

DLGPPF**PURPOSE**

Compute the discrete logarithmic series percent point function.

DESCRIPTION

The discrete logarithmic distribution has the following probability density function:

$$p(x, \theta) \equiv \frac{-\theta^x}{\log(1 - c)^x} \quad x = 1, 2, \dots \quad \text{(EQ Aux-97)}$$

where θ is a shape parameter in the interval (0,1).

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. The percent point function takes a cumulative probability value and computes the corresponding x value. The discrete logarithmic percent point function is computed using a bisection method.

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

SYNTAX

LET <y2> = DLGPPF(<y1>,<theta>) <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 logarithmic series ppf value is stored;

<theta> is a number or parameter that specifies the shape parameter of the Poisson distribution;

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

EXAMPLES

LET A = DLGPPF(0.9,5)

LET X2 = DLGPPF(X1,0.7)

DEFAULT

None

SYNONYMS

None

RELATED COMMANDS

DLGCDF	=	Compute the logarithmic series cumulative distribution function.
DLGPDF	=	Compute the logarithmic series probability density function.
WARCDF	=	Compute the Waring cumulative distribution function.
WARPDF	=	Compute the Waring probability density function.
WARPPF	=	Compute the Waring percent point function.
POICDF	=	Compute the Poisson cumulative distribution function.
POIPDF	=	Compute the Poisson probability density function.
POIPPF	=	Compute the Poisson percent point function.
BINCDF	=	Compute the binomial cumulative distribution function.
BINPDF	=	Compute the binomial probability density function.
BINPPF	=	Compute the binomial percent point function.
NBCDF	=	Compute the negative binomial cumulative distribution function.
NBPDF	=	Compute the negative binomial probability density function.
NBPPF	=	Compute the negative binomial percent point function.
GEOCDF	=	Compute the geometric cumulative distribution function.
GEOPDF	=	Compute the geometric probability density function.
GEOPPF	=	Compute the geometric percent point function.

REFERENCE

"Discrete Univariate Distributions," 2nd. ed., Johnson, Kotz, and Kemp, John Wiley & Sons, 1994 (chapter 7).

"Statistical Distributions," 2nd. ed., Evans, Hastings, and Peacock, John Wiley and Sons, 1993 (chapter 23).

APPLICATIONS

Data Analysis

IMPLEMENTATION DATE

95/4

PROGRAM

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LET Z = DATA ...
    0.1 0.3 0.5 0.7 0.8 0.85 0.90 0.95 0.99 0.995 0.999 0.9999
TITLE AUTOMATIC
YILABEL X; XILABEL PROBABILITY
MULTILOT 4 3; MULTILOT CORNER COORDINATES 0 0 100 100
.
LINE SOLID
SPIKE OFF
XLIMITS 0 1
MAJOR XTIC NUMBER 6
MINOR XTIC NUMBER 1
XTIC DECIMAL 1
MULTILOT 4 3
LOOP FOR K = 1 1 12
    LET THETA = Z(K)
    XILABEL THETA = ^THETA
    PLOT DLGPPF(P,THETA) FOR P = 0 0.01 0.99
END OF LOOP
END OF MULTILOT

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