PARCDF

PURPOSE

Compute the standard form of the Pareto cumulative distribution function of the first kind.

DESCRIPTION

The standard form of the Pareto probability density function is:

$$f(x) = \frac{\gamma}{x^{\gamma+1}} \qquad \text{for } x \geq 1 \qquad \textbf{(EQ 8-294)}$$

The standard form of the Pareto cumulative distribution function is:

$$F(x) = 1 - \frac{1}{x^{\gamma}} \qquad \text{for } x \geq 1 \qquad \textbf{(EQ 8-295)}$$

SYNTAX

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

where <y1> is a variable, a number, or a parameter;

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

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

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

EXAMPLES

LET A = PARCDF(3,1.5)

LET Y = PARCDF(X1,GAMMA)

NOTE

The general form of the Pareto probability density function is:

$$f(x) = \frac{\gamma k^{\gamma}}{x^{\gamma+1}} \qquad \text{for } x \geq k \qquad \textbf{(EQ 8-296)}$$

The general form of the Pareto cumulative distribution function is:

$$F(x) = 1 - \left(\frac{k}{x}\right)^{\gamma} \qquad \text{for } x \geq k \qquad \textbf{(EQ 8-297)}$$

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 cdf values for the general form of the distribution.

DEFAULT

None

SYNONYMS

None

RELATED COMMANDS

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

REFERENCE

"Continuous Univariate Distributions - 1," 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

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TITLE PARCDF FOR VARIOUS VALUES OF GAMMA
X1LABEL X; Y1LABEL PROBABILITY
SEGMENT 1 COORDINATES 69 38 74 38; SEGMENT 1 PATTERN SOLID
SEGMENT 2 COORDINATES 69 34 74 34; SEGMENT 2 PATTERN DASH
SEGMENT 3 COORDINATES 69 30 74 30; SEGMENT 3 PATTERN DOT
SEGMENT 4 COORDINATES 69 26 74 26; SEGMENT 4 PATTERN DA2
LEGEND 1 GAMMA = 1; LEGEND 1 COORDINATES 75 37
LEGEND 2 GAMMA = 2; LEGEND 2 COORDINATES 75 33
LEGEND 3 GAMMA = 5; LEGEND 3 COORDINATES 75 29
LEGEND 4 GAMMA = .5; LEGEND 4 COORDINATES 75 25
LINES SOLID DASH DOT DASH2
YLIMITS 0 1
YTIC OFFSET 0.01
MAJOR YTIC MARK NUMBER 6
YTIC MARK DECIMAL 1
PLOT PARCDF(X,1) FOR X = 1 0.1 10 AND
PLOT PARCDF(X,2) FOR X = 1 0.1 10 AND
PLOT PARCDF(X,5) FOR X = 1 0.1 10 AND
PLOT PARCDF(X,0.5) FOR X = 1 0.1 10
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