POWPDF

PURPOSE

Compute the standard form of the power function probability density function.

DESCRIPTION

The standard form of the probability density function is:

$$f(x, c) = cx^{c-1} \qquad 0 \le x \le 1 \qquad \textbf{(EQ Aux-288)}$$

where c is a shape parameter.

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

SYNTAX

LET <y2> = POWPDF(<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 pdf value is saved;
and where the <SUBSET/EXCEPT/FOR qualification> is optional.

EXAMPLES

LET A = POWPDF(3,1.5)
LET X2 = POWPDF(X1,C)

NOTE

The general form of the probability density function is:

$$f(x, c, b) = \frac{cx^{c-1}}{b^c} \qquad 0 \le x \le 1 \qquad \textbf{(EQ Aux-289)}$$

where b is a positive scale parameter.

DEFAULT

None

SYNONYMS

None

RELATED COMMANDS

POWCDF	=	Compute the power function cumulative distribution function.
POWPPF	=	Compute the power function percent point 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

     95/4

PROGRAM

     TITLE POWER FUNCTION PDF'S (0.1, 0.5, 1, 3, 10)
     PLOT POWPDF(X,0.1) FOR X = 0.01 0.01 1 AND
     PLOT POWPDF(X,0.5) FOR X = 0.01 0.01 1 AND
     PLOT POWPDF(X,1) FOR X = 0.01 0.01 1 AND
     PLOT POWPDF(X,3) FOR X = 0.01 0.01 1 AND
     PLOT POWPDF(X,10) FOR X = 0.01 0.01 1