PARPDF

PURPOSE

Compute the standard form of the Pareto probability density function of the first kind.

DESCRIPTION

The standard form of the Pareto probability density function is:

$$f(x) = \frac{\gamma}{x^{\gamma+1}} \qquad \text{for } x \geq 1 \qquad \textbf{(EQ 8-298)}$$

SYNTAX

LET <y2> = PARPDF(<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 pdf 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 = PARPDF(3,1.5)

LET Y = PARPDF(X1,GAMMA)

NOTE 1

The general form of the Pareto probability density function is:

$$f(x) = \frac{\gamma k^{\gamma}}{x^{\gamma+1}} \qquad \text{for } x \geq k \qquad \textbf{(EQ 8-299)}$$

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 pdf values for the general form of the distribution.

NOTE 2

Johnson and Kotz (see the REFERENCE section below) give several alternative definitions for the Pareto distribution. The one given here is referred to as the Pareto distribution of the first kind.

DEFAULT

None

SYNONYMS

None

RELATED COMMANDS

PARCDF	=	Compute the Pareto cumulative distribution 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
EV1PDF	=	Compute the extreme value type I probability density function.
EV1PPF	=	Compute the extreme value type I percent point function.
WEICDF	=	Compute the Weibull cumulative distribution function.
WEIPDF	=	Compute the Weibull probability density function.
WEIPPF	=	Compute the Weibull 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," 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 PARPDF FOR VARIOUS VALUES OF GAMMA
X1LABEL X
Y1LABEL PROBABILITY
SEGMENT 1 COORDINATES 69 88 74 88; SEGMENT 1 PATTERN SOLID
SEGMENT 2 COORDINATES 69 84 74 84; SEGMENT 2 PATTERN DASH
SEGMENT 3 COORDINATES 69 80 74 80; SEGMENT 3 PATTERN DOT
SEGMENT 4 COORDINATES 69 76 74 76; SEGMENT 4 PATTERN DA2
LEGEND 1 GAMMA = 1; LEGEND 1 COORDINATES 75 87
LEGEND 2 GAMMA = 2; LEGEND 2 COORDINATES 75 83
LEGEND 3 GAMMA = 5; LEGEND 3 COORDINATES 75 79
LEGEND 4 GAMMA = .5; LEGEND 4 COORDINATES 75 75
LINES SOLID DASH DOT DASH2
YLIMITS 0 1
TITLE AUTOMATIC
PLOT PARPDF(X,1) FOR X = 1 0.1 10 AND
PLOT PARPDF(X,2) FOR X = 1 0.1 10 AND
PLOT PARPDF(X,5) FOR X = 1 0.1 10 AND
PLOT PARPDF(X,0.5) FOR X = 1 0.1 10
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