ARCSINH

PURPOSE
Compute the hyperbolic arcsine for a variable or parameter.

DESCRIPTION
The hyperbolic arcsine is the number whose hyperbolic sine is equal to the given value. The hyperbolic sine is defined as:

$$\text{arcsinh}(x) = \log(x + \sqrt{x^2 + 1}) \qquad \text{for all real x} \qquad \textbf{(EQ 7-105)}$$

SYNTAX
LET \<y2> = ARCSINH(\<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 arcsine value is stored;

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

EXAMPLES
LET A = ARCSINH(-2)
LET A = ARCSINH(A1)
LET X2 = ARCSINH(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.
ARCSECH	=	Compute hyperbolic arcsecant.
ARCSIN	=	Compute arcsine.
ARCTAN	=	Compute arctangent.
ARCTANH	=	Compute hyperbolic arctangent.

APPLICATIONS
Trigonometry

IMPLEMENTATION DATE
Pre-1987

PROGRAM
        X1LABEL HYPERBOLIC SINE(Y)
        Y1LABEL ARCSINH(X)
        TITLE ARCSINH(X) FOR X = -10 TO 10
        PLOT ARCSINH(X) FOR X = -10 .1 10