TRIPDF

PURPOSE
Compute the triangular probability density function.

DESCRIPTION
The standard triangular probability density function is:

$$f(x) = \frac{x+1}{c+1} \qquad\qquad -1 \le x \le c \qquad\qquad \textbf{(EQ 8-324)}$$

$$f(x) = \frac{1-x}{1-c} \qquad\qquad c < x \le 1 \qquad\qquad \textbf{(EQ 8-325)}$$

SYNTAX
LET <y2> = TRIPDF(<y1>,<c>)   <SUBSET/EXCEPT/FOR qualification>
where <y1> is a variable, number, or parameter containing values in the interval (-1,1);
   <c> is a number, parameter, or variable containing values in the interval (-1,1);
   <y2> is a variable or a parameter (depending on what <x> and <c> are) where the computed pdf value is stored;
and where the <SUBSET/EXCEPT/FOR qualification> is optional.

EXAMPLES
LET A = TRIPDF(0.5,0)
LET Y = TRIPDF(X1,0.5)

NOTE
The general form of the triangular probability density function is:

$$f(x) = \frac{2(x-a)}{(b-a)(c-a)} \qquad\qquad a \le x \le c \qquad\qquad \textbf{(EQ 8-326)}$$

$$f(x) = \frac{2(b-x)}{(b-a)(b-c)} \qquad\qquad c < x \le b \qquad\qquad \textbf{(EQ 8-327)}$$

where a is the location parameter and b is the upper limit. The scale parameter is (b-a)/2. Some references define the standard distribution with a equal 0 and b equal 1 (DATAPLOT uses a=-1 and b=1). The mean is (a+b+c)//3, which reduces to 0 for the standard distribution. The standard deviation is sqrt((a^2+b^2+c^2-ab-ac-bc)/18), which reduces to sqrt(1/6) for the standard case. See topic (3) under the General considerations section at the beginning of this chapter for a discussion of generating pdf values for the general form of the distribution.

DEFAULT
None

SYNONYMS
None

RELATED COMMANDS
TRICDF	=	Compute the triangular cumulative distribution function.
TRIPPF	=	Compute the triangular percent point function.
UNICDF	=	Compute the uniform cumulative distribution function.
UNIPDF	=	Compute the uniform probability density function.
UNIPPF	=	Compute the uniform percent point function.
UNISF	=	Compute the uniform sparsity function.
SEMCDF	=	Compute the semi-circular cumulative distribution function.
SEMPDF	=	Compute the semi-circular probability density function.
SEMPPF	=	Compute the semi-circular 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

"Statistical Distributions," 2nd Ed., Evans, Hastings, and Peacock, John Wiley and Sons (chapter 39).

APPLICATIONS

Data Analysis

IMPLEMENTATION DATE

94/9

PROGRAM

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TITLE TRIANGULAR DISTRIBUTIONS
X1LABEL X
Y1LABEL PROBABILITY
LET C1 = -0.5
PLOT TRIPDF(X,0) FOR X = -1 .1 1 AND
PLOT TRIPDF(X,0.5) FOR X = -1 .1 1 AND
PLOT TRIPDF(X,C1) FOR X = -1 .1 1
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