

BESSY1**PURPOSE**

Compute the Bessel function of the second kind and order 1.

DESCRIPTION

The definition of Bessel functions of the second kind with order ν (ν is a non-negative real number) is:

$$Y_{\nu}(x) = \frac{J_{\nu}(x)\cos(\pi\nu) - J_{-\nu}(x)}{\sin(\pi\nu)} \quad (\text{EQ Aux-43})$$

where J_{ν} is the Bessel function of the first kind. See the documentation for the BESSJN commands for details on this function.

SYNTAX

LET <y2> = BESSY1(<y1>) <SUBSET/EXCEPT/FOR qualification>

where <y1> is a positive decimal 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 = BESSY1(2)

LET Y = BESSY1(X1)

NOTE

DATAPLOT uses the routine BESY1 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

BESSY0	=	Compute the Bessel function of the second kind and order 0.
BESSYN	=	Compute the Bessel function of the second kind and order N.
BESSJ1	=	Compute the Bessel function of the first kind of order 1.
BESSI1	=	Compute the modified Bessel function of order 1.
BESSK1	=	Compute the modified Bessel function of the third kind and order 1.

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

TITLE AUTOMATIC

PLOT BESSY1(X) FOR X = 0.1 0.1 100

