BESSK0

PURPOSE

Compute the modified Bessel function of the third kind and order 0.

DESCRIPTION

The modified Bessel function of the third kind can be defined in terms of the modified Bessel function of the first kind:

$$K_v(x) = \frac{\pi}{2}\left(\frac{I_{-v}(x) - I_v(x)}{\sin(\pi v)}\right) \qquad \textbf{(EQ Aux-36)}$$

where I_v is the modified Bessel function of the first kind. See the documentation for the BESSIN commands for details on this function.

SYNTAX

LET <y2> = BESSK0(<y1>) <SUBSET/EXCEPT/FOR qualification>

where <y1> is a positive number, variable or parameter;

<y2> is a variable or a parameter (depending on what <y1> is) where the computed Bessel value is stored;

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

EXAMPLES

LET X2 = BESSK0(2)

LET Y = BESSK0(X)

NOTE

DATAPLOT uses the routine BESK0 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

BESSK1	=	Compute the modified Bessel function of the third kind and order 1.
BESSKN	=	Compute the modified Bessel function of the third kind and order N.
BESSKNE	=	Compute the exponentially scaled modified Bessel function of the third kind and order N.
BESSJ0	=	Compute the Bessel function of the first kind and order 0.
BESSI0	=	Compute the modified Bessel function of order 0.
BESSY0	=	Compute the Bessel function of the second kind and order 0.

REFERENCE

"Handbook of Mathematical Functions, Applied Mathematics Series, Vol. 55," Abramowitz and Stegun, National Bureau of Standards, 1964 (pages 355-433).

"Numerical Recipes: The Art of Scientific Computing (FORTRAN Version)," 2nd Edition, Press, Flannery, Teukolsky, and Vetterling. Cambridge University Press, 1992 (chapter 6).

APPLICATIONS

Special Functions

IMPLEMENTATION DATE

94/9

PROGRAM

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TITLE AUTOMATIC
PLOT BESSK0(X) FOR X = 0.01 0.01 5
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