

SEMPPF**PURPOSE**

Compute the semi-circular percent point function.

DESCRIPTION

The semi-circular distribution is the distribution onto one axis of the points uniformly distributed within the unit circle. As such, it is useful for testing 2-dimensional uniformity. The semi-circular probability density function is:

$$f(x) = \sqrt{1-x^2} \quad \text{for } -1 \leq x \leq 1 \quad \text{(EQ 8-314)}$$

The percent point for the semi-circular distribution is calculated with an iterative numerical approximation. The input value is a real number between 0 and 1.

SYNTAX

LET <y2> = SEMPPF(<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 semi-circular ppf value is stored; and where the <SUBSET/EXCEPT/FOR qualification> is optional.

EXAMPLES

LET A = SEMPPF(0.9)

LET Y = SEMPPF(P)

DEFAULT

None

SYNONYMS

None

RELATED COMMANDS

SEMPCDF	=	Compute the semi-circular cumulative distribution function.
SEMPDF	=	Compute the semi-circular probability density function.
UNIPDF	=	Compute the uniform probability density function.
UNICDF	=	Compute the uniform cumulative distribution function.
UNIPPF	=	Compute the uniform percent point function.
NORCDF	=	Compute the normal cumulative distributing function.
NORPDF	=	Compute the normal probability density function.
NORPPF	=	Compute the normal percent point function.

REFERENCE

"Continuous Univariate Distributions - 2," Johnson and Kotz, Houghton Mifflin, 1970 (chapter 25).

"Simple and Robust Linear Estimation of the Location Parameter of a Symmetric Distribution," Filliben, unpublished Ph.d dissertation, Princeton University, 1969 (pp. 21-44, 229-231).

APPLICATIONS

Data Analysis

IMPLEMENTATION DATE

94/4

PROGRAM

```
XLIMITS 0 1
MAJOR XTIC NUMBER 6
MINOR XTIC NUMBER 1
XTIC DECIMAL 1
YLIMITS -1 1
YTIC OFFSET 0.1 0.1
TITLE AUTOMATIC
XILABEL PROBABILITY
YILABEL X
PLOT SEMPPF(X) FOR X = 0.01 .01 0.99
```

