

LLGPPF**PURPOSE**

Compute the log-logistic percent point function.

DESCRIPTION

The log-logistic distribution has the following cumulative distribution function:

$$f(x, \delta) = \frac{\delta x^{\delta-1}}{(1+x^\delta)^2} \quad x > 0, \delta > 0 \quad (\text{EQ Aux-237})$$

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 (i.e., the integral of the above function). The percent point function takes a cumulative probability value and computes the corresponding x value. The percent point function has the formula:

$$G(p, \delta) = \left(\frac{1-p}{p}\right)^{\frac{-1}{\delta}} \quad 0 \leq p < 1, \delta > 0 \quad (\text{EQ Aux-238})$$

SYNTAX

LET <y2> = LLGPPF(<y1>,<d>) <SUBSET/EXCEPT/FOR qualification>

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

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

<d> is a number, parameter, or variable;

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

EXAMPLES

LET A = LLGPPF(0.9,0.5)

LET A = LLGPPF(A1,D)

LET X2 = LLGPPF(X1,3)

DEFAULT

None

SYNONYMS

None

RELATED COMMANDS

| | | |
|--------|---|--|
| LLGCDF | = | Compute the log-logistic cumulative distribution function. |
| LLGPDF | = | Compute the log-logistic probability density function. |
| LOGCDF | = | Compute the logistic cumulative distribution function. |
| LOGPDF | = | Compute the logistic probability density function. |
| LOGPPF | = | Compute the logistic percent point function. |
| NORCDF | = | Compute the normal cumulative distribution function. |
| NORPDF | = | Compute the normal probability density function. |
| NORPPF | = | Compute the normal percent point function. |
| LGNCDF | = | Compute the lognormal cumulative distribution function. |
| LGNPDF | = | Compute the lognormal probability density function. |
| LGNPPF | = | Compute the lognormal percent point function. |

REFERENCE

“Measuring Skewness With Respect To The Mode,” Arnold and Groeneveld, The American Statistician, February 1995 (page 36).

APPLICATIONS

Lifetime Analysis

IMPLEMENTATION DATE

95/5

PROGRAM

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LET D = DATA 0.1 0.5 1.0 1.5 2.0 2.5 5 10 20
.
MULTIPLY 3 3; MULTIPLY CORNER COORDINATES 0 0 100 100
TITLE AUTOMATIC
XLIMITS 0 1
MAJOR XTIC NUMBER 6
MINOR XTIC NUMBER 1
XTIC DECIMAL 1
YLABEL X; XILABEL PROBABILITY
LOOP FOR K = 1 1 9
  LET D1 = D(K)
  XILABEL DELTA = ^D1
  PLOT LLGPPF(P,D1) FOR P = 0.01 0.01 0.99
END OF LOOP
END OF MULTIPLY
    
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