

LOGPPF**PURPOSE**

Compute the standard logistic percent point function.

DESCRIPTION

The standard form of the logistic probability density function is:

$$f(x) = \frac{e^{-x}}{(1 + e^{-x})^2} \quad (\text{EQ 8-265})$$

The standard form of the logistic percent point function is:

$$G(p) = \log\left(\frac{p}{1-p}\right) \quad (\text{EQ 8-266})$$

The input value is a real number between 0 and 1.

SYNTAX

LET <y2> = LOGPPF(<y1>) <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 logistic ppf value is stored; and where the <SUBSET/EXCEPT/FOR qualification> is optional.

EXAMPLES

LET A = LOGPPF(0.9)

LET Y = LOGPPF(P)

NOTE

The general form of the logistic percent point function is:

$$G(p) = \mu + \sigma \log\left(\frac{p}{1-p}\right) \quad (\text{EQ 8-267})$$

where μ is a location parameter and σ is a scale parameter. See topic (3) under the General considerations section at the beginning of this chapter for a discussion of generating ppf values for the general form of the distribution.

DEFAULT

None

SYNONYMS

None

RELATED COMMANDS

LOGCDF	=	Compute the logistic cumulative distribution function.
LOGPDF	=	Compute the logistic probability density function.
LOGSF	=	Compute the logistic sparsity 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.
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 - 2," Johnson and Kotz, Houghton-Mifflin, 1970 (chapter 22).

“Statistical Distributions,” 2nd ed., Evans, Hastings, and Peacock, Wiley and Sons, 1993 (chapter 24).

“Statistical Models and Methods for Lifetime Data,” Lawless, John Wiley, 1982 (pp. 46-47).

APPLICATIONS

Reliability

IMPLEMENTATION DATE

94/4

PROGRAM

```
XLIMITS 0 1
MAJOR XTIC NUMBER 6
MINOR XTIC NUMBER 1
XTIC DECIMAL 1
TITLE AUTOMATIC
PLOT LOGPPF(X) FOR X = 0.01 .01 0.99
```

