

HFNPDF**PURPOSE**

Compute the standard half-normal probability density function.

DESCRIPTION

The standard half-normal probability density function is:

$$f(x) = \frac{2e^{-\frac{x^2}{2}}}{\sqrt{2\pi}} \quad \text{for } x \geq 0 \quad (\text{EQ 8-236})$$

The half-normal distribution is the distribution of the variable $X=ABS(Z)$ where Z is a normally distributed variable. It has a mean of $\sqrt{2/\pi}$ and a standard deviation of 1.

SYNTAX

LET <y2> = HFNPDF(<y1>) <SUBSET/EXCEPT/FOR qualification>

where <y1> is a non-negative variable, a number, or a parameter;

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

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

EXAMPLES

LET A = HFNPDF(3)

LET Y = HFNPDF(X1)

NOTE

The general half-normal probability density function is:

$$f(x) = \frac{2e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2}}{\sigma\sqrt{2\pi}} \quad \text{for } x \geq \mu \quad (\text{EQ 8-237})$$

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 pdf values for the general form of the distribution.

DEFAULT

None

SYNONYMS

None

RELATED COMMANDS

HFNCDF	=	Compute the half-normal cumulative distribution function.
HFNPPF	=	Compute the half-normal 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

"Use of Half-Normal Plots in Interpreting Factorial Two-Level Experiments," Daniel, Technometrics, 1, 1959 (pp. 311-341).

"Continuous Univariate Distributions - 1," Johnson and Kotz, Houghton Mifflin, 1970 (chapter 13).

APPLICATIONS

Data Analysis

IMPLEMENTATION DATE

94/4

PROGRAM

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XLIMITS 0 3
XTIC OFFSET 0.2 0.6
TITLE AUTOMATIC
XILABEL X
YILABEL PROBABILITY
PLOT HFNPDF(X) FOR X = 0 0.01 3.5
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