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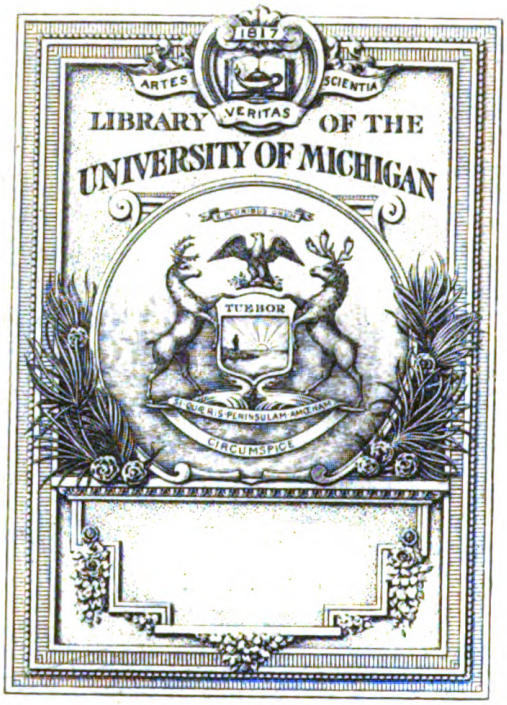
By

TRUMAN LEE KELLEY

Adjunct Professor of the Philosophy of Education

Published by the University six times a month and entered as second-class matter at the postoffice at AUSTIN, TEXAS



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The benefits of education and of useful knowledge, generally diffused through a community, are essential to the preservation of a free government.

Sam Houston.

Cultivated mind is the guardian genius of democracy. . . . It is the only dictator that freemen acknowledge and the only security that freemen desire.

Mirabeau B. Lamar.

Introduction

In these tables Dr. Kelley has done much to make practicable a wider use of certain methods of statistical analysis of related facts developed by Edgeworth, Pearson and Yule.

The mere title of these tables and an inspection to make sure that they are derived with precision will secure a welcome for them from experts in modern statistical methods, who understand the importance of partial correlation and have been prevented from using the method by the elaborateness of the computations required. The tables will reduce this by about eighty per cent.

The number of students of the biological and social sciences who do understand the importance of partial correlation coefficients or regression equations is, however, small because of the recency of the development of the mathematical technique as well as its intricacy.

Yet we all need command of this delicate instrument for analyzing resemblances or correspondences, if we are to utilize quantitative data fully. Indeed it is in some of the most practical fields of investigation that it is most needed. The economist who seeks the causes of the high cost of living, the psychologist who analyzes the merit of advertisements, the educational expert who gives vocational guidance—these are samples of the many workers in the social sciences who should master the theory if they can, and should at least learn how to use the formulae and interpret their results.

Twenty years ago the ordinary coefficient of correlation for one series of paired values was a recondite mathematical technique just beginning to be used by a few biometricians. Now it is a stock means of measuring resemblance or correspondence employed when appropriate by all competent investigators. The same career might be prophesied for partial coefficients of correlation, but for the complexity and tediousness of the computations involved. It is the service of Dr. Kelley's tables to reduce these.

There is, of course, some danger that mathematical devotees may use this statistical analysis in cases where experimental

analysis would be sounder, and that careless thinkers may use it where it is inappropriate. On the whole, however, it seems certain that the prophecy of the influence of factors *per se* by means of regression equations will stimulate rather than repress efforts to isolate the factors by experiment; and that careless thinkers will do less harm with partial correlation coefficients than without them.

EDWARD L. THORNDIKE,
Teachers College, Columbia University.

AUTHOR'S PREFACE

The regression equation method has been so laborious, as well as involving such accuracy in and knowledge of statistical method that it has not been used in many studies in which it alone could evaluate the data in such a manner as to answer the questions involved. It is hoped that the tables here presented have so materially decreased the labor of calculation that the method will be used extensively. If this has been accomplished a second edition will be demanded and if such is called for two important improvements may be expected, first, that the tables be carried at least two decimal places further and, second, that entries for at least one of the variables be for every .001 instead of as at present for every .01. The shortcomings mentioned are well recognized. The author would be glad to hear of any others discovered by users.

T. L. K.

THE FUNCTION OF PARTIAL COEFFICIENTS OF CORRELATION AND REGRESSION EQUATIONS

(1) Partial coefficients of correlation.

If several measures are correlated with a common measure and with each other, then the coefficient of correlation between any one of these several measures and the given measure represents the correlation that exists due to itself and due also to the indirect effect of the other measures. To cite a familiar example: if alcoholoism is correlated with degeneracy to the extent r_{ad} and if bad heredity is correlated with degeneracy to the extent r_{hd} and if alcoholism is correlated with bad heredity to the extent r_{ah}, then the correlation between alcoholism and degeneracy, r_{ad} does not measure the effect of alcoholism alone upon degeneracy, but it is a function of the effect of alcoholism plus the indirect effect of heredity upon degeneracy and this indirect effect may be the one of major importance.

To determine the relation between alcoholism and degeneracy independent of heredity it is necessary to find the partial coefficient of correlation, $r_{ad.h}$ which may be variously read "the correlation between alcoholism and degeneracy, heredity eliminated," or, "the correlation between alcoholism and degeneracy, in the field of heredity," or, "the correlation between alcoholism and degeneracy, heredity constant." Whenever two factors, such as a and h, are correlated with each other and with a third, such as d, the partial correlations, such as $r_{ad.h}$ and $r_{hd.a}$ are demanded for purposes of analysis and understanding of causal relationships. No coefficients of correlation, not even partial coefficients, necessarily measure causal relationships, but a partial coefficient of correlation does assist in determining such relationships by giving a measure of existing relationships when the relation of other factors has been eliminated.

A partial coefficient of higher order, such as $r_{ad.he}$ has a comparable significance and, if "e" stands for environment, means the correlation between alcoholism and degeneracy having eliminated the effect of heredity and environment.

Partial coefficients of correlation are, then, in and of them-

selves, of intrinsic merit, in addition to the function they perform in the regression equation.

(2) Regression Equations:

If three sets of measures are inter-correlated, such as measures of accomplishment in English, of intellectual ability and of conscientiousness, and it is desired to estimate with as high a degree of accuracy as possible one of the measures by means of the other two, e. g. to estimate accomplishment in English from measures of intellectual ability and of conscientiousness, it is necessary to combine the latter two measures into a single one in such a way that they give the closest possible estimate of accomplishment in English, or, in other words, that they correlate to as high a degree as possible with accomplishment in English. This best combination must be such that it weights intellectual ability according to its correlation with English when conscientiousness is eliminated, i. e. according to $r_{ei.c}$, and similarly weights conscientiousness according to $r_{ec.i}$, provided each is measured in terms of its independence of the other two measures, or, in other words, in terms of its dependence upon itself alone. Expressed as an equation: (Standard deviations, for simplicity, assumed equal to 1.)

$$\text{Constant} \times e = r_{ei.c} \frac{i}{\text{dependence of i upon itself}} + r_{ec.i} \frac{c}{\text{dependence of c upon itself}},$$

or this may be stated:

$$\text{Constant} \times e = r_{ei.c} \frac{i}{\text{independence of i from e and c}} + r_{ec.i} \frac{c}{\text{independence of c from e and i}}.$$

These denominators—coefficients of independence—are just as important as measures of dependence—coefficients of correlation; they equal in fact $\sqrt{1-r^2}$, and are zero for perfect dependence and 1 for perfect independence.

It may be shown that if any other weighting is given to these

measures than that indicated,* the combined measure (the entire right hand member of the equation) would, of necessity, correlate less highly with e. This is to say that if the weights of i and c are not weights according to their importances independent of the other variables, then one or the other has been overweighted. Expressing the last equation in more definite terms and giving the correct value to the constant which multiplies e, gives:

$$\frac{1}{\sqrt{1-r^2_{ei}}\ \sqrt{1-r^2_{ei.c}}}\,e = \frac{r_{ei.c}}{\sqrt{1-r^2_{ei}}\ \sqrt{1-r^2_{ic.e}}}\,i + \frac{r_{ec.i}}{\sqrt{1-r^2_{ec}}\ \sqrt{1-r^2_{ic.e}}}\,c,$$ or, as usually expressed:

$$e = (r_{ei.c}\,\frac{\sigma_{e.ic}}{\sigma_{i.ec}})\,i + (r_{ec.i}\,\frac{\sigma_{e.ic}}{\sigma_{c.ei}})\,c.$$

The magnitudes in the parentheses are designated by the symbols $b_{ei.c}$ and $b_{ec.i}$ respectively, and are called regression coefficients.

The peculiar value of the regression equation is twofold:

(1) It gives the mathematical means of combining any number of measures into a single measure in such a way that the highest possible correlation with a dependent measure is obtained. If a regression equation combining several measures with reference to another measure has once been calculated, such an equation may be used in the future to estimate the dependent measure, provided the others are already known; for example, in a prognosis problem where several known factors contribute to a future result the regression equation provides the means of arriving at the closest estimate. This fact is of particular value when there are quite a number of contributory factors, for the problem quickly becomes too complex for the mind to cope with without mathematical aid in summing influences.

(2) Further, the regression equation makes possible an analysis of the relative importance of the various contributory

*Yule, Introduction to the Theory of Statistics, gives a proof not involving calculus.

factors which bear upon a final result.* This is readily seen to be so from the fact that the regression coefficients give weightings to the various factors that are proportionate to their significance independent of the other factors.

It may thus be pointed out that the regression equation is of peculiar service in combining several factors which contribute to the determination of the value of a further measure in all statistical work in biology, sociology, economics, psychology and education, where mutual implication exists between measures rather than invariable relationships, as in physics.

PROCEDURE IN CALCULATING REGRESSION EQUATIONS.

(1) *Regression equation with two variables, x_1, x_2, —x_1, being the dependent variable.*

In this case the equation is $x_1 = r_{12} \frac{\sigma_1}{\sigma_2} x_2$, usually expressed by $x_1 = b_{12}\, x_2$. b_{12} is the regression coefficient, and as shown $= r_{12} \frac{\sigma_1}{\sigma_2}$.

(2) *Three variables, x_1, x_2, x_3, — x_1 the dependent variable.*

$$x_1 = b_{12.3}\, x_2 + b_{13.2}\, x_3 \quad \text{or} \quad x_1 = r_{12.3} \frac{\sigma_{1.23}}{\sigma_{2.13}} x_2 + r_{13.2} \frac{\sigma_{1.23}}{\sigma_{3.12}} x_3.$$

In which equation

$$\sigma_{1.23} = \sigma_1 \sqrt{1-r^2_{13}}\ \sqrt{1-r^2_{12.3}}$$
$$\sigma_{2.13} = \sigma_2 \sqrt{1-r^2_{23}}\ \sqrt{1-r^2_{12.3}}$$
$$\sigma_{3.12} = \sigma_3 \sqrt{1-r^2_{23}}\ \sqrt{1-r^2_{13.2}}$$
$$r_{12.3} = r_{12}\, A_{13.23} - B_{13.23}$$
$$r_{13.2} = r_{13}\, A_{12.23} - B_{12.23}$$

$A_{13.23}$ is the first entry found in the tables under the value of the coefficient of correlation r_{13} (or r_{23} provided it is larger than $_{13}$) and opposite the value of the coefficient of correlation r_{23} (or r_{13} provided it is smaller than than r_{23}). *Algebraically A is always positive.*

$B_{13.23}$ is the second entry under and opposite the same values. It is positive provided r_{13} and r_{23} are of like sign, and negative if of unlike sign, and is therefore to be *algebraically substracted*

*For this particular purpose standard deviations must be taken as equal in calculating regression coefficients.

in the former case and algebraically added in the latter. The tables at the end of the book will assist in obtaining the $\sqrt{1-r^2}$ values.

The following outline arranges the calculation conveniently. The same outline may be followed whether or not logarithms are used. In case they are not used, multiply $r_{12.3} \times \sigma_1 \times \sqrt{1-r^2_{13}} \times \sqrt{1-r^2_{12.3}}$, and divide by $\sigma_2 \times \sqrt{1-r^2_{23}} \times \sqrt{1-r^2_{12.3}}$ to obtain $b_{12.3}$. Similarly, $b_{13.2} = \dfrac{r_{13.2} \times \sigma_1 \times \sqrt{1-r^2_{13}} \times \sqrt{1-r^2_{12.3}}}{\sigma_3 \times \sqrt{1-r^2_{23}} \times \sqrt{1-r^2_{13.2}}}$

$A_{13.23}$	=	$A_{12.23}$	= r_{23} =	$\sqrt{1-r^2_{23}}$ =
r_{12}	=	r_{13}	=	(2) (3)colog =
Product		Product		$\sqrt{1-r^2_{13}}$ =
$B_{13.23}$	=	$B_{12.23}$	=	
$r_{12.3}$	=	$r_{13.2}$	=	(1) log =
log $r_{12.3}$	=	log $r_{13.2}$	=	$\sqrt{1-r_{12.3}}$ =
		log $\sigma_{1.23}$	=	(1) log =
log $\sigma_{1.23}$ log σ_1				(2) colog =
				$\sqrt{1-r^2_{13.2}}$ =
colog $\sigma_{2.13}$ colog σ_2		colog $\sigma_{3.12}$ colog σ_3		(3) colog =
log $b_{12.3}$	=	log $b_{13.2}$	=	
$b_{12.3}$	=	$b_{13.2}$	=	

The numbers in parentheses before certain logarithms indicate the primary subscripts, (those before the point) of the sigmas into which these factors enter. For illustration see sample calculation for four variables.

(3) *Four variables, x_1, x_2, x_3, x_4, —x_1 the dependent variable.*

$$x_1 = b_{12.34}\, x_2 + b_{13.24}\, x_3 + b_{14.23}\, x_4.$$

$$\text{or } x_1 = r_{12.34}\frac{\sigma_{1.234}}{\sigma_{2.134}}\, x_2 + r_{13.24}\frac{\sigma_{1.234}}{\sigma_{3.124}}\, x_3 + r_{14.23}\frac{\sigma_{1.234}}{\sigma_{4.123}}\, x_4.$$

In which
$$\sigma_{1.234} = \sigma_1\sqrt{1-r^2_{12}}\ \sqrt{1-r^2_{13.2}}\ \sqrt{1-r^2_{14.23}}$$
$$\sigma_{2.134} = \sigma_2\sqrt{1-r^2_{24}}\ \sqrt{1-r^2_{23.4}}\ \sqrt{1-r^2_{12.34}}$$
$$\sigma_{3.124} = \sigma_3\sqrt{1-r^2_{34}}\ \sqrt{1-r^2_{23.4}}\ \sqrt{1-r^2_{13.24}}$$
$$\sigma_{4.123} = \sigma_4\sqrt{1-r^2_{34}}\ \sqrt{1-r^2_{24.3}}\ \sqrt{1-r^2_{14.23}}$$

$$\begin{cases} r_{12.34} = r_{12.4}\, A_{13.4,\ 23.4} - B_{13.4,\ 23.4} \\ \text{or} = r_{12.3}\, A_{14.3,\ 24.3} - B_{14.3,\ 24.3} \end{cases}$$

$$\begin{cases} r_{13.24} = r_{13.4}\, A_{12.4,\ 23.4} - B_{12.4,\ 23.4} \\ \text{or} = r_{13.2}\, A_{14.2,\ 34.2} - B_{14.2,\ 34.2} \end{cases}$$

$$\begin{cases} r_{14.23} = r_{14.3}\, A_{12.3\ .\ 24.3} - B_{12.3,\ 24.3} \\ \text{or} = r_{14.2}\, A_{13.2,\ 34.2} - B_{13.2,\ 34.2} \end{cases}$$

Table of r's and σ's from original calculations:

	1	2	3	4
2	$r_{12}=$			
3	$r_{13}=$	$r_{23}=$		
4	$r_{14}=$	$r_{24}=$	$r_{34}=$	
σ's	$\sigma_1=$	$\sigma_2=$	$\sigma_3=$	$\sigma_4=$

The partial coefficients of the first order, such as $r_{12.4}$, are obtained first, as explained in preceding paragraphs, then the partial coefficients of the second order are similarly obtained—each in two ways to act as a check on the work. The following outline will illustrate the detailed procedure:

	1	2	3	4
2	.20			
3	.15	.63		
4	.24	.21	.54	
σ's	4.93	3.13	6.12	4.64

The figures in italics show an actual calculation based upon the accompanying table in which, 1 stands for high school grade in mathematics; 2 for grade in an English interest test; 3 for grade in a history interest test; 4 for grade in a mathematics interest test. These data, drawn from the writer's work "Educational Guidance," are chosen to illustrate a calculation involving negative partial coefficients of correlation.

Outline for calculation of regression coefficients—4 variables.

$A_{13.23}$	*1.302*	$A_{12.23}$	*1.314*	$A_{24.34}$	*1.215*	$\sqrt{1-r^2_{12}}$	
r_{12}	*.20*	r_{13}	*.15*	r_{23}	*.63*	(1) log	*9.999913*
	26040		*6570*		*3645*		
			1314		*7290*	$\sqrt{1-r^2_{13.2}}$	
						(1) log	*9.999774*
Product	*.2604*	Product	*.1971*	Product	*.76545*		
$B_{13.23}$	*.1231*	$B_{12.23}$	*.1656*	$B_{24.34}$	*.1378*		
$r_{12.3}$	*.137*	$r_{13.2}$	*.032*	$r_{23.4}$	*.628*	$\sqrt{1-r^2_{23.4}}$	
						(2) (3) colog	*.108915*
$A_{14.24}$	*1.054*	$A_{12.24}$	*1.044*	$A_{23.34}$	*1.530*		
r_{12}	*.20*	r_{14}	*.24*	r_{24}	*.21*	$\sqrt{1-r^2_{24}}$	
	21080		*4176*		*1530*	(2) colog	*.009794*
			2088		*3060*		
Product	*.2108*	Product	*.25056*	Product	*.3213*		
$B_{14.24}$	*.0531*	$B_{12.24}$	*.0438*	$B_{23.34}$	*.5205*		
$r_{12.4}$	*.158*	$r_{14.2}$	*.207*	$r_{24.3}$	*—.199*	$\sqrt{1-r^2_{24.3}}$	
						(4) colog	*.008776*
$A_{14.34}$	*1.224*	$A_{13.34}$	*1.202*	$A_{23.24}$	*1.317*		
r_{13}	*.15*	r_{14}	*.24*	r_{34}	*.54*	$\sqrt{1-r^2_{34}}$	
	6120		*4808*		*5268*	(3) (4) colog	*.074860*
	1224		*2404*		*6585*		
Product	*.1836*	Product	*.28848*	Product	*.71118*		
$B_{14.34}$	*.1586*	$B_{13.34}$	*.0973*	$B_{23.24}$	*.1743*		
$r_{13.4}$	*.025*	$r_{14.3}$	*.191*	$r_{34.2}$	*.537*		

$A_{13.4,23.4}$	*1.285	$A_{12.4,23.4}$	1.301				
$r_{12.4}$	.158	$r_{13.4}$	.025	$r_{23.4}$	.628		
	10280		6505				
	6425		2602				
	1285					$\sqrt{1-r^2_{12.34}}$	
Product	20303	Product	.032525			(2) colog	.007402
$B_{13.4,23.4}$	.0201	$B_{12.4,23.4}$	.1290				
$r_{12.34}$	.183	$r_{13.24}$	—.096			$\sqrt{1-r^2_{13.24}}$	
						(3) colog	.002016
$A_{14.3,24.3}$	.1.040	$A_{12.3,24.3}$	1.030				
$r_{12.3}$	.137	$r_{14.3}$	.191	$r_{24.3}$	—.199		
	7280		1030				
	3120		9270				
	1040		1030				
Product	.14248	Product	.19673				
$B_{14.3,24.3}$	—.0395	$B_{12.3,24.3}$	—.0281				
$r_{12.34}$	.182	$r_{14.23}$	.255			$\sqrt{1-r^2_{14.23}}$	
						(1) log	9.988713
						(4) colog	.011287
$A_{14.2,34.2}$	1.212	$A_{13.2,34.2}$	1.186	$r_{34.2}$	.537		
$r_{13.2}$	.032	$r_{14.2}$	.207				
	2424		8302				
	3636		2372				
Product	.038784	Product	.245502				
$B_{14.2,34.2}$	.1346	$B_{13.2,34.2}$	.0204				
$r_{13.24}$	—.096	$r_{14.23}$	.225				

*In finding from the tables the value $A_{13.4,\ 23.4}$ it is necessary to interpolate, since $r_{13.4}$=.025, and $r_{23.4}$=.628. (If the greatest accuracy is not demanded use $r_{13.4}$=.02, and $r_{23.4}$=.63 and find A directly from the table=1.288.) The interpolation is to be in both directions so that $A_{13.4,\ 23.4}$, or, $A_{.025,\ .628}$= $A_{.02,\ .62}+.5(A_{.03,\ .62}-A_{.02,\ .62})+.8(A_{.02,\ .63}-A_{.02,\ .62})$ or $A_{13.4,\ 23.4}$=1.275+.5 (1.275—1.275)+.8 (1.288—1.275)=1.285.

$$\log \sigma_{1.234} \left\{ \begin{array}{lll} \log r_{12.34} & 9.261263 & \\ \log \sigma_1 & .692847 & \\ (1) & 9.999913 & \\ (1) & 9.999774 & \\ (1) & 9.988713 & \\ \text{colog } \sigma_2 & 9.504456 & \\ (2) & .108915 & \\ (2) & .009794 & \\ (2) & .007402 & \end{array} \right. \quad \text{colog } \sigma_{3.124} \left\{ \begin{array}{lll} \log r_{13.24} & (-)8.982271 & \\ \log \sigma_1 & & \\ (1) & & \\ (1) & & \\ (1) & & \\ \text{colog } \sigma_3 & 9.213249 & \\ (3) & .108915 & \\ (3) & .074860 & \\ (3) & .002016 & \end{array} \right. \quad \text{colog } \sigma_{4.123} \left\{ \begin{array}{lll} \log r_{14.23} & 9.352183 & \\ \log \sigma_1 & & \\ (1) & & \\ (1) & & \\ (1) & & \\ \text{colog } \sigma_4 & 9.333482 & \\ (4) & .008776 & \\ (4) & .074860 & \\ (4) & .011287 & \end{array} \right.$$

$$\begin{array}{lll} \log b_{12.34} & 9.573077 & \log b_{13.24}(-)9.062558 \quad \log b_{14.23} \quad 9.461835 \\ b_{12.34} & .3742 & b_{31.24} \quad -.1155 \quad b_{14.23} \quad .2896 \end{array}$$

In case logarithms are not used, multiply those factors of which the logarithms are indicated and divide by those of which the cologarithms are indicated to obtain $b_{12.34}$, $b_{13.24}$, and $b_{14.23}$.

Using the coefficients just found the regression equation is

$$x_1 = .3742\ x_2 - .1155\ x_3 + .2896\ x_4.$$

or, for practical purposes, after multiplication by 17.3, a convenient constant, c (high school grade in mathematics) = 6.5 (grade in English interest test) — 2 (grade in history interest test) + 5 (grade in mathematics interest test).

(4) *Five variables, x_1, x_2, x_3, x_4, x_5, —x_1 the dependent variable.*

$$x_1 = b_{12.345}\ x_2 + b_{13.245}\ x_3 + b_{14.235}\ x_4 + b_{15.234}\ x_5.$$

The calculation follows the same general lines as that for a smaller number of variables, but the number of partial coefficients of correlation to be calculated is here 36 as compared with 2 in the case of three variables, 15 in the case of four variables, 78 in the case of six variables, etc.

The accompanying calculation will illustrate the necessary steps. The data are taken from the writer's work previously mentioned.

1 stands for average class standing (obtained at end of term).
2 stands for teachers' estimates of intellectual ability of pupils.
3 stands for teacher's estimates of conscientiousness of pupils.
4 stands for teachers' estimates of interest of pupils in school work.
5 stands for teachers' estimates of oral expression of pupils.
(2, 3, 4, 5 obtained at beginning of term.)

In the accompanying table .72 is the correlation between average class standing and teachers' estimates of intellectual ability, etc. 4.048 is the standard deviation of the average class standing measures, etc.

The calculation that follows is slightly more abridged than in the preceding paragraph, in that long hand multiplications and substractions have been performed on a separate scratch sheet.

$$\sigma_{1.2345} = \sigma_1\sqrt{1-r^2_{12}}\ \sqrt{1-r^2_{14.2}}\ \sqrt{1-r^2_{15.24}}\ \sqrt{1-r^2_{15.234}}$$
$$\sigma_{2.1345} = \sigma_2\sqrt{1-r^2_{25}}\ \sqrt{1-r^2_{23.5}}\ \sqrt{1-r^2_{24.35}}\ \sqrt{1-r^2_{12.345}}$$
$$\sigma_{3.1245} = \sigma_3\sqrt{1-r^2_{35}}\ \sqrt{1-r^2_{23.5}}\ \sqrt{1-r^2_{34.25}}\ \sqrt{1-r^2_{13.245}}$$
$$\sigma_{4.1235} = \sigma_4\sqrt{1-r^2_{45}}\ \sqrt{1-r^2_{34.5}}\ \sqrt{1-r^2_{24.35}}\ \sqrt{1-r^2_{14.235}}$$
$$\sigma_{5.1234} = \sigma_5\sqrt{1-r^2_{45}}\ \sqrt{1-r^2_{35.4}}\ \sqrt{1-r^2_{25.34}}\ \sqrt{1-r^2_{15.234}}$$

	1	2	3	4	5
2	.72				
3	.62	.61			
4	.58	.61	.66		
5	.63	.82	.55	.59	
σ's	4.048	5.193	5.166	5.138	5.190

$r_{12.4} = r_{12}\,A_{14.\,24} - B$ (same subscript). Similarly for $r_{13.4}$, etc.

			log. (from pp. 52-53)	colog. (from pp. 52-53)
$r_{12.4} = .5672$				
$r_{13.4} = .3876$	$r_{35.4} = .2650$	(5)		.015817
$r_{23.4} = .3485$	$r_{23.5} = .3326$	(2) (3)		.025463
$r_{15.3} = .4410$	$r_{24.5} = .2732$			
$r_{14.3} = .2897$	$r_{34.5} = .4976$	(4)		.061786
$r_{45.3} = .3619$	$r_{15.2} = .0999$			
$r_{23.4} = .7192$	$r_{14.2} = .2563$	(1)	9.985239	
$r_{12.5} = .4578$	$r_{45.2} = .1982$			
$r_{13.5} = .4217$				

$r_{12.34} = r_{12.4}\ A_{13.4,\ 23.4} - B = .5000$
$r_{15.34} = r_{15.3}\ A_{14.3,\ 45.3} - B = .3769$
$r_{25.34} = r_{25.4}\ A_{23.4,\ 35.4} - B = .6940$ (5) .142712
$r_{12.35} = r_{12.5}\ A_{13.5,\ 23.5} - B = .3711$
$r_{14.35} = r_{14.3}\ A_{15.3,\ 45.3} - B = .1556$
$r_{24.35} = r_{24.5}\ A_{23.5,\ 34.5} - B = .1317$ (2) (4) .003802
$r_{13.24} = r_{13.4}\ A_{12.4,\ 23.4} - B = .2461$ (1) 9.986426
$r_{15.24} = r_{15.2}\ A_{14.2,\ 45.2} - B = .0519$
$r_{35.24} = r_{35.4}\ A_{23.4,\ 25.4} - B = .0218$
$r_{13.25} = r_{13.5}\ A_{12.5,\ 23.5} - B = .3214$
$r_{14.25} = r_{14.2}\ A_{15.2,\ 45.2} - B = .2426$
$r_{34.25} = r_{34.5}\ A_{23.5,\ 24.5} - B = .4482$ (3) .048699

$r_{12.345} = r_{12.34}\ A_{15.34,\ 25.34} - B = .3577$
$r_{12.345} = r_{12.35}\ A_{14.35,\ 24.35} - B = .3581$

Average .3579 (2) .029769

$r_{13.245} = r_{13.24}\ A_{15.24,\ 34.25} - B = .2453$
$r_{13.245} = r_{13.25}\ A_{14.25,\ 34.25} - B = .2454$ —

Average = .2453 (3) .013481

$r_{14.235} = r_{14.35}\ A_{12.35,\ 24.35} - B = .1160$
$r_{14.235} = r_{14.25}\ A_{13.25,\ 34.25} - B = .1164$

Average = .1162 (4) .002958

$r_{15.234} = r_{15.34}\ A_{12.34,\ 25.34} - B = .0479$
$r_{15.234} = r_{15.24}\ A_{13.24,\ 35.24} - B = .0480$ +

Average = .0480 (1) (5) 9.999488 .000512

.607241 } = log σ_1 and is obtained from book of
9.999488 } [logarithms.
9.986426
9.985239
9.841343 } = log $\sqrt{1-r^2_{12}}$ obtained from page 53.

log $\sigma_{1.2345}$ = .419737

$\log \sigma_{1.2345}$	= .419737		$\log \sigma_{1.2345}$	= .419737
colog. $\sigma_{2.1345}$	.029769		colog. $\sigma_{3.1245}$	.013481
	.003802			.048699
	.025463			.025463
	.242328			.078228
	9.284582			9.286846
$\log r_{12.345}$	= 9.553762	from book of logs.	$\log r_{13.245}$	= 9.389698
$\log b_{12.345}$	= 9.559443		$\log b_{13.245}$	= 9.262152
$b_{12.345}$	= .3626		$b_{13.245}$	= .1829

$\log \sigma_{1.2345}$	= .419737		$\log \sigma_{1.2345}$	= .419737
colog $\sigma_{4.1235}$	.002958		colog $\sigma_{5.1234}$	.000512
	.003802			.142712
	.061786			.015817
	.092910			.092910
	9.289206			9.284833
$\log r_{14.235}$	= 9.065206.		$\log r_{15.234}$	= 8.681241
$\log b_{14.235}$	= 8.935605		$\log b_{15.234}$	= 8.637762
$b_{14.235}$	= .08622		$b_{15.234}$	= .04343

The regression equation is therefore,
$x_1 = .3626\ x_2 + .1829\ x_3 + .0862\ x_4 + .0434\ x_5$, or for practical purposes, after multiplication by a convenient constant,

c (average class standing) = 8 (estimates of intellectual ability + 4 (estimates of conscientiousness) + 2 (estimates of interest) + 1 (estimates of expression).

(5) The partial coefficients of correlation needed in the calculation of a regression equation having six or more variables may be readily worked out by simply noting the general case,

$r_{12.345\ldots n} = r_{12.45\ldots,n}\ A_{13.45\ldots n,\ 23.45\ldots,n} - B$ (same subscript as A)

or, $r_{12.345\ldots n} = r_{12.35\ldots,n}\ A_{14.35\ldots n,\ 24.35\ldots,n} - B$ (same subscript as A)

or, $r_{12.345\ldots n} =$ etc.

The primary subscripts (those before the point) of $r_{12.345\ldots n}$ and one (any one) of the secondary subscripts comprise the primary subscripts of r, A, and B in the right hand member of the equation, and the balance of the secondary subscripts in the

left hand member become the secondary subscripts of each of the elements in the right hand member. In Yule's, Introduction to the Theory of Statistics, will be found a discussion of the problem for n variables.

n variables:

The work of calculating a regression equation having eight or more variables is very laborious and practically necessitates that an approximation be resorted to. The following example worked out from the data in a study by Thorndike* will explain the procedure.

In the accompanying table of coefficients of correlation I stands for measures of intellectual ability and is a highly reliable measure derived from a large number of sources. $M_1,..M_5$, $E_1,..E_4$, $P_1,..P_5$, C_1 are grades in mathematics, English, physics and constructive ability tests.

	I	M_1	M_2	M_3	M_4	M_5	E_1	E_2	E_3	E_4	P_1	P_2	P_3	P_4	P_5	C_1
M_1	.625															
M_2	.796	.628														
M_3	.625	.364	.495													
M_4	.614	.327	.559	.489												
M_5	.531	.268	.575	.387	.379											
E_1	.447	.375	.583	.104	.313	.391										
E_2	.652	.386	.565	.324	.395	.152	.543									
E_3	.547	.366	.445	.142	.171	.284	.675	.620								
E_4	.438	.356	.411	.100	.419	.145	.521	.549	.545							
P_1	.253	.333	.364	-.036	.237	.222	.196	.017	-.014	.223						
P_2	.531	.317	.492	.051	.243	.354	.439	.142	.300	.353	.475					
P_3	.309	.179	.295	-.095	.281	.076	.255	.112	-.104	.210	.494	.518				
P_4	.654	.294	.555	.126	.319	.288	.631	.719	.463	.400	.279	.803	.315			
P_5	.416	.306	.347	.035	.322	.187	.294	.377	.054	.237	.575	.789	.575	.670		
C_1	.178	.194	.069	.069	.322	.076	.032	.164	-.079	.341	.352	.198	.419	.211	.485	
Totals	7.616	4.693	6.383	2.555	4.776	3.784	5.352	5.065	3.888	4.810	3.717	5.474	3.530	6.073	5.253	2.853
		Sum of intercorrelations × 2 = 68.206														

*Not yet in print (June, 1916).

The problem is to obtain a single combined measure from the tests $M_1 \ldots . C_1$ which shall correlate as highly as possible with I.

Consider first the correlation between the sum (or average) of the 15 tests. The Pearson coefficient is

$$r_{I(M_1 + \ldots . C_1)} = \frac{\Sigma I(M_1 + .. C_1)}{\sqrt{\Sigma I^2}\ \sqrt{\Sigma(M_1 + .. C_1)^2}}$$

$$= \frac{\Sigma IM_1 + \ldots .\quad \Sigma IC_1}{\sqrt{\Sigma I^2}\ \sqrt{\Sigma M^2{}_1 + .. \Sigma C^2{}_1 + 2\Sigma M_1 M_2 + .. 2\Sigma M_1 C_1 + .. 2\Sigma P_5 C_1}}$$

Since every summation of the type Σxy, where x and y are measures of deviation from their respective means is equal to $n\ r_{xy}\ \sigma_x\ \sigma_y$ and since $\Sigma x^2 = n\ \sigma^2{}_x$ the above equation becomes

$$= \frac{n(r_{IM_1}\ \sigma_I\ \sigma_{M_1} + \ldots r_{IC_1}\ \sigma_I\ \sigma_{C_1})}{n\ \sigma_I\ \sqrt{\sigma^2{}_{M_1} + .. \sigma^2{}_{C_1} + 2r_{M_1 M_2}\sigma_{M_1}\sigma_{M_2} + .. 2r_{M_1 C_1}\sigma_{M_1}\sigma_{C_1} + .. 2r_{P_5 C_1}\ \sigma_{P_5}\ \sigma_{C_1}}}$$

In the problem in hand all the standard deviations equal 1.00, so that, letting Σr_{Ix} stand for the sum of the 15 correlations of the type r_{IM_1} and letting Σr_{xy} stand for the sum of the 105 correlations of the type $r_{M_1 M_2}$, we have

$$r_{I\,(\Sigma x)} = \frac{\Sigma r_{Ix}}{\sqrt{15 + 2\Sigma r_{xy}}}$$

It may readily be shown that this formula may be generalized and that it becomes, when neither the standard deviations nor the weights are equal

$$r_{1\ (\Sigma w_x x)} = \frac{\Sigma r_{1x}\ w_x \sigma_x}{\sqrt{\Sigma(w_x\sigma_x)^2 + 2\Sigma r_{xy}\ w_x\sigma_x\ w_y\sigma_y}} \quad \text{(Formula } a.\text{)}$$

By the use of this formula we may find the correlation that does exist between the dependent measure (here I) and the independent measures when weighted according to any weightings that it may be desired to try. It would be feasible to try out a number of reasonable weightings and find out which one would give the highest correlation. But instead of using this rather

haphazard method a definitely progressive method may be used. First find the correlation existing when the measures are weighted according to some preliminary scheme. How these preliminary weightings have been obtained is immaterial. Second, alter the weighting of one of the variables so as to give the "best" weight when the relative weightings of the other variables are left unchanged. Third, calculate the correlation that will then exist and proceed as before, altering the weighting of a second of the independent variables. This may be illustrated by continuing with the above problem.

The preliminary weightings given on page 23 are obtained as follows: The regression equation combining $M_1, \ldots M_5$ so as to give the highest correlation with I is found. Similarly equations are calculated combining $E_1 \ldots E_4$, $P_1 \ldots P_5$, C_1 with reference to I. Since all standard deviations are equal to 1 these equations are

$$I = .208\ M_1 + .404\ M_2 + .234\ M_3 + .171\ M_4 + .0884\ M_5$$
$$I = .0187\ E_1 + .548\ E_2 + .206\ E_3 + .0486\ E_4$$
$$I = .159\ P_1 - .0328\ P_2 + .161\ P_3 + .740\ P_4 - .203\ P_5$$
$$I = .178\ C_1$$

Calling the entire right hand members of the equations M, E, P, C respectively, we may calculate a new regression equation combining these four with reference to I. The resulting equation, calculated from the accompanying table, is

$$I = .796M + .0695E + .430P - .112C$$

	I	M	E	P	C
M	.865				
E	.679	.597			
P	.677	.513	.762		
C	.178	.169	.134	.258	
σ's		.865	.679	.677	.178

The coefficients in the first column of this table are obtained by using formula *a*. The other coefficients are obtained by the use of a formula, not given, but readily derived and similar to

formula *b* page 23 except that several measures instead of one only are correlated with several others. The standard deviations are equal respectively to the correlations of the measures M, E, P, C with I. For proof of this note that the M's, being measures resulting from the regression equation combination of the M_1's. . . .M_5's, are the measures that yield the closest estimate of I. They can therefore on the whole be neither larger nor smaller than they are and give as close an estimate. The regression equation involving I and M is $I = r_{IM}\frac{\sigma_I}{\sigma_M}M$, but as just shown the measures M cannot be multiplied by anything but 1.00 and give the best estimate, so $r_{IM}\frac{\sigma_I}{\sigma_M} = 1$. Recalling that $\sigma_I = 1$ we have $r_{IM} = \sigma_M$ and similarly $r_{IE} = \sigma_E$ etc.

Distributing the weights .796, .0695, .430 and —.112 according to the proportions indicated in the above four equations results in the preliminary weighting, page 23. This weighting is a much better weighting than a straight average, for the correlation between I. and the measures as thus combined is .913, which is considerably higher than that resulting from a straight average, .834.

The method of obtaining the second weightings, knowing the first, is the same as that of getting the third from the second except that the weightings of several of the tests were changed without first investigating to discover the result of each change. This method was quite successful in the problem in hand for it gives a correlation of .945, but it cannot be generally recommended for there is no warrant that it will always yield a higher correlation. There is such a warrant in the method used in obtaining weights three and four knowing weights two and three respectively.

Having a table of correlations such as the following (the means of obtaining it are explained further on) the regression equation

	I	W_1M_1	$W_1M_1+W_2M_2+W_4M_4+\ldots W_{12}C_1$
W_2M_2	.625		
$W_1M_1+W_2M_2+W_4M_4+\ldots W_{12}C_1$	.933	.462	
σ's		.4039	.6938

involving the three variables may be calculated. It is found to be $I = .6113W_3M_3 + 1.179\ (W_1M_1 + W_2M_2 + W_4M_4 + \ldots W_{15}C_1)$. Therefore the weight for M_3 is changed from .4039 to .2468 and each of the other weights are multiplied by 1.179. This results in the weights in column three. The correlation resulting from this weighting is .957. In this calculation M_3 was treated as a separate variable instead of M_1,M_2 or any of the rest only after 15 regression equations of the type just shown demonstrated that the change needed in the weighting of M_3 was larger than that needed in any of the other variables.

A similar procedure resulted in changing the weights to those shown in column four. E_2 was here treated as a separate variable. This procedure could be continued indefinitely, each time resulting in a slightly higher correlation until that point was reached where no changes were indicated as added calculations were made. The weightings would then be identical with those that would be given by the regression equation. If the approximation is not perfect it is recommended that the equation be called an "equation of relation" and that "regression equation" be strictly reserved for that equation which gives the "best" estimate possible. In the problem in hand added calculations were not made as it seemed probable that no number of them would succeed in raising the correlation as much as .01 above that obtained with the fourth weightings, .970.

It remains to explain how the correlations used in the last table were obtained. $r_{I(W_3M_3)} = r_{IM_3}$, if W_3 is positive, and $it = r_{IM_3}$, if W_3 is negative. This is obvious from the fact that multiplying measures of deviation by a constant does not change the correlation. $r_{I(W_1M_1+W_2M_2+W_4M_4+\ldots W_{15}C_1)}$ is obtained by formula *a* after dropping out all terms involving M_3 or W_3. $r_{W_3M_3(W_1M_1+W_2M_2+W_4M_4+\ldots W_{15}C_1)}$ is obtained as was the preceding correlation, W_3M_3 taking the place of I. Designating M_3 by the term u (measure treated uniquely), giving x and y the same meanings as in formula *a* and understanding as before that no r has a repeated subscript, a more convenient general formula, obtained in a similar manner to formula *a*, may be derived. It is

$$r_{W_uU(\Sigma W_xX)} = \frac{\Sigma r_{ux}\ W_u\sigma_u\ W_x\sigma_x}{W_u\sigma_u \sqrt{\Sigma(W_x\sigma_x)^2 - (W_u\sigma_u)^2 + 2\Sigma r_{xy} W_x\sigma_x W_y\sigma_y - 2\,\Sigma r_{ux} W_u\sigma_u W_x\sigma_x}}$$

(Formula *b*.)

In the problem in hand this equals:

$$\frac{\text{sum of 14 products}}{W\sigma_u\sqrt{\text{sum of 15 products} - (W_u\sigma_u)^2 + 2(\text{sum of 105 products}) - 2(\text{sum of 14 products})}}$$

It may also be noted that the two terms in the denominator are the standard deviations required — $W_u\sigma_u$ being the standard deviation of the W_uU measures and the square root term the standard deviation of the weighted sum of the remaining terms.

The following table gives the preliminary, second, third and fourth approximations to the weightings that would be given by the regression equation.

	Preliminary weighting	Second weighting	Third weighting	Fourth weighting
M_1	.1655	.2400	.2830	.3376
M_2	.3213	.0476	.0561	.0669
M_3	.1861	.4039	.2468	.2941
M_4	.1358	.1960	.2310	.2755
M_5	.0703	.1083	.1277	.1523
E_1	.0013	—.2428	—.2861	—.3412
E_2	.0381	.0666	.0786	—.1429
E_3	.0143	.2049	.2416	.2881
E_4	.00338	.0106	.0125	.0149
P_1	.0683	—.0393	—.0463	—.0552
P_2	—.0141	—.0520	—.0613	—.0731
P_3	.0693	.0648	.0764	.0912
P_4	.3181	.4719	.5563	.6639
P_5	—.0873	—.1358	—.1601	—.0377
C_1	—.0200	—.0268	—.0316	—.1910
Correlations resulting from above weightings	.913	.945	.957	.970

In calculations of the kind here considered, where a large number of variables are involved and high correlations obtained, great care must be exercised in obtaining the original correlations,

for any error will be siezed upon by the regression equation method and made the most of. Special emphasis is laid upon the necessity of (1) having the same means throughout all the calculations and (2) having complete data. If data which lacks a few measures is used more reliable results will probably be obtained by estimating as closely as possible the measures that are lacking and then proceeding to make the calculations with complete data. This procedure will insure that the correlations worked with are consistent.

It need scarcely be mentioned that the coefficients of correlation upon which this method is based are Pearson product-moment coefficients and that, accordingly no other coefficients should be used.

	.00		.01		.02		.03		.04		
	A	B	A	B	A	B	A	B	A	B	
.00	1.000	.0000	1.000	.0000	1.000	.0000	1.000	.0000	1.001	.0000	.00
.01			0	.0001	0	.0002	1	.0003	1	.0004	.01
.02					0	.0004	1	.0006	1	.0008	.02
.03							1	.0009	1	.0012	.03
.04									2	.0016	.04

	.00		.01		.02		.03		.04		
	.05		.06		.07		.08		.09		
	A	B	A	B	A	B	A	B	A	B	
.00	1.001	.0000	1.002	.0000	1.002	.0000	1.003	.0000	1.004	.0000	.00
.01	1	.0005	2	.0006	3	.0007	3	.0008	4	.0009	.01
.02	1	.0010	2	.0012	3	.0014	3	.0016	4	.0018	.02
.03	2	.0015	2	.0018	3	.0021	4	.0024	5	.0027	.03
.04	2	.0020	3	.0024	3	.0028	4	.0032	5	.0036	.04
.05	3	.0025	3	.0030	4	.0035	4	.0040	5	.0045	.05
.06			4	.0036	4	.0042	5	.0048	6	.0054	.06
.07					5	.0049	6	.0056	7	.0063	.07
.08							6	.0064	7	.0073	.08
.09									8	.0082	.09

	.05		.06		.07		.08		.09		
	.10		.11		.12		.13		.14		
	A	B	A	B	A	B	A	B	A	B	
.00	1.005	.0000	1.006	.0000	1.007	.0000	1.009	.0000	1.010	.0000	.00
.01	5	.0010	6	.0011	7	.0012	9	.0013	0	.0014	.01
.02	5	.0020	6	.0022	8	.0024	9	.0026	0	.0028	.02
.03	5	.0030	7	.0033	8	.0036	9	.0039	0	.0042	.03
.04	6	.0040	7	.0044	8	.0048	9	.0052	1	.0057	.04
.05	6	.0050	7	.0055	9	.0061	1.010	.0066	1	.0071	.05
.06	7	.0060	8	.0067	9	.0073	0	.0079	2	.0085	.06
.07	7	.0071	9	.0078	1.010	.0085	1	.0092	2	.0099	.07
.08	8	.0081	9	.0089	1	.0097	2	.0105	3	.0113	.08
.09	9	.0091	1.010	.0100	1	.0109	3	.0118	4	.0128	.09
.10	1.010	.0101	1.011	.0111	1.012	.0121	1.014	.0132	1.015	.0142	.10
.11			2	.0122	3	.0134	5	.0145	6	.0156	.11
.12					5	.0146	6	.0158	7	.0171	.12
.13							7	.0172	9	.0185	.13
.14									1.020	.0200	.14

	.10		.11		.12		.13		.14		

	.15		.16		.17		.18		.19		
	A	B	A	B	A	B	A	B	A	B	
.00	1.011	.0000	1.013	.0000	1.015	.0000	1.017	.0000	1.019	.0000.	.00
.01	1	.0015	3	.0016	5	.0017	7	.0018	9	.0019	.01
.02	2	.0030	3	.0032	5	.0035	7	.0037	9	.0039	.02
.03	2	.0046	4	.0049	5	.0052	7	.0055	9	.0058	.03
.04	2	.0061	4	.0065	6	.0069	7	.0073	9	.0077	.04
.05	3	.0076	4	.0081	6	.0086	8	.0092	1.020	.0097	.05
.06	3	.0091	5	.0097	7	.0104	8	.0110	0	.0116	.06
.07	4	.0106	6	.0114	7	.0121	9	.0128	1	.0136	.07
.08	5	.0122	6	.0130	8	.0138	1.020	.0147	2	.0155	.08
.09	6	.0137	7	.0146	9	.0156	1	.0165	3	.0175	.09
.10	1.016	.0152	1.018	.0163	1.020	.0173	1.022	.0184	1.024	.0195	.10
.11	8	.0168	9	.0179	1	.0191	3	.0203	5	.0214	.11
.12	9	.0183	1.020	.0196	2	.0209	4	.0221	6	.0234	.12
.13	1.020	.0199	2	.0213	4	.0226	5	.0240	7	.0254	.13
.14	1	.0214	3	.0229	5	.0244	7	.0259	9	.0274	.14
.15	3	.0230	5	.0246	6	.0262	8	.0278	1.030	.0294	.15
.16			6	.0263	8	.0280	1.030	.0297	2	.0314	.16
.17					1.030	.0298	2	.0316	4	.0334	.17
.18							3	.0335	6	.0354	.18
.19									8	.0375	.19

	.15		.16		.17		.18		.19		
	.20		.21		.22		.23		.24		
	A	B	A	B	A	B	A	B	A	B	
.00	1.021	.0000	1.023	.0000	1.025	.0000	1.028	.0000	1.030	.0000	.00
.01	1	.0020	3	.0021	5	.0023	8	.0024	0	.0025	.01
.02	1	.0041	3	.0043	5	.0045	8	.0047	0	.0049	.02
.03	1	.0061	3	.0064	6	.0068	8	.0071	1	.0074	.03
.04	1	.0082	4	.0086	6	.0090	8	.0095	1	.0099	.04
.05	2	.0102	4	.0108	6	.0113	9	.0118	1	.0124	.05
.06	2	.0123	5	.0129	7	.0136	9	.0142	2	.0149	.06
.07	3	.0143	5	.0151	8	.0158	1.030	.0166	3	.0173	.07
.08	4	.0164	6	.0172	8	.0181	1	.0190	3	.0198	.08
.09	5	.0184	7	.0194	9	.0204	2	.0214	4	.0223	.09
.10	1.026	.0205	1.028	.0216	1.030	.0227	1.033	.0237	1.035	.0248	.10
.11	7	.0226	9	.0238	1	.0250	4	.0262	6	.0274	.11
.12	8	.0247	1.030	.0260	3	.0273	5	.0286	8	.0299	.12
.13	9	.0268	2	.0282	4	.0296	6	.0310	9	.0324	.13
.14	1.031	.0289	3	.0304	5	.0319	8	.0334	1.040	.0350	.14
.15	2	.0310	4	.0326	7	.0342	9	.0359	2	.0375	.15
.16	4	.0331	6	.0348	9	.0366	1.041	.0383	4	.0401	.16
.17	6	.0352	8	.0371	1.040	.0389	3	.0408	5	.0426	.17
.18	8	.0374	1.040	.0393	2	.0413	5	.0432	7	.0452	.18
.19	1.040	.0395	2	.0416	4	.0436	7	.0457	9	.0478	.19
.20	1.042	.0417	1.044	.0438	1.046	.0460	1.049	.0482	1.051	.0505	.20
.21			6	.0461	8	.0484	1.051	.0518	4	.0531	.21
.22					1.051	.0509	3	.0533	6	.0558	.22
.23							6	.0559	8	.0584	.23
.24									1.061	.0611	.24

	.20		.21		.22		.23		.24		

	.25		.26		.27		.28		.29		
	A	B	A	B	A	B	A	B	A	B	
.00	1.033	.0000	1.036	.0000	1.039	.0000	1.042	.0000	1.045	.0000	.00
.01	3	.0026	6	.0027	9	.0028	2	.0029	5	.0030	.01
.02	3	.0052	6	.0054	9	.0056	2	.0058	5	.0061	.02
.03	3	.0077	6	.0081	9	.0084	2	.0088	5	.0091	.03
.04	4	.0103	6	.0108	9	.0112	3	.0117	6	.0121	.04
.05	4	.0129	7	.0135	1.040	.0140	3	.0146	6	.0152	.05
.06	5	.0155	7	.0162	0	.0169	4	.0175	7	.0182	.06
.07	5	.0181	8	.0189	1	.0197	4	.0205	7	.0213	.07
.08	6	.0207	9	.0216	2	.0225	5	.0234	8	.0243	.08
.09	7	.0233	1.040	.0243	3	.0253	6	.0264	9	.0274	.09
.10	1.038	.0260	1.041	.0271	1.044	.0282	1.047	.0293	1.050	.0305	.10
.11	9	.0286	2	.0298	5	.0310	8	.0323	1	.0335	.11
.12	1.040	.0312	3	.0325	6	.0339	9	.0353	3	.0366	.12
.13	2	.0339	4	.0353	7	.0368	1.051	.0382	4	.0397	.13
.14	3	.0365	6	.0281	9	.0396	2	.0412	5	.0428	.14
.15	5	.0392	7	.0408	1.050	.0425	4	.0443	7	.0460	.15
.16	6	.0419	9	.0436	2	.0455	5	.0473	9	.0491	.16
.17	8	.0445	1.051	.0464	4	.0484	7	.0503	1.060	.0523	.17
.18	1.050	.0472	3	.0493	6	.0513	9	.0534	2	.0554	.18
.19	2	.0500	5	.0521	8	.0543	1.061	.0565	4	.0586	.19
.20	1.054	.0527	1.057	.0550	1.060	.0572	1.063	.0595	1.066	.0619	.20
.21	6	.0555	9	.0578	2	.0602	5	.0627	9	.0651	.21
.22	9	.0582	1.062	.0607	5	.0632	8	.0658	1.071	.0683	.22
.23	1.061	.0610	4	.0636	7	.0663	1.070	.0689	4	.0716	.23
.24	4	.0638	7	.0666	1.070	.0693	3	.0721	6	.0749	.24
.25	7	.0667	1.070	.0695	3	.0724	6	.0753	9	.0782	.25
.26			2	.0725	6	.0755	9	.0785	1.082	.0816	.26
.27					9	.0786	1.082	.0818	5	.0850	.27
.28							5	.0851	8	.0884	.28
.29									1.092	.0918	.29
	.25		.26		.27		.28		.29.		

	.30		.31		.32		.33		.34		
	A	B	A	B	A	B	A	B	A	B	
.00	1.048	.0000	1.052	.0000	1.056	.0000	1.059	.0000	1.063	.0000	.00
.01	8	.0031	2	.0033	6	.0034	9	.0035	3	.0036	.01
.02	9	.0063	2	.0065	6	.0068	1.060	.0070	4	.0072	.02
.03	9	.0094	2	.0098	6	.0101	0	.0105	4	.0109	.03
.04	9	.0126	3	.0131	6	.0135	0	.0140	4	.0145	.04
.05	1.050	.0157	3	.0163	7	.0169	1	.0175	5	.0181	.05
.06	0	.0189	4	.0196	7	.0203	1	.0210	5	.0217	.06
.07	1	.0221	4	.0229	8	.0237	2	.0245	6	.0254	.07
.08	2	.0252	5	.0262	9	.0271	3	.0281	7	.0290	.08
.09	3	.0284	6	.0295	1.060	.0305	4	.0316	8	.0327	.09
.10	1.054	.0316	1.057	.0328	1.061	.0339	1.065	.0351	1.069	.0363	.10
.11	5	.0348	8	.0361	2	.0374	6	.0387	1.070	.0400	.11
.12	6	.0380	9	.0394	3	.0408	7	.0423	1	.0437	.12
.13	7	.0412	1.061	.0428	5	.0443	8	.0458	2	.0474	.13
.14	9	.0445	2	.0461	6	.0478	1.070	.0494	4	.0511	.14
.15	1.060	.0477	4	.0495	8	.0512	1	.0530	5	.0548	.15
.16	2	.0510	6	.0529	9	.0547	3	.0567	7	.0586	.16
.17	4	.0543	7	.0563	1.071	.0583	5	.0603	9	.0624	.17
.18	6	.0575	9	.0597	3	.0618	7	.0640	1.081	.0662	.18
.19	8	.0609	1.071	.0631	5	.0654	9	.0677	3	.0700	.19
.20	1.070	.0642	1.073	.0666	1.077	.0689	1.081	.0714	1.085	.0738	.20
.21	2	.0675	6	.0700	1.080	.0725	3	.0751	8	.0776	.21
.22	5	.0709	8	.0735	2	.0762	6	.0788	1.090	.0815	.22
.23	7	.0743	1.081	.0771	5	.0798	8	.0826	3	.0854	.23
.24	1.080	.0778	3	.0806	7	.0835	1.091	.0864	5	.0894	.24
.25	3	.0812	6	.0842	1.090	.0872	4	.0903	8	.0933	.25
.26	6	.0847	9	.0878	3	.0909	7	.0941	1.101	.0973	.26
.27	9	.0882	1.092	.0914	6	.0947	1.100	.0980	4	.1014	.27
.28	1.092	.0917	6	.0951	1.100	.0985	3	.1020	8	.1054	.28
.29	5	.0953	9	.0988	3	.1023	7	.1059	1.111	.1095	.29
.30	1.099	.0989	1.103	.1025	1.106	.1062	1.110	.1099	1.115	.1137	.30
.31			06	.1061	10	.1101	14	.1140	18	.1179	.31
.32					14	.1141	18	.1181	22	.1221	.32
.33							22	.1222	26	.1264	.33
.34									31	.1307	.34
	.30		.31		.32		.33		.34		

	.35		.36		.37		.38		.39		
	A	B	A	B	A	B	A	B	A	B	
.00	1.068	.0000	1.072	.0000	1.076	.0000	1.081	.0000	1.086	.0000	.00
.01	8	.0037	2	.0039	6	.0040	1	.0041	6	.0042	.01
.02	8	.0075	2	.0077	7	.0080	1	.0082	6	.0085	.02
.03	8	.0112	2	.0116	7	.0120	2	.0123	6	.0127	.03
.04	8	.0150	3	.0154	7	.0159	2	.0164	7	.0170	.04
.05	9	.0187	3	.0193	8	.0199	2	.0206	7	.0212	.05
.06	9	.0225	4	.0232	8	.0239	3	.0247	8	.0255	.06
.07	1.070	.0262	5	.0271	9	.0279	4	.0288	9	.0297	.07
.08	1	.0300	5	.0310	1.080	.0320	5	.0330	9	.0340	.08
.09	2	.0338	6	.0349	1	.0360	6	.0371	1.090	.0383	.09
.10	1.073	.0375	1.077	.0389	1.082	.0400	1.087	.0413	1.091	.0426	.10
.11	4	.0413	8	.0427	3	.0441	8	.0455	3	.0469	.11
.12	5	.0452	1.080	.0466	4	.0481	9	.0497	4	.0512	.12
.13	7	.0490	1	.0506	6	.0522	1.090	.0539	5	.0555	.13
.14	8	.0528	3	.0546	7	.0563	2	.0581	7	.0599	.14
.15	1.080	.0567	4	.0585	9	.0604	3	.0623	8	.0643	.15
.16	1	.0606	6	.0625	1.091	.0646	5	.0666	1.100	.0687	.16
.17	3	.0645	8	.0666	2	.0687	7	.0709	2	.0731	.17
.18	5	.0684	1.090	.0706	4	.0729	9	.0752	4	.0775	.18
.19	7	.0723	2	.0747	6	.0771	1.101	.0795	6	.0820	.19
.20	1.089	.0763	1.094	.0788	1.099	.0813	1.103	.0839	1.108	.0865	.20
.21	1.092	.0802	6	.0829	1.101	.0855	6	.0882	1.111	.0910	.21
.22	4	.0843	9	.0870	3	.0898	8	.0926	3	.0955	.22
.23	7	.0883	1.101	.0912	6	.0941	1.111	.0971	6	.1001	.23
.24	1.100	.0924	4	.0954	9	.0985	4	.1016	9	.1047	.24
.25	3	.0965	7	.0996	1.112	.1028	7	.1061	1.122	.1094	.25
.26	6	.1006	1.110	.1039	5	.1072	1.120	.1106	5	.1140	.26
.27	9	.1048	3	.1082	8	.1117	3	.1152	8	.1188	.27
.28	1.112	.1090	7	.1126	1.121	.1162	6	.1198	1.131	.1235	.28
.29	5	.1132	1.120	.1169	5	.1207	1.130	.1245	5	.1283	29
.30	1.119	.1175	1.124	.1214	1.128	.1253	1.133	.1292	1.138	.1332	.30
.31	23	.1218	27	.1258	32	.1299	37	.1340	42	.1381	.31
.32	27	.1262	31	.1303	36	.1345	41	.1388	46	.1431	.32
.33	31	.1306	35	.1349	40	.1392	45	.1436	50	.1481	.33
.34	35	.1351	40	.1395	45	.1440	50	.1485	55	.1531	.34
.35	40	.1396	44	.1442	49	.1488	54	.1535	59	.1582	.35
.36			49	.1489	54	.1537	59	.1585	64	.1634	.36
.37					59	.1586	64	.1636	69	.1687	.37
.38							69	.1688	74	.1740	.38
.39									79	.1794	.39
	.35		.36		.37		.38		.39		

	.40		.41		.42		.43		.44		
	A	B	A	B	A	B	A	B	A	B	
.00	1.091	.0000	1.096	.0000	1.102	.0000	1.108	.0000	1.114	.0000	.00
.01	1	.0044	6	.0045	2	.0046	8	.0048	4	.0049	.01
.02	1	.0087	7	.0090	2	.0093	8	.0095	4	.0098	.02
.03	2	.0131	7	.0135	2	.0139	8	.0143	4	.0147	.03
.04	2	.0175	7	.0180	3	.0185	8	.0191	4	.0196	.04
.05	2	.0218	8	.0225	3	.0232	9	.0238	5	.0245	.05
.06	3	.0262	8	.0270	4	.0278	1.110	.0286	6	.0295	.06
.07	4	.0306	9	.0315	5	.0325	0	.0334	6	.0344	.07
.08	5	.0350	1.100	.0361	5	.0371	1	.0382	7	.0393	.08
.09	6	.0394	1	.0406	6	.0418	2	.0430	8	.0443	.09
.10	1.097	.0439	1.102	.0452	1.107	.0465	1.113	.0479	1.119	.0492	.10
.11	8	.0483	3	.0497	9	.0512	4	.0527	1.120	.0542	.11
.12	9	.0528	4	.0543	1.110	.0559	6	.0576	2	.0592	.12
.13	1.100	.0572	6	.0589	1	.0607	7	.0624	3	.0642	.13
.14	2	.0617	7	.0636	3	.0654	9	.0673	5	.0693	.14
.15	4	.0662	9	.0682	4	.0702	1.120	.0723	6	.0743	.15
.16	5	.0707	1.111	.0729	6	.0750	2	.0772	8	.0794	.16
.17	7	.0753	3	.0775	8	.0798	4	.0822	1.130	.0845	.17
.18	9	.0799	5	.0823	1.120	.0847	6	.0872	2	.0897	.18
.19	1.111	.0845	7	.0870	2	.0896	8	.0922	4	.0948	.19
.20	1.114	.0891	1.119	.0918	1.125	.0945	1.130	.0972	1.137	.1000	.20
.21	6	.0937	1.121	.0966	7	.0994	3	.1023	9	.1052	.21
.22	8	.0984	4	.1014	1.130	.1044	5	.1074	1.142	.1105	.22
.23	1.121	.1031	7	.1062	2	.1094	8	.1126	4	.1158	.23
.24	4	.1079	9	.1111	5	.1144	1.141	.1177	7	.1211	.24
.25	7	.1127	1.132	.1161	8	.1195	4	.1230	1.150	.1265	.25
.26	1.130	.1175	5	.1210	1.141	.1246	7	.1282	3	.1319	.26
.27	3	.1224	9	.1261	4	.1298	1.150	.1336	7	.1374	.27
.28	7	.1273	1.142	.1311	8	.1350	4	.1389	1.160	.1429	.28
.29	1.140	.1323	6	.1362	1.151	.1402	7	.1443	4	.1485	.29
.30	1.144	.1373	1.149	.1414	1.155	.1455	1.161	.1498	1.167	.1541	.30
.31	48	.1423	53	.1466	59	.1509	65	.1553	71	.1598	.31
.32	52	.1474	57	.1518	63	.1563	69	.1609	75	.1655	.32
.33	56	.1526	61	.1571	67	.1618	73	.1665	80	.1713	.33
.34	60	.1578	66	.1625	72	.1673	78	.1722	84	.1771	.34
.35	65	.1631	70	.1680	76	.1729	82	.1780	89	.1831	.35
.36	70	.1684	75	.1735	81	.1786	87	.1838	94	.1891	.36
.37	74	.1738	80	.1790	86	.1843	92	.1897	99	.1951	.37
.38	80	.1793	85	.1847	91	.1901	97	.1957	1.204	.2013	.38
.39	85	.1848	91	.1904	97	.1960	1.203	.2017	09	.2075	.39
.40	1.190	.1905	1.196	.1962	1.202	.2020	1.209	.2079	1.215	.2138	.40
.41			1.202	.2021	08	.2080	14	.2141	21	.2203	.41
.42					14	.2142	20	.2204	27	.2268	.42
.43							27	.2268	33	.2334	.43
.44									40	.2401	.44
	.40		.41		.42		.43		.44		

	.45		.46		.47		.48		.49		
	A	B	A	B	A	B	A	B	A	B	
.00	1.120	.0000	1.126	.0000	1.133	.0000	1.140	.0000	1.147	.0000	.00
.01	0	.0050	6	.0052	3	.0053	0	.0055	7	.0056	.01
.02	0	.0101	6	.0104	3	.0107	0	.0109	7	.0112	.02
.03	0	.0151	7	.0155	3	.0160	0	.0164	8	.0169	.03
.04	1	.0202	7	.0207	4	.0213	1	.0219	8	.0225	.04
.05	1	.0252	8	.0259	4	.0267	1	.0274	9	.0281	.05
.06	2	.0303	8	.0311	5	.0320	2	.0329	9	.0338	.06
.07	3	.0354	9	.0364	6	.0374	3	.0384	1.150	.0394	.07
.08	3	.0404	1.130	.0416	7	.0427	4	.0439	1	.0451	.08
.09	4	.0455	1	.0468	8	.0481	5	.0494	2	.0508	.09
.10	1.125	.0506	1.132	.0521	1.139	.0535	1.146	.0550	1.153	.0565	.10
.11	7	.0558	3	.0573	1.140	.0589	7	.0606	4	.0622	.11
.12	8	.0609	4	.0626	1	.0644	8	.0661	6	.0679	.12
.13	9	.0661	6	.0679	3	.0698	1.150	.0717	7	.0737	.13
.14	1.131	.0712	7	.0732	4	.0753	1	.0774	9	.0795	.14
.15	3	.0765	9	.0786	6	.0808	3	.0830	1.160	.0853	.15
.16	4	.0817	1.141	.0840	8	.0863	5	.0887	2	.0911	.16
.17	6	.0869	3	.0894	1.150	.0919	7	.0944	4	.0970	.17
.18	8	.0922	5	.0948	2	.0974	9	.1001	6	.1029	.18
.19	1.141	.0975	7	.1003	4	.1031	1.161	.1059	9	.1088	.19
.20	1.143	.1029	1.149	.1057	1.156	.1087	1.163	.1117	1.171	.1147	.20
.21	5	.1082	1.152	.1113	9	.1144	6	.1175	3	.1207	.21
.22	8	.1136	4	.1168	1.161	.1201	9	.1234	6	.1268	.22
.23	1.151	.1191	7	.1224	4	.1258	1.171	.1293	9	.1328	.23
.24	4	.1246	1.160	.1281	7	.1316	4	.1353	1.182	.1390	.24
.25	7	.1301	3	.1338	1.170	.1375	7	.1413	5	.1451	.25
.26	1.160	.1357	6	.1395	3	.1434	1.180	.1473	8	.1514	.26
.27	3	.1413	1.170	.1453	7	.1493	4	.1534	1.191	.1576	.27
.28	6	.1470	3	.1511	1.180	.1553	7	.1596	5	.1640	.28
.29	1.170	.1527	7	.1570	4	.1614	1.191	.1658	9	.1703	.29
.30	1.174	.1585	1.181	.1629	1.188	.1675	1.195	.1721	1.203	.1768	.30
.31	78	.1643	85	.1689	92	.1736	99	.1784	07	.1833	.31
.32	82	.1702	89	.1750	96	.1798	1.203	.1848	11	.1899	.32
.33	86	.1762	93	.1811	1.200	.1861	07	.1913	15	.1965	.33
.34	91	.1822	97	.1873	05	.1925	12	.1978	20	.2032	.34
.35	95	.1883	1.202	.1936	09	.1989	17	.2044	25	.2100	.35
.36	1.200	.1944	07	.1999	14	.2055	22	.2111	30	.2169	.36
.37	05	.2007	12	.2063	19	.2121	27	.2179	35	.2239	.37
.38	11	.2070	18	.2128	25	.2187	32	.2248	40	.2309	.38
.39	16	.2134	23	.2194	30	.2255	38	.2317	46	.2381	.39
.40	1.222	.2199	1.229	.2261	1.236	.2324	1.244	.2388	1.252	.2453	.40
.41	28	.2265	35	.2329	42	.2394	50	.2460	58	.2527	.41
.42	34	.2332	41	.2398	48	.2464	56	.2532	64	.2602	.42
.43	40	.2400	47	.2467	55	.2536	63	.2606	71	.2677	.43
.44	47	.2469	54	.2538	62	.2609	69	.2681	78	.2754	.44
.45	54	.2539	61	.2610	69	.2683	76	.2757	85	.2833	.45
.46			68	.2684	76	.2758	84	.2835	92	.2912	.46
.47					83	.2835	91	.2913	1.300	.2993	.47
.48							99	.2994	08	.3076	.48
.49									16	.3160	.49
	.45		.46		.47		.48		.49		

	.50		.51		.52		.53		.54		
	A	B	A	B	A	B	A	B	A	B	
.00	1.155	.0000	1.163	.0000	1.171	.0000	1.179	.0000	1.188	.0000	.00
.01	5	.0058	3	.0059	1	.0061	9	.0063	8	.0064	.01
.02	5	.0115	3	.0119	1	.0122	9	.0125	8	.0128	.02
.03	5	.0173	3	.0178	1	.0183	1.180	.0188	9	.0193	.03
.04	6	.0231	4	.0237	2	.0244	0	.0250	9	.0257	.04
.05	6	.0289	4	.0297	2	.0305	1	.0313	1.190	.0321	.05
.06	7	.0347	5	.0356	3	.0366	1	.0376	0	.0386	.06
.07	8	.0405	5	.0416	4	.0427	2	.0439	1	.0450	.07
.08	8	.0463	6	.0476	4	.0489	3	.0502	2	.0515	.08
.09	9	.0522	7	.0536	5	.0550	4	.0565	3	.0580	.09
.10	1.160	.0580	1.168	.0596	1.177	.0612	1.185	.0628	1.194	.0645	.10
.11	2	.0639	1.170	.0656	8	.0674	6	.0692	5	.0710	.11
.12	3	.0698	1	.0717	9	.0736	8	.0755	7	.0776	.12
.13	5	.0757	3	.0777	1.181	.0798	9	.0819	8	.0841	.13
.14	6	.0816	4	.0838	2	.0861	1.191	.0884	1.200	.0907	.14
.15	8	.0876	6	.0900	4	.0924	3	.0948	2	.0973	.15
.16	1.170	.0936	8	.0961	6	.0987	5	.1013	4	.1040	.16
.17	2	.0996	1.180	.1023	8	.1050	7	.1078	6	.1107	.17
.18	4	.1057	2	.1085	1.190	.1114	9	.1144	8	.1174	.18
.19	6	.1117	4	.1147	2	.1178	1.201	.1210	1.210	.1242	.19
.20	1.178	.1178	1.187	.1210	1.195	.1243	1.203	.1276	1.213	.1310	.20
.21	1.181	.1240	9	.1274	7	.1308	6	.1342	5	.1378	.21
.22	4	.1302	1.192	.1337	1.200	.1373	9	.1409	8	.1447	.22
.23	6	.1364	5	.1401	3	.1439	1.212	.1477	1.221	.1516	.23
.24	9	.1427	8	.1466	6	.1505	5	.1545	4	.1586	.24
.25	1.193	.1491	1.201	.1531	9	.1572	8	.1614	7	.1657	.25
.26	6	.1555	4	.1597	1.212	.1639	1.221	.1683	1.230	.1727	.26
.27	9	.1619	7	.1663	6	.1707	5	.1753	4	.1799	.27
.28	1.203	.1684	1.211	.1729	1.220	.1776	8	.1823	8	.1870	.28
.29	6	.1749	5	.1797	3	.1845	1.232	.1894	1.241	.1944	.29
.30	1.210	.1816	1.219	.1865	1.227	.1914	1.236	.1966	1.245	.2018	.30
.31	15	.1882	23	.1933	31	.1985	40	.2038	50	.2092	.31
.32	19	.1950	27	.2003	36	.2056	45	.2111	54	.2167	.32
.33	23	.2018	32	.2073	40	.2128	49	.2185	59	.2243	.33
.34	28	.2087	36	.2144	45	.2201	54	.2259	63	.2319	.34
.35	33	.2157	41	.2215	50	.2274	59	.2335	68	.2397	.35
.36	38	.2228	46	.2288	55	.2349	64	.2412	74	.2476	.36
.37	43	.2299	51	.2361	60	.2424	69	.2489	79	.2555	.37
.38	48	.2372	57	.2436	66	.2501	75	.2567	84	.2636	.38
.39	54	.2445	63	.2511	71	.2578	81	.2647	90	.2717	.39
.40	1.260	.2520	1.269	.2588	1.277	.2657	1.287	.2728	1.296	.2800	.40
.41	66	.2595	75	.2665	84	.2737	93	.2809	1.303	.2884	.41
.42	72	.2672	81	.2744	90	.2817	99	.2892	09	.2969	.42
.43	79	.2750	88	.2824	97	.2899	1.306	.2977	16	.3056	.43
.44	86	.2829	95	.2905	1.304	.2983	13	.3062	23	.3144	.44
.45	93	.2909	1.302	.2988	11	.3068	20	.3149	30	.3233	.45
.46	1.300	.2991	09	.3072	18	.3154	28	.3238	38	.3324	.46
.47	08	.3074	17	.3157	26	.3241	36	.3328	46	.3416	.47
.48	16	.3159	25	.3244	34	.3331	44	.3420	54	.3510	.48
.49	25	.3246	34	.3333	43	.3422	53	.3513	63	.3606	.49
	.50		.51		.52		.53		.54		

	.50		.51		.52		.53		.54		
	A	B	A	B	A	B	A	B	A	B	
.50	1.333	.3333	1.342	.3423	1.352	.3515	1.362	.3608	1.372	.3704	.50
.51			52	.3516	61	.3610	71	.3706	81	.3804	.51
.52					71	.3706	80	.3805	91	.3906	.52
.53							91	.3906	1.401	.4010	.53
.54									12	.4116	.54
	.50		.51		.52		.53		.54		

	.55		.56		.57		.58		.59		
	A	B	A	B	A	B	A	B	A	B	
.00	1.197	.0000	1.207	.0000	1.217	.0000	1.228	.0000	1.239	.0000	.00
.01	7	.0066	7	.0068	7	.0069	8	.0071	9	.0073	.01
.02	8	.0132	7	.0135	7	.0139	8	.0142	9	.0146	.02
.03	8	.0198	8	.0203	8	.0208	8	.0214	9	.0219	.03
.04	8	.0264	8	.0271	8	.0278	9	.0285	9	.0293	.04
.05	9	.0330	9	.0338	9	.0347	9	.0356	1.240	.0366	.05
.06	1.200	.0396	9	.0406	9	.0417	1.230	.0428	1	.0439	.06
.07	0	.0462	1.210	.0474	1.220	.0487	1	.0500	2	.0513	.07
.08	1	.0528	1	.0542	1	.0557	2	.0571	2	.0586	.08
.09	2	.0595	2	.0611	2	.0627	3	.0643	4	.0660	.09
.10	1.203	.0662	1.213	.0679	1.223	.0697	1.234	.0716	1.245	.0734	.10
.11	5	.0729	4	.0748	5	.0768	5	.0788	6	.0809	.11
.12	6	.0796	6	.0817	6	.0839	7	.0861	8	.0883	.12
.13	8	.0863	7	.0886	7	.0910	8	.0934	9	.0958	.13
.14	9	.0931	9	.0956	9	.0981	1.240	.1007	1.251	.1033	.14
.15	1.211	.0999	1.221	.1025	1.231	.1053	2	.1080	3	.1109	.15
.16	3	.1068	3	.1096	3	.1124	4	.1154	5	.1184	.16
.17	5	.1136	5	.1166	5	.1197	6	.1228	7	.1261	.17
.18	7	.1205	7	.1237	7	.1269	8	.1303	9	.1337	.18
.19	1.220	.1275	9	.1308	1.240	.1343	1.250	.1378	1.262	.1414	.19
.20	1.222	.1344	1.232	.1380	1.242	.1416	1.253	.1453	1.264	.1492	.20
.21	5	.1415	5	.1452	5	.1490	6	.1529	7	.1569	.21
.22	7	.1485	7	.1524	8	.1564	8	.1606	1.270	.1648	.22
.23	1.230	.1556	1.240	.1597	1.251	.1640	1.261	.1683	3	.1727	.23
.24	3	.1628	3	.1671	4	.1715	5	.1760	6	.1807	.24
.25	7	.1700	7	.1745	7	.1791	8	.1838	9	.1887	.25
.26	1.240	.1773	1.250	.1820	1.260	.1868	1.271	.1917	1.283	.1968	.26
.27	4	.1847	4	.1895	4	.1945	5	.1997	6	.2049	.27
.28	7	.1921	7	.1971	8	.2024	9	.2077	1.290	.2131	.28
.29	1.251	.1996	1.261	.2048	1.272	.2102	1.283	.2158	4	.2214	.29
.30	1.255	.2071	1.265	.2126	1.276	.2182	1.287	.2239	1.298	.2298	.30
.31	59	.2147	70	.2204	80	.2262	91	.2322	1.303	.2383	.31
.32	64	.2224	74	.2283	85	.2343	96	.2405	07	.2468	.32
.33	68	.2302	79	.2363	89	.2425	1.300	.2489	12	.2554	.33
.34	73	.2381	83	.2444	94	.2508	05	.2574	17	.2642	.34
.35	78	.2461	88	.2525	99	.2592	10	.2660	22	.2730	.35
.36	83	.2541	94	.2608	1.305	.2677	16	.2748	28	.2820	.36
.37	89	.2623	99	.2692	10	.2763	21	.2836	33	.2910	.37
.38	95	.2706	1.305	.2777	16	.2850	27	.2925	39	.3002	.38
.39	1.300	.2789	11	.2863	22	.2938	33	.3016	45	.3095	.39
.40	1.306	.2874	1.317	.2950	1.328	.3028	1.339	.3107	1.351	.3189	.40
.41	13	.2960	23	.3039	34	.3118	46	.3201	58	.3285	.41
.42	19	.3048	30	.3128	41	.3211	53	.3295	65	.3382	.42
.43	26	.3136	37	.3219	48	.3304	60	.3391	72	.3480	.43
.44	33	.3227	44	.3312	55	.3399	67	.3489	79	.3580	.44
.45	41	.3318	52	.3406	63	.3496	75	.3588	87	.3682	.45
.46	49	.3412	59	.3502	71	.3594	83	.3689	95	.3785	.46
.47	57	.3507	67	.3599	79	.3694	91	.3791	1.403	.3891	.47
.48	65	.3603	76	.3698	87	.3796	99	.3896	12	.3998	.48
.49	74	.3702	85	.3800	96	.3900	1.408	.4002	21	.4108	.49
	.55		.56		.57		.58		.59		

	.55		.56		.57		.58		.59		
	A	B	A	B	A	B	A	B	A	B	
.50	1.383	.3802	1.394	.3902	1.405	.4005	1.418	.4111	1.430	.4219	.50
.51	92	.3905	1.403	.4008	15	.4113	27	.4222	40	.4333	.51
.52	1.402	.4009	13	.4115	25	.4223	37	.4335	50	.4448	.52
.53	12	.4116	23	.4224	35	.4336	48	.4450	60	.4567	.53
.54	23	.4225	34	.4336	46	.4451	59	.4568	71	.4688	.54
.55	34	.4337	45	.4452	57	.4569	70	.4689	83	.4812	.55
.56			57	.4569	69	.4689	82	.4813	95	.4939	.56
.57					81	.4813	94	.4939	1.507	.5069	.57
.58							1.507	.5070	20	.5203	.58
.59									34	.5340	.59
	.55		.56		.57		.57		.59		

	.60		.61		.62		.63		.64		
	A	B	A	B	A	B	A	B	A	B	
.00	1.250	.0000	1.262	.0000	1.275	.0000	1.288	.0000	1.301	.0000	.00
.01	0	.0075	2	.0077	5	.0079	8	.0081	1	.0083	.01
.02	0	.0150	2	.0154	5	.0158	8	.0162	2	.0167	.02
.03	1	.0225	3	.0231	5	.0237	8	.0243	2	.0250	.03
.04	1	.0300	3	.0308	6	.0316	9	.0325	2	.0333	.04
.05	2	.0375	4	.0385	6	.0396	9	.0406	3	.0417	.05
.06	2	.0451	4	.0463	7	.0475	1.290	.0488	4	.0501	.06
.07	3	.0526	5	.0540	8	.0554	1	.0569	5	.0584	.07
.08	4	.0602	6	.0618	9	.0634	2	.0651	6	.0668	.08
.09	5	.0678	7	.0696	1.280	.0714	3	.0733	7	.0753	.09
.10	1.256	.0754	1.268	.0774	1.281	.0794	1.294	.0815	1.308	.0837	.10
.11	8	.0830	1.270	.0852	2	.0875	6	.0898	9	.0922	.11
.12	9	.0907	1	.0931	4	.0955	7	.0981	1.311	.1007	.12
.13	1.261	.0983	3	.1009	5	.1036	9	.1064	3	.1092	.13
.14	2	.1060	4	.1088	7	.1117	1.300	.1147	4	.1178	.14
.15	4	.1138	6	.1168	9	.1199	2	.1231	6	.1264	.15
.16	6	.1216	9	.1248	1.291	.1281	5	.1315	8	.1350	.16
.17	9	.1294	1.281	.1328	3	.1363	7	.1400	1.321	.1437	.17
.18	1.271	.1372	3	.1409	6	.1446	9	.1485	3	.1524	.18
.19	3	.1452	5	.1490	8	.1529	1.312	.1570	6	.1612	.19
.20	1.276	.1531	1.288	.1571	1.301	.1613	1.314	.1656	1.328	.1700	.20
.21	8	.1611	1.291	.1654	4	.1697	7	.1743	1.331	.1789	.21
.22	1.281	.1691	4	.1736	6	.1782	1.320	.1830	4	.1878	.22
.23	4	.1773	7	.1819	1.310	.1867	3	.1917	7	.1968	.23
.24	8	.1854	1.300	.1903	3	.1954	6	.2006	1.341	.2059	.24
.25	1.291	.1937	3	.1988	6	.2040	1.330	.2095	4	.2151	.25
.26	4	.2019	7	.2073	1.320	.2128	4	.2184	8	.2243	.26
.27	8	.2103	1.311	.2159	4	.2216	7	.2275	1.352	.2336	.27
.28	1.302	.2188	5	.2245	8	.2305	1.341	.2366	6	.2429	.28
.29	6	.2273	9	.2333	1.332	.2394	6	.2458	1.360	.2524	.29
.30	1.310	.2359	1.323	.2421	1.336	.2485	1.350	.2551	1.364	.2619	.30
.31	15	.2446	27	.2510	41	.2576	54	.2645	69	.2716	.31
.32	19	.2533	32	.2600	45	.2669	59	.2740	74	.2813	.32
.33	24	.2622	37	.2691	50	.2762	64	.2836	79	.2912	.33
.34	29	.2711	42	.2783	55	.2857	69	.2933	84	.3011	.34
.35	34	.2802	47	.2876	61	.2952	75	.3031	89	.3112	.35
.36	40	.2894	53	.2971	66	.3049	80	.3131	95	.3214	.36
.37	46	.2987	58	.3066	72	.3147	86	.3231	1.401	.3317	.37
.38	51	.3081	64	.3162	78	.3246	92	.3333	07	.3422	.38
.39	58	.3177	71	.3260	84	.3347	98	.3436	13	.3528	.39
.40	1.364	.3273	1.377	.3360	1.391	.3449	1.405	.3541	1.420	.3635	.40
.41	71	.3371	84	.3461	97	.3552	12	.3647	27	.3744	.41
.42	77	.3471	91	.3563	1.404	.3657	19	.3754	34	.3855	.42
.43	84	.3572	98	.3666	12	.3763	26	.3864	41	.3967	.43
.44	92	.3675	1.405	.3772	19	.3872	34	.3975	49	.4081	.44
.45	1.400	.3779	13	.3879	27	.3982	42	.4088	57	.4197	.45
.46	08	.3886	21	.3988	35	.4093	50	.4203	66	.4315	.46
.47	16	.3993	30	.4099	44	.4208	59	.4320	74	.4435	.47
.48	25	.4104	39	.4212	53	.4324	68	.4439	83	.4557	.48
.49	34	.4216	48	.4327	62	.4442	77	.4560	93	.4682	.49
	.60		.61		.62		.63		.64		

	.60		.61		.62		.63		.64		
	A	B	A	B	A	B	A	B	A	B	
.50	1.443	.4330	1.457	.4444	1.472	.4562	1.487	.4684	1.503	.4809	.50
.51	53	.4447	67	.4564	82	.4685	97	.4810	13	.4938	.51
.52	63	.4566	77	.4686	92	.4811	1.508	.4939	24	.5070	.52
.53	74	.4687	88	.4811	1.503	.4939	18	.5070	35	.5205	.53
.54	85	.4812	99	.4939	14	.5070	30	.5205	46	.5344	.54
.55	97	.4939	1.511	.5070	26	.5204	42	.5343	58	.5485	.55
.56	1.509	.5070	23	.5203	38	.5341	54	.5484	71	.5630	.56
.57	21	.5203	36	.5341	51	.5482	67	.5628	84	.5778	.57
.58	34	.5340	49	.5481	65	.5626	81	.5776	98	.5930	.58
.59	48	.5480	63	.5625	78	.5774	95	.5928	1.612	.6086	.59
.60	1.562	.5625	1.577	.5774	1.593	.5926	1.610	.6084	1.627	.6247	.60
.61			93	.5926	1.608	.6083	25	.6245	42	.6412	.61
.62					24	.6244	41	.6411	59	.6582	.62
.63							58	.6581	76	.6756	.63
.64									94	.6937	.64
	.60		.61		.62		.63		.64		

	.65		.66		.67		.68		.69.		
	A	B	A	B	A	B	A	B	A	B	
.00	1.316	.0000	1.331	.0000	1.347	.0000	1.364	.0000	1.382	.0000	.00
.01	6	.0086	1	.0088	7	.0090	4	.0093	2	.0095	.01
.02	6	.0171	1	.0176	7	.0181	4	.0186	2	.0191	.02
.03	6	.0257	2	.0264	8	.0271	5	.0278	2	.0286	.03
.04	7	.0342	2	.0352	8	.0361	5	.0371	3	.0382	.04
.05	8	.0428	3	.0440	9	.0452	6	.0464	3	.0477	.05
.06	8	.0514	3	.0528	1.350	.0542	6	.0557	4	.0573	.06
.07	9	.0600	4	.0616	0	.0633	7	.0651	5	.0669	.07
.08	1.320	.0686	5	.0705	1	.0724	8	.0744	6	.0765	.08
.09	1	.0773	7	.0794	3	.0816	9	.0838	7	.0862	.09
.10	1.322	.0860	1.338	.0883	1.354	.0907	1.371	.0932	1.389	.0958	.10
.11	4	.0947	9	.0972	5	.0999	2	.1026	1.390	.1055	.11
.12	6	.1034	1.341	.1062	7	.1091	4	.1121	2	.1152	.12
.13	7	.1121	3	.1152	9	.1183	6	.1216	3	.1250	.13
.14	9	.1209	4	.1242	1.360	.1276	7	.1311	5	.1348	.14
.15	1.331	.1298	6	.1333	2	.1369	9	.1407	7	.1446	.15
.16	3	.1386	9	.1424	5	.1463	1.382	.1503	1.400	.1545	.16
.17	5	.1476	1.351	.1516	7	.1557	4	.1600	2	.1645	.17
.18	8	.1565	3	.1608	9	.1652	7	.1697	5	.1744	.18
.19	1.340	.1655	6	.1700	1.372	.1747	9	.1795	7	.1845	.19
.20	1.343	.1746	1.359	.1793	1.375	.1842	1.392	.1893	1.410	.1946	.20
.21	6	.1837	1.361	.1887	8	.1939	5	.1992	3	.2048	.21
.22	9	.1929	5	.1981	1.381	.2035	8	.2092	6	.2150	.22
.23	1.352	.2021	8	.2076	4	.2133	1.401	.2192	1.420	.2253	.23
.24	6	.2115	1.371	.2172	8	.2231	5	.2293	3	.2357	.24
.25	9	.2209	5	.2268	1.391	.2330	9	.2395	27	.2461	.25
.26	1.363	.2303	8	.2366	5	.2430	1.412	.2497	31	.2567	.26
.27	7	.2399	1.382	.2464	9	.2531	17	.2601	35	.2673	.27
.28	1.371	.2495	7	.2562	1.403	.2633	21	.2705	39	.2781	.28
.29	75	.2592	1.391	.2662	08	.2735	25	.2810	44	.2889	.29
.30	1.379	.2690	1.395	.2763	1.412	.2839	1.430	.2917	1.448	.2998	.30
.31	84	.2789	1.400	.2865	17	.2943	35	.3024	53	.3108	.31
.32	89	.2889	05	.2967	22	.3049	40	.3133	58	.3220	.32
.33	94	.2990	10	.3071	27	.3155	45	.3242	64	.3332	.33
.34	99	.3092	15	.3176	32	.3263	50	.3353	69	.3447	.34
.35	1.405	.3196	21	.3282	38	.3372	56	.3465	75	.3562	.35
.36	11	.3301	27	.3390	44	.3483	62	.3579	81	.3679	.36
.37	16	.3406	33	.3499	50	.3595	68	.3694	87	.3797	.37
.38	23	.3514	39	.3609	56	.3708	75	.3810	94	.3916	.38
.39	29	.3623	46	.3721	63	.3823	81	.3928	1.500	.4038	.39
.40	1.436	.3733	1.452	.3834	1.470	.3939	1.488	.4048	1.507	.4161	.40
.41	43	.3845	59	.3949	77	.4057	95	.4169	15	.4285	.41
.42	50	.3958	67	.4066	84	.4177	1.503	.4292	22	.4412	.42
.43	57	.4074	74	.4184	92	.4298	11	.4417	30	.4540	.43
.44	65	.4191	82	.4305	1.500	.4422	19	.4544	39	.4671	.44
.45	74	.4310	91	.4427	08	.4548	27	.4674	47	.4804	.45
.46	82	.4431	99	.4551	17	.4676	36	.4805	56	.4939	.46
.47	91	.4554	1.508	.4678	26	.4806	45	.4938	65	.5076	.47
.48	1.500	.4680	17	.4807	36	.4938	55	.5075	75	.5216	.48
.49	10	.4808	27	.4938	45	.5074	65	.5214	85	.5359	.49
	.65		.66		.67		.68		.69		

	.65		.66		.67		.68		.69		
	A	B	A	B	A	B	A	B	A	B	
.50	1.519	.4938	1.537	.5072	1.555	.5211	1.575	.5355	1.595	.5504	.50
.51	30	.5072	48	.5209	66	.5351	86	.5499	1.606	.5652	.51
.52	41	.5207	58	.5348	77	.5494	97	.5646	17	.5803	.52
.53	52	.5346	70	.5490	89	.5641	1.608	.5796	29	.5950	.53
.54	63	.5488	81	.5636	1.600	.5791	20	.5950	41	.6116	.54
.55	76	.5633	94	.5786	13	.5944	33	.6108	54	.6278	.55
.56	88	.5781	1.607	.5938	26	.6100	46	.6269	68	.6444	.56
.57	1.602	.5934	20	.6095	40	.6262	60	.6434	82	.6613	.57
.58	15	.6090	34	.6255	54	.6426	74	.6603	96	.6788	.58
.59	30	.6250	49	.6420	68	.6595	89	.6777	1.711	.6966	.59
.60	1.645	.6415	1.664	.6589	1.684	.6769	1.705	.6956	1.727	.7150	.60
.61	61	.6585	80	.6763	1.700	.6948	21	.7140	44	.7339	.61
.62	77	.6759	96	.6940	17	.7132	38	.7329	61	.7533	.62
.63	94	.6939	1.714	.7127	35	.7322	56	.7524	79	.7734	.63
.64	1.713	.7124	32	.7318	53	.7518	75	.7725	98	.7941	.64
.65	32	.7316	52	.7514	73	.7720	95	.7933	1.818	.8154	.65
.66			72	.7718	93	.7929	1.815	.8148	39	.8375	.66
.67					1.815	.8146	37	.8371	61	.8604	.67
.68							60	.8602	84	.8842	.68
.69									1.909	.9088	.69
	.65		.66		.67		.68		.69		

	.70		.71		.72		.73		.74		
	A	B	A	B	A	B	A	B	A	B	
.00	1.400	.0000	1.420	.0000	1.441	.0000	1.463	.0000	1.487	.0000	.00
.01	0	.0098	0	.0101	1	.0104	3	.0107	7	.0110	.01
.02	1	.0196	0	.0202	1	.0208	3	.0214	7	.0220	.02
.03	1	.0294	1	.0303	2	.0311	4	.0321	7	.0330	.03
.04	1	.0392	1	.0404	2	.0415	4	.0428	8	.0440	.04
.05	2	.0491	2	.0505	3	.0519	5	.0535	9	.0551	.05
.06	3	.0589	3	.0606	4	.0624	6	.0642	9	.0661	.06
.07	4	.0688	4	.0707	5	.0728	7	.0750	1.490	.0772	.07
.08	5	.0787	5	.0809	6	.0833	8	.0857	1	.0883	.08
.09	6	.0886	6	.0911	7	.0938	9	.0965	3	.0994	.09
.10	1.407	.0985	1.427	.1013	1.448	.1043	1.471	.1073	1.494	.1106	.10
.11	9	.1085	9	.1116	1.450	.1148	2	.1182	6	.1218	.11
.12	1.411	.1185	1.430	.1219	2	.1254	4	.1291	8	.1328	.12
.13	2	.1285	2	.1322	3	.1360	6	.1400	1.499	.1442	.13
.14	4	.1386	4	.1425	5	.1467	8	.1510	1.501	.1555	.14
.15	6	.1487	6	.1530	7	.1574	1.480	.1620	4	.1669	.15
.16	9	.1589	9	.1634	1.460	.1682	2	.1731	6	.1783	.16
.17	1.421	.1691	1.441	.1739	2	.1790	5	.1843	9	.1898	.17
.18	4	.1794	4	.1845	5	.1899	7	.1955	1.511	.2013	.18
.19	6	.1897	6	.1951	8	.2008	1.490	.2067	4	.2129	.19
.20	1.429	.2001	1.449	.2058	1.471	.2118	1.493	.2180	1.517	.2246	.20
.21	1.432	.2105	1.452	.2166	4	.2229	7	.2294	21	.2363	.21
.22	5	.2211	6	.2274	7	.2340	1.500	.2409	24	.2481	.22
.23	9	.2316	9	.2383	1.481	.2452	3	.2524	28	.2600	.23
.24	1.442	.2423	1.463	.2492	84	.2565	7	.2641	31	.2720	.24
.25	46	.2531	67	.2603	88	.2679	1.511	.2758	35	.2841	.25
.26	50	.2639	71	.2715	92	.2794	15	.2876	1.540	.2962	.26
.27	54	.2749	75	.2827	97	.2909	20	.2995	44	.3085	.27
.28	59	.2859	79	.2941	1.501	.3026	24	.3115	49	.3209	.28
.29	63	.2970	84	.3055	06	.3144	29	.3237	53	.3334	.29
.30	1.468	.3083	1.489	.3171	1.511	.3263	1.534	.3359	1.559	.3460	.30
.31	73	.3196	94	.3287	16	.3383	39	.3483	64	.3587	.31
.32	78	.3311	99	.3405	21	.3504	44	.3608	69	.3716	.32
.33	83	.3426	1.504	.3524	26	.3627	50	.3734	75	.3846	.33
.34	89	.3544	10	.3645	32	.3751	56	.3861	81	.3977	.34
.35	95	.3662	16	.3767	38	.3877	62	.3991	87	.4111	.35
.36	1.501	.3783	22	.3891	45	.4004	68	.4122	94	.4245	.36
.37	07	.3904	28	.4015	51	.4132	75	.4254	1.600	.4382	.37
.38	14	.4027	35	.4142	58	.4262	1.582	.4388	07	.4520	.38
.39	21	.4152	42	.4270	65	.4394	89	.4524	15	.4660	.39
.40	1.528	.4278	1.549	.4400	1.572	.4528	1.597	.4662	1.622	.4801	.40
.41	35	.4406	57	.4532	80	.4664	1.604	.4802	30	.4945	.41
.42	43	.4536	65	.4666	88	.4802	12	.4943	38	.5092	.42
.43	51	.4669	73	.4802	96	.4942	21	.5087	47	.5240	.43
.44	59	.4803	81	.4940	1.605	.5084	29	.5234	56	.5391	.44
.45	68	.4940	90	.5080	14	.5228	38	.5382	65	.5544	.45
.46	77	.5078	99	.5223	23	.5375	48	.5534	74	.5699	.46
.47	86	.5219	1.609	.5368	33	.5524	58	.5688	84	.5858	.47
.48	96	.5363	19	.5517	43	.5677	68	.5844	95	.6020	.48
.49	1.606	.5510	29	.5667	53	.5832	79	.6004	1.706	.6184	.49
	.70		.71		.72		.73		.74		

	.70		.71		.72		.73		.74		
	A	B	A	B	A	B	A	B	A	B	
.50	1.617	.5659	1.640	.5821	1.664	.5990	1.690	.6167	1.717	.6352	.50
.51	28	.5812	51	.5978	75	.6152	1.701	.6333	28	.6523	.51
.52	39	.5967	62	.6138	87	.6316	13	.6503	40	.6697	.52
.53	51	.6126	74	.6301	99	.6484	25	.6676	53	.6876	.53
.54	64	.6289	87	.6468	1.712	.6657	38	.6853	66	.7058	.54
.55	77	.6455	1.700	.6640	25	.6833	52	.7034	80	.7245	.55
.56	90	.6626	14	.6815	39	.7013	66	.7220	94	.7436	.56
.57	1.704	.6800	28	.6995	54	.7198	81	.7410	1.809	.7632	.57
.58	19	.6979	43	.7179	69	.7387	96	.7605	25	.7833	.58
.59	34	.7163	59	.7367	85	.7581	1.812	.7805	41	.8039	.59
.60	1.750	.7352	1.775	.7562	1.801	.7781	1.829	.8011	1.858	.8251	.60
.61	67	.7546	92	.7762	19	.7987	47	.8223	76	.8469	.61
.62	85	.7746	1.810	.7967	37	.8199	65	.8440	91	.8675	.62
.63	1.803	.7952	29	.8180	56	.8417	84	.8665	1.914	.8925	.63
.64	22	.8164	48	.8398	75	.8642	1.904	.8897	35	.9164	.64
.65	43	.8384	69	.8624	96	.8874	25	.9136	56	.9410	.65
.66	64	.8611	90	.8858	1.918	.9115	48	.9365	79	.9665	.66
.67	86	.8847	1.913	.9100	41	.9364	71	.9641	2.003	.9929	.67
.68	1.910	.9091	37	.9351	65	.9619	96	.9907	28	1.0203	.68
.69	35	.9345	62	.9611	91	.9891	2.022	1.0183	54	1.0488	.69
.70	1.961	.9608	1.989	.9883	2.018	1.0170	2.049	1.0470	2.082	1.0784	.70
.71			2.017	1.0165	46	1.0461	78	1.0769	2.111	1.1093	.71
.72					76	1.0765	2.108	1.1082	42	1.1414	.72
.73							41	1.1409	75	1.1751	.73
.74									2.210	1.2104	.74
	.70		.71		.72		.73		.74		

	.75		.76		.77		.78		.79		
	A	B	A	B	A	B	A	B	A	B	
.00	1.512	.0000	1.539	.0000	.1.567	.0000	1.598	.0000	1.631	.0000	.00
.01	2	.0113	9	.0117	7	.0121	8	.0125	1	.0129	.01
.02	2	.0227	9	.0234	8	.0241	8	.0249	1	.0258	.02
.03	3	.0340	9	.0351	8	.0362	9	.0374	2	.0387	.03
.04	3	.0454	1.540	.0468	9	.0483	9	.0499	2	.0516	.04
.05	4	.0568	0	.0585	9	.0604	1.600	.0624	3	.0645	.05
.06	5	.0682	1	.0703	1.570	.0725	1	.0749	4	.0774	.06
.07	6	.0796	2	.0821	1	.0847	2	.0875	5	.0904	.07
.08	7	.0910	4	.0938	2	.0969	3	.1000	6	.1034	.08
.09	8	.1025	5	.1057	4	.1091	5	.1126	8	.1164	.09
.10	1.519	.1140	1.546	.1175	1.575	.1213	1.606	.1253	1.639	.1295	.10
.11	1.521	.1255	8	.1294	7	.1336	8	.1379	1.641	.1426	.11
.12	3	.1371	1.550	.1413	9	.1459	1.610	.1507	3	.1557	.12
.13	5	.1487	2	.1533	1.581	.1582	2	.1634	5	.1689	.13
.14	7	.1603	4	.1653	3	.1706	4	.1762	7	.1822	.14
.15	9	.1720	6	.1774	5	.1831	6	.1891	1.650	.1955	.15
.16	1.532	.1838	9	.1896	8	.1956	9	.2020	2	.2089	.16
.17	4	.1956	1.561	.2017	1.590	.2082	1.622	.2150	5	.2223	.17
.18	7	.2075	4	.2140	3	.2208	5	.2281	8	.2358	.18
.19	1.540	.2194	7	.2263	6	.2336	8	.2412	1.661	.2494	.19
.20	1.543	.2314	1.570	.2387	1.600	.2463	1.631	.2544	1.665	.2630	.20
.21	6	.2436	4	.2512	3	.2592	4	.2677	8	.2768	.21
.22	1.550	.2557	7	.2637	7	.2722	8	.2811	1.672	.2906	.22
.23	3	.2680	1.581	.2763	1.610	.2852	1.642	.2946	6	.3045	.23
.24	7	.2803	5	.2891	4	.2984	6	.3081	1.680	.3185	.24
.25	1.561	.2928	9	.3019	9	.3116	1.650	.3218	4	.3327	.25
.26	6	.3053	1.593	.3149	1.623	.3249	5	.3356	9	.3469	.26
.27	1.570	.3180	8	.3279	8	.3384	1.660	.3495	1.694	.3613	.27
.28	5	.3307	1.603	.3411	1.633	.3520	5	.3635	9	.3758	.28
.29	1.580	.3436	8	.3543	8	.3657	1.670	.3777	1.704	.3904	.29
.30	1.585	.3566	1.613	.3677	1.643	.3795	1.675	.3920	1.710	.4052	.30
.31	90	.3697	18	.3813	48	.3935	81	.4064	15	.4201	.31
.32	96	.3830	24	.3950	54	.4076	87	.4210	22	.4352	.32
.33	1.602	.3964	30	.4088	60	.4219	93	.4357	28	.4504	.33
.34	08	.4099	36	.4227	67	.4363	99	.4506	34	.4658	.34
.35	14	.4237	42	.4369	73	.4509	1.706	.4657	41	.4814	.35
.36	21	.4376	49	.4512	80	.4657	13	.4810	48	.4972	.36
.37	27	.4516	56	.4657	87	.4806	20	.4964	56	.5132	.37
.38	35	.4658	63	.4804	94	.4958	28	.5121	63	.5293	.38
.39	42	.4803	71	.4953	1.702	.5111	35	.5279	71	.5457	.39
.40	1.650	.4949	1.679	.5104	1.710	.5267	1.744	.5440	1.780	.5624	.40
.41	58	.5097	87	.5256	18	.5425	52	.5603	88	.5792	.41
.42	66	.5248	95	.5412	27	.5585	61	.5768	97	.5963	.42
.43	75	.5401	1.704	.5569	36	.5748	70	.5936	1.806	.6137	.43
.44	84	.5556	13	.5730	45	.5913	80	.6107	16	.6313	.44
.45	93	.5714	23	.5892	55	.6081	89	.6281	26	.6493	.45
.46	1.703	.5874	33	.6058	65	.6252	1.800	.6457	37	.6675	.46
.47	13	.6038	43	.6226	76	.6426	10	.6637	48	.6861	.47
.48	23	.6204	54	.6398	87	.6603	22	.6820	59	.7050	.48
.49	34	.6374	65	.6573	98	.6785	33	.7006	71	.7243	.49
	.75		.76		.77		.78		.79		

	.75		.76		.77		.78		.79		
	A	B	A	B	A	B	A	B	A	B	
.50	1.746	.6547	1.777	.6751	1.810	.6968	1.845	.7196	1.883	.7439	.50
.51	58	.6723	89	.6933	22	.7155	58	.7390	96	.7640	.51
.52	70	.6903	1.801	.7118	35	.7347	71	.7588	1.909	.7844	.52
.53	83	.7087	14	.7308	48	.7543	84	.7790	23	.8053	.53
.54	96	.7275	28	.7502	62	.7743	99	.7997	38	.8267	.54
.55	1.810	.7467	42	.7701	77	.7948	1.913	.8208	53	.8486	.55
.56	25	.7665	57	.7904	92	.8157	29	.8425	69	.8709	.56
.57	40	.7866	73	.8112	1.908	.8372	45	.8647	85	.8939	.57
.58	56	.8074	89	.8326	24	.8593	62	.8875	2.002	.9174	.58
.59	72	.8286	1.906	.8545	41	.8818	79	.9108	20	.9415	.59
.60	1.890	.8505	1.923	.8770	1.959	.9051	1.998	.9348	2.039	.9664	.60
.61	1.908	.8729	42	.9002	78	.9290	2.017	.9595	58	.9919	.61
.62	27	.8960	61	.9240	98	.9536	37	.9849	79	1.0181	.62
.63	47	.9199	81	.9486	2.018	.9790	58	1.0112	2.100	1.0453	.63
.64	68	.9444	2.002	.9739	40	1.0052	80	1.0381	23	1.0732	.64
.65	90	.9699	25	1.0002	62	1.0322	2.104	1.0669	46	1.1021	.65
.66	2.012	.9962	48	1.0273	86	1.0602	27	1.0950	71	1.1320	.66
.67	38	1.0234	73	1.0554	2.111	1.0892	53	1.1250	97	1.1629	.67
.68	62	1.0517	98	1.0845	38	1.1192	80	1.1560	2.225	1.1950	.68
.69	89	1.0810	2.126	1.1147	65	1.1505	2.208	1.1882	53	1.2283	.69
.70	2.117	1.1115	2.155	1.1462	2.195	1.1829	2.238	1.2218	2.284	1.2630	.70
.71	47	1.1432	85	1.1789	2.226	1.2167	69	1.2567	2.316	1.2990	.71
.72	79	1.1764	2.217	1.2132	58	1.2521	2.303	1.2932	50	1.3369	.72
.73	2.212	1.2112	51	1.2490	93	1.2891	38	1.3314	86	1.3763	.73
.74	48	1.2476	88	1.2865	2.330	1.3278	76	1.3714	2.425	1.4177	.74
.75	86	1.2858	2.326	1.3259	70	1.3684	2.416	1.4134	66	1.4610	.75
.76			67	1.3674	2.411	1.4112	59	1.4575	2.509	1.5067	.76
.77					56	1.4564	2.505	1.5042	56	1.5550	.77
.78							54	1.5536	2.606	1.6060	.78
.79									60	1.6602	.79
	.75		.76		.77		.78		.79		

	.80		.81		.82		.83		.84		
	A	B	A	B	A	B	A	B	A	B	
.00	1.667	.0000	1.705	.0000	1.747	.0000	1.793	.0000	1.843	.0000	.00
.01	7	.0133	5	.0138	7	.0143	3	.0149	3	.0155	.01
.02	7	.0267	6	.0276	7	.0287	3	.0298	3	.0310	02
.03	7	.0400	6	.0415	8	.0430	4	.0447	4	.0465	.03
.04	8	.0534	7	.0553	8	.0574	4	.0596	4	.0620	.04
.05	9	.0668	7	.0691	9	.0717	5	.0745	5	.0775	.05
.06	1.670	.0801	8	.0830	1.750	.0861	6	.0894	6	.0931	.06
.07	1	.0936	9	.0969	1	.1005	7	.1044	8	.1086	.07
.08	2	.1070	1.711	.1109	3	.1150	9	.1194	9	.1242	.08
.09	4	.1205	2	.1248	4	.1295	1.800	.1345	1.851	.1399	.09
.10	1.675	.1340	1.714	.1387	1.756	.1440	1.802	.1496	1.852	.1556	.10
.11	7	.1476	6	.1529	9	.1586	4	.1647	4	.1713	.11
.12	9	.1612	8	.1670	1.760	.1732	6	.1799	6	.1871	.12
.13	1.681	.1748	1.720	.1811	2	.1878	8	.1951	9	.2030	.13
.14	3	.1885	2	.1953	4	.2026	1.811	.2104	1.861	.2189	.14
.15	6	.2023	5	.2095	7	.2173	3	.2258	4	.2349	.15
.16	9	.2161	8	.2239	1.770	.2322	6	.2412	7	.2509	.16
.17	1.691	.2300	1.730	.2383	3	.2472	9	.2567	1.870	.2671	.17
.18	4	.2440	4	.2527	6	.2622	1.823	.2723	4	.2833	.18
.19	8	.2581	7	.2673	1.780	.2773	6	.2880	7	.2996	.19
.20	1.701	.2722	1.740	.2819	1.783	.2924	1.830	.3037	1.881	.3160	.20
.21	5	.2864	4	.2967	7	.3077	4	.3196	5	.3325	.21
.22	9	.3007	8	.3115	1.791	.3231	8	.3356	9	.3491	.22
.23	1.713	.3151	1.752	.3264	5	.3386	1.842	.3517	1.894	.3659	.23
.24	7	.3296	7	.3415	1.800	.3542	7	.3679	8	.3827	.24
.25	1.721	.3443	1.761	.3566	4	.3699	1.852	.3842	1.903	.3997	.25
.26	6	.3590	6	.3719	9	.3857	7	.4007	9	.4168	.26
.27	1.731	.3739	1.771	.3873	1.814	.4017	1.862	.4173	1.914	.4341	.27
.28	6	.3889	6	.4029	1.820	.4179	8	.4340	1.920	.4516	.28
.29	1.742	.4040	1.782	.4185	5	.4341	1.873	.4509	6	.4691	.29
.30	1.747	.4193	1.788	.4344	1.831	.4505	1.879	.4680	1.932	.4869	.30
.31	53	.4347	94	.4505	38	.4671	86	.4852	38	.5048	.31
.32	59	.4504	1.800	.4665	44	.4839	92	.5026	45	.5229	.32
.33	66	.4661	06	.4828	51	.5008	99	.5202	52	.5412	.33
.34	72	.4820	13	.4993	58	.5179	1.906	.5380	60	.5597	.34
.35	79	.4982	20	.5161	65	.5353	14	.5560	67	.5784	.35
.36	87	.5145	28	.5330	73	.5528	22	.5742	76	.5974	.36
.37	94	.5310	35	.5501	81	.5706	30	.5927	84	.6166	.37
.38	1.802	.5478	43	.5674	89	.5886	38	.6113	92	.6360	.38
.39	10	.5647	52	.5850	97	.6068	47	.6303	2.001	.6557	.39
.40	1.819	.5819	1.861	.6028	1.906	.6253	1.956	.6495	2.011	.6757	.40
.41	27	.5994	70	.6209	16	.6440	66	.6689	21	.6959	.41
.42	37	.6171	79	.6392	25	.6630	76	.6887	31	.7165	.42
.43	46	.6350	89	.6578	35	.6823	86	.7087	41	.7373	.43
.44	56	.6533	99	.6768	46.	7020	97	.7292	52	.7586	.44
.45	66	.6719	1.909	.6960	56	.7219	2.008	.7499	64	.7801	.45
.46	77	.6907	20	.7155	68	.7422	19	.7709	76	.8020	.46
.47	88	.7100	32	.7354	79	.7628	31	.7924	88	.8243	.47
.48	1.900	.7296	44	.7557	92	.7839	44	.8142	2.101	.8470	.48
.49	12	.7495	56	.7764	2.004	.8053	57	.8365	14	.8702	.49
	.80		.81		.82		.83		.84		

	.80		.81		.82.		.83		.84		
	A	B	A	B	A	B	A	B	A	B	
.50	1.925	.7698	1.969	.7974	2.017	.8271	2.070	.8592	2.128	.8938	.50
.51	38	.7906	82	.8190	31	.8494	84	.8823	43	.9179	.51
.52	51	.8117	96	.8408	45	.8721	99	.9059	58	.9424	.52
.53	65	.8333	2.011	.8632	60	.8954	2.114	.9300	73	.9676	.53
.54	80	.8554	26	.8861	76	.9191	30	.9547	90	.9932	.54
.55	96	.8781	42	.9096	92	.9435	47	.9800	2.207	1.0195	.55
.56	2.012	.9012	58	.9336	2.109	.9683	64	1.0058	25	1.0464	.56
.57	29	.9250	75	.9582	26	.9939	82	1.0324	43	1.0740	.57
.58	46	.9493	93	.9834	45	1.0200	2.201	1.0596	62	1.1023	.58
.59	64	.9743	2.112	1.0093	64	1.0468	21	1.0874	83	1.1313	.59
.60	2.083	1.0000	2.131	1.0359	2.184	1.0745	2.241	1.1161	2.304	1.1611	.60
.61	2.103	1.0265	52	1.0633	2.205	1.1028	63	1.1456	26	1.1918	.61
.62	24	1.0536	73	1.0914	27	1.1321	85	1.1759	49	1.2233	.62
.63	46	1.0817	96	1.1205	50	1.1622	2.309	1.2072	73	1.2559	.63
.64	69	1.1105	2.219	1.1504	74	1.1932	33	1.2394	98	1.2894	.64
.65	93	1.1405	44	1.1814	99	1.2254	59	1.2728	2.425	1.3242	.65
.66	2.219	1.1714	70	1.2134	2.326	1.2586	87	1.3073	53	1.3601	.66
.67	45	1.2034	97	1.2466	54	1.2930	2.415	1.3431	83	1.3973	.67
.68	73	1.2366	2.326	1.2810	83	1.3287	45	1.3801	2.514	1.4358	.68
.69	2.303	1.2711	56	1.3167	2.414	1.3657	77	1.4186	46	1.4758	.69
.70	2.334	1.3070	2.388	1.3539	2.446	1.4043	2.511	1.4587	2.581	1.5175	.70
.71	67	1.3443	2.421	1.3925	81	1.4444	46	1.5003	2.617	1.5608	.71
.72	2.402	1.3834	57	1.4330	2.518	1.4864	84	1.5440	56	1.6062	.72
.73	39	1.4242	95	1.4753	56	1.5303	2.623	1.5895	97	1.6536	.73
.74	78	1.4670	2.535	1.5197	98	1.5762	66	1.6373	2.740	1.7033	.74
.75	2.520	1.5119	78	1.5662	2.641	1.6245	2.711	1.6874	86	1.7554	.75
.76	64	1.5592	2.624	1.6151	88	1.6752	59	1.7401	2.836	1.8102	.76
.77	2.612	1.6091	73	1.6669	2.738	1.7289	2.810	1.7959	89	1.8683	.77
.78	63	1.6620	2.725	1.7216	92	1.7857	65	1.8549	2.945	1.9296	.78
.79	2.718	1.7180	81	1.7797	2.850	1.8459	2.924	1.9174	3.006	1.9947	.79
.80	2.778	1.7779	2.842	1.8417	2.912	1.9102	2.988	1.9842	3.072	2.0642	.80
.81			2.908	1.9077	79	1.9788	3.057	2.0554	3.143	2.1383	.81
.82					3.052	2.0524	3.132	2.1319	3.220	2.2179	.82
.83							3.214	2.2145	3.304	2.3038	.83
.84									3.397	2.3966	.84
	.80		.81		.82		.83		.84		

	.85		.86		.87		.88		.89		
	A	B	A	B	A	B	A	B	A	B	
.00	1.898	.0000	1.960	.0000	2.028	.0000	2.105	.0000	2.193	.0000	.00
.01	8	.0161	0	.0169	8	.0176	6	.0185	3	.0195	.01
.02	9	.0323	0	.0337	9	.0353	6	.0371	4	.0390	.02
.03	9	.0484	1	.0506	9	.0530	6	.0556	4	.0586	.03
.04	1.900	.0646	1	.0675	2.030	.0706	7	.0742	5	.0781	.04
.05	1	.0808	2	.0844	1	.0883	8	.0928	6	.0977	.05
.06	2	.0970	3	.1013	2	.1061	9	.1114	7	.1173	.06
.07	3	.1132	5	.1183	3	.1238	2.111	.1300	9	.1370	.07
.08	4	.1295	6	.1353	5	.1416	2	.1487	2.200	.1567	.08
.09	6	.1458	8	.1523	7	.1595	4	.1674	2	.1764	.09
.10	1.908	.1622	1.969	.1694	2.038	.1773	2.116	.1862	2.204	.1962	.10
.11	1.910	.1786	1.972	.1865	2.041	.1953	8	.2050	7	.2160	.11
.12	2	.1950	4	.2037	3	.2133	2.121	.2240	9	.2359	.12
.13	5	.2116	7	.2210	6	.2314	4	.2429	2.212	.2559	.13
.14	7	.2281	9	.2383	8	.2495	6	.2619	5	.2760	.14
.15	1.920	.2447	1.982	.2557	2.051	.2677	9	.2811	8	.2961	.15
.16	3	.2616	5	.2732	5	.2860	2.133	.3003	2.222	.3164	.16
.17	6	.2784	9	.2907	8	.3044	7	.3196	6	.3367	.17
.18	1.930	.2953	1.992	.3084	2.062	.3229	2.140	.3390	2.230	.3572	.18
.19	4	.3123	6	.3262	6	.3415	5	.3586	4	.3778	.19
.20	1.937	.3294	2.000	.3440	2.070	.3602	2.149	.3782	2.238	.3984	.20
.21	1.942	.3466	4	.3620	4	.3790	2.153	.3979	2.243	.4193	.21
.22	6	.3639	9	.3801	9	.3979	8	.4178	8	.4402	.22
.23	1.951	.3813	2.014	.3983	2.084	.4170	2.163	.4379	2.254	.4613	.23
.24	5	.3989	9	.4167	9	.4362	9	.4581	9	.4826	.24
.25	1.961	.4166	2.024	.4352	2.095	.4556	2.174	.4784	2.265	.5040	.25
.26	66	.4345	29	.4538	2.100	.4751	80	.4989	71	.5256	.26
.27	72	.4525	35	.4726	06	.4948	87	.5196	78	.5474	.27
.28	77	.4706	41	.4916	13	.5147	93	.5404	85	.5693	.28
.29	84	.4889	48	.5107	19	.5347	2.200	.5614	92	.5915	.29
.30	1.990	.5075	2.054	.5300	2.126	.5549	2.207	.5827	2.299	.6139	.30
.31	97	.5261	61	.5495	33	.5754	14	.6041	07	.6364	.31
.32	2.004	.5450	68	.5693	41	.5960	22	.6258	15	.6593	.32
.33	11	.5641	76	.5891	48	.6168	30	.6477	23	.6824	.33
.34	18	.5833	84	.6093	57	.6379	39	.6698	32	.7057	.34
.35	26	.6029	92	.6297	65	.6593	48	.6922	41	.7293	.35
.36	35	.6226	2.101	.6503	74	.6809	57	.7150	51	.7532	.36
.37	43	.6426	09	.6712	83	.7028	66	.7379	61	.7774	.37
.38	52	.6629	19	.6924	93	.7249	76	.7611	71	.8019	.38
.39	62	.6834	28	.7138	2.203	.7473	86	.7847	82	.8267	.39
.40	2.071	.7042	2.138	.7355	2.213	.7701	2.297	.8086	2.393	.8519	.40
.41	81	.7253	49	.7576	24	.7932	2.308	.8329	2.405	.8774	.41
.42	92	.7467	59	.7800	35	.8166	20	.8574	17	.9034	.42
.43	2.103	.7685	71	.8027	46	.8404	32	.8824	29	.9297	.43
.44	14	.7906	82	.8258	59	.8646	45	.9078	42	.9564	.44
.45	26	.8131	94	.8493	71	.8892	58	.9336	56	.9836	.45
.46	38	.8359	2.207	.8731	84	.9141	71	.9598	70	1.0112	.46
.47	51	.8592	20	.8974	98	.9395	85	.9865	85	1.0394	.47
.48	64	.8829	34	.9222	2.312	.9654	2.400	1.0137	2.500	1.0680	.48
.49	78	.9070	48	.9474	27	.9919	15	1.0415	16	1.0972	.49
	.85		.86		.87		.88		.89		

	.85		.86		.87		.88		.89		
	A	B	A	B	A	B	A	B	A	B	
.50	2.192	.9316	2.263	.9730	2.342	1.0188	2.431	1.0697	2.532	1.1270	.50
.51	2.207	.9567	78	.9993	58	1.0462	48	1.0985	50	1.1574	.51
.52	22	.9823	94	1.0260	74	1.0742	65	1.1279	68	1.1883	.52
.53	38	1.0084	2.311	1.0533	92	1.1028	83	1.1579	86	1.2199	.53
.54	55	1.0352	28	1.0813	2.410	1.1321	2.501	1.1887	2.606	1.2523	.54
.55	73	1.0626	47	1.1099	29	1.1621	21	1.2202	26	1.2855	.55
.56	91	1.0906	65	1.1392	48	1.1927	41	1.2523	47	1.3194	.56
.57	2.310	1.1194	85	1.1692	69	1.2241	62	1.2854	69	1.3541	.57
.58	30	1.1489	2.406	1.2000	90	1.2564	85	1.3192	92	1.3898	.58
.59	51	1.1790	27	1.2315	2.512	1.2894	2.608	1.3538	2.716	1.4263	.59
.60	2.373	1.2102	2.450	1.2640	2.535	1.3234	2.632	1.3896	2.742	1.4640	.60
.61	96	1.2422	73	1.2974	60	1.3584	57	1.4263	68	1.5026	.61
.62	2.419	1.2750	98	1.3317	85	1.3943	83	1.4640	95	1.5424	.62
.63	44	1.3090	2.524	1.3672	2.612	1.4315	2.711	1.5030	2.824	1.5835	.63
.64	70	1.3439	50	1.4037	39	1.4697	40	1.5432	54	1.6258	.64
.65	98	1.3801	79	1.4415	69	1.5093	70	1.5847	86	1.6696	.65
.66	2.527	1.4175	2.609	1.4806	2.700	1.5502	2.802	1.6277	2.919	1.7149	.66
.67	57	1.4563	40	1.5211	32	1.5926	36	1.6722	54	1.7618	.67
.68	89	1.4965	73	1.5631	66	1.6365	72	1.7184	91	1.8103	.68
.69	2.623	1.5382	2.708	1.6066	2.802	1.6822	2.909	1.7662	3.030	1.8608	.69
.70	2.658	1.5816	2.744	1.6520	2.840	1.7296	2.948	1.8161	3.071	1.9133	.70
.71	96	1.6268	83	1.6992	80	1.7790	90	1.8680	3.114	1.9679	.71
.72	2.735	1.6741	2.824	1.7486	2.923	1.8307	3.034	1.9223	60	2.0252	.72
.73	78	1.7235	67	1.8002	68	1.8848	81	1.9790	3.209	2.0850	.73
.74	2.822	1.7753	2.914	1.8543	3.016	1.9414	3.130	2.0385	61	2.1476	.74
.75	70	1.8296	63	1.9111	66	2.0008	83	2.1009	3.316	2.2134	.75
.76	2.921	1.8868	3.015	1.9707	3.121	2.0633	3.239	2.1665	74	2.2825	.76
.77	75	1.9473	71	2.0339	79	2.1295	3.300	2.2359	3.437	2.3557	.77
.78	3.033	2.0112	3.132	2.1007	3.241	2.1994	64	2.3093	3.505	2.4330	.78
.79	96	2.0790	96	2.1716	3.308	2.2736	3.434	2.3872	77	2.5151	.79
.80	3.164	2.1515	3.266	2.2471	3.380	2.3528	3.509	2.4704	3.655	2.6026	.80
.81	3.237	2.2287	3.342	2.3278	3.458	2.4372	3.590	2.5590	3.740	2.6960	.81
.82	3.317	2.3116	3.424	2.4145	3.543	2.5279	3.678	2.6543	3.832	2.7964	.82
.83	3.403	2.4012	3.514	2.5079	3.636	2.6258	3.775	2.7571	3.932	2.9047	.83
.84	3.499	2.4980	3.612	2.6091	3.738	2.7317	3.880	2.8683	4.042	3.0219	.84
.85	3.604	2.6035	3.720	2.7194	3.850	2.8471	3.997	2.9895	4.163	3.1496	.85
.86			3.840	2.8404	3.975	2.9739	4.126	3.1226	4.298	3.2897	.86
.87					4.114	3.1136	4.249	3.2531	4.448	3.4442	.87
.88							4.433	3.4327	4.618	3.6165	.88
.89									4.810	3.8101	.89
	.85		.86		.87		.88		.89		

	.90		.91		.92		.93		.94		
	A	B	A	B	A	B	A	B	A	B	
.00	2.294	.0000	.2.412	.0000	2.552	.0000	2.721	.0000	2.931	.0000	.00
.01	4	.0206	2	.0219	2	.0235	1	.0253	1	.0276	.01
.02	5	.0413	2	.0439	2	.0470	1	.0506	2	.0551	.02
.03	5	.0620	3	.0659	3	.0705	2	.0759	2	.0827	.03
.04	6	.0827	4	.0879	4	.0940	3	.1013	3	.1103	.04
.05	7	.1034	5	.1099	5	.1175	4	.1267	5	.1379	.05
.06	8	.1241	6	.1319	6	.1411	5	.1521	6	.1656	.06
.07	2.300	.1449	8	.1540	8	.1647	7	.1775	8	.1933	.07
.08	2	.1657	2.420	.1761	2.560	.1884	9	.2031	2.940	.2211	.08
.09	4	.1866	2	.1983	2	.2121	2.732	.2287	3	.2490	.09
.10	2.306	.2075	2.424	.2206	2.564	.2359	2.734	.2543	2.946	.2769	.10
.11	8	.2285	7	.2429	7	.2598	7	.2800	9	.3049	.11
.12	2.311	.2496	2.430	.2653	2.570	.2838	2.740	.3058	2.952	.3330	.12
.13	4	.2707	3	.2878	4	.3078	4	.3317	6	.3613	.13
.14	7	.2919	6	.3103	7	.3319	8	.3577	2.960	.3895	.14
.15	2.320	.3133	9	.3330	2.581	.3561	2.752	.3838	5	.4180	.15
.16	4	.3347	2.443	.3558	5	.3805	6	.4101	9	.4466	.16
.17	8	.3562	8	.3786	9	.4050	2.761	.4365	2.974	.4753	.17
.18	2.332	.3778	2.452	.4016	2.594	.4296	6	.4630	2.980	.5042	.18
.19	7	.3996	7	.4248	9	.4543	2.771	.4897	6	.5332	.19
.20	2.341	.4215	2.462	.4480	2.604	.4792	2.777	.5164	2.991	.5624	.20
.21	47	.4435	67	.4714	10	.5042	2.783	.5434	8	.5918	.21
.22	52	.4657	72	.4950	16	.5294	89	.5706	3.005	.6214	.22
.23	57	.4880	78	.5187	22	.5548	95	.5979	12	.6511	.23
.24	63	.5105	84	.5426	28	.5804	2.802	.6255	19	.6812	.24
.25	69	.5331	91	.5667	35	.6061	10	.6533	27	.7114	.25
.26	76	.5560	98	.5910	42	.6321	17	.6813	35	.7419	.26
.27	83	.5790	2.505	.6155	50	.6583	26	.7095	44	.7726	.27
.28	90	.6023	12	.6402	58	.6847	34	.7380	53	.8036	.28
.29	97	.6257	20	.6651	66	.7113	43	.7666	63	.8349	.29
.30	2.405	.6494	2.528	.6903	2.675	.7382	2.852	.7957	3.073	.8665	.30
.31	13	.6732	37	.7156	84	.7654	62	.8250	83	.8984	.31
.32	22	.6974	46	.7413	93	.7929	72	.8546	94	.9306	.32
.33	30	.7218	55	.7672	2.703	.8206	82	.8845	3.105	.9631	.33
.34	39	.7465	65	.7935	13	.8487	93	.9147	17	.9961	.34
.35	49	.7715	75	.8200	24	.8771	2.904	.9453	29	1.0294	.35
.36	59	.7968	85	.8469	35	.9059	16	.9763	42	1.0632	.36
.37	69	.8223	96	.8741	47	.9349	28	1.0077	55	1.0973	.37
.38	80	.8483	2.608	.9017	59	.9644	41	1.0394	69	1.1319	.38
.39	92	.8745	20	.9298	71	.9942	55	1.0716	83	1.1670	.39
.40	2.503	.9012	2.632	.9579	2.784	1.0245	2.968	1.1042	3.198	1.2025	.40
.41	15	.9282	44	.9866	98	1.0553	83	1.1374	3.214	1.2386	.41
.42	28	.9556	58	1.0158	2.812	1.0864	98	1.1709	30	1.2751	.42
.43	41	.9834	71	1.0453	26	1.1180	3.013	1.2050	46	1.3122	.43
.44	55	1.0117	86	1.0754	41	1.1502	30	1.2398	64	1.3500	.44
.45	69	1.0404	2.701	1.1060	57	1.1829	47	1.2750	82	1.3884	.45
.46	84	1.0697	16	1.1370	74	1.2161	64	1.3107	3.301	1.4274	.46
.47	99	1.0994	32	1.1686	91	1.2499	82	1.3472	21	1.4670	.47
.48	2.615	1.1298	49	1.2009	2.909	1.2844	3.101	1.3844	41	1.5075	.48
.49	32	1.1607	67	1.2338	27	1.3196	21	1.4223	63	1.5488	.49
	.90		.91		.92		.93		.94		

	.90		.91		.92		.93		.94		
	A	B	A	B	A	B	A	B	A	B	
.50	2.649	1.1921	2.785	1.2672	2.946	1.3553	3.141	1.4608	3.385	1.5907	.50
.51	67	1.2242	2.804	1.3014	66	1.3919	63	1.5002	3.408	1.6337	.51
.52	86	1.2570	24	1.3361	87	1.4291	85	1.5403	31	1.6773	.52
.53	2.705	1.2904	44	1.3717	3.009	1.4671	3.208	1.5813	56	1.7220	.53
.54	26	1.3247	66	1.4082	32	1.5061	32	1.6233	82	1.7677	.54
.55	47	1.3598	88	1.4454	55	1.5460	58	1.6663	3.510	1.8145	.55
.56	69	1.3956	2.911	1.4835	80	1.5867	84	1.7102	38	1.8623	.56
.57	92	1.4324	36	1.5226	3.106	1.6286	3.311	1.7553	67	1.9114	.57
.58	2.816	1.4702	61	1.5627	32	1.6714	40	1.8015	98	1.9617	.58
.59	41	1.5088	87	1.6038	60	1.7154	69	1.8488	3.630	2.0133	.59
.60	2.868	1.5486	3.015	1.6461	3.189	1.7606	3.401	1.8976	3.664	2.0664	.60
.61	95	1.5895	44	1.6896	3.220	1.8071	33	1.9478	99	2.1210	.61
.62	2.924	1.6316	74	1.7344	52	1.8549	67	1.9993	3.736	2.1772	.62
.63	54	1.6750	3.106	1.7806	86	1.9044	3.503	2.0526	74	2.2352	.63
.64	86	1.7198	39	1.8280	3.321	1.9552	41	2.1074	3.815	2.2948	.64
.65	3.019	1.7661	74	1.8773	58	2.0079	80	2.1641	57	2.3566	.65
.66	54	1.8140	3.210	1.9282	96	2.0623	3.621	2.2228	3.902	2.4206	.66
.67	91	1.8636	49	1.9810	3.437	2.1188	65	2.2836	48	2.4868	.67
.68	3.129	1.9150	90	2.0356	80	2.1772	3.711	2.3466	98	2.5553	.68
.69	70	1.9684	3.332	2.0924	3.525	2.2379	59	2.4120	4.050	2.6266	.69
.70	3.213	2.0239	3.377	2.1514	3.573	2.3010	3.810	2.4801	4.104	2.7007	.70
.71	58	2.0817	3.425	2.2128	3.623	2.3667	63	2.5509	62	2.7779	.71
.72	3.306	2.1422	76	2.2771	77	2.4356	3.920	2.6251	4.224	2.8586	.72
.73	57	2.2055	3.529	2.3444	3.734	2.5074	81	2.7026	89	2.9430	.73
.74	3.411	2.2717	86	2.4148	94	2.5828	4.045	2.7838	4.356	3.0300	.74
.75	69	2.3413	3.647	2.4888	3.858	2.6619	4.113	2.8690	4.432	3.1242	.75
.76	3.530	2.4145	3.711	2.5665	3.926	2.7450	86	2.9586	4.510	3.2218	.76
.77	96	2.4918	80	2.6488	99	2.8330	4.264	3.0535	4.594	3.3251	.77
.78	3.666	2.5736	3.854	2.7357	4.077	2.9260	4.348	3.1537	4.684	3.4342	.78
.79	3.742	2.6604	3.934	2.8280	4.162	3.0247	4.437	3.2601	4.781	3.5501	.79
.80	3.824	2.7531	4.020	2.9265	4.253	3.1301	4.534	3.3736	4.885	3.6737	.80
.81	3.912	2.8519	4.113	3.0315	4.351	3.2424	4.639	3.4947	4.998	3.8056	.81
.82	4.008	2.9581	4.214	3.1443	4.458	3.3630	4.753	3.6248	5.121	3.9472	.82
.83	4.113	3.0726	4.324	3.2661	4.575	3.4933	4.878	3.7652	5.255	4.1001	.83
.84	4.228	3.1965	4.445	3.3978	4.703	3.6342	5.014	3.9170	5.402	4.2654	.84
.85	4.355	3.3317	4.579	3.5415	4.844	3.7878	5.165	4.0825	5.564	4.4457	.85
.86	4.496	3.4798	4.727	3.6990	5.000	3.9563	5.332	4.2642	5.744	4.6435	.86
.87	4.653	3.6434	4.892	3.8728	5.175	4.1422	5.518	4.4645	5.945	4.8617	.87
.88	4.830	3.8255	5.078	4.0665	5.372	4.3493	5.728	4.6878	6.171	5.1047	.88
.89	5.032	4.0303	5.290	4.2842	5.596	4.5822	5.967	4.9387	6.428	5.3781	.89
.90	5.263	4.2634	5.533	4.5319	5.854	4.8470	6.242	5.2242	6.725	5.6889	.90
.91			5.817	4.8173	6.154	5.1523	6.562	5.5533	7.070	6.0473	.91
.92					6.511	5.5107	6.942	5.9395	7.479	6.4678	.92
.93							7.402	6.4017	7.974	6.9712	.93
.94									8.591	7.5913	.94
	.90		.91		.92		.93		.94		

	.95		.96		.97		.98		.99		
	A	B	A	B	A	B	A	B	A	B	
.00	3.203	.0000	3.571	.0000	4.113	.0000	5.025	.0000	7.089	.0000	.00
.01	3	.0304	2	.0343	4	.0399	5	.0492	9	.0702	.01
.02	3	.0609	2	.0686	4	.0798	6	.0985	7.090	.1404	.02
.03	4	.0913	3	.1029	5	.1198	7	.1478	2	.2106	.03
.04	5	.1218	4	.1373	7	.1597	9	.1971	4	.2809	.04
.05	7	.1523	6	.1716	9	.1998	5.031	.2465	8	.3513	.05
.06	8	.1829	8	.2061	4.121	.2398	4	.2960	7.102	.4218	.06
.07	3.210	.2135	3.580	.2406	4	.2800	8	.3456	6	.4925	.07
.08	3	.2442	3	.2752	7	.3202	5.041	.3952	7.111	.5632	.08
.09	6	.2749	6	.3098	4.130	.3606	6	.4450	18	.6342	.09
.10	3.219	.3058	3.589	.3446	4.134	.4010	5.050	.4949	7.124	.7053	.10
.11	3.222	.3367	3.593	.3794	9	.4416	6	.5450	32	.7767	.11
.12	6	.3678	7	.4144	4.144	.4823	5.062	.5953	41	.8483	.12
.13	3.230	.3989	3.602	.4495	49	.5232	68	.6457	50	.9202	.13
.14	4	.4302	07	.4848	54	.5641	75	.6963	59	.9922	.14
.15	9	.4616	12	.5201	60	.6053	82	.7471	70	1.0647	.15
.16	3.245	.4932	18	.5558	67	.6468	91	.7983	82	1.1376	.16
.17	50	.5249	24	.5915	74	.6884	5.100	.8496	94	1.2107	.17
.18	56	.5567	31	.6274	82	.7301	09	.9012	7.206	1.2842	.18
.19	62	.5888	38	.6635	90	.7722	19	.9531	21	1.3582	.19
.20	3.269	.6210	3.645	.6998	4.198	.8145	5.129	1.0052	7.235	1.4325	.20
.21	76	.6535	53	.7364	4.207	.8570	40	1.0578	50	1.5074	.21
.22	83	.6861	61	.7732	17	.8998	51	1.1106	67	1.5827	.22
.23	91	.7190	70	.8102	27	.9430	63	1.1638	84	1.6585	.23
.24	99	.7522	79	.8476	37	.9864	76	1.2175	7.302	1.7350	.24
.25	3.308	.7856	89	.8852	48	1.0302	90	1.2715	21	1.8120	25
.26	17	.8192	99	.9231	60	1.0743	5.204	1.3260	41	1.8896	.26
.27	26	.8532	3.709	.9615	72	1.1189	19	1.3810	62	1.9680	.27
.28	36	.8874	20	1.0000	85	1.1638	35	1.4364	84	2.0470	.28
.29	46	.9219	32	1.0389	98	1.2091	51	1.4923	7.407	2.1266	.29
.30	3.357	.9568	3.744	1.0782	4.312	1.2549	5.268	1.5488	7.431	2.2071	.30
.31	68	.9920	56	1.1179	27	1.3010	85	1.6057	56	2.2882	.31
.32	80	1.0276	70	1.1580	42	1.3477	5.304	1.6634	82	2.3704	.32
.33	93	1.0635	83	1.1985	57	1.3948	23	1.7215	7.509	2.4533	.33
.34	3.405	1.0999	97	1.2395	74	1.4425	43	1.7804	38	2.5371	.34
.35	19	1.1368	3.812	1.2810	91	1.4908	64	1.8400	67	2.6221	.35
.36	33	1.1741	28	1.3230	4.409	1.5397	86	1.9004	98	2.7081	.36
.37	47	1.2117	44	1.3655	28	1.5891	5.409	1.9613	7.630	2.7950	.37
.38	62	1.2499	61	1.4085	47	1.6392	33	2.0231	64	2.8831	.38
.39	78	1.2886	79	1.4521	67	1.6900	57	2.0858	98	2.9724	.39
.40	3.494	1.3279	3.897	1.4964	4.488	1.7414	5.483	2.1493	7.735	3.0629	.40
.41	3.511	1.3677	3.916	1.5412	4.510	1.7936	5.510	2.2138	772	3.1547	.41
.42	29	1.4080	35	1.5867	33	1.8466	37	2.2792	811	3.2479	.42
.43	47	1.4490	56	1.6329	56	1.9003	66	2.3455	852	3.3424	.43
.44	66	1.4908	77	1.6799	81	1.9551	96	2.4130	894	3.4387	.44
.45	86	1.5331	99	1.7277	4.606	2.0106	5.627	2.4816	938	3.5364	.45
.46	3.607	1.5762	4.022	1.7762	33	2.0671	59	2.5513	983	3.6356	.46
.47	28	1.6200	46	1.8256	60	2.1246	93	2.6222	8.031	3.7368	47
.48	51	1.6647	71	1.8759	89	2.1832	5.728	2.6945	081	3.8399	.48
.49	74	1.7102	97	1.9273	4.719	2.2429	65	2.7683	132	3.9450	.49
	.95		.96		.97		.98		.99		

	.95		.96		.97		.98		.99		
	A	B	A	B	A	B	A	B	A	B	
.50	3.698	1.7566	4.124	1.9795	4.750	2.3037	5.803	2.8433	8.185	4.0518	.50
.51	3.723	1.8039	52	2.0329	82	2.3659	42	2.9200	241	4.1611	.51
.52	49	1.8522	81	2.0872	4.816	2.4290	83	2.9980	299	4.2723	.52
.53	77	1.9015	4.211	2.1428	51	2.4937	5.926	3.0778	359	4.3860	.53
.54	3.805	1.9520	43	2.1997	87	2.5599	70	3.1595	422	4.5025	.54
.55	35	2.0037	76	2.2579	4.926	2.6278	6.017	3.2433	488	4.6218	.55
.56	66	2.0564	4.311	2.3174	65	2.6970	065	3.3287	556	4.7436	.56
.57	98	2.1107	47	2.3786	5.007	2.7681	116	3.4164	628	4.8687	.57
.58	3.932	2.1663	84	2.4412	50	2.8410	169	3.5064	702	4.9968	.58
.59	66	2.2232	4.423	2.5053	95	2.9156	224	3.5985	779	5.1281	.59
.60	4.003	2.2819	4.464	2.5714	5.142	2.9926	6.282	3.6935	8.861	5.2634	.60
.61	42	2.3422	4.507	2.6394	91	3.0716	342	3.7911	946	5.4025	.61
.62	82	2.4041	52	2.7092	5.243	3.1530	405	3.8914	9.035	5.5455	.62
.63	4.124	2.4682	99	2.7814	97	3.2370	471	3.9951	128	5.6933	.63
.64	168	2.5341	4.648	2.8556	5.353	3.3233	540	4.1018	225	5.8452	.64
.65	214	2.6023	700	2.9326	413	3.4129	613	4.2122	328	6.0027	.65
.66	263	2.6729	754	3.0121	475	3.5054	689	4.3264	436	6.1654	.66
.67	314	2.7460	811	3.0944	541	3.6013	769	4.4448	549	6.3340	.67
.68	368	2.8217	871	3.1798	610	3.7006	854	4.5674	668	6.5088	.68
.69	425	2.9004	934	3.2684	683	3.8038	943	4.6947	794	6.6902	.69
.70	4.485	2.9823	5.001	3.3607	5.760	3.9111	7.037	4.8272	9.926	6.8790	.70
.71	548	3.0674	071	3.4567	841	4.0229	136	4.9651	10.066	7.0755	.71
.72	615	3.1566	146	3.5572	928	4.1398	241	5.1095	215	7.2813	.72
.73	686	3.2497	226	3.6622	6.019	4.2620	353	5.2602	372	7.4961	.73
.74	761	3.3472	310	3.7719	116	4.3897	471	5.4183	539	7.7212	.74
.75	842	3.4500	400	3.8877	219	4.5245	598	5.5842	718	7.9577	.75
.76	928	3.5578	5.495	4.0092	329	4.6658	732	5.7586	907	8.2063	.76
.77	5.019	3.6717	562	4.1112	447	4.8153	876	5.9432	11.110	8.4694	.77
.78	118	3.7923	707	4.2735	573	4.9734	8.030	6.1383	328	8.7474	.78
.79	223	3.9202	825	4.4177	709	5.1412	196	6.3453	562	9.0425	.79
.80	5.338	4.0567	5.952	4.5715	6.856	5.3203	8.375	6.5663	11.815	9.3573	.80
.81	461	4.2023	6.090	4.7356	7.014	5.5111	569	6.8020	12.088	9.6932	.81
.82	595	4.3587	240	4.9119	187	5.7164	780	7.0553	385	10.0541	.82
.83	742	4.5275	403	5.1021	375	5.9377	9.010	7.3284	709	10.4434	.83
.84	902	4.7101	582	5.3078	581	6.1772	261	7.6240	13.065	10.8646	.84
.85	6.079	4.9092	780	5.5322	809	6.4383	539	7.9462	457	11.3238	.85
.86	276	5.1276	963	5.7488	8.061	6.7247	848	8.2997	892	11.8276	.86
.87	496	5.3685	7.244	6.0498	343	7.0407	10.192	8.6897	14.378	12.3833	.87
.88	743	5.6370	519	6.3522	661	7.3927	580	9.1242	925	13.0025	.88
.89	7.024	5.9387	833	6.6923	9.022	7.7884	11.021	9.6127	15.547	13.6986	.89
.90	7.347	6.2820	8.194	7.0792	9.437	8.2387	11.529	10.1684	16.263	14.4904	.90
.91	724	6.6777	614	7.5251	921	8.7576	12.120	10.8088	17.097	15.4031	.91
.92	8.172	7.1421	9.113	8.0483	10.496	9.3665	12.822	11.5603	18.088	16.4742	.92
.93	713	7.6979	716	8.6748	11.191	10.0956	13.672	12.4602	19.286	17.7564	.93
.94	9.387	8.3827	10.468	9.4464	12.057	10.9937	14.729	13.5686	20.778	19.3360	.94
.95	10.257	9.2566	11.438	10.4313	13.174	12.1397	16.094	14.9831	22.703	21.3518	.95
.96			12.755	11.7549	14.691	13.6803	17.947	16.8844	25.317	24.0612	.96
.97					16.921	15.9209	20.671	19.6499	29.160	28.0022	.97
.98							25.252	24.2522	35.622	34.5609	.98
.99									50.251	49.2511	.99
	.95		.96		.97		.98		.99		

r	r^2	$1-r^2$	$\sqrt{1-r^2}$	$\frac{1}{\sqrt{1-r^2}}$	$\log\sqrt{1-r^2}$	$\log\frac{1}{\sqrt{1-r^2}}$	
.00	.0000	1.0000	1.0000	1.0000	.000000	.000000	.00
.01	.0001	.9999	.9999	1.0001	9.999978-10	.000022	.01
.02	.0004	.9996	.9998	1.0002	.999913	.000087	.02
.03	.0009	.9991	.9995	1.0005	.999804	.000196	.03
.04	.0016	.9984	.9992	1.0008	.999652	.000384	.04
.05	.0025	.9975	.9987	1.0013	.999456	.000544	.05
.06	.0036	.9964	.9982	1.0018	.999217	.000783	.06
.07	.0049	.9951	.9975	1.0025	.998934	.001066	.07
.08	.0064	.9936	.9968	1.0032	.998606	.001394	.08
.09	.0081	.9919	.9959	1.0041	.998234	.001766	.09
.10	.0100	.9900	.9950	1.0050	.997818	.002182	.10
.11	.0121	.9879	.9939	1.0061	.997356	.002644	.11
.12	.0144	.9856	.9928	1.0073	.996850	.003150	.12
.13	.0169	.9831	.9915	1.0086	.996299	.003701	.13
.14	.0196	.9804	.9902	1.0099	.995702	.004298	.14
.15	.0225	.9775	.9887	1.0114	.995058	.004942	.15
.16	.0256	.9744	.9871	1.0131	.994368	.005632	.16
.17	.0289	.9711	.9854	1.0148	.993632	.006368	.17
.18	.0324	.9676	.9837	1.0166	.992848	.007152	.18
.19	.0361	.9639	.9818	1.0186	.992016	.007984	.19
.20	.0400	.9600	.9798	1.0206	.991136	.008864	.20
.21	.0441	.9559	.9777	1.0228	.990206	.009794	.21
.22	.0484	.9516	.9755	1.0251	.989227	.010773	.22
.23	.0529	.9471	.9732	1.0275	.988198	.011802	.23
.24	.0576	.9424	.9708	1.0301	.987118	.012882	.24
.25	.0625	.9375	.9682	1.0328	.985986	.014014	.25
.26	.0676	.9324	.9656	1.0356	.984801	.015199	.26
.27	.0729	.9271	.9629	1.0386	.983564	.016436	.27
.28	.0784	.9216	.9600	1.0417	.982271	.017729	.28
.29	.0841	.9159	.9570	1.0449	.980924	.019076	.29
.30	.0900	.9100	.9539	1.0483	.979520	.020480	.30
.31	.0961	.9039	.9507	1.0518	.978060	.021940	.31
.32	.1024	.8976	.9474	1.0555	.976542	.023458	.32
.33	.1089	.8911	.9440	1.0593	.974963	.025037	.33
.34	.1156	.8844	.9404	1.0633	.973324	.026676	.34
.35	.1225	.8775	.9367	1.0675	.971624	.028376	.35
.36	.1296	.8704	.9330	1.0719	.969860	.030140	.36
.37	.1369	.8631	.9290	1.0764	.968030	.031970	.37
.38	.1444	.8556	.9250	1.0811	.966136	.033864	.38
.39	.1521	.8479	.9208	1.0860	.964172	.035828	.39
.40	.1600	.8400	.9165	1.0911	.962140	.037860	.40
.41	.1681	.8319	.9121	1.0964	.960036	.039964	.41
.42	.1764	.8236	.9075	1.1019	.957858	.042142	.42
.43	.1849	.8151	.9028	1.1076	.955606	.044394	.43
.44	.1936	.8064	.8980	1.1136	.953276	.046724	.44
.45	.2025	.7975	.8930	1.1198	.950866	.049134	.45
.46	.2116	.7884	.8879	1.1262	.948374	.051626	.46
.47	.2209	.7791	.8827	1.1329	.945796	.054204	.47
.48	.2304	.7696	.8773	1.1399	.943132	.056868	.48
.49	.2401	.7599	.8717	1.1472	9.940378-10	.059622	.49

r	r^2	$1-r^2$	$\sqrt{1-r^2}$	$\frac{1}{\sqrt{1-r^2}}$	$\log\sqrt{1-r^2}$	$\log\frac{1}{\sqrt{1-r^2}}$	
.50	.2500	.7500	.8660	1.1547	9.937530-10	.062470	.50
.51	.2601	.7399	.8617	1.1626	.934586	.065414	.51
.52	.2704	.7296	.8542	1.1707	.931542	.068458	.52
.53	.2809	.7191	.8480	1.1792	.928394	.071606	.53
.54	.2916	.7084	.8417	1.1881	.925140	.074860	.54
.55	.3025	.6975	.8352	1.1974	.921772	.078228	.55
.56	.3136	.6864	.8285	1.2070	.918288	.081712	.56
.57	.3249	.6751	.8216	1.2171	.914684	.085316	.57
.58	.3364	.6636	.8146	1.2276	.910953	.089047	.58
.59	.3481	.6519	.8074	1.2385	.907090	.092910	.59
.60	.3600	.6400	.8000	1.2500	.903090	.096910	.60
.61	.3721	.6279	.7924	1.2620	.898945	.101055	.61
.62	.3844	.6156	.7846	1.2745	.894650	.105350	.62
.63	.3969	.6031	.7766	1.2877	.890194	.109806	.63
.64	.4096	.5904	.7684	1.3014	.885573	.114427	.64
.65	.4225	.5775	.7599	1.3159	.880776	.119224	.65
.66	.4356	.5644	.7513	1.3311	.875794	.124206	.66
.67	.4489	.5511	.7424	1.3471	.870615	.129385	.67
.68	.4624	.5376	.7332	1.3639	.865230	.134770	.68
.69	.4761	.5239	.7238	1.3816	.859624	.140376	.69
.70	.4900	.5100	.7141	1.4003	.853785	.146215	.70
.71	.5041	.4959	.7042	1.4200	.847697	.152303	.71
.72	.5184	.4816	.6940	1.4410	.841343	.158657	.72
.73	.5329	.4671	.6834	1.4632	.834705	.165295	.73
.74	.5476	.4524	.6726	1.4868	.827762	.172238	.74
.75	.5625	.4375	.6614	1.5119	.820489	.179511	.75
.76	.5776	.4224	.6499	1.5386	.812862	.187138	.76
.77	.5929	.4071	.6380	1.5676	.804850	.195150	.77
.78	.6084	.3916	.6258	1.5980	.796422	.203578	.78
.79	.6241	.3759	.6131	1.6310	.787536	.212464	.79
.80	.6400	.3600	.6000	1.6667	.778152	.221848	.80
.81	.6561	.3439	.5864	1.7052	.768216	.231784	.81
.82	.6724	.3276	.5724	1.7471	.757672	.242328	.82
.83	.6889	.3111	.5578	1.7929	.746450	.253550	.83
.84	.7056	.2944	.5426	1.8430	.734469	.265531	.84
.85	.7225	.2775	.5268	1.8983	.721632	.278368	.85
.86	.7396	.2604	.5103	1.9597	.707820	.292180	.86
.87	.7569	.2431	.4931	2.0282	.692892	.307108	.87
.88	.7744	.2256	.4750	2.1054	.676670	.323330	.88
.89	.7921	.2079	.4560	2.1932	.658927	.341073	.89
.90	.8100	.1900	.4359	2.2942	.639377	.360623	.90
.91	.8281	.1719	.4146	2.4119	.617638	.382362	.91
.92	.8464	.1536	.3919	2.5516	.593196	.406804	.92
.93	.8649	.1351	.3676	2.7206	.565328	.434672	.93
.94	.8836	.1164	.3412	2.9311	.532976	.467024	.94
.95	.9025	.0975	.3122	3.2026	.494502	.505498	.95
.96	.9216	.0784	.2800	3.5714	.447158	.552842	.96
.97	.9409	.0591	.2431	4.1135	.385794	.614206	.97
.98	.9604	.0396	.1990	5.0252	.298847	.701153	.98
.99	.9801	.0199	.1411	7.0888	9.149426-10	.850574	.99