

WALPDF**PURPOSE**

Compute the Wald probability density function with shape parameter γ .

DESCRIPTION

The Wald distribution is the inverse Gaussian distribution with the location parameter set to 1. See the documentation for the IGPDF command in this chapter for the definition of the inverse Gaussian distribution (just set μ to 1 in the formulas). Since DATAPLOT calculates the standard form of the inverse Gaussian distribution, the WALPDF and IGPDF commands are identical in DATAPLOT.

SYNTAX

LET <y2> = WALPDF(<y1>,<gamma>) <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 Wald pdf values are stored;

<gamma> is a positive number or parameter that specifies the shape parameter;

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

EXAMPLES

LET A = WALPDF(3,10)

LET Y = WALPDF(X1,10)

DEFAULT

None

SYNONYMS

IGPDF

RELATED COMMANDS

WALCDF	=	Compute the Wald cumulative distribution function.
WALPPF	=	Compute the Wald percent point function.
IGPDF	=	Compute the inverse Gaussian probability density function.
IGPPF	=	Compute the inverse Gaussian percent point function.
IGCDF	=	Compute the inverse Gaussian cumulative distribution function.
RIGCDF	=	Compute the reciprocal inverse Gaussian cumulative distribution function.
RIGPDF	=	Compute the reciprocal inverse Gaussian probability density function.
RIGPPF	=	Compute the reciprocal inverse Gaussian percent point function.
FLPDF	=	Compute the fatigue-life probability density function.
FLPPF	=	Compute the fatigue-life percent point function.
FLCDF	=	Compute the fatigue-life cumulative distribution function.
NORCDF	=	Compute the normal cumulative distribution function.
NORPDF	=	Compute the normal probability density function.
NORPPF	=	Compute the normal percent point function.
WEICDF	=	Compute the Weibull cumulative distribution function.
WEIPDF	=	Compute the Weibull probability density function.
WEIPPF	=	Compute the Weibull percent point function.

REFERENCE

"Continuous Univariate Distributions - 1," Johnson and Kotz, Houghton-Mifflin, 1970 (chapter 15).

"Statistical Distributions," 2nd Ed., Evans, Hastings, and Peacock, Wiley and Sons, 1993 (chapter 21).

APPLICATIONS

Reliability Analysis

IMPLEMENTATION DATE

90/5 (definition was modified 95/1 to be consistent with Johnson and Kotz)

PROGRAM

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TITLE WALPDF FOR VARIOUS VALUES OF GAMMA
XILABEL X
YILABEL PROBABILITY
SEGMENT 1 COORDINATES 69 88 74 88; SEGMENT 1 PATTERN SOLID
SEGMENT 2 COORDINATES 69 84 74 84; SEGMENT 2 PATTERN DASH
SEGMENT 3 COORDINATES 69 80 74 80; SEGMENT 3 PATTERN DOT
SEGMENT 4 COORDINATES 69 76 74 76; SEGMENT 4 PATTERN DA2
LEGEND 1 GAMMA = 1; LEGEND 1 COORDINATES 75 87
LEGEND 2 GAMMA = 2; LEGEND 2 COORDINATES 75 83
LEGEND 3 GAMMA = 3; LEGEND 3 COORDINATES 75 79
LEGEND 4 GAMMA = .5; LEGEND 4 COORDINATES 75 75
LINES SOLID DASH DOT DASH2
PLOT WALPDF(X,1) FOR X = 0 0.01 3 AND
PLOT WALPDF(X,2) FOR X = 0 0.01 3 AND
PLOT WALPDF(X,3) FOR X = 0 0.01 3 AND
PLOT WALPDF(X,0.5) FOR X = 0 0.01 3
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