

ARCSECH**PURPOSE**

Compute the hyperbolic arcsecant for a variable or parameter.

DESCRIPTION

The hyperbolic arcsecant is the number whose hyperbolic secant is equal to the given value. The hyperbolic arcsecant is defined as:

$$\operatorname{arcsech}(x) = \frac{1}{\log(x + \sqrt{x^2 - 1})} \quad \text{for } 0 < x \leq 1 \quad \text{(EQ 7-104)}$$

Input values less than or equal to 0 or greater than 1 generate an error message.

SYNTAX

LET <y2> = ARCSECH(<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 arcsecant value is stored; and where the <SUBSET/EXCEPT/FOR qualification> is optional.

EXAMPLES

```
LET A = ARCSECH(-2)
LET X2 = ARCSECH(X1)
LET X2 = ARCSECH(X1-4)
```

DEFAULT

None

SYNONYMS

None

RELATED COMMANDS

ARCCOS	=	Compute arccosine.
ARCCOSH	=	Compute hyperbolic arccosine.
ARCCOT	=	Compute arccotangent.
ARCCOTH	=	Compute hyperbolic arccotangent.
ARCCSC	=	Compute arccosecant.
ARCCSCH	=	Compute hyperbolic arccosecant.
ARCSEC	=	Compute secant.
ARCSIN	=	Compute arcsine.
ARCSINH	=	Compute hyperbolic arcsine.
ARCTAN	=	Compute arctangent.
ARCTANH	=	Compute hyperbolic arctangent.

APPLICATIONS

Trigonometry

IMPLEMENTATION DATE

Pre-1987

PROGRAM

```
X1LABEL HYPERBOLIC SECANT(Y)
Y1LABEL ARCSECH(X)
TITLE ARCSECH FOR X = 0 TO 1
PLOT ARCSECH(X) FOR X = .01 .01 1
```

