POWPPF

PURPOSE

Compute the standard form of the power function percent pointi function.

DESCRIPTION

The standard form of the probability density function is:

$$f(x, c) = cx^{c-1} \qquad 0 \le x \le 1 \qquad \textbf{(EQ Aux-290)}$$

where c is a shape parameter.

The percent point function is the inverse of the cumulative distribution function. The cumulative distribution sums the probability from 0 to the given x value (i.e., the integral of the above function). The percent point function takes a cumulative probability value and computes the corresponding x value. It has the following formula:

$$G(p, c) = p^{\left(\frac{1}{c}\right)} \qquad \textbf{(EQ Aux-291)}$$

The input value is a real number between 0 and 1 (since it corresponds to a probability).

The power function distribution is also the distribution of the inverse of a Pareto distribution.

SYNTAX

LET \<y2\> = POWPPF(\<y1\>,c)   \<SUBSET/EXCEPT/FOR qualification\>
where \<y1\> is a number, parameter, or variable in the range 0 to 1;
    \<c\> is a number, parameter, or variable that specifies the shape parameter;
    \<y2\> is a variable or a parameter (depending on what \<y1\> is) where the computed power function ppf value is stored;
and where the \<SUBSET/EXCEPT/FOR qualification\> is optional.

EXAMPLES

LET A = POWPPF(0.9,3)
LET X2 = POWPPF(X1,C)

NOTE

The general form of the probability density function is:

$$f(x, c, b) = \frac{cx^{c-1}}{b^c} \qquad 0 \le x \le 1 \qquad \textbf{(EQ Aux-292)}$$

where b is a positive scale parameter.

The formula for the general power function percent point function is:)

$$G(p, c, b) = bp^{\left(\frac{1}{c}\right)} \qquad \textbf{(EQ Aux-293)}$$

DEFAULT

None

SYNONYMS

None

RELATED COMMANDS

POWCDF	=	Compute the power function cumulative distribution function.
POWPDF	=	Compute the power function probability density function.
PARCDF	=	Compute the Pareto cumulative distribution function.
PARPDF	=	Compute the Pareto probability density function.
PARPPF	=	Compute the Pareto percent point function.
GEPCDF	=	Compute the generalized Pareto cumulative distribution function.
GEPPDF	=	Compute the generalized Pareto probability density function.

GEPPPF	=	Compute the generalized Pareto percent point function.
EXPCDF	=	Compute the exponential cumulative distribution function.
EXPPDF	=	Compute the exponential probability density function.
EXPPPF	=	Compute the exponential percent point function.

REFERENCE

"Continuous Univariate Distributions," 2nd ed., Johnson, Kotz, and Balakrishnan, John Wiley and Sons, 1994 (page 607).

"Statistical Distributions," 2nd ed., Evans, Hastings, and Peacock, John Wiley & Sons, 1993.

APPLICATIONS

Data Analysis

IMPLEMENTATION DATE

95/5

PROGRAM

TITLE POWER FUNCTION PPF'S (0.5, 1, 3)
LINE DASH SOLID DOT
PLOT POWPPF(P,0.5) FOR P = 0 .01 1 AND
PLOT POWPPF(P,1) FOR P = 0 .01 1 AND
PLOT POWPPF(P,3) FOR P = 0 .01 1