

**NORPPF****PURPOSE**

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

**DESCRIPTION**

The standard form of the normal probability density function is:

$$f(x) = \left(\frac{1}{\sqrt{2\pi}}\right)e^{-\frac{x^2}{2}} \quad (\text{EQ 8-289})$$

The percent point function for the normal distribution does not have a simple closed form. It is calculated numerically. The input value is a real number between 0 and 1.

**SYNTAX**

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

**EXAMPLES**

LET A = NORPPF(0.9)  
 LET Y = NORPPF(P)

**NOTE**

The general form of the normal distribution has the following probability density function:

$$f(x) = \left(\frac{1}{\sigma\sqrt{2\pi}}\right)e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2} \quad (\text{EQ 8-290})$$

where  $\mu$  is the location parameter and  $\sigma$  is the 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. The mean is  $\mu$  and the standard deviation is  $\sigma$ .

**DEFAULT**

None

**SYNONYMS**

None

**RELATED COMMANDS**

NORCDF	=	Compute the normal cumulative distribution function.
NORPDF	=	Compute the normal probability density 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.
CHSCDF	=	Compute the chi-square cumulative distribution function.
CHSPDF	=	Compute the chi-square probability density function.
CHSPPF	=	Compute the chi-square percent point function.
FCDF	=	Compute the F cumulative distribution function.
FPDF	=	Compute the F probability density function.
FPPF	=	Compute the F percent point function.

TCDF = Compute the T cumulative distribution function.  
TPDF = Compute the T probability density function.  
TPPF = Compute the T 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 Stegun, National Bureau of Standards, 1964 (page 946-947).

## APPLICATIONS

Data Analysis, Hypothesis Testing

## IMPLEMENTATION DATE

Pre-1987

## PROGRAM

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

