4599	2
59	0163	9055	7945	6835	5724	4613	3500	2388	1274	0160	9046	7930	6814	5697	4580	1
60	0145	9036	7927	6816	5706	4594	3482	2369	1256	0142	9027	7912	6795	5679	4561	0
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 942	9. 943	9. 943	9. 943	9. 944	9. 944	9. 944	9. 944	9. 945	9. 945	9. 945	9. 945	9. 946	9. 946	9. 946
0	9879	2428	4976	7524	0072	2619	5166	7714	0261	2807	5354	7900	0447	2993	5539
1	9922	2470	5018	7566	0114	2662	5209	7756	0303	2850	5396	7943	0489	3035	5581
2	9964	2513	5061	7609	0156	2704	5251	7799	0346	2892	5439	7985	0532	3078	5623
3	0007	2555	5103	7651	0199	2746	5294	7841	0388	2935	5481	8028	0574	3120	5666
4	0049	2598	5146	7694	0241	2789	5336	7883	0430	2977	5524	8070	0616	3162	5708
5	0092	2640	5188	7736	0284	2831	5379	7926	0473	3020	5566	8113	0659	3205	5751
6	0134	2683	5231	7779	0326	2874	5421	7968	0515	3062	5609	8155	0701	3247	5793
7	0177	2725	5273	7821	0369	2916	5464	8011	0558	3105	5651	8198	0744	3290	5836
8	0219	2767	5316	7863	0411	2959	5506	8053	0600	3147	5694	8240	0786	3332	5878
9	0262	2810	5358	7906	0454	3001	5549	8096	0643	3189	5736	8282	0829	3375	5920
10	0304	2852	5401	7948	0496	3044	5591	8138	0685	3232	5778	8325	0871	3417	5963
11	0347	2895	5443	7991	0539	3086	5633	8181	0728	3274	5821	8367	0913	3459	6005
12	0389	2937	5485	8033	0581	3129	5676	8223	0770	3317	5863	8410	0956	3502	6048
13	0432	2980	5528	8076	0624	3171	5718	8265	0812	3359	5906	8452	0998	3544	6090
14	0474	3022	5570	8118	0666	3213	5761	8308	0855	3402	5948	8495	1041	3587	6133
15	0516	3065	5613	8161	0708	3256	5803	8350	0897	3444	5991	8537	1083	3629	6175
16	0559	3107	5655	8203	0751	3298	5846	8393	0940	3487	6033	8579	1126	3672	6217
17	0601	3150	5698	8246	0793	3341	5888	8435	0982	3529	6076	8622	1168	3714	6260
18	0644	3192	5740	8288	0836	3383	5931	8478	1025	3571	6118	8664	1211	3757	6302
19	0686	3235	5783	8331	0878	3426	5973	8520	1067	3614	6160	8707	1253	3799	6345
20	0729	3277	5825	8373	0921	3468	6016	8563	1110	3656	6203	8749	1295	3841	6387
21	0771	3320	5868	8416	0963	3511	6058	8605	1152	3699	6245	8792	1338	3884	6430
22	0814	3362	5910	8458	1006	3553	6100	8648	1194	3741	6288	8834	1380	3926	6472
23	0856	3405	5953	8500	1048	3596	6143	8690	1237	3784	6330	8877	1423	3969	6514
24	0899	3447	5995	8543	1091	3638	6185	8732	1279	3826	6373	8919	1465	4011	6557
25	0941	3489	6038	8585	1133	3681	6228	8775	1322	3869	6415	8961	1508	4054	6599
26	0984	3532	6080	8628	1175	3723	6270	8817	1364	3911	6457	9004	1550	4096	6642
27	1026	3574	6122	8670	1218	3765	6313	8860	1407	3953	6500	9046	1592	4138	6684
28	1069	3617	6165	8713	1260	3808	6355	8902	1449	3996	6542	9089	1635	4181	6727
29	1111	3659	6207	8755	1303	3850	6398	8945	1492	4038	6585	9131	1677	4223	6769
30	1154	3702	6250	8798	1345	3893	6440	8987	1534	4081	6627	9174	1720	4266	6811
31	1196	3744	6292	8840	1388	3935	6483	9030	1576	4123	6670	9216	1762	4308	6854
32	1239	3787	6335	8883	1430	3978	6525	9072	1619	4166	6712	9258	1805	4351	6896
33	1281	3829	6377	8925	1473	4020	6567	9114	1661	4208	6755	9301	1847	4393	6939
34	1323	3872	6420	8968	1515	4063	6610	9157	1704	4251	6797	9343	1889	4435	6981
35	1366	3914	6462	9010	1558	4105	6652	9199	1746	4293	6839	9386	1932	4478	7024
36	1408	3957	6505	9052	1600	4148	6695	9242	1789	4335	6882	9428	1974	4520	7066
37	1451	3999	6547	9095	1643	4190	6737	9284	1831	4378	6924	9471	2017	4563	7108
38	1493	4042	6590	9137	1685	4232	6780	9327	1874	4420	6967	9513	2059	4605	7151
39	1536	4084	6632	9180	1727	4275	6822	9369	1916	4463	7009	9556	2102	4648	7193
40	1578	4126	6674	9222	1770	4317	6865	9412	1958	4505	7052	9598	2144	4690	7236
41	1621	4169	6717	9265	1812	4360	6907	9454	2001	4548	7094	9640	2187	4732	7278
42	1663	4211	6759	9307	1855	4402	6949	9497	2043	4590	7137	9683	2229	4775	7321
43	1706	4254	6802	9350	1897	4445	6992	9539	2086	4632	7179	9725	2271	4817	7363
44	1748	4296	6844	9392	1940	4487	7034	9581	2128	4675	7221	9768	2314	4860	7405
45	1791	4339	6887	9435	1982	4530	7077	9624	2171	4717	7264	9810	2356	4902	7448
46	1833	4381	6929	9477	2025	4572	7119	9666	2213	4760	7306	9853	2399	4945	7490
47	1876	4424	6972	9520	2067	4615	7162	9709	2256	4802	7349	9895	2441	4987	7533
48	1918	4466	7014	9562	2110	4657	7204	9751	2298	4845	7391	9937	2484	5029	7575
49	1961	4509	7057	9604	2152	4699	7247	9794	2341	4887	7434	9980	2526	5072	7618
50	2003	4551	7099	9647	2194	4742	7289	9836	2383	4930	7476	0022	2568	5114	7660
51	2045	4594	7142	9689	2237	4784	7332	9879	2425	4972	7518	0065	2611	5157	7702
52	2088	4636	7184	9732	2279	4827	7374	9921	2468	5014	7561	0107	2653	5199	7745
53	2130	4679	7227	9774	2322	4869	7416	9963	2510	5057	7603	0150	2696	5242	7787
54	2173	4721	7269	9817	2364	4912	7459	0006	2553	5099	7646	0192	2738	5284	7830
55	2215	4764	7311	9859	2407	4954	7501	0048	2595	5142	7688	0235	2781	5326	7872
56	2258	4806	7354	9902	2449	4997	7544	0091	2638	5184	7731	0277	2823	5369	7915
57	2300	4848	7396	9944	2492	5039	7586	0133	2680	5227	7773	0319	2865	5411	7957
58	2343	4891	7439	9987	2534	5082	7629	0176	2723	5269	7816	0362	2908	5454	7999
59	2385	4933	7481	0029	2577	5124	7671	0218	2765	5312	7858	0404	2950	5496	8042
60	2428	4976	7524	0072	2619	5166	7714	0261	2807	5354	7900	0447	2993	5539	8084
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
	10. 057	10. 056	10. 056	10. 056	10. 055	10. 055	10. 055	10. 055	10. 054	10. 054	10. 054	10. 054	10. 053	10. 053	10. 053	″
	0121	7572	5024	2476	9928	7381	4834	2286	9739	7193	4646	2100	9553	7007	4461	60
	0078	7530	4982	2434	9886	7338	4791	2244	9697	7150	4604	2057	9511	6965	4419	59
	0036	7487	4939	2391	9844	7296	4749	2201	9654	7108	4561	2015	9468	6922	4377	58
	9993	7445	4897	2349	9801	7254	4706	2159	9612	7065	4519	1972	9426	6880	4334	57
	9951	7402	4854	2306	9759	7211	4664	2117	9570	7023	4476	1930	9384	6838	4292	56
	9908	7360	4812	2264	9716	7169	4621	2074	9527	6980	4434	1887	9341	6795	4249	55
	9866	7317	4769	2221	9674	7126	4579	2032	9485	6938	4391	1845	9299	6753	4207	54
	9823	7275	4727	2179	9631	7084	4536	1989	9442	6895	4349	1802	9256	6710	4164	53
	9781	7233	4684	2137	9589	7041	4494	1947	9400	6853	4306	1760	9214	6668	4122	52
	9738	7190	4642	2094	9546	6999	4451	1904	9357	6811	4264	1718	9171	6625	4080	51
	9696	7148	4599	2052	9504	6956	4409	1862	9315	6768	4222	1675	9129	6583	4037	50
	9653	7105	4557	2009	9461	6914	4367	1819	9272	6726	4179	1633	9087	6541	3995	49
	9611	7063	4515	1967	9419	6871	4324	1777	9230	6683	4137	1590	9044	6498	3952	48
	9568	7020	4472	1924	9376	6829	4282	1735	9188	6641	4094	1548	9002	6456	3910	47
	9526	6978	4430	1882	9334	6787	4239	1692	9145	6598	4052	1505	8959	6413	3867	46
	9484	6935	4387	1839	9292	6744	4197	1650	9103	6556	4009	1463	8917	6371	3825	45
	9441	6893	4345	1797	9249	6702	4154	1607	9060	6513	3967	1421	8874	6328	3783	44
	9399	6850	4302	1754	9207	6659	4112	1565	9018	6471	3924	1378	8832	6286	3740	43
	9356	6808	4260	1712	9164	6617	4069	1522	8975	6429	3882	1336	8789	6243	3698	42
	9314	6765	4217	1669	9122	6574	4027	1480	8933	6386	3840	1293	8747	6201	3655	41
	9271	6723	4175	1627	9079	6532	3984	1437	8890	6344	3797	1251	8705	6159	3613	40
	9229	6680	4132	1584	9037	6489	3942	1395	8848	6301	3755	1208	8662	6116	3570	39
	9186	6638	4090	1542	8994	6447	3900	1352	8806	6259	3712	1166	8620	6074	3528	38
	9144	6595	4047	1500	8952	6404	3857	1310	8763	6216	3670	1123	8577	6031	3486	37
	9101	6553	4005	1457	8909	6362	3815	1268	8721	6174	3627	1081	8535	5989	3443	36
	9059	6511	3962	1415	8867	6319	3772	1225	8678	6131	3585	1039	8492	5946	3401	35
	9016	6468	3920	1372	8825	6277	3730	1183	8636	6089	3543	0996	8450	5904	3358	34
	8974	6426	3878	1330	8782	6235	3687	1140	8593	6047	3500	0954	8408	5862	3316	33
	8931	6383	3835	1287	8740	6192	3645	1098	8551	6004	3458	0911	8365	5819	3273	32
	8889	6341	3793	1245	8697	6150	3602	1055	8508	5962	3415	0869	8323	5777	3231	31
	8846	6298	3750	1202	8655	6107	3560	1013	8466	5919	3373	0826	8280	5734	3189	30
	8804	6256	3708	1160	8612	6065	3517	0970	8424	5877	3330	0784	8238	5692	3146	29
	8761	6213	3665	1117	8570	6022	3475	0928	8381	5834	3288	0742	8195	5649	3104	28
	8719	6171	3623	1075	8527	5980	3433	0886	8339	5792	3245	0699	8153	5607	3061	27
	8677	6128	3580	1032	8485	5937	3390	0843	8296	5749	3203	0657	8111	5565	3019	26
	8634	6086	3538	0990	8442	5895	3348	0801	8254	5707	3161	0614	8068	5522	2976	25
	8592	6043	3495	0948	8400	5852	3305	0758	8211	5665	3118	0572	8026	5480	2934	24
	8549	6001	3453	0905	8357	5810	3263	0716	8169	5622	3076	0529	7983	5437	2892	23
	8507	5958	3410	0863	8315	5768	3220	0673	8126	5580	3033	0487	7941	5395	2849	22
	8464	5916	3368	0820	8273	5725	3178	0631	8084	5537	2991	0444	7898	5352	2807	21
	8422	5874	3326	0778	8230	5683	3135	0588	8042	5495	2948	0402	7856	5310	2764	20
	8379	5831	3283	0735	8188	5640	3093	0546	7999	5452	2906	0360	7813	5268	2722	19
	8337	5789	3241	0693	8145	5598	3051	0503	7957	5410	2863	0317	7771	5225	2679	18
	8294	5746	3198	0650	8103	5555	3008	0461	7914	5368	2821	0275	7729	5183	2637	17
	8252	5704	3156	0608	8060	5513	2966	0419	7872	5325	2779	0232	7686	5140	2595	16
	8209	5661	3113	0565	8018	5470	2923	0376	7829	5283	2736	0190	7644	5098	2552	15
	8167	5619	3071	0523	7975	5428	2881	0334	7787	5240	2694	0147	7601	5055	2510	14
	8124	5576	3028	0480	7933	5385	2838	0291	7744	5198	2651	0105	7559	5013	2467	13
	8082	5534	2986	0438	7890	5343	2796	0249	7702	5155	2609	0063	7516	4971	2425	12
	8039	5491	2943	0396	7848	5301	2753	0206	7659	5113	2566	0020	7474	4928	2382	11
	7997	5449	2901	0353	7806	5258	2711	0164	7617	5070	2524	9978	7432	4886	2340	10
	7955	5406	2858	0311	7763	5216	2668	0121	7575	5028	2482	9935	7389	4843	2298	9
	7912	5364	2816	0268	7721	5173	2626	0079	7532	4986	2439	9893	7347	4801	2255	8
	7870	5321	2773	0226	7678	5131	2584	0037	7490	4943	2397	9850	7304	4758	2213	7
	7827	5279	2731	0183	7636	5088	2541	9994	7447	4901	2354	9808	7262	4716	2170	6
	7785	5236	2689	0141	7593	5046	2499	9952	7405	4858	2312	9765	7219	4674	2128	5
	7742	5194	2646	0098	7551	5003	2456	9909	7362	4816	2269	9723	7177	4631	2085	4
	7700	5152	2604	0056	7508	4961	2414	9867	7320	4773	2227	9681	7135	4589	2043	3
	7657	5109	2561	0013	7466	4918	2371	9824	7277	4731	2184	9638	7092	4546	2001	2
	7615	5067	2519	9971	7423	4876	2329	9782	7235	4688	2142	9596	7050	4504	1958	1
	7572	5024	2476	9928	7381	4834	2286	9739	7193	4646	2100	9553	7007	4461	1916	0
	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

"	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9.821	9.821	9.821	9.821	9.821	9.821	9.822	9.822	9.822	9.822	9.822	9.822	9.822	9.823	9.823
0	2646	4073	5500	6926	8351	9775	1198	2621	4042	5463	6883	8302	9721	1138	2555
1	2670	4097	5524	6949	8374	9799	1222	2644	4066	5487	6907	8326	9744	1162	2578
2	2693	4121	5547	6973	8398	9822	1246	2668	4090	5510	6930	8350	9768	1185	2602
3	2717	4145	5571	6997	8422	9846	1269	2692	4113	5534	6954	8373	9791	1209	2626
4	2741	4168	5595	7021	8446	9870	1293	2715	4137	5558	6978	8397	9815	1233	2649
5	2765	4192	5619	7044	8469	9893	1317	2739	4161	5581	7001	8420	9839	1256	2673
6	2789	4216	5642	7068	8493	9917	1340	2763	4184	5605	7025	8444	9862	1280	2696
7	2812	4240	5666	7092	8517	9941	1364	2787	4208	5629	7049	8468	9886	1303	2720
8	2836	4263	5690	7116	8541	9965	1388	2810	4232	5652	7072	8491	9910	1327	2744
9	2860	4287	5714	7139	8564	9988	1412	2834	4255	5676	7096	8515	9933	1351	2767
10	2884	4311	5738	7163	8588	0012	1435	2858	4279	5700	7120	8539	9957	1374	2791
11	2907	4335	5761	7187	8612	0036	1459	2881	4303	5724	7143	8562	9981	1398	2814
12	2931	4359	5785	7211	8636	0060	1483	2905	4327	5747	7167	8586	0004	1421	2838
13	2955	4382	5809	7235	8659	0083	1506	2929	4350	5771	7191	8610	0028	1445	2862
14	2979	4406	5833	7258	8683	0107	1530	2952	4374	5795	7214	8633	0051	1469	2885
15	3003	4430	5856	7282	8707	0131	1554	2976	4398	5818	7238	8657	0075	1492	2909
16	3026	4454	5880	7306	8731	0154	1578	3000	4421	5842	7262	8681	0099	1516	2932
17	3050	4478	5904	7330	8754	0178	1601	3024	4445	5866	7285	8704	0122	1540	2956
18	3074	4501	5928	7353	8778	0202	1625	3047	4469	5889	7309	8728	0146	1563	2980
19	3098	4525	5951	7377	8802	0226	1649	3071	4492	5913	7333	8751	0170	1587	3003
20	3122	4549	5975	7401	8825	0249	1672	3095	4516	5937	7356	8775	0193	1610	3027
21	3145	4573	5999	7425	8849	0273	1696	3118	4540	5960	7380	8799	0217	1634	3050
22	3169	4596	6023	7448	8873	0297	1720	3142	4563	5984	7404	8822	0240	1658	3074
23	3193	4620	6047	7472	8897	0321	1744	3166	4587	6008	7427	8846	0264	1681	3098
24	3217	4644	6070	7496	8920	0344	1767	3189	4611	6031	7451	8870	0288	1705	3121
25	3241	4668	6094	7520	8944	0368	1791	3213	4634	6055	7475	8893	0311	1728	3145
26	3264	4692	6118	7543	8968	0392	1815	3237	4658	6079	7498	8917	0335	1752	3168
27	3288	4715	6142	7567	8992	0415	1838	3260	4682	6102	7522	8941	0359	1776	3192
28	3312	4739	6165	7591	9015	0439	1862	3284	4705	6126	7545	8964	0382	1799	3216
29	3336	4763	6189	7615	9039	0463	1886	3308	4729	6150	7569	8988	0406	1823	3239
30	3360	4787	6213	7638	9063	0487	1910	3332	4753	6173	7593	9012	0429	1847	3263
31	3383	4810	6237	7662	9087	0510	1933	3355	4776	6197	7616	9035	0453	1870	3286
32	3407	4834	6260	7686	9110	0534	1957	3379	4800	6221	7640	9059	0477	1894	3310
33	3431	4858	6284	7710	9134	0558	1981	3403	4824	6244	7664	9082	0500	1917	3334
34	3455	4882	6308	7733	9158	0581	2004	3426	4848	6268	7687	9106	0524	1941	3357
35	3479	4906	6332	7757	9182	0605	2028	3450	4871	6292	7711	9130	0548	1965	3381
36	3502	4929	6355	7781	9205	0629	2052	3474	4895	6315	7735	9153	0571	1988	3404
37	3526	4953	6379	7805	9229	0653	2075	3497	4919	6339	7758	9177	0595	2012	3428
38	3550	4977	6403	7828	9253	0676	2099	3521	4942	6363	7782	9201	0618	2035	3452
39	3574	5001	6427	7852	9276	0700	2123	3545	4966	6386	7806	9224	0642	2059	3475
40	3597	5024	6451	7876	9300	0724	2147	3569	4990	6410	7829	9248	0666	2083	3499
41	3621	5048	6474	7900	9324	0748	2170	3592	5013	6434	7853	9272	0689	2106	3522
42	3645	5072	6498	7923	9348	0771	2194	3616	5037	6457	7877	9295	0713	2130	3546
43	3669	5096	6522	7947	9371	0795	2218	3640	5061	6481	7900	9319	0737	2153	3570
44	3693	5120	6546	7971	9395	0819	2241	3663	5084	6505	7924	9342	0760	2177	3593
45	3716	5143	6569	7995	9419	0842	2265	3687	5108	6528	7948	9366	0784	2201	3617
46	3740	5167	6593	8018	9443	0866	2289	3711	5132	6552	7971	9390	0807	2224	3640
47	3764	5191	6617	8042	9466	0890	2313	3734	5155	6576	7995	9413	0831	2248	3664
48	3788	5215	6641	8066	9490	0914	2336	3758	5179	6599	8018	9437	0855	2271	3687
49	3812	5238	6664	8089	9514	0937	2360	3782	5203	6623	8042	9461	0878	2295	3711
50	3835	5262	6688	8113	9538	0961	2384	3805	5226	6646	8066	9484	0902	2319	3735
51	3859	5286	6712	8137	9561	0985	2407	3829	5250	6670	8089	9508	0926	2342	3758
52	3883	5310	6736	8161	9585	1008	2431	3853	5274	6694	8113	9532	0949	2366	3782
53	3907	5333	6759	8184	9609	1032	2455	3876	5297	6717	8137	9555	0973	2390	3805
54	3931	5357	6783	8208	9632	1056	2478	3900	5321	6741	8160	9579	0996	2413	3829
55	3954	5381	6807	8232	9656	1080	2502	3924	5345	6765	8184	9602	1020	2437	3853
56	3978	5405	6831	8256	9680	1103	2526	3948	5368	6788	8208	9626	1044	2460	3876
57	4002	5429	6854	8279	9704	1127	2550	3971	5392	6812	8231	9650	1067	2484	3900
58	4026	5452	6878	8303	9727	1151	2573	3995	5416	6836	8255	9673	1091	2508	3923
59	4049	5476	6902	8327	9751	1174	2597	4019	5439	6859	8279	9697	1114	2531	3947
60	4073	5500	6926	8351	9775	1198	2621	4042	5463	6883	8302	9721	1138	2555	3971
"	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	"
9.874	9.874	9.874	9.874	9.874	9.873	9.873	9.873	9.873	9.873	9.873	9.873	9.873	9.872	9.872	
4561	3443	2325	1205	0085	8965	7844	6722	5599	4476	3352	2227	1102	9976	8849	60
4543	3425	2306	1187	0067	8946	7825	6703	5580	4457	3333	2208	1083	9957	8831	59
4524	3406	2287	1168	0048	8927	7806	6684	5562	4438	3314	2190	1064	9939	8812	58
4506	3387	2269	1149	0029	8909	7787	6665	5543	4420	3296	2171	1046	9920	8793	57
4487	3369	2250	1131	0011	8890	7769	6647	5524	4401	3277	2152	1027	9901	8774	56
4468	3350	2231	1112	9992	8871	7750	6628	5505	4382	3258	2133	1008	9882	8756	55
4450	3332	2213	1093	9973	8853	7731	6609	5487	4363	3239	2115	0989	9863	8737	54
4431	3313	2194	1075	9955	8834	7713	6591	5468	4345	3221	2096	0971	9845	8718	53
4412	3294	2176	1056	9936	8815	7694	6572	5449	4326	3202	2077	0952	9826	8699	52
4394	3276	2157	1037	9917	8797	7675	6553	5431	4307	3183	2058	0933	9807	8680	51
4375	3257	2138	1019	9899	8778	7657	6535	5412	4288	3164	2040	0914	9788	8662	50
4357	3238	2120	1000	9880	8759	7638	6516	5393	4270	3146	2021	0896	9770	8643	49
4338	3220	2101	0981	9861	8741	7619	6497	5374	4251	3127	2002	0877	9751	8624	48
4319	3201	2082	0963	9843	8722	7600	6478	5356	4232	3108	1983	0858	9732	8605	47
4301	3182	2064	0944	9824	8703	7582	6460	5337	4214	3089	1965	0839	9713	8587	46
4282	3164	2045	0925	9805	8685	7563	6441	5318	4195	3071	1946	0821	9694	8568	45
4263	3145	2026	0907	9787	8666	7544	6422	5299	4176	3052	1927	0802	9676	8549	44
4245	3127	2008	0888	9768	8647	7526	6404	5281	4157	3033	1908	0783	9657	8530	43
4226	3108	1989	0869	9749	8628	7507	6385	5262	4139	3014	1890	0764	9638	8511	42
4207	3089	1970	0851	9731	8610	7488	6366	5243	4120	2996	1871	0745	9619	8493	41
4189	3071	1952	0832	9712	8591	7470	6347	5225	4101	2977	1852	0727	9601	8474	40
4170	3052	1933	0814	9693	8572	7451	6329	5206	4082	2958	1833	0708	9582	8455	39
4152	3033	1914	0795	9675	8554	7432	6310	5187	4064	2940	1815	0689	9563	8436	38
4133	3015	1896	0776	9656	8535	7414	6291	5168	4045	2921	1796	0670	9544	8417	37
4114	2996	1877	0758	9637	8516	7395	6273	5150	4026	2902	1777	0652	9526	8399	36
4096	2977	1858	0739	9619	8498	7376	6254	5131	4007	2883	1758	0633	9507	8380	35
4077	2959	1840	0720	9600	8479	7357	6235	5112	3989	2865	1740	0614	9488	8361	34
4058	2940	1821	0702	9581	8460	7339	6216	5094	3970	2846	1721	0595	9469	8342	33
4040	2921	1802	0683	9563	8442	7320	6198	5075	3951	2827	1702	0577	9450	8324	32
4021	2903	1784	0664	9544	8423	7301	6179	5056	3933	2808	1683	0558	9432	8305	31
4003	2884	1765	0646	9525	8404	7283	6160	5037	3914	2790	1665	0539	9413	8286	30
3984	2866	1747	0627	9507	8386	7264	6142	5019	3895	2771	1646	0520	9394	8267	29
3965	2847	1728	0608	9488	8367	7245	6123	5000	3876	2752	1627	0502	9375	8248	28
3947	2828	1709	0590	9469	8348	7227	6104	4981	3858	2733	1608	0483	9357	8230	27
3928	2810	1691	0571	9450	8329	7208	6086	4963	3839	2715	1590	0464	9338	8211	26
3909	2791	1672	0552	9432	8311	7189	6067	4944	3820	2696	1571	0445	9319	8192	25
3891	2772	1653	0534	9413	8292	7170	6048	4925	3801	2677	1552	0426	9300	8173	24
3872	2754	1635	0515	9394	8273	7152	6029	4906	3783	2658	1533	0408	9281	8154	23
3853	2735	1616	0496	9376	8255	7133	6011	4888	3764	2640	1515	0389	9263	8136	22
3835	2716	1597	0478	9357	8236	7114	5992	4869	3745	2621	1496	0370	9244	8117	21
3816	2698	1579	0459	9338	8217	7096	5973	4850	3726	2602	1477	0351	9225	8098	20
3798	2679	1560	0440	9320	8199	7077	5955	4831	3708	2583	1458	0333	9206	8079	19
3779	2660	1541	0422	9301	8180	7058	5936	4813	3689	2565	1440	0314	9188	8061	18
3760	2642	1523	0403	9282	8161	7040	5917	4794	3670	2546	1421	0295	9169	8042	17
3742	2623	1504	0384	9264	8143	7021	5898	4775	3652	2527	1402	0276	9150	8023	16
3723	2604	1485	0366	9245	8124	7002	5880	4757	3633	2508	1383	0258	9131	8004	15
3704	2586	1467	0347	9226	8105	6983	5861	4738	3614	2490	1365	0239	9112	7985	14
3686	2567	1448	0328	9208	8087	6965	5842	4719	3595	2471	1346	0220	9094	7967	13
3667	2549	1429	0309	9189	8068	6946	5824	4700	3577	2452	1327	0201	9075	7948	12
3648	2530	1411	0291	9170	8049	6927	5805	4682	3558	2433	1308	0183	9056	7929	11
3630	2511	1392	0272	9152	8030	6909	5786	4663	3539	2415	1290	0164	9037	7910	10
3611	2493	1373	0253	9133	8012	6890	5767	4644	3520	2396	1271	0145	9019	7891	9
3593	2474	1355	0235	9114	7993	6871	5749	4626	3502	2377	1252	0126	9000	7873	8
3574	2455	1336	0216	9096	7974	6852	5730	4607	3483	2358	1233	0107	8981	7854	7
3555	2437	1317	0197	9077	7956	6834	5711	4588	3464	2340	1215	0089	8962	7835	6
3537	2418	1299	0179	9058	7937	6815	5693	4569	3445	2321	1196	0070	8943	7816	5
3518	2399	1280	0160	9040	7918	6796	5674	4551	3427	2302	1177	0051	8925	7797	4
3499	2381	1261	0141	9021	7900	6778	5655	4532	3408	2283	1158	0032	8906	7779	3
3481	2362	1243	0123	9002	7881	6759	5636	4513	3389	2265	1139	0014	8887	7760	2
3462	2343	1224	0104	8983	7862	6740	5618	4494	3371	2246	1121	9995	8868	7741	1
3443	2325	1205	0085	8965	7844	6722	5599	4476	3352	2227	1102	9976	8849	7722	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	"

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 946	9. 947	9. 947	9. 947	9. 947	9. 948	9. 948	9. 948	9. 948	9. 949	9. 949	9. 949	9. 949	9. 950	9. 950
0	8084	0630	3175	5720	8265	0810	3355	5899	8443	0987	3531	6075	8619	1162	3705
1	8127	0672	3218	5763	8308	0852	3397	5941	8486	1030	3574	6117	8661	1204	3748
2	8169	0715	3260	5805	8350	0895	3439	5984	8528	1072	3616	6160	8703	1247	3790
3	8212	0757	3302	5848	8392	0937	3482	6026	8571	1115	3659	6202	8746	1289	3832
4	8254	0799	3345	5890	8435	0980	3524	6069	8613	1157	3701	6245	8788	1332	3875
5	8296	0842	3387	5932	8477	1022	3567	6111	8655	1199	3743	6287	8831	1374	3917
6	8339	0884	3430	5975	8520	1064	3609	6154	8698	1242	3786	6329	8873	1416	3960
7	8381	0927	3472	6017	8562	1107	3651	6196	8740	1284	3828	6372	8915	1459	4002
8	8424	0969	3514	6060	8605	1149	3694	6238	8783	1327	3870	6414	8958	1501	4044
9	8466	1012	3557	6102	8647	1192	3736	6281	8825	1369	3913	6457	9000	1544	4087
10	8509	1054	3599	6144	8689	1234	3779	6323	8867	1411	3955	6499	9043	1586	4129
11	8551	1096	3642	6187	8732	1277	3821	6366	8910	1454	3998	6541	9085	1628	4171
12	8593	1139	3684	6229	8774	1319	3864	6408	8952	1496	4040	6584	9127	1671	4214
13	8636	1181	3727	6272	8817	1361	3906	6450	8995	1539	4082	6626	9170	1713	4256
14	8678	1224	3769	6314	8859	1404	3948	6493	9037	1581	4125	6669	9212	1755	4299
15	8721	1266	3811	6357	8901	1446	3991	6535	9079	1623	4167	6711	9254	1798	4341
16	8763	1309	3854	6399	8944	1489	4033	6578	9122	1666	4210	6753	9297	1840	4383
17	8806	1351	3896	6441	8986	1531	4076	6620	9164	1708	4252	6796	9339	1883	4426
18	8848	1393	3939	6484	9029	1573	4118	6662	9207	1751	4294	6838	9382	1925	4468
19	8890	1436	3981	6526	9071	1616	4160	6705	9249	1793	4337	6881	9424	1967	4511
20	8933	1478	4024	6569	9114	1658	4203	6747	9291	1835	4379	6923	9466	2010	4553
21	8975	1521	4066	6611	9156	1701	4245	6790	9334	1878	4422	6965	9509	2052	4595
22	9018	1563	4108	6653	9198	1743	4288	6832	9376	1920	4464	7008	9551	2095	4638
23	9060	1606	4151	6696	9241	1785	4330	6874	9419	1963	4506	7050	9594	2137	4680
24	9103	1648	4193	6738	9283	1828	4372	6917	9461	2005	4549	7093	9636	2179	4722
25	9145	1690	4236	6781	9326	1870	4415	6959	9503	2047	4591	7135	9678	2222	4765
26	9187	1733	4278	6823	9368	1913	4457	7002	9546	2090	4634	7177	9721	2264	4807
27	9230	1775	4320	6866	9410	1955	4500	7044	9588	2132	4676	7220	9763	2306	4850
28	9272	1818	4363	6908	9453	1998	4542	7086	9631	2175	4718	7262	9806	2349	4892
29	9315	1860	4405	6950	9495	2040	4584	7129	9673	2217	4761	7304	9848	2391	4934
30	9357	1902	4448	6993	9538	2082	4627	7171	9715	2259	4803	7347	9890	2434	4977
31	9399	1945	4490	7035	9580	2125	4669	7214	9758	2302	4846	7389	9933	2476	5019
32	9442	1987	4533	7078	9622	2167	4712	7256	9800	2344	4888	7432	9975	2518	5062
33	9484	2030	4575	7120	9665	2210	4754	7298	9843	2387	4930	7474	0018	2561	5104
34	9527	2072	4617	7162	9707	2252	4797	7341	9885	2429	4973	7516	0060	2603	5146
35	9569	2115	4660	7205	9750	2294	4839	7383	9927	2471	5015	7559	0102	2646	5189
36	9612	2157	4702	7247	9792	2337	4881	7426	9970	2514	5058	7601	0145	2688	5231
37	9654	2199	4745	7290	9835	2379	4924	7468	0012	2556	5100	7644	0187	2730	5273
38	9696	2242	4787	7332	9877	2422	4966	7510	0055	2599	5142	7686	0229	2773	5316
39	9739	2284	4829	7375	9919	2464	5009	7553	0097	2641	5185	7728	0272	2815	5358
40	9781	2327	4872	7417	9962	2506	5051	7595	0139	2683	5227	7771	0314	2858	5401
41	9824	2369	4914	7459	0004	2549	5093	7638	0182	2726	5270	7813	0357	2900	5443
42	9866	2412	4957	7502	0047	2591	5136	7680	0224	2768	5312	7856	0399	2942	5485
43	9909	2454	4999	7544	0089	2634	5178	7722	0267	2811	5354	7898	0441	2985	5528
44	9951	2496	5042	7587	0131	2676	5221	7765	0309	2853	5397	7940	0484	3027	5570
45	9993	2539	5084	7629	0174	2719	5263	7807	0351	2895	5439	7983	0526	3069	5613
46	0036	2581	5126	7671	0216	2761	5305	7850	0394	2938	5482	8025	0569	3112	5655
47	0078	2624	5169	7714	0259	2803	5348	7892	0436	2980	5524	8068	0611	3154	5697
48	0121	2666	5211	7756	0301	2846	5390	7934	0479	3023	5566	8110	0653	3197	5740
49	0163	2708	5254	7799	0343	2888	5433	7977	0521	3065	5609	8152	0696	3239	5782
50	0206	2751	5296	7841	0386	2931	5475	8019	0563	3107	5651	8195	0738	3281	5824
51	0248	2793	5339	7884	0428	2973	5517	8062	0606	3150	5694	8237	0781	3324	5867
52	0290	2836	5381	7926	0471	3015	5560	8104	0648	3192	5736	8279	0823	3366	5909
53	0333	2878	5423	7968	0513	3058	5602	8147	0691	3235	5778	8322	0865	3409	5952
54	0375	2921	5466	8011	0556	3100	5645	8189	0733	3277	5821	8364	0908	3451	5994
55	0418	2963	5508	8053	0598	3143	5687	8231	0775	3319	5863	8407	0950	3493	6036
56	0460	3005	5551	8096	0640	3185	5729	8274	0818	3362	5905	8449	0992	3536	6079
57	0503	3048	5593	8138	0683	3227	5772	8316	0860	3404	5948	8491	1035	3578	6121
58	0545	3090	5635	8180	0725	3270	5814	8359	0903	3447	5990	8534	1077	3620	6164
59	0587	3133	5678	8223	0768	3312	5857	8401	0945	3489	6033	8576	1120	3663	6206
60	0630	3175	5720	8265	0810	3355	5899	8443	0987	3531	6075	8619	1162	3705	6248
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
10. 053	10. 052	10. 052	10. 052	10. 052	10. 051	10. 051	10. 051	10. 051	10. 050	10. 050	10. 050	10. 050	10. 049	10. 049	″
1916	9370	6825	4280	1735	9190	6645	4101	1557	9013	6469	3925	1381	8838	6295	60
1873	9328	6782	4237	1692	9148	6603	4059	1514	8970	6426	3883	1339	8796	6252	59
1831	9285	6740	4195	1650	9105	6561	4016	1472	8928	6384	3840	1297	8753	6210	58
1788	9243	6698	4152	1608	9063	6518	3974	1429	8885	6341	3798	1254	8711	6168	57
1746	9201	6655	4110	1565	9020	6476	3931	1387	8843	6299	3755	1212	8668	6125	56
1704	9158	6613	4068	1523	8978	6433	3889	1345	8801	6257	3713	1169	8626	6083	55
1661	9116	6570	4025	1480	8936	6391	3846	1302	8758	6214	3671	1127	8584	6040	54
1619	9073	6528	3983	1438	8893	6349	3804	1260	8716	6172	3628	1085	8541	5998	53
1576	9031	6486	3940	1395	8851	6306	3762	1217	8673	6130	3586	1042	8499	5956	52
1534	8988	6443	3898	1353	8808	6264	3719	1175	8631	6087	3543	1000	8456	5913	51
1491	8946	6401	3856	1311	8766	6221	3677	1133	8589	6045	3501	0957	8414	5871	50
1449	8904	6358	3813	1268	8723	6179	3634	1090	8546	6002	3459	0915	8372	5829	49
1407	8861	6316	3771	1226	8681	6136	3592	1048	8504	5960	3416	0873	8329	5786	48
1364	8819	6273	3728	1183	8639	6094	3550	1005	8461	5918	3374	0830	8287	5744	47
1322	8776	6231	3686	1141	8596	6052	3507	0963	8419	5875	3331	0788	8245	5701	46
1279	8734	6189	3643	1099	8554	6009	3465	0921	8377	5833	3289	0746	8202	5659	45
1237	8691	6146	3601	1056	8511	5967	3422	0878	8334	5790	3247	0703	8160	5617	44
1194	8649	6104	3559	1014	8469	5924	3380	0836	8292	5748	3204	0661	8117	5574	43
1152	8607	6061	3516	0971	8427	5882	3338	0793	8249	5706	3162	0618	8075	5532	42
1110	8564	6019	3474	0929	8384	5840	3295	0751	8207	5663	3119	0576	8033	5489	41
1067	8522	5976	3431	0886	8342	5797	3253	0709	8165	5621	3077	0534	7990	5447	40
1025	8479	5934	3389	0844	8299	5755	3210	0666	8122	5578	3035	0491	7948	5405	39
0982	8437	5892	3347	0802	8257	5712	3168	0624	8080	5536	2992	0449	7905	5362	38
0940	8394	5849	3304	0759	8215	5670	3126	0581	8037	5494	2950	0406	7863	5320	37
0897	8352	5807	3262	0717	8172	5628	3083	0539	7995	5451	2907	0364	7821	5278	36
0855	8310	5764	3219	0674	8130	5585	3041	0497	7953	5409	2865	0322	7778	5235	35
0813	8267	5722	3177	0632	8087	5543	2998	0454	7910	5366	2823	0279	7736	5193	34
0770	8225	5680	3134	0590	8045	5500	2956	0412	7868	5324	2780	0237	7694	5150	33
0728	8182	5637	3092	0547	8002	5458	2914	0369	7825	5282	2738	0194	7651	5108	32
0685	8140	5595	3050	0505	7960	5416	2871	0327	7783	5239	2696	0152	7609	5066	31
0643	8098	5552	3007	0462	7918	5373	2829	0285	7741	5197	2653	0110	7566	5023	30
0601	8055	5510	2965	0420	7875	5331	2786	0242	7698	5154	2611	0067	7524	4981	29
0558	8013	5467	2922	0378	7833	5288	2744	0200	7656	5112	2568	0025	7482	4938	28
0516	7970	5425	2880	0335	7790	5246	2702	0157	7613	5070	2526	9982	7439	4896	27
0473	7928	5383	2838	0293	7748	5203	2659	0115	7571	5027	2484	9940	7397	4854	26
0431	7885	5340	2795	0250	7706	5161	2617	0073	7529	4985	2441	9898	7354	4811	25
0388	7843	5298	2753	0208	7663	5119	2574	0030	7486	4942	2399	9855	7312	4769	24
0346	7801	5255	2710	0165	7621	5076	2532	9988	7444	4900	2356	9813	7270	4727	23
0304	7758	5213	2668	0123	7578	5034	2490	9945	7401	4858	2314	9771	7227	4684	22
0261	7716	5171	2625	0081	7536	4991	2447	9903	7359	4815	2272	9728	7185	4642	21
0219	7673	5128	2583	0038	7494	4949	2405	9861	7317	4773	2229	9686	7142	4599	20
0176	7631	5086	2541	9996	7451	4907	2362	9818	7274	4730	2187	9643	7100	4557	19
0134	7588	5043	2498	9953	7409	4864	2320	9776	7232	4688	2144	9601	7058	4515	18
0091	7546	5001	2456	9911	7366	4822	2278	9733	7189	4646	2102	9559	7015	4472	17
0049	7504	4958	2413	9869	7324	4779	2235	9691	7147	4603	2060	9516	6973	4430	16
0007	7461	4916	2371	9826	7281	4737	2193	9649	7105	4561	2017	9474	6931	4387	15
9964	7419	4874	2329	9784	7239	4695	2150	9606	7062	4518	1975	9431	6888	4345	14
9922	7376	4831	2286	9741	7197	4652	2108	9564	7020	4476	1932	9389	6846	4303	13
9879	7334	4789	2244	9699	7154	4610	2066	9521	6977	4434	1890	9347	6803	4260	12
9837	7292	4746	2201	9657	7112	4567	2023	9479	6935	4391	1848	9304	6761	4218	11
9794	7249	4704	2159	9614	7069	4525	1981	9437	6893	4349	1805	9262	6719	4176	10
9752	7207	4661	2116	9572	7027	4483	1938	9394	6850	4306	1763	9219	6676	4133	9
9710	7164	4619	2074	9529	6985	4440	1896	9352	6808	4264	1721	9177	6634	4091	8
9667	7122	4577	2032	9487	6942	4398	1853	9309	6765	4222	1678	9135	6591	4048	7
9625	7079	4534	1989	9444	6900	4355	1811	9267	6723	4179	1636	9092	6549	4006	6
9582	7037	4492	1947	9402	6857	4313	1769	9225	6681	4137	1593	9050	6507	3964	5
9540	6995	4449	1904	9360	6815	4271	1726	9182	6638	4095	1551	9008	6464	3921	4
9497	6952	4407	1862	9317	6773	4228	1684	9140	6596	4052	1509	8965	6422	3879	3
9455	6910	4365	1820	9275	6730	4186	1641	9097	6553	4010	1466	8923	6380	3836	2
9413	6867	4322	1777	9232	6688	4143	1599	9055	6511	3967	1424	8880	6337	3794	1
9370	6825	4280	1735	9190	6645	4101	1557	9013	6469	3925	1381	8838	6295	3752	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

″	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9.823	9.823	9.823	9.823	9.823	9.824	9.824	9.824	9.824	9.824	9.824	9.824	9.825	9.825	9.825
0	3971	5386	6800	8213	9626	1037	2448	3858	5267	6676	8083	9490	0896	2301	3705
1	3994	5409	6823	8237	9649	1061	2472	3882	5291	6699	8107	9514	0920	2325	3729
2	4018	5433	6847	8260	9673	1084	2495	3905	5314	6723	8130	9537	0943	2348	3752
3	4041	5456	6870	8284	9696	1108	2519	3929	5338	6746	8154	9560	0966	2371	3776
4	4065	5480	6894	8307	9720	1131	2542	3952	5361	6770	8177	9584	0990	2395	3799
5	4089	5503	6918	8331	9743	1155	2566	3976	5385	6793	8201	9607	1013	2418	3822
6	4112	5527	6941	8354	9767	1178	2589	3999	5408	6817	8224	9631	1037	2442	3846
7	4136	5551	6965	8378	9790	1202	2613	4023	5432	6840	8248	9654	1060	2465	3869
8	4159	5574	6988	8401	9814	1225	2636	4046	5455	6864	8271	9678	1084	2488	3893
9	4183	5598	7012	8425	9837	1249	2660	4070	5479	6887	8294	9701	1107	2512	3916
10	4206	5621	7035	8449	9861	1273	2683	4093	5502	6911	8318	9725	1130	2535	3939
11	4230	5645	7059	8472	9885	1296	2707	4117	5526	6934	8341	9748	1154	2559	3963
12	4254	5668	7082	8496	9908	1320	2730	4140	5549	6957	8365	9771	1177	2582	3986
13	4277	5692	7106	8519	9932	1343	2754	4164	5573	6981	8388	9795	1201	2606	4010
14	4301	5716	7130	8543	9955	1367	2777	4187	5596	7004	8412	9818	1224	2629	4033
15	4324	5739	7153	8566	9979	1390	2801	4211	5620	7028	8435	9842	1247	2652	4056
16	4348	5763	7177	8590	0002	1414	2824	4234	5643	7051	8459	9865	1271	2676	4080
17	4372	5786	7200	8613	0026	1437	2848	4258	5667	7075	8482	9889	1294	2699	4103
18	4395	5810	7224	8637	0049	1461	2871	4281	5690	7098	8506	9912	1318	2723	4127
19	4419	5833	7247	8660	0073	1484	2895	4305	5714	7122	8529	9935	1341	2746	4150
20	4442	5857	7271	8684	0096	1508	2918	4328	5737	7145	8552	9959	1365	2769	4173
21	4466	5881	7295	8708	0120	1531	2942	4352	5760	7169	8576	9982	1388	2793	4197
22	4490	5904	7318	8731	0143	1555	2965	4375	5784	7192	8599	0006	1411	2816	4220
23	4513	5928	7342	8755	0167	1578	2989	4399	5807	7216	8623	0029	1435	2840	4244
24	4537	5951	7365	8778	0190	1602	3012	4422	5831	7239	8646	0053	1458	2863	4267
25	4560	5975	7389	8802	0214	1625	3036	4446	5854	7262	8670	0076	1482	2886	4290
26	4584	5998	7412	8825	0237	1649	3059	4469	5878	7286	8693	0100	1505	2910	4314
27	4607	6022	7436	8849	0261	1672	3083	4492	5901	7309	8717	0123	1529	2933	4337
28	4631	6046	7459	8872	0285	1696	3106	4516	5925	7333	8740	0146	1552	2957	4361
29	4655	6069	7483	8896	0308	1719	3130	4539	5948	7356	8763	0170	1575	2980	4384
30	4678	6093	7507	8919	0332	1743	3153	4563	5972	7380	8787	0193	1599	3003	4407
31	4702	6116	7530	8943	0355	1766	3177	4586	5995	7403	8810	0217	1622	3027	4431
32	4725	6140	7554	8967	0379	1790	3200	4610	6019	7427	8834	0240	1646	3050	4454
33	4749	6163	7577	8990	0402	1813	3224	4633	6042	7450	8857	0264	1669	3074	4477
34	4773	6187	7601	9014	0426	1837	3247	4657	6066	7474	8881	0287	1692	3097	4501
35	4796	6211	7624	9037	0449	1860	3271	4680	6089	7497	8904	0310	1716	3120	4524
36	4820	6234	7648	9061	0473	1884	3294	4704	6113	7521	8928	0334	1739	3144	4548
37	4843	6258	7671	9084	0496	1907	3318	4727	6136	7544	8951	0357	1763	3167	4571
38	4867	6281	7695	9108	0520	1931	3341	4751	6160	7567	8974	0381	1786	3191	4594
39	4890	6305	7719	9131	0543	1954	3365	4774	6183	7591	8998	0404	1810	3214	4618
40	4914	6328	7742	9155	0567	1978	3388	4798	6206	7614	9021	0428	1833	3237	4641
41	4938	6352	7766	9178	0590	2002	3412	4821	6230	7638	9045	0451	1856	3261	4665
42	4961	6376	7789	9202	0614	2025	3435	4845	6253	7661	9068	0474	1880	3284	4688
43	4985	6399	7813	9226	0637	2049	3459	4868	6277	7685	9092	0498	1903	3308	4711
44	5008	6423	7836	9249	0661	2072	3482	4892	6300	7708	9115	0521	1927	3331	4735
45	5032	6446	7860	9273	0684	2096	3506	4915	6324	7732	9139	0545	1950	3354	4758
46	5055	6470	7883	9296	0708	2119	3529	4939	6347	7755	9162	0568	1973	3378	4782
47	5079	6493	7907	9320	0732	2143	3553	4962	6371	7779	9185	0592	1997	3401	4805
48	5103	6517	7931	9343	0755	2166	3576	4986	6394	7802	9209	0615	2020	3425	4828
49	5126	6541	7954	9367	0779	2190	3600	5009	6418	7825	9232	0638	2044	3448	4852
50	5150	6564	7978	9390	0802	2213	3623	5033	6441	7849	9256	0662	2067	3472	4875
51	5173	6588	8001	9414	0826	2237	3647	5056	6465	7872	9279	0685	2090	3495	4898
52	5197	6611	8025	9437	0849	2260	3670	5080	6488	7896	9303	0709	2114	3518	4922
53	5221	6635	8048	9461	0873	2284	3694	5103	6512	7919	9326	0732	2137	3542	4945
54	5244	6658	8072	9484	0896	2307	3717	5127	6535	7943	9350	0756	2161	3565	4969
55	5268	6682	8095	9508	0920	2331	3741	5150	6559	7966	9373	0779	2184	3588	4992
56	5291	6706	8119	9531	0943	2354	3764	5174	6582	7990	9396	0802	2208	3612	5015
57	5315	6729	8142	9555	0967	2378	3788	5197	6605	8013	9420	0826	2231	3635	5039
58	5338	6753	8166	9579	0990	2401	3811	5221	6629	8037	9443	0849	2254	3659	5062
59	5362	6776	8190	9602	1014	2425	3835	5244	6652	8060	9467	0873	2278	3682	5086
60	5386	6800	8213	9626	1037	2448	3858	5267	6676	8083	9490	0896	2301	3705	5109
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	″
9.872	9.872	9.872	9.872	9.872	9.872	9.872	9.871	9.871	9.871	9.871	9.871	9.871	9.871	9.871	
7722	6594	5466	4337	3207	2076	0945	9813	8681	7548	6414	5279	4144	3008	1872	60
7703	6576	5447	4318	3188	2057	0926	9794	8662	7529	6395	5260	4125	2989	1853	59
7685	6557	5428	4299	3169	2039	0907	9776	8643	7510	6376	5241	4106	2970	1834	58
7666	6538	5409	4280	3150	2020	0889	9757	8624	7491	6357	5222	4087	2951	1815	57
7647	6519	5391	4261	3131	2001	0870	9738	8605	7472	6338	5204	4068	2932	1796	56
7628	6500	5372	4243	3113	1982	0851	9719	8586	7453	6319	5185	4049	2914	1777	55
7610	6482	5353	4224	3094	1963	0832	9700	8567	7434	6300	5166	4031	2895	1758	54
7591	6463	5334	4205	3075	1944	0813	9681	8549	7415	6281	5147	4012	2876	1739	53
7572	6444	5315	4186	3056	1925	0794	9662	8530	7396	6262	5128	3993	2857	1720	52
7553	6425	5297	4167	3037	1907	0775	9643	8511	7378	6244	5109	3974	2838	1701	51
7534	6406	5278	4148	3018	1888	0756	9625	8492	7359	6225	5090	3955	2819	1682	50
7516	6388	5259	4130	3000	1869	0738	9606	8473	7340	6206	5071	3936	2800	1663	49
7497	6369	5240	4111	2981	1850	0719	9587	8454	7321	6187	5052	3917	2781	1644	48
7478	6350	5221	4092	2962	1831	0700	9568	8435	7302	6168	5033	3898	2762	1625	47
7459	6331	5202	4073	2943	1812	0681	9549	8416	7283	6149	5014	3879	2743	1606	46
7440	6312	5184	4054	2924	1794	0662	9530	8398	7264	6130	4995	3860	2724	1588	45
7422	6294	5165	4035	2905	1775	0643	9511	8379	7245	6111	4977	3841	2705	1569	44
7403	6275	5146	4017	2887	1756	0624	9492	8360	7226	6092	4958	3822	2686	1550	43
7384	6256	5127	3998	2868	1737	0606	9474	8341	7207	6073	4939	3803	2667	1531	42
7365	6237	5108	3979	2849	1718	0587	9455	8322	7189	6055	4920	3784	2648	1512	41
7346	6218	5090	3960	2830	1699	0568	9436	8303	7170	6036	4901	3766	2629	1493	40
7328	6199	5071	3941	2811	1680	0549	9417	8284	7151	6017	4882	3747	2611	1474	39
7309	6181	5052	3922	2792	1662	0530	9398	8265	7132	5998	4863	3728	2592	1455	38
7290	6162	5033	3904	2774	1643	0511	9379	8246	7113	5979	4844	3709	2573	1436	37
7271	6143	5014	3885	2755	1624	0492	9360	8228	7094	5960	4825	3690	2554	1417	36
7252	6124	4995	3866	2736	1605	0474	9341	8209	7075	5941	4806	3671	2535	1398	35
7234	6105	4977	3847	2717	1586	0455	9323	8190	7056	5922	4787	3652	2516	1379	34
7215	6087	4958	3828	2698	1567	0436	9304	8171	7037	5903	4768	3633	2497	1360	33
7196	6068	4939	3809	2679	1548	0417	9285	8152	7019	5884	4750	3614	2478	1341	32
7177	6049	4920	3791	2660	1530	0398	9266	8133	7000	5865	4731	3595	2459	1322	31
7158	6030	4901	3772	2642	1511	0379	9247	8114	6981	5847	4712	3576	2440	1303	30
7140	6011	4883	3753	2623	1492	0360	9228	8095	6962	5828	4693	3557	2421	1284	29
7121	5993	4864	3734	2604	1473	0342	9209	8076	6943	5809	4674	3538	2402	1265	28
7102	5974	4845	3715	2585	1454	0323	9190	8058	6924	5790	4655	3519	2383	1246	27
7083	5955	4826	3696	2566	1435	0304	9172	8039	6905	5771	4636	3501	2364	1227	26
7064	5936	4807	3678	2547	1416	0285	9153	8020	6886	5752	4617	3482	2345	1208	25
7046	5917	4788	3659	2529	1398	0266	9134	8001	6867	5733	4598	3463	2326	1190	24
7027	5899	4770	3640	2510	1379	0247	9115	7982	6848	5714	4579	3444	2307	1171	23
7008	5880	4751	3621	2491	1360	0228	9096	7963	6830	5695	4560	3425	2289	1152	22
6989	5861	4732	3602	2472	1341	0209	9077	7944	6811	5676	4541	3406	2270	1133	21
6970	5842	4713	3583	2453	1322	0191	9058	7925	6792	5657	4523	3387	2251	1114	20
6952	5823	4694	3565	2434	1303	0172	9039	7906	6773	5639	4504	3368	2232	1095	19
6933	5804	4675	3546	2416	1285	0153	9021	7888	6754	5620	4485	3349	2213	1076	18
6914	5786	4657	3527	2397	1266	0134	9002	7869	6735	5601	4466	3330	2194	1057	17
6895	5767	4638	3568	2378	1247	0115	8983	7850	6716	5582	4447	3311	2175	1038	16
6876	5748	4619	3489	2359	1228	0096	8964	7831	6697	5563	4428	3292	2156	1019	15
6858	5729	4600	3470	2340	1209	0077	8945	7812	6678	5544	4409	3273	2137	1000	14
6839	5710	4581	3452	2321	1190	0059	8926	7793	6659	5525	4390	3254	2118	0981	13
6820	5692	4563	3433	2302	1171	0040	8907	7774	6641	5506	4371	3235	2099	0962	12
6801	5673	4544	3414	2284	1153	0021	8888	7755	6622	5487	4352	3217	2080	0943	11
6782	5654	4525	3395	2265	1134	0002	8870	7736	6603	5468	4333	3198	2061	0924	10
6764	5635	4506	3376	2246	1115	9983	8851	7718	6584	5449	4314	3179	2042	0905	9
6745	5616	4487	3357	2227	1096	9964	8832	7699	6565	5431	4295	3160	2023	0886	8
6726	5598	4468	3339	2208	1077	9945	8813	7680	6546	5412	4277	3141	2004	0867	7
6707	5579	4450	3320	2189	1058	9926	8794	7661	6527	5393	4258	3122	1985	0848	6
6688	5560	4431	3301	2171	1039	9908	8775	7642	6508	5374	4239	3103	1966	0829	5
6670	5541	4412	3282	2152	1021	9889	8756	7623	6489	5355	4220	3084	1948	0810	4
6651	5522	4393	3263	2133	1002	9870	8737	7604	6470	5336	4201	3065	1929	0791	3
6632	5503	4374	3244	2114	0983	9851	8718	7585	6452	5317	4182	3046	1910	0772	2
6613	5485	4355	3226	2095	0964	9832	8700	7566	6433	5298	4163	3027	1891	0754	1
6594	5466	4337	3207	2076	0945	9813	8681	7548	6414	5279	4144	3008	1872	0735	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	9. 950	9. 950	9. 951	9. 951	9. 951	9. 951	9. 952	9. 952	9. 952	9. 952	9. 953	9. 953	9. 953	9. 953	9. 954
0	6248	8791	1334	3876	6419	8961	1503	4045	6587	9128	1670	4211	6752	9293	1834
1	6291	8834	1376	3919	6461	9003	1545	4087	6629	9171	1712	4253	6794	9335	1876
2	6333	8876	1419	3961	6504	9046	1588	4130	6671	9213	1754	4296	6837	9378	1918
3	6375	8918	1461	4004	6546	9088	1630	4172	6714	9255	1797	4338	6879	9420	1961
4	6418	8961	1503	4046	6588	9131	1673	4214	6756	9298	1839	4380	6921	9462	2003
5	6460	9003	1546	4088	6631	9173	1715	4257	6799	9340	1881	4423	6964	9505	2045
6	6503	9045	1588	4131	6673	9215	1757	4299	6841	9382	1924	4465	7006	9547	2088
7	6545	9088	1631	4173	6715	9258	1800	4342	6883	9425	1966	4507	7048	9589	2130
8	6587	9130	1673	4215	6758	9300	1842	4384	6926	9467	2009	4550	7091	9632	2173
9	6630	9173	1715	4258	6800	9342	1884	4426	6968	9510	2051	4592	7133	9674	2215
10	6672	9215	1758	4300	6843	9385	1927	4469	7010	9552	2093	4634	7176	9716	2257
11	6715	9257	1800	4343	6885	9427	1969	4511	7053	9594	2136	4677	7218	9759	2300
12	6757	9300	1842	4385	6927	9469	2012	4553	7095	9637	2178	4719	7260	9801	2342
13	6799	9342	1884	4427	6970	9512	2054	4596	7137	9679	2220	4762	7303	9843	2384
14	6842	9384	1927	4470	7012	9554	2096	4638	7180	9721	2263	4804	7345	9886	2427
15	6884	9427	1970	4512	7054	9597	2139	4680	7222	9764	2305	4846	7387	9928	2469
16	6926	9469	2012	4554	7097	9639	2181	4723	7264	9806	2347	4889	7430	9971	2511
17	6969	9512	2054	4597	7139	9681	2223	4765	7307	9848	2390	4931	7472	0013	2554
18	7011	9554	2097	4639	7182	9724	2266	4808	7349	9891	2432	4973	7514	0055	2596
19	7054	9596	2139	4682	7224	9766	2308	4850	7392	9933	2474	5016	7557	0098	2638
20	7096	9639	2181	4724	7266	9808	2350	4892	7434	9975	2517	5058	7599	0140	2681
21	7138	9681	2224	4766	7309	9851	2393	4935	7476	0018	2559	5100	7641	0182	2723
22	7181	9724	2266	4809	7351	9893	2435	4977	7519	0060	2602	5143	7684	0225	2765
23	7223	9766	2309	4851	7393	9936	2478	5019	7561	0103	2644	5185	7726	0267	2808
24	7265	9808	2351	4893	7436	9978	2520	5062	7603	0145	2686	5227	7768	0309	2850
25	7308	9851	2393	4936	7478	0020	2562	5104	7646	0187	2729	5270	7811	0352	2892
26	7350	9893	2436	4978	7520	0063	2605	5146	7688	0230	2771	5312	7853	0394	2935
27	7393	9935	2478	5021	7563	0105	2647	5189	7730	0272	2813	5354	7895	0436	2977
28	7435	9978	2520	5063	7605	0147	2689	5231	7773	0314	2856	5397	7938	0479	3019
29	7477	0020	2563	5105	7648	0190	2732	5274	7815	0357	2898	5439	7980	0521	3062
30	7520	0063	2605	5148	7690	0232	2774	5316	7858	0399	2940	5482	8023	0563	3104
31	7562	0105	2648	5190	7732	0274	2816	5358	7900	0441	2983	5524	8065	0606	3146
32	7605	0147	2690	5232	7775	0317	2859	5401	7942	0484	3025	5566	8107	0648	3189
33	7647	0190	2732	5275	7817	0359	2901	5443	7985	0526	3067	5609	8150	0690	3231
34	7689	0232	2775	5317	7859	0402	2944	5485	8027	0568	3110	5651	8192	0733	3273
35	7732	0274	2817	5360	7902	0444	2986	5528	8069	0611	3152	5693	8234	0775	3316
36	7774	0317	2859	5402	7944	0486	3028	5570	8112	0653	3194	5736	8277	0817	3358
37	7816	0359	2902	5444	7987	0529	3071	5612	8154	0696	3237	5778	8319	0860	3400
38	7859	0402	2944	5487	8029	0571	3113	5655	8196	0738	3279	5820	8361	0902	3443
39	7901	0444	2987	5529	8071	0613	3155	5697	8239	0780	3322	5863	8404	0944	3485
40	7944	0486	3029	5571	8114	0656	3198	5740	8281	0823	3364	5905	8446	0987	3528
41	7986	0529	3071	5614	8156	0698	3240	5782	8323	0865	3406	5947	8488	1029	3570
42	8028	0571	3114	5656	8198	0741	3282	5824	8366	0907	3449	5990	8531	1072	3612
43	8071	0613	3156	5699	8241	0783	3325	5867	8408	0950	3491	6032	8573	1114	3655
44	8113	0656	3198	5741	8283	0825	3367	5909	8451	0992	3533	6074	8615	1156	3697
45	8155	0698	3241	5783	8326	0868	3410	5951	8493	1034	3576	6117	8658	1199	3739
46	8198	0741	3283	5826	8368	0910	3452	5994	8535	1077	3618	6159	8700	1241	3782
47	8240	0783	3326	5868	8410	0952	3494	6036	8578	1119	3660	6201	8742	1283	3824
48	8283	0825	3368	5910	8453	0995	3537	6078	8620	1161	3703	6244	8785	1326	3866
49	8325	0868	3410	5953	8495	1037	3579	6121	8662	1204	3745	6286	8827	1368	3909
50	8367	0910	3453	5995	8537	1079	3621	6163	8705	1246	3787	6329	8870	1410	3951
51	8410	0953	3495	6037	8580	1122	3664	6205	8747	1289	3830	6371	8912	1453	3993
52	8452	0995	3537	6080	8622	1164	3706	6248	8789	1331	3872	6413	8954	1495	4036
53	8495	1037	3580	6122	8664	1207	3748	6290	8832	1373	3914	6456	8997	1537	4078
54	8537	1080	3622	6165	8707	1249	3791	6333	8874	1416	3957	6498	9039	1580	4120
55	8579	1122	3665	6207	8749	1291	3833	6375	8917	1458	3999	6540	9081	1622	4163
56	8622	1164	3707	6249	8792	1334	3876	6417	8959	1500	4042	6583	9124	1664	4205
57	8664	1207	3749	6292	8834	1376	3918	6460	9001	1543	4084	6625	9166	1707	4247
58	8706	1249	3792	6334	8876	1418	3960	6502	9044	1585	4126	6667	9208	1749	4290
59	8749	1292	3834	6376	8919	1461	4003	6544	9086	1627	4169	6710	9251	1791	4332
60	8791	1334	3876	6419	8961	1503	4045	6587	9128	1670	4211	6752	9293	1834	4374
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
	10. 049	10. 049	10. 048	10. 048	10. 048	10. 048	10. 047	10. 047	10. 047	10. 047	10. 046	10. 046	10. 046	10. 046	10. 045	″
0	3752	1209	8666	6124	3581	1039	8497	5955	3413	0872	8330	5789	3248	0707	8166	60
1	3709	1166	8624	6081	3539	0997	8455	5913	3371	0829	8288	5747	3206	0665	8124	59
2	3667	1124	8581	6039	3496	0954	8412	5870	3329	0787	8246	5704	3163	0622	8082	58
3	3625	1082	8539	5996	3454	0912	8370	5828	3286	0745	8203	5662	3121	0580	8039	57
4	3582	1039	8497	5954	3412	0869	8327	5786	3244	0702	8161	5620	3079	0538	7997	56
5	3540	0997	8454	5912	3369	0827	8285	5743	3201	0660	8119	5577	3036	0495	7955	55
6	3497	0955	8412	5869	3327	0785	8243	5701	3159	0618	8076	5535	2994	0453	7912	54
7	3455	0912	8369	5827	3285	0742	8200	5658	3117	0575	8034	5493	2952	0411	7870	53
8	3413	0870	8327	5785	3242	0700	8158	5616	3074	0533	7991	5450	2909	0368	7827	52
9	3370	0827	8285	5742	3200	0658	8116	5574	3032	0490	7949	5408	2867	0326	7785	51
10	3328	0785	8242	5700	3157	0615	8073	5531	2990	0448	7907	5366	2824	0284	7743	50
11	3285	0743	8200	5657	3115	0573	8031	5489	2947	0406	7864	5323	2782	0241	7700	49
12	3243	0700	8158	5615	3073	0531	7988	5447	2905	0363	7822	5281	2740	0199	7658	48
13	3201	0658	8115	5573	3030	0488	7946	5404	2863	0321	7780	5238	2697	0157	7616	47
14	3158	0616	8073	5530	2988	0446	7904	5362	2820	0279	7737	5196	2655	0114	7573	46
15	3116	0573	8030	5488	2946	0403	7861	5320	2778	0236	7695	5154	2613	0072	7531	45
16	3074	0531	7988	5446	2903	0361	7819	5277	2736	0194	7653	5111	2570	0029	7489	44
17	3031	0488	7946	5403	2861	0319	7777	5235	2693	0152	7610	5069	2528	9987	7446	43
18	2989	0446	7903	5361	2818	0276	7734	5192	2651	0109	7568	5027	2486	9945	7404	42
19	2946	0404	7861	5318	2776	0234	7692	5150	2608	0067	7526	4984	2443	9902	7362	41
20	2904	0361	7819	5276	2734	0192	7650	5108	2566	0025	7483	4942	2401	9860	7319	40
21	2862	0319	7776	5234	2691	0149	7607	5065	2524	9982	7441	4900	2359	9818	7277	39
22	2819	0276	7734	5191	2649	0107	7565	5023	2481	9940	7398	4857	2316	9775	7235	38
23	2777	0234	7691	5149	2607	0064	7522	4981	2439	9897	7356	4815	2274	9733	7192	37
24	2735	0192	7649	5107	2564	0022	7480	4938	2397	9855	7314	4773	2232	9691	7150	36
25	2692	0149	7607	5064	2522	9980	7438	4896	2354	9813	7271	4730	2189	9648	7108	35
26	2650	0107	7564	5022	2480	9937	7395	4854	2312	9770	7229	4688	2147	9606	7065	34
27	2607	0065	7522	4979	2437	9895	7353	4811	2270	9728	7187	4646	2105	9564	7023	33
28	2565	0022	7480	4937	2395	9853	7311	4769	2227	9686	7144	4603	2062	9521	6981	32
29	2523	9980	7437	4895	2352	9810	7268	4726	2185	9643	7102	4561	2020	9479	6938	31
30	2480	9937	7395	4852	2310	9768	7226	4684	2142	9601	7060	4518	1977	9437	6896	30
31	2438	9895	7352	4810	2268	9726	7184	4642	2100	9559	7017	4476	1935	9394	6854	29
32	2395	9853	7310	4768	2225	9683	7141	4599	2058	9516	6975	4434	1893	9352	6811	28
33	2353	9810	7268	4725	2183	9641	7099	4557	2015	9474	6933	4391	1850	9310	6769	27
34	2311	9768	7225	4683	2141	9598	7056	4515	1973	9432	6890	4349	1808	9267	6727	26
35	2268	9726	7183	4640	2098	9556	7014	4472	1931	9389	6848	4307	1766	9225	6684	25
36	2226	9683	7141	4598	2056	9514	6972	4430	1888	9347	6806	4264	1723	9183	6642	24
37	2184	9641	7098	4556	2013	9471	6929	4388	1846	9304	6763	4222	1681	9140	6600	23
38	2141	9598	7056	4513	1971	9429	6887	4345	1804	9262	6721	4180	1639	9098	6557	22
39	2099	9556	7013	4471	1929	9387	6845	4303	1761	9220	6678	4137	1596	9056	6515	21
40	2056	9514	6971	4429	1886	9344	6802	4260	1719	9177	6636	4095	1554	9013	6472	20
41	2014	9471	6929	4386	1844	9302	6760	4218	1677	9135	6594	4053	1512	8971	6430	19
42	1972	9429	6886	4344	1802	9259	6718	4176	1634	9093	6551	4010	1469	8928	6388	18
43	1929	9387	6844	4301	1759	9217	6675	4133	1592	9050	6509	3968	1427	8886	6345	17
44	1887	9344	6802	4259	1717	9175	6633	4091	1549	9008	6467	3926	1385	8844	6303	16
45	1845	9302	6759	4217	1674	9132	6590	4049	1507	8966	6424	3883	1342	8801	6261	15
46	1802	9259	6717	4174	1632	9090	6548	4006	1465	8923	6382	3841	1300	8759	6218	14
47	1760	9217	6674	4132	1590	9048	6506	3964	1422	8881	6340	3799	1258	8717	6176	13
48	1717	9175	6632	4090	1547	9005	6463	3922	1380	8839	6297	3756	1215	8674	6134	12
49	1675	9132	6590	4047	1505	8963	6421	3879	1338	8796	6255	3714	1173	8632	6091	11
50	1633	9090	6547	4005	1463	8921	6379	3837	1295	8754	6213	3671	1130	8590	6049	10
51	1590	9047	6505	3963	1420	8878	6336	3795	1253	8711	6170	3629	1088	8547	6007	9
52	1548	9005	6463	3920	1378	8836	6294	3752	1211	8669	6128	3587	1046	8505	5964	8
53	1505	8963	6420	3878	1336	8793	6252	3710	1168	8627	6086	3544	1003	8463	5922	7
54	1463	8920	6378	3835	1293	8751	6209	3667	1126	8584	6043	3502	0961	8420	5880	6
55	1421	8878	6335	3793	1251	8709	6167	3625	1083	8542	6001	3460	0919	8378	5837	5
56	1378	8836	6293	3751	1208	8666	6124	3583	1041	8500	5958	3417	0876	8336	5795	4
57	1336	8793	6251	3708	1166	8624	6082	3540	0999	8457	5916	3375	0834	8293	5753	3
58	1294	8751	6208	3666	1124	8582	6040	3498	0956	8415	5874	3333	0792	8251	5710	2
59	1251	8708	6166	3624	1081	8539	5997	3456	0914	8373	5831	3290	0749	8209	5668	1
60	1209	8666	6124	3581	1039	8497	5955	3413	0872	8330	5789	3248	0707	8166	5626	0
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.825	9.825	9.825	9.825	9.826	9.826	9.826	9.826	9.826	9.826	9.826	9.827	9.827	9.827	9.827
0	5109	6512	7913	9314	0715	2114	3512	4910	6307	7703	9098	0493	1887	3279	4671
1	5132	6535	7937	9338	0738	2137	3536	4934	6330	7726	9122	0516	1910	3303	4695
2	5156	6558	7960	9361	0761	2161	3559	4957	6354	7750	9145	0539	1933	3326	4718
3	5179	6582	7983	9384	0785	2184	3582	4980	6377	7773	9168	0563	1956	3349	4741
4	5202	6605	8007	9408	0808	2207	3606	5003	6400	7796	9191	0586	1979	3372	4764
5	5226	6628	8030	9431	0831	2231	3629	5027	6424	7820	9215	0609	2003	3395	4787
6	5249	6652	8054	9454	0855	2254	3652	5050	6447	7843	9238	0632	2026	3419	4811
7	5273	6675	8077	9478	0878	2277	3676	5073	6470	7866	9261	0656	2049	3442	4834
8	5296	6699	8100	9501	0901	2300	3699	5097	6493	7889	9284	0679	2072	3465	4857
9	5319	6722	8124	9524	0925	2324	3722	5120	6517	7913	9308	0702	2096	3488	4880
10	5343	6745	8147	9548	0948	2347	3746	5143	6540	7936	9331	0725	2119	3511	4903
11	5366	6769	8170	9571	0971	2370	3769	5166	6563	7959	9354	0749	2142	3535	4927
12	5390	6792	8194	9595	0995	2394	3792	5190	6586	7982	9377	0772	2165	3558	4950
13	5413	6815	8217	9618	1018	2417	3815	5213	6610	8006	9401	0795	2188	3581	4973
14	5436	6839	8240	9641	1041	2440	3839	5236	6633	8029	9424	0818	2212	3604	4996
15	5460	6862	8264	9665	1065	2464	3862	5260	6656	8052	9447	0841	2235	3628	5019
16	5483	6885	8287	9688	1088	2487	3885	5283	6680	8075	9470	0865	2258	3651	5043
17	5506	6909	8310	9711	1111	2510	3909	5306	6703	8099	9494	0888	2281	3674	5066
18	5530	6932	8334	9735	1134	2534	3932	5329	6726	8122	9517	0911	2305	3697	5089
19	5553	6956	8357	9758	1158	2557	3955	5353	6749	8145	9540	0934	2328	3720	5112
20	5577	6979	8381	9781	1181	2580	3978	5376	6773	8168	9563	0958	2351	3744	5135
21	5600	7002	8404	9805	1204	2604	4002	5399	6796	8192	9587	0981	2374	3767	5158
22	5623	7026	8427	9828	1228	2627	4025	5423	6819	8215	9610	1004	2397	3790	5182
23	5647	7049	8451	9851	1251	2650	4048	5446	6842	8238	9633	1027	2421	3813	5205
24	5670	7072	8474	9875	1274	2673	4072	5469	6866	8261	9656	1051	2444	3836	5228
25	5693	7096	8497	9898	1298	2697	4095	5492	6889	8285	9680	1074	2467	3860	5251
26	5717	7119	8521	9921	1321	2720	4118	5516	6912	8308	9703	1097	2490	3883	5274
27	5740	7143	8544	9945	1344	2743	4142	5539	6935	8331	9726	1120	2513	3906	5298
28	5764	7166	8567	9968	1368	2767	4165	5562	6959	8354	9749	1143	2537	3929	5321
29	5787	7189	8591	9991	1391	2790	4188	5585	6982	8378	9773	1167	2560	3952	5344
30	5810	7213	8614	0015	1414	2813	4211	5609	7005	8401	9796	1190	2583	3976	5367
31	5834	7236	8637	0038	1438	2837	4235	5632	7029	8424	9819	1213	2606	3999	5390
32	5857	7259	8661	0061	1461	2860	4258	5655	7052	8447	9842	1236	2630	4022	5414
33	5881	7283	8684	0085	1484	2883	4281	5679	7075	8471	9866	1260	2653	4045	5437
34	5904	7306	8707	0108	1508	2907	4305	5702	7098	8494	9889	1283	2676	4068	5460
35	5927	7329	8731	0131	1531	2930	4328	5725	7122	8517	9912	1306	2699	4092	5483
36	5951	7353	8754	0155	1554	2953	4351	5748	7145	8540	9935	1329	2722	4115	5506
37	5974	7376	8777	0178	1578	2976	4375	5772	7168	8564	9959	1352	2746	4138	5529
38	5997	7400	8801	0201	1601	3000	4398	5795	7191	8587	9982	1376	2769	4161	5553
39	6021	7423	8824	0225	1624	3023	4421	5818	7215	8610	0005	1399	2792	4184	5576
40	6044	7446	8848	0248	1648	3046	4444	5842	7238	8633	0028	1422	2815	4208	5599
41	6068	7470	8871	0271	1671	3070	4468	5865	7261	8657	0051	1445	2838	4231	5622
42	6091	7493	8894	0295	1694	3093	4491	5888	7284	8680	0075	1469	2862	4254	5645
43	6114	7516	8918	0318	1718	3116	4514	5911	7308	8703	0098	1492	2885	4277	5669
44	6138	7540	8941	0341	1741	3140	4538	5935	7331	8727	0121	1515	2908	4300	5692
45	6161	7563	8964	0365	1764	3163	4561	5958	7354	8750	0144	1538	2931	4324	5715
46	6184	7586	8988	0388	1788	3186	4584	5981	7378	8773	0168	1561	2955	4347	5738
47	6208	7610	9011	0411	1811	3210	4607	6005	7401	8796	0191	1585	2978	4370	5761
48	6231	7633	9034	0435	1834	3233	4631	6028	7424	8820	0214	1608	3001	4393	5784
49	6255	7656	9058	0458	1857	3256	4654	6051	7447	8843	0237	1631	3024	4416	5808
50	6278	7680	9081	0481	1881	3279	4677	6074	7471	8866	0261	1654	3047	4440	5831
51	6301	7703	9104	0505	1904	3303	4701	6098	7494	8889	0284	1678	3071	4463	5854
52	6325	7727	9128	0528	1927	3326	4724	6121	7517	8913	0307	1701	3094	4486	5877
53	6348	7750	9151	0551	1951	3349	4747	6144	7540	8936	0330	1724	3117	4509	5900
54	6371	7773	9174	0575	1974	3373	4770	6167	7564	8959	0354	1747	3140	4532	5924
55	6395	7797	9198	0598	1997	3396	4794	6191	7587	8982	0377	1770	3163	4555	5947
56	6418	7820	9221	0621	2021	3419	4817	6214	7610	9006	0400	1794	3187	4579	5970
57	6441	7843	9244	0645	2044	3443	4840	6237	7633	9029	0423	1817	3210	4602	5993
58	6465	7867	9268	0668	2067	3466	4864	6261	7657	9052	0446	1840	3233	4625	6016
59	6488	7890	9291	0691	2091	3489	4887	6284	7680	9075	0470	1863	3256	4648	6039
60	6512	7913	9314	0715	2114	3512	4910	6307	7703	9098	0493	1887	3279	4671	6063
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
9.871	9.870	9.870	9.870	9.870	9.870	9.870	9.870	9.870	9.870	9.869	9.869	9.869	9.869	9.869	″
0735	9597	8458	7319	6179	5039	3898	2756	1613	0470	9326	8182	7037	5891	4744	60
0716	9578	8439	7300	6160	5020	3879	2737	1594	0451	9307	8163	7018	5872	4725	59
0697	9559	8420	7281	6141	5001	3860	2718	1575	0432	9288	8144	6998	5853	4706	58
0678	9540	8401	7262	6122	4982	3841	2699	1556	0413	9269	8125	6979	5834	4687	57
0659	9521	8382	7243	6103	4963	3822	2680	1537	0394	9250	8106	6960	5814	4668	56
0640	9502	8363	7224	6084	4944	3803	2661	1518	0375	9231	8086	6941	5795	4649	55
0621	9483	8344	7205	6065	4925	3783	2642	1499	0356	9212	8067	6922	5776	4630	54
0602	9464	8325	7186	6046	4906	3764	2623	1480	0337	9193	8048	6903	5757	4611	53
0583	9445	8306	7167	6027	4887	3745	2604	1461	0318	9174	8029	6884	5738	4591	52
0564	9426	8287	7148	6008	4868	3726	2584	1442	0299	9155	8010	6865	5719	4572	51
0545	9407	8268	7129	5989	4849	3707	2565	1423	0280	9136	7991	6846	5700	4553	50
0526	9388	8249	7110	5970	4830	3688	2546	1404	0261	9117	7972	6827	5681	4534	49
0507	9369	8230	7091	5951	4811	3669	2527	1385	0241	9097	7953	6808	5662	4515	48
0488	9350	8212	7072	5932	4792	3650	2508	1366	0222	9078	7934	6788	5642	4496	47
0469	9331	8193	7053	5913	4773	3631	2489	1347	0203	9059	7915	6769	5623	4477	46
0450	9312	8174	7034	5894	4754	3612	2470	1328	0184	9040	7896	6750	5604	4458	45
0431	9293	8155	7015	5875	4735	3593	2451	1309	0165	9021	7877	6731	5585	4438	44
0412	9274	8136	6996	5856	4716	3574	2432	1290	0146	9002	7857	6712	5566	4419	43
0393	9255	8117	6977	5837	4697	3555	2413	1270	0127	8983	7838	6693	5547	4400	42
0374	9236	8098	6958	5818	4678	3536	2394	1251	0108	8964	7819	6674	5528	4381	41
0355	9217	8079	6939	5799	4658	3517	2375	1232	0089	8945	7800	6655	5509	4362	40
0336	9198	8060	6920	5780	4639	3498	2356	1213	0070	8926	7781	6636	5490	4343	39
0317	9179	8041	6901	5761	4620	3479	2337	1194	0051	8907	7762	6617	5471	4324	38
0298	9160	8022	6882	5742	4601	3460	2318	1175	0032	8888	7743	6598	5451	4305	37
0280	9141	8003	6863	5723	4582	3441	2299	1156	0013	8869	7724	6578	5432	4286	36
0261	9122	7984	6844	5704	4563	3422	2280	1137	9994	8850	7705	6559	5413	4266	35
0242	9103	7965	6825	5685	4544	3403	2261	1118	9975	8830	7686	6540	5394	4247	34
0223	9085	7946	6806	5666	4525	3384	2242	1099	9956	8811	7667	6521	5375	4228	33
0204	9066	7927	6787	5647	4506	3365	2223	1080	9936	8792	7648	6502	5356	4209	32
0185	9047	7908	6768	5628	4487	3346	2204	1061	9917	8773	7628	6483	5337	4190	31
0166	9028	7889	6749	5609	4468	3327	2185	1042	9898	8754	7609	6464	5318	4171	30
0147	9009	7870	6730	5590	4449	3308	2166	1023	9879	8735	7590	6445	5299	4152	29
0128	8990	7851	6711	5571	4430	3289	2147	1004	9860	8716	7571	6426	5279	4133	28
0109	8971	7832	6692	5552	4411	3270	2128	0985	9841	8697	7552	6407	5260	4113	27
0090	8952	7813	6673	5533	4392	3251	2108	0966	9822	8678	7533	6387	5241	4094	26
0071	8933	7794	6654	5514	4373	3232	2089	0947	9803	8659	7514	6368	5222	4075	25
0052	8914	7775	6635	5495	4354	3213	2070	0928	9784	8640	7495	6349	5203	4056	24
0033	8895	7756	6616	5476	4335	3194	2051	0908	9765	8621	7476	6330	5184	4037	23
0014	8876	7737	6597	5457	4316	3175	2032	0889	9746	8602	7457	6311	5165	4018	22
9995	8857	7718	6578	5438	4297	3156	2013	0870	9727	8583	7438	6292	5146	3999	21
9976	8838	7699	6559	5419	4278	3137	1994	0851	9708	8563	7418	6273	5127	3980	20
9957	8819	7680	6540	5400	4259	3117	1975	0832	9689	8544	7399	6254	5107	3961	19
9938	8800	7661	6521	5381	4240	3098	1956	0813	9670	8525	7380	6235	5088	3941	18
9919	8781	7642	6502	5362	4221	3079	1937	0794	9650	8506	7361	6216	5069	3922	17
9900	8762	7623	6483	5343	4202	3060	1918	0775	9631	8487	7342	6196	5050	3903	16
9881	8743	7604	6464	5324	4183	3041	1899	0756	9612	8468	7323	6177	5031	3884	15
9862	8724	7585	6445	5305	4164	3022	1880	0737	9593	8449	7304	6158	5012	3865	14
9843	8705	7566	6426	5286	4145	3003	1861	0718	9574	8430	7285	6139	4993	3846	13
9824	8686	7547	6407	5267	4126	2984	1842	0699	9555	8411	7266	6120	4974	3827	12
9805	8667	7528	6388	5248	4107	2965	1823	0680	9536	8392	7247	6101	4955	3808	11
9786	8648	7509	6369	5229	4088	2946	1804	0661	9517	8373	7228	6082	4935	3788	10
9767	8629	7490	6350	5210	4069	2927	1785	0642	9498	8354	7209	6063	4916	3769	9
9749	8610	7471	6331	5191	4050	2908	1766	0623	9479	8334	7189	6044	4897	3750	8
9730	8591	7452	6312	5172	4031	2889	1747	0604	9460	8315	7170	6025	4878	3731	7
9711	8572	7433	6293	5153	4012	2870	1728	0585	9441	8296	7151	6005	4859	3712	6
9692	8553	7414	6274	5134	3993	2851	1709	0565	9422	8277	7132	5986	4840	3693	5
9673	8534	7395	6255	5115	3974	2832	1690	0546	9403	8258	7113	5967	4821	3674	4
9654	8515	7376	6236	5096	3955	2813	1670	0527	9384	8239	7094	5948	4802	3655	3
9635	8496	7357	6217	5077	3936	2794	1651	0508	9364	8220	7075	5929	4783	3635	2
9616	8477	7338	6198	5058	3917	2775	1632	0489	9345	8201	7056	5910	4763	3616	1
9597	8458	7319	6179	5039	3898	2756	1613	0470	9326	8182	7037	5891	4744	3597	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9. 954	9. 954	9. 954	9. 955	9. 955	9. 955	9. 955	9. 956	9. 956	9. 956	9. 956	9. 957	9. 957	9. 957	9. 957
0	4374	6915	9455	1995	4535	7075	9615	2154	4694	7233	9772	2311	4850	7389	9927
1	4417	6957	9497	2038	4578	7117	9657	2197	4736	7275	9814	2353	4892	7431	9969
2	4459	7000	9540	2080	4620	7160	9700	2239	4778	7318	9857	2396	4935	7473	0012
3	4501	7042	9582	2122	4662	7202	9742	2281	4821	7360	9899	2438	4977	7516	0054
4	4544	7084	9624	2165	4705	7244	9784	2324	4863	7402	9941	2480	5019	7558	0096
5	4586	7127	9667	2207	4747	7287	9826	2366	4905	7445	9984	2523	5061	7600	0139
6	4628	7169	9709	2249	4789	7329	9869	2408	4948	7487	0026	2565	5104	7642	0181
7	4671	7211	9752	2292	4832	7371	9911	2451	4990	7529	0068	2607	5146	7685	0223
8	4713	7254	9794	2334	4874	7414	9953	2493	5032	7572	0111	2650	5188	7727	0266
9	4755	7296	9836	2376	4916	7456	9996	2535	5075	7614	0153	2692	5231	7769	0308
10	4798	7338	9879	2419	4959	7498	0038	2578	5117	7656	0195	2734	5273	7812	0350
11	4840	7381	9921	2461	5001	7541	0080	2620	5159	7699	0238	2777	5315	7854	0392
12	4882	7423	9963	2503	5043	7583	0123	2662	5202	7741	0280	2819	5358	7896	0435
13	4925	7465	0006	2546	5086	7625	0165	2705	5244	7783	0322	2861	5400	7939	0477
14	4967	7508	0048	2588	5128	7668	0207	2747	5286	7826	0365	2904	5442	7981	0519
15	5010	7550	0090	2630	5170	7710	0250	2789	5329	7868	0407	2946	5485	8023	0562
16	5052	7592	0133	2673	5213	7752	0292	2832	5371	7910	0449	2988	5527	8066	0604
17	5094	7635	0175	2715	5255	7795	0334	2874	5413	7952	0492	3030	5569	8108	0646
18	5137	7677	0217	2757	5297	7837	0377	2916	5456	7995	0534	3073	5612	8150	0689
19	5179	7719	0260	2800	5340	7879	0419	2959	5498	8037	0576	3115	5654	8192	0731
20	5221	7762	0302	2842	5382	7922	0461	3001	5540	8079	0618	3157	5696	8235	0773
21	5264	7804	0344	2884	5424	7964	0504	3043	5583	8122	0661	3200	5738	8277	0816
22	5306	7846	0387	2927	5467	8006	0546	3086	5625	8164	0703	3242	5781	8319	0858
23	5348	7889	0429	2969	5509	8049	0588	3128	5667	8206	0745	3284	5823	8362	0900
24	5391	7931	0471	3011	5551	8091	0631	3170	5710	8249	0788	3327	5865	8404	0942
25	5433	7973	0514	3054	5594	8133	0673	3212	5752	8291	0830	3369	5908	8446	0985
26	5475	8016	0556	3096	5636	8176	0715	3255	5794	8333	0872	3411	5950	8489	1027
27	5518	8058	0598	3138	5678	8218	0758	3297	5836	8376	0915	3454	5992	8531	1069
28	5560	8100	0641	3181	5721	8260	0800	3339	5879	8418	0957	3496	6035	8573	1112
29	5602	8143	0683	3223	5763	8303	0842	3382	5921	8460	0999	3538	6077	8616	1154
30	5645	8185	0725	3265	5805	8345	0885	3424	5963	8503	1042	3581	6119	8658	1196
31	5687	8227	0768	3308	5848	8387	0927	3466	6006	8545	1084	3623	6162	8700	1239
32	5729	8270	0810	3350	5890	8430	0969	3509	6048	8587	1126	3665	6204	8742	1281
33	5772	8312	0852	3392	5932	8472	1012	3551	6090	8630	1169	3707	6246	8785	1323
34	5814	8354	0895	3435	5975	8514	1054	3593	6133	8672	1211	3750	6289	8827	1366
35	5856	8397	0937	3477	6017	8557	1096	3636	6175	8714	1253	3792	6331	8869	1408
36	5899	8439	0979	3519	6059	8599	1139	3678	6217	8757	1296	3834	6373	8912	1450
37	5941	8481	1022	3562	6102	8641	1181	3720	6260	8799	1338	3877	6415	8954	1492
38	5983	8524	1064	3604	6144	8684	1223	3763	6302	8841	1380	3919	6458	8996	1535
39	6026	8566	1106	3646	6186	8726	1266	3805	6344	8883	1422	3961	6500	9039	1577
40	6068	8608	1149	3689	6229	8768	1308	3847	6387	8926	1465	4004	6542	9081	1619
41	6110	8651	1191	3731	6271	8811	1350	3890	6429	8968	1507	4046	6585	9123	1662
42	6153	8693	1233	3773	6313	8853	1393	3932	6471	9010	1549	4088	6627	9166	1704
43	6195	8735	1276	3816	6356	8895	1435	3974	6514	9053	1592	4131	6669	9208	1746
44	6237	8778	1318	3858	6398	8938	1477	4017	6556	9095	1634	4173	6712	9250	1789
45	6280	8820	1360	3900	6440	8980	1520	4059	6598	9137	1676	4215	6754	9292	1831
46	6322	8862	1403	3943	6483	9022	1562	4101	6641	9180	1719	4258	6796	9335	1873
47	6364	8905	1445	3985	6525	9065	1604	4144	6683	9222	1761	4300	6839	9377	1916
48	6407	8947	1487	4027	6567	9107	1647	4186	6725	9264	1803	4342	6881	9419	1958
49	6449	8989	1530	4070	6610	9149	1689	4228	6768	9307	1846	4384	6923	9462	2000
50	6491	9032	1572	4112	6652	9192	1731	4271	6810	9349	1888	4427	6965	9504	2042
51	6534	9074	1614	4154	6694	9234	1773	4313	6852	9391	1930	4469	7008	9546	2085
52	6576	9116	1657	4197	6737	9276	1816	4355	6894	9434	1973	4511	7050	9589	2127
53	6618	9159	1699	4239	6779	9319	1858	4398	6937	9476	2015	4554	7092	9631	2169
54	6661	9201	1741	4281	6821	9361	1900	4440	6979	9518	2057	4596	7135	9673	2212
55	6703	9243	1784	4324	6863	9403	1943	4482	7021	9561	2100	4638	7177	9716	2254
56	6745	9286	1826	4366	6906	9446	1985	4525	7064	9603	2142	4681	7219	9758	2296
57	6788	9328	1868	4408	6948	9488	2027	4567	7106	9645	2184	4723	7262	9800	2339
58	6830	9370	1911	4451	6990	9530	2070	4609	7148	9688	2226	4765	7304	9842	2381
59	6872	9413	1953	4493	7033	9573	2112	4651	7191	9730	2269	4808	7346	9885	2423
60	6915	9455	1995	4535	7075	9615	2154	4694	7233	9772	2311	4850	7389	9927	2465
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
	10. 045	10. 045	10. 045	10. 044	10 044	10. 044	10. 044	10. 043	10. 043	10. 043	10. 043	10. 042	10. 042	10. 042	10. 042
″	5626	3085	0545	8005	5465	2925	0385	7846	5306	2767	0228	7689	5150	2611	0073
60	5583	3043	0503	7962	5422	2883	0343	7803	5264	2725	0186	7647	5108	2569	0031
59	5541	3000	0460	7920	5380	2840	0300	7761	5222	2682	0143	7604	5065	2527	9988
58	5499	2958	0418	7878	5338	2798	0258	7719	5179	2640	0101	7562	5023	2484	9946
57	5456	2916	0376	7835	5295	2756	0216	7676	5137	2598	0059	7520	4981	2442	9904
56	5414	2873	0333	7793	5253	2713	0174	7634	5095	2555	0016	7477	4939	2400	9861
55	5372	2831	0291	7751	5211	2671	0131	7592	5052	2513	9974	7435	4896	2358	9819
54	5329	2789	0248	7708	5168	2629	0089	7549	5010	2471	9932	7393	4854	2315	9777
53	5287	2746	0206	7666	5126	2586	0047	7507	4968	2428	9889	7350	4812	2273	9734
52	5245	2704	0164	7624	5084	2544	0004	7465	4925	2386	9847	7308	4769	2231	9692
51	5202	2662	0121	7581	5041	2502	9962	7422	4883	2344	9805	7266	4727	2188	9650
50	5160	2619	0079	7539	4999	2459	9920	7380	4841	2301	9762	7223	4685	2146	9608
49	5118	2577	0037	7497	4957	2417	9877	7338	4798	2259	9720	7181	4642	2104	9565
48	5075	2535	9994	7454	4914	2375	9835	7295	4756	2217	9678	7139	4600	2061	9523
47	5033	2492	9952	7412	4872	2332	9793	7253	4714	2174	9635	7096	4558	2019	9481
46	4990	2450	9910	7370	4830	2290	9750	7211	4671	2132	9593	7054	4515	1977	9438
45	4948	2408	9867	7327	4787	2248	9708	7168	4629	2090	9551	7012	4473	1934	9396
44	4906	2365	9825	7285	4745	2205	9666	7126	4587	2048	9508	6970	4431	1892	9354
43	4863	2323	9783	7243	4703	2163	9623	7084	4544	2005	9466	6927	4388	1850	9311
42	4821	2281	9740	7200	4660	2121	9581	7041	4502	1963	9424	6885	4346	1808	9269
41	4779	2238	9698	7158	4618	2078	9539	6999	4460	1921	9382	6843	4304	1765	9227
40	4736	2196	9656	7116	4576	2036	9496	6957	4417	1878	9339	6800	4262	1723	9184
39	4694	2154	9613	7073	4533	1994	9454	6914	4375	1836	9297	6758	4219	1681	9142
38	4652	2111	9571	7031	4491	1951	9412	6872	4333	1794	9255	6716	4177	1638	9100
37	4609	2069	9529	6989	4449	1909	9369	6830	4290	1751	9212	6673	4135	1596	9058
36	4567	2027	9486	6946	4406	1867	9327	6788	4248	1709	9170	6631	4092	1554	9015
35	4525	1984	9444	6904	4364	1824	9285	6745	4206	1667	9128	6589	4050	1511	8973
34	4482	1942	9402	6862	4322	1782	9242	6703	4164	1624	9085	6546	4008	1469	8931
33	4440	1900	9359	6819	4279	1740	9200	6661	4121	1582	9043	6504	3965	1427	8888
32	4398	1857	9317	6777	4237	1697	9158	6618	4079	1540	9001	6462	3923	1384	8846
31	4355	1815	9275	6735	4195	1655	9115	6576	4037	1497	8958	6419	3881	1342	8804
30	4313	1773	9232	6692	4152	1613	9073	6534	3994	1455	8916	6377	3838	1300	8761
29	4271	1730	9190	6650	4110	1570	9031	6491	3952	1413	8874	6335	3796	1258	8719
28	4228	1688	9148	6608	4068	1528	8988	6449	3910	1370	8831	6293	3754	1215	8677
27	4186	1646	9105	6565	4025	1486	8946	6407	3867	1328	8789	6250	3711	1173	8634
26	4144	1603	9063	6523	3983	1443	8904	6364	3825	1286	8747	6208	3669	1131	8592
25	4101	1561	9021	6481	3941	1401	8861	6322	3783	1243	8704	6166	3627	1088	8550
24	4059	1519	8978	6438	3898	1359	8819	6280	3740	1201	8662	6123	3585	1046	8508
23	4017	1476	8936	6396	3856	1316	8777	6237	3698	1159	8620	6081	3542	1004	8465
22	3974	1434	8894	6354	3814	1274	8734	6195	3656	1117	8578	6039	3500	0961	8423
21	3932	1392	8851	6311	3771	1232	8692	6153	3613	1074	8535	5996	3458	0919	8381
20	3890	1349	8809	6269	3729	1189	8650	6110	3571	1032	8493	5954	3415	0877	8338
19	3847	1307	8767	6227	3687	1147	8607	6068	3529	0990	8451	5912	3373	0834	8296
18	3805	1265	8724	6184	3644	1105	8565	6026	3486	0947	8408	5869	3331	0792	8254
17	3763	1222	8682	6142	3602	1062	8523	5983	3444	0905	8366	5827	3288	0750	8211
16	3720	1180	8640	6100	3560	1020	8480	5941	3402	0863	8324	5785	3246	0708	8169
15	3678	1138	8597	6057	3517	0978	8438	5899	3359	0820	8281	5742	3204	0665	8127
14	3636	1095	8555	6015	3475	0935	8396	5856	3317	0778	8239	5700	3161	0623	8084
13	3593	1053	8513	5973	3433	0893	8353	5814	3275	0736	8197	5658	3119	0581	8042
12	3551	1011	8470	5930	3390	0851	8311	5772	3232	0693	8154	5616	3077	0538	8000
11	3509	0968	8428	5888	3348	0808	8269	5729	3190	0651	8112	5573	3035	0496	7958
10	3466	0926	8386	5846	3306	0766	8227	5687	3148	0609	8070	5531	2992	0454	7915
9	3424	0884	8343	5803	3263	0724	8184	5645	3106	0566	8027	5488	2950	0411	7873
8	3382	0841	8301	5761	3221	0681	8142	5602	3063	0524	7985	5446	2908	0369	7831
7	3339	0799	8259	5719	3179	0639	8100	5560	3021	0482	7943	5404	2865	0327	7788
6	3297	0757	8216	5676	3137	0597	8057	5518	2979	0439	7900	5362	2823	0284	7746
5	3255	0714	8174	5634	3094	0554	8015	5475	2936	0397	7858	5319	2781	0242	7704
4	3212	0672	8132	5592	3052	0512	7973	5433	2894	0355	7816	5277	2738	0200	7661
3	3170	0630	8089	5549	3010	0470	7930	5391	2852	0312	7774	5235	2696	0158	7619
2	3128	0587	8047	5507	2967	0427	7888	5349	2809	0270	7731	5192	2654	0115	7577
1	3085	0545	8005	5465	2925	0385	7846	5306	2767	0228	7689	5150	2611	0073	7535
0	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′
″															

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9.827	9.827	9.827	9.828	9.828	9.828	9.828	9.828	9.828	9.828	9.828	9.829	9.829	9.829	9.829
0	6063	7453	8843	0231	1619	3006	4393	5778	7163	8547	9930	1312	2694	4075	5454
1	6086	7476	8866	0255	1642	3030	4416	5801	7186	8570	9953	1335	2717	4098	5477
2	6109	7499	8889	0278	1666	3053	4439	5825	7209	8593	9976	1358	2740	4121	5500
3	6132	7523	8912	0301	1689	3076	4462	5848	7232	8616	9999	1381	2763	4144	5523
4	6155	7546	8935	0324	1712	3099	4485	5871	7255	8639	0022	1404	2786	4167	5546
5	6179	7569	8958	0347	1735	3122	4508	5894	7278	8662	0045	1428	2809	4190	5569
6	6202	7592	8982	0370	1758	3145	4531	5917	7301	8685	0068	1451	2832	4213	5592
7	6225	7615	9005	0393	1781	3168	4555	5940	7325	8708	0091	1474	2855	4236	5615
8	6248	7638	9028	0417	1804	3191	4578	5963	7348	8731	0114	1497	2878	4259	5638
9	6271	7662	9051	0440	1827	3214	4601	5986	7371	8754	0137	1520	2901	4282	5661
10	6294	7685	9074	0463	1851	3238	4624	6009	7394	8778	0161	1543	2924	4305	5684
11	6318	7708	9097	0486	1874	3261	4647	6032	7417	8801	0184	1566	2947	4328	5707
12	6341	7731	9120	0509	1897	3284	4670	6055	7440	8824	0207	1589	2970	4351	5730
13	6364	7754	9144	0532	1920	3307	4693	6078	7463	8847	0230	1612	2993	4374	5753
14	6387	7777	9167	0555	1943	3330	4716	6102	7486	8870	0253	1635	3016	4397	5776
15	6410	7801	9190	0578	1966	3353	4739	6125	7509	8893	0276	1658	3039	4420	5799
16	6434	7824	9213	0602	1989	3376	4762	6148	7532	8916	0299	1681	3062	4443	5822
17	6457	7847	9236	0625	2012	3399	4785	6171	7555	8939	0322	1704	3085	4466	5845
18	6480	7870	9259	0648	2036	3422	4809	6194	7578	8962	0345	1727	3108	4489	5868
19	6503	7893	9282	0671	2059	3446	4832	6217	7601	8985	0368	1750	3131	4512	5891
20	6526	7916	9306	0694	2082	3469	4855	6240	7624	9008	0391	1773	3154	4535	5914
21	6549	7939	9329	0717	2105	3492	4878	6263	7648	9031	0414	1796	3177	4558	5937
22	6573	7963	9352	0740	2128	3515	4901	6286	7671	9054	0437	1819	3200	4581	5960
23	6596	7986	9375	0764	2151	3538	4924	6309	7694	9077	0460	1842	3223	4604	5983
24	6619	8009	9398	0787	2174	3561	4947	6332	7717	9100	0483	1865	3246	4627	6006
25	6642	8032	9421	0810	2197	3584	4970	6355	7740	9123	0506	1888	3269	4650	6029
26	6665	8055	9445	0833	2221	3607	4993	6378	7763	9146	0529	1911	3292	4673	6052
27	6688	8078	9468	0856	2244	3630	5016	6402	7786	9169	0552	1934	3315	4696	6075
28	6712	8102	9491	0879	2267	3654	5040	6425	7809	9193	0575	1957	3338	4719	6098
29	6735	8125	9514	0902	2290	3677	5063	6448	7832	9216	0598	1980	3361	4742	6121
30	6758	8148	9537	0925	2313	3700	5086	6471	7855	9239	0621	2003	3384	4765	6144
31	6781	8171	9560	0949	2336	3723	5109	6494	7878	9262	0644	2026	3407	4788	6167
32	6804	8194	9583	0972	2359	3746	5132	6517	7901	9285	0667	2049	3430	4811	6190
33	6827	8217	9607	0995	2382	3769	5155	6540	7924	9308	0690	2072	3453	4834	6213
34	6851	8241	9630	1018	2405	3792	5178	6563	7947	9331	0713	2095	3476	4857	6236
35	6874	8264	9653	1041	2429	3815	5201	6586	7970	9354	0737	2118	3499	4880	6259
36	6897	8287	9676	1064	2452	3838	5224	6609	7994	9377	0760	2141	3522	4903	6282
37	6920	8310	9699	1087	2475	3861	5247	6632	8017	9400	0783	2164	3545	4926	6305
38	6943	8333	9722	1111	2498	3885	5270	6655	8040	9423	0806	2187	3568	4949	6328
39	6967	8356	9745	1134	2521	3908	5294	6679	8063	9446	0829	2210	3591	4972	6351
40	6990	8380	9769	1157	2544	3931	5317	6702	8086	9469	0852	2233	3614	4995	6374
41	7013	8403	9792	1180	2567	3954	5340	6725	8109	9492	0875	2256	3637	5018	6397
42	7036	8426	9815	1203	2590	3977	5363	6748	8132	9515	0898	2279	3660	5041	6420
43	7059	8449	9838	1226	2614	4000	5386	6771	8155	9538	0921	2303	3683	5064	6443
44	7082	8472	9861	1249	2637	4023	5409	6794	8178	9561	0944	2326	3706	5087	6466
45	7106	8495	9884	1272	2660	4046	5432	6817	8201	9584	0967	2349	3729	5110	6489
46	7129	8518	9907	1296	2683	4069	5455	6840	8224	9607	0990	2372	3752	5132	6512
47	7152	8542	9931	1319	2706	4093	5478	6863	8247	9630	1013	2395	3775	5155	6535
48	7175	8565	9954	1342	2729	4116	5501	6886	8270	9654	1036	2418	3798	5178	6558
49	7198	8588	9977	1365	2752	4139	5524	6909	8293	9677	1059	2441	3821	5201	6581
50	7221	8611	0000	1388	2775	4162	5547	6932	8316	9700	1082	2464	3844	5224	6604
51	7245	8634	0023	1411	2798	4185	5571	6955	8339	9723	1105	2487	3867	5247	6627
52	7268	8657	0046	1434	2822	4208	5594	6978	8362	9746	1128	2510	3890	5270	6650
53	7291	8681	0069	1457	2845	4231	5617	7002	8386	9769	1151	2533	3913	5293	6673
54	7314	8704	0093	1481	2868	4254	5640	7025	8409	9792	1174	2556	3936	5316	6696
55	7337	8727	0116	1504	2891	4277	5663	7048	8432	9815	1197	2579	3959	5339	6719
56	7360	8750	0139	1527	2914	4300	5686	7071	8455	9838	1220	2602	3983	5362	6742
57	7384	8773	0162	1550	2937	4324	5709	7094	8478	9861	1243	2625	4006	5385	6765
58	7407	8796	0185	1573	2960	4347	5732	7117	8501	9884	1266	2648	4029	5408	6788
59	7430	8819	0208	1596	2983	4370	5755	7140	8524	9907	1289	2671	4052	5431	6810
60	7453	8843	0231	1619	3006	4393	5778	7163	8547	9930	1312	2694	4075	5454	6833
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
	9.869	9.869	9.869	9.869	9.868	9.868	9.868	9.868	9.868	9.868	9.868	9.868	9.867	9.867	9.867	″
0	3597	2449	1301	0152	9002	7851	6700	5548	4396	3242	2088	0934	9779	8623	7466	60
1	3578	2430	1282	0132	8983	7832	6681	5529	4376	3223	2069	0915	9759	8603	7447	59
2	3559	2411	1263	0113	8963	7813	6662	5510	4357	3204	2050	0895	9740	8584	7428	58
3	3540	2392	1243	0094	8944	7794	6642	5491	4338	3185	2031	0876	9721	8565	7408	57
4	3521	2373	1224	0075	8925	7774	6623	5471	4319	3165	2012	0857	9702	8546	7389	56
5	3502	2354	1205	0056	8906	7755	6604	5452	4300	3146	1992	0838	9682	8526	7370	55
6	3482	2334	1186	0037	8887	7736	6585	5433	4280	3127	1973	0818	9663	8507	7350	54
7	3463	2315	1167	0017	8868	7717	6566	5414	4261	3108	1954	0799	9644	8488	7331	53
8	3444	2296	1148	9998	8848	7698	6546	5394	4242	3089	1935	0780	9625	8469	7312	52
9	3425	2277	1128	9979	8829	7679	6527	5375	4223	3069	1915	0761	9605	8449	7293	51
10	3406	2258	1109	9960	8810	7659	6508	5356	4203	3050	1896	0741	9586	8430	7273	50
11	3387	2239	1090	9941	8791	7640	6489	5337	4184	3031	1877	0722	9567	8411	7254	49
12	3368	2220	1071	9922	8772	7621	6470	5318	4165	3012	1858	0703	9548	8391	7235	48
13	3349	2201	1052	9903	8753	7602	6450	5298	4146	2992	1838	0684	9528	8372	7215	47
14	3329	2181	1033	9883	8733	7583	6431	5279	4127	2973	1819	0664	9509	8353	7196	46
15	3310	2162	1014	9864	8714	7563	6412	5260	4107	2954	1800	0645	9490	8334	7177	45
16	3291	2143	0994	9845	8695	7544	6393	5241	4088	2935	1781	0626	9470	8314	7158	44
17	3272	2124	0975	9826	8676	7525	6374	5222	4069	2915	1761	0607	9451	8295	7138	43
18	3253	2105	0956	9807	8657	7506	6355	5202	4050	2896	1742	0587	9432	8276	7119	42
19	3234	2086	0937	9788	8637	7487	6335	5183	4030	2877	1723	0568	9413	8257	7100	41
20	3215	2067	0918	9768	8618	7468	6316	5164	4011	2858	1704	0549	9393	8237	7080	40
21	3195	2047	0899	9749	8599	7448	6297	5145	3992	2839	1684	0530	9374	8218	7061	39
22	3176	2028	0880	9730	8580	7429	6278	5126	3973	2819	1665	0510	9355	8199	7042	38
23	3157	2009	0860	9711	8561	7410	6259	5106	3954	2800	1646	0491	9336	8179	7023	37
24	3138	1990	0841	9692	8542	7391	6239	5087	3934	2781	1627	0472	9316	8160	7003	36
25	3119	1971	0822	9673	8522	7372	6220	5068	3915	2762	1607	0453	9297	8141	6984	35
26	3100	1952	0803	9653	8503	7352	6201	5049	3896	2742	1588	0433	9278	8122	6965	34
27	3081	1933	0784	9634	8484	7333	6182	5030	3877	2723	1569	0414	9259	8102	6945	33
28	3062	1913	0765	9615	8465	7314	6163	5010	3857	2704	1550	0395	9239	8083	6926	32
29	3042	1894	0745	9596	8446	7295	6143	4991	3838	2685	1530	0376	9220	8064	6907	31
30	3023	1875	0726	9577	8427	7276	6124	4972	3819	2665	1511	0356	9201	8045	6888	30
31	3004	1856	0707	9558	8407	7257	6105	4953	3800	2646	1492	0337	9181	8025	6868	29
32	2985	1837	0688	9538	8388	7237	6086	4934	3781	2627	1473	0318	9162	8006	6849	28
33	2966	1818	0669	9519	8369	7218	6067	4914	3761	2608	1454	0299	9143	7987	6830	27
34	2947	1799	0650	9500	8350	7199	6047	4895	3742	2589	1434	0279	9124	7967	6810	26
35	2928	1779	0631	9481	8331	7180	6028	4876	3723	2569	1415	0260	9104	7948	6791	25
36	2909	1760	0611	9462	8312	7161	6009	4857	3704	2550	1396	0241	9085	7929	6772	24
37	2889	1741	0592	9443	8292	7141	5990	4837	3685	2531	1377	0222	9066	7910	6753	23
38	2870	1722	0573	9423	8273	7122	5971	4818	3665	2512	1357	0202	9047	7890	6733	22
39	2851	1703	0554	9404	8254	7103	5951	4799	3646	2492	1338	0183	9027	7871	6714	21
40	2832	1684	0535	9385	8235	7084	5932	4780	3627	2473	1319	0164	9008	7852	6695	20
41	2813	1665	0516	9366	8216	7065	5913	4761	3608	2454	1300	0145	8989	7832	6675	19
42	2794	1645	0496	9347	8196	7045	5894	4741	3588	2435	1280	0125	8970	7813	6656	18
43	2775	1626	0477	9328	8177	7026	5875	4722	3569	2415	1261	0106	8950	7794	6637	17
44	2755	1607	0458	9398	8158	7007	5855	4703	3550	2396	1242	0087	8931	7775	6618	16
45	2736	1588	0439	9289	8139	6988	5836	4684	3531	2377	1223	0068	8912	7755	6598	15
46	2717	1569	0420	9270	8120	6969	5817	4665	3512	2358	1203	0048	8892	7736	6579	14
47	2698	1550	0401	9251	8101	6949	5798	4645	3492	2339	1184	0029	8873	7717	6560	13
48	2679	1531	0382	9232	8081	6930	5779	4626	3473	2319	1165	0010	8854	7697	6540	12
49	2660	1511	0362	9213	8062	6911	5759	4607	3454	2300	1146	9990	8835	7678	6521	11
50	2641	1492	0343	9193	8043	6892	5740	4588	3435	2281	1126	9971	8815	7659	6502	10
51	2622	1473	0324	9174	8024	6873	5721	4569	3415	2262	1107	9952	8796	7640	6482	9
52	2602	1454	0305	9155	8005	6854	5702	4549	3396	2242	1088	9933	8777	7620	6463	8
53	2583	1435	0286	9136	7985	6834	5683	4530	3377	2223	1069	9913	8758	7601	6444	7
54	2564	1416	0267	9117	7966	6815	5663	4511	3358	2204	1049	9894	8738	7582	6425	6
55	2545	1397	0247	9098	7947	6796	5644	4492	3338	2185	1030	9875	8719	7563	6405	5
56	2526	1377	0228	9078	7928	6777	5625	4472	3319	2165	1011	9856	8700	7543	6386	4
57	2507	1358	0209	9059	7909	6758	5606	4453	3300	2146	0992	9836	8681	7524	6367	3
58	2488	1339	0190	9040	7890	6738	5587	4434	3281	2127	0972	9817	8661	7505	6347	2
59	2468	1320	0171	9021	7870	6719	5567	4415	3262	2108	0953	9798	8642	7485	6328	1
60	2449	1301	0152	9002	7851	6700	5548	4396	3242	2088	0934	9779	8623	7466	6309	0
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 958	9. 958	9. 958	9. 959	9. 959	9. 959	9. 959	9. 960	9. 960	9. 960	9. 960	9. 961	9. 961	9. 961	9. 961
0	2465	5004	7542	0080	2618	5155	7693	0230	2767	5305	7842	0378	2915	5452	7988
1	2508	5046	7584	0122	2660	5198	7735	0273	2810	5347	7884	0421	2957	5494	8031
2	2550	5088	7626	0164	2702	5240	7777	0315	2852	5389	7926	0463	3000	5536	8073
3	2592	5131	7669	0207	2744	5282	7820	0357	2894	5431	7968	0505	3042	5579	8115
4	2635	5173	7711	0249	2787	5324	7862	0399	2937	5474	8011	0548	3084	5621	8157
5	2677	5215	7753	0291	2829	5367	7904	0442	2979	5516	8053	0590	3127	5663	8200
6	2719	5258	7796	0334	2871	5409	7947	0484	3021	5558	8095	0632	3169	5705	8242
7	2762	5300	7838	0376	2914	5451	7989	0526	3063	5601	8138	0674	3211	5748	8284
8	2804	5342	7880	0418	2956	5494	8031	0569	3106	5643	8180	0717	3253	5790	8326
9	2846	5384	7923	0460	2998	5536	8073	0611	3148	5685	8222	0759	3296	5832	8369
10	2889	5427	7965	0503	3041	5578	8116	0653	3190	5727	8264	0801	3338	5875	8411
11	2931	5469	8007	0545	3083	5621	8158	0695	3233	5770	8307	0844	3380	5917	8453
12	2973	5511	8049	0587	3125	5663	8200	0738	3275	5812	8349	0886	3423	5959	8496
13	3015	5554	8092	0630	3167	5705	8243	0780	3317	5854	8391	0928	3465	6001	8538
14	3058	5596	8134	0672	3210	5747	8285	0822	3359	5897	8434	0970	3507	6044	8580
15	3100	5638	8176	0714	3252	5790	8327	0865	3402	5939	8476	1013	3549	6086	8622
16	3142	5681	8219	0757	3294	5832	8369	0907	3444	5981	8518	1055	3592	6128	8665
17	3185	5723	8261	0799	3337	5874	8412	0949	3486	6023	8560	1097	3634	6170	8707
18	3227	5765	8303	0841	3379	5917	8454	0991	3529	6066	8603	1140	3676	6213	8749
19	3269	5807	8346	0883	3421	5959	8496	1034	3571	6108	8645	1182	3718	6255	8791
20	3312	5850	8388	0926	3464	6001	8539	1076	3613	6150	8687	1224	3761	6297	8834
21	3354	5892	8430	0968	3506	6043	8581	1118	3655	6193	8730	1266	3803	6340	8876
22	3396	5934	8472	1010	3548	6086	8623	1161	3698	6235	8772	1309	3845	6382	8918
23	3438	5977	8515	1053	3590	6128	8665	1203	3740	6277	8814	1351	3888	6424	8961
24	3481	6019	8557	1095	3633	6170	8708	1245	3782	6319	8856	1393	3930	6466	9003
25	3523	6061	8599	1137	3675	6213	8750	1287	3825	6362	8899	1435	3972	6509	9045
26	3565	6104	8642	1180	3717	6255	8792	1330	3867	6404	8941	1478	4014	6551	9087
27	3608	6146	8684	1222	3760	6297	8835	1372	3909	6446	8983	1520	4057	6593	9130
28	3650	6188	8726	1264	3802	6339	8877	1414	3951	6489	9026	1562	4099	6636	9172
29	3692	6230	8769	1306	3844	6382	8919	1457	3994	6531	9068	1605	4141	6678	9214
30	3735	6273	8811	1349	3886	6424	8962	1499	4036	6573	9110	1647	4184	6720	9256
31	3777	6315	8853	1391	3929	6466	9004	1541	4078	6615	9152	1689	4226	6762	9299
32	3819	6357	8895	1433	3971	6509	9046	1583	4121	6658	9195	1731	4268	6805	9341
33	3862	6400	8938	1476	4013	6551	9088	1626	4163	6700	9237	1774	4310	6847	9383
34	3904	6442	8980	1518	4056	6593	9131	1668	4205	6742	9279	1816	4353	6889	9426
35	3946	6484	9022	1560	4098	6636	9173	1710	4247	6785	9321	1858	4395	6931	9468
36	3988	6527	9065	1602	4140	6678	9215	1753	4290	6827	9364	1901	4437	6974	9510
37	4031	6569	9107	1645	4183	6720	9258	1795	4332	6869	9406	1943	4479	7016	9552
38	4073	6611	9149	1687	4225	6762	9300	1837	4374	6911	9448	1985	4522	7058	9595
39	4115	6654	9192	1729	4267	6805	9342	1879	4417	6954	9491	2027	4564	7101	9637
40	4158	6696	9234	1772	4309	6847	9384	1922	4459	6996	9533	2070	4606	7143	9679
41	4200	6738	9276	1814	4352	6889	9427	1964	4501	7038	9575	2112	4649	7185	9721
42	4242	6780	9318	1856	4394	6932	9469	2006	4543	7081	9617	2154	4691	7227	9764
43	4285	6823	9361	1899	4436	6974	9511	2049	4586	7123	9660	2196	4733	7270	9806
44	4327	6865	9403	1941	4479	7016	9554	2091	4628	7165	9702	2239	4775	7312	9848
45	4369	6907	9445	1983	4521	7058	9596	2133	4670	7207	9744	2281	4818	7354	9891
46	4411	6950	9488	2025	4563	7101	9638	2175	4713	7250	9787	2323	4860	7396	9933
47	4454	6992	9530	2068	4605	7143	9680	2218	4755	7292	9829	2366	4902	7439	9975
48	4496	7034	9572	2110	4648	7185	9723	2260	4797	7334	9871	2408	4944	7481	0017
49	4538	7077	9614	2152	4690	7228	9765	2302	4839	7377	9913	2450	4987	7523	0060
50	4581	7119	9657	2195	4732	7270	9807	2345	4882	7419	9956	2492	5029	7566	0102
51	4623	7161	9699	2237	4775	7312	9850	2387	4924	7461	9998	2535	5071	7608	0144
52	4665	7203	9741	2279	4817	7354	9892	2429	4966	7503	0040	2577	5114	7650	0186
53	4708	7246	9784	2322	4859	7397	9934	2471	5009	7546	0083	2619	5156	7692	0229
54	4750	7288	9826	2364	4902	7439	9976	2514	5051	7588	0125	2662	5198	7735	0271
55	4792	7330	9868	2406	4944	7481	0019	2556	5093	7630	0167	2704	5240	7777	0313
56	4835	7373	9911	2448	4986	7524	0061	2598	5135	7672	0209	2746	5283	7819	0356
57	4877	7415	9953	2491	5028	7566	0103	2641	5178	7715	0252	2788	5325	7861	0398
58	4919	7457	9995	2533	5071	7608	0146	2683	5220	7757	0294	2831	5367	7904	0440
59	4961	7500	0037	2575	5113	7651	0188	2725	5262	7799	0336	2873	5410	7946	0482
60	5004	7542	0080	2618	5155	7693	0230	2767	5305	7842	0378	2915	5452	7988	0525
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
	10. 041	10. 041	10. 041	10. 040	10. 040	10. 040	10. 040	10. 039	10. 039	10. 039	10. 039	10. 038	10. 038	10. 038	10. 038	″
0	7535	4996	2458	9920	7382	4845	2307	9770	7233	4695	2158	9622	7085	4548	2012	60
1	7492	4954	2416	9878	7340	4802	2265	9727	7190	4653	2116	9579	7043	4506	1969	59
2	7450	4912	2374	9836	7298	4760	2223	9685	7148	4611	2074	9537	7000	4464	1927	58
3	7408	4869	2331	9793	7256	4718	2180	9643	7106	4569	2032	9495	6958	4421	1885	57
4	7365	4827	2289	9751	7213	4676	2138	9601	7063	4526	1989	9452	6916	4379	1843	56
5	7323	4785	2247	9709	7171	4633	2096	9558	7021	4484	1947	9410	6873	4337	1800	55
6	7281	4742	2204	9666	7129	4591	2053	9516	6979	4442	1905	9368	6831	4295	1758	54
7	7238	4700	2162	9624	7086	4549	2011	9474	6937	4399	1862	9326	6789	4252	1716	53
8	7196	4658	2120	9582	7044	4506	1969	9431	6894	4357	1820	9283	6747	4210	1674	52
9	7154	4616	2077	9540	7002	4464	1927	9389	6852	4315	1778	9241	6704	4168	1631	51
10	7111	4573	2035	9497	6959	4422	1884	9347	6810	4273	1736	9199	6662	4125	1589	50
11	7069	4531	1993	9455	6917	4379	1842	9305	6767	4230	1693	9156	6620	4083	1547	49
12	7027	4489	1951	9413	6875	4337	1800	9262	6725	4188	1651	9114	6577	4041	1504	48
13	6985	4446	1908	9370	6833	4295	1757	9220	6683	4146	1609	9072	6535	3999	1462	47
14	6942	4404	1866	9328	6790	4253	1715	9178	6641	4103	1566	9030	6493	3956	1420	46
15	6900	4362	1824	9286	6748	4210	1673	9135	6598	4061	1524	8987	6451	3914	1378	45
16	6858	4319	1781	9243	6706	4168	1631	9093	6556	4019	1482	8945	6408	3872	1335	44
17	6815	4277	1739	9201	6663	4126	1588	9051	6514	3977	1440	8903	6366	3830	1293	43
18	6773	4235	1697	9159	6621	4083	1546	9009	6471	3934	1397	8860	6324	3787	1251	42
19	6731	4193	1654	9117	6579	4041	1504	8966	6429	3892	1355	8818	6282	3745	1209	41
20	6688	4150	1612	9074	6536	3999	1461	8924	6387	3850	1313	8776	6239	3703	1166	40
21	6646	4108	1570	9032	6494	3957	1419	8882	6345	3807	1270	8734	6197	3660	1124	39
22	6604	4066	1528	8990	6452	3914	1377	8839	6302	3765	1228	8691	6155	3618	1082	38
23	6562	4023	1485	8947	6410	3872	1335	8797	6260	3723	1186	8649	6112	3576	1039	37
24	6519	3981	1443	8905	6367	3830	1292	8755	6218	3681	1144	8607	6070	3534	0997	36
25	6477	3939	1401	8863	6325	3787	1250	8713	6175	3638	1101	8565	6028	3491	0955	35
26	6435	3896	1358	8820	6283	3745	1208	8670	6133	3596	1059	8522	5986	3449	0913	34
27	6392	3854	1316	8778	6240	3703	1165	8628	6091	3554	1017	8480	5943	3407	0870	33
28	6350	3812	1274	8736	6198	3661	1123	8586	6049	3511	0974	8438	5901	3364	0828	32
29	6308	3770	1231	8694	6156	3618	1081	8543	6006	3469	0932	8395	5859	3322	0786	31
30	6265	3727	1189	8651	6114	3576	1038	8501	5964	3427	0890	8353	5816	3280	0744	30
31	6223	3685	1147	8609	6071	3534	0996	8459	5922	3385	0848	8311	5774	3238	0701	29
32	6181	3643	1105	8567	6029	3491	0954	8417	5879	3342	0805	8269	5732	3195	0659	28
33	6138	3600	1062	8524	5987	3449	0912	8374	5837	3300	0763	8226	5690	3153	0617	27
34	6096	3558	1020	8482	5944	3407	0869	8332	5795	3258	0721	8184	5647	3111	0574	26
35	6054	3516	0978	8440	5902	3364	0827	8290	5753	3215	0679	8142	5605	3069	0532	25
36	6012	3473	0935	8398	5860	3322	0785	8247	5710	3173	0636	8099	5563	3026	0490	24
37	5969	3431	0893	8355	5817	3280	0742	8205	5668	3131	0594	8057	5521	2984	0448	23
38	5927	3389	0851	8313	5775	3238	0700	8163	5626	3089	0552	8015	5478	2942	0405	22
39	5885	3346	0808	8271	5733	3195	0658	8121	5583	3046	0509	7973	5436	2899	0363	21
40	5842	3304	0766	8228	5691	3153	0616	8078	5541	3004	0467	7930	5394	2857	0321	20
41	5800	3262	0724	8186	5648	3111	0573	8036	5499	2962	0425	7888	5351	2815	0279	19
42	5758	3220	0682	8144	5606	3068	0531	7994	5457	2919	0383	7846	5309	2773	0236	18
43	5715	3177	0639	8101	5564	3026	0489	7951	5414	2877	0340	7804	5267	2730	0194	17
44	5673	3135	0597	8059	5521	2984	0446	7909	5372	2835	0298	7761	5225	2688	0152	16
45	5631	3093	0555	8017	5479	2942	0404	7867	5330	2793	0256	7719	5182	2646	0109	15
46	5589	3050	0512	7975	5437	2899	0362	7825	5287	2750	0213	7677	5140	2604	0067	14
47	5546	3008	0470	7932	5395	2857	0320	7782	5245	2708	0171	7634	5098	2561	0025	13
48	5504	2966	0428	7890	5352	2815	0277	7740	5203	2666	0129	7592	5056	2519	9983	12
49	5462	2923	0386	7848	5310	2772	0235	7698	5161	2623	0087	7550	5013	2477	9940	11
50	5419	2881	0343	7805	5268	2730	0193	7655	5118	2581	0044	7508	4971	2434	9898	10
51	5377	2839	0301	7763	5225	2688	0150	7613	5076	2539	0002	7465	4929	2392	9856	9
52	5335	2797	0259	7721	5183	2646	0108	7571	5034	2497	9960	7423	4886	2350	9814	8
53	5292	2754	0216	7678	5141	2603	0066	7529	4991	2454	9917	7381	4844	2308	9771	7
54	5250	2712	0174	7636	5098	2561	0024	7486	4949	2412	9875	7338	4802	2265	9729	6
55	5208	2670	0132	7594	5056	2519	9981	7444	4907	2370	9833	7296	4760	2223	9687	5
56	5165	2627	0089	7552	5014	2476	9939	7402	4865	2328	9791	7254	4717	2181	9644	4
57	5123	2585	0047	7509	4972	2434	9897	7359	4822	2285	9748	7212	4675	2139	9602	3
58	5081	2543	0005	7467	4929	2392	9854	7317	4780	2243	9706	7169	4633	2096	9560	2
59	5039	2500	9963	7425	4887	2349	9812	7275	4738	2201	9664	7127	4590	2054	9518	1
60	4996	2458	9920	7382	4845	2307	9770	7233	4695	2158	9622	7085	4548	2012	9475	0
	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9. 829	9. 829	9. 829	9. 830	9. 830	9. 830	9. 830	9. 830	9. 830	9. 830	9. 831	9. 831	9. 831	9. 831	9. 831
0	6833	8212	9589	0966	2342	3717	5091	6464	7837	9209	0580	1950	3320	4688	6056
1	6856	8235	9612	0989	2365	3740	5114	6487	7860	9232	0603	1973	3342	4711	6079
2	6879	8258	9635	1012	2388	3763	5137	6510	7883	9255	0626	1996	3365	4734	6102
3	6902	8281	9658	1035	2410	3785	5160	6533	7906	9277	0648	2019	3388	4757	6124
4	6925	8304	9681	1058	2433	3808	5183	6556	7929	9300	0671	2041	3411	4779	6147
5	6948	8327	9704	1081	2456	3831	5205	6579	7951	9323	0694	2064	3434	4802	6170
6	6971	8350	9727	1103	2479	3854	5228	6602	7974	9346	0717	2087	3456	4825	6193
7	6994	8372	9750	1126	2502	3877	5251	6625	7997	9369	0740	2110	3479	4848	6216
8	7017	8395	9773	1149	2525	3900	5274	6647	8020	9392	0763	2133	3502	4871	6238
9	7040	8418	9796	1172	2548	3923	5297	6670	8043	9415	0786	2156	3525	4893	6261
10	7063	8441	9819	1195	2571	3946	5320	6693	8066	9437	0808	2178	3548	4916	6284
11	7086	8464	9842	1218	2594	3969	5343	6716	8089	9460	0831	2201	3571	4939	6307
12	7109	8487	9865	1241	2617	3992	5366	6739	8111	9483	0854	2224	3593	4962	6330
13	7132	8510	9888	1264	2640	4015	5389	6762	8134	9506	0877	2247	3616	4985	6352
14	7155	8533	9910	1287	2663	4037	5412	6785	8157	9529	0900	2270	3639	5007	6375
15	7178	8556	9933	1310	2686	4060	5434	6808	8180	9552	0923	2293	3662	5030	6398
16	7201	8579	9956	1333	2708	4083	5457	6831	8203	9575	0945	2315	3685	5053	6421
17	7224	8602	9979	1356	2731	4106	5480	6853	8226	9597	0968	2338	3707	5076	6443
18	7247	8625	0002	1379	2754	4129	5503	6876	8249	9620	0991	2361	3730	5099	6466
19	7270	8648	0025	1402	2777	4152	5526	6899	8272	9643	1014	2384	3753	5121	6489
20	7293	8671	0048	1425	2800	4175	5549	6922	8294	9666	1037	2407	3776	5144	6512
21	7316	8694	0071	1447	2823	4198	5572	6945	8317	9689	1060	2430	3799	5167	6535
22	7339	8717	0094	1470	2846	4221	5595	6968	8340	9712	1082	2452	3822	5190	6557
23	7362	8740	0117	1493	2869	4244	5618	6991	8363	9735	1105	2475	3844	5213	6580
24	7385	8763	0140	1516	2892	4267	5640	7014	8386	9757	1128	2498	3867	5235	6603
25	7408	8786	0163	1539	2915	4289	5663	7036	8409	9780	1151	2521	3890	5258	6626
26	7431	8809	0186	1562	2938	4312	5686	7059	8432	9803	1174	2544	3913	5281	6649
27	7454	8832	0209	1585	2961	4335	5709	7082	8454	9826	1197	2566	3936	5304	6671
28	7477	8855	0232	1608	2983	4358	5732	7105	8477	9849	1219	2589	3958	5327	6694
29	7500	8878	0255	1631	3006	4381	5755	7128	8500	9872	1242	2612	3981	5349	6717
30	7523	8901	0278	1654	3029	4404	5778	7151	8523	9894	1265	2635	4004	5372	6740
31	7546	8924	0301	1677	3052	4427	5801	7174	8546	9917	1288	2658	4027	5395	6762
32	7569	8946	0323	1700	3075	4450	5824	7197	8569	9940	1311	2681	4050	5418	6785
33	7592	8969	0346	1723	3098	4473	5846	7219	8592	9963	1334	2703	4072	5441	6808
34	7615	8992	0369	1746	3121	4496	5869	7242	8615	9986	1356	2726	4095	5463	6831
35	7638	9015	0392	1769	3144	4518	5892	7265	8637	0009	1379	2749	4118	5486	6854
36	7661	9038	0415	1791	3167	4541	5915	7288	8660	0032	1402	2772	4141	5509	6876
37	7683	9061	0438	1814	3190	4564	5938	7311	8683	0054	1425	2795	4164	5532	6899
38	7706	9084	0461	1837	3213	4587	5961	7334	8706	0077	1448	2818	4186	5555	6922
39	7729	9107	0484	1860	3236	4610	5984	7357	8729	0100	1471	2840	4209	5577	6945
40	7752	9130	0507	1883	3258	4633	6007	7380	8752	0123	1493	2863	4232	5600	6968
41	7775	9153	0530	1906	3281	4656	6030	7402	8775	0146	1516	2886	4255	5623	6990
42	7798	9176	0553	1929	3304	4679	6052	7425	8797	0169	1539	2909	4278	5646	7013
43	7821	9199	0576	1952	3327	4702	6075	7448	8820	0192	1562	2932	4301	5669	7036
44	7844	9222	0599	1975	3350	4725	6098	7471	8843	0214	1585	2954	4323	5691	7059
45	7867	9245	0622	1998	3373	4747	6121	7494	8866	0237	1608	2977	4346	5714	7081
46	7890	9268	0645	2021	3396	4770	6144	7517	8889	0260	1630	3000	4369	5737	7104
47	7913	9291	0668	2044	3419	4793	6167	7540	8912	0283	1653	3023	4392	5760	7127
48	7936	9314	0691	2067	3442	4816	6190	7563	8935	0306	1676	3046	4415	5783	7150
49	7959	9337	0714	2089	3465	4839	6213	7585	8957	0329	1699	3069	4437	5805	7173
50	7982	9360	0736	2112	3488	4862	6236	7608	8980	0351	1722	3091	4460	5828	7195
51	8005	9383	0759	2135	3511	4885	6258	7631	9003	0374	1745	3114	4483	5851	7218
52	8028	9406	0782	2158	3533	4908	6281	7654	9026	0397	1767	3137	4506	5874	7241
53	8051	9429	0805	2181	3556	4931	6304	7677	9049	0420	1790	3160	4529	5897	7264
54	8074	9451	0828	2204	3579	4954	6327	7700	9072	0443	1813	3183	4551	5919	7286
55	8097	9474	0851	2227	3602	4976	6350	7723	9095	0466	1836	3205	4574	5942	7309
56	8120	9497	0874	2250	3625	4999	6373	7746	9117	0489	1859	3228	4597	5965	7332
57	8143	9520	0897	2273	3648	5022	6396	7768	9140	0511	1882	3251	4620	5988	7355
58	8166	9543	0920	2296	3671	5045	6419	7791	9163	0534	1904	3274	4643	6010	7378
59	8189	9566	0943	2319	3694	5068	6442	7814	9186	0557	1927	3297	4665	6033	7400
60	8212	9589	0966	2342	3717	5091	6464	7837	9209	0580	1950	3320	4688	6056	7423
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
	9. 867	9. 867	9. 867	9. 867	9. 867	9. 867	9. 866	9. 866	9. 866	9. 866	9. 866	9. 866	9. 866	9. 866	9. 866	″
0	6309	5151	3992	2833	1673	0512	9351	8189	7026	5863	4699	3534	2369	1203	0036	60
1	6290	5132	3973	2814	1654	0493	9332	8170	7007	5844	4679	3515	2349	1183	0016	59
2	6270	5112	3954	2794	1634	0474	9312	8150	6988	5824	4660	3495	2330	1164	9997	58
3	6251	5093	3934	2775	1615	0454	9293	8131	6968	5805	4641	3476	2310	1144	9978	57
4	6232	5074	3915	2756	1596	0435	9274	8111	6949	5785	4621	3456	2291	1125	9958	56
5	6212	5054	3896	2736	1576	0416	9254	8092	6929	5766	4602	3437	2272	1105	9939	55
6	6193	5035	3876	2717	1557	0396	9235	8073	6910	5747	4582	3418	2252	1086	9919	54
7	6174	5016	3857	2698	1538	0377	9215	8053	6891	5727	4563	3398	2233	1067	9900	53
8	6154	4996	3838	2678	1518	0358	9196	8034	6871	5708	4544	3379	2213	1047	9880	52
9	6135	4977	3818	2659	1499	0338	9177	8015	6852	5688	4524	3359	2194	1028	9861	51
10	6116	4958	3799	2640	1480	0319	9157	7995	6832	5669	4505	3340	2174	1008	9841	50
11	6097	4939	3780	2620	1460	0299	9138	7976	6813	5650	4485	3321	2155	0989	9822	49
12	6077	4919	3760	2601	1441	0280	9119	7956	6794	5630	4466	3301	2136	0969	9802	48
13	6058	4900	3741	2582	1422	0261	9099	7937	6774	5611	4447	3282	2116	0950	9783	47
14	6039	4881	3722	2562	1402	0241	9080	7918	6755	5591	4427	3262	2097	0930	9764	46
15	6019	4861	3703	2543	1383	0222	9061	7898	6736	5572	4408	3243	2077	0911	9744	45
16	6000	4842	3683	2524	1364	0203	9041	7879	6716	5553	4388	3223	2058	0892	9725	44
17	5981	4823	3664	2504	1344	0183	9022	7860	6697	5533	4369	3204	2038	0872	9705	43
18	5962	4803	3645	2485	1325	0164	9002	7840	6677	5514	4350	3185	2019	0853	9686	42
19	5942	4784	3625	2466	1306	0145	8983	7821	6658	5494	4330	3165	2000	0833	9666	41
20	5923	4765	3606	2446	1286	0125	8964	7801	6639	5475	4311	3146	1980	0814	9647	40
21	5904	4745	3587	2427	1267	0106	8944	7782	6619	5456	4291	3126	1961	0794	9627	39
22	5884	4726	3567	2408	1247	0087	8925	7763	6600	5436	4272	3107	1941	0775	9608	38
23	5865	4707	3548	2388	1228	0067	8906	7743	6580	5417	4252	3087	1922	0755	9588	37
24	5846	4688	3529	2369	1209	0048	8886	7724	6561	5397	4233	3068	1902	0736	9569	36
25	5826	4668	3509	2350	1189	0029	8867	7705	6542	5378	4214	3049	1883	0717	9550	35
26	5807	4649	3490	2330	1170	0009	8848	7685	6522	5359	4194	3029	1864	0697	9530	34
27	5788	4630	3471	2311	1151	9990	8828	7666	6503	5339	4175	3010	1844	0678	9511	33
28	5769	4610	3451	2292	1131	9970	8809	7646	6483	5320	4155	2990	1825	0658	9491	32
29	5749	4591	3432	2272	1112	9951	8789	7627	6464	5300	4136	2971	1805	0639	9472	31
30	5730	4572	3413	2253	1093	9932	8770	7608	6445	5281	4117	2952	1786	0619	9452	30
31	5711	4552	3393	2234	1073	9912	8751	7588	6425	5262	4097	2932	1766	0600	9433	29
32	5691	4533	3374	2214	1054	9893	8731	7569	6406	5242	4078	2913	1747	0580	9413	28
33	5672	4514	3355	2195	1035	9874	8712	7550	6387	5223	4058	2893	1727	0561	9394	27
34	5653	4494	3335	2176	1015	9854	8693	7530	6367	5203	4039	2874	1708	0542	9374	26
35	5633	4475	3316	2156	0996	9835	8673	7511	6348	5184	4020	2854	1689	0522	9355	25
36	5614	4456	3297	2137	0977	9816	8654	7491	6328	5165	4000	2835	1669	0503	9335	24
37	5595	4436	3277	2118	0957	9796	8634	7472	6309	5145	3981	2816	1650	0483	9316	23
38	5576	4417	3258	2098	0938	9777	8615	7453	6290	5126	3961	2796	1630	0464	9297	22
39	5556	4398	3239	2079	0919	9758	8596	7433	6270	5106	3942	2777	1611	0444	9277	21
40	5537	4379	3219	2060	0899	9738	8576	7414	6251	5087	3922	2757	1591	0425	9258	20
41	5518	4359	3200	2040	0880	9719	8557	7395	6231	5068	3903	2738	1572	0405	9238	19
42	5498	4340	3181	2021	0861	9699	8538	7375	6212	5048	3884	2718	1553	0386	9219	18
43	5479	4321	3162	2002	0841	9680	8518	7356	6193	5029	3864	2699	1533	0367	9199	17
44	5460	4301	3142	1982	0822	9661	8499	7336	6173	5009	3845	2680	1514	0347	9180	16
45	5440	4282	3123	1963	0803	9641	8480	7317	6154	4990	3825	2660	1494	0328	9160	15
46	5421	4263	3104	1944	0783	9622	8460	7298	6134	4971	3806	2641	1475	0308	9141	14
47	5402	4243	3084	1924	0764	9603	8441	7278	6115	4951	3787	2621	1455	0289	9121	13
48	5383	4224	3065	1905	0745	9583	8421	7259	6096	4932	3767	2602	1436	0269	9102	12
49	5363	4205	3046	1886	0725	9564	8402	7239	6076	4912	3748	2582	1416	0250	9082	11
50	5344	4185	3026	1866	0706	9545	8383	7220	6057	4893	3728	2563	1397	0230	9063	10
51	5325	4166	3007	1847	0686	9525	8363	7201	6037	4874	3709	2544	1378	0211	9044	9
52	5305	4147	2988	1828	0667	9506	8344	7181	6018	4854	3689	2524	1358	0191	9024	8
53	5286	4127	2968	1808	0648	9487	8325	7162	5999	4835	3670	2505	1339	0172	9005	7
54	5267	4108	2949	1789	0628	9467	8305	7143	5979	4815	3651	2485	1319	0153	8985	6
55	5247	4089	2930	1770	0609	9448	8286	7123	5960	4796	3631	2466	1300	0133	8966	5
56	5228	4070	2910	1750	0590	9428	8266	7104	5940	4776	3612	2446	1280	0114	8946	4
57	5209	4050	2891	1731	0570	9409	8247	7084	5921	4757	3592	2427	1261	0094	8927	3
58	5190	4031	2872	1712	0551	9390	8228	7065	5902	4738	3573	2408	1242	0075	8907	2
59	5170	4012	2852	1692	0532	9370	8208	7046	5882	4718	3554	2388	1222	0055	8888	1
60	5151	3992	2833	1673	0512	9351	8189	7026	5863	4699	3534	2369	1203	0036	8868	0
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

″	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.
	962	962	962	962	963	963	963	963	964	964	964	964	965	965	965
0	0525	3061	5597	8133	0669	3204	5740	8275	0811	3346	5881	8416	0951	3486	6020
1	0567	3103	5639	8175	0711	3247	5782	8318	0853	3388	5923	8458	0993	3528	6062
2	0609	3145	5681	8217	0753	3289	5824	8360	0895	3430	5966	8501	1035	3570	6105
3	0651	3188	5724	8260	0795	3331	5867	8402	0938	3473	6008	8543	1078	3612	6147
4	0694	3230	5766	8302	0838	3373	5909	8444	0980	3515	6050	8585	1120	3655	6189
5	0736	3272	5808	8344	0880	3416	5951	8487	1022	3557	6092	8627	1162	3697	6231
6	0778	3314	5851	8386	0922	3458	5994	8529	1064	3599	6135	8670	1204	3739	6274
7	0821	3357	5893	8429	0965	3500	6036	8571	1107	3642	6177	8712	1247	3781	6316
8	0863	3399	5935	8471	1007	3542	6078	8613	1149	3684	6219	8754	1289	3824	6358
9	0905	3441	5977	8513	1049	3585	6120	8656	1191	3726	6261	8796	1331	3866	6400
10	0947	3484	6020	8556	1091	3627	6163	8698	1233	3768	6304	8838	1373	3908	6443
11	0990	3526	6062	8598	1134	3669	6205	8740	1276	3811	6346	8881	1416	3950	6485
12	1032	3568	6104	8640	1176	3712	6247	8782	1318	3853	6388	8923	1458	3993	6527
13	1074	3610	6146	8682	1218	3754	6289	8825	1360	3895	6430	8965	1500	4035	6569
14	1116	3653	6189	8725	1260	3796	6332	8867	1402	3937	6473	9007	1542	4077	6612
15	1159	3695	6231	8767	1303	3838	6374	8909	1445	3980	6515	9050	1585	4119	6654
16	1201	3737	6273	8809	1345	3881	6416	8952	1487	4022	6557	9092	1627	4161	6696
17	1243	3779	6315	8851	1387	3923	6458	8994	1529	4064	6599	9134	1669	4204	6738
18	1285	3822	6358	8894	1429	3965	6501	9036	1571	4106	6642	9176	1711	4246	6781
19	1328	3864	6400	8936	1472	4007	6543	9078	1614	4149	6684	9219	1754	4288	6823
20	1370	3906	6442	8978	1514	4050	6585	9121	1656	4191	6726	9261	1796	4330	6865
21	1412	3948	6485	9020	1556	4092	6627	9163	1698	4233	6768	9303	1838	4373	6907
22	1455	3991	6527	9063	1598	4134	6670	9205	1740	4276	6811	9345	1880	4415	6950
23	1497	4033	6569	9105	1641	4176	6712	9247	1783	4318	6853	9388	1923	4457	6992
24	1539	4075	6611	9147	1683	4219	6754	9290	1825	4360	6895	9430	1965	4499	7034
25	1581	4118	6654	9189	1725	4261	6796	9332	1867	4402	6937	9472	2007	4542	7076
26	1624	4160	6696	9232	1768	4303	6839	9374	1909	4445	6980	9514	2049	4584	7118
27	1666	4202	6738	9274	1810	4345	6881	9416	1952	4487	7022	9557	2092	4626	7161
28	1708	4244	6780	9316	1852	4388	6923	9459	1994	4529	7064	9599	2134	4668	7203
29	1750	4287	6823	9359	1894	4430	6965	9501	2036	4571	7106	9641	2176	4711	7245
30	1793	4329	6865	9401	1937	4472	7008	9543	2078	4614	7149	9683	2218	4753	7287
31	1835	4371	6907	9443	1979	4514	7050	9585	2121	4656	7191	9726	2260	4795	7330
32	1877	4413	6949	9485	2021	4557	7092	9628	2163	4698	7233	9768	2303	4837	7372
33	1920	4456	6992	9528	2063	4599	7134	9670	2205	4740	7275	9810	2345	4880	7414
34	1962	4498	7034	9570	2106	4641	7177	9712	2247	4783	7318	9852	2387	4922	7456
35	2004	4540	7076	9612	2148	4683	7219	9754	2290	4825	7360	9895	2429	4964	7499
36	2046	4582	7118	9654	2190	4726	7261	9797	2332	4867	7402	9937	2472	5006	7541
37	2089	4625	7161	9697	2232	4768	7304	9839	2374	4909	7444	9979	2514	5049	7583
38	2131	4667	7203	9739	2275	4810	7346	9881	2416	4952	7487	0021	2556	5091	7625
39	2173	4709	7245	9781	2317	4853	7388	9923	2459	4994	7529	0064	2598	5133	7668
40	2215	4752	7288	9823	2359	4895	7430	9966	2501	5036	7571	0106	2641	5175	7710
41	2258	4794	7330	9866	2401	4937	7473	0008	2543	5078	7613	0148	2683	5218	7752
42	2300	4836	7372	9908	2444	4979	7515	0050	2585	5121	7656	0190	2725	5260	7794
43	2342	4878	7414	9950	2486	5022	7557	0092	2628	5163	7698	0233	2767	5302	7837
44	2385	4921	7457	9992	2528	5064	7599	0135	2670	5205	7740	0275	2810	5344	7879
45	2427	4963	7499	0035	2570	5106	7642	0177	2712	5247	7782	0317	2852	5387	7921
46	2469	5005	7541	0077	2613	5148	7684	0219	2754	5290	7825	0359	2894	5429	7963
47	2511	5047	7583	0119	2655	5191	7726	0261	2797	5332	7867	0402	2936	5471	8006
48	2554	5090	7626	0162	2697	5233	7768	0304	2839	5374	7909	0444	2979	5513	8048
49	2596	5132	7668	0204	2740	5275	7811	0346	2881	5416	7951	0486	3021	5556	8090
50	2638	5174	7710	0246	2782	5317	7853	0388	2923	5459	7994	0528	3063	5598	8132
51	2680	5217	7752	0288	2824	5360	7895	0430	2966	5501	8036	0571	3105	5640	8175
52	2723	5259	7795	0331	2866	5402	7937	0473	3008	5543	8078	0613	3148	5682	8217
53	2765	5301	7837	0373	2909	5444	7980	0515	3050	5585	8120	0655	3190	5725	8259
54	2807	5343	7879	0415	2951	5486	8022	0557	3092	5628	8163	0697	3232	5767	8301
55	2849	5386	7922	0457	2993	5529	8064	0599	3135	5670	8205	0740	3274	5809	8343
56	2892	5428	7964	0500	3035	5571	8106	0642	3177	5712	8247	0782	3317	5851	8386
57	2934	5470	8006	0542	3078	5613	8149	0684	3219	5754	8289	0824	3359	5893	8428
58	2976	5512	8048	0584	3120	5655	8191	0726	3261	5797	8332	0866	3401	5936	8470
59	3019	5555	8091	0626	3162	5698	8233	0768	3304	5839	8374	0909	3443	5978	8512
60	3061	5597	8133	0669	3204	5740	8275	0811	3346	5881	8416	0951	3486	6020	8555
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	″
10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	
037	037	037	037	036	036	036	036	035	035	035	035	034	034	034	
9475	6939	4403	1867	9331	6796	4260	1725	9189	6654	4119	1584	9049	6514	3980	60
9433	6897	4361	1825	9289	6753	4218	1682	9147	6612	4077	1542	9007	6472	3938	59
9391	6855	4319	1783	9247	6711	4176	1640	9105	6570	4034	1499	8965	6430	3895	58
9349	6812	4276	1740	9205	6669	4133	1598	9062	6527	3992	1457	8922	6388	3853	57
9306	6770	4234	1698	9162	6627	4091	1556	9020	6485	3950	1415	8880	6345	3811	56
9264	6728	4192	1656	9120	6584	4049	1513	8978	6443	3908	1373	8838	6303	3769	55
9222	6686	4149	1614	9078	6542	4006	1471	8936	6401	3865	1330	8796	6261	3726	54
9179	6643	4107	1571	9035	6500	3964	1429	8893	6358	3823	1288	8753	6219	3684	53
9137	6601	4065	1529	8993	6458	3922	1387	8851	6316	3781	1246	8711	6176	3642	52
9095	6559	4023	1487	8951	6415	3880	1344	8809	6274	3739	1204	8669	6134	3600	51
9053	6516	3980	1444	8909	6373	3837	1302	8767	6232	3696	1162	8627	6092	3557	50
9010	6474	3938	1402	8866	6331	3795	1260	8724	6189	3654	1119	8584	6050	3515	49
8968	6432	3896	1360	8824	6288	3753	1218	8682	6147	3612	1077	8542	6007	3473	48
8926	6390	3854	1318	8782	6246	3711	1175	8640	6105	3570	1035	8500	5965	3431	47
8884	6347	3811	1275	8740	6204	3668	1133	8598	6063	3527	0993	8458	5923	3388	46
8841	6305	3769	1233	8697	6162	3626	1091	8555	6020	3485	0950	8415	5881	3346	45
8799	6263	3727	1191	8655	6119	3584	1048	8513	5978	3443	0908	8373	5839	3304	44
8757	6221	3685	1149	8613	6077	3542	1006	8471	5936	3401	0866	8331	5796	3262	43
8715	6178	3642	1106	8571	6035	3499	0964	8429	5894	3358	0824	8289	5754	3219	42
8672	6136	3600	1064	8528	5993	3457	0922	8386	5851	3316	0781	8246	5712	3177	41
8630	6094	3558	1022	8486	5950	3415	0879	8344	5809	3274	0739	8204	5670	3135	40
8588	6052	3515	0980	8444	5908	3373	0837	8302	5767	3232	0697	8162	5627	3093	39
8545	6009	3473	0937	8402	5866	3330	0795	8260	5724	3189	0655	8120	5585	3050	38
8503	5967	3431	0895	8359	5824	3288	0753	8217	5682	3147	0612	8077	5543	3008	37
8461	5925	3389	0853	8317	5781	3246	0710	8175	5640	3105	0570	8035	5501	2966	36
8419	5882	3346	0811	8275	5739	3204	0668	8133	5598	3063	0528	7993	5458	2924	35
8376	5840	3304	0768	8232	5697	3161	0626	8091	5555	3020	0486	7951	5416	2882	34
8334	5798	3262	0726	8190	5655	3119	0584	8048	5513	2978	0443	7908	5374	2839	33
8292	5756	3220	0684	8148	5612	3077	0541	8006	5471	2936	0401	7866	5332	2797	32
8250	5713	3177	0641	8106	5570	3035	0499	7964	5429	2894	0359	7824	5289	2755	31
8207	5671	3135	0599	8063	5528	2992	0457	7922	5386	2851	0317	7782	5247	2713	30
8165	5629	3093	0557	8021	5486	2950	0415	7879	5344	2809	0274	7740	5205	2670	29
8123	5587	3051	0515	7979	5443	2908	0372	7837	5302	2767	0232	7697	5163	2628	28
8080	5544	3008	0472	7937	5401	2866	0330	7795	5260	2725	0190	7655	5120	2586	27
8038	5502	2966	0430	7894	5359	2823	0288	7753	5217	2682	0148	7613	5078	2544	26
7996	5460	2924	0388	7852	5317	2781	0246	7710	5175	2640	0105	7571	5036	2501	25
7954	5418	2882	0346	7810	5274	2739	0203	7668	5133	2598	0063	7528	4994	2459	24
7911	5375	2839	0303	7768	5232	2696	0161	7626	5091	2556	0021	7486	4951	2417	23
7869	5333	2797	0261	7725	5190	2654	0119	7584	5048	2513	9979	7444	4909	2375	22
7827	5291	2755	0219	7683	5147	2612	0077	7541	5006	2471	9936	7402	4867	2332	21
7785	5248	2712	0177	7641	5105	2570	0034	7499	4964	2429	9894	7359	4825	2290	20
7742	5206	2670	0134	7599	5063	2527	9992	7457	4922	2387	9852	7317	4782	2248	19
7700	5164	2628	0092	7556	5021	2485	9950	7415	4879	2344	9810	7275	4740	2206	18
7658	5122	2586	0050	7514	4978	2443	9908	7372	4837	2302	9767	7233	4698	2163	17
7615	5079	2543	0008	7472	4936	2401	9865	7330	4795	2260	9725	7190	4656	2121	16
7573	5037	2501	9965	7430	4894	2358	9823	7288	4753	2218	9683	7148	4613	2079	15
7531	4995	2459	9923	7387	4852	2316	9781	7246	4710	2175	9641	7106	4571	2037	14
7489	4953	2417	9881	7345	4809	2274	9739	7203	4668	2133	9598	7064	4529	1994	13
7446	4910	2374	9838	7303	4767	2232	9696	7161	4626	2091	9556	7021	4487	1952	12
7404	4868	2332	9796	7260	4725	2189	9654	7119	4584	2049	9514	6979	4444	1910	11
7362	4826	2290	9754	7218	4683	2147	9612	7077	4541	2006	9472	6937	4402	1868	10
7320	4783	2248	9712	7176	4640	2105	9570	7034	4499	1964	9429	6895	4360	1825	9
7277	4741	2205	9669	7134	4598	2063	9527	6992	4457	1922	9387	6852	4318	1783	8
7235	4699	2163	9627	7091	4556	2020	9485	6950	4415	1880	9345	6810	4275	1741	7
7193	4657	2121	9585	7049	4514	1978	9443	6908	4372	1837	9303	6768	4233	1699	6
7151	4614	2078	9543	7007	4471	1936	9401	6865	4330	1795	9260	6726	4191	1657	5
7108	4572	2036	9500	6965	4429	1894	9358	6823	4288	1753	9218	6683	4149	1614	4
7066	4530	1994	9458	6922	4387	1851	9316	6781	4246	1711	9176	6641	4107	1572	3
7024	4488	1952	9416	6880	4345	1809	9274	6739	4203	1668	9134	6599	4064	1530	2
6981	4445	1909	9374	6838	4302	1767	9232	6696	4161	1626	9091	6557	4022	1488	1
6939	4403	1867	9331	6796	4260	1725	9189	6654	4119	1584	9049	6514	3980	1445	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	9. 831	9. 831	9. 832	9. 832	9. 832	9. 832	9. 832	9. 832	9. 832	9. 832	9. 833	9. 833	9. 833	9. 833	9. 833
0	7423	8789	0155	1519	2883	4246	5609	6970	8331	9691	1050	2408	3766	5122	6478
1	7446	8812	0178	1542	2906	4269	5631	6993	8353	9713	1072	2431	3788	5145	6501
2	7469	8835	0200	1565	2929	4292	5654	7015	8376	9736	1095	2453	3811	5167	6523
3	7491	8858	0223	1588	2951	4314	5677	7038	8399	9759	1118	2476	3833	5190	6546
4	7514	8880	0246	1610	2974	4337	5699	7061	8421	9781	1140	2499	3856	5213	6569
5	7537	8903	0269	1633	2997	4360	5722	7084	8444	9804	1163	2521	3879	5235	6591
6	7560	8926	0291	1656	3020	4383	5745	7106	8467	9827	1186	2544	3901	5258	6614
7	7583	8949	0314	1679	3042	4405	5768	7129	8489	9849	1208	2566	3924	5280	6636
8	7605	8971	0337	1701	3065	4428	5790	7152	8512	9872	1231	2589	3946	5303	6659
9	7628	8994	0360	1724	3088	4451	5813	7174	8535	9895	1254	2612	3969	5326	6681
10	7651	9017	0382	1747	3111	4473	5836	7197	8557	9917	1276	2634	3992	5348	6704
11	7674	9040	0405	1770	3133	4496	5858	7220	8580	9940	1299	2657	4014	5371	6727
12	7696	9063	0428	1792	3156	4519	5881	7242	8603	9963	1321	2680	4037	5393	6749
13	7719	9085	0451	1815	3179	4542	5904	7265	8625	9985	1344	2702	4060	5416	6772
14	7742	9108	0473	1838	3201	4564	5926	7288	8648	0008	1367	2725	4082	5439	6794
15	7765	9131	0496	1860	3224	4587	5949	7310	8671	0030	1389	2747	4105	5461	6817
16	7788	9154	0519	1883	3247	4610	5972	7333	8693	0053	1412	2770	4127	5484	6840
17	7810	9176	0542	1906	3270	4632	5994	7356	8716	0076	1435	2793	4150	5507	6862
18	7833	9199	0564	1929	3292	4655	6017	7378	8739	0098	1457	2815	4173	5529	6885
19	7856	9222	0587	1951	3315	4678	6040	7401	8761	0121	1480	2838	4195	5552	6907
20	7879	9245	0610	1974	3338	4701	6063	7424	8784	0144	1503	2861	4218	5574	6930
21	7901	9267	0633	1997	3360	4723	6085	7446	8807	0166	1525	2883	4240	5597	6953
22	7924	9290	0655	2020	3383	4746	6108	7469	8829	0189	1548	2906	4263	5620	6975
23	7947	9313	0678	2042	3406	4769	6131	7492	8852	0212	1571	2929	4286	5642	6998
24	7970	9336	0701	2065	3429	4791	6153	7514	8875	0234	1593	2951	4308	5665	7020
25	7992	9358	0723	2088	3451	4814	6176	7537	8897	0257	1616	2974	4331	5687	7043
26	8015	9381	0746	2111	3474	4837	6199	7560	8920	0280	1638	2996	4354	5710	7065
27	8038	9404	0769	2133	3497	4859	6221	7582	8943	0302	1661	3019	4376	5733	7088
28	8061	9427	0792	2156	3519	4882	6244	7605	8965	0325	1684	3042	4399	5755	7111
29	8084	9449	0814	2179	3542	4905	6267	7628	8988	0348	1706	3064	4421	5778	7133
30	8106	9472	0837	2201	3565	4928	6289	7651	9011	0370	1729	3087	4444	5800	7156
31	8129	9495	0860	2224	3588	4950	6312	7673	9033	0393	1752	3110	4467	5823	7178
32	8152	9518	0883	2247	3610	4973	6335	7696	9056	0416	1774	3132	4489	5846	7201
33	8175	9540	0905	2270	3633	4996	6358	7719	9079	0438	1797	3155	4512	5868	7224
34	8197	9563	0928	2292	3656	5018	6380	7741	9101	0461	1820	3177	4534	5891	7246
35	8220	9586	0951	2315	3679	5041	6403	7764	9124	0484	1842	3200	4557	5913	7269
36	8243	9609	0974	2338	3701	5064	6426	7787	9147	0506	1865	3223	4580	5936	7291
37	8266	9631	0996	2361	3724	5087	6448	7809	9169	0529	1887	3245	4602	5958	7314
38	8288	9654	1019	2383	3747	5109	6471	7832	9192	0551	1910	3268	4625	5981	7337
39	8311	9677	1042	2406	3769	5132	6494	7855	9215	0574	1933	3291	4647	6004	7359
40	8334	9700	1065	2429	3792	5155	6516	7877	9237	0597	1955	3313	4670	6026	7382
41	8357	9722	1087	2451	3815	5177	6539	7900	9260	0619	1978	3336	4693	6049	7404
42	8380	9745	1110	2474	3838	5200	6562	7923	9283	0642	2001	3358	4715	6071	7427
43	8402	9768	1133	2497	3860	5223	6584	7945	9305	0665	2023	3381	4738	6094	7449
44	8425	9791	1156	2520	3883	5245	6607	7968	9328	0687	2046	3404	4761	6117	7472
45	8448	9814	1178	2542	3906	5268	6630	7991	9351	0710	2069	3426	4783	6139	7495
46	8471	9836	1201	2565	3928	5291	6652	8013	9373	0733	2091	3449	4806	6162	7517
47	8493	9859	1224	2588	3951	5314	6675	8036	9396	0755	2114	3471	4828	6184	7540
48	8516	9882	1247	2611	3974	5336	6698	8059	9419	0778	2136	3494	4851	6207	7562
49	8539	9905	1269	2633	3997	5359	6721	8081	9441	0801	2159	3517	4874	6230	7585
50	8562	9927	1292	2656	4019	5382	6743	8104	9464	0823	2182	3539	4896	6252	7608
51	8584	9950	1315	2679	4042	5404	6766	8127	9487	0846	2204	3562	4919	6275	7630
52	8607	9973	1338	2701	4065	5427	6789	8149	9509	0869	2227	3585	4941	6297	7653
53	8630	9996	1360	2724	4087	5450	6811	8172	9532	0891	2250	3607	4964	6320	7675
54	8653	0018	1383	2747	4110	5472	6834	8195	9555	0914	2272	3630	4987	6343	7698
55	8676	0041	1406	2770	4133	5495	6857	8217	9577	0937	2295	3652	5009	6365	7720
56	8698	0064	1428	2792	4156	5518	6879	8240	9600	0959	2318	3675	5032	6388	7743
57	8721	0087	1451	2815	4178	5541	6902	8263	9623	0982	2340	3698	5054	6410	7766
58	8744	0109	1474	2838	4201	5563	6925	8285	9645	1004	2363	3720	5077	6433	7788
59	8767	0132	1497	2861	4224	5586	6947	8308	9668	1027	2385	3743	5100	6456	7811
60	8789	0155	1519	2883	4246	5609	6970	8331	9691	1050	2408	3766	5122	6478	7833
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9. 865	9. 865	9. 865	9. 865	9. 865	9. 865	9. 865	9. 865	9. 864	9. 864	9. 864	9. 864	9. 864	9. 864	9. 864
0	8868	7700	6531	5362	4192	3021	1849	0677	9504	8331	7156	5981	4806	3629	2452
1	8849	7681	6512	5342	4172	3001	1830	0658	9485	8311	7137	5962	4786	3610	2433
2	8829	7661	6492	5323	4153	2982	1810	0638	9465	8291	7117	5942	4767	3590	2413
3	8810	7642	6473	5303	4133	2962	1791	0619	9446	8272	7098	5923	4747	3571	2393
4	8791	7622	6454	5284	4114	2943	1771	0599	9426	8252	7078	5903	4727	3551	2374
5	8771	7603	6434	5264	4094	2923	1752	0579	9406	8233	7058	5883	4708	3531	2354
6	8752	7583	6415	5245	4075	2904	1732	0560	9387	8213	7039	5864	4688	3512	2335
7	8732	7564	6395	5225	4055	2884	1713	0540	9367	8194	7019	5844	4669	3492	2315
8	8713	7544	6376	5206	4036	2865	1693	0521	9348	8174	7000	5825	4649	3472	2295
9	8693	7525	6356	5186	4016	2845	1674	0501	9328	8155	6980	5805	4629	3453	2276
10	8674	7506	6337	5167	3997	2826	1654	0482	9309	8135	6961	5785	4610	3433	2256
11	8654	7486	6317	5147	3977	2806	1635	0462	9289	8115	6941	5766	4590	3414	2236
12	8635	7467	6298	5128	3958	2787	1615	0443	9270	8096	6921	5746	4571	3394	2217
13	8615	7447	6278	5108	3938	2767	1595	0423	9250	8076	6902	5727	4551	3374	2197
14	8596	7428	6259	5089	3919	2748	1576	0404	9230	8057	6882	5707	4531	3355	2178
15	8576	7408	6239	5069	3899	2728	1556	0384	9211	8037	6863	5688	4512	3335	2158
16	8557	7389	6220	5050	3880	2709	1537	0364	9191	8018	6843	5668	4492	3316	2138
17	8538	7369	6200	5030	3860	2689	1517	0345	9172	7998	6824	5648	4472	3296	2119
18	8518	7350	6181	5011	3841	2670	1498	0325	9152	7978	6804	5629	4453	3276	2099
19	8499	7330	6161	4991	3821	2650	1478	0306	9133	7959	6784	5609	4433	3257	2079
20	8479	7311	6142	4972	3802	2630	1459	0286	9113	7939	6765	5590	4414	3237	2060
21	8460	7291	6122	4952	3782	2611	1439	0267	9094	7920	6745	5570	4394	3217	2040
22	8440	7272	6103	4933	3763	2591	1420	0247	9074	7900	6726	5550	4374	3198	2021
23	8421	7252	6083	4913	3743	2572	1400	0228	9054	7881	6706	5531	4355	3178	2001
24	8401	7233	6064	4894	3724	2552	1381	0208	9035	7861	6686	5511	4335	3159	1981
25	8382	7213	6044	4874	3704	2533	1361	0189	9015	7841	6667	5492	4316	3139	1962
26	8362	7194	6025	4855	3684	2513	1341	0169	8996	7822	6647	5472	4296	3119	1942
27	8343	7174	6005	4835	3665	2494	1322	0149	8976	7802	6628	5452	4276	3100	1922
28	8323	7155	5986	4816	3645	2474	1302	0130	8957	7783	6608	5433	4257	3080	1903
29	8304	7135	5966	4796	3626	2455	1283	0110	8937	7763	6589	5413	4237	3061	1883
30	8284	7116	5947	4777	3606	2435	1263	0091	8918	7744	6569	5394	4218	3041	1864
31	8265	7096	5927	4757	3587	2416	1244	0071	8898	7724	6549	5374	4198	3021	1844
32	8245	7077	5908	4738	3567	2396	1224	0052	8878	7704	6530	5354	4178	3002	1824
33	8226	7058	5888	4718	3548	2377	1205	0032	8859	7685	6510	5335	4159	2982	1805
34	8207	7038	5869	4699	3528	2357	1185	0013	8839	7665	6491	5315	4139	2962	1785
35	8187	7019	5849	4679	3509	2338	1166	9993	8820	7646	6471	5296	4120	2943	1765
36	8168	6999	5830	4660	3489	2318	1146	9973	8800	7626	6451	5276	4100	2923	1746
37	8148	6980	5810	4640	3470	2299	1127	9954	8781	7607	6432	5256	4080	2904	1726
38	8129	6960	5791	4621	3450	2279	1107	9934	8761	7587	6412	5237	4061	2884	1707
39	8109	6941	5771	4601	3431	2259	1087	9915	8741	7567	6393	5217	4041	2864	1687
40	8090	6921	5752	4582	3411	2240	1068	9895	8722	7548	6373	5198	4022	2845	1667
41	8070	6902	5732	4562	3392	2220	1048	9876	8702	7528	6354	5178	4002	2825	1648
42	8051	6882	5713	4543	3372	2201	1029	9856	8683	7509	6334	5158	3982	2806	1628
43	8031	6863	5693	4523	3353	2181	1009	9837	8663	7489	6314	5139	3963	2786	1608
44	8012	6843	5674	4504	3333	2162	0990	9817	8644	7470	6295	5119	3943	2766	1589
45	7992	6824	5654	4484	3314	2142	0970	9798	8624	7450	6275	5100	3924	2747	1569
46	7973	6804	5635	4465	3294	2123	0951	9778	8605	7430	6256	5080	3904	2727	1549
47	7953	6785	5615	4445	3275	2103	0931	9758	8585	7411	6236	5061	3884	2707	1530
48	7934	6765	5596	4426	3255	2084	0912	9739	8565	7391	6216	5041	3865	2688	1510
49	7914	6746	5576	4406	3236	2064	0892	9719	8546	7372	6197	5021	3845	2668	1491
50	7895	6726	5557	4387	3216	2045	0873	9700	8526	7352	6177	5002	3825	2649	1471
51	7876	6707	5537	4367	3197	2025	0853	9680	8507	7333	6158	4982	3806	2629	1451
52	7856	6687	5518	4348	3177	2006	0833	9661	8487	7313	6138	4963	3786	2609	1432
53	7837	6668	5498	4328	3158	1986	0814	9641	8468	7293	6118	4943	3767	2590	1412
54	7817	6648	5479	4309	3138	1967	0794	9622	8448	7274	6099	4923	3747	2570	1392
55	7798	6629	5459	4289	3119	1947	0775	9602	8428	7254	6079	4904	3727	2550	1373
56	7778	6609	5440	4270	3099	1927	0755	9582	8409	7235	6060	4884	3708	2531	1353
57	7759	6590	5420	4250	3079	1908	0736	9563	8389	7215	6040	4865	3688	2511	1334
58	7739	6570	5401	4231	3060	1888	0716	9543	8370	7195	6021	4845	3669	2492	1314
59	7720	6551	5381	4211	3040	1869	0697	9524	8350	7176	6001	4825	3649	2472	1294
60	7700	6531	5362	4192	3021	1849	0677	9504	8331	7156	5981	4806	3629	2452	1275
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
″	9.965	9.966	9.966	9.966	9.966	9.967	9.967	9.967	9.967	9.968	9.968	9.968	9.968	9.969	9.969	10.034	10.033	10.033	10.033	10.033	10.032	10.032	10.032	10.032	10.031	10.031	10.031	10.031	10.030	10.030	″
0	8555	1089	3623	6157	8692	1225	3759	6293	8827	1360	3893	6427	8960	1493	4026	1445	8911	6377	3843	1308	8775	6241	3707	1173	8640	6107	3573	1040	8507	5974	60
1	8597	1131	3666	6200	8734	1268	3801	6335	8869	1402	3936	6469	9002	1535	4068	1403	8869	6334	3800	1266	8732	6199	3665	1131	8598	6064	3531	0998	8465	5932	59
2	8639	1174	3708	6242	8776	1310	3844	6377	8911	1444	3978	6511	9044	1577	4110	1361	8826	6292	3758	1224	8690	6156	3623	1089	8556	6022	3489	0956	8423	5890	58
3	8681	1216	3750	6284	8818	1352	3886	6420	8953	1487	4020	6553	9086	1620	4152	1319	8784	6250	3716	1182	8648	6114	3580	1047	8513	5980	3447	0914	8380	5848	57
4	8724	1258	3792	6326	8860	1394	3928	6462	8995	1529	4062	6596	9129	1662	4195	1276	8742	6208	3674	1140	8606	6072	3538	1005	8471	5938	3404	0871	8338	5805	56
5	8766	1300	3835	6369	8903	1437	3970	6504	9038	1571	4105	6638	9171	1704	4237	1234	8700	6165	3631	1097	8563	6030	3496	0962	8429	5895	3362	0829	8296	5763	55
6	8808	1343	3877	6411	8945	1479	4013	6546	9080	1613	4147	6680	9213	1746	4279	1192	8657	6123	3589	1055	8521	5987	3454	0920	8387	5853	3320	0787	8254	5721	54
7	8850	1385	3919	6453	8987	1521	4055	6589	9122	1656	4189	6722	9255	1788	4321	1150	8615	6081	3547	1013	8479	5945	3411	0878	8344	5811	3278	0745	8212	5679	53
8	8893	1427	3961	6495	9029	1563	4097	6631	9164	1698	4231	6764	9298	1831	4364	1107	8573	6039	3505	0971	8437	5903	3369	0836	8302	5769	3236	0702	8169	5636	52
9	8935	1469	4003	6538	9072	1606	4139	6673	9207	1740	4273	6807	9340	1873	4406	1065	8531	5997	3462	0928	8394	5861	3327	0793	8260	5727	3193	0660	8127	5594	51
10	8977	1511	4046	6580	9114	1648	4182	6715	9249	1782	4316	6849	9382	1915	4448	1023	8489	5954	3420	0886	8352	5818	3285	0751	8218	5684	3151	0618	8085	5552	50
11	9019	1554	4088	6622	9156	1690	4224	6757	9291	1824	4358	6891	9424	1957	4490	0981	8446	5912	3378	0844	8310	5776	3243	0709	8176	5642	3109	0576	8043	5510	49
12	9062	1596	4130	6664	9198	1732	4266	6800	9333	1867	4400	6933	9466	1999	4532	0938	8404	5870	3336	0802	8268	5734	3200	0667	8133	5600	3067	0534	8001	5468	48
13	9104	1638	4172	6707	9241	1774	4308	6842	9375	1909	4442	6976	9509	2042	4575	0896	8362	5828	3293	0759	8226	5692	3158	0625	8091	5558	3024	0491	7958	5425	47
14	9146	1680	4215	6749	9283	1817	4350	6884	9418	1951	4484	7018	9551	2084	4617	0854	8320	5785	3251	0717	8183	5650	3116	0582	8049	5516	2982	0449	7916	5383	46
15	9188	1723	4257	6791	9325	1859	4393	6926	9460	1993	4527	7060	9593	2126	4659	0812	8277	5743	3209	0675	8141	5607	3074	0540	8007	5473	2940	0407	7874	5341	45
16	9231	1765	4299	6833	9367	1901	4435	6969	9502	2036	4569	7102	9635	2168	4701	0769	8235	5701	3167	0633	8099	5565	3031	0498	7964	5431	2898	0365	7832	5299	44
17	9273	1807	4341	6875	9409	1943	4477	7011	9544	2078	4611	7144	9678	2211	4743	0727	8193	5659	3125	0591	8057	5523	2989	0456	7922	5389	2856	0322	7789	5257	43
18	9315	1849	4384	6918	9452	1986	4519	7053	9587	2120	4653	7187	9720	2253	4786	0685	8151	5616	3082	0548	8014	5481	2947	0413	7880	5347	2813	0280	7747	5214	42
19	9357	1892	4426	6960	9494	2028	4562	7095	9629	2162	4696	7229	9762	2295	4828	0643	8108	5574	3040	0506	7972	5438	2905	0371	7838	5304	2771	0238	7705	5172	41
20	9400	1934	4468	7002	9536	2070	4604	7137	9671	2204	4738	7271	9804	2337	4870	0600	8066	5532	2998	0464	7930	5396	2863	0329	7796	5262	2729	0196	7663	5130	40
21	9442	1976	4510	7044	9578	2112	4646	7180	9713	2247	4780	7313	9846	2379	4912	0558	8024	5490	2956	0422	7888	5354	2820	0287	7753	5220	2687	0154	7621	5088	39
22	9484	2018	4553	7087	9621	2155	4688	7222	9755	2289	4822	7355	9889	2422	4955	0516	7982	5447	2913	0379	7845	5312	2778	0245	7711	5178	2645	0111	7578	5045	38
23	9526	2061	4595	7129	9663	2197	4731	7264	9798	2331	4864	7398	9931	2464	4997	0474	7939	5405	2871	0337	7803	5269	2736	0202	7669	5136	2602	0069	7536	5003	37
24	9568	2103	4637	7171	9705	2239	4773	7306	9840	2373	4907	7440	9973	2506	5039	0432	7897	5363	2829	0295	7761	5227	2694	0160	7627	5093	2560	0027	7494	4961	36
25	9611	2145	4679	7213	9747	2281	4815	7349	9882	2416	4949	7482	0015	2548	5081	0389	7855	5321	2787	0253	7719	5185	2651	0118	7584	5051	2518	9985	7452	4919	35
26	9653	2187	4721	7256	9790	2323	4857	7391	9924	2458	4991	7524	0057	2590	5123	0347	7813	5279	2744	0210	7677	5143	2609	0076	7542	5009	2476	9943	7410	4877	34
27	9695	2230	4764	7298	9832	2366	4899	7433	9967	2500	5033	7567	0100	2633	5166	0305	7770	5236	2702	0168	7634	5101	2567	0033	7500	4967	2433	9900	7367	4834	33
28	9737	2272	4806	7340	9874	2408	4942	7475	0009	2542	5076	7609	0142	2675	5208	0263	7728	5194	2660	0126	7592	5058	2525	9991	7458	4924	2391	9858	7325	4792	32
29	9780	2314	4848	7382	9916	2450	4984	7518	0051	2585	5118	7651	0184	2717	5250	0220	7686	5152	2618	0084	7550	5016	2482	9949	7415	4882	2349	9816	7283	4750	31
30	9822	2356	4890	7425	9958	2492	5026	7560	0093	2627	5160	7693	0226	2759	5292	0178	7644	5110	2575	0042	7508	4974	2440	9907	7373	4840	2307	9774	7241	4708	30
31	9864	2398	4933	7467	0001	2535	5068	7602	0136	2669	5202	7735	0269	2802	5334	0136	7602	5067	2533	9999	7465	4932	2398	9864	7331	4798	2265	9731	7198	4666	29
32	9906	2441	4975	7509	0043	2577	5111	7644	0178	2711	5244	7778	0311	2844	5377	0094	7559	5025	2491	9957	7423	4889	2356	9822	7289	4756	2222	9689	7156	4623	28
33	9949	2483	5017	7551	0085	2619	5153	7686	0220	2753	5287	7820	0353	2886	5419	0051	7517	4983	2449	9915	7381	4847	2314	9780	7247	4713	2180	9647	7114	4581	27
34	9991	2525	5059	7593	0127	2661	5195	7729	0262	2796	5329	7862	0395	2928	5461	0009	7475	4941	2407	9873	7339	4805	2271	9738	7204	4671	2138	9605	7072	4539	26
35	0033	2567	5102	7636	0170	2704	5237	7771	0304	2838	5371	7904	0437	2970	5503	9967	7433	4898	2364	9830	7296	4763	2229	9696	7162	4629	2096	9563	7030	4497	25
36	0075	2610	5144	7678	0212	2746	5279	7813	0347	2880	5413	7947	0480	3013	5546	9925	7390	4856	2322	9788	7254	4721	2187	9653	7120	4587	2053	9520	6987	4454	24
37	0118	2652	5186	7720	0254	2788	5322	7855	0389	2922	5456	7989	0522	3055	5588	9882	7348	4814	2280	9746	7212	4678	2145	9611	7078	4544	2011	9478	6945	4412	23
38	0160	2694	5228	7762	0296	2830	5364	7898	0431	2965	5498	8031	0564	3097	5630	9840	7306	4772	2238	9704	7170	4636	2102	9569	7035	4502	1969	9436	6903	4370	22
39	0202	2736	5271	7805	0339	2872	5406	7940	0473	3007	5540	8073	0606	3139	5672	9798	7264	4729	2195	9661	7128	4594	2060	9527	6993	4460	1927	9394	6861	4328	21
40	0244	2779	5313	7847	0381	2915	5448	7982	0516	3049	5582	8115	0649	3182	5714	9756	7221	4687	2153	9619	7085	4552	2018	9484	6951	4418	1885	9351	6818	4286	20
41	0287	2821	5355	7889	0423	2957	5491	8024	0558	3091	5624	8158	0691	3224	5757	9713	7179	4645	2111	9577	7043	4509	1976	9442	6909	4376	1842	9309	6776	4243	19
42	0329	2863	5397	7931	0465	2999	5533	8066	0600	3133	5667	8200	0733	3266	5799	9671	7137	4603	2069	9535	7001	4467	1934	9400	6867	4333	1800	9267	6734	4201	18
43	0371	2905	5439	7974	0508	3041	5575	8109	0642	3176	5709	8242	0775	3308	5841	9629	7095	4561	2026	9492	6959	4425	1891	9358	6824	4291	1758	9225	6692	4159	17
44	0413	2948	5482	8016	0550	3084	5617	8151	0684	3218	5751	8284	0817	3350	5883	9587	7052	4518	1984	9450	6916	4383	1849	9316	6782	4249	1716	9183	6650	4117	16
45	0455	2990	5524	8058	0592	3126	5660	8193	0727	3260	5793	8327	0860	3393	5925	9545	7010	4476	1942	9408	6874	4340	1807	9273	6740	4207	1673	9140	6607	4075	15
46	0498	3032	5566	8100	0634	3168	5702	8235	0769	3302	5836	8369	0902	3435	5968	9502	6968	4434	1900	9366	6832	4298	1765	9231	6698	4164	1631	9098	6565	4032	14
47	0540	3074	5608	8142	0676	3210	5744	8278	0811	3345	5878	8411	0944	3477	6010	9460	6926	4392	1858	9324	6790	4256	1722	9189	6655	4122	1589	9056	6523	3990	13
48	0582	3116	5651	8185	0719	3252	5786	8320	0853	3387	5920	8453	0986	3519	6052	9418	6884	4349	1815	9281	6748	4214	1680	9147	6613	4080	1547	9014	6481	3948	12
49	0624	3159	5693	8227	0761	3295	5828	8362	0896	3429	5962	8495	1028	3561	6094	9376	6841	4307	1773	9239	6705	4172	1638	9104	6571	4038	1505	8972	6439	3906	11
50	0667	3201	5735	8269	0803	3337	5871	8404	0938	3471	6004	8538	1071	3604	6137	9333	6799	4265	1731	9197	6663	4129	1596	9062	6529	3996	1462	8929	6396	3863	10
51	0709	3243	5777	8311	0845	3379	5913	8447	0980	3513	6047	8580	1113	3646	6179	9291	6757	4223	1689	9155	6621	4087	1553	9020	6487	3953	1420	8887	6354	3821	9
52	0751	3285	5820	8354	0888	3421	5955	8489	1022	3556	6089	8622	1155	3688	6221	9249	6715	4180	1646	9112	6579	4045	1511	8978	6444	3911	1378	8845	6312	3779	8
53	0793	3328	5862	8396	0930	3464	5997	8531	1064	3598	6131	8664	1197	3730	6263	9207	6672	4138	1604	9070	6536	4003	1469	8936	6402	3869	1336	8803	6270	3737	7
54	0836	3370	5904	8438	0972	3506	6040	8573	1107	3640	6173	8707	1240	3773	6305	9164	6630	4096	1562	9028	6494	3960	1427	8893	6360	3827	1293	8760	6227	3695	6
55	0878	3412	5946	8480	1014	3548	6082	8615	1149	3682	6216	8749	1282	3815	6348	9122	6588	4054	1520	8986	6452	3918	1385	8851	6318	3784	1251	8718	6185	3652	5
56	0920	3454	5989	8523	1057	3590	6124	8658	1191	3725	6258	8791	1324	3857	6390	9080	6546	4011	1477	8943	6410	3876	1342	8809	6275	3742	1209	8676	6143	3610	4
57	0962	3497	6031	8565	1099	3633	6166	8700	1233	3767	6300	8833	1366	3890	6432	9038	6503	3969	1435	8901	6367	3834	1300	8767	6233	3700	1167	8634	6101	3568	3
58	1005	3539	6073	8607	1141	3675	6208	8742	1276	3809	6342	8875	1408	3941	6474	8995	6461	3927	1393	8859	6325	3792	1258	8724	6191	3658	1125	8592	6059	3526	2
59	1047	3581	6115	8649	1183	3717	6251	8784	1318	3851	6384	8918	1451	3984	6516	8953	6419	3885	1351	8817	6283	3749	1216	8682	6149	3616	1082	8549	6016	3484	1
60	1089	3623	6157	8692	1225	3759	6293	8827	1360	3893	6427	8960	1493	4026	6559	8911	6377	3843	1308	8775	6241	3707	1173	8640	6107	3573	1040	8507	5974	3441	0
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′		0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
″	9.833	9.833	9.834	9.834	9.834	9.834	9.834	9.834	9.834	9.834	9.835	9.835	9.835	9.835	9.835	″	9.864	9.864	9.863	9.863	9.863	9.863	9.863	9.863	9.863	9.863	9.862	9.862	9.862	9.862	9.862	″
0	7833	9188	0541	1894	3246	4597	5948	7297	8646	9994	1341	2688	4033	5378	6722		1275	0096	8917	7737	6557	5376	4194	3011	1828	0644	9460	8274	7088	5902	4714	60
1	7856	9210	0564	1916	3268	4620	5970	7320	8668	0016	1364	2710	4056	5401	6745		1255	0077	8897	7718	6537	5356	4174	2992	1808	0625	9440	8255	7069	5882	4695	59
2	7878	9233	0586	1939	3291	4642	5993	7342	8691	0039	1386	2733	4078	5423	6767		1235	0057	8878	7698	6518	5336	4155	2972	1789	0605	9420	8235	7049	5862	4675	58
3	7901	9255	0609	1962	3314	4665	6015	7365	8713	0061	1409	2755	4101	5446	6790		1216	0037	8858	7678	6498	5317	4135	2952	1769	0585	9400	8215	7029	5842	4655	57
4	7924	9278	0631	1984	3336	4687	6038	7387	8736	0084	1431	2777	4123	5468	6812		1196	0018	8839	7659	6478	5297	4115	2933	1749	0565	9381	8195	7009	5823	4635	56
5	7946	9300	0654	2007	3359	4710	6060	7410	8758	0106	1453	2800	4145	5490	6834		1176	9998	8819	7639	6459	5277	4095	2913	1730	0546	9361	8176	6990	5803	4615	55
6	7969	9323	0677	2029	3381	4732	6083	7432	8781	0129	1476	2822	4168	5513	6857		1157	9978	8799	7619	6439	5258	4076	2893	1710	0526	9341	8156	6970	5783	4596	54
7	7991	9346	0699	2052	3404	4755	6105	7455	8803	0151	1498	2845	4190	5535	6879		1137	9959	8780	7600	6419	5238	4056	2873	1690	0506	9321	8136	6950	5763	4576	53
8	8014	9368	0722	2074	3426	4777	6128	7477	8826	0174	1521	2867	4213	5558	6902		1118	9939	8760	7580	6399	5218	4036	2854	1670	0486	9302	8116	6930	5743	4556	52
9	8037	9391	0744	2097	3449	4800	6150	7499	8848	0196	1543	2890	4235	5580	6924		1098	9919	8740	7560	6380	5199	4017	2834	1651	0467	9282	8097	6910	5724	4536	51
10	8059	9413	0767	2119	3471	4822	6173	7522	8871	0219	1566	2912	4258	5602	6946		1078	9900	8721	7541	6360	5179	3997	2814	1631	0447	9262	8077	6891	5704	4516	50
11	8082	9436	0789	2142	3494	4845	6195	7544	8893	0241	1588	2934	4280	5625	6969		1059	9880	8701	7521	6340	5159	3977	2795	1611	0427	9242	8057	6871	5684	4497	49
12	8104	9458	0812	2164	3516	4867	6217	7567	8916	0263	1611	2957	4302	5647	6991		1039	9860	8681	7501	6321	5139	3957	2775	1591	0407	9223	8037	6851	5664	4477	48
13	8127	9481	0834	2187	3539	4890	6240	7589	8938	0286	1633	2979	4325	5670	7014		1019	9841	8662	7482	6301	5120	3938	2755	1572	0388	9203	8017	6831	5645	4457	47
14	8149	9504	0857	2209	3561	4912	6262	7612	8961	0308	1655	3002	4347	5692	7036		1000	9821	8642	7462	6281	5100	3918	2735	1552	0368	9183	7998	6812	5625	4437	46
15	8172	9526	0879	2232	3584	4935	6285	7634	8983	0331	1678	3024	4370	5714	7058		0980	9802	8622	7442	6262	5080	3898	2716	1532	0348	9163	7978	6792	5605	4417	45
16	8195	9549	0902	2255	3606	4957	6307	7657	9006	0353	1700	3047	4392	5737	7081		0960	9782	8603	7423	6242	5061	3879	2696	1513	0328	9144	7958	6772	5585	4398	44
17	8217	9571	0925	2277	3629	4980	6330	7679	9028	0376	1723	3069	4415	5759	7103		0941	9762	8583	7403	6222	5041	3859	2676	1493	0309	9124	7938	6752	5565	4378	43
18	8240	9594	0947	2300	3651	5002	6352	7702	9050	0398	1745	3091	4437	5782	7125		0921	9743	8563	7383	6203	5021	3839	2656	1473	0289	9104	7919	6732	5546	4358	42
19	8262	9616	0970	2322	3674	5025	6375	7724	9073	0421	1768	3114	4459	5804	7148		0902	9723	8544	7364	6183	5002	3820	2637	1453	0269	9084	7899	6713	5526	4338	41
20	8285	9639	0992	2345	3696	5047	6397	7747	9095	0443	1790	3136	4482	5826	7170		0882	9703	8524	7344	6163	4982	3800	2617	1434	0249	9065	7879	6693	5506	4318	40
21	8307	9661	1015	2367	3719	5070	6420	7769	9118	0466	1813	3159	4504	5849	7193		0862	9684	8504	7324	6144	4962	3780	2597	1414	0230	9045	7859	6673	5486	4299	39
22	8330	9684	1037	2390	3741	5092	6442	7792	9140	0488	1835	3181	4527	5871	7215		0843	9664	8485	7305	6124	4942	3760	2578	1394	0210	9025	7840	6653	5466	4279	38
23	8353	9707	1060	2412	3764	5115	6465	7814	9163	0511	1857	3204	4549	5894	7237		0823	9644	8465	7285	6104	4923	3741	2558	1374	0190	9005	7820	6634	5447	4259	37
24	8375	9729	1082	2435	3786	5137	6487	7837	9185	0533	1880	3226	4571	5916	7260		0803	9625	8445	7265	6085	4903	3721	2538	1355	0170	8986	7800	6614	5427	4239	36
25	8398	9752	1105	2457	3809	5160	6510	7859	9208	0555	1902	3249	4594	5938	7282		0784	9605	8426	7246	6065	4883	3701	2518	1335	0151	8966	7780	6594	5407	4219	35
26	8420	9774	1127	2480	3832	5182	6532	7882	9230	0578	1925	3271	4616	5961	7305		0764	9585	8406	7226	6045	4864	3682	2499	1315	0131	8946	7761	6574	5387	4200	34
27	8443	9797	1150	2502	3854	5205	6555	7904	9253	0600	1947	3293	4639	5983	7327		0744	9566	8386	7206	6025	4844	3662	2479	1295	0111	8926	7741	6554	5367	4180	33
28	8465	9819	1173	2525	3877	5227	6577	7927	9275	0623	1970	3316	4661	6006	7349		0725	9546	8367	7187	6006	4824	3642	2459	1276	0092	8907	7721	6535	5348	4160	32
29	8488	9842	1195	2548	3899	5250	6600	7949	9298	0645	1992	3338	4684	6028	7372		0705	9526	8347	7167	5986	4805	3622	2440	1256	0072	8887	7701	6515	5328	4140	31
30	8511	9865	1218	2570	3922	5272	6622	7972	9320	0668	2015	3361	4706	6050	7394		0686	9507	8327	7147	5966	4785	3603	2420	1236	0052	8867	7681	6495	5308	4120	30
31	8533	9887	1240	2593	3944	5295	6645	7994	9343	0690	2037	3383	4728	6073	7417		0666	9487	8308	7128	5947	4765	3583	2400	1217	0032	8847	7662	6475	5288	4101	29
32	8556	9910	1263	2615	3967	5317	6667	8017	9365	0713	2059	3406	4751	6095	7439		0646	9467	8288	7108	5927	4746	3563	2380	1197	0013	8828	7642	6456	5269	4081	28
33	8578	9932	1285	2638	3989	5340	6690	8039	9387	0735	2082	3428	4773	6118	7461		0627	9448	8268	7088	5907	4726	3544	2361	1177	9993	8808	7622	6436	5249	4061	27
34	8601	9955	1308	2660	4012	5362	6712	8062	9410	0758	2104	3450	4796	6140	7484		0607	9428	8249	7069	5888	4706	3524	2341	1157	9973	8788	7602	6416	5229	4041	26
35	8623	9977	1330	2683	4034	5385	6735	8084	9432	0780	2127	3473	4818	6162	7506		0587	9409	8229	7049	5868	4686	3504	2321	1138	9953	8768	7583	6396	5209	4021	25
36	8646	0000	1353	2705	4057	5407	6757	8107	9455	0802	2149	3495	4840	6185	7528		0568	9389	8209	7029	5848	4667	3484	2302	1118	9934	8749	7563	6376	5189	4002	24
37	8669	0022	1375	2728	4079	5430	6780	8129	9477	0825	2172	3518	4863	6207	7551		0548	9369	8190	7010	5829	4647	3465	2282	1098	9914	8729	7543	6357	5170	3982	23
38	8691	0045	1398	2750	4102	5452	6802	8151	9500	0847	2194	3540	4885	6230	7573		0528	9350	8170	6990	5809	4627	3445	2262	1078	9894	8709	7523	6337	5150	3962	22
39	8714	0068	1421	2773	4124	5475	6825	8174	9522	0870	2217	3562	4908	6252	7596		0509	9330	8150	6970	5789	4608	3425	2242	1059	9874	8689	7504	6317	5130	3942	21
40	8736	0090	1443	2795	4147	5497	6847	8196	9545	0892	2239	3585	4930	6274	7618		0489	9310	8131	6950	5770	4588	3406	2223	1039	9855	8670	7484	6297	5110	3922	20
41	8759	0113	1466	2818	4169	5520	6870	8219	9567	0915	2261	3607	4952	6297	7640		0469	9291	8111	6931	5750	4568	3386	2203	1019	9835	8650	7464	6278	5090	3903	19
42	8781	0135	1488	2840	4192	5542	6892	8241	9590	0937	2284	3630	4975	6319	7663		0450	9271	8091	6911	5730	4549	3366	2183	1000	9815	8630	7444	6258	5071	3883	18
43	8804	0158	1511	2863	4214	5565	6915	8264	9612	0960	2306	3652	4997	6342	7685		0430	9251	8072	6891	5710	4529	3347	2163	0980	9795	8610	7424	6238	5051	3863	17
44	8827	0180	1533	2885	4237	5587	6937	8286	9635	0982	2329	3675	5020	6364	7708		0411	9232	8052	6872	5691	4509	3327	2144	0960	9776	8591	7405	6218	5031	3843	16
45	8849	0203	1556	2908	4259	5610	6960	8309	9657	1004	2351	3697	5042	6386	7730		0391	9212	8032	6852	5671	4489	3307	2124	0940	9756	8571	7385	6198	5011	3823	15
46	8872	0225	1578	2931	4282	5632	6982	8331	9680	1027	2374	3719	5065	6409	7752		0371	9192	8013	6832	5651	4470	3287	2104	0921	9736	8551	7365	6179	4991	3804	14
47	8894	0248	1601	2953	4304	5655	7005	8354	9702	1049	2396	3742	5087	6431	7775		0352	9173	7993	6813	5632	4450	3268	2085	0901	9716	8531	7345	6159	4972	3784	13
48	8917	0271	1623	2976	4327	5677	7027	8376	9724	1072	2418	3764	5109	6454	7797		0332	9153	7973	6793	5612	4430	3248	2065	0881	9697	8511	7326	6139	4952	3764	12
49	8939	0293	1646	2998	4349	5700	7050	8399	9747	1094	2441	3787	5132	6476	7820		0312	9133	7954	6773	5592	4411	3228	2045	0861	9677	8492	7306	6119	4932	3744	11
50	8962	0316	1669	3021	4372	5723	7072	8421	9769	1117	2463	3809	5154	6498	7842		0293	9114	7934	6754	5573	4391	3209	2025	0842	9657	8472	7286	6100	4912	3724	10
51	8985	0338	1691	3043	4394	5745	7095	8444	9792	1139	2486	3832	5177	6521	7864		0273	9094	7914	6734	5553	4371	3189	2006	0822	9637	8452	7266	6080	4892	3705	9
52	9007	0361	1714	3066	4417	5768	7117	8466	9814	1162	2508	3854	5199	6543	7887		0253	9074	7895	6714	5533	4352	3169	1986	0802	9618	8432	7247	6060	4873	3685	8
53	9030	0383	1736	3088	4440	5790	7140	8489	9837	1184	2531	3876	5221	6566	7909		0234	9055	7875	6695	5514	4332	3149	1966	0782	9598	8413	7227	6040	4853	3665	7
54	9052	0406	1759	3111	4462	5813	7162	8511	9859	1207	2553	3899	5244	6588	7931		0214	9035	7855	6675	5494	4312	3130	1947	0763	9578	8393	7207	6020	4833	3645	6
55	9075	0428	1781	3133	4485	5835	7185	8534	9882	1229	2576	3921	5266	6610	7954		0194	9015	7836	6655	5474	4292	3110	1927	0743	9558	8373	7187	6001	4813	3625	5
56	9097	0451	1804	3156	4507	5858	7207	8556	9904	1251	2598	3944	5289	6633	7976		0175	8996	7816	6636	5455	4273	3090	1907	0723	9539	8353	7167	5981	4794	3606	4
57	9120	0474	1826	3178	4530	5880	7230	8579	9927	1274	2620	3966	5311	6655	7999		0155	8976	7796	6616	5435	4253	3071	1887	0703	9519	8334	7148	5961	4774	3586	3
58	9143	0496	1849	3201	4552	5903	7252	8601	9949	1296	2643	3989	5333	6678	8021		0136	8956	7777	6596	5415	4233	3051	1868	0684	9499	8314	7128	5941	4754	3566	2
59	9165	0519	1871	3223	4575	5925	7275	8623	9972	1319	2665	4011	5356	6700	8043		0116	8937	7757	6577	5395	4214	3031	1848	0664	9479	8294	7108	5921	4734	3546	1
60	9188	0541	1894	3246	4597	5948	7297	8646	9994	1341	2688	4033	5378	6722	8068		0096	8917	7737	6557	5376	4194	3011	1828	0644	9460	8274	7088	5902	4714	3526	0
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

43 Deg. Tangent

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.969	9.969	9.970	9.970	9.970	9.970	9.971	9.971	9.971	9.971	9.972	9.972	9.972	9.972	9.973
0	6559	9091	1624	4157	6689	9221	1754	4286	6818	9350	1882	4413	6945	9477	2008
1	6601	9134	1666	4199	6731	9264	1796	4328	6860	9392	1924	4456	6987	9519	2050
2	6643	9176	1708	4241	6773	9306	1838	4370	6902	9434	1966	4498	7029	9561	2092
3	6685	9218	1751	4283	6816	9348	1880	4412	6944	9476	2008	4540	7072	9603	2135
4	6728	9260	1793	4325	6858	9390	1922	4455	6987	9519	2050	4582	7114	9645	2177
5	6770	9302	1835	4368	6900	9432	1965	4497	7029	9561	2093	4624	7156	9688	2219
6	6812	9345	1877	4410	6942	9475	2007	4539	7071	9603	2135	4667	7198	9730	2261
7	6854	9387	1920	4452	6984	9517	2049	4581	7113	9645	2177	4709	7240	9772	2303
8	6896	9429	1962	4494	7027	9559	2091	4623	7155	9687	2219	4751	7283	9814	2346
9	6939	9471	2004	4536	7069	9601	2133	4666	7198	9730	2261	4793	7325	9856	2388
10	6981	9514	2046	4579	7111	9643	2176	4708	7240	9772	2304	4835	7367	9898	2430
11	7023	9556	2088	4621	7153	9686	2218	4750	7282	9814	2346	4877	7409	9941	2472
12	7065	9598	2131	4663	7195	9728	2260	4792	7324	9856	2388	4920	7451	9983	2514
13	7107	9640	2173	4705	7238	9770	2302	4834	7366	9898	2430	4962	7494	0025	2557
14	7150	9682	2215	4747	7280	9812	2344	4877	7409	9941	2472	5004	7536	0067	2599
15	7192	9725	2257	4790	7322	9854	2387	4919	7451	9983	2515	5046	7578	0109	2641
16	7234	9767	2299	4832	7364	9897	2429	4961	7493	0025	2557	5088	7620	0152	2683
17	7276	9809	2342	4874	7407	9939	2471	5003	7535	0067	2599	5131	7662	0194	2725
18	7318	9851	2384	4916	7449	9981	2513	5045	7577	0109	2641	5173	7704	0236	2767
19	7361	9893	2426	4959	7491	0023	2555	5088	7620	0151	2683	5215	7747	0278	2810
20	7403	9936	2468	5001	7533	0065	2598	5130	7662	0194	2726	5257	7789	0320	2852
21	7445	9978	2510	5043	7575	0108	2640	5172	7704	0236	2768	5299	7831	0363	2894
22	7487	0020	2553	5085	7618	0150	2682	5214	7746	0278	2810	5342	7873	0405	2936
23	7530	0062	2595	5127	7660	0192	2724	5256	7788	0320	2852	5384	7915	0447	2978
24	7572	0104	2637	5170	7702	0234	2766	5299	7831	0362	2894	5426	7958	0489	3021
25	7614	0147	2679	5212	7744	0276	2809	5341	7873	0405	2936	5468	8000	0531	3063
26	7656	0189	2721	5254	7786	0319	2851	5383	7915	0447	2979	5510	8042	0574	3105
27	7698	0231	2764	5296	7829	0361	2893	5425	7957	0489	3021	5553	8084	0616	3147
28	7741	0273	2806	5338	7871	0403	2935	5467	7999	0531	3063	5595	8126	0658	3189
29	7783	0316	2848	5381	7913	0445	2977	5510	8042	0573	3105	5637	8169	0700	3232
30	7825	0358	2890	5423	7955	0487	3020	5552	8084	0616	3147	5679	8211	0742	3274
31	7867	0400	2933	5465	7997	0530	3062	5594	8126	0658	3190	5721	8253	0785	3316
32	7909	0442	2975	5507	8040	0572	3104	5636	8168	0700	3232	5764	8295	0827	3358
33	7952	0484	3017	5549	8082	0614	3146	5678	8210	0742	3274	5806	8337	0869	3400
34	7994	0527	3059	5592	8124	0656	3188	5721	8253	0784	3316	5848	8380	0911	3443
35	8036	0569	3101	5634	8166	0699	3231	5763	8295	0827	3358	5890	8422	0953	3485
36	8078	0611	3144	5676	8208	0741	3273	5805	8337	0869	3401	5932	8464	0995	3527
37	8121	0653	3186	5718	8251	0783	3315	5847	8379	0911	3443	5975	8506	1038	3569
38	8163	0695	3228	5760	8293	0825	3357	5889	8421	0953	3485	6017	8548	1080	3611
39	8205	0738	3270	5803	8335	0867	3400	5932	8464	0995	3527	6059	8591	1122	3653
40	8247	0780	3312	5845	8377	0910	3442	5974	8506	1038	3569	6101	8633	1164	3696
41	8289	0822	3355	5887	8419	0952	3484	6016	8548	1080	3612	6143	8675	1206	3738
42	8332	0864	3397	5929	8462	0994	3526	6058	8590	1122	3654	6186	8717	1249	3780
43	8374	0906	3439	5972	8504	1036	3568	6100	8632	1164	3696	6228	8759	1291	3822
44	8416	0949	3481	6014	8546	1078	3611	6143	8675	1206	3738	6270	8802	1333	3864
45	8458	0991	3523	6056	8588	1121	3653	6185	8717	1249	3780	6312	8844	1375	3907
46	8500	1033	3566	6098	8630	1163	3695	6227	8759	1291	3823	6354	8886	1417	3949
47	8543	1075	3608	6140	8673	1205	3737	6269	8801	1333	3865	6396	8928	1460	3991
48	8585	1118	3650	6183	8715	1247	3779	6311	8843	1375	3907	6439	8970	1502	4033
49	8627	1160	3692	6225	8757	1289	3822	6354	8886	1417	3949	6481	9012	1544	4075
50	8669	1202	3735	6267	8799	1332	3864	6396	8928	1460	3991	6523	9055	1586	4118
51	8712	1244	3777	6309	8842	1374	3906	6438	8970	1502	4034	6565	9097	1628	4160
52	8754	1286	3819	6351	8884	1416	3948	6480	9012	1544	4076	6607	9139	1671	4202
53	8796	1329	3861	6394	8926	1458	3990	6522	9054	1586	4118	6650	9181	1713	4244
54	8838	1371	3903	6436	8968	1500	4033	6565	9097	1628	4160	6692	9223	1755	4286
55	8880	1413	3946	6478	9010	1543	4075	6607	9139	1671	4202	6734	9266	1797	4329
56	8923	1455	3988	6520	9053	1585	4117	6649	9181	1713	4245	6776	9308	1839	4371
57	8965	1497	4030	6562	9095	1627	4159	6691	9223	1755	4287	6818	9350	1881	4413
58	9007	1540	4072	6605	9137	1669	4201	6733	9265	1797	4329	6861	9392	1924	4455
59	9049	1582	4114	6647	9179	1711	4244	6776	9308	1839	4371	6903	9434	1966	4497
60	9091	1624	4157	6689	9221	1754	4286	6818	9350	1882	4413	6945	9477	2008	4539
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

Co-Tangent Deg. 46

43 Deg. Co-Tangent

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
10.030	10.030	10.029	10.029	10.029	10.029	10.028	10.028	10.028	10.028	10.027	10.027	10.027	10.027	10.026	″
3441	0909	8376	5843	3311	0779	8246	5714	3182	0650	8118	5587	3055	0523	7992	60
3399	0866	8334	5801	3269	0736	8204	5672	3140	0608	8076	5544	3013	0481	7950	59
3357	0824	8292	5759	3227	0694	8162	5630	3098	0566	8034	5502	2971	0439	7908	58
3315	0782	8249	5717	3184	0652	8120	5588	3056	0524	7992	5460	2928	0397	7865	57
3272	0740	8207	5675	3142	0610	8078	5545	3013	0481	7950	5418	2886	0355	7823	56
3230	0698	8165	5632	3100	0568	8035	5503	2971	0439	7907	5376	2844	0312	7781	55
3188	0655	8123	5590	3058	0525	7993	5461	2929	0397	7865	5333	2802	0270	7739	54
3146	0613	8080	5548	3016	0483	7951	5419	2887	0355	7823	5291	2760	0228	7697	53
3104	0571	8038	5506	2973	0441	7909	5377	2845	0313	7781	5249	2717	0186	7654	52
3061	0529	7996	5464	2931	0399	7867	5334	2802	0270	7739	5207	2675	0144	7612	51
3019	0486	7954	5421	2889	0357	7824	5292	2760	0228	7696	5165	2633	0102	7570	50
2977	0444	7912	5379	2847	0314	7782	5250	2718	0186	7654	5123	2591	0059	7528	49
2935	0402	7869	5337	2805	0272	7740	5208	2676	0144	7612	5080	2549	0017	7486	48
2893	0360	7827	5295	2762	0230	7698	5166	2634	0102	7570	5038	2506	9975	7443	47
2850	0318	7785	5253	2720	0188	7656	5123	2591	0059	7528	4996	2464	9933	7401	46
2808	0275	7743	5210	2678	0146	7613	5081	2549	0017	7485	4954	2422	9891	7359	45
2766	0233	7701	5168	2636	0103	7571	5039	2507	9975	7443	4912	2380	9848	7317	44
2724	0191	7658	5126	2593	0061	7529	4997	2465	9933	7401	4869	2338	9806	7275	43
2682	0149	7616	5084	2551	0019	7487	4955	2423	9891	7359	4827	2296	9764	7233	42
2639	0107	7574	5041	2509	9977	7445	4912	2380	9849	7317	4785	2253	9722	7190	41
2597	0064	7532	4999	2467	9935	7402	4870	2338	9806	7274	4743	2211	9680	7148	40
2555	0022	7490	4957	2425	9892	7360	4828	2296	9764	7232	4701	2169	9637	7106	39
2513	9980	7447	4915	2382	9850	7318	4786	2254	9722	7190	4658	2127	9595	7064	38
2470	9938	7405	4873	2340	9808	7276	4744	2212	9680	7148	4616	2085	9553	7022	37
2428	9896	7363	4830	2298	9766	7234	4701	2169	9638	7106	4574	2042	9511	6979	36
2386	9853	7321	4788	2256	9724	7191	4659	2127	9595	7064	4532	2000	9469	6937	35
2344	9811	7279	4746	2214	9681	7149	4617	2085	9553	7021	4490	1958	9426	6895	34
2302	9769	7236	4704	2171	9639	7107	4575	2043	9511	6979	4447	1916	9384	6853	33
2259	9727	7194	4662	2129	9597	7065	4533	2001	9469	6937	4405	1874	9342	6811	32
2217	9684	7152	4619	2087	9555	7023	4490	1958	9427	6895	4363	1831	9300	6768	31
2175	9642	7110	4577	2045	9513	6980	4448	1916	9384	6853	4321	1789	9258	6726	30
2133	9600	7067	4535	2003	9470	6938	4406	1874	9342	6810	4279	1747	9215	6684	29
2091	9558	7025	4493	1960	9428	6896	4364	1832	9300	6768	4236	1705	9173	6642	28
2048	9516	6983	4451	1918	9386	6854	4322	1790	9258	6726	4194	1663	9131	6600	27
2006	9473	6941	4408	1876	9344	6812	4279	1747	9216	6684	4152	1620	9089	6557	26
1964	9431	6899	4366	1834	9301	6769	4237	1705	9173	6642	4110	1578	9047	6515	25
1922	9389	6856	4324	1792	9259	6727	4195	1663	9131	6599	4068	1536	9005	6473	24
1879	9347	6814	4282	1749	9217	6685	4153	1621	9089	6557	4025	1494	8962	6431	23
1837	9305	6772	4240	1707	9175	6643	4111	1579	9047	6515	3983	1452	8920	6389	22
1795	9262	6730	4197	1665	9133	6600	4068	1536	9005	6473	3941	1409	8878	6347	21
1753	9220	6688	4155	1623	9090	6558	4026	1494	8962	6431	3899	1367	8836	6304	20
1711	9178	6645	4113	1581	9048	6516	3984	1452	8920	6388	3857	1325	8794	6262	19
1668	9136	6603	4071	1538	9006	6474	3942	1410	8878	6346	3814	1283	8751	6220	18
1626	9094	6561	4028	1496	8964	6432	3900	1368	8836	6304	3772	1241	8709	6178	17
1584	9051	6519	3986	1454	8922	6389	3857	1325	8794	6262	3730	1198	8667	6136	16
1542	9009	6477	3944	1412	8879	6347	3815	1283	8751	6220	3688	1156	8625	6093	15
1500	8967	6434	3902	1370	8837	6305	3773	1241	8709	6177	3646	1114	8583	6051	14
1457	8925	6392	3860	1327	8795	6263	3731	1199	8667	6135	3604	1072	8540	6009	13
1415	8882	6350	3817	1285	8753	6221	3689	1157	8625	6093	3561	1030	8498	5967	12
1373	8840	6308	3775	1243	8711	6178	3646	1114	8583	6051	3519	0988	8456	5925	11
1331	8798	6265	3733	1201	8668	6136	3604	1072	8540	6009	3477	0945	8414	5882	10
1288	8756	6223	3691	1158	8626	6094	3562	1030	8498	5966	3435	0903	8372	5840	9
1246	8714	6181	3649	1116	8584	6052	3520	0988	8456	5924	3393	0861	8329	5798	8
1204	8671	6139	3606	1074	8542	6010	3478	0946	8414	5882	3350	0819	8287	5756	7
1162	8629	6097	3564	1032	8500	5967	3435	0903	8372	5840	3308	0777	8245	5714	6
1120	8587	6054	3522	0990	8457	5925	3393	0861	8329	5798	3266	0734	8203	5671	5
1077	8545	6012	3480	0947	8415	5883	3351	0819	8287	5755	3224	0692	8161	5629	4
1035	8503	5970	3438	0905	8373	5841	3309	0777	8245	5713	3182	0650	8119	5587	3
0993	8460	5928	3395	0863	8331	5799	3267	0735	8203	5671	3139	0608	8076	5545	2
0951	8418	5886	3353	0821	8289	5756	3224	0692	8161	5629	3097	0566	8034	5503	1
0909	8376	5843	3311	0779	8246	5714	3182	0650	8118	5587	3055	0523	7992	5461	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

Tangent Deg. 46

43 Deg. Sine

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9.835	9.835	9.836	9.836	9.836	9.836	9.836	9.836	9.836	9.837	9.837	9.837	9.837	9.837	9.837
0	8066	9408	0750	2091	3431	4771	6109	7447	8784	0121	1456	2791	4125	5458	6790
1	8088	9431	0772	2113	3454	4793	6132	7469	8807	0143	1478	2813	4147	5480	6813
2	8110	9453	6795	2136	3476	4815	6154	7492	8829	0165	1501	2835	4169	5502	6835
3	8133	9475	0817	2158	3498	4838	6176	7514	8851	0187	1523	2858	4191	5525	6857
4	8155	9498	0839	2180	3521	4860	6199	7536	8873	0210	1545	2880	4214	5547	6879
5	8178	9520	0862	2203	3543	4882	6221	7559	8896	0232	1567	2902	4236	5569	6901
6	8200	9542	0884	2225	3565	4905	6243	7581	8918	0254	1590	2924	4258	5591	6924
7	8222	9565	0907	2247	3588	4927	6265	7603	8940	0276	1612	2946	4280	5613	6946
8	8245	9587	0929	2270	3610	4949	6288	7625	8962	0299	1634	2969	4303	5636	6968
9	8267	9610	0951	2292	3632	4972	6310	7648	8985	0321	1656	2991	4325	5658	6990
10	8290	9632	0974	2314	3655	4994	6332	7670	9007	0343	1679	3013	4347	5680	7012
11	8312	9654	0996	2337	3677	5016	6355	7692	9029	0365	1701	3035	4369	5702	7035
12	8334	9677	1018	2359	3699	5038	6377	7715	9052	0388	1723	3058	4391	5725	7057
13	8357	9699	1041	2381	3722	5061	6399	7737	9074	0410	1745	3080	4414	5747	7079
14	8379	9721	1063	2404	3744	5083	6422	7759	9096	0432	1768	3102	4436	5769	7101
15	8401	9744	1085	2426	3766	5105	6444	7782	9118	0454	1790	3124	4458	5791	7123
16	8424	9766	1108	2448	3788	5128	6466	7804	9141	0477	1812	3147	4480	5813	7146
17	8446	9789	1130	2471	3811	5150	6488	7826	9163	0499	1834	3169	4503	5836	7168
18	8469	9811	1152	2493	3833	5172	6511	7848	9185	0521	1857	3191	4525	5858	7190
19	8491	9833	1175	2516	3855	5195	6533	7871	9207	0544	1879	3213	4547	5880	7212
20	8513	9856	1197	2538	3878	5217	6555	7893	9230	0566	1901	3236	4569	5902	7234
21	8536	9878	1219	2560	3900	5239	6578	7915	9252	0588	1923	3258	4591	5924	7257
22	8558	9900	1242	2583	3922	5262	6600	7938	9274	0610	1946	3280	4614	5947	7279
23	8580	9923	1264	2605	3945	5284	6622	7960	9297	0633	1968	3302	4636	5969	7301
24	8603	9945	1287	2627	3967	5306	6645	7982	9319	0655	1990	3324	4658	5991	7323
25	8625	9967	1309	2650	3989	5329	6667	8004	9341	0677	2012	3347	4680	6013	7345
26	8648	9990	1331	2672	4012	5351	6689	8027	9363	0699	2035	3369	4703	6035	7368
27	8670	0012	1354	2694	4034	5373	6711	8049	9386	0722	2057	3391	4725	6058	7390
28	8692	0035	1376	2717	4056	5395	6734	8071	9408	0744	2079	3413	4747	6080	7412
29	8715	0057	1398	2739	4079	5418	6756	8094	9430	0766	2101	3436	4769	6102	7434
30	8737	0079	1421	2761	4101	5440	6778	8116	9452	0788	2124	3458	4791	6124	7456
31	8759	0102	1443	2784	4123	5462	6801	8138	9475	0811	2146	3480	4814	6146	7479
32	8782	0124	1465	2806	4146	5485	6823	8160	9497	0833	2168	3502	4836	6169	7501
33	8804	0146	1488	2828	4168	5507	6845	8183	9519	0855	2190	3525	4858	6191	7523
34	8827	0169	1510	2851	4190	5529	6868	8205	9542	0877	2213	3547	4880	6213	7545
35	8849	0191	1532	2873	4213	5552	6890	8227	9564	0900	2235	3569	4903	6235	7567
36	8871	0213	1555	2895	4235	5574	6912	8250	9586	0922	2257	3591	4925	6258	7589
37	8894	0236	1577	2918	4257	5596	6934	8272	9608	0944	2279	3614	4947	6280	7612
38	8916	0258	1599	2940	4280	5619	6957	8294	9631	0966	2302	3636	4969	6302	7634
39	8938	0281	1622	2962	4302	5641	6979	8316	9653	0989	2324	3658	4991	6324	7656
40	8961	0303	1644	2985	4324	5663	7001	8339	9675	1011	2346	3680	5014	6346	7678
41	8983	0325	1666	3007	4347	5685	7024	8361	9697	1033	2368	3702	5036	6369	7700
42	9006	0348	1689	3029	4369	5708	7046	8383	9720	1055	2390	3725	5058	6391	7723
43	9028	0370	1711	3052	4391	5730	7068	8405	9742	1078	2413	3747	5080	6413	7745
44	9050	0392	1734	3074	4414	5752	7090	8428	9764	1100	2435	3769	5103	6435	7767
45	9073	0415	1756	3096	4436	5775	7113	8450	9787	1122	2457	3791	5125	6457	7789
46	9095	0437	1778	3119	4458	5797	7135	8472	9809	1145	2479	3814	5147	6480	7811
47	9117	0459	1801	3141	4481	5819	7157	8495	9831	1167	2502	3836	5169	6502	7834
48	9140	0482	1823	3163	4503	5842	7180	8517	9853	1189	2524	3858	5191	6524	7856
49	9162	0504	1845	3186	4525	5864	7202	8539	9876	1211	2546	3880	5214	6546	7878
50	9185	0526	1868	3208	4547	5886	7224	8561	9898	1234	2568	3903	5236	6568	7900
51	9207	0549	1890	3230	4570	5909	7247	8584	9920	1256	2591	3925	5258	6591	7922
52	9229	0571	1912	3253	4592	5931	7269	8606	9942	1278	2613	3947	5280	6613	7945
53	9252	0594	1935	3275	4614	5953	7291	8628	9965	1300	2635	3969	5302	6635	7967
54	9274	0616	1957	3297	4637	5975	7313	8651	9987	1323	2657	3991	5325	6657	7989
55	9296	0638	1979	3320	4659	5998	7336	8673	0009	1345	2680	4014	5347	6679	8011
56	9319	0661	2002	3342	4681	6020	7358	8695	0031	1367	2702	4036	5369	6702	8033
57	9341	0683	2024	3364	4704	6042	7380	8717	0054	1389	2724	4058	5391	6724	8055
58	9364	0705	2046	3387	4726	6065	7402	8740	0076	1412	2746	4080	5414	6746	8078
59	9386	0728	2069	3409	4748	6087	7425	8762	0098	1434	2769	4103	5436	6768	8100
60	9408	0750	2091	3431	4771	6109	7447	8784	0121	1456	2791	4125	5458	6790	8122
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Sine Deg. 46

43 Deg. Co-Sine

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	
	9.862	9.862	9.862	9.861	9.861	9.861	9.861	9.861	9.861	9.861	9.861	9.861	9.860	9.860	9.860	″
0	3526	2338	1148	9958	8767	7576	6383	5190	3997	2803	1608	0412	9215	8018	6821	60
1	3506	2318	1128	9938	8747	7556	6363	5171	3977	2783	1588	0392	9195	7998	6801	59
2	3487	2298	1108	9918	8727	7536	6344	5151	3957	2763	1568	0372	9176	7978	6781	58
3	3467	2278	1089	9898	8708	7516	6324	5131	3937	2743	1548	0352	9156	7958	6761	57
4	3447	2258	1069	9879	8688	7496	6304	5111	3917	2723	1528	0332	9136	7939	6741	56
5	3427	2238	1049	9859	8668	7476	6284	5091	3897	2703	1508	0312	9116	7919	6721	55
6	3407	2219	1029	9839	8648	7456	6264	5071	3877	2683	1488	0292	9096	7899	6701	54
7	3388	2199	1009	9819	8628	7437	6244	5051	3858	2663	1468	0272	9076	7879	6681	53
8	3368	2179	0989	9799	8608	7417	6224	5031	3838	2643	1448	0252	9056	7859	6661	52
9	3348	2159	0970	9779	8588	7397	6204	5011	3818	2623	1428	0232	9036	7839	6641	51
10	3328	2139	0950	9760	8569	7377	6185	4992	3798	2603	1408	0212	9016	7819	6621	50
11	3308	2120	0930	9740	8549	7357	6165	4972	3778	2584	1388	0193	8996	7799	6601	49
12	3289	2100	0910	9720	8529	7337	6145	4952	3758	2564	1368	0173	8976	7779	6581	48
13	3269	2080	0890	9700	8509	7317	6125	4932	3738	2544	1349	0153	8956	7759	6561	47
14	3249	2060	0870	9680	8489	7297	6105	4912	3718	2524	1329	0133	8936	7739	6541	46
15	3229	2040	0851	9660	8469	7278	6085	4892	3698	2504	1309	0113	8916	7719	6521	45
16	3209	2020	0831	9640	8449	7258	6065	4872	3678	2484	1289	0093	8896	7699	6501	44
17	3190	2001	0811	9621	8430	7238	6045	4852	3659	2464	1269	0073	8876	7679	6481	43
18	3170	1981	0791	9601	8410	7218	6026	4832	3639	2444	1249	0053	8856	7659	6461	42
19	3150	1961	0771	9581	8390	7198	6006	4813	3619	2424	1229	0033	8836	7639	6441	41
20	3130	1941	0751	9561	8370	7178	5986	4793	3599	2404	1209	0013	8816	7619	6421	40
21	3110	1921	0732	9541	8350	7158	5966	4773	3579	2384	1189	9993	8797	7599	6401	39
22	3090	1901	0712	9521	8330	7139	5946	4753	3559	2364	1169	9973	8777	7579	6381	38
23	3071	1882	0692	9502	8310	7119	5926	4733	3539	2345	1149	9953	8757	7559	6361	37
24	3051	1862	0672	9482	8291	7099	5906	4713	3519	2325	1129	9933	8737	7539	6341	36
25	3031	1842	0652	9462	8271	7079	5886	4693	3499	2305	1109	9913	8717	7519	6321	35
26	3011	1822	0632	9442	8251	7059	5867	4673	3479	2285	1089	9893	8697	7499	6301	34
27	2991	1802	0613	9422	8231	7039	5847	4653	3459	2265	1070	9874	8677	7479	6281	33
28	2972	1783	0593	9402	8211	7019	5827	4634	3440	2245	1050	9854	8657	7459	6261	32
29	2952	1763	0573	9382	8191	6999	5807	4614	3420	2225	1030	9834	8637	7440	6241	31
30	2932	1743	0553	9363	8171	6980	5787	4594	3400	2205	1010	9814	8617	7420	6221	30
31	2912	1723	0533	9343	8152	6960	5767	4574	3380	2185	0990	9794	8597	7400	6201	29
32	2892	1703	0513	9323	8132	6940	5747	4554	3360	2165	0970	9774	8577	7380	6181	28
33	2873	1683	0494	9303	8112	6920	5727	4534	3340	2145	0950	9754	8557	7360	6161	27
34	2853	1664	0474	9283	8092	6900	5707	4514	3320	2125	0930	9734	8537	7340	6142	26
35	2833	1644	0454	9263	8072	6880	5688	4494	3300	2106	0910	9714	8517	7320	6122	25
36	2813	1624	0434	9244	8052	6860	5668	4474	3280	2086	0890	9694	8497	7300	6102	24
37	2793	1604	0414	9224	8032	6840	5648	4454	3260	2066	0870	9674	8477	7280	6082	23
38	2773	1584	0394	9204	8013	6821	5628	4435	3241	2046	0850	9654	8457	7260	6062	22
39	2754	1564	0375	9184	7993	6801	5608	4415	3221	2026	0830	9634	8437	7240	6042	21
40	2734	1545	0355	9164	7973	6781	5588	4395	3201	2006	0810	9614	8417	7220	6022	20
41	2714	1525	0335	9144	7953	6761	5568	4375	3181	1986	0791	9594	8398	7200	6002	19
42	2694	1505	0315	9124	7933	6741	5548	4355	3161	1966	0771	9574	8378	7180	5982	18
43	2674	1485	0295	9105	7913	6721	5529	4335	3141	1946	0751	9554	8358	7160	5962	17
44	2655	1465	0275	9085	7893	6701	5509	4315	3121	1926	0731	9535	8338	7140	5942	16
45	2635	1446	0256	9065	7874	6681	5489	4295	3101	1906	0711	9515	8318	7120	5922	15
46	2615	1426	0236	9045	7854	6662	5469	4275	3081	1886	0691	9495	8298	7100	5902	14
47	2595	1406	0216	9025	7834	6642	5449	4256	3061	1867	0671	9475	8278	7080	5882	13
48	2575	1386	0196	9005	7814	6622	5429	4236	3041	1847	0651	9455	8258	7060	5862	12
49	2556	1366	0176	8985	7794	6602	5409	4216	3022	1827	0631	9435	8238	7040	5842	11
50	2536	1346	0156	8966	7774	6582	5389	4196	3002	1807	0611	9415	8218	7020	5822	10
51	2516	1327	0137	8946	7754	6562	5369	4176	2982	1787	0591	9395	8198	7000	5802	9
52	2496	1307	0117	8926	7735	6542	5350	4156	2962	1767	0571	9375	8178	6980	5782	8
53	2476	1287	0097	8906	7715	6522	5330	4136	2942	1747	0551	9355	8158	6960	5762	7
54	2456	1267	0077	8886	7695	6503	5310	4116	2922	1727	0531	9335	8138	6940	5742	6
55	2437	1247	0057	8866	7675	6483	5290	4096	2902	1707	0512	9315	8118	6920	5722	5
56	2417	1227	0037	8847	7655	6463	5270	4076	2882	1687	0492	9295	8098	6900	5702	4
57	2397	1208	0017	8827	7635	6443	5250	4057	2862	1667	0472	9275	8078	6880	5682	3
58	2377	1188	9998	8807	7615	6423	5230	4037	2842	1647	0452	9255	8058	6860	5662	2
59	2357	1168	9978	8787	7595	6403	5210	4017	2822	1627	0432	9235	8038	6841	5642	1
60	2338	1148	9958	8767	7576	6383	5190	3997	2803	1608	0412	9215	8018	6821	5622	0
	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Sine Deg. 46

43 Deg. Tangent

"	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.
	973	973	973	974	974	974	974	975	975	975	975	976	976	976	976
0	4539	7071	9602	2133	4664	7195	9726	2257	4787	7318	9849	2379	4909	7440	9970
1	4582	7113	9644	2175	4706	7237	9768	2299	4830	7360	9891	2421	4952	7482	0012
2	4624	7155	9686	2217	4748	7279	9810	2341	4872	7402	9933	2463	4994	7524	0054
3	4666	7197	9729	2260	4791	7322	9852	2383	4914	7445	9975	2505	5036	7566	0096
4	4708	7239	9771	2302	4833	7364	9895	2425	4956	7487	0017	2548	5078	7608	0139
5	4750	7282	9813	2344	4875	7406	9937	2468	4998	7529	0059	2590	5120	7650	0181
6	4793	7324	9855	2386	4917	7448	9979	2510	5040	7571	0102	2632	5162	7693	0223
7	4835	7366	9897	2428	4959	7490	0021	2552	5083	7613	0144	2674	5205	7735	0265
8	4877	7408	9939	2471	5002	7533	0063	2594	5125	7655	0186	2716	5247	7777	0307
9	4919	7450	9982	2513	5044	7575	0106	2636	5167	7698	0228	2759	5289	7819	0349
10	4961	7493	0024	2555	5086	7617	0148	2678	5209	7740	0270	2801	5331	7861	0392
11	5004	7535	0066	2597	5128	7659	0190	2721	5251	7782	0312	2843	5373	7904	0434
12	5046	7577	0108	2639	5170	7701	0232	2763	5294	7824	0355	2885	5415	7946	0476
13	5088	7619	0150	2681	5212	7743	0274	2805	5336	7866	0397	2927	5458	7988	0518
14	5130	7661	0193	2724	5255	7786	0316	2847	5378	7908	0439	2969	5500	8030	0560
15	5172	7704	0235	2766	5297	7828	0359	2889	5420	7951	0481	3012	5542	8072	0602
16	5214	7746	0277	2808	5339	7870	0401	2932	5462	7993	0523	3054	5584	8114	0645
17	5257	7788	0319	2850	5381	7912	0443	2974	5504	8035	0566	3096	5626	8157	0687
18	5299	7830	0361	2892	5423	7954	0485	3016	5547	8077	0608	3138	5668	8199	0729
19	5341	7872	0403	2935	5466	7997	0527	3058	5589	8119	0650	3180	5711	8241	0771
20	5383	7914	0446	2977	5508	8039	0570	3100	5631	8162	0692	3222	5753	8283	0813
21	5425	7957	0488	3019	5550	8081	0612	3142	5673	8204	0734	3265	5795	8325	0855
22	5468	7999	0530	3061	5592	8123	0654	3185	5715	8246	0776	3307	5837	8367	0898
23	5510	8041	0572	3103	5634	8165	0696	3227	5757	8288	0819	3349	5879	8410	0940
24	5552	8083	0614	3146	5677	8207	0738	3269	5800	8330	0861	3391	5921	8452	0982
25	5594	8125	0657	3188	5719	8250	0780	3311	5842	8372	0903	3433	5964	8494	1024
26	5636	8168	0699	3230	5761	8292	0823	3353	5884	8415	0945	3475	6006	8536	1066
27	5679	8210	0741	3272	5803	8334	0865	3396	5926	8457	0987	3518	6048	8578	1108
28	5721	8252	0783	3314	5845	8376	0907	3438	5968	8499	1029	3560	6090	8620	1151
29	5763	8294	0825	3356	5887	8418	0949	3480	6011	8541	1072	3602	6132	8663	1193
30	5805	8336	0868	3399	5930	8461	0991	3522	6053	8583	1114	3644	6174	8705	1235
31	5847	8379	0910	3441	5972	8503	1034	3564	6095	8625	1156	3686	6217	8747	1277
32	5889	8421	0952	3483	6014	8545	1076	3606	6137	8668	1198	3729	6259	8789	1319
33	5932	8463	0994	3525	6056	8587	1118	3649	6179	8710	1240	3771	6301	8831	1361
34	5974	8505	1036	3567	6098	8629	1160	3691	6221	8752	1282	3813	6343	8873	1404
35	6016	8547	1078	3610	6141	8671	1202	3733	6264	8794	1325	3855	6385	8916	1446
36	6058	8589	1121	3652	6183	8714	1244	3775	6306	8836	1367	3897	6428	8958	1488
37	6100	8632	1163	3694	6225	8756	1287	3817	6348	8879	1409	3939	6470	9000	1530
38	6143	8674	1205	3736	6267	8798	1329	3859	6390	8921	1451	3982	6512	9042	1572
39	6185	8716	1247	3778	6309	8840	1371	3902	6432	8963	1493	4024	6554	9084	1614
40	6227	8758	1289	3820	6351	8882	1413	3944	6474	9005	1536	4066	6596	9126	1657
41	6269	8800	1332	3863	6394	8924	1455	3986	6517	9047	1578	4108	6638	9169	1699
42	6311	8843	1374	3905	6436	8967	1497	4028	6559	9089	1620	4150	6681	9211	1741
43	6354	8885	1416	3947	6478	9009	1540	4070	6601	9132	1662	4192	6723	9253	1783
44	6396	8927	1458	3989	6520	9051	1582	4113	6643	9174	1704	4235	6765	9295	1825
45	6438	8969	1500	4031	6562	9093	1624	4155	6685	9216	1746	4277	6807	9337	1867
46	6480	9011	1542	4074	6605	9135	1666	4197	6728	9258	1789	4319	6849	9379	1910
47	6522	9054	1585	4116	6647	9178	1708	4239	6770	9300	1831	4361	6891	9422	1952
48	6564	9096	1627	4158	6689	9220	1751	4281	6812	9342	1873	4403	6934	9464	1994
49	6607	9138	1669	4200	6731	9262	1793	4323	6854	9385	1915	4445	6976	9506	2036
50	6649	9180	1711	4242	6773	9304	1835	4366	6896	9427	1957	4488	7018	9548	2078
51	6691	9222	1753	4284	6815	9346	1877	4408	6938	9469	1999	4530	7060	9590	2120
52	6733	9264	1796	4327	6858	9388	1919	4450	6981	9511	2042	4572	7102	9632	2163
53	6775	9307	1838	4369	6900	9431	1961	4492	7023	9553	2084	4614	7144	9675	2205
54	6818	9349	1880	4411	6942	9473	2004	4534	7065	9595	2126	4656	7187	9717	2247
55	6860	9391	1922	4453	6984	9515	2046	4577	7107	9638	2168	4698	7229	9759	2289
56	6902	9433	1964	4495	7026	9557	2088	4619	7149	9680	2210	4741	7271	9801	2331
57	6944	9475	2007	4538	7069	9599	2130	4661	7191	9722	2252	4783	7313	9843	2373
58	6986	9518	2049	4580	7111	9642	2172	4703	7234	9764	2295	4825	7355	9885	2416
59	7029	9560	2091	4622	7153	9684	2215	4745	7276	9806	2337	4867	7397	9928	2458
60	7071	9602	2133	4664	7195	9726	2257	4787	7318	9849	2379	4909	7440	9970	2500
"	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Tangent Deg. 46

43 Deg. Co-Tangent

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	"
10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	
026	026	026	025	025	025	025	024	024	024	024	023	023	023	023	
5461	2929	0398	7867	5336	2805	0274	7743	5213	2682	0151	7621	5091	2560	0030	60
5418	2887	0356	7825	5294	2763	0232	7701	5170	2640	0109	7579	5048	2518	9986	59
5376	2845	0314	7783	5252	2721	0190	7659	5128	2598	0067	7537	5006	2476	9946	58
5334	2803	0271	7740	5209	2678	0148	7617	5086	2555	0025	7495	4964	2434	9904	57
5292	2761	0229	7698	5167	2636	0105	7575	5044	2513	9983	7452	4922	2392	9861	56
5250	2718	0187	7656	5125	2594	0063	7532	5002	2471	9941	7410	4880	2350	9819	55
5207	2676	0145	7614	5083	2552	0021	7490	4960	2429	9898	7368	4838	2307	9777	54
5165	2634	0103	7572	5041	2510	9979	7448	4917	2387	9856	7326	4795	2265	9735	53
5123	2592	0061	7529	4998	2467	9937	7406	4875	2345	9814	7284	4753	2223	9693	52
5081	2550	0018	7487	4956	2425	9894	7364	4833	2302	9772	7241	4711	2181	9651	51
5039	2507	9976	7445	4914	2383	9852	7322	4791	2260	9730	7199	4669	2139	9608	50
4996	2465	9934	7403	4872	2341	9810	7279	4749	2218	9688	7157	4627	2096	9566	49
4954	2423	9892	7361	4830	2299	9768	7237	4706	2176	9645	7115	4585	2054	9524	48
4912	2381	9850	7319	4788	2257	9726	7195	4664	2134	9603	7073	4542	2012	9482	47
4870	2339	9807	7276	4745	2214	9684	7153	4622	2092	9561	7031	4500	1970	9440	46
4828	2296	9765	7234	4703	2172	9641	7111	4580	2049	9519	6988	4458	1928	9398	45
4786	2254	9723	7192	4661	2130	9599	7068	4538	2007	9477	6946	4416	1886	9355	44
4743	2212	9681	7150	4619	2088	9557	7026	4496	1965	9434	6904	4374	1843	9313	43
4701	2170	9639	7108	4577	2046	9515	6984	4453	1923	9392	6862	4332	1801	9271	42
4659	2128	9597	7065	4534	2003	9473	6942	4411	1881	9350	6820	4289	1759	9229	41
4617	2086	9554	7023	4492	1961	9430	6900	4369	1838	9308	6778	4247	1717	9187	40
4575	2043	9512	6981	4450	1919	9388	6858	4327	1796	9266	6735	4205	1675	9145	39
4532	2001	9470	6939	4408	1877	9346	6815	4285	1754	9224	6693	4163	1633	9102	38
4490	1959	9428	6897	4366	1835	9304	6773	4243	1712	9181	6651	4121	1590	9060	37
4448	1917	9386	6854	4323	1793	9262	6731	4200	1670	9139	6609	4079	1548	9018	36
4406	1875	9343	6812	4281	1750	9220	6689	4158	1628	9097	6567	4036	1506	8976	35
4364	1832	9301	6770	4239	1708	9177	6647	4116	1585	9055	6525	3994	1464	8934	34
4321	1790	9259	6728	4197	1666	9135	6604	4074	1543	9013	6482	3952	1422	8892	33
4279	1748	9217	6686	4155	1624	9093	6562	4032	1501	8971	6440	3910	1380	8849	32
4237	1706	9175	6644	4113	1582	9051	6520	3989	1459	8928	6398	3868	1337	8807	31
4195	1664	9132	6601	4070	1539	9009	6478	3947	1417	8886	6356	3826	1295	8765	30
4153	1621	9090	6559	4028	1497	8966	6436	3905	1375	8844	6314	3783	1253	8723	29
4111	1579	9048	6517	3986	1455	8924	6394	3863	1332	8802	6271	3741	1211	8681	28
4068	1537	9006	6475	3944	1413	8882	6351	3821	1290	8760	6229	3699	1169	8639	27
4026	1495	8964	6433	3902	1371	8840	6309	3779	1248	8718	6187	3657	1127	8596	26
3984	1453	8922	6390	3859	1329	8798	6267	3736	1206	8675	6145	3615	1084	8554	25
3942	1411	8879	6348	3817	1286	8756	6225	3694	1164	8633	6103	3572	1042	8512	24
3900	1368	8837	6306	3775	1244	8713	6183	3652	1121	8591	6061	3530	1000	8470	23
3857	1326	8795	6264	3733	1202	8671	6141	3610	1079	8549	6018	3488	0958	8428	22
3815	1284	8753	6222	3691	1160	8629	6098	3568	1037	8507	5976	3446	0916	8386	21
3773	1242	8711	6180	3649	1118	8587	6056	3526	0995	8464	5934	3404	0874	8343	20
3731	1200	8668	6137	3606	1076	8545	6014	3483	0953	8422	5892	3362	0831	8301	19
3689	1157	8626	6095	3564	1033	8503	5972	3441	0911	8380	5850	3319	0789	8259	18
3646	1115	8584	6053	3522	0991	8460	5930	3399	0868	8338	5808	3277	0747	8217	17
3604	1073	8542	6011	3480	0949	8418	5887	3357	0826	8296	5765	3235	0705	8175	16
3562	1031	8500	5969	3438	0907	8376	5845	3315	0784	8254	5723	3193	0663	8133	15
3520	0989	8458	5926	3395	0865	8334	5803	3272	0742	8211	5681	3151	0621	8090	14
3478	0946	8415	5884	3353	0822	8292	5761	3230	0700	8169	5639	3109	0578	8048	13
3436	0904	8373	5842	3311	0780	8249	5719	3188	0658	8127	5597	3066	0536	8006	12
3393	0862	8331	5800	3269	0738	8207	5677	3146	0615	8085	5555	3024	0494	7964	11
3351	0820	8289	5758	3227	0696	8165	5634	3104	0573	8043	5512	2982	0452	7922	10
3309	0778	8247	5716	3185	0654	8123	5592	3062	0531	8001	5470	2940	0410	7880	9
3267	0736	8204	5673	3142	0612	8081	5550	3019	0489	7958	5428	2898	0368	7837	8
3225	0693	8162	5631	3100	0569	8039	5508	2977	0447	7916	5386	2856	0325	7795	7
3182	0651	8120	5589	3058	0527	7996	5466	2935	0405	7874	5344	2813	0283	7753	6
3140	0609	8078	5547	3016	0485	7954	5423	2893	0362	7832	5302	2771	0241	7711	5
3098	0567	8036	5505	2974	0443	7912	5381	2851	0320	7790	5259	2729	0199	7669	4
3056	0525	7993	5462	2931	0401	7870	5339	2809	0278	7748	5217	2687	0157	7627	3
3014	0482	7951	5420	2889	0358	7828	5297	2766	0236	7705	5175	2645	0115	7584	2
2971	0440	7909	5378	2847	0316	7785	5255	2724	0194	7663	5133	2603	0072	7542	1
2929	0398	7867	5336	2805	0274	7743	5213	2682	0151	7621	5091	2560	0030	7500	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	"

Tangent Deg. 46

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
″	9.837	9.837	9.838	9.838	9.838	9.838	9.838	9.838	9.838	9.839	9.839	9.839	9.839	9.839	9.839
0	8122	9453	0783	2112	3441	4769	6096	7422	8747	0072	1396	2719	4041	5363	6684
1	8144	9475	0805	2134	3463	4791	6118	7444	8769	0094	1418	2741	4063	5385	6706
2	8166	9497	0827	2157	3485	4813	6140	7466	8791	0116	1440	2763	4085	5407	6728
3	8189	9519	0849	2179	3507	4835	6162	7488	8814	0138	1462	2785	4107	5429	6750
4	8211	9542	0872	2201	3529	4857	6184	7510	8836	0160	1484	2807	4129	5451	6772
5	8233	9564	0894	2223	3552	4879	6206	7532	8858	0182	1506	2829	4152	5473	6794
6	8255	9586	0916	2245	3574	4901	6228	7554	8880	0204	1528	2851	4174	5495	6816
7	8277	9608	0938	2267	3596	4923	6250	7577	8902	0226	1550	2873	4196	5517	6838
8	8300	9630	0960	2289	3618	4946	6272	7599	8924	0249	1572	2895	4218	5539	6860
9	8322	9652	0982	2312	3640	4968	6295	7621	8946	0271	1594	2917	4240	5561	6882
10	8344	9675	1005	2334	3662	4990	6317	7643	8968	0293	1616	2939	4262	5583	6904
11	8366	9697	1027	2356	3684	5012	6339	7665	8990	0315	1638	2961	4284	5605	6926
12	8388	9719	1049	2378	3706	5034	6361	7687	9012	0337	1661	2984	4306	5627	6948
13	8410	9741	1071	2400	3729	5056	6383	7709	9034	0359	1683	3006	4328	5649	6970
14	8433	9763	1093	2422	3751	5078	6405	7731	9056	0381	1705	3028	4350	5671	6992
15	8455	9785	1115	2445	3773	5100	6427	7753	9079	0403	1727	3050	4372	5693	7014
16	8477	9808	1138	2467	3795	5123	6449	7775	9101	0425	1749	3072	4394	5715	7036
17	8499	9830	1160	2489	3817	5145	6471	7797	9123	0447	1771	3094	4416	5737	7058
18	8521	9852	1182	2511	3839	5167	6494	7820	9145	0469	1793	3116	4438	5759	7080
19	8544	9874	1204	2533	3861	5189	6516	7842	9167	0491	1815	3138	4460	5781	7102
20	8566	9896	1226	2555	3884	5211	6538	7864	9189	0513	1837	3160	4482	5803	7124
21	8588	9919	1248	2577	3906	5233	6560	7886	9211	0535	1859	3182	4504	5825	7146
22	8610	9941	1270	2600	3928	5255	6582	7908	9233	0557	1881	3204	4526	5847	7168
23	8632	9963	1293	2622	3950	5277	6604	7930	9255	0580	1903	3226	4548	5869	7190
24	8654	9985	1315	2644	3972	5300	6626	7952	9277	0602	1925	3248	4570	5891	7212
25	8677	0007	1337	2666	3994	5322	6648	7974	9299	0624	1947	3270	4592	5913	7234
26	8699	0029	1359	2688	4016	5344	6670	7996	9321	0646	1969	3292	4614	5935	7256
27	8721	0052	1381	2710	4038	5366	6693	8018	9343	0668	1991	3314	4636	5957	7278
28	8743	0074	1403	2732	4061	5388	6715	8040	9366	0690	2013	3336	4658	5979	7300
29	8765	0096	1426	2755	4083	5410	6737	8063	9388	0712	2035	3358	4680	6001	7322
30	8788	0118	1448	2777	4105	5432	6759	8085	9410	0734	2058	3380	4702	6023	7344
31	8810	0140	1470	2799	4127	5454	6781	8107	9432	0756	2080	3402	4724	6045	7366
32	8832	0162	1492	2821	4149	5476	6803	8129	9454	0778	2102	3424	4746	6067	7388
33	8854	0185	1514	2843	4171	5499	6825	8151	9476	0800	2124	3446	4768	6090	7410
34	8876	0207	1536	2865	4193	5521	6847	8173	9498	0822	2146	3468	4790	6112	7432
35	8898	0229	1559	2887	4215	5543	6869	8195	9520	0844	2168	3490	4812	6134	7454
36	8921	0251	1581	2910	4238	5565	6891	8217	9542	0866	2190	3513	4834	6156	7476
37	8943	0273	1603	2932	4260	5587	6914	8239	9564	0888	2212	3535	4856	6178	7498
38	8965	0295	1625	2954	4282	5609	6936	8261	9586	0911	2234	3557	4878	6200	7520
39	8987	0318	1647	2976	4304	5631	6958	8283	9608	0933	2256	3579	4900	6222	7542
40	9009	0340	1669	2998	4326	5653	6980	8306	9630	0955	2278	3601	4923	6244	7564
41	9032	0362	1691	3020	4348	5675	7002	8328	9653	0977	2300	3623	4945	6266	7586
42	9054	0384	1714	3042	4370	5698	7024	8350	9675	0999	2322	3645	4967	6288	7608
43	9076	0406	1736	3065	4392	5720	7046	8372	9697	1021	2344	3667	4989	6310	7630
44	9098	0428	1758	3087	4415	5742	7068	8394	9719	1043	2366	3689	5011	6332	7652
45	9120	0451	1780	3109	4437	5764	7090	8416	9741	1065	2388	3711	5033	6354	7674
46	9142	0473	1802	3131	4459	5786	7112	8438	9763	1087	2410	3733	5055	6376	7696
47	9165	0495	1824	3153	4481	5808	7135	8460	9785	1109	2432	3755	5077	6398	7718
48	9187	0517	1847	3175	4503	5830	7157	8482	9807	1131	2454	3777	5099	6420	7740
49	9209	0539	1869	3197	4525	5852	7179	8504	9829	1153	2476	3799	5121	6442	7762
50	9231	0561	1891	3219	4547	5874	7201	8526	9851	1175	2499	3821	5143	6464	7784
51	9253	0584	1913	3242	4569	5897	7223	8549	9873	1197	2521	3843	5165	6486	7806
52	9275	0606	1935	3264	4592	5919	7245	8571	9895	1219	2543	3865	5187	6508	7828
53	9298	0628	1957	3286	4614	5941	7267	8593	9917	1241	2565	3887	5209	6530	7850
54	9320	0650	1979	3308	4636	5963	7289	8615	9940	1264	2587	3909	5231	6552	7872
55	9342	0672	2002	3330	4658	5985	7311	8637	9962	1286	2609	3931	5253	6574	7894
56	9364	0694	2024	3352	4680	6007	7333	8659	9984	1308	2631	3953	5275	6596	7916
57	9386	0717	2046	3374	4702	6029	7356	8681	0006	1330	2653	3975	5297	6618	7938
58	9409	0739	2068	3397	4724	6051	7378	8703	0028	1352	2675	3997	5319	6640	7960
59	9431	0761	2090	3419	4746	6073	7400	8725	0050	1374	2697	4019	5341	6662	7982
60	9453	0783	2112	3441	4769	6096	7422	8747	0072	1396	2719	4041	5363	6684	8004
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	
	9.860	9.860	9.860	9.860	9.860	9.859	9.859	9.859	9.859	9.859	9.859	9.859	9.859	9.858	9.858	″
0	5622	4423	3223	2022	0821	9619	8416	7213	6009	4804	3599	2393	1186	9978	8770	60
1	5602	4403	3203	2002	0801	9599	8396	7193	5989	4784	3579	2372	1165	9958	8750	59
2	5582	4383	3183	1982	0781	9579	8376	7173	5969	4764	3559	2352	1145	9938	8729	58
3	5562	4363	3163	1962	0761	9559	8356	7153	5949	4744	3538	2332	1125	9918	8709	57
4	5542	4343	3143	1942	0741	9539	8336	7133	5929	4724	3518	2312	1105	9897	8689	56
5	5522	4323	3123	1922	0721	9519	8316	7113	5909	4704	3498	2292	1085	9877	8669	55
6	5502	4303	3103	1902	0701	9499	8296	7093	5889	4684	3478	2272	1065	9857	8649	54
7	5482	4283	3083	1882	0681	9479	8276	7073	5868	4664	3458	2252	1045	9837	8629	53
8	5462	4263	3063	1862	0661	9459	8256	7053	5848	4644	3438	2232	1025	9817	8609	52
9	5442	4243	3043	1842	0641	9439	8236	7033	5828	4623	3418	2212	1005	9797	8588	51
10	5422	4223	3023	1822	0621	9419	8216	7012	5808	4603	3398	2191	0984	9777	8568	50
11	5402	4203	3003	1802	0601	9399	8196	6992	5788	4583	3378	2171	0964	9757	8548	49
12	5382	4183	2983	1782	0581	9379	8176	6972	5768	4563	3358	2151	0944	9736	8528	48
13	5362	4163	2963	1762	0561	9359	8156	6952	5748	4543	3337	2131	0924	9716	8508	47
14	5342	4143	2943	1742	0541	9339	8136	6932	5728	4523	3317	2111	0904	9696	8488	46
15	5322	4123	2923	1722	0521	9319	8116	6912	5708	4503	3297	2091	0884	9676	8468	45
16	5302	4103	2903	1702	0501	9298	8096	6892	5688	4483	3277	2071	0864	9656	8447	44
17	5282	4083	2883	1682	0481	9278	8076	6872	5668	4463	3257	2051	0844	9636	8427	43
18	5262	4063	2863	1662	0461	9258	8056	6852	5648	4443	3237	2031	0823	9616	8407	42
19	5242	4043	2843	1642	0441	9238	8035	6832	5628	4423	3217	2010	0803	9595	8387	41
20	5222	4023	2823	1622	0421	9218	8015	6812	5607	4402	3197	1990	0783	9575	8367	40
21	5202	4003	2803	1602	0401	9198	7995	6792	5587	4382	3177	1970	0763	9555	8347	39
22	5182	3983	2783	1582	0380	9178	7975	6772	5567	4362	3157	1950	0743	9535	8326	38
23	5162	3963	2763	1562	0360	9158	7955	6752	5547	4342	3136	1930	0723	9515	8306	37
24	5142	3943	2743	1542	0340	9138	7935	6732	5527	4322	3116	1910	0703	9495	8286	36
25	5122	3923	2723	1522	0320	9118	7915	6711	5507	4302	3096	1890	0683	9475	8266	35
26	5103	3903	2703	1502	0300	9098	7895	6691	5487	4282	3076	1870	0662	9455	8246	34
27	5083	3883	2683	1482	0280	9078	7875	6671	5467	4262	3056	1849	0642	9434	8226	33
28	5063	3863	2663	1462	0260	9058	7855	6651	5447	4242	3036	1829	0622	9414	8206	32
29	5043	3843	2643	1442	0240	9038	7835	6631	5427	4222	3016	1809	0602	9394	8185	31
30	5023	3823	2623	1422	0220	9018	7815	6611	5407	4202	2996	1789	0582	9374	8165	30
31	5003	3803	2603	1402	0200	8998	7795	6591	5387	4181	2976	1769	0562	9354	8145	29
32	4983	3783	2583	1382	0180	8978	7775	6571	5367	4161	2955	1749	0542	9334	8125	28
33	4963	3763	2563	1362	0160	8958	7755	6551	5346	4141	2935	1729	0522	9314	8105	27
34	4943	3743	2543	1342	0140	8938	7735	6531	5326	4121	2915	1709	0501	9293	8085	26
35	4923	3723	2523	1322	0120	8918	7715	6511	5306	4101	2895	1689	0481	9273	8065	25
36	4903	3703	2503	1302	0100	8898	7695	6491	5286	4081	2875	1668	0461	9253	8044	24
37	4883	3683	2483	1282	0080	8878	7674	6471	5266	4061	2855	1648	0441	9233	8024	23
38	4863	3663	2463	1262	0060	8858	7654	6451	5246	4041	2835	1628	0421	9213	8004	22
39	4843	3643	2443	1242	0040	8837	7634	6430	5226	4021	2815	1608	0401	9193	7984	21
40	4823	3623	2423	1222	0020	8817	7614	6410	5206	4001	2795	1588	0381	9173	7964	20
41	4803	3603	2403	1202	0000	8797	7594	6390	5186	3981	2775	1568	0361	9152	7944	19
42	4783	3583	2383	1182	9980	8777	7574	6370	5166	3960	2754	1548	0340	9132	7923	18
43	4763	3563	2363	1162	9960	8757	7554	6350	5146	3940	2734	1528	0320	9112	7903	17
44	4743	3543	2343	1142	9940	8737	7534	6330	5126	3920	2714	1508	0300	9092	7883	16
45	4723	3523	2323	1122	9920	8717	7514	6310	5105	3900	2694	1487	0280	9072	7863	15
46	4703	3503	2303	1101	9900	8697	7494	6290	5085	3880	2674	1467	0260	9052	7843	14
47	4683	3483	2283	1081	9880	8677	7474	6270	5065	3860	2654	1447	0240	9032	7823	13
48	4663	3463	2263	1061	9860	8657	7454	6250	5045	3840	2634	1427	0220	9011	7803	12
49	4643	3443	2243	1041	9840	8637	7434	6230	5025	3820	2614	1407	0199	8991	7782	11
50	4623	3423	2223	1021	9820	8617	7414	6210	5005	3800	2594	1387	0179	8971	7762	10
51	4603	3403	2203	1001	9799	8597	7394	6190	4985	3780	2573	1367	0159	8951	7742	9
52	4583	3383	2183	0981	9779	8577	7374	6170	4965	3759	2553	1347	0139	8931	7722	8
53	4563	3363	2163	0961	9759	8557	7354	6149	4945	3739	2533	1326	0119	8911	7702	7
54	4543	3343	2143	0941	9739	8537	7333	6129	4925	3719	2513	1306	0099	8891	7682	6
55	4523	3323	2122	0921	9719	8517	7313	6109	4905	3699	2493	1286	0079	8870	7661	5
56	4503	3303	2102	0901	9699	8497	7293	6089	4885	3679	2473	1266	0059	8850	7641	4
57	4483	3283	2082	0881	9679	8477	7273	6069	4864	3659	2453	1246	0038	8830	7621	3
58	4463	3263	2062	0861	9659	8457	7253	6049	4844	3639	2433	1226	0018	8810	7601	2
59	4443	3243	2042	0841	9639	8437	7233	6029	4824	3619	2413	1206	9998	8790	7581	1
60	4423	3223	2022	0821	9619	8416	7213	6009	4804	3599	2393	1186	9978	8770	7561	0
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

″	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9.977	9.977	9.977	9.978	9.978	9.978	9.978	9.979	9.979	9.979	9.979	9.980	9.980	9.980	9.980
0	2500	5030	7560	0090	2620	5149	7679	0209	2738	5268	7797	0326	2856	5385	7914
1	2542	5072	7602	0132	2662	5192	7721	0251	2780	5310	7839	0369	2898	5427	7956
2	2584	5114	7644	0174	2704	5234	7763	0293	2823	5352	7881	0411	2940	5469	7998
3	2626	5157	7686	0216	2746	5276	7806	0335	2865	5394	7924	0453	2982	5511	8041
4	2669	5199	7729	0259	2788	5318	7848	0377	2907	5436	7966	0495	3024	5554	8083
5	2711	5241	7771	0301	2831	5360	7890	0420	2949	5479	8008	0537	3067	5596	8125
6	2753	5283	7813	0343	2873	5402	7932	0462	2991	5521	8050	0579	3109	5638	8167
7	2795	5325	7855	0385	2915	5445	7974	0504	3033	5563	8092	0622	3151	5680	8209
8	2837	5367	7897	0427	2957	5487	8016	0546	3076	5605	8134	0664	3193	5722	8251
9	2879	5410	7939	0469	2999	5529	8059	0588	3118	5647	8177	0706	3235	5764	8293
10	2922	5452	7982	0512	3041	5571	8101	0630	3160	5689	8219	0748	3277	5806	8336
11	2964	5494	8024	0554	3084	5613	8143	0673	3202	5731	8261	0790	3319	5849	8378
12	3006	5536	8066	0596	3126	5655	8185	0715	3244	5774	8303	0832	3362	5891	8420
13	3048	5578	8108	0638	3168	5698	8227	0757	3286	5816	8345	0874	3404	5933	8462
14	3090	5620	8150	0680	3210	5740	8269	0799	3329	5858	8387	0917	3446	5975	8504
15	3132	5663	8192	0722	3252	5782	8312	0841	3371	5900	8429	0959	3488	6017	8546
16	3175	5705	8235	0765	3294	5824	8354	0883	3413	5942	8472	1001	3530	6059	8588
17	3217	5747	8277	0807	3336	5866	8396	0925	3455	5984	8514	1043	3572	6102	8631
18	3259	5789	8319	0849	3379	5908	8438	0968	3497	6027	8556	1085	3615	6144	8673
19	3301	5831	8361	0891	3421	5951	8480	1010	3539	6069	8598	1127	3657	6186	8715
20	3343	5873	8403	0933	3463	5993	8522	1052	3581	6111	8640	1170	3699	6228	8757
21	3385	5916	8445	0975	3505	6035	8565	1094	3624	6153	8682	1212	3741	6270	8799
22	3428	5958	8488	1018	3547	6077	8607	1136	3666	6195	8725	1254	3783	6312	8841
23	3470	6000	8530	1060	3589	6119	8649	1178	3708	6237	8767	1296	3825	6354	8884
24	3512	6042	8572	1102	3632	6161	8691	1221	3750	6280	8809	1338	3867	6397	8926
25	3554	6084	8614	1144	3674	6204	8733	1263	3792	6322	8851	1380	3910	6439	8968
26	3596	6126	8656	1186	3716	6246	8775	1305	3834	6364	8893	1423	3952	6481	9010
27	3638	6169	8698	1228	3758	6288	8817	1347	3877	6406	8935	1465	3994	6523	9052
28	3681	6211	8741	1270	3800	6330	8860	1389	3919	6448	8978	1507	4036	6565	9094
29	3723	6253	8783	1313	3842	6372	8902	1431	3961	6490	9020	1549	4078	6607	9136
30	3765	6295	8825	1355	3885	6414	8944	1474	4003	6532	9062	1591	4120	6650	9179
31	3807	6337	8867	1397	3927	6456	8986	1516	4045	6575	9104	1633	4163	6692	9221
32	3849	6379	8909	1439	3969	6499	9028	1558	4087	6617	9146	1675	4205	6734	9263
33	3892	6422	8951	1481	4011	6541	9070	1600	4130	6659	9188	1718	4247	6776	9305
34	3934	6464	8994	1523	4053	6583	9113	1642	4172	6701	9230	1760	4289	6818	9347
35	3976	6506	9036	1566	4095	6625	9155	1684	4214	6743	9273	1802	4331	6860	9389
36	4018	6548	9078	1608	4138	6667	9197	1726	4256	6785	9315	1844	4373	6902	9432
37	4060	6590	9120	1650	4180	6709	9239	1769	4298	6828	9357	1886	4415	6945	9474
38	4102	6632	9162	1692	4222	6752	9281	1811	4340	6870	9399	1928	4458	6987	9516
39	4145	6675	9204	1734	4264	6794	9323	1853	4382	6912	9441	1971	4500	7029	9558
40	4187	6717	9247	1776	4306	6836	9366	1895	4425	6954	9483	2013	4542	7071	9600
41	4229	6759	9289	1819	4348	6878	9408	1937	4467	6996	9526	2055	4584	7113	9642
42	4271	6801	9331	1861	4391	6920	9450	1979	4509	7038	9568	2097	4626	7155	9684
43	4313	6843	9373	1903	4433	6962	9492	2022	4551	7080	9610	2139	4668	7197	9727
44	4355	6885	9415	1945	4475	7005	9534	2064	4593	7123	9652	2181	4710	7240	9769
45	4398	6928	9457	1987	4517	7047	9576	2106	4635	7165	9694	2223	4753	7282	9811
46	4440	6970	9500	2029	4559	7089	9619	2148	4678	7207	9736	2266	4795	7324	9853
47	4482	7012	9542	2072	4601	7131	9661	2190	4720	7249	9778	2308	4837	7366	9895
48	4524	7054	9584	2114	4644	7173	9703	2232	4762	7291	9821	2350	4879	7408	9937
49	4566	7096	9626	2156	4686	7215	9745	2275	4804	7333	9863	2392	4921	7450	9979
50	4608	7138	9668	2198	4728	7258	9787	2317	4846	7376	9905	2434	4963	7493	0022
51	4651	7181	9710	2240	4770	7300	9829	2359	4888	7418	9947	2476	5006	7535	0064
52	4693	7223	9753	2282	4812	7342	9871	2401	4931	7460	9989	2519	5048	7577	0106
53	4735	7265	9795	2325	4854	7384	9914	2443	4973	7502	0031	2561	5090	7619	0148
54	4777	7307	9837	2367	4896	7426	9956	2485	5015	7544	0074	2603	5132	7661	0190
55	4819	7349	9879	2409	4939	7468	9998	2528	5057	7586	0116	2645	5174	7703	0232
56	4861	7391	9921	2451	4981	7511	0040	2570	5099	7629	0158	2687	5216	7745	0275
57	4904	7433	9963	2493	5023	7553	0082	2612	5141	7671	0200	2729	5258	7788	0317
58	4946	7476	0006	2535	5065	7595	0124	2654	5183	7713	0242	2771	5301	7830	0359
59	4988	7518	0048	2578	5107	7637	0167	2696	5226	7755	0284	2814	5343	7872	0401
60	5030	7560	0090	2620	5149	7679	0209	2738	5268	7797	0326	2856	5385	7914	0443
″	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	″
10.022	10.022	10.022	10.021	10.021	10.021	10.021	10.020	10.020	10.020	10.020	10.019	10.019	10.019	10.019	
7500	4970	2440	9910	7380	4851	2321	9791	7262	4732	2203	9674	7144	4615	2086	60
7458	4928	2398	9868	7338	4808	2279	9749	7220	4690	2161	9631	7102	4573	2044	59
7416	4886	2356	9826	7296	4766	2237	9707	7177	4648	2119	9589	7060	4531	2002	58
7374	4843	2314	9784	7254	4724	2194	9665	7135	4606	2076	9547	7018	4489	1959	57
7331	4801	2271	9741	7212	4682	2152	9623	7093	4564	2034	9505	6976	4446	1917	56
7289	4759	2229	9699	7169	4640	2110	9580	7051	4521	1992	9463	6933	4404	1875	55
7247	4717	2187	9657	7127	4598	2068	9538	7009	4479	1950	9421	6891	4362	1833	54
7205	4675	2145	9615	7085	4555	2026	9496	6967	4437	1908	9378	6849	4320	1791	53
7163	4633	2103	9573	7043	4513	1984	9454	6924	4395	1866	9336	6807	4278	1749	52
7121	4590	2061	9531	7001	4471	1941	9412	6882	4353	1823	9294	6765	4236	1707	51
7078	4548	2018	9488	6959	4429	1899	9370	6840	4311	1781	9252	6723	4194	1664	50
7036	4506	1976	9446	6916	4387	1857	9327	6798	4269	1739	9210	6681	4151	1622	49
6994	4464	1934	9404	6874	4345	1815	9285	6756	4226	1697	9168	6638	4109	1580	48
6952	4422	1892	9362	6832	4302	1773	9243	6714	4184	1655	9126	6596	4067	1538	47
6910	4380	1850	9320	6790	4260	1731	9201	6671	4142	1613	9083	6554	4025	1496	46
6868	4337	1808	9278	6748	4218	1688	9159	6629	4100	1571	9041	6512	3983	1454	45
6825	4295	1765	9235	6706	4176	1646	9117	6587	4058	1528	8999	6470	3941	1412	44
6783	4253	1723	9193	6664	4134	1604	9075	6545	4016	1486	8957	6428	3898	1369	43
6741	4211	1681	9151	6621	4092	1562	9032	6503	3973	1444	8915	6385	3856	1327	42
6699	4169	1639	9109	6579	4049	1520	8990	6461	3931	1402	8873	6343	3814	1285	41
6657	4127	1597	9067	6537	4007	1478	8948	6419	3889	1360	8830	6301	3772	1243	40
6615	4084	1555	9025	6495	3965	1435	8906	6376	3847	1318	8788	6259	3730	1201	39
6572	4042	1512	8982	6453	3923	1393	8864	6334	3805	1275	8746	6217	3688	1159	38
6530	4000	1470	8940	6411	3881	1351	8822	6292	3763	1233	8704	6175	3646	1116	37
6488	3958	1428	8898	6368	3839	1309	8779	6250	3720	1191	8662	6133	3603	1074	36
6446	3916	1386	8856	6326	3796	1267	8737	6208	3678	1149	8620	6090	3561	1032	35
6404	3874	1344	8814	6284	3754	1225	8695	6166	3636	1107	8577	6048	3519	0990	34
6362	3831	1302	8772	6242	3712	1183	8653	6123	3594	1065	8535	6006	3477	0948	33
6319	3789	1259	8730	6200	3670	1140	8611	6081	3552	1022	8493	5964	3435	0906	32
6277	3747	1217	8687	6158	3628	1098	8569	6039	3510	0980	8451	5922	3393	0864	31
6235	3705	1175	8645	6115	3586	1056	8526	5997	3468	0938	8409	5880	3350	0821	30
6193	3663	1133	8603	6073	3544	1014	8484	5955	3425	0896	8367	5837	3308	0779	29
6151	3621	1091	8561	6031	3501	0972	8442	5913	3383	0854	8325	5795	3266	0737	28
6108	3578	1049	8519	5989	3459	0930	8400	5870	3341	0812	8282	5753	3224	0695	27
6066	3536	1006	8477	5947	3417	0887	8358	5828	3299	0770	8240	5711	3182	0653	26
6024	3494	0964	8434	5905	3375	0845	8316	5786	3257	0727	8198	5669	3140	0611	25
5982	3452	0922	8392	5862	3333	0803	8274	5744	3215	0685	8156	5627	3098	0568	24
5940	3410	0880	8350	5820	3291	0761	8231	5702	3172	0643	8114	5585	3055	0526	23
5898	3368	0838	8308	5778	3248	0719	8189	5660	3130	0601	8072	5542	3013	0484	22
5855	3325	0796	8266	5736	3206	0677	8147	5618	3088	0559	8029	5500	2971	0442	21
5813	3283	0753	8224	5694	3164	0634	8105	5575	3046	0517	7987	5458	2929	0400	20
5771	3241	0711	8181	5652	3122	0592	8063	5533	3004	0474	7945	5416	2887	0358	19
5729	3199	0669	8139	5609	3080	0550	8021	5491	2962	0432	7903	5374	2845	0316	18
5687	3157	0627	8097	5567	3038	0508	7978	5449	2920	0390	7861	5332	2803	0273	17
5645	3115	0585	8055	5525	2995	0466	7936	5407	2877	0348	7819	5290	2760	0231	16
5602	3072	0543	8013	5483	2953	0424	7894	5365	2835	0306	7777	5247	2718	0189	15
5560	3030	0500	7971	5441	2911	0381	7852	5322	2793	0264	7734	5205	2676	0147	14
5518	2988	0458	7928	5399	2869	0339	7810	5280	2751	0222	7692	5163	2634	0105	13
5476	2946	0416	7886	5356	2827	0297	7768	5238	2709	0179	7650	5121	2592	0063	12
5434	2904	0374	7844	5314	2785	0255	7725	5196	2667	0137	7608	5079	2550	0021	11
5392	2862	0332	7802	5272	2742	0213	7683	5154	2624	0095	7566	5037	2507	9978	10
5349	2819	0290	7760	5230	2700	0171	7641	5112	2582	0053	7524	4994	2465	9936	9
5307	2777	0247	7718	5188	2658	0129	7599	5069	2540	0011	7481	4952	2423	9894	8
5265	2735	0205	7675	5146	2616	0086	7557	5027	2498	9969	7439	4910	2381	9852	7
5223	2693	0163	7633	5104	2574	0044	7515	4985	2456	9926	7397	4868	2339	9810	6
5181	2651	0121	7591	5061	2532	0002	7472	4943	2414	9884	7355	4826	2297	9768	5
5139	2609	0079	7549	5019	2489	9960	7430	4901	2371	9842	7313	4784	2255	9725	4
5096	2567	0037	7507	4977	2447	9918	7388	4859	2329	9800	7271	4742	2212	9683	3
5054	2524	9994	7465	4935	2405	9876	7346	4817	2287	9758	7229	4699	2170	9641	2
5012	2482	9952	7422	4893	2363	9833	7304	4774	2245	9716	7186	4657	2128	9599	1
4970	2440	9910	7380	4851	2321	9791	7262	4732	2203	9674	7144	4615	2086	9557	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	″

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′		45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
″	9.839	9.839	9.840	9.840	9.840	9.840	9.840	9.840	9.840	9.840	9.841	9.841	9.841	9.841	9.841	″	9.858	9.858	9.858	9.858	9.858	9.858	9.858	9.857	9.857	9.857	9.857	9.857	9.857	9.857	9.857	″
0	8004	9323	0642	1959	3276	4593	5908	7223	8537	9850	1162	2474	3785	5095	6404		7561	6351	5141	3929	2718	1505	0292	9078	7863	6648	5432	4215	2998	1779	0561	60
1	8026	9345	0664	1981	3298	4615	5930	7245	8559	9872	1184	2496	3807	5117	6426		7541	6331	5120	3909	2697	1485	0272	9058	7843	6628	5412	4195	2977	1759	0540	59
2	8048	9367	0686	2003	3320	4636	5952	7267	8580	9894	1206	2518	3828	5138	6448		7520	6311	5100	3889	2677	1465	0251	9037	7823	6607	5391	4175	2957	1739	0520	58
3	8070	9389	0708	2025	3342	4658	5974	7288	8602	9915	1228	2539	3850	5160	6470		7500	6291	5080	3869	2657	1444	0231	9017	7803	6587	5371	4154	2937	1718	0500	57
4	8092	9411	0730	2047	3364	4680	5996	7310	8624	9937	1250	2561	3872	5182	6491		7480	6270	5060	3849	2637	1424	0211	8997	7782	6567	5351	4134	2916	1698	0479	56
5	8114	9433	0751	2069	3386	4702	6018	7332	8646	9959	1272	2583	3894	5204	6513		7460	6250	5040	3829	2617	1404	0191	8977	7762	6547	5330	4114	2896	1678	0459	55
6	8136	9455	0773	2091	3408	4724	6040	7354	8668	9981	1293	2605	3916	5226	6535		7440	6230	5020	3808	2596	1384	0171	8957	7742	6526	5310	4093	2876	1658	0439	54
7	8158	9477	0795	2113	3430	4746	6061	7376	8690	0003	1315	2627	3938	5248	6557		7420	6210	4999	3788	2576	1364	0150	8936	7722	6506	5290	4073	2856	1637	0418	53
8	8180	9499	0817	2135	3452	4768	6083	7398	8712	0025	1337	2649	3959	5269	6579		7399	6190	4979	3768	2556	1343	0130	8916	7701	6486	5270	4053	2835	1617	0398	52
9	8202	9521	0839	2157	3474	4790	6105	7420	8734	0047	1359	2671	3981	5291	6600		7379	6169	4959	3748	2536	1323	0110	8896	7681	6466	5249	4033	2815	1597	0378	51
10	8224	9543	0861	2179	3496	4812	6127	7442	8756	0069	1381	2692	4003	5313	6622		7359	6149	4939	3728	2516	1303	0090	8876	7661	6445	5229	4012	2795	1576	0357	50
11	8246	9565	0883	2201	3518	4834	6149	7464	8777	0090	1403	2714	4025	5335	6644		7339	6129	4919	3707	2495	1283	0069	8855	7641	6425	5209	3992	2774	1556	0337	49
12	8268	9587	0905	2223	3540	4856	6171	7486	8799	0112	1425	2736	4047	5357	6666		7319	6109	4898	3687	2475	1263	0049	8835	7620	6405	5189	3972	2754	1536	0317	48
13	8290	9609	0927	2245	3562	4878	6193	7507	8821	0134	1446	2758	4069	5379	6688		7299	6089	4878	3667	2455	1242	0029	8815	7600	6385	5168	3951	2734	1515	0296	47
14	8312	9631	0949	2267	3584	4900	6215	7529	8843	0156	1468	2780	4090	5400	6710		7279	6069	4858	3647	2435	1222	0009	8795	7580	6364	5148	3931	2713	1495	0276	46
15	8334	9653	0971	2289	3606	4922	6237	7551	8865	0178	1490	2802	4112	5422	6731		7258	6048	4838	3627	2415	1202	9988	8774	7560	6344	5128	3911	2693	1475	0256	45
16	8356	9675	0993	2311	3627	4943	6259	7573	8887	0200	1512	2823	4134	5444	6753		7238	6028	4818	3606	2394	1182	9968	8754	7539	6324	5107	3890	2673	1454	0235	44
17	8378	9697	1015	2333	3649	4965	6281	7595	8909	0222	1534	2845	4156	5466	6775		7218	6008	4798	3586	2374	1161	9948	8734	7519	6303	5087	3870	2653	1434	0215	43
18	8400	9719	1037	2355	3671	4987	6303	7617	8931	0244	1556	2867	4178	5488	6797		7198	5988	4777	3566	2354	1141	9928	8714	7499	6283	5067	3850	2632	1414	0195	42
19	8422	9741	1059	2377	3693	5009	6324	7639	8953	0265	1578	2889	4200	5510	6819		7178	5968	4757	3546	2334	1121	9908	8693	7478	6263	5047	3830	2612	1394	0174	41
20	8444	9763	1081	2398	3715	5031	6346	7661	8974	0287	1600	2911	4221	5531	6840		7158	5948	4737	3526	2314	1101	9887	8673	7458	6243	5026	3809	2592	1373	0154	40
21	8466	9785	1103	2420	3737	5053	6368	7683	8996	0309	1621	2933	4243	5553	6862		7137	5927	4717	3505	2293	1081	9867	8653	7438	6222	5006	3789	2571	1353	0134	39
22	8488	9807	1125	2442	3759	5075	6390	7705	9018	0331	1643	2955	4265	5575	6884		7117	5907	4697	3485	2273	1060	9847	8633	7418	6202	4986	3769	2551	1333	0113	38
23	8510	9829	1147	2464	3781	5097	6412	7727	9040	0353	1665	2976	4287	5597	6906		7097	5887	4676	3465	2253	1040	9827	8612	7397	6182	4966	3748	2531	1312	0093	37
24	8532	9851	1169	2486	3803	5119	6434	7748	9062	0375	1687	2998	4309	5619	6928		7077	5867	4656	3445	2233	1020	9806	8592	7377	6162	4945	3728	2510	1292	0073	36
25	8554	9873	1191	2508	3825	5141	6456	7770	9084	0397	1709	3020	4331	5640	6949		7057	5847	4636	3425	2213	1000	9786	8572	7357	6141	4925	3708	2490	1272	0052	35
26	8576	9895	1213	2530	3847	5163	6478	7792	9106	0419	1731	3042	4353	5662	6971		7037	5827	4616	3404	2192	0979	9766	8552	7337	6121	4905	3688	2470	1251	0032	34
27	8598	9917	1235	2552	3869	5185	6500	7814	9128	0440	1753	3064	4374	5684	6993		7016	5806	4596	3384	2172	0959	9746	8531	7316	6101	4884	3667	2450	1231	0012	33
28	8620	9939	1257	2574	3891	5207	6522	7836	9150	0462	1774	3086	4396	5706	7015		6996	5786	4575	3364	2152	0939	9725	8511	7296	6081	4864	3647	2429	1211	9991	32
29	8642	9961	1279	2596	3913	5229	6544	7858	9171	0484	1796	3108	4418	5728	7037		6976	5766	4555	3344	2132	0919	9705	8491	7276	6060	4844	3627	2409	1190	9971	31
30	8664	9982	1301	2618	3935	5250	6565	7880	9193	0506	1818	3129	4440	5750	7059		6956	5746	4535	3324	2111	0899	9685	8471	7256	6040	4824	3606	2389	1170	9951	30
31	8686	0004	1323	2640	3957	5272	6587	7902	9215	0528	1840	3151	4462	5771	7080		6936	5726	4515	3303	2091	0878	9665	8450	7235	6020	4803	3586	2368	1150	9930	29
32	8708	0026	1345	2662	3978	5294	6609	7924	9237	0550	1862	3173	4484	5793	7102		6916	5706	4495	3283	2071	0858	9645	8430	7215	5999	4783	3566	2348	1129	9910	28
33	8730	0048	1367	2684	4000	5316	6631	7945	9259	0572	1884	3195	4505	5815	7124		6895	5685	4475	3263	2051	0838	9624	8410	7195	5979	4763	3546	2328	1109	9890	27
34	8752	0070	1388	2706	4022	5338	6653	7967	9281	0594	1906	3217	4527	5837	7146		6875	5665	4454	3243	2031	0818	9604	8390	7175	5959	4742	3525	2307	1089	9869	26
35	8774	0092	1410	2728	4044	5360	6675	7989	9303	0615	1927	3239	4549	5859	7168		6855	5645	4434	3223	2010	0797	9584	8369	7154	5939	4722	3505	2287	1068	9849	25
36	8796	0114	1432	2750	4066	5382	6697	8011	9325	0637	1949	3260	4571	5881	7189		6835	5625	4414	3202	1990	0777	9564	8349	7134	5918	4702	3485	2267	1048	9829	24
37	8817	0136	1454	2772	4088	5404	6719	8033	9347	0659	1971	3282	4593	5902	7211		6815	5605	4394	3182	1970	0757	9543	8329	7114	5898	4682	3464	2246	1028	9809	23
38	8839	0158	1476	2794	4110	5426	6741	8055	9368	0681	1993	3304	4615	5924	7233		6795	5584	4374	3162	1950	0737	9523	8309	7094	5878	4661	3444	2226	1008	9788	22
39	8861	0180	1498	2816	4132	5448	6763	8077	9390	0703	2015	3326	4636	5946	7255		6774	5564	4353	3142	1930	0717	9503	8288	7073	5858	4641	3424	2206	0987	9768	21
40	8883	0202	1520	2837	4154	5470	6785	8099	9412	0725	2037	3348	4658	5968	7277		6754	5544	4333	3122	1909	0696	9483	8268	7053	5837	4621	3404	2186	0967	9748	20
41	8905	0224	1542	2859	4176	5492	6807	8121	9434	0747	2059	3370	4680	5990	7298		6734	5524	4313	3101	1889	0676	9462	8248	7033	5817	4600	3383	2165	0947	9727	19
42	8927	0246	1564	2881	4198	5514	6828	8143	9456	0769	2080	3392	4702	6011	7320		6714	5504	4293	3081	1869	0656	9442	8228	7013	5797	4580	3363	2145	0926	9707	18
43	8949	0268	1586	2903	4220	5535	6850	8164	9478	0790	2102	3413	4724	6033	7342		6694	5484	4273	3061	1849	0636	9422	8208	6992	5776	4560	3343	2125	0906	9687	17
44	8971	0290	1608	2925	4242	5557	6872	8186	9500	0812	2124	3435	4746	6055	7364		6674	5463	4253	3041	1829	0615	9402	8187	6972	5756	4540	3322	2104	0886	9666	16
45	8993	0312	1630	2947	4264	5579	6894	8208	9522	0834	2146	3457	4767	6077	7386		6653	5443	4232	3021	1808	0595	9381	8167	6952	5736	4519	3302	2084	0865	9646	15
46	9015	0334	1652	2969	4286	5601	6916	8230	9543	0856	2168	3479	4789	6099	7407		6633	5423	4212	3000	1788	0575	9361	8147	6932	5716	4499	3282	2064	0845	9626	14
47	9037	0356	1674	2991	4307	5623	6938	8252	9565	0878	2190	3501	4811	6121	7429		6613	5403	4192	2980	1768	0555	9341	8127	6911	5695	4479	3261	2043	0825	9605	13
48	9059	0378	1696	3013	4329	5645	6960	8274	9587	0900	2212	3523	4833	6142	7451		6593	5383	4172	2960	1748	0535	9321	8106	6891	5675	4458	3241	2023	0804	9585	12
49	9081	0400	1718	3035	4351	5667	6982	8296	9609	0922	2233	3544	4855	6164	7473		6573	5363	4152	2940	1727	0514	9301	8086	6871	5655	4438	3221	2003	0784	9565	11
50	9103	0422	1740	3057	4373	5689	7004	8318	9631	0944	2255	3566	4877	6186	7495		6553	5342	4131	2920	1707	0494	9280	8066	6851	5635	4418	3201	1982	0764	9544	10
51	9125	0444	1762	3079	4395	5711	7026	8340	9653	0965	2277	3588	4898	6208	7516		6533	5322	4111	2899	1687	0474	9260	8046	6830	5614	4398	3180	1962	0743	9524	9
52	9147	0466	1784	3101	4417	5733	7047	8362	9675	0987	2299	3610	4920	6230	7538		6512	5302	4091	2879	1667	0454	9240	8025	6810	5594	4377	3160	1942	0723	9504	8
53	9169	0488	1806	3123	4439	5755	7069	8383	9697	1009	2321	3632	4942	6251	7560		6492	5282	4071	2859	1647	0433	9220	8005	6790	5574	4357	3140	1922	0703	9483	7
54	9191	0510	1828	3145	4461	5777	7091	8405	9719	1031	2343	3654	4964	6273	7582		6472	5262	4051	2839	1626	0413	9199	7985	6769	5553	4337	3119	1901	0682	9463	6
55	9213	0532	1850	3167	4483	5798	7113	8427	9740	1053	2365	3676	4986	6295	7604		6452	5241	4030	2819	1606	0393	9179	7965	6749	5533	4317	3099	1881	0662	9443	5
56	9235	0554	1872	3189	4505	5820	7135	8449	9762	1075	2386	3697	5007	6317	7626		6432	5221	4010	2798	1586	0373	9159	7944	6729	5513	4296	3079	1861	0642	9422	4
57	9257	0576	1894	3211	4527	5842	7157	8471	9784	1097	2408	3719	5029	6339	7647		6412	5201	3990	2778	1566	0353	9139	7924	6709	5493	4276	3058	1840	0621	9402	3
58	9279	0598	1915	3232	4549	5864	7179	8493	9806	1118	2430	3741	5051	6361	7669		6391	5181	3970	2758	1546	0332	9118	7904	6688	5472	4256	3038	1820	0601	9382	2
59	9301	0620	1937	3254	4571	5886	7201	8515	9828	1140	2452	3763	5073	6382	7691		6371	5161	3950	2738	1525	0312	9098	7884	6668	5452	4235	3018	1800	0581	9361	1
60	9323	0642	1959	3276	4593	5908	7223	8537	9850	1162	2474	3785	5095	6404	7713		6351	5141	3929	2718	1505	0292	9078	7863	6648	5432	4215	2998	1779	0561	9341	0
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

43 Deg. Tangent

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
″	9.981	9.981	9.981	9.981	9.982	9.982	9.982	9.982	9.983	9.983	9.983	9.983	9.984	9.984	9.984
0	0443	2972	5501	8030	0559	3087	5616	8145	0673	3202	5730	8259	0787	3315	5844
1	0485	3014	5543	8072	0601	3130	5658	8187	0716	3244	5772	8301	0829	3358	5886
2	0527	3056	5585	8114	0643	3172	5700	8229	0758	3286	5815	8343	0871	3400	5928
3	0570	3099	5628	8156	0685	3214	5743	8271	0800	3328	5857	8385	0914	3442	5970
4	0612	3141	5670	8199	0727	3256	5785	8313	0842	3370	5899	8427	0956	3484	6012
5	0654	3183	5712	8241	0769	3298	5827	8356	0884	3413	5941	8469	0998	3526	6054
6	0696	3225	5754	8283	0812	3340	5869	8398	0926	3455	5983	8512	1040	3568	6096
7	0738	3267	5796	8325	0854	3383	5911	8440	0968	3497	6025	8554	1082	3610	6139
8	0780	3309	5838	8367	0896	3425	5953	8482	1011	3539	6067	8596	1124	3653	6181
9	0822	3351	5880	8409	0938	3467	5995	8524	1053	3581	6110	8638	1166	3695	6223
10	0865	3394	5923	8451	0980	3509	6038	8566	1095	3623	6152	8680	1208	3737	6265
11	0907	3436	5965	8494	1022	3551	6080	8608	1137	3665	6194	8722	1251	3779	6307
12	0949	3478	6007	8536	1064	3593	6122	8651	1179	3708	6236	8764	1293	3821	6349
13	0991	3520	6049	8578	1107	3635	6164	8693	1221	3750	6278	8807	1335	3863	6391
14	1033	3562	6091	8620	1149	3678	6206	8735	1263	3792	6320	8849	1377	3905	6434
15	1075	3604	6133	8662	1191	3720	6248	8777	1306	3834	6362	8891	1419	3947	6476
16	1118	3647	6175	8704	1233	3762	6290	8819	1348	3876	6405	8933	1461	3990	6518
17	1160	3689	6218	8746	1275	3804	6333	8861	1390	3918	6447	8975	1503	4032	6560
18	1202	3731	6260	8789	1317	3846	6375	8903	1432	3960	6489	9017	1546	4074	6602
19	1244	3773	6302	8831	1360	3888	6417	8946	1474	4003	6531	9059	1588	4116	6644
20	1286	3815	6344	8873	1402	3930	6459	8988	1516	4045	6573	9102	1630	4158	6686
21	1328	3857	6386	8915	1444	3973	6501	9030	1558	4087	6615	9144	1672	4200	6729
22	1370	3899	6428	8957	1486	4015	6543	9072	1601	4129	6657	9186	1714	4242	6771
23	1413	3942	6470	8999	1528	4057	6585	9114	1643	4171	6700	9228	1756	4285	6813
24	1455	3984	6513	9041	1570	4099	6628	9156	1685	4213	6742	9270	1798	4327	6855
25	1497	4026	6555	9084	1612	4141	6670	9198	1727	4255	6784	9312	1841	4369	6897
26	1539	4068	6597	9126	1655	4183	6712	9241	1769	4298	6826	9354	1883	4411	6939
27	1581	4110	6639	9168	1697	4225	6754	9283	1811	4340	6868	9397	1925	4453	6981
28	1623	4152	6681	9210	1739	4268	6796	9325	1853	4382	6910	9439	1967	4495	7023
29	1665	4194	6723	9252	1781	4310	6838	9367	1896	4424	6952	9481	2009	4537	7066
30	1708	4237	6766	9294	1823	4352	6881	9409	1938	4466	6995	9523	2051	4580	7108
31	1750	4279	6808	9336	1865	4394	6923	9451	1980	4508	7037	9565	2093	4622	7150
32	1792	4321	6850	9379	1907	4436	6965	9493	2022	4550	7079	9607	2136	4664	7192
33	1834	4363	6892	9421	1950	4478	7007	9536	2064	4593	7121	9649	2178	4706	7234
34	1876	4405	6934	9463	1992	4520	7049	9578	2106	4635	7163	9691	2220	4748	7276
35	1918	4447	6976	9505	2034	4563	7091	9620	2148	4677	7205	9734	2262	4790	7318
36	1961	4489	7018	9547	2076	4605	7133	9662	2190	4719	7247	9776	2304	4832	7361
37	2003	4532	7061	9589	2118	4647	7176	9704	2233	4761	7290	9818	2346	4874	7403
38	2045	4574	7103	9632	2160	4689	7218	9746	2275	4803	7332	9860	2388	4917	7445
39	2087	4616	7145	9674	2202	4731	7260	9788	2317	4845	7374	9902	2431	4959	7487
40	2129	4658	7187	9716	2245	4773	7302	9831	2359	4888	7416	9944	2473	5001	7529
41	2171	4700	7229	9758	2287	4815	7344	9873	2401	4930	7458	9986	2515	5043	7571
42	2213	4742	7271	9800	2329	4858	7386	9915	2443	4972	7500	0029	2557	5085	7613
43	2256	4785	7313	9842	2371	4900	7428	9957	2485	5014	7542	0071	2599	5127	7656
44	2298	4827	7356	9884	2413	4942	7471	9999	2528	5056	7585	0113	2641	5169	7698
45	2340	4869	7398	9927	2455	4984	7513	0041	2570	5098	7627	0155	2683	5212	7740
46	2382	4911	7440	9969	2497	5026	7555	0083	2612	5140	7669	0197	2725	5254	7782
47	2424	4953	7482	0011	2540	5068	7597	0126	2654	5183	7711	0239	2768	5296	7824
48	2466	4995	7524	0053	2582	5110	7639	0168	2696	5225	7753	0281	2810	5338	7866
49	2508	5037	7566	0095	2624	5153	7681	0210	2738	5267	7795	0324	2852	5380	7908
50	2551	5080	7608	0137	2666	5195	7723	0252	2780	5309	7837	0366	2894	5422	7950
51	2593	5122	7651	0179	2708	5237	7766	0294	2823	5351	7880	0408	2936	5464	7993
52	2635	5164	7693	0222	2750	5279	7808	0336	2865	5393	7922	0450	2978	5507	8035
53	2677	5206	7735	0264	2792	5321	7850	0378	2907	5435	7964	0492	3020	5549	8077
54	2719	5248	7777	0306	2835	5363	7892	0421	2949	5478	8006	0534	3063	5591	8119
55	2761	5290	7819	0348	2877	5405	7934	0463	2991	5520	8048	0576	3105	5633	8161
56	2804	5332	7861	0390	2919	5448	7976	0505	3033	5562	8090	0619	3147	5675	8203
57	2846	5375	7903	0432	2961	5490	8018	0547	3075	5604	8132	0661	3189	5717	8245
58	2888	5417	7946	0474	3003	5532	8061	0589	3118	5646	8174	0703	3231	5759	8288
59	2930	5459	7988	0517	3045	5574	8103	0631	3160	5688	8217	0745	3273	5802	8330
60	2972	5501	8030	0559	3087	5616	8145	0673	3202	5730	8259	0787	3315	5844	8372
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

43 Deg. Co-Tangent

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
	10.018	10.018	10.018	10.018	10.017	10.017	10.017	10.017	10.016	10.016	10.016	10.016	10.015	10.015	10.015	″
	9557	7028	4499	1970	9441	6913	4384	1855	9327	6798	4270	1741	9213	6685	4156	60
	9515	6986	4457	1928	9399	6870	4342	1813	9284	6756	4228	1699	9171	6642	4114	59
	9473	6944	4415	1886	9357	6828	4300	1771	9242	6714	4185	1657	9129	6600	4072	58
	9430	6901	4372	1844	9315	6786	4257	1729	9200	6672	4143	1615	9086	6558	4030	57
	9388	6859	4330	1801	9273	6744	4215	1687	9158	6630	4101	1573	9044	6516	3988	56
	9346	6817	4288	1759	9231	6702	4173	1644	9116	6587	4059	1531	9002	6474	3946	55
	9304	6775	4246	1717	9188	6660	4131	1602	9074	6545	4017	1488	8960	6432	3904	54
	9262	6733	4204	1675	9146	6617	4089	1560	9032	6503	3975	1446	8918	6390	3861	53
	9220	6691	4162	1633	9104	6575	4047	1518	8989	6461	3933	1404	8876	6347	3819	52
	9178	6649	4120	1591	9062	6533	4005	1476	8947	6419	3890	1362	8834	6305	3777	51
	9135	6606	4077	1549	9020	6491	3962	1434	8905	6377	3848	1320	8792	6263	3735	50
	9093	6564	4035	1506	8978	6449	3920	1392	8863	6335	3806	1278	8749	6221	3693	49
	9051	6522	3993	1464	8936	6407	3878	1349	8821	6292	3764	1236	8707	6179	3651	48
	9009	6480	3951	1422	8893	6365	3836	1307	8779	6250	3722	1193	8665	6137	3609	47
	8967	6438	3909	1380	8851	6322	3794	1265	8737	6208	3680	1151	8623	6095	3566	46
	8925	6396	3867	1338	8809	6280	3752	1223	8694	6166	3638	1109	8581	6053	3524	45
	8882	6353	3825	1296	8767	6238	3710	1181	8652	6124	3595	1067	8539	6010	3482	44
	8840	6311	3782	1254	8725	6196	3667	1139	8610	6082	3553	1025	8497	5968	3440	43
	8798	6269	3740	1211	8683	6154	3625	1097	8568	6040	3511	0983	8454	5926	3398	42
	8756	6227	3698	1169	8640	6112	3583	1054	8526	5997	3469	0941	8412	5884	3356	41
	8714	6185	3656	1127	8598	6070	3541	1012	8484	5955	3427	0898	8370	5842	3314	40
	8672	6143	3614	1085	8556	6027	3499	0970	8442	5913	3385	0856	8328	5800	3271	39
	8630	6101	3572	1043	8514	5985	3457	0928	8399	5871	3343	0814	8286	5758	3229	38
	8587	6058	3530	1001	8472	5943	3415	0886	8357	5829	3300	0772	8244	5715	3187	37
	8545	6016	3487	0959	8430	5901	3372	0844	8315	5787	3258	0730	8202	5673	3145	36
	8503	5974	3445	0916	8388	5859	3330	0802	8273	5745	3216	0688	8159	5631	3103	35
	8461	5932	3403	0874	8345	5817	3288	0759	8231	5702	3174	0646	8117	5589	3061	34
	8419	5890	3361	0832	8303	5775	3246	0717	8189	5660	3132	0603	8075	5547	3019	33
	8377	5848	3319	0790	8261	5732	3204	0675	8147	5618	3090	0561	8033	5505	2977	32
	8335	5806	3277	0748	8219	5690	3162	0633	8104	5576	3048	0519	7991	5463	2934	31
	8292	5763	3234	0706	8177	5648	3119	0591	8062	5534	3005	0477	7949	5420	2892	30
	8250	5721	3192	0664	8135	5606	3077	0549	8020	5492	2963	0435	7907	5378	2850	29
	8208	5679	3150	0621	8093	5564	3035	0507	7978	5450	2921	0393	7864	5336	2808	28
	8166	5637	3108	0579	8050	5522	2993	0464	7936	5407	2879	0351	7822	5294	2766	27
	8124	5595	3066	0537	8008	5480	2951	0422	7894	5365	2837	0309	7780	5252	2724	26
	8082	5553	3024	0495	7966	5437	2909	0380	7852	5323	2795	0266	7738	5210	2682	25
	8039	5511	2982	0453	7924	5395	2867	0338	7810	5281	2753	0224	7696	5168	2639	24
	7997	5468	2939	0411	7882	5353	2824	0296	7767	5239	2710	0182	7654	5126	2597	23
	7955	5426	2897	0368	7840	5311	2782	0254	7725	5197	2668	0140	7612	5083	2555	22
	7913	5384	2855	0326	7798	5269	2740	0212	7683	5155	2626	0098	7569	5041	2513	21
	7871	5342	2813	0284	7755	5227	2698	0169	7641	5112	2584	0056	7527	4999	2471	20
	7829	5300	2771	0242	7713	5185	2656	0127	7599	5070	2542	0014	7485	4957	2429	19
	7787	5258	2729	0200	7671	5142	2614	0085	7557	5028	2500	9971	7443	4915	2387	18
	7744	5215	2687	0158	7629	5100	2572	0043	7515	4986	2458	9929	7401	4873	2344	17
	7702	5173	2644	0116	7587	5058	2529	0001	7472	4944	2415	9887	7[illegible]	4831	2302	16
	7660	5131	2602	0073	7545	5016	2487	9959	7430	4902	2373	9845	7[illegible]	4788	2260	15
	7618	5089	2560	0031	7503	4974	2445	9917	7388	4860	2331	9803	7275	4746	2218	14
	7576	5047	2518	9989	7460	4932	2403	9874	7346	4817	2289	9761	7232	4704	2176	13
	7534	5005	2476	9947	7418	4890	2361	9832	7304	4775	2247	9719	7190	4662	2134	12
	7492	4963	2434	9905	7376	4847	2319	9790	7262	4733	2205	9676	7148	4620	2092	11
	7449	4920	2392	9863	7334	4805	2277	9748	7220	4691	2163	9634	7106	4578	2050	10
	7407	4878	2349	9821	7292	4763	2234	9706	7177	4649	2120	9592	7064	4536	2007	9
	7365	4836	2307	9778	7250	4721	2192	9664	7135	4607	2078	9550	7022	4493	1965	8
	7323	4794	2265	9736	7208	4679	2150	9622	7093	4565	2036	9508	6980	4451	1923	7
	7281	4752	2223	9694	7165	4637	2108	9579	7051	4522	1994	9466	6937	4409	1881	6
	7239	4710	2181	9652	7123	4595	2066	9537	7009	4480	1952	9424	6895	4367	1839	5
	7196	4668	2139	9610	7081	4552	2024	9495	6967	4438	1910	9381	6853	4325	1797	4
	7154	4625	2097	9568	7039	4510	1982	9453	6925	4396	1868	9339	6811	4283	1755	3
	7112	4583	2054	9526	6997	4468	1939	9411	6882	4354	1826	9297	6769	4241	1712	2
	7070	4541	2012	9483	6955	4426	1897	9369	6840	4312	1783	9255	6727	4198	1670	1
	7028	4499	1970	9441	6913	4384	1855	9327	6798	4270	1741	9213	6685	4156	1628	0
	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

Co-Tangent Deg. 46

Tangent Deg. 46

	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′
″	9.841	9.841	9.842	9.842	9.842	9.842	9.842	9.842	9.842	9.842	9.843	9.843	9.843	9.843	9.843
0	7713	9021	0328	1634	2939	4244	5548	6851	8154	9456	0757	2057	3356	4655	5953
1	7735	9042	0349	1656	2961	4266	5570	6873	8176	9477	0778	2079	3378	4677	5975
2	7756	9064	0371	1677	2983	4288	5592	6895	8197	9499	0800	2100	3400	4698	5996
3	7778	9086	0393	1699	3005	4309	5613	6917	8219	9521	0822	2122	3421	4720	6018
4	7800	9108	0415	1721	3026	4331	5635	6938	8241	9542	0843	2144	3443	4742	6040
5	7822	9129	0436	1743	3048	4353	5657	6960	8262	9564	0865	2165	3465	4763	6061
6	7844	9151	0458	1764	3070	4375	5679	6982	8284	9586	0887	2187	3480	4785	6083
7	7865	9173	0480	1786	3092	4396	5700	7003	8306	9608	0908	2209	3508	4807	6104
8	7887	9195	0502	1808	3113	4418	5722	7025	8328	9629	0930	2230	3530	4828	6126
9	7909	9217	0524	1830	3135	4440	5744	7047	8349	9651	0952	2252	3551	4850	6148
10	7931	9238	0545	1852	3157	4462	5765	7069	8371	9673	0973	2274	3573	4871	6169
11	7953	9260	0567	1873	3179	4483	5787	7090	8393	9694	0995	2295	3595	4893	6191
12	7974	9282	0589	1895	3200	4505	5809	7112	8414	9716	1017	2317	3616	4915	6213
13	7996	9304	0611	1917	3222	4527	5831	7134	8436	9738	1038	2339	3638	4936	6234
14	8018	9326	0632	1939	3244	4549	5852	7155	8458	9759	1060	2360	3660	4958	6256
15	8040	9347	0654	1960	3266	4570	5874	7177	8479	9781	1082	2382	3681	4980	6277
16	8062	9369	0676	1982	3287	4592	5896	7199	8501	9803	1104	2404	3703	5001	6299
17	8083	9391	0698	2004	3309	4614	5918	7221	8523	9824	1125	2425	3724	5023	6321
18	8105	9413	0720	2026	3331	4635	5939	7242	8545	9846	1147	2447	3746	5045	6342
19	8127	9435	0741	2047	3353	4657	5961	7264	8566	9868	1169	2469	3768	5066	6364
20	8149	9456	0763	2069	3374	4679	5983	7286	8588	9889	1190	2490	3789	5088	6386
21	8171	9478	0785	2091	3396	4701	6004	7307	8610	9911	1212	2512	3811	5109	6407
22	8192	9500	0807	2113	3418	4722	6026	7329	8631	9933	1234	2533	3833	5131	6429
23	8214	9522	0828	2134	3440	4744	6048	7351	8653	9955	1255	2555	3854	5153	6450
24	8236	9543	0850	2156	3461	4766	6070	7373	8675	9976	1277	2577	3876	5174	6472
25	8258	9565	0872	2178	3483	4788	6091	7394	8696	9998	1299	2598	3898	5196	6494
26	8280	9587	0894	2200	3505	4809	6113	7416	8718	0020	1320	2620	3919	5218	6515
27	8301	9609	0916	2221	3527	4831	6135	7438	8740	0041	1342	2642	3941	5239	6537
28	8323	9631	0937	2243	3548	4853	6157	7459	8762	0063	1364	2663	3963	5261	6559
29	8345	9652	0959	2265	3570	4875	6178	7481	8783	0085	1385	2685	3984	5283	6580
30	8367	9674	0981	2287	3592	4896	6200	7503	8805	0106	1407	2707	4006	5304	6602
31	8389	9696	1003	2309	3614	4918	6222	7525	8827	0128	1429	2728	4027	5326	6623
32	8410	9718	1024	2330	3635	4940	6243	7546	8848	0150	1450	2750	4049	5347	6645
33	8432	9740	1046	2352	3657	4962	6265	7568	8870	0171	1472	2772	4071	5369	6667
34	8454	9761	1068	2374	3679	4983	6287	7590	8892	0193	1494	2793	4092	5391	6688
35	8476	9783	1090	2396	3701	5005	6309	7611	8913	0215	1515	2815	4114	5412	6710
36	8498	9805	1111	2417	3722	5027	6330	7633	8935	0236	1537	2837	4136	5434	6731
37	8519	9827	1133	2439	3744	5048	6352	7655	8957	0258	1559	2858	4157	5456	6753
38	8541	9848	1155	2461	3766	5070	6374	7676	8979	0280	1580	2880	4179	5477	6775
39	8563	9870	1177	2483	3788	5092	6395	7698	9000	0301	1602	2902	4201	5499	6796
40	8585	9892	1199	2504	3809	5114	6417	7720	9022	0323	1624	2923	4222	5521	6818
41	8606	9914	1220	2526	3831	5135	6439	7742	9044	0345	1645	2945	4244	5542	6840
42	8628	9936	1242	2548	3853	5157	6461	7763	9065	0366	1667	2967	4266	5564	6861
43	8650	9957	1264	2570	3875	5179	6482	7785	9087	0388	1689	2988	4287	5585	6883
44	8672	9979	1286	2591	3896	5201	6504	7807	9109	0410	1710	3010	4309	5607	6904
45	8694	0001	1307	2613	3918	5222	6526	7828	9130	0432	1732	3032	4331	5629	6926
46	8715	0023	1329	2635	3940	5244	6547	7850	9152	0453	1754	3053	4352	5650	6948
47	8737	0044	1351	2657	3962	5266	6569	7872	9174	0475	1775	3075	4374	5672	6969
48	8759	0066	1373	2678	3983	5287	6591	7894	9195	0497	1797	3097	4395	5694	6991
49	8781	0088	1394	2700	4005	5309	6613	7915	9217	0518	1819	3118	4417	5715	7013
50	8803	0110	1416	2722	4027	5331	6634	7937	9239	0540	1840	3140	4439	5737	7034
51	8824	0132	1438	2744	4049	5353	6656	7959	9261	0562	1862	3162	4460	5758	7056
52	8846	0153	1460	2765	4070	5374	6678	7980	9282	0583	1884	3183	4482	5780	7077
53	8868	0175	1482	2787	4092	5396	6699	8002	9304	0605	1905	3205	4504	5802	7099
54	8890	0197	1503	2809	4114	5418	6721	8024	9326	0627	1927	3226	4525	5823	7121
55	8912	0219	1525	2831	4136	5440	6743	8045	9347	0648	1949	3248	4547	5845	7142
56	8933	0240	1547	2852	4157	5461	6765	8067	9369	0670	1970	3270	4569	5867	7164
57	8955	0262	1569	2874	4179	5483	6786	8089	9391	0692	1992	3291	4590	5888	7185
58	8977	0284	1590	2896	4201	5505	6808	8111	9412	0713	2014	3313	4612	5910	7207
59	8999	0306	1612	2918	4222	5526	6830	8132	9434	0735	2035	3335	4633	5931	7229
60	9021	0328	1634	2939	4244	5548	6851	8154	9456	0757	2057	3356	4655	5953	7250
″	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′

0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	
9.856	9.856	9.856	9.856	9.856	9.856	9.856	9.856	9.855	9.855	9.855	9.855	9.855	9.855	9.855	″
9341	8121	6900	5678	4455	3232	2008	0784	9558	8332	7106	5878	4650	3421	2192	60
9321	8100	6879	5657	4435	3212	1988	0763	9538	8312	7085	5858	4630	3401	2171	59
9300	8080	6859	5637	4415	3191	1968	0743	9518	8292	7065	5837	4609	3380	2151	58
9280	8060	6838	5617	4394	3171	1947	0722	9497	8271	7044	5817	4589	3360	2130	57
9260	8039	6818	5596	4374	3151	1927	0702	9477	8251	7024	5796	4568	3339	2110	56
9239	8019	6798	5576	4353	3130	1906	0682	9456	8230	7003	5776	4548	3319	2089	55
9219	7999	6777	5556	4333	3110	1886	0661	9436	8210	6983	5755	4527	3298	2069	54
9199	7978	6757	5535	4313	3089	1865	0641	9415	8189	6963	5735	4507	3278	2048	53
9178	7958	6737	5515	4292	3069	1845	0620	9395	8169	6942	5715	4486	3257	2028	52
9158	7937	6716	5494	4272	3049	1825	0600	9375	8148	6922	5694	4466	3237	2007	51
9138	7917	6696	5474	4252	3028	1804	0580	9354	8128	6901	5674	4445	3216	1987	50
9117	7897	6676	5454	4231	3008	1784	0559	9334	8108	6881	5653	4425	3196	1966	49
9097	7876	6655	5433	4211	2987	1763	0539	9313	8087	6860	5633	4404	3175	1946	48
9077	7856	6635	5413	4190	2967	1743	0518	9293	8067	6840	5612	4384	3155	1925	47
9056	7836	6615	5393	4170	2947	1723	0498	9272	8046	6819	5592	4363	3134	1905	46
9036	7815	6594	5372	4150	2926	1702	0477	9252	8026	6799	5571	4343	3114	1884	45
9016	7795	6574	5352	4129	2906	1682	0457	9232	8005	6778	5551	4322	3093	1864	44
8995	7775	6553	5332	4109	2885	1661	0437	9211	7985	6758	5530	4302	3073	1843	43
8975	7754	6533	5311	4088	2865	1641	0416	9191	7964	6738	5510	4281	3052	1823	42
8955	7734	6513	5291	4068	2845	1621	0396	9170	7944	6717	5489	4261	3032	1802	41
8934	7714	6492	5270	4048	2824	1600	0375	9150	7924	6697	5469	4241	3011	1782	40
8914	7693	6472	5250	4027	2804	1580	0355	9129	7903	6676	5448	4220	2991	1761	39
8894	7673	6452	5230	4007	2784	1559	0335	9109	7883	6656	5428	4200	2970	1741	38
8873	7653	6431	5209	3987	2763	1539	0314	9089	7862	6635	5408	4179	2950	1720	37
8853	7632	6411	5189	3966	2743	1519	0294	9068	7842	6615	5387	4159	2929	1700	36
8833	7612	6391	5169	3946	2722	1498	0273	9048	7821	6594	5367	4138	2909	1679	35
8812	7592	6370	5148	3925	2702	1478	0253	9027	7801	6574	5346	4118	2888	1659	34
8792	7571	6350	5128	3905	2682	1457	0232	9007	7780	6553	5326	4097	2868	1638	33
8772	7551	6329	5107	3885	2661	1437	0212	8986	7760	6533	5305	4077	2847	1618	32
8751	7531	6309	5087	3864	2641	1417	0192	8966	7740	6512	5285	4056	2827	1597	31
8731	7510	6289	5067	3844	2620	1396	0171	8945	7719	6492	5264	4036	2806	1577	30
8710	7490	6268	5046	3823	2600	1376	0151	8925	7699	6472	5244	4015	2786	1556	29
8690	7469	6248	5026	3803	2580	1355	0130	8905	7678	6451	5223	3995	2765	1536	28
8670	7449	6228	5006	3783	2559	1335	0110	8884	7658	6431	5203	3974	2745	1515	27
8649	7429	6207	4985	3762	2539	1314	0089	8864	7637	6410	5182	3954	2725	1495	26
8629	7408	6187	4965	3742	2518	1294	0069	8843	7617	6390	5162	3933	2704	1474	25
8609	7388	6167	4944	3722	2498	1274	0049	8823	7596	6369	5141	3913	2684	1454	24
8588	7368	6146	4924	3701	2478	1253	0028	8802	7576	6349	5121	3892	2663	1433	23
8568	7347	6126	4904	3681	2457	1233	0008	8782	7556	6328	5100	3872	2643	1412	22
8548	7327	6105	4883	3660	2437	1212	9987	8762	7535	6308	5080	3851	2622	1392	21
8527	7307	6085	4863	3640	2416	1192	9967	8741	7515	6287	5060	3831	2602	1371	20
8507	7286	6065	4843	3620	2396	1172	9947	8721	7494	6267	5039	3810	2581	1351	19
8487	7266	6044	4822	3599	2376	1151	9926	8700	7474	6247	5019	3790	2561	1330	18
8466	7246	6024	4802	3579	2355	1131	9906	8680	7453	6226	4998	3769	2540	1310	17
8446	7225	6004	4781	3558	2335	1110	9885	8659	7433	6206	4978	3749	2520	1289	16
8426	7205	5983	4761	3538	2314	1090	9865	8639	7412	6185	4957	3728	2499	1269	15
8405	7185	5963	4741	3518	2294	1070	9844	8619	7392	6165	4937	3708	2479	1248	14
8385	7164	5943	4720	3497	2274	1049	9824	8598	7372	6144	4916	3688	2458	1228	13
8365	7144	5922	4700	3477	2253	1029	9804	8578	7351	6124	4896	3667	2438	1207	12
8344	7123	5902	4680	3456	2233	1008	9783	8557	7331	6103	4875	3647	2417	1187	11
8324	7103	5881	4659	3436	2212	0988	9763	8537	7310	6083	4855	3626	2397	1166	10
8304	7083	5861	4639	3416	2192	0967	9742	8516	7290	6062	4834	3606	2376	1146	9
8283	7062	5841	4618	3395	2172	0947	9722	8496	7269	6042	4814	3585	2356	1125	8
8263	7042	5820	4598	3375	2151	0927	9701	8475	7249	6021	4793	3565	2335	1105	7
8243	7022	5800	4578	3355	2131	0906	9681	8455	7228	6001	4773	3544	2315	1084	6
8222	7001	5780	4557	3334	2110	0886	9661	8435	7208	5981	4752	3524	2294	1064	5
8202	6981	5759	4537	3314	2090	0865	9640	8414	7187	5960	4732	3503	2274	1043	4
8182	6961	5739	4516	3293	2070	0845	9620	8394	7167	5940	4711	3483	2253	1023	3
8161	6940	5719	4496	3273	2049	0825	9599	8373	7147	5919	4691	3462	2233	1002	2
8141	6920	5698	4476	3253	2029	0804	9579	8353	7126	5899	4671	3442	2212	0982	1
8121	6900	5678	4455	3232	2008	0784	9558	8332	7106	5878	4650	3421	2192	0961	0
59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	″

44 Deg. Tangent — 44 Deg. Co-Tangent

"	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	0′	1′	2′	3′	4′	5′	6′	7′	8′	9′	10′	11′	12′	13′	14′	"
	9. 984	9. 985	9. 985	9. 985	9. 985	9. 986	9. 986	9. 986	9. 986	9. 987	9. 987	9. 987	9. 987	9. 988	9. 988	10. 015	10. 014	10. 014	10. 014	10. 014	10. 013	10. 013	10. 013	10. 013	10. 012	10. 012	10. 012	10. 012	10. 011	10. 011	
0	8372	0900	3428	5956	8484	1012	3540	6068	8596	1123	3651	6179	8706	1234	3761	1628	9100	6572	4044	1516	8988	6460	3932	1404	8877	6349	3821	1294	8766	6239	60
1	8414	0942	3470	5998	8526	1054	3582	6110	8638	1165	3693	6221	8748	1276	3804	1586	9058	6530	4002	1474	8946	6418	3890	1362	8835	6307	3779	1252	8724	6196	59
2	8456	0984	3512	6040	8568	1096	3624	6152	8680	1208	3735	6263	8791	1318	3846	1544	9016	6488	3960	1432	8904	6376	3848	1320	8792	6265	3737	1209	8682	6154	58
3	8498	1026	3554	6082	8610	1138	3666	6194	8722	1250	3777	6305	8833	1360	3888	1502	8974	6446	3918	1390	8862	6334	3806	1278	8750	6223	3695	1167	8640	6112	57
4	8540	1069	3597	6125	8653	1181	3708	6236	8764	1292	3820	6347	8875	1402	3930	1460	8931	6403	3875	1347	8819	6292	3764	1236	8708	6180	3653	1125	8598	6070	56
5	8583	1111	3639	6167	8695	1223	3751	6278	8806	1334	3862	6389	8917	1445	3972	1417	8889	6361	3833	1305	8777	6249	3722	1194	8666	6138	3611	1083	8555	6028	55
6	8625	1153	3681	6209	8737	1265	3793	6321	8848	1376	3904	6431	8959	1487	4014	1375	8847	6319	3791	1263	8735	6207	3679	1152	8624	6096	3569	1041	8513	5986	54
7	8667	1195	3723	6251	8779	1307	3835	6363	8890	1418	3946	6474	9001	1529	4056	1333	8805	6277	3749	1221	8693	6165	3637	1110	8582	6054	3526	0999	8471	5944	53
8	8709	1237	3765	6293	8821	1349	3877	6405	8933	1460	3988	6516	9043	1571	4098	1291	8763	6235	3707	1179	8651	6123	3595	1067	8540	6012	3484	0957	8429	5902	52
9	8751	1279	3807	6335	8863	1391	3919	6447	8975	1502	4030	6558	9085	1613	4141	1249	8721	6193	3665	1137	8609	6081	3553	1025	8498	5970	3442	0915	8387	5859	51
10	8793	1321	3849	6377	8905	1433	3961	6489	9017	1545	4072	6600	9128	1655	4183	1207	8679	6151	3623	1095	8567	6039	3511	0983	8455	5928	3400	0872	8345	5817	50
11	8835	1363	3892	6420	8948	1475	4003	6531	9059	1587	4114	6642	9170	1697	4225	1165	8637	6108	3580	1052	8525	5997	3469	0941	8413	5886	3358	0830	8303	5775	49
12	8877	1406	3934	6462	8990	1518	4045	6573	9101	1629	4157	6684	9212	1739	4267	1123	8594	6066	3538	1010	8482	5955	3427	0899	8371	5843	3316	0788	8261	5733	48
13	8920	1448	3976	6504	9032	1560	4088	6615	9143	1671	4199	6726	9254	1782	4309	1080	8552	6024	3496	0968	8440	5912	3385	0857	8329	5801	3274	0746	8218	5691	47
14	8962	1490	4018	6546	9074	1602	4130	6658	9185	1713	4241	6768	9296	1824	4351	1038	8510	5982	3454	0926	8398	5870	3342	0815	8287	5759	3232	0704	8176	5649	46
15	9004	1532	4060	6588	9116	1644	4172	6700	9228	1755	4283	6811	9338	1866	4393	0996	8468	5940	3412	0884	8356	5828	3300	0772	8245	5717	3189	0662	8134	5607	45
16	9046	1574	4102	6630	9158	1686	4214	6742	9270	1797	4325	6853	9380	1908	4435	0954	8426	5898	3370	0842	8314	5786	3258	0730	8203	5675	3147	0620	8092	5565	44
17	9088	1616	4144	6672	9200	1728	4256	6784	9312	1840	4367	6895	9422	1950	4478	0912	8384	5856	3328	0800	8272	5744	3216	0688	8160	5633	3105	0578	8050	5522	43
18	9130	1658	4186	6714	9242	1770	4298	6826	9354	1882	4409	6937	9465	1992	4520	0870	8342	5814	3286	0758	8230	5702	3174	0646	8118	5591	3063	0535	8008	5480	42
19	9172	1701	4229	6757	9285	1813	4340	6868	9396	1924	4451	6979	9507	2034	4562	0828	8299	5771	3243	0715	8187	5660	3132	0604	8076	5549	3021	0493	7966	5438	41
20	9215	1743	4271	6799	9327	1855	4383	6910	9438	1966	4494	7021	9549	2076	4604	0785	8257	5729	3201	0673	8145	5617	3090	0562	8034	5506	2979	0451	7924	5396	40
21	9257	1785	4313	6841	9369	1897	4425	6952	9480	2008	4536	7063	9591	2119	4646	0743	8215	5687	3159	0631	8103	5575	3048	0520	7992	5464	2937	0409	7881	5354	39
22	9299	1827	4355	6883	9411	1939	4467	6995	9522	2050	4578	7106	9633	2161	4688	0701	8173	5645	3117	0589	8061	5533	3005	0478	7950	5422	2894	0367	7839	5312	38
23	9341	1869	4397	6925	9453	1981	4509	7037	9565	2092	4620	7148	9675	2203	4730	0659	8131	5603	3075	0547	8019	5491	2963	0435	7908	5380	2852	0325	7797	5270	37
24	9383	1911	4439	6967	9495	2023	4551	7079	9607	2134	4662	7190	9717	2245	4772	0617	8089	5561	3033	0505	7977	5449	2921	0393	7866	5338	2810	0283	7755	5228	36
25	9425	1953	4481	7009	9537	2065	4593	7121	9649	2177	4704	7232	9760	2287	4815	0575	8047	5519	2991	0463	7935	5407	2879	0351	7823	5296	2768	0240	7713	5185	35
26	9467	1995	4524	7052	9580	2107	4635	7163	9691	2219	4746	7274	9802	2329	4857	0533	8005	5476	2948	0420	7893	5365	2837	0309	7781	5254	2726	0198	7671	5143	34
27	9509	2038	4566	7094	9622	2150	4677	7205	9733	2261	4788	7316	9844	2371	4899	0491	7962	5434	2906	0378	7850	5323	2795	0267	7739	5212	2684	0156	7629	5101	33
28	9552	2080	4608	7136	9664	2192	4720	7247	9775	2303	4831	7358	9886	2413	4941	0448	7920	5392	2864	0336	7808	5280	2753	0225	7697	5169	2642	0114	7587	5059	32
29	9594	2122	4650	7178	9706	2234	4762	7290	9817	2345	4873	7400	9928	2456	4983	0406	7878	5350	2822	0294	7766	5238	2710	0183	7655	5127	2600	0072	7544	5017	31
30	9636	2164	4692	7220	9748	2276	4804	7332	9859	2387	4915	7443	9970	2498	5025	0364	7836	5308	2780	0252	7724	5196	2668	0141	7613	5085	2557	0030	7502	4975	30
31	9678	2206	4734	7262	9790	2318	4846	7374	9902	2429	4957	7485	0012	2540	5067	0322	7794	5266	2738	0210	7682	5154	2626	0098	7571	5043	2515	9988	7460	4933	29
32	9720	2248	4776	7304	9832	2360	4888	7416	9944	2471	4999	7527	0054	2582	5109	0280	7752	5224	2696	0168	7640	5112	2584	0056	7529	5001	2473	9946	7418	4891	28
33	9762	2290	4818	7346	9874	2402	4930	7458	9986	2514	5041	7569	0097	2624	5152	0238	7710	5182	2654	0126	7598	5070	2542	0014	7486	4959	2431	9903	7376	4848	27
34	9804	2333	4861	7389	9917	2445	4972	7500	0028	2556	5083	7611	0139	2666	5194	0196	7667	5139	2611	0083	7555	5028	2500	9972	7444	4917	2389	9861	7334	4806	26
35	9847	2375	4903	7431	9959	2487	5014	7542	0070	2598	5126	7653	0181	2708	5236	0153	7625	5097	2569	0041	7513	4986	2458	9930	7402	4874	2347	9819	7292	4764	25
36	9889	2417	4945	7473	0001	2529	5057	7584	0112	2640	5168	7695	0223	2750	5278	0111	7583	5055	2527	9999	7471	4943	2416	9888	7360	4832	2305	9777	7250	4722	24
37	9931	2459	4987	7515	0043	2571	5099	7627	0154	2682	5210	7737	0265	2793	5320	0069	7541	5013	2485	9957	7429	4901	2373	9846	7318	4790	2263	9735	7207	4680	23
38	9973	2501	5029	7557	0085	2613	5141	7669	0196	2724	5252	7780	0307	2835	5362	0027	7499	4971	2443	9915	7387	4859	2331	9804	7276	4748	2220	9693	7165	4638	22
39	0015	2543	5071	7599	0127	2655	5183	7711	0239	2766	5294	7822	0349	2877	5404	9985	7457	4929	2401	9873	7345	4817	2289	9761	7234	4706	2178	9651	7123	4596	21
40	0057	2585	5113	7641	0169	2697	5225	7753	0281	2808	5336	7864	0391	2919	5446	9943	7415	4887	2359	9831	7303	4775	2247	9719	7192	4664	2136	9609	7081	4554	20
41	0099	2628	5156	7684	0212	2739	5267	7795	0323	2851	5378	7906	0434	2961	5489	9901	7372	4844	2316	9788	7261	4733	2205	9677	7149	4622	2094	9566	7039	4511	19
42	0142	2670	5198	7726	0254	2782	5309	7837	0365	2893	5420	7948	0476	3003	5531	9858	7330	4802	2274	9746	7218	4691	2163	9635	7107	4580	2052	9524	6997	4469	18
43	0184	2712	5240	7768	0296	2824	5352	7879	0407	2935	5463	7990	0518	3045	5573	9816	7288	4760	2232	9704	7176	4648	2121	9593	7065	4537	2010	9482	6955	4427	17
44	0226	2754	5282	7810	0338	2866	5394	7921	0449	2977	5505	8032	0560	3087	5615	9774	7246	4718	2190	9662	7134	4606	2079	9551	7023	4495	1968	9440	6913	4385	16
45	0268	2796	5324	7852	0380	2908	5436	7964	0491	3019	5547	8074	0602	3130	5657	9732	7204	4676	2148	9620	7092	4564	2036	9509	6981	4453	1926	9398	6870	4343	15
46	0310	2838	5366	7894	0422	2950	5478	8006	0534	3061	5589	8117	0644	3172	5699	9690	7162	4634	2106	9578	7050	4522	1994	9466	6939	4411	1883	9356	6828	4301	14
47	0352	2880	5408	7936	0464	2992	5520	8048	0576	3103	5631	8159	0686	3214	5741	9648	7120	4592	2064	9536	7008	4480	1952	9424	6897	4369	1841	9314	6786	4259	13
48	0394	2922	5450	7978	0506	3034	5562	8090	0618	3145	5673	8201	0728	3256	5783	9606	7078	4550	2022	9494	6966	4438	1910	9382	6855	4327	1799	9272	6744	4217	12
49	0436	2965	5493	8021	0549	3076	5604	8132	0660	3188	5715	8243	0771	3298	5826	9564	7035	4507	1979	9451	6924	4396	1868	9340	6812	4285	1757	9229	6702	4174	11
50	0479	3007	5535	8063	0591	3119	5646	8174	0702	3230	5757	8285	0813	3340	5868	9521	6993	4465	1937	9409	6881	4354	1826	9298	6770	4243	1715	9187	6660	4132	10
51	0521	3049	5577	8105	0633	3161	5689	8216	0744	3272	5800	8327	0855	3382	5910	9479	6951	4423	1895	9367	6839	4311	1784	9256	6728	4200	1673	9145	6618	4090	9
52	0563	3091	5619	8147	0675	3203	5731	8259	0786	3314	5842	8369	0897	3424	5952	9437	6909	4381	1853	9325	6797	4269	1741	9214	6686	4158	1631	9103	6576	4048	8
53	0605	3133	5661	8189	0717	3245	5773	8301	0828	3356	5884	8411	0939	3467	5994	9395	6867	4339	1811	9283	6755	4227	1699	9172	6644	4116	1589	9061	6533	4006	7
54	0647	3175	5703	8231	0759	3287	5815	8343	0871	3398	5926	8454	0981	3509	6036	9353	6825	4297	1769	9241	6713	4185	1657	9129	6602	4074	1546	9019	6491	3964	6
55	0689	3217	5745	8273	0801	3329	5857	8385	0913	3440	5968	8496	1023	3551	6078	9311	6783	4255	1727	9199	6671	4143	1615	9087	6560	4032	1504	8977	6449	3922	5
56	0731	3260	5788	8316	0843	3371	5899	8427	0955	3483	6010	8538	1065	3593	6120	9269	6740	4212	1684	9157	6629	4101	1573	9045	6517	3990	1462	8935	6407	3880	4
57	0774	3302	5830	8358	0886	3414	5941	8469	0997	3525	6052	8580	1108	3635	6163	9226	6698	4170	1642	9114	6586	4059	1531	9003	6475	3948	1420	8892	6365	3837	3
58	0816	3344	5872	8400	0928	3456	5984	8511	1039	3567	6094	8622	1150	3677	6205	9184	6656	4128	1600	9072	6544	4016	1489	8961	6433	3906	1378	8850	6323	3795	2
59	0858	3386	5914	8442	0970	3498	6026	8553	1081	3609	6137	8664	1192	3719	6247	9142	6614	4086	1558	9030	6502	3974	1447	8919	6391	3863	1336	8808	6281	3753	1
60	0900	3428	5956	8484	1012	3540	6068	8596	1123	3651	6179	8706	1234	3761	6289	9100	6572	4044	1516	8988	6460	3932	1404	8877	6349	3821	1294	8766	6230	3711	0
"	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	59′	58′	57′	56′	55′	54′	53′	52′	51′	50′	49′	48′	47′	46′	45′	"

Co-Tangent Deg 45 — Tangent Deg. 45

″	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	9.843	9.843	9.843	9.844	9.844	9.844	9.844	9.844	9.844	9.844	9.845	9.845	9.845	9.845	9.845
0	7250	8547	9842	1137	2432	3725	5018	6310	7601	8891	0181	1470	2758	4045	5332
1	7272	8568	9864	1159	2453	3747	5039	6331	7622	8913	0202	1491	2779	4067	5354
2	7294	8590	9886	1181	2475	3768	5061	6353	7644	8934	0224	1513	2801	4088	5375
3	7315	8612	9907	1202	2496	3790	5082	6374	7665	8956	0245	1534	2822	4110	5396
4	7337	8633	9929	1224	2518	3811	5104	6396	7687	8977	0267	1556	2844	4131	5418
5	7358	8655	9950	1245	2539	3833	5125	6417	7708	8999	0288	1577	2865	4153	5439
6	7380	8676	9972	1267	2561	3854	5147	6439	7730	9020	0310	1599	2887	4174	5461
7	7402	8698	9994	1288	2582	3876	5168	6460	7751	9042	0331	1620	2908	4196	5482
8	7423	8720	0015	1310	2604	3897	5190	6482	7773	9063	0353	1642	2930	4217	5504
9	7445	8741	0037	1332	2626	3919	5211	6503	7794	9085	0374	1663	2951	4238	5525
10	7466	8763	0058	1353	2647	3940	5233	6525	7816	9106	0396	1685	2973	4260	5546
11	7488	8784	0080	1375	2669	3962	5255	6546	7837	9128	0417	1706	2994	4281	5568
12	7510	8806	0101	1396	2690	3984	5276	6568	7859	9149	0439	1727	3016	4303	5589
13	7531	8828	0123	1418	2712	4005	5298	6589	7880	9171	0460	1749	3037	4324	5611
14	7553	8849	0145	1439	2733	4027	5319	6611	7902	9192	0482	1770	3058	4346	5632
15	7574	8871	0166	1461	2755	4048	5341	6632	7923	9214	0503	1792	3080	4367	5654
16	7596	8892	0188	1483	2777	4070	5362	6654	7945	9235	0525	1813	3101	4389	5675
17	7618	8914	0209	1504	2798	4091	5384	6675	7966	9257	0546	1835	3123	4410	5696
18	7639	8936	0231	1526	2820	4113	5405	6697	7988	9278	0568	1856	3144	4431	5718
19	7661	8957	0253	1547	2841	4134	5427	6719	8009	9300	0589	1878	3166	4453	5739
20	7683	8979	0274	1569	2863	4156	5448	6740	8031	9321	0611	1899	3187	4474	5761
21	7704	9000	0296	1590	2884	4178	5470	6762	8052	9343	0632	1921	3209	4496	5782
22	7726	9022	0317	1612	2906	4199	5491	6783	8074	9364	0654	1942	3230	4517	5804
23	7747	9043	0339	1634	2927	4221	5513	6805	8096	9386	0675	1964	3252	4539	5825
24	7769	9065	0360	1655	2949	4242	5535	6826	8117	9407	0697	1985	3273	4560	5847
25	7791	9087	0382	1677	2971	4264	5556	6848	8139	9429	0718	2007	3294	4582	5868
26	7812	9108	0404	1698	2992	4285	5578	6869	8160	9450	0739	2028	3316	4603	5889
27	7834	9130	0425	1720	3014	4307	5599	6891	8182	9472	0761	2050	3337	4624	5911
28	7855	9151	0447	1741	3035	4328	5621	6912	8203	9493	0782	2071	3359	4646	5932
29	7877	9173	0468	1763	3057	4350	5642	6934	8225	9515	0804	2093	3380	4667	5954
30	7899	9195	0490	1785	3078	4371	5664	6955	8246	9536	0825	2114	3402	4689	5975
31	7920	9216	0512	1806	3100	4393	5685	6977	8268	9558	0847	2135	3423	4710	5997
32	7942	9238	0533	1828	3121	4415	5707	[illegible]	8289	9579	0868	2157	3445	4732	6018
33	7963	9259	0555	1849	3143	4436	5728	[illegible]	8311	9601	0890	2178	3466	4753	6039
34	7985	9281	0576	1871	3165	4458	5750	7041	8332	9622	0911	2200	3488	4775	6061
35	8007	9303	0598	1892	3186	4479	5771	7063	8354	9644	0932	2221	3509	4796	6082
36	8028	9324	0619	1914	3208	4501	5793	7084	8375	9665	0954	2243	3531	4817	6104
37	8050	9346	0641	1936	3229	4522	5814	7106	8397	9687	0976	2264	3552	4839	6125
38	8071	9367	0663	1957	3251	4544	5836	7127	8418	9708	0997	2286	3573	4860	6147
39	8093	9389	0684	1979	3272	4565	5857	7149	8440	9730	1019	2307	3595	4882	6168
40	8115	9411	0706	2000	3294	4587	5879	7170	8461	9751	1040	2329	3616	4903	6189
41	8136	9432	0727	2022	3315	4608	5901	7192	8483	9773	1062	2350	3638	4925	6211
42	8158	9454	0749	2043	3337	4630	5922	7213	8504	9794	1083	2372	3659	4946	6232
43	8179	9475	0771	2065	3359	4651	5944	7235	8526	9816	1105	2393	3681	4968	6254
44	8201	9497	0792	2087	3380	4673	5965	7257	8547	9837	1126	2415	3702	4989	6275
45	8223	9519	0814	2108	3402	4695	5987	7278	8569	9859	1148	2436	3724	5010	6297
46	8244	9540	0835	2130	3423	4716	6008	7300	8590	9880	1169	2457	3745	5032	6318
47	8266	9562	0857	2151	3445	4738	6030	7321	8612	9902	1191	2479	3767	5053	6339
48	8287	9583	0878	2173	3466	4759	6051	7343	8633	9923	1212	2500	3788	5075	6361
49	8309	9605	0900	2194	3488	4781	6073	7364	8655	9944	1234	2522	3809	5096	6382
50	8331	9627	0922	2216	3509	4802	6094	7386	8676	9966	1255	2543	3831	5118	6404
51	8352	9648	0943	2237	3531	4824	6116	7407	8698	9987	1277	2565	3852	5139	6425
52	8374	9670	0965	2259	3553	4845	6137	7429	8719	0009	1298	2586	3874	5161	6447
53	8396	9691	0986	2281	3574	4867	6159	7450	8741	0030	1319	2608	3895	5182	6468
54	8417	9713	1008	2302	3596	4888	6180	7472	8762	0052	1341	2629	3917	5203	6489
55	8439	9734	1029	2324	3617	4910	6202	7493	8784	0073	1362	2651	3938	5225	6511
56	8460	9756	1051	2345	3639	4932	6223	7515	8805	0095	1384	2672	3960	5246	6532
57	8482	9778	1073	2367	3660	4953	6245	7536	8827	0116	1405	2694	3981	5268	6554
58	8504	9799	1094	2388	3682	4975	6267	7558	8848	0138	1427	2715	4002	5289	6575
59	8525	9821	1116	2410	3703	4996	6288	7579	8870	0159	1448	2737	4024	5311	6597
60	8547	9842	1137	2432	3725	5018	6310	7601	8891	0181	1470	2758	4045	5332	6618
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

Co-Sine Deg. 45

15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′	″
9.855	9.854	9.854	9.854	9.854	9.854	9.854	9.854	9.854	9.853	9.853	9.853	9.853	9.853	9.853	″
0961	9730	8499	7266	6033	4799	3564	2329	1093	9856	8619	7381	6142	4902	3662	60
0941	9710	8478	7246	6012	4778	3544	2308	1072	9836	8598	7360	6121	4881	3641	59
0920	9689	8457	7225	5992	4758	3523	2288	1052	9815	8578	7339	6100	4861	3620	58
0900	9669	8437	7204	5971	4737	3503	2267	1031	9794	8557	7319	6080	4840	3600	57
0879	9648	8416	7184	5951	4717	3482	2247	1011	9774	8536	7298	6059	4819	3579	56
0859	9628	8396	7163	5930	4696	3461	2226	0990	9753	8516	7277	6038	4799	3558	55
0838	9607	8375	7143	5910	4676	3441	2206	0969	9733	8495	7257	6018	4778	3538	54
0818	9587	8355	7122	5889	4655	3420	2185	0949	9712	8474	7236	5997	4757	3517	53
0797	9566	8334	7102	5868	4634	3400	2164	0928	9691	8454	7215	5976	4737	3496	52
0777	9546	8314	7081	5848	4614	3379	2144	0908	9671	8433	7195	5956	4716	3476	51
0756	9525	8293	7061	5827	4593	3359	2123	0887	9650	8412	7174	5935	4695	3455	50
0736	9505	8273	7040	5807	4573	3338	2103	0866	9629	8392	7153	5914	4675	3434	49
0715	9484	8252	7020	5786	4552	3317	2082	0846	9609	8371	7133	5894	4654	3413	48
0695	9463	8232	6999	5766	4532	3297	2061	0825	9588	8351	7112	5873	4633	3393	47
0674	9443	8211	6978	5745	4511	3276	2041	0805	9568	8330	7092	5852	4613	3372	46
0654	9422	8190	6958	5725	4490	3256	2020	0784	9547	8309	7071	5832	4592	3351	45
0633	9402	8170	6937	5704	4470	3235	2000	0763	9526	8289	7050	5811	4571	3331	44
0613	9381	8149	6917	5683	4449	3214	1979	0743	9506	8268	7030	5790	4551	3310	43
0592	9361	8129	6896	5663	4429	3194	1958	0722	9485	8247	7009	5770	4530	3289	42
0572	9340	8108	6876	5642	4408	3173	1938	0701	9464	8227	6988	5749	4509	3269	41
0551	9320	8088	6855	5622	4388	3153	1917	0681	9444	8206	6968	5729	4489	3248	40
0531	9299	8067	6835	5601	4367	3132	1897	0660	9423	8185	6947	5708	4468	3227	39
0510	9279	8047	6814	5581	4346	3112	1876	0640	9403	8165	6926	5687	4447	3207	38
0489	9258	8026	6793	5560	4326	3091	1855	0619	9382	8144	6906	5667	4427	3186	37
0469	9238	8006	6773	5539	4305	3070	1835	0598	9361	8124	6885	5646	4406	3165	36
0448	9217	7985	6752	5519	4285	3050	1814	0578	9341	8103	6864	5625	4385	3145	35
0428	9197	7965	6732	5498	4264	3029	1794	0557	9320	8082	6844	5605	4365	3124	34
0407	9176	7944	6711	5478	4244	3009	1773	0537	9299	8062	6823	5584	4344	3103	33
0387	9156	7923	6691	5457	4223	2988	1752	0516	9279	8041	6802	5563	4323	3083	32
0366	9135	7903	6670	5437	4202	2967	1732	0495	9258	8020	6782	5543	4303	3062	31
0346	9114	7882	6650	5416	4182	2947	1711	0475	9238	8000	6761	5522	4282	3041	30
0325	9094	7862	6629	5395	4161	2926	1691	0454	9217	7979	6741	5501	4261	3020	29
0305	9073	7841	6608	5375	4141	2906	1670	0434	9196	7958	6720	5481	4241	3000	28
0284	9053	7821	6588	5354	4120	2885	1649	0413	9176	7938	6699	5460	4220	2979	27
0264	9032	7800	6567	5334	4099	2864	1629	0392	9155	7917	6679	5439	4199	2958	26
0243	9012	7780	6547	5313	4079	2844	1608	0372	9134	7897	6658	5419	4179	2938	25
0223	8991	7759	6526	5293	4058	2823	1588	0351	9114	7876	6637	5398	4158	2917	24
0202	8971	7739	6506	5272	4038	2803	1567	0330	9093	7855	6617	5377	4137	2896	23
0182	8950	7718	6485	5252	4017	2782	1546	0310	9073	7835	6596	5357	4117	2876	22
0161	8930	7698	6465	5231	3997	2762	1526	0289	9052	7814	6575	5336	4096	2855	21
0141	8909	7677	6444	5210	3976	2741	1505	0269	9031	7793	6555	5315	4075	2834	20
0120	8889	7656	6423	5190	3955	2720	1485	0248	9011	7773	6534	5295	4054	2814	19
0100	8868	7636	6403	5169	3935	2700	1464	0227	8990	7752	6513	5274	4034	2793	18
0079	8848	7615	6382	5149	3914	2679	1443	0207	8969	7731	6493	5253	4013	2772	17
0059	8827	7595	6362	5128	3894	2659	1423	0186	8949	7711	6472	5233	3992	2752	16
0038	8807	7574	6341	5108	3873	2638	1402	0166	8928	7690	6451	5212	3972	2731	15
0018	8786	7554	6321	5087	3853	2617	1382	0145	8908	7670	6431	5191	3951	2710	14
9997	8765	7533	6300	5066	3832	2597	1361	0124	8887	7649	6410	5171	3930	2690	13
9977	8745	7513	6280	5046	3811	2576	1340	0104	8866	7628	6389	5150	3910	2669	12
9956	8724	7492	6259	5025	3791	2556	1320	0083	8846	7608	6369	5129	3889	2648	11
9935	8704	7472	6238	5005	3770	2535	1299	0062	8825	7587	6348	5109	3868	2627	10
9915	8683	7451	6218	4984	3750	2514	1278	0042	8804	7566	6328	5088	3848	2607	9
9894	8663	7430	6197	4964	3729	2494	1258	0021	8784	7546	6307	5067	3827	2586	8
9874	8642	7410	6177	4943	3708	2473	1237	0001	8763	7525	6286	5047	3806	2565	7
9853	8622	7389	6156	4922	3688	2453	1217	9980	8743	7504	6266	5026	3786	2545	6
9833	8601	7369	6136	4902	3667	2432	1196	9959	8722	7484	6245	5005	3765	2524	5
9812	8581	7348	6115	4881	3647	2411	1175	9939	8701	7463	6224	4985	3744	2503	4
9792	8560	7328	6095	4861	3626	2391	1155	9918	8681	7443	6204	4964	3724	2483	3
9771	8540	7307	6074	4840	3606	2370	1134	9898	8660	7422	6183	4943	3703	2462	2
9751	8519	7287	6053	4820	3585	2350	1114	9877	8639	7401	6162	4923	3682	2441	1
9730	8499	7266	6033	4799	3564	2329	1093	9856	8619	7381	6142	4902	3662	2421	0
44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′	″

Sine Deg. 45

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
″	9. 988	9. 988	9. 989	9. 989	9. 989	9. 989	9. 990	9. 990	9. 990	9. 990	9. 991	9. 991	9. 991	9. 991	9. 992
0	6289	8816	1344	3871	6399	8926	1453	3981	6508	9035	1562	4089	6616	9143	1670
1	6331	8859	1386	3913	6441	8968	1495	4023	6550	9077	1604	4131	6658	9186	1713
2	6373	8901	1428	3956	6483	9010	1537	4065	6592	9119	1646	4173	6701	9228	1755
3	6415	8943	1470	3998	6525	9052	1580	4107	6634	9161	1688	4216	6743	9270	1797
4	6457	8985	1512	4040	6567	9094	1622	4149	6676	9203	1731	4258	6785	9312	1839
5	6500	9027	1555	4082	6609	9137	1664	4191	6718	9246	1773	4300	6827	9354	1881
6	6542	9069	1597	4124	6651	9179	1706	4233	6760	9288	1815	4342	6869	9396	1923
7	6584	9111	1639	4166	6693	9221	1748	4275	6803	9330	1857	4384	6911	9438	1965
8	6626	9153	1681	4208	6736	9263	1790	4317	6845	9372	1899	4426	6953	9480	2007
9	6668	9196	1723	4250	6778	9305	1832	4360	6887	9414	1941	4468	6995	9522	2049
10	6710	9238	1765	4293	6820	9347	1874	4402	6929	9456	1983	4510	7038	9565	2092
11	6752	9280	1807	4335	6862	9389	1917	4444	6971	9498	2025	4553	7080	9607	2134
12	6794	9322	1849	4377	6904	9431	1959	4486	7013	9540	2068	4595	7122	9649	2176
13	6837	9364	1891	4419	6946	9474	2001	4528	7055	9582	2110	4637	7164	9691	2218
14	6879	9406	1934	4461	6988	9516	2043	4570	7097	9625	2152	4679	7206	9733	2260
15	6921	9448	1976	4503	7030	9558	2085	4612	7140	9667	2194	4721	7248	9775	2302
16	6963	9490	2018	4545	7073	9600	2127	4654	7182	9709	2236	4763	7290	9817	2344
17	7005	9533	2060	4587	7115	9642	2169	4697	7224	9751	2278	4805	7332	9859	2386
18	7047	9575	2102	4629	7157	9684	2211	4739	7266	9793	2320	4847	7374	9902	2429
19	7089	9617	2144	4672	7199	9726	2254	4781	7308	9835	2362	4889	7417	9944	2471
20	7131	9659	2186	4714	7241	9768	2296	4823	7350	9877	2404	4932	7459	9986	2513
21	7174	9701	2228	4756	7283	9811	2338	4865	7392	9919	2447	4974	7501	0028	2555
22	7216	9743	2271	4798	7325	9853	2380	4907	7434	9962	2489	5016	7543	0070	2597
23	7258	9785	2313	4840	7367	9895	2422	4949	7476	0004	2531	5058	7585	0112	2639
24	7300	9827	2355	4882	7410	9937	2464	4991	7519	0046	2573	5100	7627	0154	2681
25	7342	9870	2397	4924	7452	9979	2506	5034	7561	0088	2615	5142	7669	0196	2723
26	7384	9912	2439	4966	7494	0021	2548	5076	7603	0130	2657	5184	7711	0238	2765
27	7426	9954	2481	5009	7536	0063	2591	5118	7645	0172	2699	5226	7754	0281	2808
28	7468	9996	2523	5051	7578	0105	2633	5160	7687	0214	2741	5269	7796	0323	2850
29	7511	0038	2565	5093	7620	0147	2675	5202	7729	0256	2784	5311	7838	0365	2892
30	7553	0080	2608	5135	7662	0190	2717	5244	7771	0299	2826	5353	7880	0407	2934
31	7595	0122	2650	5177	7704	0232	2759	5286	7813	0341	2868	5395	7922	0449	2976
32	7637	0164	2692	5219	7747	0274	2801	5328	7856	0383	2910	5437	7964	0491	3018
33	7679	0207	2734	5261	7789	0316	2843	5370	7898	0425	2952	5479	8006	0533	3060
34	7721	0249	2776	5303	7831	0358	2885	5413	7940	0467	2994	5521	8048	0575	3102
35	7763	0291	2818	5346	7873	0400	2927	5455	7982	0509	3036	5563	8090	0618	3145
36	7805	0333	2860	5388	7915	0442	2970	5497	8024	0551	3078	5605	8133	0660	3187
37	7848	0375	2902	5430	7957	0484	3012	5539	8066	0593	3120	5648	8175	0702	3229
38	7890	0417	2945	5472	7999	0527	3054	5581	8108	0635	3163	5690	8217	0744	3271
39	7932	0459	2987	5514	8041	0569	3096	5623	8150	0678	3205	5732	8259	0786	3313
40	7974	0501	3029	5556	8084	0611	3138	5665	8193	0720	3247	5774	8301	0828	3355
41	8016	0544	3071	5598	8126	0653	3180	5707	8235	0762	3289	5816	8343	0870	3397
42	8058	0586	3113	5640	8168	0695	3222	5750	8277	0804	3331	5858	8385	0912	3439
43	8100	0628	3155	5683	8210	0737	3264	5792	8319	0846	3373	5900	8427	0954	3481
44	8142	0670	3197	5725	8252	0779	3307	5834	8361	0888	3415	5942	8470	0997	3524
45	8185	0712	3239	5767	8294	0821	3349	5876	8403	0930	3457	5985	8512	1039	3566
46	8227	0754	3282	5809	8336	0864	3391	5918	8445	0972	3500	6027	8554	1081	3608
47	8269	0796	3324	5851	8378	0906	3433	5960	8487	1015	3542	6069	8596	1123	3650
48	8311	0838	3366	5893	8420	0948	3475	6002	8529	1057	3584	6111	8638	1165	3692
49	8353	0881	3408	5935	8463	0990	3517	6044	8572	1099	3626	6153	8680	1207	3734
50	8395	0923	3450	5977	8505	1032	3559	6087	8614	1141	3668	6195	8722	1249	3776
51	8437	0965	3492	6020	8547	1074	3601	6129	8656	1183	3710	6237	8764	1291	3818
52	8479	1007	3534	6062	8589	1116	3644	6171	8698	1225	3752	6279	8806	1334	3861
53	8522	1049	3576	6104	8631	1158	3686	6213	8740	1267	3794	6321	8849	1376	3903
54	8564	1091	3619	6146	8673	1201	3728	6255	8782	1309	3837	6364	8891	1418	3945
55	8606	1133	3661	6188	8715	1243	3770	6297	8824	1351	3879	6406	8933	1460	3987
56	8648	1175	3703	6230	8757	1285	3812	6339	8866	1394	3921	6448	8975	1502	4029
57	8690	1218	3745	6272	8800	1327	3854	6381	8909	1436	3963	6490	9017	1544	4071
58	8732	1260	3787	6314	8842	1369	3896	6423	8951	1478	4005	6532	9059	1586	4113
59	8774	1302	3829	6357	8884	1411	3938	6466	8993	1520	4047	6574	9101	1628	4155
60	8816	1344	3871	6399	8926	1453	3981	6508	9035	1562	4089	6616	9143	1670	4197
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

	15′	16′	17′	18′	19′	20′	21′	22′	23′	24′	25′	26′	27′	28′	29′
	10. 011	10. 011	10. 010	10. 010	10. 010	10. 010	10. 009	10. 009	10. 009	10. 009	10. 008	10. 008	10. 008	10. 008	10. 007
0	3711	1184	8656	6129	3601	1074	8547	6019	3492	0965	8438	5911	3384	0857	8330
1	3669	1141	8614	6087	3559	1032	8505	5977	3450	0923	8396	5869	3342	0814	8287
2	3627	1099	8572	6044	3517	0990	8463	5935	3408	0881	8354	5827	3299	0772	8245
3	3585	1057	8530	6002	3475	0948	8420	5893	3366	0839	8312	5784	3257	0730	8203
4	3543	1015	8488	5960	3433	0906	8378	5851	3324	0797	8269	5742	3215	0688	8161
5	3500	0973	8445	5918	3391	0863	8336	5809	3282	0754	8227	5700	3173	0646	8119
6	3458	0931	8403	5876	3349	0821	8294	5767	3240	0712	8185	5658	3131	0604	8077
7	3416	0889	8361	5834	3307	0779	8252	5725	3197	0670	8143	5616	3089	0562	8035
8	3374	0847	8319	5792	3264	0737	8210	5683	3155	0628	8101	5574	3047	0520	7993
9	3332	0804	8277	5750	3222	0695	8168	5640	3113	0586	8059	5532	3005	0478	7951
10	3290	0762	8235	5707	3180	0653	8126	5598	3071	0544	8017	5490	2962	0435	7908
11	3248	0720	8193	5665	3138	0611	8083	5556	3029	0502	7975	5447	2920	0393	7866
12	3206	0678	8151	5623	3096	0569	8041	5514	2987	0460	7932	5405	2878	0351	7824
13	3163	0636	8109	5581	3054	0526	7999	5472	2945	0418	7890	5363	2836	0309	7782
14	3121	0594	8066	5539	3012	0484	7957	5430	2993	0375	7848	5321	2794	0267	7740
15	3079	0552	8024	5497	2970	0442	7915	5388	2860	0333	7806	5279	2752	0225	7698
16	3037	0510	7982	5455	2927	0400	7873	5346	2818	0291	7764	5237	2710	0183	7656
17	2995	0467	7940	5413	2885	0358	7831	5303	2776	0249	7722	5195	2668	0141	7614
18	2953	0425	7898	5371	2843	0316	7789	5261	2734	0207	7680	5153	2626	0098	7571
19	2911	0383	7856	5328	2801	0274	7746	5219	2692	0165	7638	5111	2583	0056	7529
20	2869	0341	7814	5286	2759	0232	7704	5177	2650	0123	7596	5068	2541	0014	7487
21	2826	0299	7772	5244	2717	0189	7662	5135	2608	0081	7553	5026	2499	9972	7445
22	2784	0257	7729	5202	2675	0147	7620	5093	2566	0038	7511	4984	2457	9930	7403
23	2742	0215	7687	5160	2633	0105	7578	5051	2524	9996	7469	4942	2415	9888	7361
24	2700	0173	7645	5118	2590	0063	7536	5009	2481	9954	7427	4900	2373	9846	7319
25	2658	0130	7603	5076	2548	0021	7494	4966	2439	9912	7385	4858	2331	9804	7277
26	2616	0088	7561	5034	2506	9979	7452	4924	2397	9870	7343	4816	2289	9762	7235
27	2574	0046	7519	4991	2464	9937	7409	4882	2355	9828	7301	4774	2246	9719	7192
28	2532	0004	7477	4949	2422	9895	7367	4840	2313	9786	7259	4731	2204	9677	7150
29	2489	9962	7435	4907	2380	9853	7325	4798	2271	9744	7216	4689	2162	9635	7108
30	2447	9920	7392	4865	2338	9810	7283	4756	2229	9701	7174	4647	2120	9593	7066
31	2405	9878	7350	4823	2296	9768	7241	4714	2187	9659	7132	4605	2078	9551	7024
32	2363	9836	7308	4781	2253	9726	7199	4672	2144	9617	7090	4563	2036	9509	6982
33	2321	9793	7266	4739	2211	9684	7157	4630	2102	9575	7048	4521	1994	9467	6940
34	2279	9751	7224	4697	2169	9642	7115	4587	2060	9533	7006	4479	1952	9425	6898
35	2237	9709	7182	4654	2127	9600	7073	4545	2018	9491	6964	4437	1910	9382	6855
36	2195	9667	7140	4612	2085	9558	7030	4503	1976	9449	6922	4395	1867	9340	6813
37	2152	9625	7098	4570	2043	9516	6988	4461	1934	9407	6880	4352	1825	9298	6771
38	2110	9583	7055	4528	2001	9473	6946	4419	1892	9365	6837	4310	1783	9256	6729
39	2068	9541	7013	4486	1959	9431	6904	4377	1850	9322	6795	4268	1741	9214	6687
40	2026	9499	6971	4444	1916	9389	6862	4335	1807	9280	6753	4226	1699	9172	6645
41	1984	9456	6929	4402	1874	9347	6820	4293	1765	9238	6711	4184	1657	9130	6603
42	1942	9414	6887	4360	1832	9305	6778	4250	1723	9196	6669	4142	1615	9088	6561
43	1900	9372	6845	4317	1790	9263	6736	4208	1681	9154	6627	4100	1573	9046	6519
44	1858	9330	6803	4275	1748	9221	6693	4166	1639	9112	6585	4058	1530	9003	6476
45	1815	9288	6761	4233	1706	9179	6651	4124	1597	9070	6543	4015	1488	8961	6434
46	1773	9246	6718	4191	1664	9136	6609	4082	1555	9028	6500	3973	1446	8919	6392
47	1731	9204	6676	4149	1622	9094	6567	4040	1513	8985	6458	3931	1404	8877	6350
48	1689	9162	6634	4107	1580	9052	6525	3998	1471	8943	6416	3889	1362	8835	6308
49	1647	9119	6592	4065	1537	9010	6483	3956	1428	8901	6374	3847	1320	8793	6266
50	1605	9077	6550	4023	1495	8968	6441	3913	1386	8859	6332	3805	1278	8751	6224
51	1563	9035	6508	3980	1453	8926	6399	3871	1344	8817	6290	3763	1236	8709	6182
52	1521	8993	6466	3938	1411	8884	6356	3829	1302	8775	6248	3721	1194	8666	6139
53	1478	8951	6424	3896	1369	8842	6314	3787	1260	8733	6206	3679	1151	8624	6097
54	1436	8909	6381	3854	1327	8799	6272	3745	1218	8691	6163	3636	1109	8582	6055
55	1394	8867	6339	3812	1285	8757	6230	3703	1176	8649	6121	3594	1067	8540	6013
56	1352	8825	6297	3770	1243	8715	6188	3661	1134	8606	6079	3552	1025	8498	5971
57	1310	8782	6255	3728	1200	8673	6146	3619	1091	8564	6037	3510	0983	8456	5929
58	1268	8740	6213	3686	1158	8631	6104	3577	1049	8522	5995	3468	0941	8414	5887
59	1226	8698	6171	3643	1116	8589	6062	3534	1007	8480	5953	3426	0899	8372	5845
60	1184	8656	6129	3601	1074	8547	6019	3492	0965	8438	5911	3384	0857	8330	5803
″	44′	43′	42′	41′	40′	39′	38′	37′	36′	35′	34′	33′	32′	31′	30′

"	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9. 845	9. 845	9. 845	9. 846	9. 846	9. 846	9. 846	9. 846	9. 846	9. 846	9. 846	9. 847	9. 847	9. 847	9. 847
0	6618	7903	9188	0471	1754	3036	4318	5599	6879	8158	9436	0714	1991	3267	4543
1	6639	7925	9209	0493	1776	3058	4339	5620	6900	8179	9458	0735	2012	3288	4564
2	6661	7946	9230	0514	1797	3079	4361	5641	6921	8200	9479	0757	2033	3310	4585
3	6682	7967	9252	0535	1818	3101	4382	5663	6943	8222	9500	0778	2055	3331	4606
4	6704	7989	9273	0557	1840	3122	4403	5684	6964	8243	9521	0799	2076	3352	4628
5	6725	8010	9295	0578	1861	3143	4425	5705	6985	8264	9543	0820	2097	3373	4649
6	6747	8032	9316	0600	1882	3165	4446	5727	7006	8286	9564	0842	2119	3395	4670
7	6768	8053	9337	0621	1904	3186	4467	5748	7028	8307	9585	0863	2140	3416	4691
8	6789	8074	9359	0642	1925	3207	4489	5769	7049	8328	9607	0884	2161	3437	4713
9	6811	8096	9380	0664	1947	3229	4510	5791	7070	8350	9628	0906	2182	3459	4734
10	6832	8117	9402	0685	1968	3250	4531	5812	7092	8371	9649	0927	2204	3480	4755
11	6854	8139	9423	0707	1989	3271	4553	5833	7113	8392	9671	0948	2225	3501	4776
12	6875	8160	9444	0728	2011	3293	4574	5855	7134	8414	9692	0969	2246	3522	4798
13	6897	8182	9466	0749	2032	3314	4595	5876	7156	8435	9713	0991	2268	3544	4819
14	6918	8203	9487	0771	2053	3336	4617	5897	7177	8456	9734	1012	2289	3565	4840
15	6939	8224	9509	0792	2075	3357	4638	5919	7198	8477	9756	1033	2310	3586	4861
16	6961	8246	9530	0813	2096	3378	4659	5940	7220	8499	9777	1055	2331	3607	4883
17	6982	8267	9551	0835	2118	3400	4681	5961	7241	8520	9798	1076	2353	3629	4904
18	7004	8289	9573	0856	2139	3421	4702	5983	7262	8541	9820	1097	2374	3650	4925
19	7025	8310	9594	0878	2160	3442	4724	6004	7284	8563	9841	1118	2395	3671	4946
20	7046	8331	9616	0899	2182	3464	4745	6025	7305	8584	9862	1140	2416	3692	4968
21	7068	8353	9637	0920	2203	3485	4766	6047	7326	8605	9884	1161	2438	3714	4989
22	7089	8374	9658	0942	2224	3506	4788	6068	7348	8627	9905	1182	2459	3735	5010
23	7111	8396	9680	0963	2246	3528	4809	6089	7369	8648	9926	1204	2480	3756	5031
24	7132	8417	9701	0985	2267	3549	4830	6111	7390	8669	9947	1225	2502	3777	5053
25	7154	8438	9723	1006	2289	3570	4852	6132	7412	8691	9969	1246	2523	3799	5074
26	7175	8460	9744	1027	2310	3592	4873	6153	7433	8712	9990	1267	2544	3820	5095
27	7196	8481	9765	1049	2331	3613	4894	6175	7454	8733	0011	1289	2565	3841	5116
28	7218	8503	9787	1070	2353	3635	4916	6196	7476	8754	0033	1310	2587	3862	5138
29	7239	8524	9808	1091	2374	3656	4937	6217	7497	8776	0054	1331	2608	3884	5159
30	7261	8545	9830	1113	2395	3677	4958	6239	7518	8797	0075	1353	2629	3905	5180
31	7282	8567	9851	1134	2417	3699	4980	6260	7540	8818	0096	1374	2650	3926	5201
32	7304	8588	9872	1156	2438	3720	5001	6281	7561	8840	0118	1395	2672	3948	5223
33	7325	8610	9894	1177	2460	3741	5022	6303	7582	8861	0139	1416	2693	3969	5244
34	7346	8631	9915	1198	2481	3763	5044	6324	7604	8882	0160	1438	2714	3990	5265
35	7368	8653	9937	1220	2502	3784	5065	6345	7625	8904	0182	1459	2735	4011	5286
36	7389	8674	9958	1241	2524	3805	5086	6367	7646	8925	0203	1480	2757	4033	5308
37	7411	8695	9979	1263	2545	3827	5108	6388	7667	8946	0224	1502	2778	4054	5329
38	7432	8717	0001	1284	2566	3848	5129	6409	7689	8968	0246	1523	2799	4075	5350
39	7453	8738	0022	1305	2588	3869	5150	6431	7710	8989	0267	1544	2821	4096	5371
40	7475	8760	0043	1327	2609	3891	5172	6452	7731	9010	0288	1565	2842	4118	5393
41	7496	8781	0065	1348	2630	3912	5193	6473	7753	9031	0309	1587	2863	4139	5414
42	7518	8802	0086	1369	2652	3934	5214	6495	7774	9053	0331	1608	2884	4160	5435
43	7539	8824	0108	1391	2673	3955	5236	6516	7795	9074	0352	1629	2906	4181	5456
44	7561	8845	0129	1412	2695	3976	5257	6537	7817	9095	0373	1650	2927	4203	5478
45	7582	8867	0150	1434	2716	3998	5278	6559	7838	9117	0395	1672	2948	4224	5499
46	7603	8888	0172	1455	2737	4019	5300	6580	7859	9138	0416	1693	2969	4245	5520
47	7625	8909	0193	1476	2759	4040	5321	6601	7881	9159	0437	1714	2991	4266	5541
48	7646	8931	0215	1498	2780	4062	5343	6623	7902	9181	0458	1736	3012	4288	5563
49	7668	8952	0236	1519	2801	4083	5364	6644	7923	9202	0480	1757	3033	4309	5584
50	7689	8974	0257	1540	2823	4104	5385	6665	7945	9223	0501	1778	3055	4330	5605
51	7710	8995	0279	1562	2844	4126	5407	6687	7966	9245	0522	1799	3076	4351	5626
52	7732	9016	0300	1583	2866	4147	5428	6708	7987	9266	0544	1821	3097	4373	5647
53	7753	9038	0322	1605	2887	4168	5449	6729	8009	9287	0565	1842	3118	4394	5669
54	7775	9059	0343	1626	2908	4190	5471	6751	8030	9308	0586	1863	3140	4415	5690
55	7796	9081	0364	1647	2930	4211	5492	6772	8051	9330	0608	1885	3161	4436	5711
56	7818	9102	0386	1669	2951	4232	5513	6793	8073	9351	0629	1906	3182	4458	5732
57	7839	9123	0407	1690	2972	4254	5535	6815	8094	9372	0650	1927	3203	4479	5754
58	7860	9145	0429	1711	2994	4275	5556	6836	8115	9394	0671	1948	3225	4500	5775
59	7882	9166	0450	1733	3015	4297	5577	6857	8136	9415	0693	1970	3246	4521	5796
60	7903	9188	0471	1754	3036	4318	5599	6879	8158	9436	0714	1991	3267	4543	5817
"	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	"
9. 853	9. 853	9. 852	9. 852	9. 852	9. 852	9. 852	9. 852	9. 852	9. 852	9. 851	9. 851	9. 851	9. 851	9. 851	
2421	1179	9936	8693	7449	6204	4959	3713	2466	1218	9970	8721	7471	6220	4969	60
2400	1158	9915	8672	7428	6183	4938	3692	2445	1197	9949	8700	7450	6200	4948	59
2379	1137	9895	8651	7407	6163	4917	3671	2424	1177	9928	8679	7429	6179	4927	58
2358	1117	9874	8631	7387	6142	4897	3650	2403	1156	9907	8658	7408	6158	4907	57
2338	1096	9853	8610	7366	6121	4876	3630	2383	1135	9887	8637	7388	6137	4886	56
2317	1075	9833	8589	7345	6100	4855	3609	2362	1114	9866	8617	7367	6116	4865	55
2296	1055	9812	8569	7325	6080	4834	3588	2341	1093	9845	8596	7346	6095	4844	54
2276	1034	9791	8548	7304	6059	4813	3567	2320	1073	9824	8575	7325	6075	4823	53
2255	1013	9770	8527	7283	6038	4793	3546	2299	1052	9803	8554	7304	6054	4802	52
2234	0992	9750	8506	7262	6017	4772	3526	2279	1031	9783	8533	7283	6033	4781	51
2214	0972	9729	8486	7242	5997	4751	3505	2258	1010	9762	8513	7263	6012	4761	50
2193	0951	9708	8465	7221	5976	4730	3484	2237	0989	9741	8492	7242	5991	4740	49
2172	0930	9688	8444	7200	5955	4710	3463	2216	0969	9720	8471	7221	5970	4719	48
2152	0910	9667	8423	7179	5934	4689	3443	2196	0948	9699	8450	7200	5949	4698	47
2131	0889	9646	8403	7159	5914	4668	3422	2175	0927	9678	8429	7179	5929	4677	46
2110	0868	9625	8382	7138	5893	4647	3401	2154	0906	9658	8408	7158	5908	4656	45
2089	0847	9605	8361	7117	5872	4627	3380	2133	0885	9637	8388	7138	5887	4635	44
2069	0827	9584	8341	7096	5851	4606	3359	2112	0865	9616	8367	7117	5866	4615	43
2048	0806	9563	8320	7076	5831	4585	3339	2092	0844	9595	8346	7096	5845	4594	42
2027	0785	9543	8299	7055	5810	4564	3318	2071	0823	9574	8325	7075	5824	4573	41
2007	0765	9522	8278	7034	5789	4543	3297	2050	0802	9554	8304	7054	5803	4552	40
1986	0744	9501	8258	7013	5768	4523	3276	2029	0781	9533	8283	7033	5783	4531	39
1965	0723	9480	8237	6993	5748	4502	3256	2008	0761	9512	8263	7013	5762	4510	38
1945	0703	9460	8216	6972	5727	4481	3235	1988	0740	9491	8242	6992	5741	4489	37
1924	0682	9439	8195	6951	5706	4460	3214	1967	0719	9470	8221	6971	5720	4469	36
1903	0661	9418	8175	6930	5685	4440	3193	1946	0698	9449	8200	6950	5699	4448	35
1883	0640	9398	8154	6910	5665	4419	3172	1925	0677	9429	8179	6929	5678	4427	34
1862	0620	9377	8133	6889	5644	4398	3152	1904	0656	9408	8158	6908	5657	4406	33
1841	0599	9356	8112	6868	5623	4377	3131	1884	0636	9387	8138	6887	5637	4385	32
1820	0578	9335	8092	6847	5602	4357	3110	1863	0615	9366	8117	6867	5616	4364	31
1800	0558	9315	8071	6827	5582	4336	3089	1842	0594	9345	8096	6846	5595	4343	30
1779	0537	9294	8050	6806	5561	4315	3069	1821	0573	9325	8075	6825	5574	4322	29
1758	0516	9273	8030	6785	5540	4294	3048	1800	0552	9304	8054	6804	5553	4302	28
1738	0495	9252	8009	6764	5519	4274	3027	1780	0532	9283	8033	6783	5532	4281	27
1717	0475	9232	7988	6744	5499	4253	3006	1759	0511	9262	8013	6762	5512	4260	26
1696	0454	9211	7967	6723	5478	4232	2985	1738	0490	9241	7992	6742	5491	4239	25
1676	0433	9190	7947	6702	5457	4211	2965	1717	0469	9220	7971	6721	5470	4218	24
1655	0413	9170	7926	6681	5436	4190	2944	1696	0448	9200	7950	6700	5449	4197	23
1634	0392	9149	7905	6661	5416	4170	2923	1676	0428	9179	7929	6679	5428	4176	22
1613	0371	9128	7884	6640	5395	4149	2902	1655	0407	9158	7908	6658	5407	4156	21
1593	0350	9107	7864	6619	5374	4128	2881	1634	0386	9137	7888	6637	5386	4135	20
1572	0330	9087	7843	6598	5353	4107	2861	1613	0365	9116	7867	6617	5366	4114	19
1551	0309	9066	7822	6578	5333	4087	2840	1593	0344	9096	7846	6596	5345	4093	18
1531	0288	9045	7801	6557	5312	4066	2819	1572	0324	9075	7825	6575	5324	4072	17
1510	0268	9025	7781	6536	5291	4045	2798	1551	0303	9054	7804	6554	5303	4051	16
1489	0247	9004	7760	6515	5270	4024	2778	1530	0282	9033	7783	6533	5282	4030	15
1469	0226	8983	7739	6495	5249	4003	2757	1509	0261	9012	7763	6512	5261	4009	14
1448	0205	8962	7719	6474	5229	3983	2736	1489	0240	8991	7742	6491	5240	3989	13
1427	0185	8942	7698	6453	5208	3962	2715	1468	0220	8971	7721	6471	5220	3968	12
1406	0164	8921	7677	6432	5187	3941	2694	1447	0199	8950	7700	6450	5199	3947	11
1386	0143	8900	7656	6412	5166	3920	2674	1426	0178	8929	7679	6429	5178	3926	10
1365	0123	8879	7636	6391	5146	3900	2653	1405	0157	8908	7658	6408	5157	3905	9
1344	0102	8859	7615	6370	5125	3879	2632	1385	0136	8887	7638	6387	5136	3884	8
1324	0081	8838	7594	6349	5104	3858	2611	1364	0116	8867	7617	6366	5115	3863	7
1303	0060	8817	7573	6329	5083	3837	2590	1343	0095	8846	7596	6346	5094	3842	6
1282	0040	8797	7553	6308	5063	3817	2570	1322	0074	8825	7575	6325	5074	3822	5
1262	0019	8776	7532	6287	5042	3796	2549	1301	0053	8804	7554	6304	5053	3801	4
1241	9998	8755	7511	6266	5021	3775	2528	1281	0032	8783	7533	6283	5032	3780	3
1220	9978	8734	7490	6246	5000	3754	2507	1260	0011	8762	7513	6262	5011	3759	2
1199	9957	8714	7470	6225	4980	3733	2487	1239	9991	8742	7492	6241	4990	3738	1
1179	9936	8693	7449	6204	4959	3713	2466	1218	9970	8721	7471	6220	4969	3717	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	"

44 Deg. Tangent

"	30′	31′	32′	33′	34′	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′
	9.992	9.992	9.992	9.993	9.993	9.993	9.993	9.994	9.994	9.994	9.994	9.995	9.995	9.995	9.995
0	4197	6724	9251	1778	4305	6832	9359	1886	4413	6940	9466	1993	4520	7047	9573
1	4240	6767	9294	1820	4347	6874	9401	1928	4455	6982	9509	2035	4562	7089	9616
2	4282	6809	9336	1863	4390	6916	9443	1970	4497	7024	9551	2077	4604	7131	9658
3	4324	6851	9378	1905	4432	6959	9485	2012	4539	7066	9593	2120	4646	7173	9700
4	4366	6893	9420	1947	4474	7001	9528	2054	4581	7108	9635	2162	4688	7215	9742
5	4408	6935	9462	1989	4516	7043	9570	2097	4623	7150	9677	2204	4731	7257	9784
6	4450	6977	9504	2031	4558	7085	9612	2139	4665	7192	9719	2246	4773	7299	9826
7	4492	7019	9546	2073	4600	7127	9654	2181	4708	7234	9761	2288	4815	7341	9868
8	4534	7061	9588	2115	4642	7169	9696	2223	4750	7277	9803	2330	4857	7384	9910
9	4577	7104	9630	2157	4684	7211	9738	2265	4792	7319	9845	2372	4899	7426	9952
10	4619	7146	9673	2200	4726	7253	9780	2307	4834	7361	9888	2414	4941	7468	9995
11	4661	7188	9715	2242	4769	7295	9822	2349	4876	7403	9930	2456	4983	7510	0037
12	4703	7230	9757	2284	4811	7338	9864	2391	4918	7445	9972	2499	5025	7552	0079
13	4745	7272	9799	2326	4853	7380	9907	2433	4960	7487	0014	2541	5067	7594	0121
14	4787	7314	9841	2368	4895	7422	9949	2476	5002	7529	0056	2583	5110	7636	0163
15	4829	7356	9883	2410	4937	7464	9991	2518	5044	7571	0098	2625	5152	7678	0205
16	4871	7398	9925	2452	4979	7506	0033	2560	5087	7613	0140	2667	5194	7721	0247
17	4913	7440	9967	2494	5021	7548	0075	2602	5129	7656	0182	2709	5236	7763	0289
18	4956	7483	0010	2536	5063	7590	0117	2644	5171	7698	0224	2751	5278	7805	0331
19	4998	7525	0052	2579	5105	7632	0159	2686	5213	7740	0267	2793	5320	7847	0374
20	5040	7567	0094	2621	5148	7674	0201	2728	5255	7782	0309	2835	5362	7889	0416
21	5082	7609	0136	2663	5190	7717	0243	2770	5297	7824	0351	2878	5404	7931	0458
22	5124	7651	0178	2705	5232	7759	0286	2812	5339	7866	0393	2920	5446	7973	0500
23	5166	7693	0220	2747	5274	7801	0328	2855	5381	7908	0435	2962	5489	8015	0542
24	5208	7735	0262	2789	5316	7843	0370	2897	5424	7950	0477	3004	5531	8057	0584
25	5250	7777	0304	2831	5358	7885	0412	2939	5466	7992	0519	3046	5573	8100	0626
26	5292	7819	0346	2873	5400	7927	0454	2981	5508	8035	0561	3088	5615	8142	0668
27	5335	7862	0389	2915	5442	7969	0496	3023	5550	8077	0603	3130	5657	8184	0710
28	5377	7904	0431	2958	5485	8011	0538	3065	5592	8119	0646	3172	5699	8226	0753
29	5419	7946	0473	3000	5527	8054	0580	3107	5634	8161	0688	3214	5741	8268	0795
30	5461	7988	0515	3042	5569	8096	0623	3149	5676	8203	0730	3257	5783	8310	0837
31	5503	8030	0557	3084	5611	8138	0665	3191	5718	8245	0772	3299	5825	8352	0879
32	5545	8072	0599	3126	5653	8180	0707	3234	5760	8287	0814	3341	5868	8394	0921
33	5587	8114	0641	3168	5695	8222	0749	3276	5803	8329	0856	3383	5910	8436	0963
34	5629	8156	0683	3210	5737	8264	0791	3318	5845	8371	0898	3425	5952	8479	1005
35	5672	8199	0725	3252	5779	8306	0833	3360	5887	8414	0940	3467	5994	8521	1047
36	5714	8241	0768	3295	5821	8348	0875	3402	5929	8456	0982	3509	6036	8563	1089
37	5756	8283	0810	3337	5864	8390	0917	3444	5971	8498	1025	3551	6078	8605	1132
38	5798	8325	0852	3379	5906	8433	0959	3486	6013	8540	1067	3593	6120	8647	1174
39	5840	8367	0894	3421	5948	8475	1002	3528	6055	8582	1109	3636	6162	8689	1216
40	5882	8409	0936	3463	5990	8517	1044	3571	6097	8624	1151	3678	6204	8731	1258
41	5924	8451	0978	3505	6032	8559	1086	3613	6139	8666	1193	3720	6247	8773	1300
42	5966	8493	1020	3547	6074	8601	1128	3655	6182	8708	1235	3762	6289	8815	1342
43	6008	8535	1062	3589	6116	8643	1170	3697	6224	8750	1277	3804	6331	8858	1384
44	6051	8578	1105	3631	6158	8685	1212	3739	6266	8793	1319	3846	6373	8900	1426
45	6093	8620	1147	3674	6200	8727	1254	3781	6308	8835	1361	3888	6415	8942	1468
46	6135	8662	1189	3716	6243	8769	1296	3823	6350	8877	1404	3930	6457	8984	1511
47	6177	8704	1231	3758	6285	8812	1338	3865	6392	8919	1446	3972	6499	9026	1553
48	6219	8746	1273	3800	6327	8854	1381	3907	6434	8961	1488	4015	6541	9068	1595
49	6261	8788	1315	3842	6369	8896	1423	3950	6476	9003	1530	4057	6583	9110	1637
50	6303	8830	1357	3884	6411	8938	1465	3992	6518	9045	1572	4099	6626	9152	1679
51	6345	8872	1399	3926	6453	8980	1507	4034	6561	9087	1614	4141	6668	9194	1721
52	6388	8915	1441	3968	6495	9022	1549	4076	6603	9129	1656	4183	6710	9237	1763
53	6430	8957	1484	4010	6537	9064	1591	4118	6645	9172	1698	4225	6752	9279	1805
54	6472	8999	1526	4053	6580	9106	1633	4160	6687	9214	1741	4267	6794	9321	1848
55	6514	9041	1568	4095	6622	9149	1675	4202	6729	9256	1783	4309	6836	9363	1890
56	6556	9083	1610	4137	6664	9191	1717	4244	6771	9298	1825	4352	6878	9405	1932
57	6598	9125	1652	4179	6706	9233	1760	4286	6813	9340	1867	4394	6920	9447	1974
58	6640	9167	1694	4221	6748	9275	1802	4329	6855	9382	1909	4436	6962	9489	2016
59	6682	9209	1736	4263	6790	9317	1844	4371	6897	9424	1951	4478	7005	9531	2058
60	6724	9251	1778	4305	6832	9359	1886	4413	6940	9466	1993	4520	7047	9573	2100
"	29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′

Co-Tangent Deg. 45

44 Deg. Co-Tangent

30′	31′	32′	33′	34	35′	36′	37′	38′	39′	40′	41′	42′	43′	44′	"
10.007	10.007	10.007	10.006	10.006	10.006	10.006	10.005	10.005	10.005	10.005	10.004	10.004	10.004	10.004	
5803	3276	0749	8222	5695	3168	0641	8114	5587	3060	0534	8007	5480	2953	0427	60
5760	3233	0706	8180	5653	3126	0599	8072	5545	3018	0491	7965	5438	2911	0384	59
5718	3191	0664	8137	5610	3084	0557	8030	5503	2976	0449	7923	5396	2869	0342	58
5676	3149	0622	8095	5568	3041	0515	7988	5461	2934	0407	7880	5354	2827	0300	57
5634	3107	0580	8053	5526	2999	0472	7946	5419	2892	0365	7838	5312	2785	0258	56
5592	3065	0538	8011	5484	2957	0430	7903	5377	2850	0323	7796	5269	2743	0216	55
5550	3023	0496	7969	5442	2915	0388	7861	5335	2808	0281	7754	5227	2701	0174	54
5508	2981	0454	7927	5400	2873	0346	7819	5292	2766	0239	7712	5185	2659	0132	53
5466	2939	0412	7885	5358	2831	0304	7777	5250	2723	0197	7670	5143	2616	0090	52
5423	2896	0370	7843	5316	2789	0262	7735	5208	2681	0155	7628	5101	2574	0048	51
5381	2854	0327	7800	5274	2747	0220	7693	5166	2639	0112	7586	5059	2532	0005	50
5339	2812	0285	7758	5231	2705	0178	7651	5124	2597	0070	7544	5017	2490	9963	49
5297	2770	0243	7716	5189	2662	0136	7609	5082	2555	0028	7501	4975	2448	9921	48
5255	2728	0201	7674	5147	2620	0093	7567	5040	2513	9986	7459	4933	2406	9879	47
5213	2686	0159	7632	5105	2578	0051	7524	4998	2471	9944	7417	4890	2364	9837	46
5171	2644	0117	7590	5063	2536	0009	7482	4956	2429	9902	7375	4848	2322	9795	45
5129	2602	0075	7548	5021	2494	9967	7440	4913	2387	9860	7333	4806	2279	9753	44
5087	2560	0033	7506	4979	2452	9925	7398	4871	2344	9818	7291	4764	2237	9711	43
5044	2517	9990	7464	4937	2410	9883	7356	4829	2302	9776	7249	4722	2195	9669	42
5002	2475	9948	7421	4895	2368	9841	7314	4787	2260	9733	7207	4680	2153	9626	41
4960	2433	9906	7379	4852	2326	9799	7272	4745	2218	9691	7165	4638	2111	9584	40
4918	2391	9864	7337	4810	2283	9757	7230	4703	2176	9649	7122	4596	2069	9542	39
4876	2349	9822	7295	4768	2241	9714	7188	4661	2134	9607	7080	4554	2027	9500	38
4834	2307	9780	7253	4726	2199	9672	7145	4619	2092	9565	7038	4511	1985	9458	37
4792	2265	9738	7211	4684	2157	9630	7103	4576	2050	9523	6996	4469	1943	9416	36
4750	2223	9696	7169	4642	2115	9588	7061	4534	2008	9481	6954	4427	1900	9374	35
4708	2181	9654	7127	4600	2073	9546	7019	4492	1965	9439	6912	4385	1858	9332	34
4665	2138	9611	7085	4558	2031	9504	6977	4450	1923	9397	6870	4343	1816	9290	33
4623	2096	9569	7042	4515	1989	9462	6935	4408	1881	9354	6828	4301	1774	9247	32
4581	2054	9527	7000	4473	1946	9420	6893	4366	1839	9312	6786	4259	1732	9205	31
4539	2012	9485	6958	4431	1904	9377	6851	4324	1797	9270	6743	4217	1690	9163	30
4497	1970	9443	6916	4389	1862	9335	6809	4282	1755	9228	6701	4175	1648	9121	29
4455	1928	9401	6874	4347	1820	9293	6766	4240	1713	9186	6659	4132	1606	9079	28
4413	1886	9359	6832	4305	1778	9251	6724	4197	1671	9144	6617	4090	1564	9037	27
4371	1844	9317	6790	4263	1736	9209	6682	4155	1629	9102	6575	4048	1521	8995	26
4328	1801	9275	6748	4221	1694	9167	6640	4113	1586	9060	6533	4006	1479	8953	25
4286	1759	9232	6705	4179	1652	9125	6598	4071	1544	9018	6491	3964	1437	8911	24
4244	1717	9190	6663	4136	1610	9083	6556	4029	1502	8975	6449	3922	1395	8868	23
4202	1675	9148	6621	4094	1567	9041	6514	3987	1460	8933	6407	3880	1353	8826	22
4160	1633	9106	6579	4052	1525	8998	6472	3945	1418	8891	6364	3838	1311	8784	21
4118	1591	9064	6537	4010	1483	8956	6429	3903	1376	8849	6322	3796	1269	8742	20
4076	1549	9022	6495	3968	1441	8914	6387	3861	1334	8807	6280	3753	1227	8700	19
4034	1507	8980	6453	3926	1399	8872	6345	3818	1292	8765	6238	3711	1185	8658	18
3992	1465	8938	6411	3884	1357	8830	6303	3776	1250	8723	6196	3669	1142	8616	17
3949	1422	8895	6369	3842	1315	8788	6261	3734	1207	8681	6154	3627	1100	8574	16
3907	1380	8853	6326	3800	1273	8746	6219	3692	1165	8639	6112	3585	1058	8532	15
3865	1338	8811	6284	3757	1231	8704	6177	3650	1123	8596	6070	3543	1016	8489	14
3823	1296	8769	6242	3715	1188	8662	6135	3608	1081	8554	6028	3501	0974	8447	13
3781	1254	8727	6200	3673	1146	8619	6093	3566	1039	8512	5985	3459	0932	8405	12
3739	1212	8685	6158	3631	1104	8577	6050	3524	0997	8470	5943	3417	0890	8363	11
3697	1170	8643	6116	3589	1062	8535	6008	3482	0955	8428	5901	3374	0848	8321	10
3655	1128	8601	6074	3547	1020	8493	5966	3439	0913	8386	5859	3332	0806	8279	9
3612	1085	8559	6032	3505	0978	8451	5924	3397	0871	8344	5817	3290	0763	8237	8
3570	1043	8516	5990	3463	0936	8409	5882	3355	0828	8302	5775	3248	0721	8195	7
3528	1001	8474	5947	3420	0894	8367	5840	3313	0786	8259	5733	3206	0679	8152	6
3486	0959	8432	5905	3378	0851	8325	5798	3271	0744	8217	5691	3164	0637	8110	5
3444	0917	8390	5863	3336	0809	8283	5756	3229	0702	8175	5648	3122	0595	8068	4
3402	0875	8348	5821	3294	0767	8240	5714	3187	0660	8133	5606	3080	0553	8026	3
3360	0833	8306	5779	3252	0725	8198	5671	3145	0618	8091	5564	3038	0511	7984	2
3318	0791	8264	5737	3210	0683	8156	5629	3103	0576	8049	5522	2995	0469	7942	1
3276	0749	8222	5695	3168	0641	8114	5587	3060	0534	8007	5480	2953	0427	7900	0
29′	28′	27′	26′	25′	24′	23′	22′	21′	20′	19′	18′	17′	16′	15′	"

Tangent Deg. 45

	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	
″	9.847	9.847	9.847	9.847	9.848	9.848	9.848	9.848	9.848	9.848	9.848	9.848	9.849	9.849	9.849	9.851	9.851	9.851	9.850	9.850	9.850	9.850	9.850	9.850	9.850	9.850	9.849	9.849	9.849	9.849	″
0	5817	7091	8365	9637	0909	2180	3450	4720	5989	7257	8524	9791	1057	2322	3586	3717	2465	1211	9957	8702	7446	6190	4933	3675	2417	1157	9897	8637	7375	6113	60
1	5839	7113	8386	9658	0930	2201	3472	4741	6010	7278	8545	9812	1078	2343	3607	3696	2444	1190	9936	8681	7426	6169	4912	3654	2396	1136	9876	8616	7354	6092	59
2	5860	7134	8407	9680	0951	2222	3493	4762	6031	7299	8567	9833	1099	2364	3628	3676	2423	1169	9915	8660	7405	6148	4891	3633	2375	1115	9855	8595	7333	6071	58
3	5881	7155	8428	9701	0973	2244	3514	4783	6052	7320	8586	9854	1120	2385	3650	3655	2402	1148	9894	8639	7384	6127	4870	3612	2354	1094	9834	8574	7312	6050	57
4	5902	7176	8450	9722	0994	2265	3535	4805	6073	7341	8609	9875	1141	2406	3671	3634	2381	1128	9873	8618	7363	6106	4849	3591	2333	1073	9813	8553	7291	6029	56
5	5924	7198	8471	9743	1015	2286	3556	4826	6095	7363	8630	9896	1162	2427	3692	3613	2360	1107	9852	8597	7342	6085	4828	3570	2312	1052	9792	8532	7270	6008	55
6	5945	7219	8492	9764	1036	2307	3577	4847	6116	7384	8651	9918	1183	2448	3713	3592	2339	1086	9832	8577	7321	6064	4807	3549	2291	1031	9771	8511	7249	5987	54
7	5966	7240	8513	9786	1057	2328	3599	4868	6137	7405	8672	9939	1204	2469	3734	3571	2318	1065	9811	8556	7300	6043	4786	3528	2270	1010	9750	8490	7228	5966	53
8	5987	7261	8534	9807	1079	2350	3620	4889	6158	7426	8693	9960	1226	2491	3755	3550	2297	1044	9790	8535	7279	6023	4765	3507	2249	0989	9729	8468	7207	5945	52
9	6009	7282	8556	9828	1100	2371	3641	4910	6179	7447	8714	9981	1247	2512	3776	3529	2277	1023	9769	8514	7258	6002	4744	3486	2228	0968	9708	8447	7186	5924	51
10	6030	7304	8577	9849	1121	2392	3662	4931	6200	7468	8735	0002	1268	2533	3797	3509	2256	1002	9748	8493	7237	5981	4723	3466	2207	0947	9687	8426	7165	5903	50
11	6051	7325	8598	9870	1142	2413	3683	4953	6221	7489	8757	0023	1289	2554	3818	3488	2235	0981	9727	8472	7216	5960	4702	3445	2186	0926	9666	8405	7144	5881	49
12	6072	7346	8619	9892	1163	2434	3704	4974	6242	7510	8778	0044	1310	2575	3839	3467	2214	0960	9706	8451	7195	5939	4682	3424	2165	0905	9645	8384	7123	5860	48
13	6094	7367	8640	9913	1184	2455	3726	4995	6264	7532	8799	0065	1331	2596	3860	3446	2193	0939	9685	8430	7174	5918	4661	3403	2144	0884	9624	8363	7102	5839	47
14	6115	7389	8662	9934	1206	2477	3747	5016	6285	7553	8820	0086	1352	2617	3881	3425	2172	0919	9664	8409	7153	5897	4640	3382	2123	0863	9603	8342	7081	5818	46
15	6136	7410	8683	9955	1227	2498	3768	5037	6306	7574	8841	0107	1373	2638	3902	3404	2151	0898	9643	8388	7132	5876	4619	3361	2102	0842	9582	8321	7060	5797	45
16	6157	7431	8704	9976	1248	2519	3789	5058	6327	7595	8862	0129	1394	2659	3923	3383	2130	0877	9622	8367	7112	5855	4598	3340	2081	0821	9561	8300	7039	5776	44
17	6178	7452	8725	9998	1269	2540	3810	5080	6348	7616	8883	0150	1415	2680	3944	3362	2109	0856	9601	8346	7091	5834	4577	3319	2060	0800	9540	8279	7018	5755	43
18	6200	7473	8747	0019	1290	2561	3831	5101	6369	7637	8904	0171	1436	2701	3966	3342	2089	0835	9581	8325	7070	5813	4556	3298	2039	0779	9519	8258	6997	5734	42
19	6221	7495	8768	0040	1312	2582	3853	5122	6390	7658	8925	0192	1457	2722	3987	3321	2068	0814	9560	8305	7049	5792	4535	3277	2018	0758	9498	8237	6976	5713	41
20	6242	7516	8789	0061	1333	2604	3874	5143	6412	7679	8947	0213	1479	2743	4008	3300	2047	0793	9539	8284	7028	5771	4514	3256	1997	0737	9477	8216	6955	5692	40
21	6263	7537	8810	0082	1354	2625	3895	5164	6433	7701	8968	0234	1500	2765	4029	3279	2026	0772	9518	8263	7007	5750	4493	3235	1976	0716	9456	8195	6933	5671	39
22	6285	7558	8831	0104	1375	2646	3916	5185	6454	7722	8989	0255	1521	2786	4050	3258	2005	0751	9497	8242	6986	5729	4472	3214	1955	0695	9435	8174	6912	5650	38
23	6306	7580	8853	0125	1396	2667	3937	5206	6475	7743	9010	0276	1542	2807	4071	3237	1984	0730	9476	8221	6965	5708	4451	3193	1934	0674	9414	8153	6891	5629	37
24	6327	7601	8874	0146	1418	2688	3958	5228	6496	7764	9031	0297	1563	2828	4092	3216	1963	0710	9455	8200	6944	5687	4430	3172	1913	0653	9393	8132	6870	5608	36
25	6348	7622	8895	0167	1439	2709	3979	5249	6517	7785	9052	0318	1584	2849	4113	3195	1942	0689	9434	8179	6923	5666	4409	3151	1892	0632	9372	8111	6849	5587	35
26	6370	7643	8916	0188	1460	2731	4001	5270	0538	7806	9073	0340	1605	2870	4134	3175	1921	0668	9413	8158	6902	5645	4388	3130	1871	0611	9351	8090	6828	5566	34
27	6391	7665	8937	0210	1481	2752	4022	5291	6560	7827	9094	0361	1626	2891	4155	3154	1901	0647	9392	8137	6881	5625	4367	3109	1850	0590	9330	8069	6807	5545	33
28	6412	7686	8959	0231	1502	2773	4043	5312	6581	7848	9115	0382	1647	2912	4176	3133	1880	0626	9371	8116	6860	5604	4346	3088	1829	0569	9309	8048	6786	5524	32
29	6433	7707	8980	0252	1523	2794	4064	5333	6602	7870	9137	0403	1668	2933	4197	3112	1859	0605	9351	8095	6839	5583	4325	3067	1808	0548	9288	8027	6765	5503	31
30	6455	7728	9001	0273	1545	2815	4085	5354	6623	7891	9158	0424	1689	2954	4218	3091	1838	0584	9330	8074	6818	5562	4304	3046	1787	0527	9267	8006	6744	5482	30
31	6476	7749	9022	0294	1566	2837	4106	5376	6644	7912	9179	0445	1711	2975	4239	3070	1817	0563	9309	8053	6797	5541	4283	3025	1766	0506	9246	7985	6723	5461	29
32	6497	7771	9043	0316	1587	2858	4128	5397	6665	7933	9200	0466	1732	2996	4260	3049	1796	0542	9288	8033	6776	5520	4262	3004	1745	0485	9225	7964	6702	5439	28
33	6518	7792	9065	0337	1608	2879	4149	5418	6686	7954	9221	0487	1753	3017	4281	3028	1775	0521	9267	8012	6756	5499	4241	2983	1724	0464	9204	7943	6681	5418	27
34	6539	7813	9086	0358	1629	2900	4170	5439	6707	7975	9242	0508	1774	3039	4303	3007	1754	0501	9246	7991	6735	5478	4220	2962	1703	0443	9183	7922	6660	5397	26
35	6561	7834	9107	0379	1651	2921	4191	5460	6729	7996	9263	0529	1795	3060	4324	2987	1733	0480	9225	7970	6714	5457	4199	2941	1682	0422	9162	7901	6639	5376	25
36	6582	7855	9128	0400	1672	2942	4212	5481	6750	8017	9284	0551	1816	3081	4345	2966	1713	0459	9204	7949	6693	5436	4178	2920	1661	0401	9141	7880	6618	5355	24
37	6603	7877	9150	0422	1693	2964	4233	5503	6771	8039	9305	0572	1837	3102	4366	2945	1692	0438	9183	7928	6672	5415	4157	2899	1640	0380	9120	7859	6597	5334	23
38	6624	7898	9171	0443	1714	2985	4255	5524	6792	8060	9327	0593	1858	3123	4387	2924	1671	0417	9162	7907	6651	5394	4136	2878	1619	0359	9099	7838	6576	5313	22
39	6646	7919	9192	0464	1735	3006	4276	5545	6813	8081	9348	0614	1879	3144	4408	2903	1650	0396	9141	7886	6630	5373	4116	2857	1598	0338	9078	7817	6555	5292	21
40	6667	7940	9213	0485	1756	3027	4297	5566	6834	8102	9369	0635	1900	3165	4429	2882	1629	0375	9120	7865	6609	5352	4095	2836	1577	0317	9057	7796	6534	5271	20
41	6688	7962	9234	0506	1778	3048	4318	5587	6855	8123	9390	0656	1921	3186	4450	2861	1608	0354	9100	7844	6588	5331	4074	2815	1556	0296	9036	7775	6513	5250	19
42	6709	7983	9256	0528	1799	3069	4339	5608	6877	8144	9411	0677	1942	3207	4471	2840	1587	0333	9079	7823	6567	5310	4053	2794	1535	0275	9015	7754	6492	5229	18
43	6731	8004	9277	0549	1820	3091	4360	5629	6898	8165	9432	0698	1964	3228	4492	2820	1566	0312	9058	7802	6546	5289	4032	2773	1514	0254	8994	7733	6471	5208	17
44	6752	8025	9298	0570	1841	3112	4381	5651	6919	8186	9453	0719	1985	3249	4513	2799	1545	0291	9037	7781	6525	5268	4011	2752	1493	0233	8973	7712	6450	5187	16
45	6773	8046	9319	0591	1862	3133	4403	5672	6940	8207	9474	0740	2006	3270	4534	2778	1525	0271	9016	7760	6504	5247	3990	2731	1472	0212	8952	7691	6429	5166	15
46	6794	8068	9340	0612	1884	3154	4424	5693	6961	8229	9495	0761	2027	3291	4555	2757	1504	0250	8995	7740	6483	5226	3969	2710	1451	0191	8931	7670	6408	5145	14
47	6815	8089	9362	0634	1905	3175	4445	5714	6982	8250	9517	0783	2048	3312	4576	2736	1483	0229	8974	7719	6462	5205	3948	2689	1430	0170	8910	7649	6387	5124	13
48	6837	8110	9383	0655	1926	3196	4466	5735	7003	8271	9538	0804	2069	3334	4597	2715	1462	0208	8953	7698	6441	5185	3927	2668	1409	0149	8889	7628	6365	5103	12
49	6858	8131	9404	0676	1947	3218	4487	5756	7024	8292	9559	0825	2090	3355	4618	2694	1441	0187	8932	7677	6420	5164	3906	2647	1388	0128	8868	7607	6344	5082	11
50	6879	8153	9425	0697	1968	3239	4508	5777	7046	8313	9580	0846	2111	3376	4639	2673	1420	0166	8911	7656	6400	5143	3885	2626	1367	0107	8847	7585	6323	5061	10
51	6900	8174	9446	0718	1989	3260	4530	5799	7067	8334	9601	0867	2132	3397	4661	2653	1399	0145	8890	7635	6379	5122	3864	2606	1346	0086	8826	7564	6302	5040	9
52	6922	8195	9468	0740	2011	3281	4551	5820	7088	8355	9622	0888	2153	3418	4682	2632	1378	0124	8869	7614	6358	5101	3843	2585	1325	0065	8805	7543	6281	5018	8
53	6943	8216	9489	0761	2032	3302	4572	5841	7109	8376	9643	0909	2174	3439	4703	2611	1357	0103	8849	7593	6337	5080	3822	2564	1304	0044	8784	7522	6260	4997	7
54	6964	8237	9510	0782	2053	3323	4593	5862	7130	8398	9664	0930	2195	3460	4724	2590	1336	0082	8828	7572	6316	5059	3801	2543	1283	0023	8763	7501	6239	4976	6
55	6985	8259	9531	0803	2074	3345	4614	5883	7151	8419	9685	0951	2217	3481	4745	2569	1316	0062	8807	7551	6295	5038	3780	2522	1262	0002	8742	7480	6218	4955	5
56	7007	8280	9552	0824	2095	3366	4635	5904	7172	8440	9706	0972	2238	3502	4766	2548	1295	0041	8786	7530	6274	5017	3759	2501	1241	9981	8721	7459	6197	4934	4
57	7028	8301	9574	0845	2117	3387	4657	5925	7194	8461	9728	0994	2259	3523	4787	2527	1274	0020	8765	7509	6253	4996	3738	2480	1220	9960	8700	7438	6176	4913	3
58	7049	8322	9595	0867	2138	3408	4678	5947	7215	8482	9749	1015	2280	3544	4808	2506	1253	9999	8744	7488	6232	4975	3717	2459	1199	9939	8679	7417	6155	4892	2
59	7070	8343	9616	0888	2159	3429	4699	5968	7236	8503	9770	1036	2301	3565	4829	2485	1232	9978	8723	7467	6211	4954	3696	2438	1178	9918	8658	7396	6134	4871	1
60	7091	8365	9637	0909	2180	3450	4720	5989	7257	8524	9791	1057	2322	3586	4850	2465	1211	9957	8702	7446	6190	4933	3675	2417	1157	9897	8637	7375	6113	4850	0
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

″	45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′
	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.
	996	996	996	996	997	997	997	997	998	998	998	998	999	999	999
0	2100	4627	7154	9680	2207	4734	7260	9787	2314	4840	7367	9893	2420	4947	7473
1	2142	4669	7196	9722	2249	4776	7302	9829	2356	4882	7409	9936	2462	4989	7515
2	2184	4711	7238	9765	2291	4818	7345	9871	2398	4924	7451	9978	2504	5031	7558
3	2227	4753	7280	9807	2333	4860	7387	9913	2440	4967	7493	0020	2546	5073	7600
4	2269	4795	7322	9849	2375	4902	7429	9955	2482	5009	7535	0062	2589	5115	7642
5	2311	4837	7364	9891	2418	4944	7471	9997	2524	5051	7577	0104	2631	5157	7684
6	2353	4880	7406	9933	2460	4986	7513	0040	2566	5093	7620	0146	2673	5199	7726
7	2395	4922	7448	9975	2502	5028	7555	0082	2608	5135	7662	0188	2715	5242	7768
8	2437	4964	7490	0017	2544	5071	7597	0124	2650	5177	7704	0230	2757	5284	7810
9	2479	5006	7533	0059	2586	5113	7639	0166	2693	5219	7746	0272	2799	5326	7852
10	2521	5048	7575	0101	2628	5155	7681	0208	2735	5261	7788	0315	2841	5368	7894
11	2563	5090	7617	0144	2670	5197	7724	0250	2777	5303	7830	0357	2883	5410	7937
12	2606	5132	7659	0186	2712	5239	7766	0292	2819	5346	7872	0399	2925	5452	7979
13	2648	5174	7701	0228	2754	5281	7808	0334	2861	5388	7914	0441	2968	5494	8021
14	2690	5216	7743	0270	2797	5323	7850	0376	2903	5430	7956	0483	3010	5536	8063
15	2732	5259	7785	0312	2839	5365	7892	0419	2945	5472	7999	0525	3052	5578	8105
16	2774	5301	7827	0354	2881	5407	7934	0461	2987	5514	8041	0567	3094	5621	8147
17	2816	5343	7869	0396	2923	5450	7976	0503	3029	5556	8083	0609	3136	5663	8189
18	2858	5385	7912	0438	2965	5492	8018	0545	3072	5598	8125	0651	3178	5705	8231
19	2900	5427	7954	0480	3007	5534	8060	0587	3114	5640	8167	0694	3220	5747	8273
20	2942	5469	7996	0523	3049	5576	8103	0629	3156	5682	8209	0736	3262	5789	8316
21	2985	5511	8038	0565	3091	5618	8145	0671	3198	5725	8251	0778	3304	5831	8358
22	3027	5553	8080	0607	3133	5660	8187	0713	3240	5767	8293	0820	3347	5873	8400
23	3069	5595	8122	0649	3176	5702	8229	0755	3282	5809	8335	0862	3389	5915	8442
24	3111	5638	8164	0691	3218	5744	8271	0798	3324	5851	8378	0904	3431	5957	8484
25	3153	5680	8206	0733	3260	5786	8313	0840	3366	5893	8420	0946	3473	6000	8526
26	3195	5722	8248	0775	3302	5829	8355	0882	3408	5935	8462	0988	3515	6042	8568
27	3237	5764	8291	0817	3344	5871	8397	0924	3451	5977	8504	1030	3557	6084	8610
28	3279	5806	8333	0859	3386	5913	8439	0966	3493	6019	8546	1073	3599	6126	8652
29	3321	5848	8375	0902	3428	5955	8482	1008	3535	6061	8588	1115	3641	6168	8695
30	3364	5890	8417	0944	3470	5997	8524	1050	3577	6104	8630	1157	3683	6210	8737
31	3406	5932	8459	0986	3512	6039	8566	1092	3619	6146	8672	1199	3726	6252	8779
32	3448	5974	8501	1028	3555	6081	8608	1134	3661	6188	8714	1241	3768	6294	8821
33	3490	6017	8543	1070	3597	6123	8650	1177	3703	6230	8757	1283	3810	6336	8863
34	3532	6059	8585	1112	3639	6165	8692	1219	3745	6272	8799	1325	3852	6379	8905
35	3574	6101	8627	1154	3681	6208	8734	1261	3787	6314	8841	1367	3894	6421	8947
36	3616	6143	8670	1196	3723	6250	8776	1303	3830	6356	8883	1409	3936	6463	8989
37	3658	6185	8712	1238	3765	6292	8818	1345	3872	6398	8925	1452	3978	6505	9031
38	3700	6227	8754	1281	3807	6334	8861	1387	3914	6440	8967	1494	4020	6547	9074
39	3743	6269	8796	1323	3849	6376	8903	1429	3956	6483	9009	1536	4062	6589	9116
40	3785	6311	8838	1365	3891	6418	8945	1471	3998	6525	9051	1578	4105	6631	9158
41	3827	6353	8880	1407	3934	6460	8987	1513	4040	6567	9093	1620	4147	6673	9200
42	3869	6396	8922	1449	3976	6502	9029	1556	4082	6609	9136	1662	4189	6715	9242
43	3911	6438	8964	1491	4018	6544	9071	1598	4124	6651	9178	1704	4231	6757	9284
44	3953	6480	9006	1533	4060	6587	9113	1640	4166	6693	9220	1746	4273	6800	9326
45	3995	6522	9049	1575	4102	6629	9155	1682	4209	6735	9262	1788	4315	6842	9368
46	4037	6564	9091	1617	4144	6671	9197	1724	4251	6777	9304	1831	4357	6884	9410
47	4079	6606	9133	1660	4186	6713	9240	1766	4293	6819	9346	1873	4399	6926	9453
48	4122	6648	9175	1702	4228	6755	9282	1808	4335	6862	9388	1915	4441	6968	9495
49	4164	6690	9217	1744	4270	6797	9324	1850	4377	6904	9430	1957	4484	7010	9537
50	4206	6732	9259	1786	4313	6839	9366	1892	4419	6946	9472	1999	4526	7052	9579
51	4248	6775	9301	1828	4355	6881	9408	1935	4461	6988	9515	2041	4568	7094	9621
52	4290	6817	9343	1870	4397	6923	9450	1977	4503	7030	9557	2083	4610	7136	9663
53	4332	6859	9386	1912	4439	6966	9492	2019	4545	7072	9599	2125	4652	7179	9705
54	4374	6901	9428	1954	4481	7008	9534	2061	4588	7114	9641	2167	4694	7221	9747
55	4416	6943	9470	1996	4523	7050	9576	2103	4630	7156	9683	2210	4736	7263	9789
56	4458	6985	9512	2039	4565	7092	9618	2145	4672	7198	9725	2252	4778	7305	9832
57	4501	7027	9554	2081	4607	7134	9661	2187	4714	7241	9767	2294	4820	7347	9874
58	4543	7069	9596	2123	4649	7176	9703	2229	4756	7283	9809	2336	4863	7389	9916
59	4585	7111	9638	2165	4692	7218	9745	2271	4798	7325	9851	2378	4905	7431	9958
60	4627	7154	9680	2207	4734	7260	9787	2314	4840	7367	9893	2420	4947	7473	0000
″	14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′

45′	46′	47′	48′	49′	50′	51′	52′	53′	54′	55′	56′	57′	58′	59′	″
10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10	10.	
003	003	003	003	002	002	002	002	001	001	001	001	000	000	000	
7900	5373	2846	0320	7793	5266	2740	0213	7686	5160	2633	0107	7580	5053	2527	60
7858	5331	2804	0278	7751	5224	2698	0171	7644	5118	2591	0064	7538	5011	2485	59
7816	5289	2762	0235	7709	5182	2655	0129	7602	5076	2549	0022	7496	4969	2442	58
7773	5247	2720	0193	7667	5140	2613	0087	7560	5033	2507	9980	7454	4927	2400	57
7731	5205	2678	0151	7625	5098	2571	0045	7518	4991	2465	9938	7411	4885	2358	56
7689	5163	2636	0109	7582	5056	2529	0003	7476	4949	2423	9896	7369	4843	2316	55
7647	5120	2594	0067	7540	5014	2487	9960	7434	4907	2380	9854	7327	4801	2274	54
7605	5078	2552	0025	7498	4972	2445	9918	7392	4865	2338	9812	7285	4758	2232	53
7563	5036	2510	9983	7456	4929	2403	9876	7350	4823	2296	9770	7243	4716	2190	52
7521	4994	2467	9941	7414	4887	2361	9834	7307	4781	2254	9728	7201	4674	2148	51
7479	4952	2425	9899	7372	4845	2319	9792	7265	4739	2212	9685	7159	4632	2106	50
7437	4910	2383	9856	7330	4803	2276	9750	7223	4697	2170	9643	7117	4590	2063	49
7394	4868	2341	9814	7288	4761	2234	9708	7181	4654	2128	9601	7075	4548	2021	48
7352	4826	2299	9772	7246	4719	2192	9666	7139	4612	2086	9559	7032	4506	1979	47
7310	4784	2257	9730	7203	4677	2150	9624	7097	4570	2044	9517	6990	4464	1937	46
7268	4741	2215	9688	7161	4635	2108	9581	7055	4528	2001	9475	6948	4422	1895	45
7226	4699	2173	9646	7119	4593	2066	9539	7013	4486	1959	9433	6906	4379	1853	44
7184	4657	2131	9604	7077	4550	2024	9497	6971	4444	1917	9391	6864	4337	1811	43
7142	4615	2088	9562	7035	4508	1982	9455	6928	4402	1875	9349	6822	4295	1769	42
7100	4573	2046	9520	6993	4466	1940	9413	6886	4360	1833	9306	6780	4253	1727	41
7058	4531	2004	9477	6951	4424	1897	9371	6844	4318	1791	9264	6738	4211	1684	40
7015	4489	1962	9435	6909	4382	1855	9329	6802	4275	1749	9222	6696	4169	1642	39
6973	4447	1920	9393	6867	4340	1813	9287	6760	4233	1707	9180	6653	4127	1600	38
6931	4405	1878	9351	6824	4298	1771	9245	6718	4191	1665	9138	6611	4085	1558	37
6889	4362	1836	9309	6782	4256	1729	9202	6676	4149	1622	9096	6569	4043	1516	36
6847	4320	1794	9267	6740	4214	1687	9160	6634	4107	1580	9054	6527	4000	1474	35
6805	4278	1752	9225	6698	4171	1645	9118	6592	4065	1538	9012	6485	3958	1432	34
6763	4236	1709	9183	6656	4129	1603	9076	6549	4023	1496	8970	6443	3916	1390	33
6721	4194	1667	9141	6614	4087	1561	9034	6507	3981	1454	8927	6401	3874	1348	32
6679	4152	1625	9098	6572	4045	1518	8992	6465	3939	1412	8885	6359	3832	1305	31
6636	4110	1583	9056	6530	4003	1476	8950	6423	3896	1370	8843	6317	3790	1263	30
6594	4068	1541	9014	6488	3961	1434	8908	6381	3854	1328	8801	6274	3748	1221	29
6552	4026	1499	8972	6445	3919	1392	8866	6339	3812	1286	8759	6232	3706	1179	28
6510	3983	1457	8930	6403	3877	1350	8823	6297	3770	1243	8717	6190	3664	1137	27
6468	3941	1415	8888	6361	3835	1308	8781	6255	3728	1201	8675	6148	3621	1095	26
6426	3899	1373	8846	6319	3792	1266	8739	6213	3686	1159	8633	6106	3579	1053	25
6384	3857	1330	8804	6277	3750	1224	8697	6170	3644	1117	8591	6064	3537	1011	24
6342	3815	1288	8762	6235	3708	1182	8655	6128	3602	1075	8548	6022	3495	0969	23
6300	3773	1246	8719	6193	3666	1139	8613	6086	3560	1033	8506	5980	3453	0926	22
6257	3731	1204	8677	6151	3624	1097	8571	6044	3517	0991	8464	5938	3411	0884	21
6215	3689	1162	8635	6109	3582	1055	8529	6002	3475	0949	8422	5895	3369	0842	20
6173	3647	1120	8593	6066	3540	1013	8487	5960	3433	0907	8380	5853	3327	0800	19
6131	3604	1078	8551	6024	3498	0971	8444	5918	3391	0864	8338	5811	3285	0758	18
6089	3562	1036	8509	5982	3456	0929	8402	5876	3349	0822	8296	5769	3243	0716	17
6047	3520	0994	8467	5940	3413	0887	8360	5834	3307	0780	8254	5727	3200	0674	16
6005	3478	0951	8425	5898	3371	0845	8318	5791	3265	0738	8212	5685	3158	0632	15
5963	3436	0909	8383	5856	3329	0803	8276	5749	3223	0696	8169	5643	3116	0590	14
5921	3394	0867	8340	5814	3287	0760	8234	5707	3181	0654	8127	5601	3074	0547	13
5878	3352	0825	8298	5772	3245	0718	8192	5665	3138	0612	8085	5559	3032	0505	12
5836	3310	0783	8256	5730	3203	0676	8150	5623	3096	0570	8043	5516	2990	0463	11
5794	3268	0741	8214	5687	3161	0634	8108	5581	3054	0528	8001	5474	2948	0421	10
5752	3225	0699	8172	5645	3119	0592	8065	5539	3012	0485	7959	5432	2906	0379	9
5710	3183	0657	8130	5603	3077	0550	8023	5497	2970	0443	7917	5390	2864	0337	8
5668	3141	0614	8088	5561	3034	0508	7981	5455	2928	0401	7875	5348	2821	0295	7
5626	3099	0572	8046	5519	2992	0466	7939	5412	2886	0359	7833	5306	2779	0253	6
5584	3057	0530	8004	5477	2950	0424	7897	5370	2844	0317	7790	5264	2737	0211	5
5542	3015	0488	7961	5435	2908	0382	7855	5328	2802	0275	7748	5222	2695	0168	4
5499	2973	0446	7919	5393	2866	0339	7813	5286	2759	0233	7706	5180	2653	0126	3
5457	2931	0404	7877	5351	2824	0297	7771	5244	2717	0191	7664	5137	2611	0084	2
5415	2889	0362	7835	5308	2782	0255	7729	5202	2675	0149	7622	5095	2569	0042	1
5373	2846	0320	7793	5266	2740	0213	7686	5160	2633	0107	7580	5053	2527	0000	0
14′	13′	12′	11′	10′	9′	8′	7′	6′	5′	4′	3′	2′	1′	0′	″

NUMBERS frequently used in CALCULATION, *with their LOGARITHMS.*

Number.		Logarithm.
3, 14159265	Circumference of a circle to diameter unity Surface of a sphere to diameter unity - Area of a circle to radius unity - - -	0. 4971499
0, 7853982	Area of a circle to diameter unity - - - - - -	9. 8950899
0, 5235988	Solid content of a sphere to diameter unity - - - -	9. 7189986
4, 1887902	Solid content of a sphere to radius unity - - - - -	0. 6220886
57°, 2957795	Arc equal to the radius - - - - - - - -	1. 7581226
206264″, 8	Arc equal to the radius - - - - - - - - -	5. 3144251
2, 30258509	Hyperbolic logarithm of 10 - - - - - - -	0. 3622149
365d. 5h. 48′. 48″ = 31556928″	Tropical year	
365d. 6h. 9′. 17″ = 31558157″	Sidereal year - - - - - - -	7. 9991116
1°. 23′. 55″ =	Precession of Equinoxes in 100 years.	
109d, 61545	Passage of a Comet of perihel. distance unity from perih. to latus rectum	2. 0398718
8″, 75	Mean horizontal parallax of the Sun - - - - - -	0. 9420
487″	Time taken by light to come from the Sun in his mean distance -	2. 6875
20″	Maximum of aberration of a Star in longitude - - - -	1. 3010
9″, 55	Maximum of nutation of Earth's axis in solstitial colure - -	0. 9800
7″, 11	Maximum of nutation of Earth's axis in equinoctial colure -	0. 8519
	Co-ar. of Log. of 9 - - - - - - - - -	9. 0457575
	99 - - - - - - - - -	8. 0043648
	999 - - - - - - - - -	7. 0004345
	9999 - - - - - - - - -	6. 0000434
	99999 - - - - - - - - -	5. 0000043
	999999 - - - - - - - - -	4. 0000004
	9999999 = 10000000 nearly - - - - -	3. 0000000

E R R A T A

In the TABLES of the LOGARITHMS of NUMBERS.

Signature

F At the top of 4th page Number 3800 } Log. 589 *read* 579 in some copies.

F Number 38962 Log. 6413 *read* 6412

K Number 59419 Log. 6253 *read* 9253

In the TABLES of the LOGARITHMIC SINES and TANGENTS to every Second of the Quadrant.

Signature		° ′ ″				
M	Co-Sine	4. 18. 12	*for*	87740	*read*	87739 in some of the copies.
N	Co-Tangent	4. 29. 38	*for*	46084	*read*	46085
Ff	Co-Sine	12. 29. 39	*for*	5912	*read*	5913
Gg	Co-Tangent	12. 23. 40	*for*	0461	*read*	0462
Tt	Co-Sine	18. 41. 34	*for*	4648	*read*	4649
	Co-Sine	18. 41. 35	*for*	4641	*read*	4642
	Co-Sine	18. 41. 36	*for*	4634	*read*	4635
	Co-Sine	18. 41. 37	*for*	4627	*read*	4628
	Co-Sine	18. 41. 38	*for*	4620	*read*	4621
	Co-Sine	18. 41. 39	*for*	4613	*read*	4614
Lll	Co-Sine	26. 24. 38	*for*	1286	*read*	1285
Rrr	Co-Tangent	28. 45. 12	*for*	6794	*read*	6694
	Co-Sine	29. 27. 38	*for*	8657	*read*	8658
Uuu	Tangent	30. 38. 38	*for*	6391	*read*	6390
	Co-Tangent	30. 38. 38	*for*	3609	*read*	3610
4 *A*	Co-Sine	32. 52. 11	*for*	2310	*read*	2311
4 *I*	Sine	36. 54. 11	*for*	4861	*read*	4862
4 *N*	At top of page 3 Tan. 44 *read* 44′ in some of the copies.					
4 *Q*	Sine	40. 28. 27	*for*	3151	*read*	3150
4 *U*	Co-Sine	42. 10. 39	*for*	8583	*read*	8582
4 *Y*	Sine	43. 14. 60	*for*	8068	*read*	8066