LNBETA

PURPOSE

Compute the logarithm of the beta function.

DESCRIPTION

The logarithmic beta function is defined as:

$$B(\alpha, \beta) = LN\left(\int_0^1 t^{\alpha-1}(1-t)^{\beta-1}dt\right) \quad \textbf{(EQ 6-96)}$$

where LN is the natural logarithm and α and β are positive real numbers.

SYNTAX

LET <y2> = LNBETA(<a>,<b>) <SUBSET/EXCEPT/FOR qualification>
where <a> is a positive number, variable, or parameter;
<b> is a positive number, variable, or parameter;
<y2> is a variable or a parameter (depending on what <a> and <b> are) where the computed values are stored;
and where the <SUBSET/EXCEPT/FOR qualification> is optional.

EXAMPLES

LET A = LNBETA(1,2)
LET A = LNBETA(A1,B3)
LET X2 = LNBETA(X,2)

NOTE

DATAPLOT uses the routine DLBETA from the SLATEC Common Mathematical Library to compute this function. SLATEC is a large set of high quality, portable, public domain Fortran routines for various mathematical capabilities maintained by seven federal laboratories.

DEFAULT

None

SYNONYMS

None

RELATED COMMANDS

BETAI	=	Compute the incomplete Beta function.
BETA	=	Compute the Beta function.
GAMMA	=	Compute the gamma function.
LOGGAMMA	=	Compute the log gamma function.

REFERENCE

"Handbook of Mathematical Functions, Applied Mathematics Series, Vol. 55," Abramowitz and Stegun, National Bureau of Standards, 1964 (chapter 6).

APPLICATIONS

Special Functions

IMPLEMENTATION DATE

94/9

PROGRAM

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TITLE AUTOMATIC
PLOT LNBETA(X,4) FOR X = 1 1 100
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