

COSPPF**PURPOSE**

Compute the cosine percent point function.

DESCRIPTION

The cosine distribution has the following probability density function:

$$f(x) = \frac{1 + \cos(x)}{2\pi} \quad -\pi \leq x \leq \pi \quad \text{(EQ Aux-79)}$$

The percent point function is the inverse of the cumulative distribution function. The cumulative distribution sums the probability from 0 to the given x value (i.e., the integral of the above function). The percent point function takes a cumulative probability value and computes the corresponding x value. The input value is a real number between 0 and 1 (since it corresponds to a probability).

SYNTAX

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

EXAMPLES

LET A = COSPPF(0.9)
 LET A = COSPPF(A1)

NOTE

DATAPLOT uses a bisection method to compute the cosine ppf value. The algorithm for the beta distribution is given in the Kennedy and Gentle book (see the Reference section below). The algorithm for the cosine distribution is similar.

DEFAULT

None

SYNONYMS

None

RELATED COMMANDS

COSCDF	=	Compute the cosine cumulative distribution function.
COSPDF	=	Compute the cosine cumulative distribution function.
NORCDF	=	Compute the normal cumulative distribution function.
NORPDF	=	Compute the normal probability density function.
NORPPF	=	Compute the normal percent point function.
UNICDF	=	Compute the uniform cumulative distribution function.
UNIPDF	=	Compute the uniform probability density function.
UNIPPF	=	Compute the uniform percent point function.

REFERENCE

“Some Useful Alternatives to the Normal Distribution,” Chew, The American Statistician, June, 1968.

APPLICATIONS

Data Analysis

IMPLEMENTATION DATE

95/4

PROGRAM

TITLE AUTOMATIC

PLOT COSPPF(P) FOR P = 0 0.01 1

