

**BESSK1E****PURPOSE**

Compute the exponentially scaled modified Bessel function of the third kind and order 1.

**DESCRIPTION**

This function can be defined as:

$$\text{BESSK1E}(x) = e^{-x} K_1(x) \quad (\text{EQ Aux-39})$$

where  $K_1$  is the modified Bessel function of the third kind. See the documentation for the BESSK1 command for a description of this function.

**SYNTAX**

LET <y2> = BESSK1E(<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 = BESSK1E(2)
LET Y = BESSK1E(X)
```

**NOTE**

DATAPLOT uses the routine BESK1E 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**

|         |   |                                                                                          |
|---------|---|------------------------------------------------------------------------------------------|
| BESSK0  | = | Compute the modified Bessel function of the third kind and order 0.                      |
| 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.                      |
| BESSKOE | = | Compute the exponentially scaled modified Bessel function of the third kind and order 0. |
| BESSKNE | = | Compute the exponentially scaled modified Bessel function of the third kind and order N. |
| BESSJ1  | = | Compute the Bessel function of the first kind and order 1.                               |
| BESSI1  | = | Compute the modified Bessel function of order 1.                                         |
| BESSY1  | = | Compute the Bessel function of the second 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 BESSK1E(X) FOR X = 0.01 0.01 5

