SECH

PURPOSE
Compute the hyperbolic secant for a variable or parameter.

DESCRIPTION
The hyperbolic secant is defined as:

\[ \text{sech}(x) = \frac{2}{e^x + e^{-x}} \]  

(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