SECH

PURPOSE

Compute the hyperbolic secant for a variable or parameter.

DESCRIPTION

The hyperbolic secant is defined as:

$$\text{sech}(x) = \frac{2}{e^x + e^{-x}} \qquad \textbf{(EQ 7-110)}$$

The hyperbolic secant is defined for all real numbers. The range is zero to one.

SYNTAX

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

where <y1> is a number, parameter, or variable;

<y2> is a variable or a parameter (depending on what <y1> is) where the computed hyperbolic secant value is stored;

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

EXAMPLES

LET A = SECH(-2)
LET A = SECH(A1)
LET X2 = SECH(PI/2)

DEFAULT

None

SYNONYMS

None

RELATED COMMANDS

SEC	=	Compute secant.
SINH	=	Compute hyperbolic sine.
COSH	=	Compute hyperbolic cosine.
TANH	=	Compute hyperbolic tangent.
COTH	=	Compute hyperbolic cotangent.
CSCH	=	Compute hyperbolic cosecant.
ARCCOSH	=	Compute hyperbolic arccosine.
ARCCOTH	=	Compute hyperbolic arccotangent.
ARCCSCH	=	Compute hyperbolic arccosecant.
ARCSECH	=	Compute hyperbolic arcsecant.
ARCSINH	=	Compute hyperbolic arcsine.
ARCTANH	=	Compute hyperbolic arctangent.

APPLICATIONS

Trigonometry

IMPLEMENTATION DATE

Pre-1987

PROGRAM

```
TITLE SECH(X) FOR X = -4 TO 4
X1LABEL X
Y1LABEL SECH(X)
YTIC OFFSET 0 0.05
PLOT SECH(X) FOR X = -5 0.01 5
```