NORCDF

PURPOSE

Compute the standard normal (i.e, mean=0, sd=1) cumulative distribution function.

DESCRIPTION

The standard form of the normal probability density function is:

$$f(x) = \left(\frac{1}{\sqrt{2\pi}}\right)e^{-\frac{x^2}{2}} \qquad \textbf{(EQ 8-284)}$$

The standard form of the normal cumulative distribution function is

$$F(x) = \frac{\text{erf}\left(\frac{x}{\sqrt{2}}\right) + 1}{2} \qquad \textbf{(EQ 8-285)}$$

where erf is the error function. See the documentation for the ERF command in the Mathematical Library Functions chapter for a description of this function. The input value can be any real number.

SYNTAX

LET <y2> = NORCDF(<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 normal cdf value is stored;
and where the <SUBSET/EXCEPT/FOR qualification> is optional.

EXAMPLES

LET A = NORCDF(3)
LET Y = NORCDF(X1)

NOTE

The general form of the normal probability density function is:

$$f(x) = \left(\frac{1}{\sigma\sqrt{2\pi}}\right)e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2} \qquad \textbf{(EQ 8-286)}$$

where μ is the mean or location parameter and σ is the standard deviation or 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.

DEFAULT

None

SYNONYMS

None

RELATED COMMANDS

NORPDF	=	Compute the normal probability density function.
NORPPF	=	Compute the normal percent point function.
NORSF	=	Compute the normal sparsity function.
HFNPDF	=	Compute the half-normal cumulative distribution function.
HFNPDF	=	Compute the half-normal probability density function.
HFNPPF	=	Compute the half-normal percent point function.
LGNPDF	=	Compute the lognormal cumulative distribution function.
LGNPDF	=	Compute the lognormal probability density function.
LGNPPF	=	Compute the lognormal 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.
TCDF	=	Compute the T cumulative distribution function.
TPDF	=	Compute the T probability density function.
TPPF	=	Compute the T percent point function.
WEICDF	=	Compute the Weibull cumulative distribution function.
WEIPDF	=	Compute the Weibull probability density function.
WEIPPF	=	Compute the Weibull percent point function.

REFERENCE

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

"Handbook of Mathematical Functions, Applied Mathematics Series, Vol. 55," Abramowitz and Stegum, National Bureau of Standards, 1964 (page 946-947).

APPLICATIONS

Data Analysis, Hypothesis Testing

IMPLEMENTATION DATE

Pre-1987

PROGRAM

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TITLE AUTOMATIC: Y1LABEL PROBABILITY; X1LABEL X
YLIMITS 0 1
YTIC DECIMAL 1
MAJOR YTIC NUMBER 6
MINOR YTIC NUMBER 1
XLIMITS -3 3
XTIC OFFSET 0.6 0.6
PLOT NORCDF(X) FOR X = -3.5 0.01 3.5
```