WALCDF

PURPOSE
Compute the Wald cumulative distribution 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 IGCDF 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 WALCDF and IGCDF commands are identical in DATAPLOT.

SYNTAX
LET <y2> = WALCDF(<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 cdf value is stored;
   <gamma> is a positive number, parameter, or variable that specifies the shape parameter;
and where the <SUBSET/EXCEPT/FOR qualification> is optional.

EXAMPLES
LET A = WALCDF(3,10)
LET Y = WALCDF(X1,10)

DEFAULT
None

SYNONYMS
IGCDF

RELATED COMMANDS

WALPDF	=	Compute the Wald probability density 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

        TITLE WALCDF FOR VARIOUS VALUES OF GAMMA
        X1LABEL X
        Y1LABEL PROBABILITY
        SEGMENT 1 COORDINATES 69 38 74 38; SEGMENT 1 PATTERN SOLID
        SEGMENT 2 COORDINATES 69 34 74 34; SEGMENT 2 PATTERN DASH
        SEGMENT 3 COORDINATES 69 30 74 30; SEGMENT 3 PATTERN DOT
        SEGMENT 4 COORDINATES 69 26 74 26; SEGMENT 4 PATTERN DA2
        LEGEND 1 GAMMA = 1; LEGEND 1 COORDINATES 75 37
        LEGEND 2 GAMMA = 2; LEGEND 2 COORDINATES 75 33
        LEGEND 3 GAMMA = 5; LEGEND 3 COORDINATES 75 29
        LEGEND 4 GAMMA = .5; LEGEND 4 COORDINATES 75 25
        YLIMITS 0 1; MAJOR YTIC NUMBER 6; MINOR YTIC NUMBER 1; YTIC DECIMAL 1
        XLIMITS 0 3
        LINES SOLID DASH DOT DASH2
        PLOT WALCDF(X,1) FOR X = 0.01 0.01 3 AND
        PLOT WALCDF(X,2) FOR X = 0.01 0.01 3 AND
        PLOT WALCDF(X,5) FOR X = 0.01 0.01 3 AND
        PLOT WALCDF(X,0.5) FOR X = 0.01 0.01 3