

**FRESNS****PURPOSE**

Compute the Fresnel sine integral.

**DESCRIPTION**

The Fresnel sine integral is defined as:

$$S(x) = \int_0^x \sin\left(\frac{\pi t^2}{2}\right) dt \quad (\text{EQ Aux-148})$$

**SYNTAX**

LET <y> = FRESNS(<x>) <SUBSET/EXCEPT/FOR qualification>

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

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

**EXAMPLES**

LET A = FRESNS(0.1)

LET A = FRESNS(X)

**NOTE**

DATAPLOT uses ACM algorithm 723 from the ACM Transactions of Mathematical Software (see the REFERENCE section below) to compute the Fresnel integrals.

**DEFAULT**

None

**SYNONYMS**

None

**RELATED COMMANDS**

FRESNC	=	Compute the Fresnel cosine integral.
FRESNF	=	Compute the Fresnel auxillary function f.
FRESNG	=	Compute the Fresnel auxillary function g.
DAWS	=	Compute the Dawson integral.
ERF	=	Compute the error function.
ERFC	=	Compute the complementary error function.
SININT	=	Compute the sine integral.
SININT	=	Compute the cosine integral.
EXPINTN	=	Compute the exponential integral of order N.
LOGINT	=	Compute the logarithmic integral.

**REFERENCE**

“Handbook of Mathematical Functions, Applied Mathematics Series, Vol. 55,” Abramowitz and Stegun, National Bureau of Standards, 1964 (chapter 7).

“Algorithm 723: Fresnel Integrals,” Snyder, ACM Transactions on Mathematical Software, Volume 19, Number 4, 1993, (pp. 452-456).

**APPLICATIONS**

Special Functions

**IMPLEMENTATION DATE**

94/11

PROGRAM

TITLE AUTOMATIC

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

