

SINHINT**PURPOSE**

Compute the hyperbolic sine integral.

DESCRIPTION

The hyperbolic sine integral is defined as:

$$\text{Shi}(x) = \int_0^x \frac{\sinh(t)}{t} dt \quad (\text{EQ Aux-303})$$

where sinh is the hyperbolic sine function.

SYNTAX

LET <y2> = SINHINT(<x>) <SUBSET/EXCEPT/FOR qualification>

where <x> is a non-zero number, variable, or parameter;

<y2> is a variable or a parameter (depending on what <x> is where the computed hyperbolic sine integral values are stored; and where the <SUBSET/EXCEPT/FOR qualification> is optional.

EXAMPLES

```
LET A = SINHINT(0.1)
LET A = SINHINT(-0.1)
LET X2 = SINHINT(X)
```

NOTE

DATAPLOT uses the routine SICIEI written by Irene Stegum and Ruth Zucker of NIST (see the REFERENCE section below).

DEFAULT

None

SYNONYMS

None

RELATED COMMANDS

SININT	=	Compute the hyperbolic sine integral.
COSINT	=	Compute the hyperbolic cosine integral.
COSHINT	=	Compute the hyperbolic cosine integral.
EXPINTN	=	Compute the exponential integral of order N.
LOGINT	=	Compute the logarithmic integral.
DAWSON	=	Compute Dawson's integral.

REFERENCE

"SICIEI: Automatic Computing Methods for Special Functions. Part III. The Sine, Cosine, Exponential Integrals and Related Functions," Stegum and Zucker, Journal of Research of the National Bureau of Standards, 80B(2), 1976.

"Handbook of Mathematical Functions, Applied Mathematics Series, Vol. 55," Abramowitz and Stegun, National Bureau of Standards, 1964 (chapter 5).

APPLICATIONS

Special Functions

IMPLEMENTATION DATE

94/9

PROGRAM

TITLE AUTOMATIC

YLIMITS 0 20

YTIC OFFSET 0 0.5

PLOT SINHINT(X) FOR X = -5 0.01 5

