PARPPF

PURPOSE

Compute the standard form of the Pareto percent point function of the first kind.

DESCRIPTION

The standard form of the Pareto probability density function is:

$$f(x) = \frac{\gamma}{x^{\gamma + 1}} \qquad \text{for } x \geq 1 \qquad \textbf{(EQ 8-300)}$$

The Pareto percent point function has the following formula:

$$G(p) = (1 - p)^{\frac{-1}{\gamma}} \qquad \textbf{(EQ 8-301)}$$

The input value is a real number between 0 and 1.

SYNTAX

LET <y2> = PARPPF(<y1>,gamma)   <SUBSET/EXCEPT/FOR qualification>

where <y1> is a variable, a number, or a parameter in the range 0 to 1;

    <y2> is a variable or a parameter (depending on what <y1> is) where the computed Pareto ppf value is stored;

    <gamma> is a number or parameter that specifies the shape parameter;

and where the <SUBSET/EXCEPT/FOR qualification> is optional.

EXAMPLES

LET A = PARPPF(0.9)

LET Y = PARPPF(P)

NOTE

The general form of the Pareto percent point function is:

$$G(p) = k(1 - p)^{\frac{-1}{\gamma}} \qquad \textbf{(EQ 8-302)}$$

where k is a positive location parameter. See topic (3) under the General considerations section at the beginning of this chapter for a discussion of generating ppf values for the general form of the distribution.

DEFAULT

None

SYNONYMS

None

RELATED COMMANDS

PARCDF	=	Compute the Pareto cumulative distribution function.
PARPDF	=	Compute the Pareto probability density 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.
EV1CDF	=	Compute the extreme value type I cumulative distribution
EV1PDF	=	Compute the extreme value type I probability density function.
EV1PPF	=	Compute the extreme value type I percent point function.

REFERENCE

"Continuous Univariate Distributions," Johnson and Kotz, Houghton Mifflin, 1970 (chapter 19).

"Statistical Distributions," 2nd ed., Evans, Hastings, and Peacock, Wiley and Sons, 1993 (chapter 30).

APPLICATIONS

     Data Analysis

IMPLEMENTATION DATE

     94/4

PROGRAM

     TITLE PARPPF FOR VARIOUS VALUES OF GAMMA
     Y1LABEL X
     X1LABEL PROBABILITY
     SEGMENT 1 COORDINATES 16 88 21 88; SEGMENT 1 PATTERN SOLID
     SEGMENT 2 COORDINATES 16 84 21 84; SEGMENT 2 PATTERN DASH
     SEGMENT 3 COORDINATES 16 80 21 80; SEGMENT 3 PATTERN DOT
     SEGMENT 4 COORDINATES 16 76 21 76; SEGMENT 4 PATTERN DA2
     LEGEND 1 GAMMA = 1; LEGEND 1 COORDINATES 22 87
     LEGEND 2 GAMMA = 2; LEGEND 2 COORDINATES 22 83
     LEGEND 3 GAMMA = 5; LEGEND 3 COORDINATES 22 79
     LEGEND 4 GAMMA = .5; LEGEND 4 COORDINATES 22 75
     XLIMITS 0 1; MAJOR XTIC NUMBER 6
     MINOR XTIC NUMBER 1; XTIC DECIMAL 1
     YLIMITS 1 10
     LINES SOLID DASH DOT DASH2
     PLOT PARPPF(X,1) FOR X = 0.01 .01 0.99 AND
     PLOT PARPPF(X,2) FOR X = 0.01 .01 0.99 AND
     PLOT PARPPF(X,5) FOR X = 0.01 .01 0.99 AND
     PLOT PARPPF(X,0.5) FOR X = 0.01 .01 0.99