

FRESNG**PURPOSE**

Compute the Fresnel auxillary function g.

DESCRIPTION

The Fresnel auxillary function g is defined as:

$$f(x) = \left(\frac{1}{2} - C(x)\right)\cos\left(\frac{\pi x^2}{2}\right) - \left(\frac{1}{2} - S(x)\right)\sin\left(\frac{\pi x^2}{2}\right) \quad (\text{EQ Aux-147})$$

where S is the Fresnel sine integral function and C is the Fresnel cosine integral function.

SYNTAX

LET <y> = FRESNG(<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 FRESNG integral values are stored;

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

EXAMPLES

LET A = FRESNG(0.1)

LET A = FRESNG(X)

NOTE

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

DEFAULT

None

SYNONYMS

None

RELATED COMMANDS

FRESNC	=	Compute the Fresnel cosine integral.
FRESNS	=	Compute the Fresnel sine integral.
FRESNF	=	Compute the Fresnel auxillary function f.
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 FRESNG(X) FOR X = -5 0.01 5

