

FPDF**PURPOSE**

Compute the F probability density function with degrees of freedom parameters ν_1 and ν_2 .

DESCRIPTION

The F distribution is the ratio of 2 chi-square distributions with n_1 and n_2 degrees of freedom respectively. This yields the following probability density function:

$$f(x) = \frac{\Gamma\left(\frac{\nu_1 + \nu_2}{2}\right) \left(\frac{\nu_1}{\nu_2}\right)^{\frac{\nu_1}{2}} x^{\frac{\nu_1}{2} - 1}}{\Gamma\left(\frac{\nu_1}{2}\right) \Gamma\left(\frac{\nu_2}{2}\right) \left(1 + \frac{\nu_1 x}{\nu_2}\right)^{\frac{\nu_1 + \nu_2}{2}}} \quad (\text{EQ 8-209})$$

The input value must be greater than or equal to 0. This function is restricted to integer degrees of freedom.

SYNTAX

LET <y2> = FPDF(<y1>, <nu1>, <nu2>) <SUBSET/EXCEPT/FOR qualification>
 where <y1> is a variable, a number, or a parameter containing positive values;
 <y2> is a variable or a parameter (depending on what <y1> is) where the computed F pdf value is stored;
 <nu1> and <nu2> are positive integer numbers or parameters that define the degrees of freedom;
 and where the <SUBSET/EXCEPT/FOR qualification> is optional.

EXAMPLES

LET A = FPDF(3,10,8)
 LET Y = FPDF(X1,10,8)

DEFAULT

None

SYNONYMS

None

RELATED COMMANDS

FCDF	=	Compute the F cumulative distribution function.
FPPF	=	Compute the F percent point function.
NCFCDF	=	Compute the non-central F cumulative distribution function.
DNFCDF	=	Compute the doubly non-central F cumulative distribution function.
CHSCDF	=	Compute the chi-square cumulative distribution function.
CHSPDF	=	Compute the chi-square probability density function.
CHSPPF	=	Compute the chi-square percent point function.
NORCDF	=	Compute the normal cumulative distribution function.
NORPDF	=	Compute the normal probability density function.
NORPPF	=	Compute the normal percent point function.
TCDF	=	Compute the t cumulative distribution function.
TPDF	=	Compute the t probability density function.
TPPF	=	Compute the t percent point function.

REFERENCE

“Continuous Univariate Distributions - 2,” Johnson and Kotz, Houghton Mifflin, 1970 (chapter 26).

“Handbook of Mathematical Functions, Applied Mathematics Series, Vol. 55,” Abramowitz and Stegun, National Bureau of Standards, 1964 (page 946-947).

APPLICATIONS

Hypothesis Testing

IMPLEMENTATION DATE

Pre-1987

PROGRAM

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SEGMENT 1 COORDINATES 64 88 69 88; SEGMENT 1 PATTERN SOLID
SEGMENT 2 COORDINATES 64 84 69 84; SEGMENT 2 PATTERN DASH
SEGMENT 3 COORDINATES 64 80 69 80; SEGMENT 3 PATTERN DOT
SEGMENT 4 COORDINATES 64 76 69 76; SEGMENT 4 PATTERN DASH2
LEGEND 1 NU1 = 5, NU2 = 5; LEGEND 1 COORDINATES 70 87
LEGEND 2 NU1 = 5, NU2 = 10; LEGEND 2 COORDINATES 70 83
LEGEND 3 NU1 = 10, NU2 = 5; LEGEND 3 COORDINATES 70 79
LEGEND 4 NU1 = 10, NU2 = 10; LEGEND 4 COORDINATES 70 75
YLIMITS 0 0.8
MAJOR YTIC NUMBER 9
MINOR YTIC NUMBER 1
YTIC DECIMAL 1
XLIMITS 0 5
XTIC OFFSET 0.5 1
MAJOR XTIC NUMBER 6
MINOR XTIC NUMBER 1
TITLE FPDF FOR VARIOUS VALUES OF NU
YILABEL PROBABILITY; XILABEL X
LINES SOLID DASH DOT DASH2
PLOT FPDF(X,5,5) FOR X = 0 .05 6 AND
PLOT FPDF(X,5,10) FOR X = 0 .05 6 AND
PLOT FPDF(X,10,5) FOR X = 0 .05 6 AND
PLOT FPDF(X,10,10) FOR X = 0 .05 6

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