CLOG

PURPOSE
Compute the real or complex component of the natural logarithmic function for a complex number.

SYNTAX 1
LET <yr> = CLOG(<xr>,<xc>) <SUBSET/EXCEPT/FOR qualification>
where <xr> is a number, parameter, or variable that specifies the real component of the the complex number;
<xc> is a number, parameter, or variable that specifies the complex component of the the complex number;
<yr> is a variable or a parameter (depending on what <xr> and <xc> are) where the real component of the computed logarithmic value is stored;
and where the <SUBSET/EXCEPT/FOR qualification> is optional.
This syntax computes the real component of the complex logarithmic function.

SYNTAX 2
LET <yc> = CLOG(<xr>,<xc>) <SUBSET/EXCEPT/FOR qualification>
where <xr> is a number, parameter, or variable that specifies the real component of the the complex number;
<xc> is a number, parameter, or variable that specifies the complex component of the the complex number;
<yc> is a variable or a parameter (depending on what <xr> and <xc> are) where the complex component of the computed logarithmic value is stored;
and where the <SUBSET/EXCEPT/FOR qualification> is optional.
This syntax computes the complex component of the complex logarithmic function.

EXAMPLES
LET AR = CLOG(14,-2)
LET AC = CLOGI(14,-2)
LET ZR = CLOG(XR,XC)
LET ZC = CLOGI(XR,XC)

NOTE
DATAPLOT uses the Fortran intrinsic function CLOG to compute this function.

DEFAULT
None

SYNONYMS
None

RELATED COMMANDS
LOG = Compute the natural logarithm of a real number.
CEXP = Compute the real component of the exponential of a complex number.
CEXPI = Compute the complex component of the exponential of a complex number.
CCOS = Compute the real component of the cosine of a complex number.
CCOSI = Compute the complex component of the cosine of a complex number.
CSIN = Compute the real component of the sine of a complex number.
CSINI = Compute the complex component of the sine of a complex number.
CSQRT = Compute the real component of the square root of a complex number.
CSQRTI = Compute the complex component of the square root of a complex number.

APPLICATIONS
Elementary functions

IMPLEMENTATION DATE
94/10
PROGRAM
X1LABEL SOLID = REAL COMPONENT
X2LABEL DASH = COMPLEX COMPONENT
LINE SOLID DASH
MULTIPLY 2 2; MULTIPLY CORNER COORDINATES 0 0 100 100
LET C = 1
TITLE CLOG, COMPLEX COMPONENT = ^C
PLOT CLOG(X,C) FOR X = -3 0.01 3 AND
PLOT CLOGI(X,C) FOR X = -3 .01 3
LET C = -1
TITLE CLOG, COMPLEX COMPONENT = ^C
PLOT CLOG(X,C) FOR X = -3 0.01 3 AND
PLOT CLOGI(X,C) FOR X = -3 .01 3
LET C = 2
TITLE CLOG, COMPLEX COMPONENT = ^C
PLOT CLOG(X,C) FOR X = -3 0.01 3 AND
PLOT CLOGI(X,C) FOR X = -3 .01 3
LET C = -2
TITLE CLOG, COMPLEX COMPONENT = ^C
PLOT CLOG(X,C) FOR X = -3 0.01 3 AND
PLOT CLOGI(X,C) FOR X = -3 .01 3
END OF MULTIPLY

\[ \text{CLOG, COMPLEX COMPONENT} = \text{SOLID} = \text{REAL COMPONENT} \]
\[ \text{DASH} = \text{COMPLEX COMPONENT} \]