NCFPPF

PURPOSE

Compute the non-central F percent point function with degrees of freedom parameters v_1 and v_2 and non-centrality parameter lambda.

DESCRIPTION

The central F distribution is the ratio of 2 central chi-square distributions with υ_1 and υ_2 degrees of freedom respectively. The non-central F distribution is the ratio of a non-central chi-square distribution with υ_1 degrees of freedom and non-centrality parameter λ and a central chi-square distribution with degrees of freedom parameter υ_2. The percent point function does not have a simple closed form. It is calculated numerically.

SYNTAX

LET <y> = NCFPPF(<p>,<v1>,<v2>,<lambda>)   <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;
    <v1> is a non-negative number, parameter or variable that specifies the first degrees of freedom parameter;
    <v2> is a non-negative number, parameter or variable that specifies the second degrees of freedom parameter;
    <lambda> is a non-negative number, parameter or variable that specifies the non-centrality parameter;
and where the <SUBSET/EXCEPT/FOR qualification> is optional.

EXAMPLES

LET A = NCFPPF(0.75,3,3,5)
LET A = NCFPPF(0.95,10,10,5)
LET Y = NCFPPF(0.82,14,15,10000)

NOTE 1

DATAPLOT uses a bisection method to compute the non-central F 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 F distribution is similar.

NOTE 2

Both the degrees of freedom parameters and the non-centrality parameters should be positive real numbers. The non-centrality parameter should be a non-negative real number.

NOTE 3

DATAPLOT also supports the central F and the doubly non-central F distributions (see the documentation for FPPF and DNFPPF). The DNFPPF function can be used for the singly non-central F as well (set the second non-centrality parameter to zero). The NCFPPF function can be used for the central F distribution as well.

DEFAULT

None

SYNONYMS

None

RELATED COMMANDS

DNFPPF	=	Compute the doubly non-central F percent point function.
NCFCDF	=	Compute the singly non-central F cumulative distribution function.
FCDF	=	Compute the F cumulative distribution function.
FPDF	=	Compute the F probability density function.
FPPF	=	Compute the F percent point function.
NCBCDF	=	Compute the non-central beta cumulative distribution function.
NCBPPF	=	Compute the non-central beta percent point function.
NCCCDF	=	Compute the non-central chi-square cumulative distribution function.
NCCPPF	=	Compute the non-central chi-square percent point function.
NCTCDF	=	Compute the non-central t cumulative distribution function.
NCTPPF	=	Compute the non-central t percent point 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.
NORCDF	=	Compute the normal cumulative distribution function.
NORPDF	=	Compute the normal probability density function.
NORPPF	=	Compute the normal percent point function.

REFERENCE
      "Computing Noncentral Beta Probabilities," Lenth, Applied Statistics, Vol. 39, No. 2, 1987, pp. 241-244.

      "Continuous Univariate Distributions - Vol. 2," Johnson and Kotz, Wiley and Sons, 1970.

      "Statistical Distributions," 2nd Edition, Evans, Hastings, and Peacock, 1970 (chapter 17).

APPLICATIONS
      Hypothesis testing

IMPLEMENTATION DATE
      94/9

PROGRAM
      TITLE AUTOMATIC
      X1LABEL PROBABILITY
      Y1LABEL X
      PLOT NCFPPF(P,10,10,5) FOR P = 0.01 0.01 0.99