

TRIPPF**PURPOSE**

Compute the triangular percent point function.

DESCRIPTION

The standard triangular probability density function is:

$$f(x) = \frac{x+1}{c+1} \quad -1 \leq x \leq c \quad \text{(EQ 8-328)}$$

$$f(x) = \frac{1-x}{1-c} \quad c < x \leq 1 \quad \text{(EQ 8-329)}$$

where c is the shape parameter. The standard triangular percent point function is:

$$G(p) = 1 + \sqrt{2p(c+1)} \quad 0 \leq p \leq \frac{c+1}{2} \quad \text{(EQ 8-330)}$$

$$G(p) = 1 - \sqrt{2(1-p)(1-c)} \quad \frac{c+1}{2} \leq p \leq 1 \quad \text{(EQ 8-331)}$$

The input value is a real number between 0 and 1.

SYNTAX

LET <y> = TRIPPF(<p>,<c>) <SUBSET/EXCEPT/FOR qualification>

where <p> is a number, variable or parameter in the range 0 to 1;

<c> is a number, parameter, or variable containing values in the interval (-1,1);

<y> is a variable or a parameter (depending on what <p> is) where the computed triangular pdf value is stored;

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

EXAMPLES

LET A = TRIPPF(0.9,0)

LET Y = TRIPPF(0.95,0.5)

NOTE

The general form of the triangular percent point function is:

$$G(p) = a + \sqrt{2p(b-a)(c-a)} \quad 0 \leq p \leq \frac{c-a}{2} \quad \text{(EQ 8-332)}$$

$$G(p) = b - \sqrt{(1-p)(b-a)(b-c)} \quad \frac{c-a}{2} \leq p \leq 1 \quad \text{(EQ 8-333)}$$

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 $b=1$). 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.
TRIPDF	=	Compute the triangular probability density 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. Edition, Evans, Hastings, and Peacock, John Wiley and Sons (chapter 39).

APPLICATIONS

Data Analysis

IMPLEMENTATION DATE

94/9 (bug for non-zero c values implemented 95/1)

PROGRAM

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XLIMITS 0 1
MAJOR XTIC NUMBER 6
MINOR XTIC NUMBER 1
XTIC DECIMAL 1
YLIMITS 0 1
YTIC OFFSET 0.05 0.05
TITLE TRIANGULAR PERCENT POINT FUNCTIONS
XILABEL PROBABILITY; YILABEL X
LINE SOLID DASH DOT
LET C1 = -0.5
PLOT TRIPPF(P,0) FOR P = 0.01 .01 0.99 AND
PLOT TRIPPF(P,0.5) FOR P = 0.01 .01 0.99 AND
PLOT TRIPPF(P,C1) FOR P = 0.01 .01 0.99

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