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Tables and Graphs of the Stable Probability Density Functions *

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Four-decimal-place tables are presented of the probability density function $p(x; \alpha, \beta)$ of the stable distribution for $\alpha = 0.25(.25)2.00$, $\beta = -1.00(.25)1.00$, and nonnegative x in steps varying by factors of 10 from 0.001 to 100 such that interpolation is possible, the tabulation being terminated where $p(x; \alpha, \beta)$ falls to 0.0001. The largest such value of x is 338, for $\alpha = 0.25$, $\beta = -1.00$. Graphs of $p(x; \alpha, \beta)$ are also provided for essentially the above values of α and β. The methods of calculation (from the characteristic function), checking, and interpolation with respect to x, β, and (to some extent) α are described. The most important properties of stable distributions are summarized. Some applications are cited. A selected bibliography with 91 items is included.

Key words: Accuracy; approximations; asymptotic expansion; Cauchy distribution; characteristic function; closed forms; contour; convergence; curves; distribution function; error; Fourier transform; infinite series; interpolation; limit distribution; normal distribution; polynomials; probability density function; quadrature; stable distribution; sums of independent random variables; tables; truncation.

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1. Introduction

The stable distributions have provided a fascinating and fruitful area of research for probability theorists and models of value in physics, astronomy, economics, and communications theory. The *symmetric* stable distributions were introduced by Cauchy in 1853 [4],[1] and one of them is well known by his name. The general class was studied systematically by Paul Lévy in the early 1920's [18a, 19]. If two independent real random variables with the same shape or *type* of distribution are combined linearly and the distribution of the resulting random variable has the same shape, the common distribution (or its type, more precisely) is said to be *stable*. The normal, or Gaussian, distribution is the best-known example.

The inspiration for systematic research on stable distributions was the desire to generalize the celebrated Central Limit Theorem, which states that under fairly general conditions, the distribution function (df) of the sum of n independent random variables approaches (when standardized to constant median and scale) the normal df as n becomes infinite. It was known that the mean of n independent observations from a Cauchy distribution has the same distribution as a single observation, which is thus also the limit distribution as $n \to \infty$ and not covered by the Central Limit Theorem. It can be shown that all limit distributions of sums of independent random variables must be stable [Lévy, 19; Gnedenko and Kolmogorov, 11].

The restrictive condition of stability enabled A. Ya. Khintchine and Lévy in 1936 [see 11, p. 164] to derive the general form for the characteristic function (*cf*, the Fourier transform of the probability density function (pdf)) of a stable distribution. However, the *pdf* itself is not known in closed form except for the normal and Cauchy types and one other type (see sec. 2.13).

The considerable interest in stable distributions makes a general set of tables of the densities and distribution functions highly desirable. A table of *pdf*'s for characteristic exponent $\alpha = 1.1(.1)1.9$, 1.95, 1.99 was given by Mandelbrot and Zarnfaller in 1961 [88]. Fama and Roll [85] published tables of the *df*'s and fractiles of standardized symmetric stable distributions for characteristic exponent $\alpha = 1.0(.1)1.9(.05)2.0$ (as well as formulas and tables for estimating the parameters). Here we present four-decimal-place tables (sec. 12) of the standardized *pdf* $p(x;\, \alpha,\, \beta)$ for $\alpha = 0.25(.25)2.00$, $\beta = -1.00(.25)1.00$, and nonnegative x in steps varying by factors of 10 from 0.001 to 100 such that interpolation is possible. The tabulation is terminated where $p(x;\, \alpha,\, \beta)$ first falls to 0.0001, correct to the fourth decimal place. The largest such value of x is 338, for $\alpha = 0.25$, $\beta = -1.00$. Graphs of $p(x;\, \alpha,\, \beta)$ are also provided for the above values of α and β (sec. 13). The methods of calculation, checking, and interpolation are described in detail (secs. 4–8). Probabilities may be calculated from the tables by Simpson's Rule (sec. 10).

The theory and properties of stable distributions have been systematically presented by Lukacs [23, 24], Gnedenko and Kolmogorov [11], and Feller [44], but a brief statement, without proofs, of the most important properties, taken from these sources, especially [24], is given in section 2 for convenience. Some applications are noted in section 3. An extensive selected bibliography is included (sec. 11).

2. Definition and Properties of Stable Distributions

2.1. *Definition.*

The (cumulative) *distribution function* (df), $P(x)$, of a real random variable X is the probability that X is less than or equal to the real number x:

$$P(x) \equiv \text{Prob}\,[X \leq x], \qquad -\infty < x < +\infty.$$

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[1] Figures in brackets indicate the literature references on pages 161–164.

(The definition of a random variable is omitted, being outside the scope of this paper.)

2.2. *Definition.*

The *probability density function* (*pdf*), of X is (when it exists or, equivalently, when $P(x)$ is absolutely continuous) the derivative of the *df*:

$$p(x) \equiv P'(x) \equiv dP/dx, \qquad -\infty < x < +\infty.$$

2.3. *Definition.*

The *characteristic function* (*cf*) of X is the Fourier-Stieltjes transform of the *df*:

$$\varphi(t) \equiv \int_{-\infty}^{\infty} e^{itx} dP(x), \qquad -\infty < t < +\infty,$$

$$= \int_{-\infty}^{\infty} e^{itx} p(x)\, dx$$

when $p(x)$ exists.

2.4. The *df*, *pdf* (when it exists), and *cf* are alternative and equivalent ways of describing a probability distribution, and it is at times convenient and sufficient to say "distribution" rather than *df*, *pdf*, or *cf*. When the *pdf* $p(x)$ exists,

$$p(x) = \frac{1}{2\pi} \int_{-\infty}^{\infty} e^{-ixt} \varphi(t)\, dt.$$

2.5. *Definition.*

If X, and X_2 are two independent random variables with *df*'s $P_1(x)$ and $P_2(x)$ and *cf*'s $\varphi_1(t)$ and $\varphi_2(t)$, then the *df* $P(x)$ of the sum $X \equiv X_1 + X_2$ is given by the convolution of $P_1(x)$ and $P_2(x)$:

$$P(x) = P_1(x) * P_2(x) \equiv \int_{-\infty}^{\infty} P_1(x-y)\, dP_2(y).$$

The corresponding *cf* is $\varphi(t) = \varphi_1(t)\varphi_2(t)$.

2.6. *Definition.*

Two *df*'s $P(x)$ and $Q(x)$ are *of the same type* if there exist a postive c and real d such that the relation $Q(x) = P((x-d)/c)$ holds for all x.

2.7. *Definition.*

A *df* $P(x)$ (or any *df* of the same type as $P(x)$) is *stable* if to every $c_1 > 0$, $c_2 > 0$ and real d_1, d_2 there correspond a positive c and real d such that

$$P\left(\frac{x-d_1}{c_1}\right) * P\left(\frac{x-d_2}{c_2}\right) \equiv P\left(\frac{x-d}{c}\right)$$

for all x. An equivalent condition for $P(x)$ to be stable is the following: If X_1 and X_2 are independent random variables with the *df* $P(x)$, then the *df* of $c_1X_1+c_2X_2$ is of the same type as $P(x)$ for every $c_1>0$, $c_2>0$. Stability is really a property of the *type* of distribution rather than of any single distribution, but we may attribute it conveniently to a *df*, a *pdf*, or a *cf* also, just as we speak of the normal distribution when we mean the normal type.

2.8. A *cf* $\varphi(t)$ is stable if and only if it has the form

$$\varphi(t)=\exp\{idt-|ct|^{\alpha}[1+i\beta(t/|t|)\omega(|t|,\alpha)]\}$$

where $-\infty<d<+\infty$, $c\geqslant 0$, $0<\alpha\leqslant 2$, $-1\leqslant\beta\leqslant 1$, and

$$\omega(|t|,\alpha)=\begin{cases}\tan(\pi\alpha/2) & \text{for } \alpha\neq 1\\ (2/\pi)\log|t| & \text{for } \alpha=1.\end{cases}$$

(Here c is the scale parameter as in Fama and Roll [85] but not as in Lukacs [23, 24]. If the c of Lukacs is denoted by c', then $c'=c^{\alpha}$.) The constant α is called the *characteristic exponent.* (Unfortunately the above definitions of ω produce the heavier tail of the *pdf* in the positive x direction for $\alpha=1$ and in the negative x direction for $\alpha\neq 1$. Thus there is an apparent inconsistency in the tables and graphs.)

2.9. *Degenerate distribution.*

If $c=0$, the stable *cf* reduces to that of the degenerate (improper) distribution with *df*

$$P(x)=\begin{cases}0, & x<d\\ 1, & x\geqslant d.\end{cases}$$

2.10. *Normal distribution.*

If $\alpha=2$, the stable *cf* reduces to that of the normal distribution with mean d and variance $2c^2$ (independent of the value of β).

2.11. *Cauchy distribution.*

If $\alpha=1$ and $\beta=0$, the stable *cf* reduces to that of the Cauchy distribution with median d, semi-interquartile range c, and *pdf*

$$\frac{1}{\pi}\cdot\frac{c}{c^2+(x-d)^2}.$$

For $c=1$ and $d=0$ this reduces to the Student t *pdf* with 1 degree of freedom.

2.12. The *cf* of the standardized variable $(X-d)/c$ for $c>0$ is of the form in section 2.8 with $d=0$ and $c=1$. Hereafter (except in secs. 2.24 and 2.28) we therefore take $d=0$ and $c=1$ and write the *pdf* of the standardized variable, by section 2.4, as

$$p(x;\alpha,\beta)=\frac{1}{\pi}\int_0^{\infty}e^{-t^{\alpha}}\cos[xt+\beta t^{\alpha}\omega(t,\alpha)]\,dt.$$

2.13. $\alpha=\frac{1}{2}, \beta=-1.$

Then the stable *cf* corresponds to the *pdf*

$$p(x; \tfrac{1}{2}, -1)=\begin{cases}(2\pi)^{-1/2}x^{-3/2}e^{-1/(2x)} & \text{for } x>0\\ 0 & \text{for } x\leqslant 0.\end{cases}$$

This is the *pdf* of the reciprocal of a chi-square variable with 1 degree of freedom. It is also of Type V in the Pearson system of frequency curves. No stable distributions with *pdf*'s that are elementary functions other than the four above are known.

2.14. *Higher transcendental functions.*

The stable densities for several rational values of α can be represented in terms of higher transcendental functions as follows:

α	β	*Principal function involved*
1/3	1	Macdonald function (modified Bessel function of third kind) $K_{1/3}(x)$ [38]
2/3	0	Whittaker function $W_{1/2,\,1/6}(x)$ [38; 39; 69, p. 505]
2/3	1	
3/2	1	
1/2	arbitrary	$w(z)$ as shown in (7.1)–(7.3) below

2.15. $p(-x; \alpha, -\beta)=p(x; \alpha, \beta)$.

Hence we tabulate $p(x; \alpha, \beta)$ only for nonnegative values of x.

2.16. *Continuity.*

All stable *df*'s are absolutely continuous. All stable *pdf*'s are continuous.

2.17. *Regularity.*

The stable *pdf*'s with $\alpha\geqq 1$ are regular (analytic) for all real x and are entire functions except for the Cauchy distributions. The stable *pdf*'s with $\alpha<1$ have the form

$$p(x; \alpha, \beta)=\begin{cases}(1/x)\Phi_1(x^{-\alpha}) & \text{for } x>0\\ (1/|x|)\Phi_2(|x|^{-\alpha}) & \text{for } x<0\end{cases}$$

where $\Phi_1(z)$ and $\Phi_2(z)$ are entire functions.

2.18. *Derivatives.*

Derivatives of the stable *pdf*'s with respect to x of all orders exist for all real x. They are bounded according to

$$\left|\frac{\partial^n p(x; \alpha, \beta)}{\partial x^n}\right| \leqslant \frac{1}{\pi\alpha}\Gamma\left(\frac{n+1}{\alpha}\right).$$

2.19. *Unimodality.*

All stable *pdf*'s are unimodal.

2.20. *Symmetry.*

A stable *pdf* is symmetrical if and only if $\beta=0$.

2.21. *Convergent infinite series.*

The stable *pdf*'s have convergent infinite series representations. Let $x>0$, $\eta=\beta \tan(\pi\alpha/2)$, $r=(1+\eta^2)^{-1/(2\alpha)}$, and $\gamma=-(2/\pi)\arctan\eta$. Then the *pdf* of the standardized variable evaluated at the abscissa rx is, for $0<\alpha<1$,

$$p(rx;\,\alpha,\,\beta)=\frac{1}{\pi rx}\sum_{k=1}^{\infty}\frac{(-1)^{k-1}}{k!}\Gamma(\alpha k+1)x^{-\alpha k}\sin\left[\frac{k\pi}{2}(\alpha+\gamma)\right],$$

and for $1<\alpha\leq 2$,

$$p(rx;\,\alpha,\,\beta)=\frac{1}{\pi rx}\sum_{k=1}^{\infty}\frac{(-1)^{k-1}}{k!}\Gamma\left(\frac{k}{\alpha}+1\right)x^{k}\sin\left[\frac{k\pi}{2\alpha}(\alpha+\gamma)\right].$$

A series in powers of x exists for $\alpha=1$, but the coefficients are expressed only as complicated integrals.

2.22. *Asymptotic series.*

Asymptotic series are available for x in the neighborhood of 0, $+\infty$, or $-\infty$ and exhaustive ranges of values of α and β. In particular the first n terms of the first series in section 2.21 is an asymptotic approximation for $x\to+\infty$ and $1<\alpha<2$. Likewise the first n terms of the second series in section 2.21 is an asymptotic approximation for $x\downarrow 0$ and $0<\alpha<1$. (Note the interchange in the ranges of α from those for convergence in sec. 2.21.)

2.23. $x=0$, $\alpha\neq 1$.

By changes of variable in section 2.12 with $x=0$ and $\alpha\neq 1$ we obtain gamma functions and consequently

$$p(0;\,\alpha,\,\beta)=\frac{1}{\pi\alpha}\Gamma\left(\frac{1}{\alpha}\right)\left(\cos\frac{\pi\gamma}{2}\right)^{1/\alpha}\cos\frac{\pi\gamma}{2\alpha},$$

with γ as in section 2.21.
In particular

$$p(0;\,\alpha,\,0)=\frac{1}{\pi\alpha}\Gamma\left(\frac{1}{\alpha}\right);$$

$$p(0;\,\alpha,\,\pm1)=0,\ \alpha<1;$$

$$p\left(0;\,\frac{1}{2},\,\beta\right)=\frac{2}{\pi}\,\frac{1-\beta^2}{(1+\beta^2)^2};$$

$$p\left(0;\,\frac{1}{3},\,\beta\right)=\frac{3!}{\pi}\,\frac{1-\beta^2}{(1+\beta^2/3)^3};$$

$$p\left(0; \frac{1}{4}, \beta\right) = \frac{4!}{\pi} \frac{1 - 6\eta^2 + \eta^4}{(1+\eta^2)^4}, \qquad \eta = \beta(\sqrt{2} - 1);$$

$$p\left(0; \frac{2}{3}, \beta\right) = \frac{3}{4\sqrt{2\pi}} \rho^{-3}(2-\rho)(1+\rho)^{1/2}, \qquad \rho = (1+3\beta^2)^{1/2}.$$

2.24. *Interrelation for α and $\alpha^* = 1/\alpha$.*

It is convenient to consider a stable *pdf* of the nonstandardized variable $Y = X/c$, where $c = [\cos(\pi\gamma/2)]^{1/\alpha}$ with γ as in section 2.21. Let $1 < \alpha \leq 2$, $\alpha^* = 1/\alpha$, $\gamma^* = (\gamma + \alpha - 1)/\alpha$, and $p_{\alpha\gamma}(y)$ be the *pdf* of Y. Then for $y > 0$

$$p_{\alpha^*\gamma^*}(y) = y^{-\alpha^*-1}\, p_{\alpha\gamma}(y^{-\alpha^*}).$$

2.25. *Zero values of pdf's.*

If $0 < \alpha < 1$ and $\gamma = -\alpha$, then it follows from the first formula in section 2.21 that

$$p(x; \alpha, 1) = 0 \text{ for } x > 0.$$

From section 2.15

$$p(x; \alpha, -1) = 0 \text{ for } x < 0 \text{ and } 0 < \alpha < 1.$$

2.26. *Infinite divisibility.*

A stable *cf* is infinitely divisible; i.e., for every positive integer n it can be expressed as the nth power of some *cf*. Equivalently we can say that for every positive integer n a stable *df* can be expressed as the n- fold convolution of some *df*.

2.27. *Moments.*

The absolute moment of order δ of a *df* $P(x)$ is defined as

$$\int_{-\infty}^{\infty} |x|^\delta \, dP(x) \text{ or } \int_{-\infty}^{\infty} |x|^\delta \, p(x)\, dx$$

when $p(x)$ exists. Every stable *df* with characteristic exponent α with $0 < \alpha < 2$ has finite absolute moments of all orders δ with $0 < \delta < \alpha$, whereas all absolute moments of order $\delta \geq \alpha$ are infinite. Thus the normal *df's* are the only stable *df's* with finite variance. The mean exists for $1 < \alpha \leq 2$, but neither the mean nor the variance exists for $0 < \alpha \leq 1$.

2.28. *Location and scale parameters of a linear combination.*

If $X_1, X_2, \ldots, X_n$ are independent random variables with stable distributions of the same type (and therefore with the same α and β), location parameters $d_1, d_2, \ldots, d_n$, and scale parameters $c_1, c_2, \ldots, c_n$ respectively, then the linear combination

$$Y = \sum_{i=1}^{n} a_i X_i, \qquad a_i \geq 0,$$

has, from sections 2.3, 2.5, and 2.8, the location parameter

$$d = \sum_{i=1}^{n} a_i d_i$$

and scale parameter c given by

$$c^\alpha = \sum_{i=1}^{n} a_i^\alpha c_i^\alpha.$$

The last equation is familiar for $\alpha = 2$, the normal distribution, but is not so well known for other α. In particular, if all $d_i = d_1, c_i = c_1$, and $a_i = 1/n$, so that Y is the sample mean $\bar{X}$, then

$$c = \frac{c_1}{\sqrt{n}}, \qquad \alpha = 2 \text{ (normal)}$$

$$c = c_1, \qquad \alpha = 1 \text{ (Cauchy if } \beta = 0)$$

$$c = nc_1, \qquad \alpha = \frac{1}{2} \text{ (Pearson Type V if } \beta = -1)$$

Thus the scale parameter (as well as the entire distribution) for $\alpha = 1$ is the same for $\bar{X}$ as for X_1, but the scale parameter of $\bar{X}$ for $\alpha = \frac{1}{2}$ (and all other $\alpha < 1$) increases without limit as $n \to \infty$.

2.29. *Importance in limit distributions.*

Let $Z_1, Z_2, \ldots, Z_n, \ldots$ be independent and identically distributed random variables. Let

$$U_n = \frac{1}{B_n} \sum_{i=1}^{n} Z_i - A_n, \qquad n = 1, 2, \ldots,$$

where $A_1, A_2, \ldots$ and $B_1, B_2, \ldots, B_i > 0$, are sequences of constants. A well-known Central Limit Theorem states that if the Z_i have a finite variance then the sequence of *df*'s of the U_n converges to the standardized normal *df* for suitable choices of the A_i and B_i. The normal *df* is not the only possible limit *df* for the U_n in general, however: In order that a *df* be the limit *df* of a sequence of *df*'s of U_n it is necessary and sufficient that it be a stable *df*.

3. Applications of Stable Distributions

Beyond the pervasive occurrence of the normal distribution in practice as well as in theory, the primary interest in the stable distributions arises in probability theory as a result of their remarkable theoretical properties. However, they have also been applied in a wide variety of scientific fields, as indicated by the substantial but quite incomplete appended bibliography on applications. Feller's Volume II [44] discusses applications to the gravitational field of stars (Holtsmark distribution, $\alpha = 3/2$; cf. Holtsmark, [48]), first-passage times in Brownian motion ($\alpha = 1$), diffusion theory, and economics.

Benoit Mandelbrot has discussed many applications in economics, including the distributions of income and of speculative prices and relating stable distributions to the well-known Pareto distributions [53–59, 61, 63]. He has also found stable distributions in biology [51, 62], psychology

[52], and electrical engineering [60]. The occurrence in economics or business is also discussed by Press [66], Roll [67], Teichmoeller [68], Granger and Orr [47], and Fielitz and Smith [45].

The interest in economics led to the tabulation of the *cdf*'s and fractiles of the symmetric stable distributions for $\alpha=1.0$ (.1) 2.0 by Fama and Roll [85] and to estimation of parameters and tests of hypotheses by them [86] and by Press [28]. A manuscript including the *cdf*'s for certain asymmetric stable distributions ($\beta=-1$ (.25)0) for $\alpha=1.1$ (.2) 1.9, 2.0, as well as graphs of the corresponding *pdf*'s for $\alpha=1.1$ (.4) 1.9, has just been sent to us by M. J. Cross [84].

The infinite divisibility of the stable distributions accounts for their occurrence in the theory of stochastic processes with stationary independent increments; see Feller [44, Vol. II], Kolmogorov and Sevast'yanov [50], Kac [14], Berman [41], Getoor [10]; Greenwood [12], Kesten [15, 49], and Lukacs [25].

Other occurrences in electrical engineering are indicated by Dobrushin [42] and by Ovsevič and Yaglom [65].

4. Approximation of the Stable Density $p(x;\alpha,\beta)$

The present tables of the stable *pdf* $p(x;\alpha,\beta)$ were calculated primarily from four approximations:

p_1, the first N terms of eq (4.1) below;
p_2, (4.12);
p_3, Section 4.3;
p_4, Section 7.

The values of α and β for which each of these is used are shown in table 1.

TABLE 1. *Approximations for the stable density* $p(x;\alpha,\beta)$

β \ α	0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00
−1.00	p_2[b]	$1/\chi_1^2$	p_1, p_4[a]	p_1	p_2	p_2[b, c]	p_1	Normal
−.75		p_2[b]				p_1		
−.50								
−.25			p_1, p_4	p_1	p_2			
.00	(c)	(c)	$p_2(x\neq0)$[c]	Cauchy	$p_1(x\neq0)$[c]	$(x\neq0)$[c]	$(x\neq0)$[c]	
.25			p_2	p_3	p_1			
.50			p_2					
.75	p_2[b]	p_2[b]	p_2					
1.00	0	0	0	p_3	p_1	p_1	p_1	Normal

[a] p_1 for $0\leq x\leq x_N$, p_4 for $x_N\leq x\leq x_T$
[b] $0<x_0\leq x\leq x_T$
[c] See section 2.23

In all cases the *pdf* is computed over the interval $0\leq x\leq x_T$, where x_T is such that $p(x_T;\alpha,\beta)=0.00010$ and $p(x_{T-1};\alpha,\beta)=0.00011$ with $x_T=x_{T-1}+0.1$. However, the tabulated *pdf* values are rounded to 4 decimal places so that several values of x usually exist for which $p(x;\alpha,\beta)=0.0001$. For $\alpha=0.75$, $\beta<0$, and x large, say $x\geq x_N$, p_1 converges too slowly and p_4 is used for $x_N\leq x\leq x_T$. The approximation p_2 converges slowly for x near 0; hence, it is used only for $x\geq x_0=10^{-n}$, $n=1, 2, 3$ with $n=3$ only where it is essential ($\alpha=0.25, 0.50$).

In sections 4.1 − 4.3 we derive the approximations from the integral formula for $p(x;\alpha,\beta)$ in section 2.12. We assume $x\geq0$ throughout the remaining sections.

4.1. $p_1(x;\alpha,\beta)$.

To obtain $p_1(x;\ \alpha,\ \beta)$ we remove the branch point $t=0$ by setting $\alpha=p/q+1(p,\ q$ positive integers) and $t=u^q$. Now consider the infinite series

$$p(x;\ \alpha,\ \beta)=\frac{q}{\pi}\sum_{k=0}^{\infty}\int_{u_k}^{u_{k+1}} e^{-u^p}\,u^{q-1}\cos f_1\,(u;\ \alpha,\ \beta,\ x)du \qquad (u_0=0) \tag{4.1}$$

such that $u_k(k=0,1,2,\ .\ .\ .)$ is the largest nonnegative real root of the function

$$|f_1(u;\ \alpha,\ \beta,\ x)|-k\pi\equiv\left|xu^q+\left(\beta\tan\frac{\pi\alpha}{2}\right)u^p\right|-k\pi. \tag{4.2}$$

To prove that the expansion (4.1) is an alternating series consider the proposition $u_{k+1}-u_k\to 0$ as $k\to\infty$. From (4.2) the difference equation for two successive extrema u_k and u_{k+1} yields

$$x\ (u^q_{k+1}-u^q_k)+\eta\ (u^p_{k+1}-u^p_k)=\pm\pi \tag{4.3}$$

where $\eta=\beta\tan(\pi\alpha/2)$. Equation (4.3) can be written as

$$u_{k+1}-u_k=\frac{\pm\pi}{xg_{q-1}(u_k,\ u_{k+1})+\eta g_{p-1}(u_k,\ u_{k+1})}$$

where $g_{n-1}(u_k,\ u_{k+1})=u^{n-1}_{k+1}+u^{n-2}_{k+1}u_k+\ .\ .\ .+u^{n-1}_k$. Since $u_k\to\infty$ as $k\to\infty$, it follows that $u_{k+1}-u_k\to 0$.

We now show that for k sufficiently large

$$\int_{u_k}^{u'} e^{-u^p}u^{q-1}|\cos f_1(u;\ \alpha,\ \beta,\ x)|du\geqslant e^{-u'^p}u'^{q-1}\int_{u_k}^{u'}|\cos f_1(u;\alpha,\beta,x)|\,du$$

$$\geqslant e^{-u'^p}u'^{q-1}\int_{u'}^{u_{k+1}}|\cos f_1(u;\alpha,\beta,x)|\,du$$

$$\geqslant\int_{u'}^{u_{k+1}} e^{-u^p}\,u^{q-1}|\cos f_1(u;\alpha,\beta,x)|\,du, \tag{4.4}$$

where $\cos f_1(u_k;\ \alpha,\ \beta,\ x)=\pm 1$, $\cos f_1(u';\ \alpha,\ \beta,\ x)=0$, $\cos f_1(u_{k+1};\ \alpha,\ \beta,\ x)=\mp 1$, and $u_k<u'<u_{k+1}$. To demonstrate the middle inequality, let $v=xu^q+\eta u^p$. Then

$$\int_{u_k}^{u'}|\cos(xu^q+\eta u^p)|\,du=\int_{v_{\max}}^{v_0}|\cos v|\frac{dv}{xqu^{q-1}+p\eta u^{p-1}},$$

and, since $v_{\min}-v_0=v_{\max}-v_0=\pi/2$, the inequality

$$\int_{v_0}^{v_{\min}} |\cos v| \frac{dv}{xqu^{q-1}+\eta pu^{p-1}} \leq \int_{v_{\max}}^{v_0} \frac{|\cos v|}{xqu^{q-1}+\eta pu^{p-1}} dv$$

is true. Thus (4.4) is established. Since both the integrand and the interval $u_{k+1}-u_k$ approach zero as $k \to \infty$, so also does the kth term of the series (4.1).

Similarly when $\alpha=1$ we have the infinite series

$$p(x;\, 1, \beta)=\frac{1}{\pi} \sum_{k=0}^{\infty} \int_{t_k}^{t_{k+1}} e^{-t} \cos f_2(t;\, \beta, x) dt \qquad (t_0=0) \tag{4.5}$$

such that t_k is the largest nonnegative real root of the equation

$$|f_2(t;\, \beta, x)-k\pi|=\left| xt+\frac{2\beta}{\pi} t \ln \mathrm{t} \right| - k\pi \qquad (k=0, 1, \ldots). \tag{4.6}$$

It is easy to show that $t_{k+1}-t_k \to 0$ as $k \to \infty$ by substituting the expansion

$$\ln t_{k+1}=\ln [t_k+t_{k+1}-t_k]$$

$$=\ln t_k+2\left[\frac{t_{k+1}-t_k}{t_{k+1}+t_k}+\frac{1}{3}\left(\frac{t_{k+1}-t_k}{t_{k+1}+t_k}\right)^3+\ldots\right]$$

into the difference equation

$$x(t_{k+1}-t_k)+\frac{2\beta}{\pi}(t_{k+1} \ln t_{k+1}-t_k \ln t_k)=\pm\pi.$$

Hence we have

$$t_{k+1}-t_k=\frac{\pm\pi}{x+\frac{2\beta}{\pi}\left[\ln t_k+2\,\frac{t_{k+1}}{t_{k+1}+t_k}+O\left(\frac{t_{k+1}-t_k}{t_k}\right)^2\right]}$$

Since $t_k \to \infty$ as $k \to \infty$, it follows that $t_{k+1}-t_k \to 0$.

The fact that (4.5) is an alternating series follows in the same way as in establishing (4.4).

The approximation $p_1(x;\, \alpha, \beta)$ is the truncation of (4.1) and (4.5) to N terms with the Nth term the first term not greater than 10^{-5} in magnitude.

The zeros u_k and t_k are computed via the Newton-Raphson (NR) and False Position (FP) root-finding procedures. The NR procedure is used in the following cases, for which the necessary sign conditions certainly hold:

$$\left.\begin{array}{l} \alpha=\frac{3}{2},\ -1<\beta<0 \\ \\ \alpha=\frac{7}{4},\ \beta<0 \end{array}\right\} \quad 0<x_0<x \leq x_T.$$

In the remaining cases the FP procedure is applied.

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Determining the initial values, say $u_{k,0}$ and $t_{k,0}$, for the NR and FP procedures in the presence of arbitrary fixed (x, α, β) requires a little care. For the NR procedure the following initial values were used:

$$\begin{aligned} u_0(x_i) &= 0, u_{k,0}(x_0) = 1 (k = 1, 2, \ldots), \qquad u_{1,0}(x_i) = u_1(x_{i-1}), \\ u_{k,0}(x_i) &= u_{k-1}(x_i) \ (k = 2, 3, \ldots), \qquad (i = 0, 1, \ldots) \end{aligned} \tag{4.7}$$

where $u_k(x_i)$ is the root of eq (4.2) with $x = x_i$.

A table of initial values for the FP procedure is available on request.

We denote the kth integral of (4.1) (i.e., not including the factor q/π) by T_k, normalize the interval of integration to $[-1, 1]$, and approximate T_k by 48-point Legendre-Gaussian quadrature. Hence, the quadrature representation becomes

$$T_k \doteq A_k \sum_{j=1}^{48} H_j w_{jk}^{q-1} e^{-w_{jk}^p} \cos (x w_{jk}^q + \eta w_{jk}^p), \tag{4.8}$$

$$w_{jk} = A_k v_j + B_k, A_k = \frac{u_{k+1} - u_k}{2}, \text{ and } B_k = \frac{u_{k+1} + u_k}{2},$$

where H_j and v_j are Gaussian weights and abscissas respectively [79, p. 30].

The approximation for (4.5) parallels the approximation for (4.1); hence we omit that formulation.

Although the approximation $p_1(x; \alpha, \beta)$ may be used for any given (α, β, x), experience showed that the other approximations below required less computer time for the desired accuracy over certain ranges of α, β, x as shown in table 1.

4.2 $p_2(x; \alpha, \beta)$

Consider the contour integral

$$\frac{1}{\pi} \int_C \exp [-w^\alpha + i(xw + \eta w^\alpha)] \, dw \qquad (\alpha \neq 1) \tag{4.9}$$

taken on the path in figure 1.

Along the t axis (4.9) reduces to $p(x; \alpha, \beta)$ in the limit as $\epsilon \to 0$ and $R \to \infty$. The integral along C_1, say I_1, is bounded by

$$|I_1| \leq R \int_0^{\pi/2} \exp [-R^\alpha (\cos \alpha\theta + \eta \sin \alpha\theta) - xR \sin \theta] d\theta. \tag{4.10}$$

Hence, $I_1 \to 0$ as $R \to \infty$. The contribution on C_2 goes to zero as the branch point is approached, and consequently, equating real parts yields

$$p(x; \alpha, \beta) = \frac{1}{\pi} \int_0^\infty \exp (-xt - D_1 t^\alpha) \sin D_2 t^\alpha dt, \tag{4.11}$$

$$D_1 = \cos \frac{\alpha\pi}{2} + \beta \tan \frac{\pi\alpha}{2} \sin \frac{\pi\alpha}{2}, \ D_2 = (1 - \beta) \sin \frac{\pi\alpha}{2},$$

where $D_1 \geq 0$ is sufficient for the integral to converge ($D_1 > 0$ for $x = 0$).

Employing the transformation $t^{1/q}=u$ in (4.11), applying 48-point Legendre-Gaussian quadrature between each extremum pair of the function $\sin D_2u^p$ and normalizing the jth interval to $[-1, 1]$ yields the approximation

$$p_2(x;\alpha,\beta)=\frac{q}{\pi}\left(\frac{\pi}{2D_2}\right)^{q/p}\sum_{k=0}^{N}C_{1k}\left\{\sum_{j=0}^{48}H_jz_{jk}^{q-1}\cdot\exp\left\{-\left[x\left(\frac{\pi}{2D_2}\right)^{q/p}z_{jk}^q+\frac{D_1\pi}{2D_2}z_{jk}^p\right]\right\}\sin\frac{\pi}{2}z_{jk}^p\right. \tag{4.12}$$

where

$$z_{jk}=C_{1k}v_j+C_{2k},$$

$$C_{1k}=\tfrac{1}{2}[(2k+1)^{1/p}-(2k-1)^{1/p}],$$

$$C_{2k}=\tfrac{1}{2}[(2k+1)^{1/p}+(2k-1)^{1/p}],\qquad k=1,2,\ldots,N,$$

$$C_{10}=C_{20}=\tfrac{1}{2},$$

H_j and v_j are Gaussian weights and abscissas respectively, and N is determined so that the Nth term is the first term not greater than 10^{-5} in magnitude.

4.3 $p_3(x;1,\beta)$.

Using a different contour integration, Skorohod [32, p. 161] obtained a useful alternative integral formula for $\alpha=1$:

$$p(x;1,\beta)=\frac{1}{\pi}\int_0^\infty \exp[-xu-(2/\pi)\beta u\ln u]\sin[(1+\beta)u]du. \tag{4.13}$$

The approximation $p_3(x;1,\beta)$ is obtained by applying the 48-point Legendre-Gaussian quadrature formula to each term of the convergent alternating series arising from (4.13) when it is divided at successive extrema of $\sin(1+\beta)u$.

5. Further Asymptotic Expansions of $p(x;\alpha,\beta)$

A double series expansion of the product $\exp(-D_1t^\alpha)\sin D_2t^\alpha$ in (4.11), an interchange of integration and summation, and the application of Watson's lemma yields

$$p(x;\alpha,\beta)\sim\frac{1}{\pi}\sum_{k=0}^{\infty}\sum_{l=0}^{\infty}\frac{(-1)^{k+l}}{k!(2l+1)!}D_1^kD_2^{2l+1}\frac{\Gamma[(k+2l+1)\alpha+1]}{x^{(k+2l+1)\alpha+1}}\quad(\alpha\neq1) \tag{5.1}$$

as $x\to\infty$.

Expanding the integrand of (4.13) yields

$$p(x;1,\beta)=\frac{1}{\pi}\Bigg[(1+\beta)\int_0^\infty e^{-xt}tdt-\frac{2\beta}{\pi}(1+\beta)\int_0^\infty e^{-xt}t^2\ln dt$$

$$-\frac{(1+\beta)}{3!}\int_0^\infty e^{-xt}t^3dt+\left(\frac{2\beta}{\pi}\right)^2(1+\beta)\int_0^\infty e^{-xt}t^3\ln^2 tdt+\frac{2\beta}{\pi}(1+\beta)^3$$

$$\times\int_0^\infty e^{-xt}t^4\ln tdt-\left(\frac{2\beta}{\pi}\right)^3(1+\beta)\int_0^\infty e^{-xt}t^4\ln^3 tdt+\ldots\Bigg]. \tag{5.2}$$

With the aid of integral tables [74, pp. 576–578] we obtain the incomplete asymptotic expansion

$$p(x;1,\beta)\sim\frac{1}{\pi}\frac{(1+\beta)}{x^2}-\frac{2^2\beta(1+\beta)}{\pi^2x^3}[\psi(3)-\ln x]$$

$$+\left[\frac{12\beta^2}{\pi^2}(1+\beta)\{[\psi(4)-\ln x]^2+\zeta(2,3)\}-(1+\beta)^3\right]\frac{1}{x^4}$$

$$+\left[\frac{8(1+\beta)^3\beta}{\pi}[\psi(5)-\ln x]-\frac{2^5\beta^3}{\pi^3}(1+\beta)\{[\psi(5)-\ln x]^3\right.$$

$$\left.+[2\psi(5)-3\ln x]\zeta(2,4)-2\zeta(3,4)\}\right]\frac{1}{x^5},\ x\to\infty, \tag{5.3}$$

which is valid for $\beta>0$. The symbols ψ and ζ represent the digamma and generalized Riemann zeta functions

$$\psi(z)=\frac{d\ln\Gamma(z)}{dz}\text{ and }\zeta(z,q)=\sum_{n=0}^{\infty}\frac{1}{(q+n)^z}.$$

6. Preparation of Tables

To tabulate *pdf* values computer programs were prepared from the various approximations. Since values of the *pdf* were both printed and punched, the two sets of values were compared to safeguard against mechanical errors. In the vicinity of the maximum of each *pdf* we employed a variable mesh size in the x direction which depended on $|dp(x;\alpha,\beta)/dx|$. Hence, for $\alpha\leq\frac{1}{2}$, $\Delta x=0.001$, 0.01, or 0.1; for $\alpha=\frac{3}{4}$, $\Delta x=0.01$ or 0.1; and for $\alpha\geq 1$, $\Delta x=0.1$. On the *pdf* tails most of the original values with a mesh size $\Delta x=0.1$ were discarded in favor of linear interpolation with steps $\Delta x=1$, 10, or 100. Consequently, after reading all *pdf* values into the computer, we deleted unnecessary values, rounded the remaining ones to four decimal places, and punched the results on cards. After some trial and error the appended printout (reduced in size) was obtained from the punched cards.

7. Checking the Tables

In addition to the previous cross checking, the appropriate approximations, closed forms, and special values were compared. We also made spot checks by using

(a) $p_1(x;1,\beta)$ over $\beta>0$;

(b) $p_5(x;1,\beta)$ over $\beta>0$, for large values of x near x_T;

(c) $p_4(x;\alpha,\beta)$ over $\alpha\neq 1$, $\beta<1$ for large values of x near x_T;

(d) $p_6(x;\alpha,\beta)$ over $\alpha\neq 1$, for values of x near 0.

Approximation $p_5(x;1,\beta)$ is the truncation of the asymptotic expansion (5.3), two terms of which were generally required for agreement with the tabulated *pdf* values. The approximations $p_4(x;\alpha,\beta)$ and $p_6(x;\alpha,\beta)$ are the truncations of the first and second expansions of section 2.21 respectively. (See sec. 2.22 for asymptotic properties of the two expansions of sec. 2.21.)

By use of the following equations of V. M. Zolotarev [38, p. 166], an additional check is available for $\alpha=\frac{1}{2}$. He showed that

$$p\left(x; \frac{1}{2}, \beta\right)=\operatorname{Re}\left\{\frac{z}{\pi x}\left[\pi^{1/2}e^{-z^2}-2iw(z)\right]\right\} \tag{7.1}$$

where

$$w(z)=e^{-z^2}\int_0^z e^{t^2}dt, \qquad z=\frac{1+\beta-i(1-\beta)}{2\sqrt{2}x} \tag{7.2}$$

By setting $w(z)=u(p,-q)+iv(p,-q)$ and $z=p-iq$ we obtain

$$p\left(x;\frac{1}{2},\beta\right)=\frac{1}{\pi^{1/2}}(2x)^{-3/2}e^{-\beta/(2x)}\left[(1+\beta)\cos\frac{1-\beta^2}{4x}+(1-\beta)\sin\frac{1-\beta^2}{4x}-\frac{2}{\pi x}(qu-pv)\right]. \tag{7.3}$$

Karpov [78] tabulates u and v from $w(\rho e^{i\theta})$. Checking of several tabulated *pdf* values corresponding to $\beta=0.25$ and $\beta=1$ reveals no error in our tables greater than 10^{-4}.

Many of the tabulated values of $p(x;\ 1.5, \pm 1)$ were checked with values found in a report by Mandelbrot and Zarnfaller [88]; no discrepancy was found. A check is also available from Fama and Roll's [85] 4-place table of *cdf*'s for $\beta=0$ and $\alpha=1.0(0.1)2.0$; see section 10.

To detect blunders which escaped the preceding checks, *pdf* values from the punched cards were subjected to differencing of orders 1 through 12. Miller [80] states that blunders may occur when sixth and tenth difference magnitudes greater than 22 and 300 respectively appear. Using this technique uncovered several entries which were obviously erroneous.

8. Interpolation

8.1 *Interpolation with respect to* x.

To reduce the size of the table of *pdf* values it is necessary to establish appropriate degree interpolation polynomials over certain intervals of x for each $p(x;\ \alpha, \beta)$. We justify this interpolation by noting the analytic properties of $p(x;\ \alpha, \beta)$.

For $\alpha \geqslant 1$, (except $\alpha=1$ and $\beta=0$), $p(x;\ \alpha, \beta)$ is an entire function of x[sec. 2.17]. Hence, a sequence of interpolating polynomials $\{p_n(x)\}$ converges uniformly to $p(x;\ \alpha, \beta)$ over a given closed interval [71]. For $\alpha<1$, $|dp(x;\ \alpha, \beta)/dx|$ becomes large at or near $x=0$. Therefore, interpolation over $[0, x_s]$, for some small x_s is difficult. However, away from $x=0$, $p(x;\ \alpha, \beta)$ is an analytic function even for $\alpha<1$ [23], so that some $\{p_n(x)\}$ provides interpolation for $p(x;\ \alpha, \beta)$ for $x>x_s$.

The Lagrange interpolation polynomial for n equally spaced abscissas x_k and corresponding ordinates f_k is represented by

$$f(x_0+ph)=\sum_k A_k^n(p)f_k+R_{n-1} \tag{7.4}$$

where the index k is defined via the inequalities

$$-\tfrac{1}{2}(n-2)\leqslant k\leqslant n/2 \qquad (n \text{ even}),$$

$$-\tfrac{1}{2}(n-1)\leqslant k\leqslant \tfrac{1}{2}(n-1) \qquad (n \text{ odd}).$$

The coefficients $A_k^n(p)$ are defined in [69, p. 878] and tabulated in [69, pp. 900–913]. We computed a sample of 150–300 *pdf* values with $\Delta x=0.01$ (in contrast with $\Delta x=0.1$ for the tabulated *pdf* values) around the maximum of each curve for $\alpha\geqslant 1$ and applied the Lagrange formula with $n=2(1)8$; $p=0.1, 0.5, 0.9$; $h=0.1$; and sliding intervals beginning with 0.00, 0.01, 0.02, ... The interpolated points were compared with the computed points and all errors (E) were tallied and classified according to the magnitudes:

$$\text{(a) } |E| \geq 10^{-4}, \qquad \text{(b) } 10^{-4} > |E| \geq 0.5(10^{-4}), \qquad \text{(c) } 0.5(10^{-4}) > |E|.$$

An example below (table 2) illustrates this scheme:
$\alpha=1$, $\beta=-0.25$, 154 points starting at $x=0.00$, i.e., $0.00 \leq x \leq 1.53$.

TABLE 2

p	Degree of interpolation	Number of errors in (a)	Interval containing errors in (a)	Number of errors in (b)	Interval containing errors in (b)
0.1	2 to 7[a]	0		0	
0.5	2	8	[0.57, 0.72]	36	[0.45, 0.88]
0.5	3 to 7	0		0	
0.9	2	0		1	
0.9	3 to 7	0		0	

[a] That is, each degree from 2 to 7 was used, and none of the formulas yielded any errors.

The interpolation results above illustrate that for $\alpha=1$ and $\beta=-0.25$ a third-degree polynomial succeeds over [0.00, 1.00]. Furthermore, it appears that second-degree polynomial interpolation is successful for the tabulated *pdf* values from $x=1.0$ to $x=10.0$. An additional examination of the *pdf* values for $\alpha=1$ and $\beta=0.25$ reveals that linear interpolation is applicable beyond $x=10.0$ for $h=1$ and $0<p<1$; i.e., the next table entry corresponds to $x=11$ (instead of $x=10.1$). We summarize our results below in table 3. Notice the range of application means, for instance, in the first line of table 3 that second-degree polynomial interpolation is valid for any three consecutive tabulated *pdf* values from $x=2.0$ to $x=8.0$.

TABLE 3. *Parameters for interpolation with respect to* x *for the tabulated values of* p(x; α, β) *in section 13*

Error of interpolation $< 5\times10^{-5}$				
α	β	Degree of interpolation	Range of application	
0.25	−1.00(0.25)0.75	2	2.0	8.0
0.50	−1.00(0.25)−0.25	3	2.0	4.0
		2	4.0	10.0
	0.00(0.25)0.75	2	2.0	10.0
0.75	−1.00	5	2.0	4.0
		4	4.0	6.0
		3	6.0	8.0
		2	8.0	13.0
	−0.75	4	2.0	5.0
		3	5.0	7.0
		2	7.0	13.0
	−0.50, −0.25	3	2.0	4.0
		2	4.0	13.0
	0.00(0.25)0.75	2	2.0	13.0
1.00	−1.00	4	0.0	2.3
	−0.75(0.25)0.00	4	0.0	2.0
		3	2.0	4.0
		2	4.0	10.0
	0.25(0.25)1.00	3	0.0	2.0
		2	2.0	10.0
1.25, 1.50, 1.75	All β	2	0.0	8.0

8.2. *Interpolation with respect to* β.

The accuracy of polynomial interpolation with respect to β was estimated from the remainder formulas for Lagrangian interpolation in the Handbook of Mathematical Functions [69, sec. 25.2, pp. 878–879]. The accuracy was also tested by extensive application of Lagrangian interpolation to the tabulated *pdf* values using the interval on β of 0.50 to interpolate the *pdf* values at the mid-points of intervals and comparing with the corresponding tabulated values. We conclude that:

(a) $p(x;\ \alpha,\ \beta)$ can be obtained accurate to 3 or 4 decimal places (DP) by at least one of 2-, 3-, or 4-point Lagrangian interpolation with respect to β (using coefficients given in the Handbook [69, table 25.1, pp. 900–903]) for all β for the tabulated α's and any x not too near to 0.0.

(b) Higher than 4-point interpolation may not necessarily improve the accuracy since higher-order differences often do not decrease in magnitude.

(c) $p(0;\ \alpha,\ \beta)$ for $(\alpha,\ \beta)$ not in the table should always be calculated from the closed formula, section 2.23 (not applicable for $\alpha=1$).

Rule (a) cannot be easily stated more quantitatively. For sufficiently large x linear interpolation with respect to β yields 4 *DP* accuracy (i.e., within 1 unit in the 4th *DP*). As x decreases, higher-degree interpolation is required for the same accuracy. For example, for $\alpha=0.25$ linear interpolation yields 4 *DP* accuracy for $x \geqslant 1.00$ but cubic is in general needed (and is sufficient) for $x=0.10$. For $\alpha=1$ quadratic interpolation yields 4 *DP* accuracy for $x \geqslant 2.0$, but only 3 *DP* can be attained for $x=0.5$, even if cubic or quartic interpolation is used.

8.3. *Interpolation with respect to* α.

Interpolation with respect to α was investigated in the same way as that with respect to β. Unfortunately the results are mostly negative because there are as many as three local maxima with respect to α for tabulated values of $\beta \neq 0$ and x. We conclude that:

(a) For $\beta=0$, linear quadratic, or cubic interpolation with respect to α yields 3 *DP* accuracy for $x \geqslant 1.0$.

(b) For $\beta \neq 0$ quadratic interpolation may yield 2 *DP* or 3 *DP* accuracy for $\alpha > 1.50$, but interpolation is unreliable for $\alpha < 1.50$.

9. Truncation Points (x_T)

In section 4 we defined x_T such that $p(x_T;\ \alpha,\ \beta)=0.00010$ and $p(x_{T-1};\ \alpha,\ \beta)=0.00011$ with $x_T=x_{T-1}+0.1$. The last tabulated *pdf* value is rounded to 0.0001, and the tabulated x is usually an integer, not the actual truncation point x_T. We show in table 4 the computed truncation points x_T for every $(\alpha,\ \beta)$.

TABLE 4. *Truncation points of* p(x; α, β)

α \ β	−1.00	−0.75	−0.50	−0.25	0.00	0.25	0.50	0.75	1.00	β / α
0.25	413.2	367.6	321.2	274.0	225.6	175.8	123.6	68.7	....	.25
0.50	251.2	227.8	203.6	178.3	151.7	123.2	91.9	55.6	....	.50
0.75	140.9	129.3	117.1	104.2	90.4	75.2	58.0	37.1	....	.75
1.00	2.3	26.8	39.2	48.4	56.5	63.5	70.1	76.2	81.9	1.00
1.25	49.1	46.5	43.6	40.5	36.9	33.0	28.0	21.2	5.5	1.25
1.50	32.4	30.6	28.8	26.9	24.1	22.3	19.6	14.6	4.8	1.50
1.75	20.3	19.5	18.4	17.4	16.0	14.4	12.6	10.0	5.1	1.75

10. Computation of the Stable (Cumulative) Distribution Function $P(x;\ \alpha,\ \beta)$

In a very direct way it is possible to calculate the (cumulative) distribution function $P(x;\ \alpha,\ \beta)$ of a stable distribution for the values of α and β in table 1 except for the cases $(\alpha=1,\ |\beta| \leqslant 1)$,

($\alpha=0.75$, $|\beta|\leq 1$), ($\alpha>1$, $|\beta|=1$). Assuming $\alpha\leq\frac{1}{2}$, $|\beta|\leq 1$, we obtain a representation of $P(x;\alpha,\beta)$ from (4.11) by an interchange of the order of integration:

$$P(x;\alpha,\beta)=\int_{-\infty}^{x} p(x';\alpha,\beta)dx',$$

$$=1-\frac{1}{\pi}\int_0^\infty\left[\frac{1}{t}e^{-xt-D_1t^\alpha}\right]\sin D_2t^\alpha dt\,(x>0). \tag{10.1}$$

Via the identity $p(-x;\alpha,\beta)=p(x;\alpha,\beta)$ we have from (10.1) the representation

$$P(-x;\alpha,\beta)=\frac{1}{\pi}\int_0^\infty \frac{1}{t}e^{-xt-D_1(\alpha,\beta)t^\alpha}\sin\left[D_2(\alpha,-\beta)t^\alpha\right]dt\,(x>0). \tag{10.2}$$

Hence, an approximation paralleling (4.12) requires only several terms for convergence in the t direction.

To compute $P(x;\alpha,\beta)$ for the category ($\alpha>1$, $|\beta|<1$) we break up the interval of integrational $(-\infty,x)$ into two subintervals $(-\infty,-10)$ and $(-10,x)$. The contribution to $P(x;\alpha,\beta)$ over the subinterval $(-\infty,-10)$ may be found from the approximation

$$P_4(-10;\alpha,\beta)=\int_{10}^{\infty} p_4(x;\alpha,-\beta)dx=\frac{1}{\pi}\sum_{n=0}^{N}\frac{A_n(\alpha,-\beta)}{\alpha n}10^{-\alpha n} \tag{10.3}$$

where $N=4$ usually suffices. Over the second subinterval $(-10,x)$ Simpson's rule is applied to the tabulated *pdf* values by assuming the rounding error ($\pm 5\times 10^{-5}$) is uncorrelated from ordinate to ordinate. To carry this further, let $n/2=100$, $x=10$, and $h=1$ in Simpson's rule,

$$\int_{x_0}^{x_n} p(x;\alpha,\beta)dx=\frac{h}{3}\left[p(x_0;\alpha,\beta)+4p(x_0+h,\alpha,\beta)+2p(x_0+2h;\alpha,\beta)\right.$$

$$\left.+\ .\ .\ .+p(x_n,\alpha,\beta)\right]-\frac{nh^5}{180}\frac{d^4}{dx^4}p(x;\alpha,\beta)\,|_{x=\xi}, \tag{10.4}$$

$x_0<\xi<x_n$. In view of the form of (10.4) the total rounding error is less than $\frac{1}{3}\cdot\frac{1}{2}\,(10^{-4})\,(2+100\cdot 4^2+99\cdot 2^2)\,\frac{3}{\sqrt{3}}\doteq 1.3\times 10^{-4}$. The factor $1/\sqrt{3}$ results from the assumption of uniform distribution for individual ordinate rounding errors, and the factor 3 results from defining the "maximum" total rounding error as 3 times the standard deviation.

The integration error term of (10.4) has the bound (sec. 2.18)

$$\left|\frac{nh^5}{180}\frac{d^4}{dx^4}p(\cdot\, x;\alpha,\beta)\right|\leq\frac{nh^5}{180}\frac{1}{\pi\alpha}\Gamma\left(\frac{5}{\alpha}\right). \tag{10.5}$$

When $\alpha\geq 1$, the error bound (10.5) is not more than 2×10^{-4} for $h=0.1$ and not more than 2×10^{-9} for $h=0.01$.

Application of Simpson's rule (plus linear interpolation for intermediate x) to the three cases of explicit *pdf*'s (normal, Cauchy, $1/\chi_1^2$) indicates that the above bounds are conservative: (1) The maximum error of 7 normal probabilities calculated was 3×10^{-7}, attributable to rounding. (2) The maximum error of 59 Cauchy probabilities calculated was 8×10^{-5} except in the tail where the steps in x become 10, and then the maximum error was 3×10^{-4}. (3) The maximum error of twelve $1/\chi_1^2(\alpha=0.5, \beta=-1)$ probabilities was 1.3×10^{-5} for x in steps of 0.01 and 3.6×10^{-5} for x in steps of 0.1.

Values of *cdf* for $\alpha=1.5$, $\beta=0$, as well as the above ones for $\alpha=1$, $\beta=0$ and $\alpha=2$, were derived for comparison with Fama and Roll's [85] 4-place table for *cdf*'s for $\beta=0$ and $\alpha=1.0(0.1)2.0$. In 39 comparisons there was only one difference (3) greater than 1 in the 4th place.

The rather dense grid of values of x, as fine as 0.001 for the largest *pdf* values, is an important contributor to the accuracy of calculation of probabilities. We conclude from the above that probabilities can be calculated by Simpson's rule plus linear interpolation with maximum error of 3×10^{-4} for $\alpha \geqslant 1$. For $\alpha < 1$ we have no rigorous error bound and the errors tend to be larger than for $\alpha \geqslant 1$, but calculated probabilities may well have satisfactory accuracies comparable to those above.

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11. Selected Bibliography

A few listed works, Feller's books in particular, may have material in more than one of the following four categories, but each is listed only once. Several Russian papers have English translations in "Selected Translations in Mathematical Statistics and Probability", published for the Institute of Mathematical Statistics by the American Mathematical Society, Providence, Rhode Island. These are identified below as AMS-IMS.

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PROBABILITY DENSITY FUNCTION P(X;ALPHA,BETA)

ALPHA = .25

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	X
0.000	7.6394	6.8502	6.8502	4.8079	4.8079	2.2737	2.2737	0.0000	0.000
0.001	5.6948	6.3547	4.4417	6.1773	2.8977	5.0616	1.3461	3.1154	0.001
0.002	4.6299	5.3938	3.5237	5.6279	2.2742	5.1996	1.0566	4.0753	0.002
0.003	3.9662	4.7186	2.9832	5.0931	1.9162	4.9694	0.8910	4.2832	0.003
0.004	3.5002	4.2182	2.6138	4.6482	1.6743	4.6848	0.7793	4.2581	0.004
0.005	3.1493	3.8294	2.3403	4.2802	1.4966	4.4098	0.6972	4.1495	0.005
0.006	2.8730	3.5165	2.1273	3.9721	1.3588	4.1586	0.6336	4.0112	0.006
0.007	2.6483	3.2580	1.9555	3.7103	1.2480	3.9328	0.5824	3.8651	0.007
0.008	2.4609	3.0400	1.8132	3.4848	1.1565	3.7304	0.5401	3.7207	0.008
0.009	2.3018	2.8531	1.6930	3.2882	1.0794	3.5486	0.5044	3.5821	0.009
0.01	2.1646	2.6907	1.5897	3.1152	1.0132	3.3847	0.4738	3.4510	0.01
0.02	1.3915	1.7553	1.0146	2.0814	0.6461	2.3431	0.3036	2.5142	0.02
0.03	1.0443	1.3252	0.7595	1.5870	0.4839	1.8131	0.2281	1.9863	0.03
0.04	0.8419	1.0718	0.6116	1.2907	0.3899	1.4869	0.1842	1.6482	0.04
0.05	0.7078	0.9029	0.5139	1.0912	0.3278	1.2640	0.1551	1.4118	0.05
0.06	0.6118	0.7815	0.4440	0.9469	0.2834	1.1011	0.1343	1.2366	0.06
0.07	0.5394	0.6897	0.3914	0.8373	0.2500	0.9764	0.1186	1.1011	0.07
0.08	0.4828	0.6177	0.3503	0.7509	0.2238	0.8777	0.1063	0.9930	0.08
0.09	0.4371	0.5596	0.3172	0.6811	0.2028	0.7975	0.0964	0.9046	0.09
0.10	0.3995	0.5117	0.2899	0.6233	0.1854	0.7310	0.0882	0.8309	0.10
0.11	0.3680	0.4714	0.2670	0.5747	0.1709	0.6749	0.0814	0.7685	0.11
0.12	0.3411	0.4371	0.2475	0.5332	0.1585	0.6268	0.0755	0.7149	0.12
0.13	0.3179	0.4075	0.2307	0.4974	0.1478	0.5852	0.0705	0.6683	0.13
0.14	0.2977	0.3817	0.2161	0.4661	0.1384	0.5488	0.0661	0.6275	0.14
0.15	0.2800	0.3590	0.2032	0.4385	0.1302	0.5167	0.0622	0.5914	0.15
0.16	0.2642	0.3388	0.1918	0.4140	0.1230	0.4881	0.0587	0.5592	0.16
0.17	0.2501	0.3208	0.1816	0.3921	0.1165	0.4626	0.0557	0.5304	0.17
0.18	0.2375	0.3046	0.1724	0.3724	0.1106	0.4396	0.0529	0.5043	0.18
0.19	0.2261	0.2899	0.1642	0.3546	0.1053	0.4187	0.0504	0.4807	0.19
0.20	0.2157	0.2766	0.1567	0.3384	0.1005	0.3997	0.0481	0.4592	0.20
0.21	0.2062	0.2645	0.1498	0.3236	0.0961	0.3824	0.0460	0.4396	0.21
0.22	0.1975	0.2534	0.1435	0.3101	0.0921	0.3665	0.0441	0.4215	0.22
0.23	0.1895	0.2431	0.1377	0.2976	0.0884	0.3519	0.0424	0.4048	0.23
0.24	0.1822	0.2337	0.1324	0.2861	0.0850	0.3383	0.0408	0.3895	0.24
0.25	0.1754	0.2249	0.1274	0.2754	0.0819	0.3258	0.0392	0.3752	0.25
0.26	0.1690	0.2168	0.1228	0.2655	0.0789	0.3142	0.0379	0.3619	0.26
0.27	0.1631	0.2093	0.1186	0.2562	0.0762	0.3033	0.0366	0.3495	0.27
0.28	0.1576	0.2022	0.1146	0.2476	0.0737	0.2932	0.0353	0.3379	0.28
0.29	0.1525	0.1956	0.1109	0.2396	0.0713	0.2837	0.0342	0.3271	0.29
0.30	0.1477	0.1894	0.1074	0.2320	0.0691	0.2747	0.0331	0.3169	0.30
0.31	0.1431	0.1836	0.1041	0.2249	0.0670	0.2664	0.0321	0.3073	0.31
0.32	0.1389	0.1781	0.1010	0.2182	0.0650	0.2585	0.0312	0.2983	0.32
0.33	0.1348	0.1730	0.0981	0.2119	0.0631	0.2510	0.0303	0.2898	0.33
0.34	0.1310	0.1681	0.0953	0.2059	0.0613	0.2440	0.0295	0.2817	0.34
0.35	0.1274	0.1635	0.0927	0.2003	0.0597	0.2374	0.0287	0.2741	0.35
0.36	0.1240	0.1591	0.0902	0.1949	0.0581	0.2310	0.0279	0.2668	0.36
0.37	0.1208	0.1549	0.0879	0.1899	0.0566	0.2251	0.0272	0.2600	0.37
0.38	0.1177	0.1510	0.0857	0.1850	0.0552	0.2194	0.0265	0.2534	0.38
0.39	0.1148	0.1473	0.0835	0.1804	0.0538	0.2139	0.0259	0.2472	0.39
0.40	0.1120	0.1437	0.0815	0.1761	0.0525	0.2088	0.0253	0.2413	0.40

PROBABILITY DENSITY FUNCTION P(X;ALPHA,BETA)

ALPHA = .25

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	X
0.41	0.1094	0.1403	0.0796	0.1719	0.0513	0.2039	0.0247	0.2356	0.41
0.42	0.1069	0.1370	0.0778	0.1679	0.0501	0.1991	0.0241	0.2302	0.42
0.43	0.1044	0.1339	0.0760	0.1641	0.0490	0.1947	0.0236	0.2251	0.43
0.44	0.1021	0.1309	0.0743	0.1605	0.0479	0.1903	0.0231	0.2201	0.44
0.45	0.0999	0.1281	0.0727	0.1570	0.0469	0.1862	0.0226	0.2154	0.45
0.46	0.0978	0.1254	0.0712	0.1536	0.0459	0.1823	0.0221	0.2108	0.46
0.47	0.0957	0.1227	0.0697	0.1504	0.0449	0.1785	0.0216	0.2065	0.47
0.48	0.0938	0.1202	0.0683	0.1474	0.0440	0.1748	0.0212	0.2023	0.48
0.49	0.0919	0.1178	0.0669	0.1444	0.0432	0.1713	0.0208	0.1983	0.49
0.50	0.0901	0.1155	0.0656	0.1416	0.0423	0.1680	0.0204	0.1944	0.50
0.51	0.0883	0.1133	0.0643	0.1388	0.0415	0.1647	0.0200	0.1907	0.51
0.52	0.0867	0.1111	0.0631	0.1362	0.0407	0.1616	0.0196	0.1871	0.52
0.53	0.0850	0.1090	0.0620	0.1336	0.0400	0.1586	0.0193	0.1836	0.53
0.54	0.0835	0.1070	0.0608	0.1312	0.0392	0.1557	0.0189	0.1802	0.54
0.55	0.0820	0.1051	0.0597	0.1288	0.0385	0.1529	0.0186	0.1770	0.55
0.56	0.0805	0.1032	0.0587	0.1265	0.0379	0.1502	0.0183	0.1739	0.56
0.57	0.0791	0.1014	0.0577	0.1243	0.0372	0.1476	0.0179	0.1709	0.57
0.58	0.0778	0.0997	0.0567	0.1222	0.0366	0.1450	0.0176	0.1680	0.58
0.59	0.0765	0.0980	0.0557	0.1201	0.0360	0.1426	0.0174	0.1652	0.59
0.60	0.0752	0.0964	0.0548	0.1181	0.0354	0.1402	0.0171	0.1624	0.60
0.61	0.0740	0.0948	0.0539	0.1162	0.0348	0.1380	0.0168	0.1598	0.61
0.62	0.0728	0.0933	0.0531	0.1143	0.0342	0.1357	0.0165	0.1572	0.62
0.63	0.0716	0.0918	0.0522	0.1125	0.0337	0.1336	0.0163	0.1547	0.63
0.64	0.0705	0.0904	0.0514	0.1107	0.0332	0.1315	0.0160	0.1523	0.64
0.65	0.0694	0.0890	0.0506	0.1090	0.0327	0.1295	0.0158	0.1500	0.65
0.66	0.0684	0.0876	0.0498	0.1074	0.0322	0.1275	0.0155	0.1477	0.66
0.67	0.0673	0.0863	0.0491	0.1058	0.0317	0.1256	0.0153	0.1455	0.67
0.68	0.0663	0.0850	0.0484	0.1042	0.0313	0.1237	0.0151	0.1434	0.68
0.69	0.0654	0.0838	0.0477	0.1027	0.0308	0.1219	0.0149	0.1413	0.69
0.70	0.0644	0.0826	0.0470	0.1012	0.0304	0.1202	0.0147	0.1393	0.70
0.71	0.0635	0.0814	0.0463	0.0998	0.0299	0.1185	0.0145	0.1373	0.71
0.72	0.0626	0.0803	0.0457	0.0984	0.0295	0.1168	0.0143	0.1354	0.72
0.73	0.0618	0.0791	0.0451	0.0970	0.0291	0.1152	0.0141	0.1335	0.73
0.74	0.0609	0.0781	0.0444	0.0957	0.0287	0.1136	0.0139	0.1317	0.74
0.75	0.0601	0.0770	0.0439	0.0944	0.0283	0.1121	0.0137	0.1299	0.75
0.76	0.0593	0.0760	0.0433	0.0931	0.0280	0.1106	0.0135	0.1282	0.76
0.77	0.0585	0.0750	0.0427	0.0919	0.0276	0.1092	0.0133	0.1265	0.77
0.78	0.0578	0.0740	0.0422	0.0907	0.0273	0.1077	0.0132	0.1249	0.78
0.79	0.0570	0.0731	0.0416	0.0896	0.0269	0.1064	0.0130	0.1233	0.79
0.80	0.0563	0.0721	0.0411	0.0884	0.0266	0.1050	0.0128	0.1217	0.80
0.81	0.0556	0.0712	0.0406	0.0873	0.0262	0.1037	0.0127	0.1202	0.81
0.82	0.0549	0.0703	0.0401	0.0862	0.0259	0.1024	0.0125	0.1187	0.82
0.83	0.0543	0.0695	0.0396	0.0852	0.0256	0.1011	0.0124	0.1173	0.83
0.84	0.0536	0.0686	0.0391	0.0841	0.0253	0.0999	0.0122	0.1159	0.84
0.85	0.0530	0.0678	0.0386	0.0831	0.0250	0.0987	0.0121	0.1145	0.85
0.86	0.0523	0.0670	0.0382	0.0821	0.0247	0.0976	0.0119	0.1131	0.86
0.87	0.0517	0.0662	0.0377	0.0812	0.0244	0.0964	0.0118	0.1118	0.87
0.88	0.0511	0.0655	0.0373	0.0802	0.0241	0.0953	0.0117	0.1105	0.88
0.89	0.0505	0.0647	0.0369	0.0793	0.0239	0.0942	0.0115	0.1092	0.89
0.90	0.0500	0.0640	0.0365	0.0784	0.0236	0.0931	0.0114	0.1080	0.90

PROBABILITY DENSITY FUNCTION P(X;ALPHA,BETA)

ALPHA = .25

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	X
0.91	0.0494	0.0633	0.0361	0.0775	0.0233	0.0921	0.0113	0.1068	0.91
0.92	0.0489	0.0626	0.0357	0.0767	0.0231	0.0911	0.0112	0.1056	0.92
0.93	0.0483	0.0619	0.0353	0.0758	0.0228	0.0901	0.0110	0.1044	0.93
0.94	0.0478	0.0612	0.0349	0.0750	0.0226	0.0891	0.0109	0.1033	0.94
0.95	0.0473	0.0605	0.0345	0.0742	0.0223	0.0881	0.0108	0.1022	0.95
0.96	0.0468	0.0599	0.0342	0.0734	0.0221	0.0872	0.0107	0.1011	0.96
0.97	0.0463	0.0593	0.0338	0.0726	0.0219	0.0862	0.0106	0.1000	0.97
0.98	0.0458	0.0586	0.0334	0.0718	0.0216	0.0853	0.0105	0.0990	0.98
0.99	0.0453	0.0580	0.0331	0.0711	0.0214	0.0845	0.0104	0.0980	0.99
1.00	0.0449	0.0574	0.0328	0.0704	0.0212	0.0836	0.0103	0.0969	1.00
1.01	0.0444	0.0568	0.0324	0.0696	0.0210	0.0827	0.0102	0.0960	1.01
1.02	0.0440	0.0563	0.0321	0.0689	0.0208	0.0819	0.0101	0.0950	1.02
1.03	0.0435	0.0557	0.0318	0.0683	0.0206	0.0811	0.0100	0.0940	1.03
1.04	0.0431	0.0552	0.0315	0.0676	0.0204	0.0803	0.0099	0.0931	1.04
1.05	0.0427	0.0546	0.0312	0.0669	0.0202	0.0795	0.0098	0.0922	1.05
1.06	0.0423	0.0541	0.0309	0.0663	0.0200	0.0787	0.0097	0.0913	1.06
1.07	0.0418	0.0535	0.0306	0.0656	0.0198	0.0780	0.0096	0.0904	1.07
1.08	0.0414	0.0530	0.0303	0.0650	0.0196	0.0772	0.0095	0.0896	1.08
1.09	0.0410	0.0525	0.0300	0.0644	0.0194	0.0765	0.0094	0.0887	1.09
1.10	0.0407	0.0521	0.0297	0.0638	0.0192	0.0757	0.0093	0.0879	1.10
1.11	0.0403	0.0516	0.0294	0.0632	0.0191	0.0750	0.0092	0.0871	1.11
1.12	0.0399	0.0511	0.0292	0.0626	0.0189	0.0744	0.0092	0.0863	1.12
1.13	0.0396	0.0506	0.0289	0.0620	0.0187	0.0737	0.0091	0.0855	1.13
1.14	0.0392	0.0502	0.0286	0.0615	0.0185	0.0730	0.0090	0.0847	1.14
1.15	0.0388	0.0497	0.0284	0.0609	0.0184	0.0723	0.0089	0.0839	1.15
1.16	0.0385	0.0493	0.0281	0.0604	0.0182	0.0717	0.0088	0.0832	1.16
1.17	0.0382	0.0488	0.0279	0.0598	0.0181	0.0711	0.0087	0.0824	1.17
1.18	0.0378	0.0484	0.0276	0.0593	0.0179	0.0704	0.0087	0.0817	1.18
1.19	0.0375	0.0480	0.0274	0.0588	0.0177	0.0698	0.0086	0.0810	1.19
1.20	0.0372	0.0476	0.0272	0.0583	0.0176	0.0692	0.0085	0.0803	1.20
1.21	0.0369	0.0472	0.0269	0.0578	0.0174	0.0686	0.0085	0.0796	1.21
1.22	0.0365	0.0468	0.0267	0.0573	0.0173	0.0680	0.0084	0.0789	1.22
1.23	0.0362	0.0463	0.0265	0.0568	0.0172	0.0675	0.0083	0.0783	1.23
1.24	0.0359	0.0460	0.0262	0.0563	0.0170	0.0669	0.0082	0.0776	1.24
1.25	0.0356	0.0456	0.0260	0.0558	0.0169	0.0663	0.0082	0.0770	1.25
1.26	0.0353	0.0452	0.0258	0.0554	0.0167	0.0658	0.0081	0.0763	1.26
1.27	0.0350	0.0448	0.0256	0.0549	0.0166	0.0652	0.0080	0.0757	1.27
1.28	0.0348	0.0445	0.0254	0.0545	0.0165	0.0647	0.0080	0.0751	1.28
1.29	0.0345	0.0441	0.0252	0.0540	0.0163	0.0642	0.0079	0.0745	1.29
1.30	0.0342	0.0438	0.0250	0.0536	0.0162	0.0637	0.0078	0.0739	1.30
1.31	0.0339	0.0434	0.0248	0.0532	0.0161	0.0632	0.0078	0.0733	1.31
1.32	0.0337	0.0431	0.0246	0.0527	0.0159	0.0627	0.0077	0.0727	1.32
1.33	0.0334	0.0427	0.0244	0.0523	0.0158	0.0622	0.0077	0.0721	1.33
1.34	0.0331	0.0424	0.0242	0.0519	0.0157	0.0617	0.0076	0.0716	1.34
1.35	0.0329	0.0421	0.0240	0.0515	0.0156	0.0612	0.0076	0.0710	1.35
1.36	0.0326	0.0417	0.0239	0.0511	0.0155	0.0607	0.0075	0.0705	1.36
1.37	0.0324	0.0414	0.0237	0.0507	0.0153	0.0603	0.0074	0.0699	1.37
1.38	0.0321	0.0411	0.0235	0.0504	0.0152	0.0598	0.0074	0.0694	1.38
1.39	0.0319	0.0408	0.0233	0.0500	0.0151	0.0594	0.0073	0.0689	1.39
1.40	0.0317	0.0405	0.0231	0.0496	0.0150	0.0589	0.0073	0.0684	1.40

ALPHA = .25

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	X
1.41	0.0314	0.0402	0.0230	0.0492	0.0149	0.0585	0.0072	0.0679	1.41
1.42	0.0312	0.0399	0.0228	0.0489	0.0148	0.0580	0.0072	0.0674	1.42
1.43	0.0310	0.0396	0.0226	0.0485	0.0147	0.0576	0.0071	0.0669	1.43
1.44	0.0307	0.0393	0.0225	0.0482	0.0146	0.0572	0.0071	0.0664	1.44
1.45	0.0305	0.0390	0.0223	0.0478	0.0145	0.0568	0.0070	0.0659	1.45
1.46	0.0303	0.0387	0.0222	0.0475	0.0144	0.0564	0.0070	0.0654	1.46
1.47	0.0301	0.0385	0.0220	0.0471	0.0143	0.0560	0.0069	0.0650	1.47
1.48	0.0299	0.0382	0.0219	0.0468	0.0142	0.0556	0.0069	0.0645	1.48
1.49	0.0297	0.0379	0.0217	0.0465	0.0141	0.0552	0.0068	0.0641	1.49
1.50	0.0295	0.0377	0.0215	0.0461	0.0140	0.0548	0.0068	0.0636	1.50
1.51	0.0293	0.0374	0.0214	0.0458	0.0139	0.0544	0.0067	0.0632	1.51
1.52	0.0291	0.0372	0.0212	0.0455	0.0138	0.0540	0.0067	0.0627	1.52
1.53	0.0289	0.0369	0.0211	0.0452	0.0137	0.0537	0.0066	0.0623	1.53
1.54	0.0287	0.0366	0.0210	0.0449	0.0136	0.0533	0.0066	0.0619	1.54
1.55	0.0285	0.0364	0.0208	0.0446	0.0135	0.0529	0.0065	0.0615	1.55
1.56	0.0283	0.0361	0.0207	0.0443	0.0134	0.0526	0.0065	0.0610	1.56
1.57	0.0281	0.0359	0.0205	0.0440	0.0133	0.0522	0.0065	0.0606	1.57
1.58	0.0279	0.0357	0.0204	0.0437	0.0132	0.0519	0.0064	0.0602	1.58
1.59	0.0277	0.0354	0.0203	0.0434	0.0131	0.0515	0.0064	0.0598	1.59
1.60	0.0275	0.0352	0.0201	0.0431	0.0131	0.0512	0.0063	0.0594	1.60
1.61	0.0273	0.0350	0.0200	0.0428	0.0130	0.0509	0.0063	0.0590	1.61
1.62	0.0272	0.0347	0.0199	0.0425	0.0129	0.0505	0.0063	0.0586	1.62
1.63	0.0270	0.0345	0.0197	0.0423	0.0128	0.0502	0.0062	0.0583	1.63
1.64	0.0268	0.0343	0.0196	0.0420	0.0127	0.0499	0.0062	0.0579	1.64
1.65	0.0266	0.0341	0.0195	0.0417	0.0126	0.0496	0.0061	0.0575	1.65
1.66	0.0265	0.0339	0.0194	0.0415	0.0126	0.0492	0.0061	0.0572	1.66
1.67	0.0263	0.0336	0.0192	0.0412	0.0125	0.0489	0.0061	0.0568	1.67
1.68	0.0262	0.0334	0.0191	0.0409	0.0124	0.0486	0.0060	0.0564	1.68
1.69	0.0260	0.0332	0.0190	0.0407	0.0123	0.0483	0.0060	0.0561	1.69
1.70	0.0258	0.0330	0.0189	0.0404	0.0123	0.0480	0.0059	0.0557	1.70
1.71	0.0257	0.0328	0.0188	0.0402	0.0122	0.0477	0.0059	0.0554	1.71
1.72	0.0255	0.0326	0.0187	0.0399	0.0121	0.0474	0.0059	0.0550	1.72
1.73	0.0253	0.0324	0.0185	0.0397	0.0120	0.0471	0.0059	0.0547	1.73
1.74	0.0252	0.0322	0.0184	0.0394	0.0120	0.0468	0.0058	0.0544	1.74
1.75	0.0251	0.0320	0.0183	0.0392	0.0119	0.0466	0.0058	0.0540	1.75
1.76	0.0249	0.0318	0.0182	0.0390	0.0118	0.0463	0.0057	0.0537	1.76
1.77	0.0248	0.0316	0.0181	0.0387	0.0118	0.0460	0.0057	0.0534	1.77
1.78	0.0246	0.0315	0.0180	0.0385	0.0117	0.0457	0.0057	0.0531	1.78
1.79	0.0245	0.0313	0.0179	0.0383	0.0116	0.0455	0.0056	0.0528	1.79
1.80	0.0243	0.0311	0.0178	0.0381	0.0115	0.0452	0.0056	0.0525	1.80
1.81	0.0242	0.0309	0.0177	0.0378	0.0115	0.0449	0.0056	0.0522	1.81
1.82	0.0240	0.0307	0.0176	0.0376	0.0114	0.0447	0.0055	0.0518	1.82
1.83	0.0239	0.0305	0.0175	0.0374	0.0113	0.0444	0.0055	0.0516	1.83
1.84	0.0238	0.0304	0.0174	0.0372	0.0113	0.0441	0.0055	0.0513	1.84
1.85	0.0236	0.0302	0.0173	0.0370	0.0112	0.0439	0.0054	0.0510	1.85
1.86	0.0235	0.0300	0.0172	0.0368	0.0112	0.0436	0.0054	0.0507	1.86
1.87	0.0233	0.0298	0.0171	0.0365	0.0111	0.0434	0.0054	0.0504	1.87
1.88	0.0232	0.0297	0.0170	0.0363	0.0110	0.0432	0.0054	0.0501	1.88
1.89	0.0231	0.0295	0.0169	0.0361	0.0110	0.0429	0.0053	0.0498	1.89
1.90	0.0230	0.0293	0.0168	0.0359	0.0109	0.0427	0.0053	0.0495	1.90

PROBABILITY DENSITY FUNCTION P(X;ALPHA,BETA)

ALPHA = .25

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	X
1.91	0.0228	0.0292	0.0167	0.0357	0.0108	0.0424	0.0053	0.0493	1.91
1.92	0.0227	0.0290	0.0166	0.0355	0.0108	0.0422	0.0053	0.0490	1.92
1.93	0.0226	0.0289	0.0165	0.0353	0.0107	0.0420	0.0052	0.0487	1.93
1.94	0.0225	0.0287	0.0164	0.0351	0.0107	0.0417	0.0052	0.0485	1.94
1.95	0.0223	0.0285	0.0164	0.0350	0.0106	0.0415	0.0052	0.0482	1.95
1.96	0.0222	0.0284	0.0163	0.0348	0.0106	0.0413	0.0051	0.0479	1.96
1.97	0.0221	0.0282	0.0162	0.0346	0.0105	0.0411	0.0051	0.0477	1.97
1.98	0.0220	0.0281	0.0161	0.0344	0.0104	0.0408	0.0051	0.0474	1.98
1.99	0.0219	0.0279	0.0160	0.0342	0.0104	0.0406	0.0050	0.0472	1.99
2.00	0.0217	0.0278	0.0159	0.0340	0.0103	0.0404	0.0050	0.0469	2.00
2.1	0.0206	0.0264	0.0151	0.0323	0.0098	0.0383	0.0048	0.0445	2.1
2.2	0.0197	0.0251	0.0144	0.0307	0.0094	0.0365	0.0045	0.0423	2.2
2.3	0.0187	0.0239	0.0137	0.0293	0.0089	0.0348	0.0043	0.0404	2.3
2.4	0.0179	0.0229	0.0131	0.0280	0.0085	0.0332	0.0041	0.0386	2.4
2.5	0.0171	0.0219	0.0126	0.0268	0.0082	0.0318	0.0040	0.0369	2.5
2.6	0.0164	0.0210	0.0121	0.0257	0.0078	0.0305	0.0038	0.0354	2.6
2.7	0.0158	0.0201	0.0116	0.0246	0.0075	0.0293	0.0037	0.0340	2.7
2.8	0.0152	0.0194	0.0111	0.0237	0.0072	0.0281	0.0035	0.0327	2.8
2.9	0.0146	0.0186	0.0107	0.0228	0.0070	0.0271	0.0034	0.0314	2.9
3.0	0.0141	0.0180	0.0103	0.0220	0.0067	0.0261	0.0033	0.0303	3.0
3.1	0.0136	0.0174	0.0100	0.0212	0.0065	0.0252	0.0032	0.0292	3.1
3.2	0.0131	0.0168	0.0096	0.0205	0.0063	0.0243	0.0030	0.0282	3.2
3.3	0.0127	0.0162	0.0093	0.0198	0.0061	0.0235	0.0030	0.0273	3.3
3.4	0.0123	0.0157	0.0090	0.0192	0.0059	0.0228	0.0029	0.0264	3.4
3.5	0.0119	0.0152	0.0087	0.0186	0.0057	0.0221	0.0028	0.0256	3.5
3.6	0.0116	0.0148	0.0085	0.0180	0.0055	0.0214	0.0027	0.0248	3.6
3.7	0.0112	0.0143	0.0082	0.0175	0.0054	0.0208	0.0026	0.0241	3.7
3.8	0.0109	0.0139	0.0080	0.0170	0.0052	0.0202	0.0025	0.0234	3.8
3.9	0.0106	0.0135	0.0078	0.0165	0.0051	0.0196	0.0025	0.0228	3.9
4.0	0.0103	0.0131	0.0076	0.0161	0.0049	0.0191	0.0024	0.0221	4.0
4.1	0.0100	0.0128	0.0074	0.0156	0.0048	0.0186	0.0023	0.0215	4.1
4.2	0.0098	0.0125	0.0072	0.0152	0.0047	0.0181	0.0023	0.0210	4.2
4.3	0.0095	0.0121	0.0070	0.0148	0.0046	0.0176	0.0022	0.0204	4.3
4.4	0.0093	0.0118	0.0068	0.0145	0.0045	0.0172	0.0022	0.0199	4.4
4.5	0.0091	0.0115	0.0067	0.0141	0.0043	0.0167	0.0021	0.0194	4.5
4.6	0.0088	0.0113	0.0065	0.0138	0.0042	0.0163	0.0021	0.0190	4.6
4.7	0.0086	0.0110	0.0063	0.0135	0.0041	0.0160	0.0020	0.0185	4.7
4.8	0.0084	0.0108	0.0062	0.0131	0.0040	0.0156	0.0020	0.0181	4.8
4.9	0.0083	0.0105	0.0061	0.0129	0.0040	0.0152	0.0019	0.0177	4.9
5.0	0.0081	0.0103	0.0059	0.0126	0.0039	0.0149	0.0019	0.0173	5.0
5.1	0.0079	0.0101	0.0058	0.0123	0.0038	0.0146	0.0018	0.0169	5.1
5.2	0.0077	0.0098	0.0057	0.0120	0.0037	0.0143	0.0018	0.0166	5.2
5.3	0.0076	0.0096	0.0056	0.0118	0.0036	0.0140	0.0018	0.0162	5.3
5.4	0.0074	0.0095	0.0054	0.0115	0.0036	0.0137	0.0017	0.0159	5.4
5.5	0.0073	0.0093	0.0053	0.0113	0.0035	0.0134	0.0017	0.0156	5.5
5.6	0.0071	0.0091	0.0052	0.0111	0.0034	0.0131	0.0017	0.0152	5.6
5.7	0.0070	0.0089	0.0051	0.0109	0.0034	0.0129	0.0016	0.0149	5.7
5.8	0.0068	0.0087	0.0050	0.0107	0.0033	0.0126	0.0016	0.0147	5.8
5.9	0.0067	0.0086	0.0049	0.0105	0.0032	0.0124	0.0016	0.0144	5.9
6.0	0.0066	0.0084	0.0049	0.0103	0.0032	0.0122	0.0015	0.0141	6.0

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ALPHA = .25

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	X
6.1	0.0065	0.0083	0.0048	0.0101	0.0031	0.0120	0.0015	0.0139	6.1
6.2	0.0064	0.0081	0.0047	0.0099	0.0030	0.0117	0.0015	0.0136	6.2
6.3	0.0063	0.0080	0.0046	0.0097	0.0030	0.0115	0.0015	0.0134	6.3
6.4	0.0062	0.0078	0.0045	0.0095	0.0029	0.0113	0.0014	0.0131	6.4
6.5	0.0060	0.0077	0.0044	0.0094	0.0029	0.0111	0.0014	0.0129	6.5
6.6	0.0059	0.0076	0.0044	0.0092	0.0029	0.0109	0.0014	0.0127	6.6
6.7	0.0058	0.0074	0.0043	0.0091	0.0028	0.0108	0.0014	0.0125	6.7
6.8	0.0058	0.0073	0.0042	0.0089	0.0028	0.0106	0.0014	0.0123	6.8
6.9	0.0056	0.0072	0.0042	0.0088	0.0027	0.0104	0.0013	0.0121	6.9
7.0	0.0056	0.0071	0.0041	0.0086	0.0027	0.0103	0.0013	0.0119	7.0
7.1	0.0055	0.0070	0.0040	0.0085	0.0026	0.0101	0.0013	0.0117	7.1
7.2	0.0054	0.0069	0.0040	0.0084	0.0026	0.0099	0.0013	0.0115	7.2
7.3	0.0053	0.0068	0.0039	0.0083	0.0025	0.0098	0.0012	0.0113	7.3
7.4	0.0052	0.0067	0.0038	0.0081	0.0025	0.0096	0.0012	0.0112	7.4
7.5	0.0051	0.0066	0.0038	0.0080	0.0025	0.0095	0.0012	0.0110	7.5
7.6	0.0051	0.0065	0.0037	0.0079	0.0024	0.0093	0.0012	0.0108	7.6
7.7	0.0050	0.0064	0.0037	0.0078	0.0024	0.0092	0.0012	0.0107	7.7
7.8	0.0049	0.0063	0.0036	0.0077	0.0024	0.0091	0.0012	0.0105	7.8
7.9	0.0049	0.0062	0.0036	0.0076	0.0023	0.0089	0.0011	0.0104	7.9
8.0	0.0048	0.0061	0.0035	0.0074	0.0023	0.0088	0.0011	0.0102	8.0
9.	0.0042	0.0053	0.0031	0.0065	0.0020	0.0077	0.0010	0.0090	9.
10.	0.0037	0.0047	0.0027	0.0058	0.0018	0.0069	0.0009	0.0079	10.
11.	0.0034	0.0043	0.0025	0.0052	0.0016	0.0062	0.0008	0.0071	11.
12.	0.0030	0.0039	0.0022	0.0047	0.0015	0.0056	0.0007	0.0065	12.
13.	0.0028	0.0035	0.0020	0.0043	0.0013	0.0051	0.0006	0.0059	13.
14.	0.0025	0.0032	0.0019	0.0040	0.0012	0.0047	0.0006	0.0054	14.
15.	0.0024	0.0030	0.0017	0.0036	0.0011	0.0043	0.0006	0.0050	15.
16.	0.0022	0.0028	0.0016	0.0034	0.0011	0.0040	0.0005	0.0046	16.
17.	0.0020	0.0026	0.0015	0.0032	0.0010	0.0037	0.0005	0.0043	17.
18.	0.0019	0.0024	0.0014	0.0030	0.0009	0.0035	0.0005	0.0041	18.
19.	0.0018	0.0023	0.0013	0.0028	0.0009	0.0033	0.0004	0.0038	19.
20.	0.0017	0.0022	0.0012	0.0026	0.0008	0.0031	0.0004	0.0036	20.
21.	0.0016	0.0020	0.0012	0.0025	0.0008	0.0029	0.0004	0.0034	21.
22.	0.0015	0.0019	0.0011	0.0023	0.0007	0.0028	0.0004	0.0032	22.
23.	0.0014	0.0018	0.0011	0.0022	0.0007	0.0026	0.0003	0.0031	23.
24.	0.0014	0.0017	0.0010	0.0021	0.0007	0.0025	0.0003	0.0029	24.
25.	0.0013	0.0017	0.0010	0.0020	0.0006	0.0024	0.0003	0.0028	25.
26.	0.0013	0.0016	0.0009	0.0019	0.0006	0.0023	0.0003	0.0027	26.
27.	0.0012	0.0015	0.0009	0.0019	0.0006	0.0022	0.0003	0.0025	27.
28.	0.0011	0.0015	0.0008	0.0018	0.0006	0.0021	0.0003	0.0024	28.
29.	0.0011	0.0014	0.0008	0.0017	0.0005	0.0020	0.0003	0.0023	29.
30.	0.0011	0.0014	0.0008	0.0016	0.0005	0.0019	0.0002	0.0023	30.
31.	0.0010	0.0013	0.0008	0.0016	0.0005	0.0019	0.0002	0.0022	31.
32.	0.0010	0.0012	0.0007	0.0015	0.0005	0.0018	0.0002	0.0021	32.
33.	0.0009	0.0012	0.0007	0.0015	0.0005	0.0017	0.0002	0.0020	33.
34.	0.0009	0.0012	0.0007	0.0014	0.0004	0.0017	0.0002	0.0019	34.
35.	0.0009	0.0011	0.0007	0.0014	0.0004	0.0016	0.0002	0.0019	35.
36.	0.0009	0.0011	0.0006	0.0013	0.0004	0.0016	0.0002	0.0018	36.
37.	0.0008	0.0011	0.0006	0.0013	0.0004	0.0015	0.0002	0.0018	37.
38.	0.0008	0.0010	0.0006	0.0012	0.0004	0.0015	0.0002	0.0017	38.

PROBABILITY DENSITY FUNCTION P(X;ALPHA,BETA)

ALPHA = .25

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	X
48.	0.0006	0.0008	0.0005	0.0009	0.0003	0.0011	0.0001	0.0013	48.
58.	0.0005	0.0006	0.0004	0.0008	0.0002	0.0009		0.0010	58.
68.	0.0004	0.0005	0.0003	0.0006	0.0002	0.0007		0.0009	68.
78.	0.0004	0.0004	0.0003	0.0005	0.0002	0.0006		0.0007	78.
88.	0.0003	0.0004	0.0002	0.0005	0.0001	0.0005		0.0006	88.
98.	0.0003	0.0003	0.0002	0.0004		0.0005		0.0006	98.
108.	0.0002	0.0003	0.0002	0.0004		0.0004		0.0005	108.
118.	0.0002	0.0003	0.0002	0.0003		0.0004		0.0004	118.
128.	0.0002	0.0002	0.0001	0.0003		0.0003		0.0004	128.
138.	0.0002	0.0002		0.0003		0.0003		0.0004	138.
238.	0.0001	0.0001		0.0001		0.0002		0.0002	238.
338.						0.0001		0.0001	338.

ALPHA = .50

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	X
0.000	0.6366	0.5287	0.5287	0.3056	0.3056	0.1141	0.1141	0.0000	0.000
0.001	0.6366	0.5315	0.5259	0.3079	0.3032	0.1149	0.1132	0.0000	0.001
0.002	0.6365	0.5343	0.5231	0.3103	0.3009	0.1158	0.1124	0.0000	0.002
0.003	0.6363	0.5371	0.5202	0.3128	0.2987	0.1167	0.1116	0.0000	0.003
0.004	0.6360	0.5398	0.5174	0.3153	0.2965	0.1176	0.1108	0.0000	0.004
0.005	0.6357	0.5426	0.5146	0.3178	0.2943	0.1185	0.1100	0.0000	0.005
0.006	0.6353	0.5453	0.5118	0.3203	0.2921	0.1194	0.1093	0.0000	0.006
0.007	0.6348	0.5480	0.5090	0.3229	0.2900	0.1204	0.1085	0.0000	0.007
0.008	0.6342	0.5507	0.5062	0.3256	0.2879	0.1213	0.1078	0.0000	0.008
0.009	0.6336	0.5534	0.5034	0.3283	0.2859	0.1223	0.1071	0.0000	0.009
0.01	0.6329	0.5560	0.5006	0.3310	0.2838	0.1233	0.1064	0.0000	0.01
0.02	0.6226	0.5799	0.4735	0.3605	0.2651	0.1348	0.0997	0.0000	0.02
0.03	0.6077	0.5981	0.4481	0.3935	0.2487	0.1497	0.0940	0.0000	0.03
0.04	0.5900	0.6096	0.4246	0.4278	0.2343	0.1697	0.0890	0.0002	0.04
0.05	0.5709	0.6150	0.4030	0.4605	0.2215	0.1956	0.0845	0.0016	0.05
0.06	0.5513	0.6152	0.3832	0.4897	0.2101	0.2268	0.0805	0.0065	0.06
0.07	0.5318	0.6112	0.3651	0.5141	0.1998	0.2611	0.0768	0.0170	0.07
0.08	0.5127	0.6042	0.3484	0.5335	0.1905	0.2964	0.0735	0.0340	0.08
0.09	0.4942	0.5950	0.3331	0.5482	0.1820	0.3307	0.0705	0.0571	0.09
0.10	0.4764	0.5841	0.3190	0.5585	0.1743	0.3628	0.0678	0.0850	0.10
0.11	0.4595	0.5722	0.3059	0.5651	0.1672	0.3918	0.0652	0.1161	0.11
0.12	0.4434	0.5597	0.2938	0.5685	0.1606	0.4174	0.0629	0.1488	0.12
0.13	0.4281	0.5467	0.2825	0.5692	0.1545	0.4395	0.0607	0.1818	0.13
0.14	0.4136	0.5336	0.2720	0.5677	0.1489	0.4582	0.0586	0.2141	0.14
0.15	0.3999	0.5205	0.2622	0.5645	0.1437	0.4736	0.0567	0.2450	0.15
0.16	0.3869	0.5075	0.2531	0.5599	0.1388	0.4862	0.0549	0.2739	0.16
0.17	0.3745	0.4948	0.2445	0.5541	0.1342	0.4960	0.0533	0.3005	0.17
0.18	0.3628	0.4823	0.2365	0.5475	0.1299	0.5035	0.0517	0.3248	0.18
0.19	0.3517	0.4701	0.2289	0.5402	0.1259	0.5090	0.0502	0.3466	0.19
0.20	0.3411	0.4582	0.2218	0.5323	0.1221	0.5126	0.0488	0.3661	0.20
0.21	0.3311	0.4467	0.2150	0.5241	0.1185	0.5147	0.0475	0.3833	0.21
0.22	0.3216	0.4355	0.2086	0.5156	0.1151	0.5154	0.0462	0.3983	0.22
0.23	0.3125	0.4248	0.2026	0.5069	0.1119	0.5149	0.0450	0.4113	0.23
0.24	0.3039	0.4143	0.1969	0.4981	0.1088	0.5134	0.0439	0.4225	0.24
0.25	0.2956	0.4043	0.1915	0.4893	0.1059	0.5111	0.0428	0.4319	0.25

PROBABILITY DENSITY FUNCTION P(X;ALPHA,BETA)

ALPHA = .50

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	X
0.26	0.2878	0.3946	0.1863	0.4805	0.1032	0.5080	0.0418	0.4398	0.26
0.27	0.2803	0.3852	0.1814	0.4718	0.1006	0.5044	0.0408	0.4463	0.27
0.28	0.2731	0.3762	0.1767	0.4631	0.0981	0.5002	0.0399	0.4515	0.28
0.29	0.2663	0.3674	0.1723	0.4546	0.0957	0.4956	0.0390	0.4555	0.29
0.30	0.2597	0.3590	0.1680	0.4461	0.0935	0.4907	0.0381	0.4586	0.30
0.31	0.2534	0.3509	0.1640	0.4378	0.0913	0.4854	0.0373	0.4607	0.31
0.32	0.2474	0.3431	0.1601	0.4297	0.0892	0.4800	0.0365	0.4619	0.32
0.33	0.2417	0.3356	0.1564	0.4217	0.0872	0.4743	0.0357	0.4625	0.33
0.34	0.2361	0.3283	0.1528	0.4139	0.0853	0.4685	0.0350	0.4624	0.34
0.35	0.2308	0.3212	0.1494	0.4062	0.0835	0.4627	0.0343	0.4617	0.35
0.36	0.2257	0.3144	0.1461	0.3988	0.0817	0.4567	0.0336	0.4605	0.36
0.37	0.2208	0.3079	0.1430	0.3915	0.0801	0.4507	0.0330	0.4589	0.37
0.38	0.2161	0.3015	0.1399	0.3843	0.0784	0.4447	0.0324	0.4569	0.38
0.39	0.2115	0.2954	0.1370	0.3774	0.0769	0.4386	0.0317	0.4545	0.39
0.40	0.2071	0.2895	0.1342	0.3706	0.0753	0.4326	0.0312	0.4518	0.40
0.41	0.2029	0.2838	0.1315	0.3640	0.0739	0.4266	0.0306	0.4489	0.41
0.42	0.1988	0.2782	0.1289	0.3576	0.0725	0.4207	0.0301	0.4457	0.42
0.43	0.1949	0.2728	0.1264	0.3513	0.0711	0.4148	0.0295	0.4423	0.43
0.44	0.1911	0.2676	0.1239	0.3451	0.0698	0.4089	0.0290	0.4387	0.44
0.45	0.1874	0.2626	0.1216	0.3392	0.0686	0.4031	0.0285	0.4351	0.45
0.46	0.1838	0.2577	0.1193	0.3334	0.0673	0.3974	0.0280	0.4312	0.46
0.47	0.1804	0.2530	0.1171	0.3277	0.0662	0.3918	0.0276	0.4273	0.47
0.48	0.1771	0.2484	0.1150	0.3222	0.0650	0.3862	0.0271	0.4233	0.48
0.49	0.1739	0.2440	0.1130	0.3168	0.0639	0.3807	0.0267	0.4192	0.49
0.50	0.1708	0.2397	0.1110	0.3115	0.0628	0.3753	0.0263	0.4151	0.50
0.51	0.1677	0.2355	0.1091	0.3064	0.0618	0.3700	0.0259	0.4109	0.51
0.52	0.1648	0.2314	0.1072	0.3014	0.0608	0.3648	0.0255	0.4067	0.52
0.53	0.1620	0.2275	0.1054	0.2966	0.0598	0.3596	0.0251	0.4025	0.53
0.54	0.1592	0.2236	0.1036	0.2918	0.0589	0.3546	0.0247	0.3983	0.54
0.55	0.1566	0.2199	0.1020	0.2872	0.0579	0.3496	0.0244	0.3941	0.55
0.56	0.1540	0.2163	0.1003	0.2827	0.0570	0.3447	0.0240	0.3898	0.56
0.57	0.1515	0.2128	0.0987	0.2783	0.0562	0.3400	0.0237	0.3856	0.57
0.58	0.1490	0.2094	0.0971	0.2740	0.0553	0.3353	0.0233	0.3814	0.58
0.59	0.1466	0.2060	0.0956	0.2698	0.0545	0.3307	0.0230	0.3772	0.59
0.60	0.1443	0.2028	0.0942	0.2658	0.0537	0.3261	0.0227	0.3731	0.60
0.61	0.1421	0.1996	0.0927	0.2618	0.0529	0.3217	0.0224	0.3689	0.61
0.62	0.1399	0.1966	0.0913	0.2579	0.0522	0.3173	0.0221	0.3648	0.62
0.63	0.1378	0.1936	0.0900	0.2541	0.0514	0.3131	0.0218	0.3608	0.63
0.64	0.1357	0.1907	0.0887	0.2504	0.0507	0.3089	0.0215	0.3567	0.64
0.65	0.1337	0.1878	0.0874	0.2468	0.0500	0.3048	0.0212	0.3527	0.65
0.66	0.1317	0.1851	0.0861	0.2433	0.0493	0.3007	0.0209	0.3488	0.66
0.67	0.1298	0.1823	0.0849	0.2398	0.0486	0.2968	0.0206	0.3449	0.67
0.68	0.1279	0.1797	0.0837	0.2364	0.0480	0.2929	0.0204	0.3410	0.68
0.69	0.1261	0.1771	0.0825	0.2331	0.0473	0.2891	0.0201	0.3372	0.69
0.70	0.1243	0.1746	0.0814	0.2299	0.0467	0.2854	0.0199	0.3335	0.70
0.71	0.1226	0.1722	0.0803	0.2268	0.0461	0.2817	0.0196	0.3297	0.71
0.72	0.1209	0.1698	0.0792	0.2237	0.0455	0.2781	0.0194	0.3261	0.72
0.73	0.1192	0.1675	0.0782	0.2207	0.0449	0.2746	0.0192	0.3224	0.73
0.74	0.1176	0.1652	0.0772	0.2177	0.0444	0.2712	0.0189	0.3189	0.74
0.75	0.1161	0.1630	0.0762	0.2149	0.0438	0.2678	0.0187	0.3153	0.75

PROBABILITY DENSITY FUNCTION P(X;ALPHA,BETA)

ALPHA = .50

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	X
0.76	0.1145	0.1608	0.0752	0.2120	0.0433	0.2645	0.0185	0.3119	0.76
0.77	0.1130	0.1587	0.0742	0.2093	0.0427	0.2612	0.0183	0.3084	0.77
0.78	0.1116	0.1566	0.0733	0.2066	0.0422	0.2580	0.0181	0.3051	0.78
0.79	0.1101	0.1546	0.0724	0.2039	0.0417	0.2549	0.0179	0.3017	0.79
0.80	0.1087	0.1526	0.0715	0.2014	0.0412	0.2518	0.0177	0.2984	0.80
0.81	0.1074	0.1506	0.0706	0.1988	0.0408	0.2488	0.0175	0.2952	0.81
0.82	0.1060	0.1487	0.0697	0.1964	0.0403	0.2458	0.0173	0.2920	0.82
0.83	0.1047	0.1469	0.0689	0.1939	0.0398	0.2429	0.0171	0.2888	0.83
0.84	0.1034	0.1450	0.0681	0.1915	0.0394	0.2400	0.0169	0.2857	0.84
0.85	0.1022	0.1433	0.0673	0.1892	0.0389	0.2372	0.0167	0.2827	0.85
0.86	0.1009	0.1415	0.0665	0.1869	0.0385	0.2345	0.0165	0.2797	0.86
0.87	0.0997	0.1398	0.0657	0.1847	0.0380	0.2318	0.0164	0.2767	0.87
0.88	0.0986	0.1381	0.0650	0.1825	0.0376	0.2291	0.0162	0.2738	0.88
0.89	0.0974	0.1365	0.0642	0.1803	0.0372	0.2265	0.0160	0.2709	0.89
0.90	0.0963	0.1349	0.0635	0.1782	0.0368	0.2240	0.0159	0.2681	0.90
0.91	0.0951	0.1333	0.0628	0.1762	0.0364	0.2215	0.0157	0.2653	0.91
0.92	0.0941	0.1318	0.0621	0.1741	0.0360	0.2190	0.0156	0.2625	0.92
0.93	0.0930	0.1303	0.0614	0.1722	0.0356	0.2166	0.0154	0.2598	0.93
0.94	0.0920	0.1288	0.0607	0.1702	0.0353	0.2142	0.0152	0.2572	0.94
0.95	0.0909	0.1273	0.0601	0.1683	0.0349	0.2118	0.0151	0.2545	0.95
0.96	0.0899	0.1259	0.0594	0.1664	0.0346	0.2095	0.0149	0.2519	0.96
0.97	0.0889	0.1245	0.0588	0.1646	0.0342	0.2073	0.0148	0.2494	0.97
0.98	0.0880	0.1231	0.0582	0.1628	0.0338	0.2051	0.0147	0.2469	0.98
0.99	0.0870	0.1218	0.0576	0.1610	0.0335	0.2029	0.0145	0.2444	0.99
1.00	0.0861	0.1205	0.0570	0.1592	0.0332	0.2007	0.0144	0.2420	1.00
1.01	0.0852	0.1192	0.0564	0.1575	0.0328	0.1986	0.0142	0.2396	1.01
1.02	0.0843	0.1179	0.0558	0.1558	0.0325	0.1965	0.0141	0.2372	1.02
1.03	0.0834	0.1166	0.0553	0.1542	0.0322	0.1945	0.0140	0.2349	1.03
1.04	0.0825	0.1154	0.0547	0.1526	0.0319	0.1925	0.0139	0.2326	1.04
1.05	0.0817	0.1142	0.0541	0.1510	0.0316	0.1905	0.0137	0.2303	1.05
1.06	0.0809	0.1130	0.0536	0.1494	0.0313	0.1886	0.0136	0.2281	1.06
1.07	0.0801	0.1118	0.0531	0.1479	0.0310	0.1867	0.0135	0.2259	1.07
1.08	0.0792	0.1107	0.0526	0.1463	0.0307	0.1848	0.0133	0.2237	1.08
1.09	0.0785	0.1096	0.0521	0.1449	0.0304	0.1830	0.0132	0.2216	1.09
1.10	0.0777	0.1085	0.0516	0.1434	0.0301	0.1812	0.0131	0.2195	1.10
1.11	0.0769	0.1074	0.0511	0.1420	0.0299	0.1794	0.0130	0.2174	1.11
1.12	0.0762	0.1063	0.0506	0.1405	0.0296	0.1776	0.0129	0.2154	1.12
1.13	0.0754	0.1053	0.0501	0.1391	0.0293	0.1759	0.0128	0.2134	1.13
1.14	0.0747	0.1042	0.0496	0.1378	0.0291	0.1742	0.0127	0.2114	1.14
1.15	0.0740	0.1032	0.0492	0.1364	0.0288	0.1725	0.0126	0.2094	1.15
1.16	0.0733	0.1022	0.0487	0.1351	0.0285	0.1708	0.0125	0.2075	1.16
1.17	0.0726	0.1012	0.0483	0.1338	0.0283	0.1692	0.0123	0.2056	1.17
1.18	0.0719	0.1003	0.0478	0.1325	0.0280	0.1676	0.0122	0.2037	1.18
1.19	0.0713	0.0993	0.0474	0.1313	0.0278	0.1660	0.0122	0.2019	1.19
1.20	0.0706	0.0984	0.0470	0.1300	0.0276	0.1645	0.0121	0.2001	1.20
1.21	0.0699	0.0975	0.0466	0.1288	0.0273	0.1630	0.0120	0.1983	1.21
1.22	0.0693	0.0966	0.0462	0.1276	0.0271	0.1615	0.0119	0.1965	1.22
1.23	0.0687	0.0957	0.0458	0.1264	0.0269	0.1600	0.0118	0.1948	1.23
1.24	0.0681	0.0948	0.0454	0.1253	0.0266	0.1585	0.0117	0.1930	1.24
1.25	0.0675	0.0940	0.0450	0.1241	0.0264	0.1571	0.0116	0.1913	1.25

ALPHA = .50

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	X
1.26	0.0669	0.0931	0.0446	0.1230	0.0262	0.1557	0.0115	0.1897	1.26
1.27	0.0663	0.0923	0.0442	0.1219	0.0260	0.1543	0.0114	0.1880	1.27
1.28	0.0657	0.0914	0.0438	0.1208	0.0258	0.1529	0.0113	0.1864	1.28
1.29	0.0651	0.0906	0.0435	0.1197	0.0256	0.1515	0.0112	0.1848	1.29
1.30	0.0646	0.0898	0.0431	0.1186	0.0254	0.1502	0.0111	0.1832	1.30
1.31	0.0640	0.0891	0.0427	0.1176	0.0252	0.1489	0.0110	0.1816	1.31
1.32	0.0635	0.0883	0.0424	0.1166	0.0250	0.1476	0.0110	0.1801	1.32
1.33	0.0629	0.0875	0.0420	0.1156	0.0248	0.1463	0.0109	0.1786	1.33
1.34	0.0624	0.0868	0.0417	0.1146	0.0246	0.1451	0.0108	0.1771	1.34
1.35	0.0619	0.0860	0.0414	0.1136	0.0244	0.1438	0.0107	0.1756	1.35
1.36	0.0614	0.0853	0.0410	0.1126	0.0242	0.1426	0.0106	0.1741	1.36
1.37	0.0608	0.0846	0.0407	0.1116	0.0240	0.1414	0.0106	0.1727	1.37
1.38	0.0603	0.0839	0.0404	0.1107	0.0238	0.1402	0.0105	0.1713	1.38
1.39	0.0599	0.0832	0.0400	0.1097	0.0236	0.1390	0.0104	0.1699	1.39
1.40	0.0594	0.0825	0.0397	0.1088	0.0235	0.1379	0.0103	0.1685	1.40
1.41	0.0589	0.0818	0.0394	0.1079	0.0233	0.1367	0.0103	0.1671	1.41
1.42	0.0584	0.0811	0.0391	0.1070	0.0231	0.1356	0.0102	0.1658	1.42
1.43	0.0580	0.0805	0.0388	0.1062	0.0229	0.1345	0.0101	0.1645	1.43
1.44	0.0575	0.0798	0.0385	0.1053	0.0228	0.1334	0.0100	0.1631	1.44
1.45	0.0570	0.0792	0.0382	0.1044	0.0226	0.1323	0.0100	0.1618	1.45
1.46	0.0566	0.0785	0.0379	0.1036	0.0224	0.1312	0.0099	0.1606	1.46
1.47	0.0562	0.0779	0.0376	0.1028	0.0223	0.1302	0.0098	0.1593	1.47
1.48	0.0557	0.0773	0.0373	0.1019	0.0221	0.1292	0.0098	0.1580	1.48
1.49	0.0553	0.0767	0.0371	0.1011	0.0219	0.1281	0.0097	0.1568	1.49
1.50	0.0549	0.0761	0.0368	0.1003	0.0218	0.1271	0.0096	0.1556	1.50
1.51	0.0544	0.0755	0.0365	0.0995	0.0216	0.1261	0.0096	0.1544	1.51
1.52	0.0540	0.0749	0.0363	0.0988	0.0215	0.1251	0.0095	0.1532	1.52
1.53	0.0536	0.0743	0.0360	0.0980	0.0213	0.1242	0.0094	0.1520	1.53
1.54	0.0532	0.0738	0.0357	0.0972	0.0212	0.1232	0.0094	0.1509	1.54
1.55	0.0528	0.0732	0.0355	0.0965	0.0210	0.1223	0.0093	0.1497	1.55
1.56	0.0524	0.0727	0.0352	0.0957	0.0209	0.1213	0.0092	0.1486	1.56
1.57	0.0521	0.0721	0.0350	0.0950	0.0207	0.1204	0.0092	0.1475	1.57
1.58	0.0517	0.0716	0.0347	0.0943	0.0206	0.1195	0.0091	0.1464	1.58
1.59	0.0513	0.0710	0.0345	0.0936	0.0205	0.1186	0.0091	0.1453	1.59
1.60	0.0509	0.0705	0.0342	0.0929	0.0203	0.1177	0.0090	0.1442	1.60
1.61	0.0506	0.0700	0.0340	0.0922	0.0202	0.1168	0.0089	0.1431	1.61
1.62	0.0502	0.0695	0.0337	0.0915	0.0200	0.1159	0.0089	0.1421	1.62
1.63	0.0498	0.0690	0.0335	0.0908	0.0199	0.1151	0.0088	0.1411	1.63
1.64	0.0495	0.0685	0.0333	0.0902	0.0198	0.1142	0.0088	0.1400	1.64
1.65	0.0491	0.0680	0.0331	0.0895	0.0197	0.1134	0.0087	0.1390	1.65
1.66	0.0488	0.0675	0.0328	0.0889	0.0195	0.1126	0.0087	0.1380	1.66
1.67	0.0485	0.0670	0.0326	0.0882	0.0194	0.1118	0.0086	0.1370	1.67
1.68	0.0481	0.0665	0.0324	0.0876	0.0193	0.1109	0.0086	0.1360	1.68
1.69	0.0478	0.0661	0.0322	0.0869	0.0191	0.1101	0.0085	0.1351	1.69
1.70	0.0475	0.0656	0.0319	0.0863	0.0190	0.1094	0.0084	0.1341	1.70
1.71	0.0471	0.0651	0.0317	0.0857	0.0189	0.1086	0.0084	0.1332	1.71
1.72	0.0468	0.0647	0.0315	0.0851	0.0188	0.1078	0.0083	0.1322	1.72
1.73	0.0465	0.0642	0.0313	0.0845	0.0186	0.1071	0.0083	0.1313	1.73
1.74	0.0462	0.0638	0.0311	0.0839	0.0185	0.1063	0.0082	0.1304	1.74
1.75	0.0459	0.0634	0.0309	0.0833	0.0184	0.1056	0.0082	0.1295	1.75

PROBABILITY DENSITY FUNCTION P(X;ALPHA,BETA)

ALPHA = .50

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	X
1.76	0.0455	0.0629	0.0307	0.0827	0.0183	0.1048	0.0081	0.1286	1.76
1.77	0.0453	0.0625	0.0305	0.0822	0.0182	0.1041	0.0081	0.1277	1.77
1.78	0.0450	0.0621	0.0303	0.0816	0.0181	0.1034	0.0080	0.1268	1.78
1.79	0.0447	0.0616	0.0301	0.0811	0.0180	0.1027	0.0080	0.1260	1.79
1.80	0.0444	0.0612	0.0299	0.0805	0.0179	0.1020	0.0079	0.1251	1.80
1.81	0.0441	0.0608	0.0297	0.0800	0.0177	0.1013	0.0079	0.1243	1.81
1.82	0.0438	0.0604	0.0296	0.0794	0.0176	0.1006	0.0079	0.1234	1.82
1.83	0.0435	0.0600	0.0294	0.0789	0.0175	0.0999	0.0078	0.1226	1.83
1.84	0.0432	0.0596	0.0292	0.0784	0.0174	0.0992	0.0078	0.1218	1.84
1.85	0.0430	0.0592	0.0290	0.0778	0.0173	0.0986	0.0077	0.1210	1.85
1.86	0.0427	0.0589	0.0288	0.0773	0.0172	0.0979	0.0077	0.1202	1.86
1.87	0.0424	0.0585	0.0287	0.0768	0.0171	0.0973	0.0076	0.1194	1.87
1.88	0.0421	0.0581	0.0285	0.0763	0.0170	0.0966	0.0076	0.1186	1.88
1.89	0.0419	0.0577	0.0283	0.0758	0.0169	0.0960	0.0076	0.1178	1.89
1.90	0.0416	0.0574	0.0281	0.0753	0.0168	0.0954	0.0075	0.1171	1.90
1.91	0.0414	0.0570	0.0280	0.0748	0.0167	0.0948	0.0075	0.1163	1.91
1.92	0.0411	0.0566	0.0278	0.0744	0.0166	0.0941	0.0074	0.1156	1.92
1.93	0.0408	0.0563	0.0276	0.0739	0.0165	0.0935	0.0074	0.1148	1.93
1.94	0.0406	0.0559	0.0275	0.0734	0.0164	0.0929	0.0073	0.1141	1.94
1.95	0.0403	0.0556	0.0273	0.0729	0.0163	0.0923	0.0073	0.1134	1.95
1.96	0.0401	0.0552	0.0271	0.0725	0.0162	0.0917	0.0073	0.1126	1.96
1.97	0.0399	0.0549	0.0270	0.0720	0.0161	0.0912	0.0072	0.1119	1.97
1.98	0.0396	0.0545	0.0268	0.0716	0.0161	0.0906	0.0072	0.1112	1.98
1.99	0.0394	0.0542	0.0267	0.0711	0.0160	0.0900	0.0071	0.1105	1.99
2.00	0.0391	0.0539	0.0265	0.0707	0.0159	0.0895	0.0071	0.1098	2.00
2.1	0.0369	0.0507	0.0250	0.0665	0.0150	0.0841	0.0067	0.1033	2.1
2.2	0.0349	0.0479	0.0237	0.0627	0.0142	0.0793	0.0064	0.0974	2.2
2.3	0.0331	0.0453	0.0225	0.0593	0.0135	0.0749	0.0061	0.0920	2.3
2.4	0.0314	0.0430	0.0214	0.0562	0.0129	0.0709	0.0058	0.0871	2.4
2.5	0.0298	0.0408	0.0204	0.0533	0.0123	0.0673	0.0055	0.0826	2.5
2.6	0.0284	0.0389	0.0194	0.0507	0.0117	0.0640	0.0053	0.0785	2.6
2.7	0.0271	0.0370	0.0186	0.0483	0.0112	0.0609	0.0051	0.0747	2.7
2.8	0.0259	0.0354	0.0178	0.0461	0.0108	0.0581	0.0049	0.0712	2.8
2.9	0.0248	0.0338	0.0170	0.0440	0.0103	0.0554	0.0047	0.0680	2.9
3.0	0.0238	0.0324	0.0163	0.0421	0.0099	0.0530	0.0045	0.0650	3.0
3.1	0.0228	0.0311	0.0157	0.0404	0.0095	0.0508	0.0044	0.0622	3.1
3.2	0.0219	0.0298	0.0151	0.0387	0.0092	0.0487	0.0042	0.0596	3.2
3.3	0.0211	0.0286	0.0145	0.0372	0.0089	0.0467	0.0040	0.0572	3.3
3.4	0.0203	0.0275	0.0140	0.0357	0.0086	0.0449	0.0039	0.0549	3.4
3.5	0.0196	0.0265	0.0135	0.0344	0.0083	0.0432	0.0038	0.0528	3.5
3.6	0.0189	0.0256	0.0130	0.0331	0.0080	0.0415	0.0036	0.0508	3.6
3.7	0.0182	0.0247	0.0126	0.0319	0.0077	0.0400	0.0035	0.0490	3.7
3.8	0.0176	0.0238	0.0122	0.0308	0.0075	0.0386	0.0034	0.0472	3.8
3.9	0.0170	0.0230	0.0118	0.0298	0.0072	0.0373	0.0033	0.0456	3.9
4.0	0.0165	0.0223	0.0114	0.0288	0.0070	0.0360	0.0032	0.0440	4.0
4.1	0.0160	0.0216	0.0111	0.0278	0.0068	0.0348	0.0031	0.0425	4.1
4.2	0.0155	0.0209	0.0107	0.0270	0.0066	0.0337	0.0030	0.0412	4.2
4.3	0.0150	0.0203	0.0104	0.0261	0.0064	0.0326	0.0030	0.0398	4.3
4.4	0.0146	0.0196	0.0101	0.0253	0.0062	0.0316	0.0029	0.0386	4.4
4.5	0.0142	0.0191	0.0098	0.0246	0.0061	0.0307	0.0028	0.0374	4.5

PROBABILITY DENSITY FUNCTION P(X;ALPHA,BETA)

ALPHA = .50

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	X
4.6	0.0138	0.0185	0.0096	0.0238	0.0059	0.0298	0.0027	0.0363	4.6
4.7	0.0134	0.0180	0.0093	0.0232	0.0058	0.0289	0.0027	0.0352	4.7
4.8	0.0130	0.0175	0.0091	0.0225	0.0056	0.0281	0.0026	0.0342	4.8
4.9	0.0127	0.0170	0.0088	0.0219	0.0055	0.0273	0.0025	0.0332	4.9
5.0	0.0123	0.0166	0.0086	0.0213	0.0053	0.0265	0.0025	0.0323	5.0
5.1	0.0120	0.0161	0.0084	0.0207	0.0052	0.0258	0.0024	0.0314	5.1
5.2	0.0117	0.0157	0.0082	0.0202	0.0051	0.0251	0.0023	0.0306	5.2
5.3	0.0114	0.0153	0.0080	0.0197	0.0049	0.0245	0.0023	0.0298	5.3
5.4	0.0112	0.0149	0.0078	0.0192	0.0048	0.0238	0.0022	0.0290	5.4
5.5	0.0109	0.0146	0.0076	0.0187	0.0047	0.0232	0.0022	0.0282	5.5
5.6	0.0106	0.0142	0.0074	0.0182	0.0046	0.0227	0.0021	0.0275	5.6
5.7	0.0104	0.0139	0.0073	0.0178	0.0045	0.0221	0.0021	0.0269	5.7
5.8	0.0102	0.0136	0.0071	0.0174	0.0044	0.0216	0.0020	0.0262	5.8
5.9	0.0099	0.0133	0.0069	0.0170	0.0043	0.0211	0.0020	0.0256	5.9
6.0	0.0097	0.0130	0.0068	0.0166	0.0042	0.0206	0.0020	0.0250	6.0
6.1	0.0095	0.0127	0.0067	0.0162	0.0041	0.0201	0.0019	0.0244	6.1
6.2	0.0093	0.0124	0.0065	0.0158	0.0041	0.0197	0.0019	0.0238	6.2
6.3	0.0091	0.0121	0.0064	0.0155	0.0040	0.0192	0.0018	0.0233	6.3
6.4	0.0089	0.0119	0.0063	0.0152	0.0039	0.0188	0.0018	0.0228	6.4
6.5	0.0087	0.0116	0.0061	0.0149	0.0038	0.0184	0.0018	0.0223	6.5
6.6	0.0085	0.0114	0.0060	0.0145	0.0037	0.0180	0.0017	0.0218	6.6
6.7	0.0084	0.0112	0.0059	0.0142	0.0037	0.0176	0.0017	0.0213	6.7
6.8	0.0082	0.0109	0.0058	0.0140	0.0036	0.0173	0.0017	0.0209	6.8
6.9	0.0080	0.0107	0.0057	0.0137	0.0035	0.0169	0.0016	0.0205	6.9
7.0	0.0079	0.0105	0.0056	0.0134	0.0035	0.0166	0.0016	0.0201	7.0
7.1	0.0077	0.0103	0.0054	0.0131	0.0034	0.0163	0.0016	0.0197	7.1
7.2	0.0076	0.0101	0.0054	0.0129	0.0033	0.0159	0.0016	0.0193	7.2
7.3	0.0075	0.0099	0.0053	0.0126	0.0033	0.0156	0.0015	0.0189	7.3
7.4	0.0073	0.0097	0.0052	0.0124	0.0032	0.0153	0.0015	0.0185	7.4
7.5	0.0072	0.0096	0.0051	0.0122	0.0032	0.0150	0.0015	0.0182	7.5
7.6	0.0071	0.0094	0.0050	0.0120	0.0031	0.0148	0.0015	0.0178	7.6
7.7	0.0069	0.0092	0.0049	0.0117	0.0031	0.0145	0.0014	0.0175	7.7
7.8	0.0068	0.0091	0.0048	0.0115	0.0030	0.0142	0.0014	0.0172	7.8
7.9	0.0067	0.0089	0.0047	0.0113	0.0030	0.0140	0.0014	0.0169	7.9
8.0	0.0066	0.0087	0.0047	0.0111	0.0029	0.0137	0.0014	0.0166	8.0
8.1	0.0065	0.0086	0.0046	0.0109	0.0029	0.0135	0.0014	0.0163	8.1
8.2	0.0064	0.0085	0.0045	0.0107	0.0028	0.0132	0.0013	0.0160	8.2
8.3	0.0063	0.0083	0.0044	0.0106	0.0028	0.0130	0.0013	0.0157	8.3
8.4	0.0062	0.0082	0.0044	0.0104	0.0027	0.0128	0.0013	0.0154	8.4
8.5	0.0061	0.0080	0.0043	0.0102	0.0027	0.0126	0.0013	0.0152	8.5
8.6	0.0060	0.0079	0.0042	0.0101	0.0027	0.0124	0.0012	0.0149	8.6
8.7	0.0059	0.0078	0.0042	0.0099	0.0026	0.0122	0.0012	0.0147	8.7
8.8	0.0058	0.0077	0.0041	0.0097	0.0026	0.0120	0.0012	0.0144	8.8
8.9	0.0057	0.0076	0.0040	0.0096	0.0025	0.0118	0.0012	0.0142	8.9
9.0	0.0056	0.0074	0.0040	0.0094	0.0025	0.0116	0.0012	0.0140	9.0
9.1	0.0055	0.0073	0.0039	0.0093	0.0025	0.0114	0.0012	0.0138	9.1
9.2	0.0054	0.0072	0.0039	0.0091	0.0024	0.0113	0.0011	0.0135	9.2
9.3	0.0054	0.0071	0.0038	0.0090	0.0024	0.0111	0.0011	0.0133	9.3
9.4	0.0053	0.0070	0.0038	0.0089	0.0024	0.0109	0.0011	0.0131	9.4
9.5	0.0052	0.0069	0.0037	0.0087	0.0023	0.0107	0.0011	0.0129	9.5

PROBABILITY DENSITY FUNCTION P(X;ALPHA,BETA)

ALPHA = .50

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	X
9.6	0.0051	0.0068	0.0036	0.0086	0.0023	0.0106	0.0011	0.0127	9.6
9.7	0.0051	0.0067	0.0036	0.0085	0.0023	0.0104	0.0011	0.0125	9.7
9.8	0.0050	0.0066	0.0036	0.0084	0.0022	0.0103	0.0010	0.0124	9.8
9.9	0.0049	0.0065	0.0035	0.0082	0.0022	0.0101	0.0010	0.0122	9.9
10.0	0.0049	0.0064	0.0034	0.0081	0.0022	0.0100	0.0010	0.0120	10.0
11.	0.0043	0.0056	0.0030	0.0071	0.0019	0.0087	0.0009	0.0104	11.
12.	0.0038	0.0050	0.0027	0.0063	0.0017	0.0077	0.0008	0.0092	12.
13.	0.0034	0.0045	0.0024	0.0056	0.0015	0.0068	0.0007	0.0082	13.
14.	0.0031	0.0040	0.0022	0.0050	0.0014	0.0062	0.0007	0.0073	14.
15.	0.0028	0.0036	0.0020	0.0046	0.0013	0.0056	0.0006	0.0066	15.
16.	0.0025	0.0033	0.0018	0.0042	0.0012	0.0051	0.0005	0.0060	16.
17.	0.0023	0.0030	0.0017	0.0038	0.0011	0.0046	0.0005	0.0055	17.
18.	0.0021	0.0028	0.0015	0.0035	0.0010	0.0043	0.0005	0.0051	18.
19.	0.0020	0.0026	0.0014	0.0032	0.0009	0.0039	0.0004	0.0047	19.
20.	0.0018	0.0024	0.0013	0.0030	0.0008	0.0037	0.0004	0.0044	20.
21.	0.0017	0.0023	0.0012	0.0028	0.0008	0.0034	0.0004	0.0041	21.
22.	0.0016	0.0021	0.0012	0.0026	0.0007	0.0032	0.0004	0.0038	22.
23.	0.0015	0.0020	0.0011	0.0025	0.0007	0.0030	0.0003	0.0035	23.
24.	0.0014	0.0019	0.0010	0.0023	0.0007	0.0028	0.0003	0.0033	24.
25.	0.0014	0.0017	0.0010	0.0022	0.0006	0.0026	0.0003	0.0031	25.
26.	0.0013	0.0017	0.0009	0.0021	0.0006	0.0025	0.0003	0.0029	26.
27.	0.0012	0.0016	0.0009	0.0019	0.0006	0.0024	0.0003	0.0028	27.
28.	0.0011	0.0015	0.0008	0.0018	0.0005	0.0022	0.0003	0.0026	28.
29.	0.0011	0.0014	0.0008	0.0018	0.0005	0.0021	0.0002	0.0025	29.
30.	0.0010	0.0014	0.0007	0.0017	0.0005	0.0020	0.0002	0.0024	30.
31.	0.0010	0.0013	0.0007	0.0016	0.0005	0.0019	0.0002	0.0023	31.
32.	0.0009	0.0012	0.0007	0.0015	0.0004	0.0018	0.0002	0.0022	32.
33.	0.0009	0.0012	0.0007	0.0015	0.0004	0.0017	0.0002	0.0021	33.
34.	0.0009	0.0011	0.0006	0.0014	0.0004	0.0017	0.0002	0.0020	34.
35.	0.0008	0.0011	0.0006	0.0013	0.0004	0.0016	0.0002	0.0019	35.
36.	0.0008	0.0010	0.0006	0.0013	0.0004	0.0015	0.0002	0.0018	36.
37.	0.0008	0.0010	0.0006	0.0012	0.0004	0.0015	0.0002	0.0017	37.
38.	0.0007	0.0010	0.0005	0.0012	0.0003	0.0014	0.0002	0.0017	38.
39.	0.0007	0.0009	0.0005	0.0011	0.0003	0.0014	0.0002	0.0016	39.
40.	0.0007	0.0009	0.0005	0.0011	0.0003	0.0013	0.0001	0.0016	40.
50.	0.0005	0.0006	0.0004	0.0008	0.0002	0.0009		0.0011	50.
60.	0.0004	0.0005	0.0003	0.0006	0.0002	0.0007		0.0008	60.
70.	0.0003	0.0004	0.0002	0.0005	0.0001	0.0006		0.0007	70.
80.	0.0002	0.0003	0.0002	0.0004		0.0005		0.0005	80.
90.	0.0002	0.0003	0.0001	0.0003		0.0004		0.0005	90.
100.	0.0002	0.0002		0.0003		0.0003		0.0004	100.
110.	0.0002	0.0002		0.0002		0.0003		0.0003	110.
120.	0.0001	0.0002		0.0002		0.0002		0.0003	120.
130.		0.0001		0.0002		0.0002		0.0003	130.
140.				0.0002		0.0002		0.0002	140.
150.				0.0001		0.0002		0.0002	150.
160.						0.0002		0.0002	160.
170.						0.0001		0.0002	170.
180.								0.0002	180.
190.								0.0001	190.

PROBABILITY DENSITY FUNCTION P(X;ALPHA,BETA)

ALPHA = .75

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	X
0.00	0.3790	0.2308	0.2308	0.0808	0.0808	0.0214	0.0214	0.0000	0.00
0.01	0.3789	0.2350	0.2267	0.0822	0.0795	0.0216	0.0211	0.0000	0.01
0.02	0.3785	0.2393	0.2226	0.0837	0.0781	0.0219	0.0208	0.0000	0.02
0.03	0.3778	0.2437	0.2186	0.0852	0.0769	0.0222	0.0206	0.0000	0.03
0.04	0.3770	0.2481	0.2147	0.0867	0.0756	0.0225	0.0203	0.0000	0.04
0.05	0.3758	0.2527	0.2109	0.0882	0.0744	0.0228	0.0201	0.0000	0.05
0.06	0.3745	0.2572	0.2071	0.0899	0.0732	0.0231	0.0199	0.0000	0.06
0.07	0.3729	0.2619	0.2034	0.0915	0.0721	0.0234	0.0196	0.0000	0.07
0.08	0.3711	0.2665	0.1999	0.0933	0.0709	0.0237	0.0194	0.0000	0.08
0.09	0.3691	0.2712	0.1963	0.0950	0.0698	0.0241	0.0192	0.0000	0.09
0.10	0.3669	0.2760	0.1929	0.0969	0.0688	0.0244	0.0189	0.0000	0.10
0.11	0.3645	0.2808	0.1896	0.0988	0.0677	0.0248	0.0187	0.0000	0.11
0.12	0.3619	0.2856	0.1863	0.1007	0.0667	0.0251	0.0185	0.0000	0.12
0.13	0.3592	0.2903	0.1831	0.1027	0.0657	0.0255	0.0183	0.0000	0.13
0.14	0.3564	0.2951	0.1800	0.1048	0.0648	0.0258	0.0181	0.0000	0.14
0.15	0.3533	0.2999	0.1769	0.1070	0.0638	0.0262	0.0179	0.0000	0.15
0.16	0.3502	0.3046	0.1739	0.1092	0.0629	0.0266	0.0177	0.0000	0.16
0.17	0.3470	0.3092	0.1710	0.1115	0.0620	0.0270	0.0175	0.0000	0.17
0.18	0.3437	0.3138	0.1682	0.1139	0.0611	0.0275	0.0173	0.0000	0.18
0.19	0.3402	0.3183	0.1654	0.1164	0.0603	0.0279	0.0171	0.0000	0.19
0.20	0.3367	0.3227	0.1627	0.1189	0.0594	0.0283	0.0170	0.0000	0.20
0.21	0.3331	0.3270	0.1600	0.1216	0.0586	0.0288	0.0168	0.0000	0.21
0.22	0.3295	0.3312	0.1574	0.1243	0.0578	0.0292	0.0166	0.0000	0.22
0.23	0.3258	0.3352	0.1549	0.1272	0.0571	0.0297	0.0164	0.0000	0.23
0.24	0.3221	0.3391	0.1524	0.1301	0.0563	0.0302	0.0163	0.0000	0.24
0.25	0.3184	0.3428	0.1500	0.1332	0.0556	0.0307	0.0161	0.0000	0.25
0.26	0.3146	0.3463	0.1477	0.1363	0.0548	0.0313	0.0159	0.0000	0.26
0.27	0.3108	0.3496	0.1454	0.1396	0.0541	0.0318	0.0158	0.0000	0.27
0.28	0.3070	0.3527	0.1431	0.1430	0.0534	0.0324	0.0156	0.0000	0.28
0.29	0.3032	0.3556	0.1409	0.1465	0.0527	0.0329	0.0155	0.0000	0.29
0.30	0.2995	0.3583	0.1388	0.1502	0.0521	0.0335	0.0153	0.0000	0.30
0.31	0.2957	0.3607	0.1367	0.1539	0.0514	0.0342	0.0151	0.0000	0.31
0.32	0.2919	0.3629	0.1346	0.1578	0.0508	0.0348	0.0150	0.0000	0.32
0.33	0.2882	0.3649	0.1326	0.1619	0.0502	0.0355	0.0149	0.0000	0.33
0.34	0.2844	0.3666	0.1306	0.1661	0.0495	0.0361	0.0147	0.0000	0.34
0.35	0.2807	0.3681	0.1287	0.1704	0.0489	0.0369	0.0146	0.0000	0.35
0.36	0.2770	0.3693	0.1269	0.1748	0.0483	0.0376	0.0144	0.0000	0.36
0.37	0.2734	0.3703	0.1250	0.1794	0.0478	0.0384	0.0143	0.0000	0.37
0.38	0.2698	0.3711	0.1232	0.1841	0.0472	0.0392	0.0142	0.0000	0.38
0.39	0.2662	0.3717	0.1215	0.1889	0.0466	0.0400	0.0140	0.0000	0.39
0.40	0.2627	0.3720	0.1197	0.1939	0.0461	0.0409	0.0139	0.0000	0.40
0.41	0.2591	0.3721	0.1181	0.1989	0.0456	0.0418	0.0138	0.0000	0.41
0.42	0.2557	0.3720	0.1164	0.2041	0.0450	0.0427	0.0137	0.0000	0.42
0.43	0.2523	0.3717	0.1148	0.2094	0.0445	0.0437	0.0135	0.0000	0.43
0.44	0.2489	0.3712	0.1132	0.2147	0.0440	0.0447	0.0134	0.0000	0.44
0.45	0.2456	0.3706	0.1117	0.2201	0.0435	0.0458	0.0133	0.0000	0.45
0.46	0.2423	0.3697	0.1102	0.2256	0.0430	0.0469	0.0132	0.0000	0.46
0.47	0.2390	0.3687	0.1087	0.2311	0.0426	0.0481	0.0131	0.0000	0.47
0.48	0.2358	0.3675	0.1073	0.2367	0.0421	0.0493	0.0129	0.0000	0.48
0.49	0.2327	0.3661	0.1058	0.2423	0.0416	0.0506	0.0128	0.0000	0.49
0.50	0.2296	0.3646	0.1045	0.2478	0.0412	0.0520	0.0127	0.0000	0.50

PROBABILITY DENSITY FUNCTION P(X;ALPHA,BETA)

ALPHA = .75

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	X
0.51	0.2265	0.3630	0.1031	0.2534	0.0407	0.0534	0.0126	0.0000	0.51
0.52	0.2235	0.3612	0.1018	0.2589	0.0403	0.0549	0.0125	0.0000	0.52
0.53	0.2205	0.3594	0.1004	0.2643	0.0399	0.0566	0.0124	0.0000	0.53
0.54	0.2176	0.3574	0.0992	0.2697	0.0395	0.0583	0.0123	0.0000	0.54
0.55	0.2147	0.3553	0.0979	0.2750	0.0390	0.0601	0.0122	0.0000	0.55
0.56	0.2119	0.3531	0.0967	0.2802	0.0386	0.0620	0.0121	0.0000	0.56
0.57	0.2091	0.3508	0.0955	0.2853	0.0382	0.0640	0.0120	0.0000	0.57
0.58	0.2064	0.3484	0.0943	0.2902	0.0378	0.0662	0.0119	0.0000	0.58
0.59	0.2037	0.3460	0.0931	0.2951	0.0375	0.0685	0.0118	0.0000	0.59
0.60	0.2010	0.3435	0.0920	0.2997	0.0371	0.0709	0.0117	0.0000	0.60
0.61	0.1984	0.3409	0.0909	0.3043	0.0367	0.0735	0.0116	0.0000	0.61
0.62	0.1959	0.3383	0.0898	0.3086	0.0363	0.0763	0.0115	0.0000	0.62
0.63	0.1933	0.3356	0.0887	0.3128	0.0360	0.0792	0.0114	0.0000	0.63
0.64	0.1909	0.3329	0.0876	0.3168	0.0356	0.0823	0.0113	0.0000	0.64
0.65	0.1884	0.3302	0.0866	0.3205	0.0353	0.0856	0.0112	0.0000	0.65
0.66	0.1860	0.3274	0.0856	0.3242	0.0349	0.0890	0.0111	0.0000	0.66
0.67	0.1837	0.3245	0.0846	0.3276	0.0346	0.0927	0.0111	0.0000	0.67
0.68	0.1813	0.3217	0.0836	0.3308	0.0343	0.0965	0.0110	0.0000	0.68
0.69	0.1791	0.3188	0.0827	0.3337	0.0339	0.1005	0.0109	0.0000	0.69
0.70	0.1768	0.3159	0.0817	0.3365	0.0336	0.1046	0.0108	0.0000	0.70
0.71	0.1746	0.3130	0.0808	0.3391	0.0333	0.1090	0.0107	0.0000	0.71
0.72	0.1724	0.3101	0.0799	0.3415	0.0330	0.1136	0.0106	0.0000	0.72
0.73	0.1703	0.3072	0.0790	0.3437	0.0327	0.1183	0.0105	0.0000	0.73
0.74	0.1682	0.3043	0.0781	0.3457	0.0324	0.1232	0.0105	0.0000	0.74
0.75	0.1662	0.3014	0.0772	0.3475	0.0321	0.1282	0.0104	0.0000	0.75
0.76	0.1642	0.2985	0.0764	0.3491	0.0318	0.1334	0.0103	0.0000	0.76
0.77	0.1622	0.2955	0.0755	0.3505	0.0315	0.1387	0.0102	0.0001	0.77
0.78	0.1602	0.2926	0.0747	0.3517	0.0312	0.1441	0.0102	0.0002	0.78
0.79	0.1583	0.2897	0.0739	0.3527	0.0309	0.1496	0.0101	0.0002	0.79
0.80	0.1564	0.2868	0.0731	0.3536	0.0307	0.1553	0.0100	0.0004	0.80
0.81	0.1545	0.2839	0.0724	0.3543	0.0304	0.1610	0.0099	0.0005	0.81
0.82	0.1527	0.2811	0.0716	0.3548	0.0301	0.1668	0.0099	0.0007	0.82
0.83	0.1509	0.2782	0.0708	0.3552	0.0298	0.1726	0.0098	0.0009	0.83
0.84	0.1491	0.2754	0.0701	0.3554	0.0296	0.1784	0.0097	0.0012	0.84
0.85	0.1474	0.2726	0.0694	0.3555	0.0293	0.1843	0.0097	0.0015	0.85
0.86	0.1457	0.2698	0.0686	0.3554	0.0291	0.1902	0.0096	0.0020	0.86
0.87	0.1440	0.2670	0.0679	0.3552	0.0288	0.1961	0.0095	0.0025	0.87
0.88	0.1424	0.2642	0.0672	0.3548	0.0286	0.2019	0.0095	0.0031	0.88
0.89	0.1407	0.2615	0.0666	0.3543	0.0283	0.2077	0.0094	0.0038	0.89
0.90	0.1391	0.2588	0.0659	0.3537	0.0281	0.2135	0.0093	0.0047	0.90
0.91	0.1376	0.2561	0.0652	0.3530	0.0279	0.2192	0.0093	0.0057	0.91
0.92	0.1360	0.2534	0.0646	0.3521	0.0276	0.2248	0.0092	0.0069	0.92
0.93	0.1345	0.2508	0.0639	0.3512	0.0274	0.2304	0.0091	0.0082	0.93
0.94	0.1330	0.2481	0.0633	0.3502	0.0272	0.2358	0.0091	0.0096	0.94
0.95	0.1315	0.2455	0.0627	0.3490	0.0270	0.2412	0.0090	0.0113	0.95
0.96	0.1301	0.2430	0.0621	0.3478	0.0267	0.2464	0.0089	0.0131	0.96
0.97	0.1286	0.2404	0.0615	0.3465	0.0265	0.2515	0.0089	0.0152	0.97
0.98	0.1272	0.2379	0.0609	0.3451	0.0263	0.2564	0.0088	0.0174	0.98
0.99	0.1259	0.2354	0.0603	0.3436	0.0261	0.2613	0.0088	0.0199	0.99
1.00	0.1245	0.2330	0.0597	0.3421	0.0259	0.2660	0.0087	0.0226	1.00

PROBABILITY DENSITY FUNCTION P(X;ALPHA,BETA)

ALPHA = .75

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	X
1.01	0.1232	0.2306	0.0592	0.3405	0.0257	0.2705	0.0086	0.0254	1.01
1.02	0.1218	0.2281	0.0586	0.3388	0.0255	0.2749	0.0086	0.0285	1.02
1.03	0.1205	0.2258	0.0581	0.3371	0.0253	0.2791	0.0085	0.0318	1.03
1.04	0.1193	0.2234	0.0575	0.3353	0.0251	0.2832	0.0085	0.0353	1.04
1.05	0.1180	0.2211	0.0570	0.3335	0.0249	0.2871	0.0084	0.0391	1.05
1.06	0.1168	0.2188	0.0565	0.3316	0.0247	0.2909	0.0084	0.0430	1.06
1.07	0.1156	0.2165	0.0559	0.3297	0.0245	0.2944	0.0083	0.0471	1.07
1.08	0.1144	0.2143	0.0554	0.3277	0.0243	0.2979	0.0083	0.0514	1.08
1.09	0.1132	0.2120	0.0549	0.3257	0.0241	0.3011	0.0082	0.0559	1.09
1.10	0.1120	0.2098	0.0544	0.3237	0.0239	0.3042	0.0082	0.0605	1.10
1.11	0.1109	0.2077	0.0539	0.3216	0.0237	0.3071	0.0081	0.0653	1.11
1.12	0.1097	0.2055	0.0535	0.3196	0.0236	0.3099	0.0081	0.0703	1.12
1.13	0.1086	0.2034	0.0530	0.3174	0.0234	0.3125	0.0080	0.0754	1.13
1.14	0.1075	0.2014	0.0525	0.3153	0.0232	0.3149	0.0079	0.0806	1.14
1.15	0.1065	0.1993	0.0521	0.3131	0.0230	0.3172	0.0079	0.0860	1.15
1.16	0.1054	0.1973	0.0516	0.3110	0.0229	0.3193	0.0079	0.0914	1.16
1.17	0.1044	0.1953	0.0512	0.3088	0.0227	0.3213	0.0078	0.0970	1.17
1.18	0.1033	0.1933	0.0507	0.3066	0.0226	0.3231	0.0078	0.1026	1.18
1.19	0.1023	0.1913	0.0503	0.3043	0.0224	0.3248	0.0077	0.1083	1.19
1.20	0.1013	0.1894	0.0499	0.3021	0.0222	0.3263	0.0077	0.1140	1.20
1.21	0.1003	0.1875	0.0494	0.2999	0.0221	0.3277	0.0076	0.1198	1.21
1.22	0.0994	0.1856	0.0490	0.2976	0.0219	0.3289	0.0076	0.1256	1.22
1.23	0.0984	0.1837	0.0486	0.2954	0.0217	0.3300	0.0075	0.1315	1.23
1.24	0.0975	0.1819	0.0482	0.2931	0.0216	0.3310	0.0075	0.1373	1.24
1.25	0.0965	0.1801	0.0478	0.2909	0.0214	0.3319	0.0074	0.1431	1.25
1.26	0.0956	0.1783	0.0474	0.2886	0.0213	0.3326	0.0074	0.1489	1.26
1.27	0.0947	0.1765	0.0470	0.2864	0.0211	0.3332	0.0073	0.1547	1.27
1.28	0.0938	0.1748	0.0466	0.2841	0.0210	0.3337	0.0073	0.1605	1.28
1.29	0.0930	0.1731	0.0462	0.2818	0.0208	0.3341	0.0073	0.1662	1.29
1.30	0.0921	0.1714	0.0459	0.2796	0.0207	0.3343	0.0072	0.1718	1.30
1.31	0.0912	0.1697	0.0455	0.2774	0.0206	0.3345	0.0072	0.1774	1.31
1.32	0.0904	0.1680	0.0451	0.2751	0.0204	0.3345	0.0071	0.1829	1.32
1.33	0.0896	0.1664	0.0448	0.2729	0.0203	0.3345	0.0071	0.1884	1.33
1.34	0.0887	0.1648	0.0444	0.2707	0.0201	0.3344	0.0071	0.1937	1.34
1.35	0.0879	0.1632	0.0440	0.2685	0.0200	0.3342	0.0070	0.1990	1.35
1.36	0.0871	0.1616	0.0437	0.2663	0.0199	0.3338	0.0070	0.2041	1.36
1.37	0.0864	0.1601	0.0433	0.2641	0.0197	0.3334	0.0069	0.2092	1.37
1.38	0.0856	0.1586	0.0430	0.2619	0.0196	0.3330	0.0069	0.2141	1.38
1.39	0.0848	0.1571	0.0427	0.2597	0.0195	0.3324	0.0068	0.2190	1.39
1.40	0.0841	0.1556	0.0423	0.2576	0.0193	0.3318	0.0068	0.2237	1.40
1.41	0.0833	0.1541	0.0420	0.2554	0.0192	0.3311	0.0068	0.2283	1.41
1.42	0.0826	0.1526	0.0417	0.2533	0.0191	0.3303	0.0067	0.2328	1.42
1.43	0.0819	0.1512	0.0414	0.2512	0.0190	0.3295	0.0067	0.2371	1.43
1.44	0.0812	0.1498	0.0410	0.2491	0.0188	0.3286	0.0067	0.2414	1.44
1.45	0.0804	0.1484	0.0407	0.2470	0.0187	0.3276	0.0066	0.2454	1.45
1.46	0.0798	0.1470	0.0404	0.2449	0.0186	0.3266	0.0066	0.2494	1.46
1.47	0.0791	0.1456	0.0401	0.2428	0.0185	0.3256	0.0065	0.2533	1.47
1.48	0.0784	0.1443	0.0398	0.2408	0.0183	0.3244	0.0065	0.2570	1.48
1.49	0.0777	0.1430	0.0395	0.2388	0.0182	0.3233	0.0065	0.2605	1.49
1.50	0.0771	0.1417	0.0392	0.2367	0.0181	0.3221	0.0064	0.2640	1.50

PROBABILITY DENSITY FUNCTION P(X;ALPHA,BETA)

ALPHA = .75

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	X
1.51	0.0764	0.1404	0.0390	0.2347	0.0180	0.3208	0.0064	0.2673	1.51
1.52	0.0758	0.1391	0.0387	0.2327	0.0179	0.3195	0.0064	0.2705	1.52
1.53	0.0752	0.1378	0.0384	0.2308	0.0178	0.3182	0.0063	0.2735	1.53
1.54	0.0745	0.1366	0.0381	0.2288	0.0177	0.3168	0.0063	0.2764	1.54
1.55	0.0739	0.1354	0.0378	0.2269	0.0176	0.3154	0.0063	0.2792	1.55
1.56	0.0733	0.1342	0.0376	0.2250	0.0174	0.3140	0.0062	0.2819	1.56
1.57	0.0727	0.1330	0.0373	0.2231	0.0173	0.3125	0.0062	0.2844	1.57
1.58	0.0721	0.1318	0.0370	0.2212	0.0172	0.3110	0.0062	0.2868	1.58
1.59	0.0715	0.1306	0.0368	0.2193	0.0171	0.3095	0.0061	0.2891	1.59
1.60	0.0709	0.1295	0.0365	0.2175	0.0170	0.3080	0.0061	0.2913	1.60
1.61	0.0704	0.1283	0.0362	0.2156	0.0169	0.3064	0.0061	0.2933	1.61
1.62	0.0698	0.1272	0.0360	0.2138	0.0168	0.3048	0.0060	0.2953	1.62
1.63	0.0692	0.1261	0.0357	0.2120	0.0167	0.3032	0.0060	0.2971	1.63
1.64	0.0687	0.1250	0.0355	0.2102	0.0166	0.3016	0.0060	0.2988	1.64
1.65	0.0681	0.1239	0.0352	0.2084	0.0165	0.2999	0.0059	0.3004	1.65
1.66	0.0676	0.1228	0.0350	0.2067	0.0164	0.2983	0.0059	0.3019	1.66
1.67	0.0671	0.1218	0.0347	0.2049	0.0163	0.2966	0.0059	0.3032	1.67
1.68	0.0665	0.1207	0.0345	0.2032	0.0162	0.2949	0.0059	0.3045	1.68
1.69	0.0660	0.1197	0.0343	0.2015	0.0161	0.2932	0.0058	0.3057	1.69
1.70	0.0655	0.1187	0.0340	0.1998	0.0160	0.2915	0.0058	0.3067	1.70
1.71	0.0650	0.1177	0.0338	0.1981	0.0159	0.2898	0.0058	0.3077	1.71
1.72	0.0645	0.1167	0.0336	0.1965	0.0158	0.2880	0.0057	0.3086	1.72
1.73	0.0640	0.1157	0.0333	0.1948	0.0157	0.2863	0.0057	0.3094	1.73
1.74	0.0635	0.1148	0.0331	0.1932	0.0156	0.2845	0.0057	0.3101	1.74
1.75	0.0630	0.1138	0.0329	0.1916	0.0156	0.2828	0.0056	0.3107	1.75
1.76	0.0626	0.1128	0.0327	0.1900	0.0155	0.2810	0.0056	0.3112	1.76
1.77	0.0621	0.1119	0.0325	0.1884	0.0154	0.2793	0.0056	0.3116	1.77
1.78	0.0616	0.1110	0.0323	0.1869	0.0153	0.2775	0.0056	0.3120	1.78
1.79	0.0612	0.1101	0.0320	0.1853	0.0152	0.2758	0.0055	0.3123	1.79
1.80	0.0607	0.1092	0.0318	0.1838	0.0151	0.2740	0.0055	0.3125	1.80
1.81	0.0603	0.1083	0.0316	0.1823	0.0150	0.2723	0.0055	0.3126	1.81
1.82	0.0598	0.1074	0.0314	0.1808	0.0149	0.2705	0.0055	0.3127	1.82
1.83	0.0594	0.1065	0.0312	0.1793	0.0149	0.2687	0.0054	0.3127	1.83
1.84	0.0589	0.1057	0.0310	0.1779	0.0148	0.2670	0.0054	0.3126	1.84
1.85	0.0585	0.1048	0.0308	0.1764	0.0147	0.2652	0.0054	0.3125	1.85
1.86	0.0581	0.1040	0.0306	0.1750	0.0146	0.2635	0.0054	0.3123	1.86
1.87	0.0576	0.1032	0.0304	0.1735	0.0145	0.2617	0.0053	0.3120	1.87
1.88	0.0572	0.1023	0.0302	0.1721	0.0145	0.2600	0.0053	0.3117	1.88
1.89	0.0568	0.1015	0.0300	0.1707	0.0144	0.2582	0.0053	0.3114	1.89
1.90	0.0564	0.1007	0.0298	0.1694	0.0143	0.2565	0.0053	0.3109	1.90
1.91	0.0560	0.0999	0.0297	0.1680	0.0142	0.2548	0.0052	0.3105	1.91
1.92	0.0556	0.0991	0.0295	0.1666	0.0141	0.2530	0.0052	0.3100	1.92
1.93	0.0552	0.0984	0.0293	0.1653	0.0141	0.2513	0.0052	0.3094	1.93
1.94	0.0548	0.0976	0.0291	0.1640	0.0140	0.2496	0.0052	0.3088	1.94
1.95	0.0544	0.0968	0.0289	0.1627	0.0139	0.2479	0.0051	0.3081	1.95
1.96	0.0541	0.0961	0.0287	0.1614	0.0138	0.2462	0.0051	0.3074	1.96
1.97	0.0537	0.0954	0.0286	0.1601	0.0138	0.2445	0.0051	0.3068	1.97
1.98	0.0533	0.0946	0.0284	0.1588	0.0137	0.2428	0.0051	0.3059	1.98
1.99	0.0530	0.0939	0.0282	0.1576	0.0136	0.2411	0.0050	0.3051	1.99
2.00	0.0526	0.0932	0.0280	0.1563	0.0135	0.2394	0.0050	0.3042	2.00

PROBABILITY DENSITY FUNCTION P(X;ALPHA,BETA)

ALPHA = .75

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	X
2.1	0.0491	0.0865	0.0264	0.1446	0.0129	0.2232	0.0048	0.2941	2.1
2.2	0.0460	0.0804	0.0249	0.1340	0.0122	0.2080	0.0046	0.2818	2.2
2.3	0.0432	0.0750	0.0236	0.1245	0.0116	0.1938	0.0044	0.2683	2.3
2.4	0.0407	0.0701	0.0224	0.1158	0.0111	0.1807	0.0042	0.2544	2.4
2.5	0.0383	0.0657	0.0212	0.1080	0.0106	0.1686	0.0040	0.2405	2.5
2.6	0.0362	0.0617	0.0202	0.1010	0.0101	0.1575	0.0039	0.2270	2.6
2.7	0.0343	0.0580	0.0192	0.0945	0.0097	0.1473	0.0037	0.2139	2.7
2.8	0.0325	0.0547	0.0183	0.0887	0.0093	0.1380	0.0036	0.2014	2.8
2.9	0.0309	0.0517	0.0175	0.0834	0.0089	0.1294	0.0035	0.1897	2.9
3.0	0.0293	0.0489	0.0167	0.0785	0.0086	0.1215	0.0033	0.1786	3.0
3.1	0.0279	0.0463	0.0160	0.0740	0.0082	0.1143	0.0032	0.1683	3.1
3.2	0.0266	0.0439	0.0153	0.0699	0.0079	0.1076	0.0031	0.1587	3.2
3.3	0.0254	0.0417	0.0147	0.0661	0.0076	0.1015	0.0030	0.1497	3.3
3.4	0.0243	0.0397	0.0141	0.0626	0.0073	0.0959	0.0029	0.1413	3.4
3.5	0.0232	0.0378	0.0135	0.0594	0.0071	0.0907	0.0028	0.1336	3.5
3.6	0.0223	0.0360	0.0130	0.0564	0.0068	0.0858	0.0027	0.1263	3.6
3.7	0.0213	0.0344	0.0125	0.0537	0.0066	0.0814	0.0027	0.1196	3.7
3.8	0.0205	0.0329	0.0121	0.0511	0.0064	0.0773	0.0026	0.1134	3.8
3.9	0.0197	0.0315	0.0116	0.0487	0.0062	0.0734	0.0025	0.1076	3.9
4.0	0.0189	0.0302	0.0112	0.0465	0.0060	0.0699	0.0024	0.1022	4.0
4.1	0.0182	0.0289	0.0108	0.0445	0.0058	0.0665	0.0023	0.0971	4.1
4.2	0.0175	0.0278	0.0105	0.0425	0.0056	0.0635	0.0023	0.0924	4.2
4.3	0.0169	0.0267	0.0101	0.0407	0.0054	0.0606	0.0022	0.0880	4.3
4.4	0.0163	0.0257	0.0098	0.0390	0.0053	0.0579	0.0022	0.0839	4.4
4.5	0.0157	0.0247	0.0095	0.0374	0.0051	0.0554	0.0021	0.0801	4.5
4.6	0.0152	0.0238	0.0092	0.0359	0.0050	0.0530	0.0020	0.0765	4.6
4.7	0.0147	0.0229	0.0089	0.0345	0.0049	0.0508	0.0020	0.0731	4.7
4.8	0.0142	0.0221	0.0086	0.0332	0.0047	0.0487	0.0019	0.0700	4.8
4.9	0.0138	0.0213	0.0084	0.0319	0.0046	0.0467	0.0019	0.0670	4.9
5.0	0.0133	0.0206	0.0081	0.0308	0.0045	0.0449	0.0018	0.0642	5.0
5.1	0.0129	0.0199	0.0079	0.0297	0.0044	0.0432	0.0018	0.0616	5.1
5.2	0.0125	0.0192	0.0077	0.0286	0.0042	0.0415	0.0018	0.0591	5.2
5.3	0.0121	0.0186	0.0075	0.0276	0.0041	0.0400	0.0017	0.0568	5.3
5.4	0.0118	0.0180	0.0073	0.0267	0.0040	0.0385	0.0017	0.0546	5.4
5.5	0.0114	0.0175	0.0071	0.0258	0.0039	0.0371	0.0016	0.0525	5.5
5.6	0.0111	0.0169	0.0069	0.0249	0.0038	0.0358	0.0016	0.0506	5.6
5.7	0.0108	0.0164	0.0067	0.0241	0.0037	0.0346	0.0016	0.0487	5.7
5.8	0.0105	0.0159	0.0065	0.0233	0.0036	0.0334	0.0015	0.0469	5.8
5.9	0.0102	0.0155	0.0064	0.0226	0.0036	0.0323	0.0015	0.0453	5.9
6.0	0.0099	0.0150	0.0062	0.0219	0.0035	0.0312	0.0015	0.0437	6.0
6.1	0.0097	0.0146	0.0061	0.0213	0.0034	0.0302	0.0014	0.0422	6.1
6.2	0.0094	0.0142	0.0059	0.0206	0.0033	0.0293	0.0014	0.0408	6.2
6.3	0.0092	0.0138	0.0058	0.0200	0.0032	0.0283	0.0014	0.0394	6.3
6.4	0.0090	0.0134	0.0056	0.0194	0.0032	0.0275	0.0014	0.0381	6.4
6.5	0.0087	0.0131	0.0055	0.0189	0.0031	0.0266	0.0013	0.0369	6.5
6.6	0.0085	0.0127	0.0054	0.0184	0.0030	0.0258	0.0013	0.0357	6.6
6.7	0.0083	0.0124	0.0053	0.0179	0.0030	0.0251	0.0013	0.0346	6.7
6.8	0.0081	0.0121	0.0051	0.0174	0.0029	0.0244	0.0012	0.0336	6.8
6.9	0.0079	0.0118	0.0050	0.0169	0.0029	0.0237	0.0012	0.0325	6.9
7.0	0.0077	0.0115	0.0049	0.0165	0.0028	0.0230	0.0012	0.0316	7.0

PROBABILITY DENSITY FUNCTION P(X;ALPHA,BETA)

ALPHA = .75

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	X
7.1	0.0076	0.0112	0.0048	0.0160	0.0027	0.0224	0.0012	0.0307	7.1
7.2	0.0074	0.0109	0.0047	0.0156	0.0027	0.0217	0.0011	0.0298	7.2
7.3	0.0072	0.0107	0.0046	0.0152	0.0026	0.0212	0.0011	0.0289	7.3
7.4	0.0071	0.0104	0.0045	0.0148	0.0026	0.0206	0.0011	0.0281	7.4
7.5	0.0069	0.0102	0.0044	0.0145	0.0025	0.0201	0.0011	0.0273	7.5
7.6	0.0068	0.0100	0.0044	0.0141	0.0025	0.0195	0.0011	0.0266	7.6
7.7	0.0066	0.0097	0.0043	0.0138	0.0024	0.0190	0.0010	0.0259	7.7
7.8	0.0065	0.0095	0.0042	0.0134	0.0024	0.0186	0.0010	0.0252	7.8
7.9	0.0064	0.0093	0.0041	0.0131	0.0023	0.0181	0.0010	0.0245	7.9
8.0	0.0062	0.0091	0.0040	0.0128	0.0023	0.0177	0.0010	0.0239	8.0
8.1	0.0061	0.0089	0.0039	0.0125	0.0023	0.0172	0.0010	0.0233	8.1
8.2	0.0060	0.0087	0.0039	0.0123	0.0022	0.0168	0.0010	0.0227	8.2
8.3	0.0059	0.0085	0.0038	0.0120	0.0022	0.0164	0.0009	0.0221	8.3
8.4	0.0058	0.0084	0.0037	0.0117	0.0021	0.0160	0.0009	0.0216	8.4
8.5	0.0056	0.0082	0.0036	0.0115	0.0021	0.0157	0.0009	0.0210	8.5
8.6	0.0055	0.0080	0.0036	0.0112	0.0021	0.0153	0.0009	0.0205	8.6
8.7	0.0054	0.0079	0.0035	0.0110	0.0020	0.0150	0.0009	0.0201	8.7
8.8	0.0053	0.0077	0.0035	0.0107	0.0020	0.0146	0.0009	0.0196	8.8
8.9	0.0052	0.0076	0.0034	0.0105	0.0020	0.0143	0.0009	0.0191	8.9
9.0	0.0051	0.0074	0.0033	0.0103	0.0019	0.0140	0.0008	0.0187	9.0
9.1	0.0050	0.0073	0.0033	0.0101	0.0019	0.0137	0.0008	0.0183	9.1
9.2	0.0050	0.0071	0.0032	0.0099	0.0019	0.0134	0.0008	0.0179	9.2
9.3	0.0049	0.0070	0.0032	0.0097	0.0018	0.0131	0.0008	0.0175	9.3
9.4	0.0048	0.0069	0.0031	0.0095	0.0018	0.0129	0.0008	0.0171	9.4
9.5	0.0047	0.0067	0.0031	0.0093	0.0018	0.0126	0.0008	0.0167	9.5
9.6	0.0046	0.0066	0.0030	0.0092	0.0018	0.0123	0.0008	0.0164	9.6
9.7	0.0045	0.0065	0.0030	0.0090	0.0017	0.0121	0.0008	0.0160	9.7
9.8	0.0045	0.0064	0.0029	0.0088	0.0017	0.0119	0.0007	0.0157	9.8
9.9	0.0044	0.0063	0.0029	0.0086	0.0017	0.0116	0.0007	0.0154	9.9
10.0	0.0043	0.0062	0.0028	0.0085	0.0017	0.0114	0.0007	0.0150	10.0
10.1	0.0042	0.0060	0.0028	0.0083	0.0016	0.0112	0.0007	0.0147	10.1
10.2	0.0042	0.0059	0.0027	0.0082	0.0016	0.0110	0.0007	0.0144	10.2
10.3	0.0041	0.0059	0.0027	0.0080	0.0016	0.0108	0.0007	0.0142	10.3
10.4	0.0040	0.0058	0.0027	0.0079	0.0016	0.0106	0.0007	0.0139	10.4
10.5	0.0040	0.0056	0.0026	0.0077	0.0015	0.0104	0.0007	0.0136	10.5
10.6	0.0039	0.0056	0.0026	0.0076	0.0015	0.0102	0.0007	0.0133	10.6
10.7	0.0038	0.0055	0.0025	0.0075	0.0015	0.0100	0.0007	0.0131	10.7
10.8	0.0038	0.0054	0.0025	0.0074	0.0015	0.0098	0.0007	0.0129	10.8
10.9	0.0037	0.0053	0.0025	0.0072	0.0015	0.0096	0.0006	0.0126	10.9
11.0	0.0037	0.0052	0.0024	0.0071	0.0014	0.0095	0.0006	0.0124	11.0
11.1	0.0036	0.0051	0.0024	0.0070	0.0014	0.0093	0.0006	0.0122	11.1
11.2	0.0036	0.0050	0.0024	0.0069	0.0014	0.0091	0.0006	0.0119	11.2
11.3	0.0035	0.0050	0.0023	0.0068	0.0014	0.0090	0.0006	0.0117	11.3
11.4	0.0035	0.0049	0.0023	0.0067	0.0014	0.0088	0.0006	0.0115	11.4
11.5	0.0034	0.0048	0.0023	0.0065	0.0014	0.0087	0.0006	0.0113	11.5
11.6	0.0034	0.0047	0.0022	0.0064	0.0013	0.0085	0.0006	0.0111	11.6
11.7	0.0033	0.0047	0.0022	0.0063	0.0013	0.0084	0.0006	0.0109	11.7
11.8	0.0033	0.0046	0.0022	0.0063	0.0013	0.0083	0.0006	0.0107	11.8
11.9	0.0032	0.0045	0.0021	0.0062	0.0013	0.0081	0.0006	0.0105	11.9
12.0	0.0032	0.0045	0.0021	0.0061	0.0013	0.0080	0.0006	0.0104	12.0

PROBABILITY DENSITY FUNCTION P(X;ALPHA,BETA)

ALPHA = .75

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	X
12.1	0.0031	0.0044	0.0021	0.0060	0.0012	0.0079	0.0006	0.0102	12.1
12.2	0.0031	0.0043	0.0021	0.0059	0.0012	0.0077	0.0005	0.0100	12.2
12.3	0.0030	0.0043	0.0020	0.0058	0.0012	0.0076	0.0005	0.0099	12.3
12.4	0.0030	0.0042	0.0020	0.0057	0.0012	0.0075	0.0005	0.0097	12.4
12.5	0.0030	0.0042	0.0020	0.0056	0.0012	0.0074	0.0005	0.0095	12.5
12.6	0.0029	0.0041	0.0020	0.0055	0.0012	0.0073	0.0005	0.0094	12.6
12.7	0.0029	0.0040	0.0019	0.0055	0.0012	0.0072	0.0005	0.0093	12.7
12.8	0.0029	0.0040	0.0019	0.0054	0.0011	0.0071	0.0005	0.0091	12.8
12.9	0.0028	0.0039	0.0019	0.0053	0.0011	0.0070	0.0005	0.0090	12.9
13.0	0.0028	0.0039	0.0019	0.0052	0.0011	0.0069	0.0005	0.0088	13.0
14.	0.0024	0.0034	0.0017	0.0046	0.0010	0.0059	0.0005	0.0076	14.
15.	0.0022	0.0030	0.0015	0.0040	0.0009	0.0052	0.0004	0.0066	15.
16.	0.0020	0.0027	0.0013	0.0036	0.0008	0.0046	0.0004	0.0058	16.
17.	0.0018	0.0024	0.0012	0.0032	0.0007	0.0041	0.0003	0.0052	17.
18.	0.0016	0.0022	0.0011	0.0029	0.0007	0.0037	0.0003	0.0046	18.
19.	0.0015	0.0020	0.0010	0.0026	0.0006	0.0033	0.0003	0.0042	19.
20.	0.0013	0.0018	0.0009	0.0024	0.0006	0.0030	0.0003	0.0038	20.
21.	0.0012	0.0017	0.0008	0.0022	0.0005	0.0027	0.0002	0.0034	21.
22.	0.0011	0.0015	0.0008	0.0020	0.0005	0.0025	0.0002	0.0031	22.
23.	0.0010	0.0014	0.0007	0.0018	0.0005	0.0023	0.0002	0.0029	23.
24.	0.0010	0.0013	0.0007	0.0017	0.0004	0.0021	0.0002	0.0026	24.
25.	0.0009	0.0012	0.0006	0.0016	0.0004	0.0020	0.0002	0.0024	25.
26.	0.0008	0.0011	0.0006	0.0015	0.0004	0.0018	0.0002	0.0023	26.
27.	0.0008	0.0011	0.0006	0.0014	0.0003	0.0017	0.0002	0.0021	27.
28.	0.0007	0.0010	0.0005	0.0013	0.0003	0.0016	0.0001	0.0020	28.
29.	0.0007	0.0009	0.0005	0.0012	0.0003	0.0015		0.0018	29.
30.	0.0007	0.0009	0.0005	0.0011	0.0003	0.0014		0.0017	30.
31.	0.0006	0.0008	0.0004	0.0011	0.0003	0.0013		0.0016	31.
32.	0.0006	0.0008	0.0004	0.0010	0.0003	0.0013		0.0015	32.
33.	0.0006	0.0007	0.0004	0.0010	0.0002	0.0012		0.0014	33.
34.	0.0005	0.0007	0.0004	0.0009	0.0002	0.0011		0.0014	34.
35.	0.0005	0.0007	0.0004	0.0009	0.0002	0.0011		0.0013	35.
36.	0.0005	0.0006	0.0003	0.0008	0.0002	0.0010		0.0012	36.
37.	0.0005	0.0006	0.0003	0.0008	0.0002	0.0010		0.0012	37.
38.	0.0004	0.0006	0.0003	0.0007	0.0002	0.0009		0.0011	38.
39.	0.0004	0.0006	0.0003	0.0007	0.0002	0.0009		0.0010	39.
40.	0.0004	0.0005	0.0003	0.0007	0.0002	0.0008		0.0010	40.
41.	0.0004	0.0005	0.0003	0.0006	0.0002	0.0008		0.0010	41.
42.	0.0004	0.0005	0.0003	0.0006	0.0002	0.0008		0.0009	42.
43.	0.0004	0.0005	0.0002	0.0006	0.0002	0.0007		0.0009	43.
53.	0.0002	0.0003	0.0002	0.0004	0.0001	0.0005		0.0006	53.
63.	0.0002	0.0002	0.0001	0.0003		0.0004		0.0004	63.
73.	0.0001	0.0002		0.0002		0.0003		0.0003	73.
83.		0.0001		0.0002		0.0002		0.0003	83.
93.				0.0001		0.0002		0.0002	93.
103.						0.0001		0.0002	103.
113.								0.0001	113.

PROBABILITY DENSITY FUNCTION P(X;ALPHA,BETA)

ALPHA = 1.00

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	1.00	X
0.0	0.3183	0.3096	0.3096	0.2925	0.2925	0.2761	0.2761	0.2622	0.2622	0.0
0.1	0.3152	0.3147	0.2999	0.3011	0.2814	0.2849	0.2657	0.2702	0.2532	0.1
0.2	0.3061	0.3143	0.2867	0.3061	0.2685	0.2915	0.2543	0.2768	0.2434	0.2
0.3	0.2920	0.3077	0.2711	0.3069	0.2545	0.2954	0.2423	0.2814	0.2332	0.3
0.4	0.2744	0.2953	0.2543	0.3025	0.2400	0.2958	0.2301	0.2836	0.2228	0.4
0.5	0.2547	0.2776	0.2369	0.2926	0.2254	0.2921	0.2178	0.2830	0.2123	0.5
0.6	0.2340	0.2562	0.2197	0.2772	0.2111	0.2838	0.2057	0.2789	0.2020	0.6
0.7	0.2136	0.2327	0.2030	0.2568	0.1973	0.2705	0.1940	0.2710	0.1919	0.7
0.8	0.1941	0.2087	0.1872	0.2325	0.1841	0.2523	0.1827	0.2588	0.1820	0.8
0.9	0.1759	0.1855	0.1724	0.2061	0.1716	0.2297	0.1719	0.2424	0.1726	0.9
1.0	0.1591	0.1640	0.1587	0.1793	0.1599	0.2036	0.1617	0.2218	0.1635	1.0
1.1	0.1440	0.1447	0.1461	0.1537	0.1490	0.1754	0.1520	0.1974	0.1549	1.1
1.2	0.1305	0.1277	0.1346	0.1306	0.1389	0.1469	0.1430	0.1701	0.1467	1.2
1.3	0.1183	0.1130	0.1241	0.1107	0.1295	0.1197	0.1344	0.1411	0.1389	1.3
1.4	0.1075	0.1002	0.1145	0.0939	0.1208	0.0955	0.1265	0.1120	0.1315	1.4
1.5	0.0979	0.0892	0.1058	0.0801	0.1128	0.0751	0.1190	0.0845	0.1246	1.5
1.6	0.0894	0.0798	0.0979	0.0689	0.1054	0.0589	0.1121	0.0599	0.1180	1.6
1.7	0.0818	0.0716	0.0907	0.0597	0.0986	0.0465	0.1056	0.0396	0.1119	1.7
1.8	0.0751	0.0646	0.0842	0.0522	0.0923	0.0374	0.0996	0.0240	0.1061	1.8
1.9	0.0691	0.0585	0.0783	0.0460	0.0865	0.0307	0.0940	0.0132	0.1006	1.9
2.0	0.0637	0.0531	0.0729	0.0409	0.0812	0.0258	0.0887	0.0065	0.0955	2.0
2.1	0.0588	0.0485	0.0680	0.0365	0.0763	0.0220	0.0838	0.0028	0.0907	2.1
2.2	0.0545	0.0444	0.0636	0.0329	0.0718	0.0191	0.0793	0.0010	0.0862	2.2
2.3	0.0506	0.0408	0.0595	0.0298	0.0676	0.0168	0.0751	0.0003	0.0820	2.3
2.4	0.0471	0.0376	0.0557	0.0271	0.0637	0.0150	0.0711		0.0780	2.4
2.5	0.0439	0.0348	0.0523	0.0247	0.0602	0.0134	0.0674		0.0742	2.5
2.6	0.0410	0.0322	0.0492	0.0227	0.0568	0.0121	0.0640		0.0707	2.6
2.7	0.0384	0.0300	0.0463	0.0209	0.0538	0.0110	0.0608		0.0674	2.7
2.8	0.0360	0.0279	0.0437	0.0193	0.0509	0.0101	0.0578		0.0643	2.8
2.9	0.0338	0.0261	0.0412	0.0179	0.0483	0.0092	0.0550		0.0614	2.9
3.0	0.0318	0.0244	0.0390	0.0166	0.0458	0.0085	0.0523		0.0586	3.0
3.1	0.0300	0.0229	0.0369	0.0155	0.0435	0.0079	0.0499		0.0560	3.1
3.2	0.0283	0.0215	0.0349	0.0145	0.0414	0.0073	0.0476		0.0536	3.2
3.3	0.0268	0.0202	0.0331	0.0136	0.0394	0.0068	0.0454		0.0513	3.3
3.4	0.0253	0.0191	0.0315	0.0128	0.0375	0.0064	0.0434		0.0491	3.4
3.5	0.0240	0.0180	0.0299	0.0120	0.0358	0.0060	0.0415		0.0471	3.5
3.6	0.0228	0.0171	0.0285	0.0113	0.0341	0.0056	0.0397		0.0451	3.6
3.7	0.0217	0.0162	0.0271	0.0107	0.0326	0.0053	0.0380		0.0433	3.7
3.8	0.0206	0.0153	0.0259	0.0101	0.0312	0.0050	0.0364		0.0416	3.8
3.9	0.0196	0.0146	0.0247	0.0096	0.0298	0.0047	0.0349		0.0399	3.9
4.0	0.0187	0.0139	0.0236	0.0091	0.0285	0.0045	0.0335		0.0384	4.0
4.1	0.0179	0.0132	0.0226	0.0086	0.0273	0.0042	0.0321		0.0369	4.1
4.2	0.0171	0.0126	0.0216	0.0082	0.0262	0.0040	0.0309		0.0355	4.2
4.3	0.0163	0.0120	0.0207	0.0078	0.0252	0.0038	0.0297		0.0342	4.3
4.4	0.0156	0.0115	0.0199	0.0075	0.0242	0.0036	0.0285		0.0329	4.4
4.5	0.0150	0.0110	0.0191	0.0072	0.0232	0.0035	0.0275		0.0317	4.5
4.6	0.0144	0.0105	0.0183	0.0068	0.0223	0.0033	0.0264		0.0306	4.6
4.7	0.0138	0.0101	0.0176	0.0065	0.0215	0.0032	0.0255		0.0295	4.7
4.8	0.0132	0.0097	0.0169	0.0063	0.0207	0.0030	0.0246		0.0285	4.8
4.9	0.0127	0.0093	0.0163	0.0060	0.0199	0.0029	0.0237		0.0275	4.9
5.0	0.0122	0.0089	0.0157	0.0058	0.0192	0.0028	0.0228		0.0266	5.0

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ALPHA = 1.00

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	1.00	X
5.1	0.0118	0.0086	0.0151	0.0055	0.0185	0.0027	0.0221		0.0257	5.1
5.2	0.0113	0.0083	0.0146	0.0053	0.0179	0.0026	0.0213		0.0248	5.2
5.3	0.0109	0.0080	0.0140	0.0051	0.0173	0.0025	0.0206		0.0240	5.3
5.4	0.0105	0.0077	0.0136	0.0049	0.0167	0.0024	0.0199		0.0232	5.4
5.5	0.0102	0.0074	0.0131	0.0048	0.0161	0.0023	0.0193		0.0225	5.5
5.6	0.0098	0.0071	0.0127	0.0046	0.0156	0.0022	0.0186		0.0218	5.6
5.7	0.0095	0.0069	0.0122	0.0044	0.0151	0.0021	0.0181		0.0211	5.7
5.8	0.0092	0.0067	0.0118	0.0043	0.0146	0.0021	0.0175		0.0205	5.8
5.9	0.0089	0.0064	0.0115	0.0041	0.0141	0.0020	0.0170		0.0199	5.9
6.0	0.0086	0.0062	0.0111	0.0040	0.0137	0.0019	0.0164		0.0193	6.0
6.1	0.0083	0.0060	0.0107	0.0039	0.0133	0.0019	0.0159		0.0187	6.1
6.2	0.0081	0.0058	0.0104	0.0038	0.0129	0.0018	0.0155		0.0181	6.2
6.3	0.0078	0.0057	0.0101	0.0036	0.0125	0.0017	0.0150		0.0176	6.3
6.4	0.0076	0.0055	0.0098	0.0035	0.0121	0.0017	0.0146		0.0171	6.4
6.5	0.0074	0.0053	0.0095	0.0034	0.0118	0.0016	0.0142		0.0166	6.5
6.6	0.0071	0.0052	0.0092	0.0033	0.0114	0.0016	0.0138		0.0162	6.6
6.7	0.0069	0.0050	0.0090	0.0032	0.0111	0.0015	0.0134		0.0157	6.7
6.8	0.0067	0.0049	0.0087	0.0031	0.0108	0.0015	0.0130		0.0153	6.8
6.9	0.0065	0.0047	0.0085	0.0030	0.0105	0.0014	0.0127		0.0149	6.9
7.0	0.0064	0.0046	0.0082	0.0029	0.0102	0.0014	0.0123		0.0145	7.0
7.1	0.0062	0.0045	0.0080	0.0029	0.0099	0.0014	0.0120		0.0141	7.1
7.2	0.0060	0.0044	0.0078	0.0028	0.0097	0.0013	0.0117		0.0138	7.2
7.3	0.0059	0.0042	0.0076	0.0027	0.0094	0.0013	0.0114		0.0134	7.3
7.4	0.0057	0.0041	0.0074	0.0026	0.0092	0.0013	0.0111		0.0131	7.4
7.5	0.0056	0.0040	0.0072	0.0026	0.0089	0.0012	0.0108		0.0127	7.5
7.6	0.0054	0.0039	0.0070	0.0025	0.0087	0.0012	0.0105		0.0124	7.6
7.7	0.0053	0.0038	0.0068	0.0024	0.0085	0.0012	0.0103		0.0121	7.7
7.8	0.0051	0.0037	0.0067	0.0024	0.0083	0.0011	0.0100		0.0118	7.8
7.9	0.0050	0.0036	0.0065	0.0023	0.0081	0.0011	0.0098		0.0115	7.9
8.0	0.0049	0.0035	0.0063	0.0023	0.0079	0.0011	0.0095		0.0113	8.0
8.1	0.0048	0.0034	0.0062	0.0022	0.0077	0.0010	0.0093		0.0110	8.1
8.2	0.0047	0.0034	0.0060	0.0021	0.0075	0.0010	0.0091		0.0107	8.2
8.3	0.0045	0.0033	0.0059	0.0021	0.0073	0.0010	0.0089		0.0105	8.3
8.4	0.0045	0.0032	0.0058	0.0020	0.0072	0.0010	0.0087		0.0103	8.4
8.5	0.0044	0.0031	0.0056	0.0020	0.0070	0.0010	0.0085		0.0100	8.5
8.6	0.0042	0.0031	0.0055	0.0019	0.0069	0.0009	0.0083		0.0098	8.6
8.7	0.0041	0.0030	0.0054	0.0019	0.0067	0.0009	0.0081		0.0096	8.7
8.8	0.0041	0.0029	0.0053	0.0019	0.0066	0.0009	0.0079		0.0094	8.8
8.9	0.0040	0.0029	0.0051	0.0018	0.0064	0.0009	0.0077		0.0092	8.9
9.0	0.0039	0.0028	0.0050	0.0018	0.0063	0.0008	0.0076		0.0090	9.0
9.1	0.0038	0.0027	0.0049	0.0017	0.0061	0.0008	0.0074		0.0088	9.1
9.2	0.0037	0.0027	0.0048	0.0017	0.0060	0.0008	0.0073		0.0086	9.2
9.3	0.0036	0.0026	0.0047	0.0017	0.0059	0.0008	0.0071		0.0084	9.3
9.4	0.0036	0.0026	0.0046	0.0016	0.0058	0.0008	0.0070		0.0082	9.4
9.5	0.0035	0.0025	0.0045	0.0016	0.0056	0.0008	0.0068		0.0081	9.5
9.6	0.0034	0.0025	0.0044	0.0016	0.0055	0.0007	0.0067		0.0079	9.6
9.7	0.0034	0.0024	0.0043	0.0015	0.0054	0.0007	0.0065		0.0077	9.7
9.8	0.0033	0.0024	0.0043	0.0015	0.0053	0.0007	0.0064		0.0076	9.8
9.9	0.0032	0.0023	0.0042	0.0015	0.0052	0.0007	0.0063		0.0074	9.9
10.0	0.0032	0.0023	0.0041	0.0014	0.0051	0.0007	0.0062		0.0073	10.0

PROBABILITY DENSITY FUNCTION P(X;ALPHA,BETA)

ALPHA = 1.00

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	1.00	X
11.	0.0026	0.0019	0.0034	0.0012	0.0042	0.0006	0.0051		0.0060	11.
12.	0.0022	0.0016	0.0028	0.0010	0.0035	0.0005	0.0043		0.0051	12.
13.	0.0019	0.0014	0.0024	0.0009	0.0030	0.0004	0.0036		0.0043	13.
14.	0.0016	0.0012	0.0021	0.0007	0.0026	0.0004	0.0031		0.0037	14.
15.	0.0014	0.0010	0.0018	0.0006	0.0023	0.0003	0.0027		0.0032	15.
16.	0.0012	0.0009	0.0016	0.0006	0.0020	0.0003	0.0024		0.0028	16.
17.	0.0011	0.0008	0.0014	0.0005	0.0018	0.0002	0.0021		0.0025	17.
18.	0.0010	0.0007	0.0013	0.0005	0.0016	0.0002	0.0019		0.0022	18.
19.	0.0009	0.0006	0.0011	0.0004	0.0014	0.0002	0.0017		0.0020	19.
20.	0.0008	0.0006	0.0010	0.0004	0.0013	0.0002	0.0015		0.0018	20.
21.	0.0007	0.0005	0.0009	0.0003	0.0011	0.0002	0.0014		0.0016	21.
22.	0.0007	0.0005	0.0008	0.0003	0.0010	0.0001	0.0012		0.0015	22.
23.	0.0006	0.0004	0.0008	0.0003	0.0009		0.0011		0.0014	23.
24.	0.0005	0.0004	0.0007	0.0003	0.0009		0.0010		0.0012	24.
25.	0.0005	0.0004	0.0006	0.0002	0.0008		0.0010		0.0011	25.
26.	0.0005	0.0003	0.0006	0.0002	0.0007		0.0009		0.0010	26.
27.	0.0004	0.0003	0.0006	0.0002	0.0007		0.0008		0.0010	27.
28.	0.0004	0.0003	0.0005	0.0002	0.0006		0.0008		0.0009	28.
29.	0.0004	0.0003	0.0005	0.0002	0.0006		0.0007		0.0008	29.
30.	0.0003	0.0002	0.0005	0.0002	0.0005		0.0007		0.0008	30.
40.	0.0002	0.0001	0.0002	0.0001	0.0003		0.0004		0.0004	40.
50.	0.0001		0.0002		0.0002		0.0002		0.0003	50.
60.			0.0001		0.0001		0.0002		0.0002	60.
70.							0.0001		0.0001	70.

ALPHA = 1.25

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	1.00	X
0.0	0.2965	0.2375	0.2375	0.1578	0.1578	0.1090	0.1090	0.0808	0.0808	0.0
0.1	0.2985	0.2237	0.2507	0.1472	0.1690	0.1022	0.1163	0.0763	0.0856	0.1
0.2	0.2901	0.2097	0.2629	0.1371	0.1807	0.0958	0.1241	0.0721	0.0907	0.2
0.3	0.2827	0.1957	0.2738	0.1277	0.1928	0.0899	0.1323	0.0681	0.0962	0.3
0.4	0.2727	0.1821	0.2828	0.1188	0.2052	0.0843	0.1410	0.0644	0.1020	0.4
0.5	0.2606	0.1689	0.2896	0.1105	0.2177	0.0791	0.1502	0.0609	0.1082	0.5
0.6	0.2469	0.1563	0.2937	0.1029	0.2301	0.0743	0.1599	0.0577	0.1147	0.6
0.7	0.2320	0.1444	0.2950	0.0957	0.2422	0.0699	0.1700	0.0547	0.1216	0.7
0.8	0.2166	0.1333	0.2933	0.0891	0.2537	0.0657	0.1805	0.0518	0.1290	0.8
0.9	0.2009	0.1229	0.2884	0.0830	0.2643	0.0618	0.1913	0.0491	0.1367	0.9
1.0	0.1854	0.1133	0.2806	0.0774	0.2736	0.0582	0.2023	0.0466	0.1448	1.0
1.1	0.1703	0.1044	0.2700	0.0722	0.2813	0.0549	0.2134	0.0443	0.1533	1.1
1.2	0.1560	0.0962	0.2570	0.0674	0.2869	0.0517	0.2245	0.0421	0.1621	1.2
1.3	0.1424	0.0887	0.2421	0.0630	0.2903	0.0488	0.2354	0.0400	0.1713	1.3
1.4	0.1298	0.0819	0.2259	0.0589	0.2910	0.0461	0.2459	0.0381	0.1808	1.4
1.5	0.1182	0.0757	0.2089	0.0552	0.2889	0.0436	0.2557	0.0362	0.1905	1.5
1.6	0.1075	0.0699	0.1915	0.0517	0.2838	0.0412	0.2646	0.0345	0.2004	1.6
1.7	0.0979	0.0647	0.1744	0.0485	0.2758	0.0391	0.2723	0.0329	0.2104	1.7
1.8	0.0891	0.0600	0.1579	0.0455	0.2650	0.0370	0.2784	0.0314	0.2203	1.8
1.9	0.0811	0.0557	0.1422	0.0428	0.2516	0.0351	0.2828	0.0300	0.2300	1.9
2.0	0.0740	0.0517	0.1276	0.0403	0.2361	0.0333	0.2850	0.0286	0.2394	2.0
2.1	0.0676	0.0481	0.1142	0.0379	0.2189	0.0316	0.2849	0.0274	0.2483	2.1
2.2	0.0618	0.0448	0.1021	0.0357	0.2007	0.0301	0.2821	0.0262	0.2565	2.2
2.3	0.0566	0.0418	0.0912	0.0337	0.1820	0.0286	0.2767	0.0250	0.2637	2.3
2.4	0.0519	0.0390	0.0815	0.0319	0.1633	0.0272	0.2684	0.0240	0.2697	2.4
2.5	0.0477	0.0365	0.0729	0.0301	0.1452	0.0260	0.2575	0.0230	0.2743	2.5

PROBABILITY DENSITY FUNCTION P(X;ALPHA,BETA)

ALPHA = 1.25

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	1.00	X
2.6	0.0440	0.0342	0.0653	0.0285	0.1281	0.0248	0.2440	0.0220	0.2772	2.6
2.7	0.0406	0.0321	0.0587	0.0270	0.1123	0.0236	0.2282	0.0211	0.2782	2.7
2.8	0.0375	0.0301	0.0528	0.0256	0.0980	0.0226	0.2106	0.0203	0.2770	2.8
2.9	0.0348	0.0283	0.0476	0.0243	0.0852	0.0215	0.1917	0.0195	0.2734	2.9
3.0	0.0323	0.0267	0.0431	0.0231	0.0740	0.0206	0.1720	0.0187	0.2674	3.0
3.1	0.0300	0.0251	0.0391	0.0220	0.0643	0.0197	0.1522	0.0180	0.2588	3.1
3.2	0.0280	0.0237	0.0356	0.0209	0.0559	0.0189	0.1327	0.0173	0.2476	3.2
3.3	0.0261	0.0224	0.0325	0.0199	0.0488	0.0181	0.1142	0.0166	0.2340	3.3
3.4	0.0244	0.0212	0.0298	0.0190	0.0427	0.0173	0.0971	0.0160	0.2182	3.4
3.5	0.0228	0.0201	0.0273	0.0181	0.0376	0.0166	0.0816	0.0154	0.2005	3.5
3.6	0.0214	0.0190	0.0251	0.0173	0.0333	0.0160	0.0679	0.0149	0.1813	3.6
3.7	0.0201	0.0180	0.0232	0.0165	0.0296	0.0153	0.0562	0.0143	0.1612	3.7
3.8	0.0189	0.0171	0.0215	0.0158	0.0264	0.0147	0.0463	0.0138	0.1407	3.8
3.9	0.0178	0.0163	0.0199	0.0151	0.0237	0.0142	0.0382	0.0133	0.1203	3.9
4.0	0.0168	0.0155	0.0185	0.0145	0.0213	0.0136	0.0315	0.0129	0.1007	4.0
4.1	0.0158	0.0148	0.0172	0.0139	0.0193	0.0131	0.0262	0.0124	0.0824	4.1
4.2	0.0150	0.0141	0.0161	0.0133	0.0176	0.0126	0.0219	0.0120	0.0657	4.2
4.3	0.0142	0.0134	0.0150	0.0128	0.0161	0.0122	0.0186	0.0116	0.0510	4.3
4.4	0.0134	0.0128	0.0141	0.0123	0.0147	0.0117	0.0159	0.0113	0.0385	4.4
4.5	0.0128	0.0123	0.0132	0.0118	0.0135	0.0113	0.0137	0.0109	0.0282	4.5
4.6	0.0121	0.0117	0.0124	0.0113	0.0125	0.0109	0.0120	0.0105	0.0200	4.6
4.7	0.0115	0.0112	0.0117	0.0109	0.0116	0.0105	0.0106	0.0102	0.0137	4.7
4.8	0.0110	0.0108	0.0110	0.0105	0.0107	0.0102	0.0094	0.0099	0.0090	4.8
4.9	0.0105	0.0103	0.0104	0.0101	0.0100	0.0098	0.0085	0.0096	0.0057	4.9
5.0	0.0100	0.0099	0.0099	0.0097	0.0093	0.0095	0.0077	0.0093	0.0035	5.0
5.1	0.0095	0.0095	0.0093	0.0094	0.0087	0.0092	0.0069	0.0090	0.0020	5.1
5.2	0.0091	0.0091	0.0089	0.0090	0.0082	0.0089	0.0063	0.0087	0.0011	5.2
5.3	0.0087	0.0088	0.0084	0.0087	0.0077	0.0086	0.0058	0.0085	0.0006	5.3
5.4	0.0083	0.0085	0.0080	0.0084	0.0072	0.0084	0.0054	0.0082	0.0003	5.4
5.5	0.0080	0.0081	0.0076	0.0081	0.0068	0.0081	0.0050	0.0080	0.0001	5.5
5.6	0.0077	0.0078	0.0072	0.0079	0.0064	0.0078	0.0046	0.0078		5.6
5.7	0.0073	0.0075	0.0069	0.0076	0.0061	0.0076	0.0043	0.0076		5.7
5.8	0.0071	0.0073	0.0066	0.0074	0.0057	0.0074	0.0040	0.0073		5.8
5.9	0.0068	0.0070	0.0063	0.0071	0.0054	0.0072	0.0037	0.0071		5.9
6.0	0.0065	0.0068	0.0060	0.0069	0.0052	0.0069	0.0035	0.0069		6.0
6.1	0.0063	0.0065	0.0058	0.0067	0.0049	0.0068	0.0033	0.0068		6.1
6.2	0.0060	0.0063	0.0055	0.0065	0.0047	0.0065	0.0031	0.0066		6.2
6.3	0.0058	0.0061	0.0053	0.0063	0.0044	0.0064	0.0029	0.0064		6.3
6.4	0.0056	0.0059	0.0051	0.0061	0.0042	0.0062	0.0028	0.0062		6.4
6.5	0.0054	0.0057	0.0049	0.0059	0.0040	0.0060	0.0026	0.0061		6.5
6.6	0.0052	0.0055	0.0047	0.0057	0.0039	0.0059	0.0025	0.0059		6.6
6.7	0.0050	0.0054	0.0045	0.0056	0.0037	0.0057	0.0024	0.0058		6.7
6.8	0.0049	0.0052	0.0043	0.0054	0.0035	0.0055	0.0022	0.0056		6.8
6.9	0.0047	0.0050	0.0042	0.0053	0.0034	0.0054	0.0021	0.0055		6.9
7.0	0.0045	0.0049	0.0040	0.0051	0.0032	0.0053	0.0020	0.0053		7.0
7.1	0.0044	0.0047	0.0039	0.0050	0.0031	0.0051	0.0019	0.0052		7.1
7.2	0.0042	0.0046	0.0038	0.0048	0.0030	0.0050	0.0018	0.0051		7.2
7.3	0.0041	0.0045	0.0036	0.0047	0.0029	0.0049	0.0018	0.0050		7.3
7.4	0.0040	0.0043	0.0035	0.0046	0.0028	0.0047	0.0017	0.0049		7.4
7.5	0.0039	0.0042	0.0034	0.0045	0.0027	0.0046	0.0016	0.0047		7.5

ALPHA = 1.25

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	1.00	X
7.6	0.0038	0.0041	0.0033	0.0043	0.0026	0.0045	0.0015	0.0046		7.6
7.7	0.0036	0.0040	0.0032	0.0042	0.0025	0.0044	0.0015	0.0045		7.7
7.8	0.0035	0.0039	0.0031	0.0041	0.0024	0.0043	0.0014	0.0044		7.8
7.9	0.0034	0.0038	0.0030	0.0040	0.0023	0.0042	0.0014	0.0043		7.9
8.0	0.0033	0.0037	0.0029	0.0039	0.0022	0.0041	0.0013	0.0042		8.0
9.	0.0025	0.0028	0.0021	0.0031	0.0016	0.0032	0.0009	0.0034		9.
10.	0.0020	0.0023	0.0016	0.0025	0.0012	0.0026	0.0007	0.0028		10.
11.	0.0016	0.0018	0.0013	0.0020	0.0009	0.0022	0.0005	0.0023		11.
12.	0.0013	0.0015	0.0010	0.0017	0.0008	0.0018	0.0004	0.0020		12.
13.	0.0011	0.0013	0.0009	0.0014	0.0006	0.0015	0.0003	0.0017		13.
14.	0.0009	0.0011	0.0007	0.0012	0.0005	0.0013	0.0003	0.0014		14.
15.	0.0008	0.0009	0.0006	0.0010	0.0004	0.0011	0.0002	0.0012		15.
16.	0.0007	0.0008	0.0005	0.0009	0.0004	0.0010	0.0002	0.0011		16.
17.	0.0006	0.0007	0.0005	0.0008	0.0003	0.0009	0.0002	0.0010		17.
18.	0.0005	0.0006	0.0004	0.0007	0.0003	0.0008	0.0001	0.0009		18.
19.	0.0005	0.0005	0.0003	0.0006	0.0002	0.0007		0.0008		19.
20.	0.0004	0.0005	0.0003	0.0006	0.0002	0.0006		0.0007		20.
21.	0.0004	0.0004	0.0003	0.0005	0.0002	0.0006		0.0006		21.
22.	0.0003	0.0004	0.0002	0.0005	0.0002	0.0005		0.0006		22.
23.	0.0003	0.0003	0.0002	0.0004	0.0001	0.0005		0.0005		23.
24.	0.0003	0.0003	0.0002	0.0004		0.0004		0.0005		24.
25.	0.0002	0.0003	0.0002	0.0003		0.0004		0.0004		25.
26.	0.0002	0.0003	0.0002	0.0003		0.0003		0.0004		26.
27.	0.0002	0.0002	0.0001	0.0003		0.0003		0.0004		27.
28.	0.0002	0.0002		0.0003		0.0003		0.0003		28.
29.	0.0002	0.0002		0.0002		0.0003		0.0003		29.
30.	0.0002	0.0001		0.0002		0.0003		0.0003		30.
31.	0.0001			0.0002		0.0002		0.0003		31.
38.				0.0001		0.0001		0.0002		38.
48.								0.0001		48.

ALPHA = 1.50

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	1.00	X
0.0	0.2873	0.2778	0.2778	0.2541	0.2541	0.2252	0.2252	0.1975	0.1975	0.0
0.1	0.2863	0.2712	0.2828	0.2442	0.2630	0.2144	0.2356	0.1872	0.2078	0.1
0.2	0.2831	0.2629	0.2858	0.2334	0.2707	0.2034	0.2455	0.1770	0.2180	0.2
0.3	0.2780	0.2533	0.2868	0.2221	0.2769	0.1923	0.2546	0.1669	0.2280	0.3
0.4	0.2710	0.2426	0.2857	0.2104	0.2815	0.1812	0.2627	0.1572	0.2375	0.4
0.5	0.2623	0.2310	0.2824	0.1986	0.2843	0.1704	0.2697	0.1477	0.2465	0.5
0.6	0.2521	0.2189	0.2772	0.1867	0.2851	0.1598	0.2754	0.1386	0.2548	0.6
0.7	0.2408	0.2063	0.2700	0.1749	0.2839	0.1495	0.2795	0.1299	0.2621	0.7
0.8	0.2285	0.1936	0.2610	0.1634	0.2806	0.1397	0.2819	0.1216	0.2683	0.8
0.9	0.2155	0.1808	0.2505	0.1522	0.2753	0.1303	0.2825	0.1137	0.2733	0.9
1.0	0.2020	0.1683	0.2386	0.1415	0.2680	0.1214	0.2811	0.1062	0.2769	1.0

PROBABILITY DENSITY FUNCTION P(X;ALPHA,BETA)

ALPHA = 1.50

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	1.00	X
1.1	0.1884	0.1561	0.2257	0.1313	0.2589	0.1129	0.2777	0.0992	0.2788	1.1
1.2	0.1748	0.1443	0.2119	0.1216	0.2481	0.1050	0.2724	0.0926	0.2790	1.2
1.3	0.1615	0.1331	0.1977	0.1124	0.2359	0.0975	0.2650	0.0865	0.2774	1.3
1.4	0.1486	0.1224	0.1832	0.1038	0.2225	0.0905	0.2559	0.0807	0.2738	1.4
1.5	0.1361	0.1124	0.1688	0.0958	0.2082	0.0840	0.2450	0.0753	0.2684	1.5
1.6	0.1243	0.1031	0.1546	0.0884	0.1933	0.0780	0.2325	0.0702	0.2610	1.6
1.7	0.1133	0.0944	0.1409	0.0815	0.1781	0.0723	0.2188	0.0655	0.2518	1.7
1.8	0.1029	0.0863	0.1278	0.0751	0.1628	0.0671	0.2041	0.0612	0.2408	1.8
1.9	0.0933	0.0789	0.1154	0.0692	0.1478	0.0623	0.1887	0.0571	0.2283	1.9
2.0	0.0845	0.0721	0.1038	0.0638	0.1333	0.0579	0.1729	0.0534	0.2145	2.0
2.1	0.0765	0.0660	0.0931	0.0589	0.1194	0.0538	0.1569	0.0499	0.1995	2.1
2.2	0.0692	0.0603	0.0833	0.0543	0.1064	0.0500	0.1412	0.0467	0.1838	2.2
2.3	0.0625	0.0551	0.0743	0.0501	0.0942	0.0465	0.1259	0.0437	0.1675	2.3
2.4	0.0565	0.0505	0.0663	0.0463	0.0831	0.0433	0.1112	0.0409	0.1510	2.4
2.5	0.0511	0.0462	0.0590	0.0428	0.0729	0.0403	0.0974	0.0383	0.1346	2.5
2.6	0.0463	0.0424	0.0526	0.0396	0.0639	0.0376	0.0847	0.0359	0.1186	2.6
2.7	0.0420	0.0389	0.0468	0.0367	0.0558	0.0351	0.0730	0.0337	0.1033	2.7
2.8	0.0381	0.0358	0.0418	0.0341	0.0486	0.0328	0.0625	0.0317	0.0888	2.8
2.9	0.0346	0.0329	0.0373	0.0316	0.0423	0.0306	0.0531	0.0298	0.0753	2.9
3.0	0.0315	0.0303	0.0333	0.0294	0.0369	0.0287	0.0450	0.0280	0.0631	3.0
3.1	0.0287	0.0280	0.0299	0.0274	0.0322	0.0268	0.0378	0.0264	0.0521	3.1
3.2	0.0262	0.0258	0.0268	0.0255	0.0281	0.0252	0.0318	0.0248	0.0424	3.2
3.3	0.0240	0.0239	0.0242	0.0238	0.0246	0.0236	0.0266	0.0234	0.0340	3.3
3.4	0.0220	0.0222	0.0218	0.0222	0.0216	0.0222	0.0223	0.0221	0.0269	3.4
3.5	0.0203	0.0206	0.0197	0.0208	0.0190	0.0209	0.0186	0.0209	0.0209	3.5
3.6	0.0186	0.0191	0.0179	0.0194	0.0168	0.0196	0.0157	0.0197	0.0160	3.6
3.7	0.0172	0.0178	0.0163	0.0182	0.0149	0.0185	0.0132	0.0187	0.0121	3.7
3.8	0.0159	0.0166	0.0149	0.0171	0.0133	0.0174	0.0112	0.0177	0.0089	3.8
3.9	0.0147	0.0155	0.0136	0.0161	0.0120	0.0165	0.0095	0.0167	0.0065	3.9
4.0	0.0137	0.0145	0.0125	0.0151	0.0107	0.0156	0.0082	0.0159	0.0047	4.0
4.1	0.0127	0.0136	0.0115	0.0142	0.0097	0.0147	0.0071	0.0151	0.0033	4.1
4.2	0.0118	0.0128	0.0106	0.0134	0.0088	0.0139	0.0062	0.0143	0.0023	4.2
4.3	0.0110	0.0120	0.0098	0.0127	0.0080	0.0132	0.0055	0.0136	0.0015	4.3
4.4	0.0103	0.0113	0.0091	0.0120	0.0073	0.0125	0.0048	0.0130	0.0010	4.4
4.5	0.0097	0.0106	0.0084	0.0113	0.0067	0.0119	0.0043	0.0123	0.0007	4.5
4.6	0.0091	0.0100	0.0078	0.0107	0.0062	0.0113	0.0039	0.0118	0.0004	4.6
4.7	0.0085	0.0094	0.0073	0.0102	0.0057	0.0107	0.0035	0.0112	0.0003	4.7
4.8	0.0080	0.0089	0.0068	0.0096	0.0053	0.0102	0.0032	0.0107	0.0002	4.8
4.9	0.0075	0.0084	0.0064	0.0092	0.0049	0.0097	0.0029	0.0102	0.0001	4.9
5.0	0.0071	0.0080	0.0060	0.0087	0.0046	0.0093	0.0027	0.0098		5.0
5.1	0.0067	0.0076	0.0056	0.0083	0.0043	0.0088	0.0025	0.0093		5.1
5.2	0.0063	0.0072	0.0053	0.0079	0.0040	0.0085	0.0023	0.0089		5.2
5.3	0.0060	0.0068	0.0050	0.0075	0.0037	0.0081	0.0021	0.0086		5.3
5.4	0.0057	0.0065	0.0047	0.0072	0.0035	0.0077	0.0020	0.0082		5.4
5.5	0.0054	0.0062	0.0045	0.0068	0.0033	0.0074	0.0018	0.0078		5.5
5.6	0.0051	0.0059	0.0042	0.0065	0.0031	0.0071	0.0017	0.0075		5.6
5.7	0.0049	0.0056	0.0040	0.0062	0.0029	0.0068	0.0016	0.0072		5.7
5.8	0.0046	0.0054	0.0038	0.0060	0.0028	0.0065	0.0015	0.0069		5.8
5.9	0.0044	0.0051	0.0036	0.0057	0.0026	0.0062	0.0014	0.0067		5.9
6.0	0.0042	0.0049	0.0034	0.0055	0.0025	0.0060	0.0014	0.0064		6.0

PROBABILITY DENSITY FUNCTION P(X;ALPHA,BETA)

ALPHA = 1.50

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	1.00	X
6.1	0.0040	0.0047	0.0033	0.0053	0.0024	0.0057	0.0013	0.0062		6.1
6.2	0.0038	0.0045	0.0031	0.0050	0.0022	0.0055	0.0012	0.0059		6.2
6.3	0.0037	0.0043	0.0030	0.0048	0.0021	0.0053	0.0011	0.0057		6.3
6.4	0.0035	0.0041	0.0028	0.0046	0.0020	0.0051	0.0011	0.0055		6.4
6.5	0.0034	0.0040	0.0027	0.0045	0.0019	0.0049	0.0010	0.0053		6.5
6.6	0.0032	0.0038	0.0026	0.0043	0.0018	0.0047	0.0010	0.0051		6.6
6.7	0.0031	0.0036	0.0025	0.0041	0.0018	0.0046	0.0009	0.0049		6.7
6.8	0.0030	0.0035	0.0024	0.0040	0.0017	0.0044	0.0009	0.0048		6.8
6.9	0.0029	0.0034	0.0023	0.0038	0.0016	0.0042	0.0009	0.0046		6.9
7.0	0.0027	0.0032	0.0022	0.0037	0.0015	0.0041	0.0008	0.0045		7.0
7.1	0.0026	0.0031	0.0021	0.0036	0.0015	0.0040	0.0008	0.0043		7.1
7.2	0.0025	0.0030	0.0020	0.0034	0.0014	0.0038	0.0007	0.0042		7.2
7.3	0.0024	0.0029	0.0019	0.0033	0.0014	0.0037	0.0007	0.0040		7.3
7.4	0.0023	0.0028	0.0019	0.0032	0.0013	0.0036	0.0007	0.0039		7.4
7.5	0.0023	0.0027	0.0018	0.0031	0.0012	0.0034	0.0007	0.0038		7.5
7.6	0.0022	0.0026	0.0017	0.0030	0.0012	0.0033	0.0006	0.0036		7.6
7.7	0.0021	0.0025	0.0017	0.0029	0.0012	0.0032	0.0006	0.0035		7.7
7.8	0.0020	0.0024	0.0016	0.0028	0.0011	0.0031	0.0006	0.0034		7.8
7.9	0.0020	0.0023	0.0015	0.0027	0.0011	0.0030	0.0006	0.0033		7.9
8.0	0.0019	0.0023	0.0015	0.0026	0.0010	0.0029	0.0005	0.0032		8.0
9.0	0.0014	0.0017	0.0011	0.0019	0.0007	0.0022	0.0004	0.0024		9.0
10.	0.0010	0.0013	0.0008	0.0015	0.0005	0.0017	0.0003	0.0019		10.
11.	0.0008	0.0010	0.0006	0.0012	0.0004	0.0013	0.0002	0.0015		11.
12.	0.0006	0.0008	0.0005	0.0009	0.0003	0.0011	0.0002	0.0012		12.
13.	0.0005	0.0006	0.0004	0.0008	0.0003	0.0009	0.0001	0.0010		13.
14.	0.0004	0.0005	0.0003	0.0006	0.0002	0.0007		0.0008		14.
15.	0.0004	0.0004	0.0003	0.0005	0.0002	0.0006		0.0007		15.
16.	0.0003	0.0004	0.0002	0.0004	0.0001	0.0005		0.0006		16.
17.	0.0003	0.0003	0.0002	0.0004		0.0004		0.0005		17.
18.	0.0002	0.0003	0.0002	0.0003		0.0004		0.0004		18.
19.	0.0002	0.0002	0.0001	0.0003		0.0003		0.0004		19.
20.	0.0002	0.0002		0.0002		0.0003		0.0003		20.
21.	0.0001	0.0002		0.0002		0.0003		0.0003		21.
22.		0.0002		0.0002		0.0002		0.0003		22.
23.		0.0001		0.0002		0.0002		0.0002		23.
24.				0.0002		0.0002		0.0002		24.
25.				0.0001		0.0002		0.0002		25.
26.						0.0001		0.0002		26.
27.								0.0001		27.

PROBABILITY DENSITY FUNCTION P(X;ALPHA,BETA)

ALPHA = 1.75

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	1.00	X
0.0	0.2835	0.2821	0.2821	0.2782	0.2782	0.2720	0.2720	0.2642	0.2642	0.0
0.1	0.2824	0.2793	0.2833	0.2736	0.2813	0.2660	0.2768	0.2569	0.2703	0.1
0.2	0.2800	0.2750	0.2828	0.2677	0.2828	0.2587	0.2801	0.2486	0.2752	0.2
0.3	0.2761	0.2692	0.2807	0.2604	0.2827	0.2503	0.2819	0.2395	0.2787	0.3
0.4	0.2706	0.2621	0.2770	0.2520	0.2809	0.2410	0.2821	0.2297	0.2808	0.4
0.5	0.2636	0.2537	0.2717	0.2427	0.2775	0.2310	0.2807	0.2193	0.2813	0.5
0.6	0.2553	0.2443	0.2649	0.2325	0.2725	0.2204	0.2776	0.2086	0.2802	0.6
0.7	0.2459	0.2340	0.2568	0.2216	0.2660	0.2094	0.2730	0.1976	0.2775	0.7
0.8	0.2355	0.2229	0.2474	0.2103	0.2581	0.1981	0.2668	0.1865	0.2731	0.8
0.9	0.2244	0.2114	0.2371	0.1986	0.2489	0.1866	0.2591	0.1754	0.2672	0.9
1.0	0.2126	0.1994	0.2258	0.1868	0.2385	0.1751	0.2501	0.1644	0.2599	1.0
1.1	0.2003	0.1872	0.2138	0.1750	0.2272	0.1637	0.2399	0.1536	0.2511	1.1
1.2	0.1878	0.1750	0.2013	0.1632	0.2152	0.1526	0.2286	0.1431	0.2411	1.2
1.3	0.1752	0.1628	0.1885	0.1516	0.2025	0.1417	0.2165	0.1330	0.2299	1.3
1.4	0.1626	0.1508	0.1755	0.1404	0.1894	0.1312	0.2037	0.1232	0.2178	1.4
1.5	0.1502	0.1392	0.1626	0.1295	0.1761	0.1212	0.1904	0.1139	0.2050	1.5
1.6	0.1381	0.1279	0.1498	0.1191	0.1628	0.1116	0.1768	0.1051	0.1915	1.6
1.7	0.1265	0.1172	0.1373	0.1092	0.1495	0.1025	0.1632	0.0968	0.1777	1.7
1.8	0.1153	0.1070	0.1252	0.0999	0.1366	0.0940	0.1495	0.0890	0.1637	1.8
1.9	0.1047	0.0973	0.1136	0.0911	0.1241	0.0860	0.1362	0.0817	0.1498	1.9
2.0	0.0948	0.0883	0.1026	0.0830	0.1121	0.0785	0.1232	0.0749	0.1360	2.0
2.1	0.0855	0.0799	0.0923	0.0754	0.1007	0.0716	0.1107	0.0685	0.1225	2.1
2.2	0.0768	0.0721	0.0827	0.0683	0.0899	0.0653	0.0989	0.0627	0.1096	2.2
2.3	0.0689	0.0650	0.0738	0.0619	0.0800	0.0594	0.0877	0.0573	0.0973	2.3
2.4	0.0616	0.0585	0.0656	0.0560	0.0707	0.0540	0.0773	0.0524	0.0857	2.4
2.5	0.0549	0.0525	0.0581	0.0506	0.0623	0.0491	0.0678	0.0478	0.0749	2.5
2.6	0.0489	0.0471	0.0514	0.0457	0.0546	0.0446	0.0590	0.0437	0.0649	2.6
2.7	0.0435	0.0422	0.0453	0.0413	0.0477	0.0405	0.0511	0.0399	0.0558	2.7
2.8	0.0386	0.0378	0.0398	0.0372	0.0415	0.0368	0.0440	0.0364	0.0477	2.8
2.9	0.0343	0.0339	0.0350	0.0336	0.0360	0.0334	0.0377	0.0333	0.0403	2.9
3.0	0.0304	0.0303	0.0307	0.0303	0.0312	0.0304	0.0321	0.0305	0.0338	3.0
3.1	0.0270	0.0272	0.0269	0.0274	0.0269	0.0276	0.0273	0.0279	0.0282	3.1
3.2	0.0239	0.0244	0.0235	0.0248	0.0232	0.0252	0.0230	0.0255	0.0232	3.2
3.3	0.0213	0.0219	0.0206	0.0224	0.0199	0.0229	0.0194	0.0234	0.0190	3.3
3.4	0.0189	0.0197	0.0181	0.0203	0.0172	0.0209	0.0163	0.0215	0.0154	3.4
3.5	0.0168	0.0177	0.0159	0.0185	0.0148	0.0191	0.0136	0.0197	0.0124	3.5
3.6	0.0150	0.0159	0.0139	0.0168	0.0127	0.0175	0.0113	0.0181	0.0099	3.6
3.7	0.0134	0.0144	0.0123	0.0153	0.0110	0.0160	0.0095	0.0167	0.0078	3.7
3.8	0.0120	0.0130	0.0108	0.0139	0.0095	0.0147	0.0079	0.0154	0.0061	3.8
3.9	0.0108	0.0118	0.0096	0.0127	0.0082	0.0135	0.0066	0.0142	0.0047	3.9
4.0	0.0097	0.0107	0.0085	0.0116	0.0071	0.0124	0.0055	0.0131	0.0036	4.0
4.1	0.0087	0.0098	0.0076	0.0106	0.0062	0.0114	0.0046	0.0121	0.0028	4.1
4.2	0.0079	0.0089	0.0068	0.0098	0.0055	0.0106	0.0039	0.0113	0.0021	4.2
4.3	0.0072	0.0081	0.0061	0.0090	0.0048	0.0098	0.0033	0.0104	0.0016	4.3
4.4	0.0065	0.0075	0.0055	0.0083	0.0042	0.0090	0.0028	0.0097	0.0012	4.4
4.5	0.0060	0.0069	0.0049	0.0077	0.0038	0.0084	0.0024	0.0090	0.0008	4.5
4.6	0.0054	0.0063	0.0045	0.0071	0.0034	0.0078	0.0021	0.0084	0.0006	4.6
4.7	0.0050	0.0058	0.0041	0.0066	0.0030	0.0072	0.0018	0.0079	0.0004	4.7
4.8	0.0046	0.0054	0.0037	0.0061	0.0027	0.0068	0.0016	0.0073	0.0003	4.8
4.9	0.0042	0.0050	0.0034	0.0057	0.0025	0.0063	0.0014	0.0069	0.0002	4.9
5.0	0.0039	0.0046	0.0031	0.0053	0.0023	0.0059	0.0013	0.0064	0.0001	5.0

PROBABILITY DENSITY FUNCTION P(X;ALPHA,BETA)

ALPHA = 1.75

X	BETA = .00	-.25	.25	-.50	.50	-.75	.75	-1.00	1.00	X
5.1	0.0036	0.0043	0.0029	0.0050	0.0021	0.0055	0.0011	0.0060	0.0000	5.1
5.2	0.0034	0.0040	0.0027	0.0046	0.0019	0.0052	0.0010	0.0057		5.2
5.3	0.0031	0.0038	0.0025	0.0043	0.0017	0.0049	0.0009	0.0054		5.3
5.4	0.0029	0.0035	0.0023	0.0041	0.0016	0.0046	0.0008	0.0050		5.4
5.5	0.0027	0.0033	0.0021	0.0038	0.0015	0.0043	0.0008	0.0048		5.5
5.6	0.0026	0.0031	0.0020	0.0036	0.0014	0.0041	0.0007	0.0045		5.6
5.7	0.0024	0.0029	0.0019	0.0034	0.0013	0.0038	0.0007	0.0042		5.7
5.8	0.0023	0.0027	0.0017	0.0032	0.0012	0.0036	0.0006	0.0040		5.8
5.9	0.0021	0.0026	0.0016	0.0030	0.0011	0.0034	0.0006	0.0038		5.9
6.0	0.0020	0.0024	0.0015	0.0029	0.0011	0.0032	0.0005	0.0036		6.0
6.1	0.0019	0.0023	0.0015	0.0027	0.0010	0.0031	0.0005	0.0034		6.1
6.2	0.0018	0.0022	0.0014	0.0026	0.0009	0.0029	0.0005	0.0033		6.2
6.3	0.0017	0.0021	0.0013	0.0024	0.0009	0.0028	0.0005	0.0031		6.3
6.4	0.0016	0.0020	0.0012	0.0023	0.0008	0.0026	0.0004	0.0029		6.4
6.5	0.0015	0.0019	0.0012	0.0022	0.0008	0.0025	0.0004	0.0028		6.5
6.6	0.0014	0.0018	0.0011	0.0021	0.0007	0.0024	0.0004	0.0027		6.6
6.7	0.0014	0.0017	0.0010	0.0020	0.0007	0.0023	0.0004	0.0026		6.7
6.8	0.0013	0.0016	0.0010	0.0019	0.0007	0.0022	0.0003	0.0024		6.8
6.9	0.0012	0.0015	0.0009	0.0018	0.0006	0.0021	0.0003	0.0023		6.9
7.0	0.0012	0.0015	0.0009	0.0017	0.0006	0.0020	0.0003	0.0022		7.0
7.1	0.0011	0.0014	0.0009	0.0017	0.0006	0.0019	0.0003	0.0021		7.1
7.2	0.0011	0.0013	0.0008	0.0016	0.0006	0.0018	0.0003	0.0020		7.2
7.3	0.0010	0.0013	0.0008	0.0015	0.0005	0.0017	0.0003	0.0020		7.3
7.4	0.0010	0.0012	0.0008	0.0014	0.0005	0.0017	0.0003	0.0019		7.4
7.5	0.0009	0.0012	0.0007	0.0014	0.0005	0.0016	0.0002	0.0018		7.5
7.6	0.0009	0.0011	0.0007	0.0013	0.0005	0.0015	0.0002	0.0017		7.6
7.7	0.0009	0.0011	0.0007	0.0013	0.0005	0.0015	0.0002	0.0017		7.7
7.8	0.0008	0.0010	0.0006	0.0012	0.0004	0.0014	0.0002	0.0016		7.8
7.9	0.0008	0.0010	0.0006	0.0012	0.0004	0.0014	0.0002	0.0015		7.9
8.0	0.0008	0.0010	0.0006	0.0011	0.0004	0.0013	0.0002	0.0015		8.0
9.	0.0005	0.0007	0.0004	0.0008	0.0003	0.0009	0.0001	0.0010		9.
10.	0.0004	0.0005	0.0003	0.0006	0.0002	0.0007		0.0008		10.
11.	0.0003	0.0004	0.0002	0.0004	0.0001	0.0005		0.0006		11.
12.	0.0002	0.0003	0.0002	0.0003		0.0004		0.0005		12.
13.	0.0002	0.0002	0.0001	0.0003		0.0003		0.0004		13.
14.	0.0001	0.0002		0.0002		0.0002		0.0003		14.
15.		0.0001		0.0002		0.0002		0.0002		15.
16.				0.0001		0.0002		0.0002		16.
17.						0.0001		0.0002		17.
18.								0.0001		18.

P(X;2,BETA)

X	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
0.	0.28209	0.28139	0.27929	0.27582	0.27103	0.26500	0.25792	0.24957	0.24039	0.23038
1.	0.21970	0.20846	0.19681	0.18489	0.17282	0.16073	0.14875	0.13697	0.12549	0.11440
2.	0.10378	0.09367	0.08412	0.07517	0.06684	0.05913	0.05265	0.04559	0.03974	0.03446
3.	0.02973	0.02553	0.02181	0.01854	0.01568	0.01319	0.01165	0.00920	0.00763	0.00629
4.	0.00517	0.00422	0.00343	0.00277	0.00223	0.00179	0.00142	0.00113	0.00089	0.00070
5.	0.00054	0.00042	0.00033	0.00025	0.00019	0.00015	0.00011	0.00008	0.00006	0.00005
6.	0.00003	0.00003	0.00002	0.00001	0.00001					

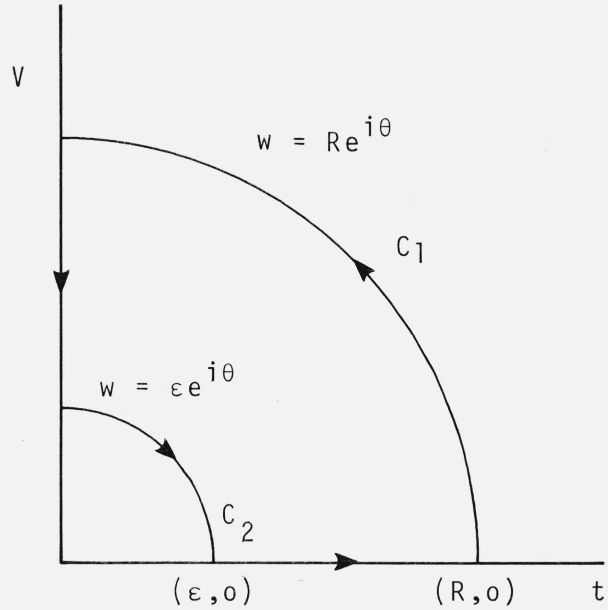

FIGURE 1. *Contour for* $p_2(x; \alpha, \beta)$.

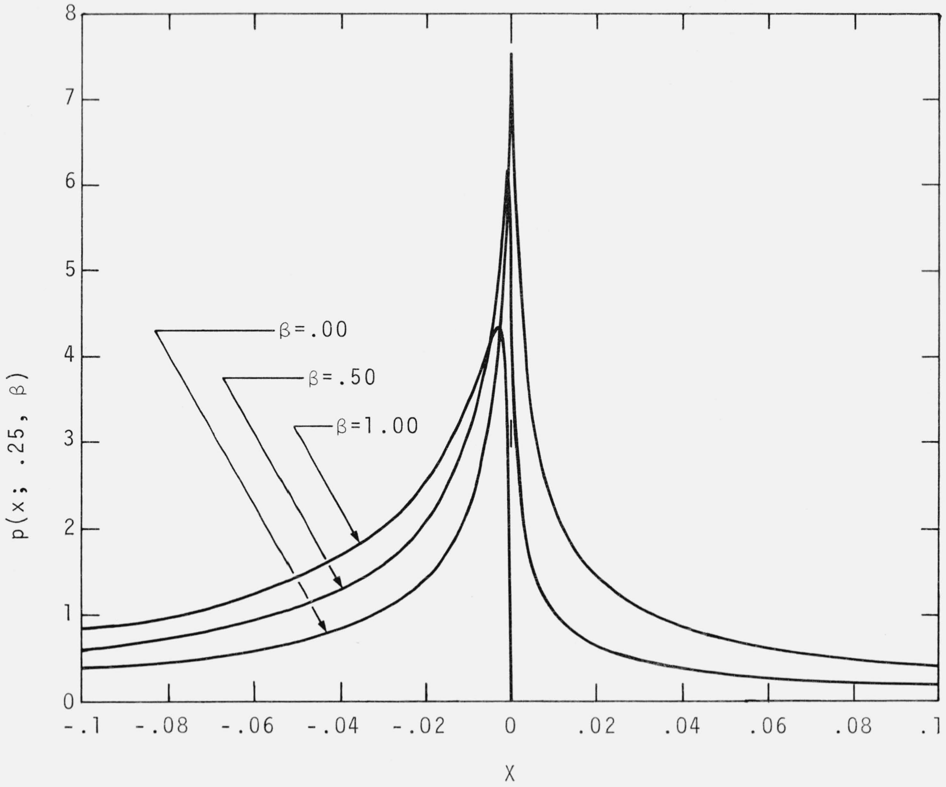

Figure 2. *Stable probability density functions* p(x; α, β) *for* $\alpha = 0.25$.

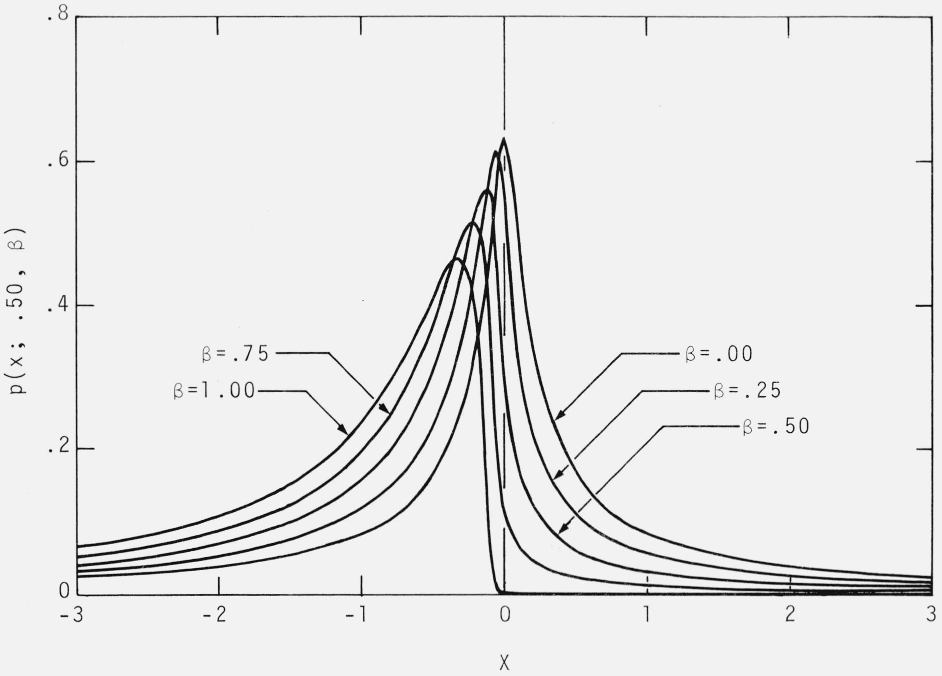

Figure 3. *Stable probability density functions* p(x; α, β) *for* $\alpha = 0.50$.

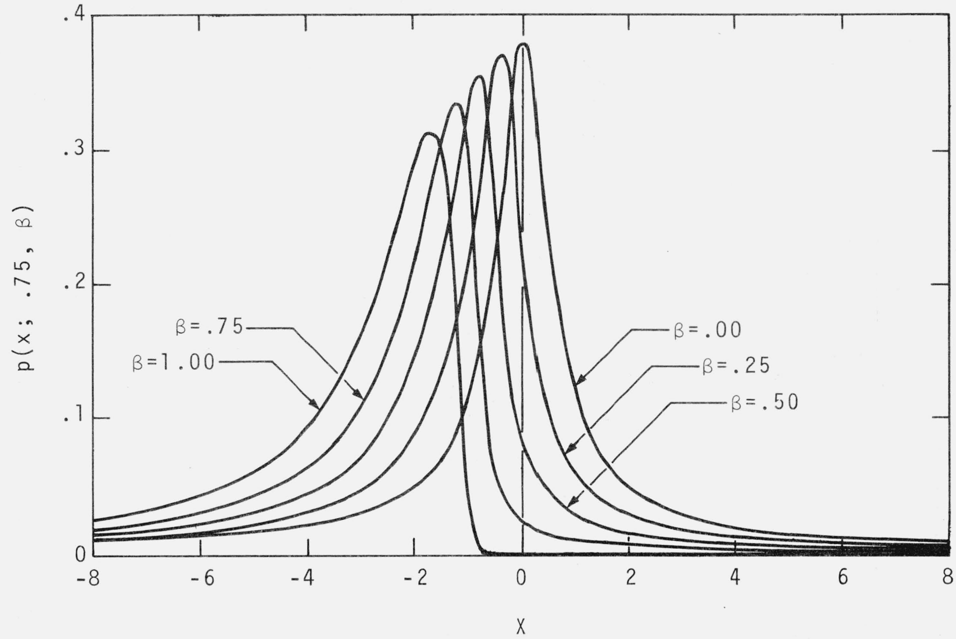

Figure 4. *Stable probability density functions* p(x; α, β) *for* $\alpha = 0.75$.

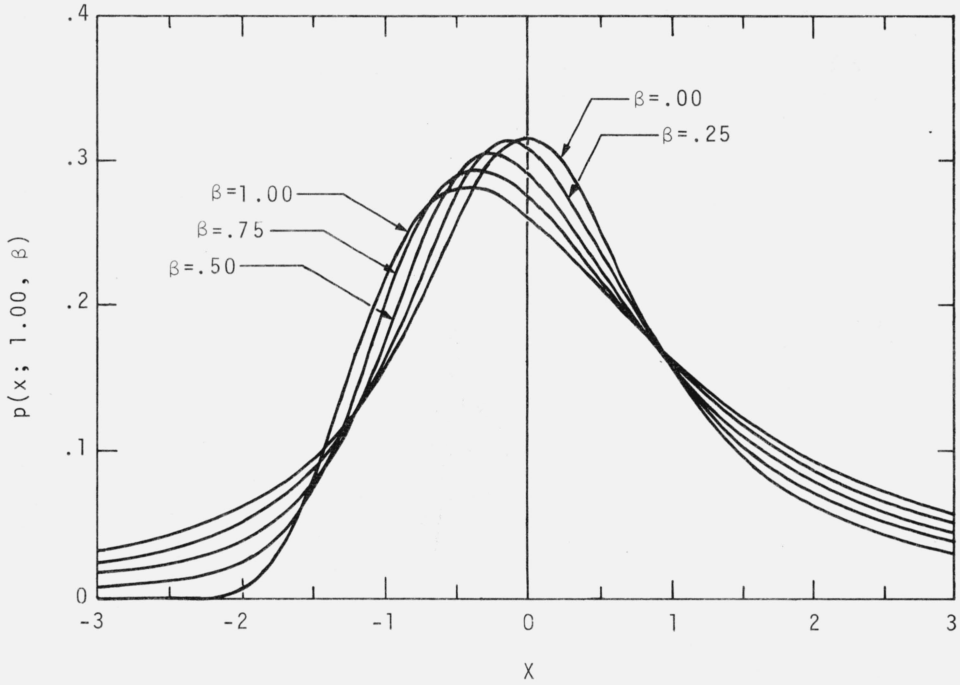

Figure 5. *Stable probability density functions* p(x; α, β) *for* $\alpha = 1.00$.

Note reversal of location of heavier tail from that for $\alpha \neq 1$.

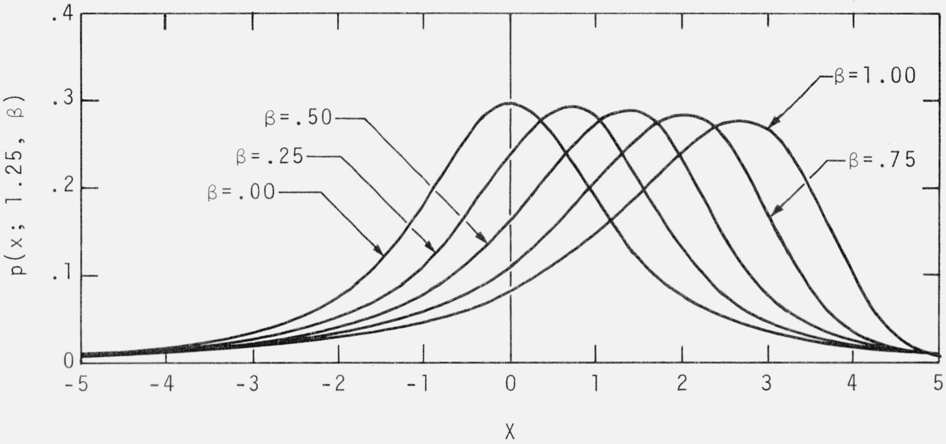

FIGURE 6. *Stable probability density functions* p(x; α, β) *for* α=*1.25.*

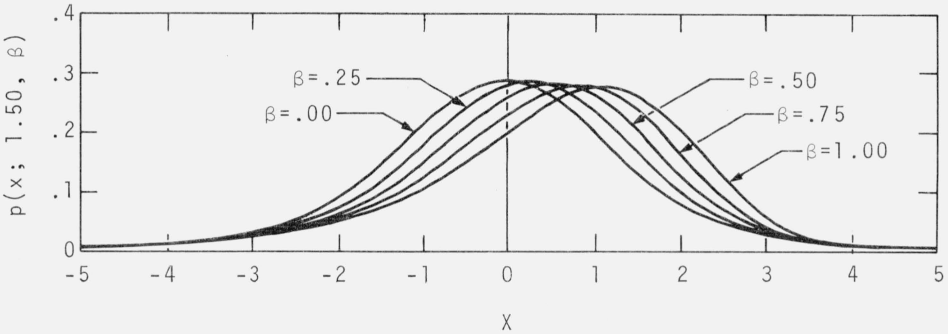

FIGURE 7. *Stable probability density functions* p(x; α, β) *for* α=*1.50.*

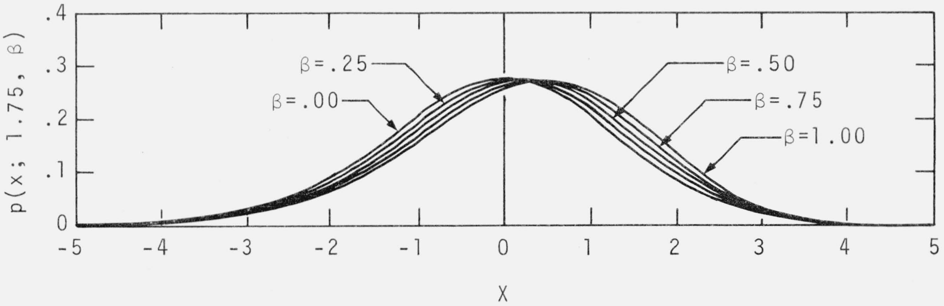

FIGURE 8. *Stable probability density functions* p(x; α, β) *for* α=*1.75.*

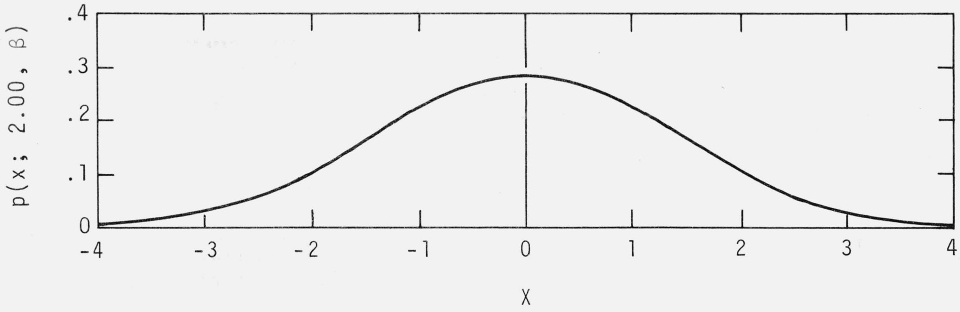

FIGURE 9. *Stable probability density function* p(x; α, β) *for* $\alpha=2$ (*the normal* pdf).

(Paper 77B3&4–390)