

DEXPDF**PURPOSE**

Compute the standard form of the double exponential (also known as the Laplace distribution) probability density function.

DESCRIPTION

The standard form of the double exponential probability density function is:

$$f(x) = \frac{e^{-|x|}}{2} \quad (\text{EQ 8-150})$$

The input value can be any real number. The mean and standard deviation are 0 and $\sqrt{2}$ respectively.

SYNTAX

LET <y2> = DEXPDF(<y1>) <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 double exponential pdf value is saved;
and where the <SUBSET/EXCEPT/FOR qualification> is optional.

EXAMPLES

LET A = DEXPDF(3)

LET Y = DEXPDF(X1)

NOTE

The general form of the double exponential probability density function is:

$$f(x) = \frac{e^{-\frac{|x-\mu|}{\beta}}}{2\beta} \quad (\text{EQ 8-151})$$

The parameter μ is a location parameter and the parameter β is a scale parameter. See topic (3) under the General considerations section at the beginning of this chapter for a discussion of generating cdf values for the general form of the distribution. The mean and standard deviation are μ and $\sqrt{2}*\beta$ respectively.

DEFAULT

None

SYNONYMS

None

RELATED COMMANDS

DEXCDF	=	Compute the double exponential cumulative distribution function.
DEXPPF	=	Compute the double exponential percent point function.
DEXSF	=	Compute the double exponential sparsity function.
EXPCDF	=	Compute the exponential cumulative distribution function.
EXPPDF	=	Compute the exponential probability density function.
EXPPPF	=	Compute the exponential percent point function.
WEICDF	=	Compute the Weibull cumulative distribution function.
WEIPDF	=	Compute the Weibull probability density function.
WEIPPF	=	Compute the Weibull percent point function.
EVICDF	=	Compute the extreme value type I cumulative distribution function.
EVI PDF	=	Compute the extreme value type I probability density function.
EVI PPF	=	Compute the extreme value type I percent point function.
CHSPDF	=	Compute the chi-square probability density function.
CHSCDF	=	Compute the chi-square cumulative distribution function.
CHSPPF	=	Compute the chi-square percent point function.

REFERENCE

“Continuous Univariate Distributions - 2,” Johnson and Kotz, Houghton Mifflin, 1970 (chapter 23).

“Handbook of Mathematical Functions, Applied Mathematics Series, Vol. 55,” Abramowitz and Stegun, National Bureau of Standards, 1964 (page 930).

APPLICATIONS

Data Analysis

IMPLEMENTATION DATE

94/4

PROGRAM

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YLIMITS 0 0.5
MAJOR YTIC NUMBER 6
MINOR YTIC NUMBER 1
YTIC DECIMAL 1
XLIMITS -4 4
XTIC OFFSET 0.6 0.6
TITLE AUTOMATIC
XILABEL X
YILABEL PROBABILITY
PLOT DEXPDF(X) FOR X = -4.5 0.01 4.5
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