

HFNPPF**PURPOSE**

Compute the half-normal percent point function.

DESCRIPTION

The standard half-normal probability density function is:

$$f(x) = \left(\frac{2}{\sqrt{2\pi}}\right)e^{\left(\frac{-x^2}{2}\right)} \quad \text{for } x \geq 0 \quad \text{(EQ 8-238)}$$

The standard half-normal percent point function is:

$$G(p) = \Phi^{-1}\left(\frac{p+1}{2}\right) \quad \text{(EQ 8-239)}$$

where Φ^{-1} is the percent point function of the standard normal distribution.

The input value is a real number between 0 and 1. The half-normal distribution is the distribution of the variable $X=ABS(Z)$ where Z is a normally distributed variable.

SYNTAX

LET <y2> = HFNPPF(<y1>) <SUBSET/EXCEPT/FOR qualification>
 where <y1> is a variable or a parameter in the range 0 to 1;
 <y2> is a variable or a parameter (depending on what <y1> is) where the computed half-normal ppf value is stored;
 and where the <SUBSET/EXCEPT/FOR qualification> is optional.

EXAMPLES

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

NOTE

The general half-normal probability density function is:

$$f(x) = \frac{2e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2}}{\sigma\sqrt{2\pi}} \quad \text{for } x \geq \mu \quad \text{(EQ 8-240)}$$

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

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

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

