

NCCPPF**PURPOSE**

Compute the non-central chi-square percent point function with degrees of freedom parameters ν and non-centrality parameter δ .

DESCRIPTION

The non-central chi-square distribution with degrees of freedom ν and non-centrality parameter δ is the sum of ν independent normal distributions with standard deviation 1. The non-centrality parameter is one half the sum of squares of the normal means. The percent point function does not have a simple closed form. It is calculated numerically.

SYNTAX

LET <y> = NCCPPF(<p>,<v>,<delta>) <SUBSET/EXCEPT/FOR qualification>

where <p> is a number, variable or a parameter containing values in the interval (0,1);

<y> is a variable or a parameter (depending on what <p> is) where the computed ppf value is stored;

<v> is a non-negative number, parameter or variable that specifies the degrees of freedom parameter;

<delta> is a non-negative number, parameter or variable that specifies the first non-centrality parameter;

and where the <SUBSET/EXCEPT/FOR qualification> is optional.

EXAMPLES

LET A = NCCPPF(0.90,3,3)

LET A = NCCPPF(0.95,10,5)

LET Y = NCCPPF(0.99,100,10)

NOTE

DATAPLOT uses a bisection method to compute the non-central chi-square ppf value. The algorithm for the central beta distribution is given in the Kennedy and Gentle book (see the REFERENCE section below). The algorithm for the non-central chi-square distribution is similar.

DEFAULT

None

SYNONYMS

None

RELATED COMMANDS

NCCCDF	=	Compute the non-central chi-square cumulative distribution function.
NCCNCP	=	Compute the non-central chi-square non-centrality parameter function.
CHSPDF	=	Compute the chi-square probability density function.
CHSPPF	=	Compute the chi-square percent point function.
CHSCDF	=	Compute the chi-square cumulative distribution function.
NCFCDF	=	Compute the non-central F cumulative distribution function.
NCFPPF	=	Compute the non-central F percent point function.
NCBCDF	=	Compute the non-central beta cumulative distribution function.
NCBPPF	=	Compute the non-central beta percent point function.
NCTCDF	=	Compute the non-central t cumulative distribution function.
NCTPPF	=	Compute the non-central t percent point function.
NORCDF	=	Compute the normal cumulative distribution function.
NORPDF	=	Compute the normal probability density function.
NORPPF	=	Compute the normal percent point function.

REFERENCE

“Computation of Probability and Non-centrality Parameter of a Non-central Chi-squared Distribution,” Narula and Desu, Applied Statistics, Vol. 30, No. 3, 1981, pp. 349-352.

“Continuous Univariate Distributions,” Johnson and Kotz, Wiley and Sons, 1970.

“Statistical Distributions,” 2nd Edition, Evans, Hastings, and Peacock, 1970 (chapter 9).

APPLICATIONS

Hypothesis testing

IMPLEMENTATION DATE

94/9

PROGRAM

TITLE AUTOMATIC

YILABEL X

XILABEL PROBABILITY

PLOT NCCPPF(P,10,1) FOR P = 0.01 0.01 0.99

