MATRIX REPLACE ROW

PURPOSE
Copy a variable into a row of a matrix.

DESCRIPTION
This command is useful when operating on rows (rather than columns) of a matrix. You can loop over the rows, extract a row, operate on the row, and then replace the row. An example might be to subtract the row means from a matrix. An alternative is to take the transpose of the matrix and loop over the columns of the transposed matrix. Although this is simpler, it does not work when there are too many rows. The default limits for matrices are 750 rows by 100 columns.

SYNTAX
LET <mat2> = MATRIX REPLACE ROW <mat1> <var> <rowid>

where <mat1> is a matrix for which the row is to be replaced;

<var> is a variable;

<rowid> is the row number to be replaced;

and   <mat2> is a matrix where the replaced row is saved (it typically has the same name as <mat1>).

EXAMPLES
LET C = MATRIX REPLACE ROW C A 3

DEFAULT
None

SYNONYMS
None

RELATED COMMANDS
MATRIX ROW	=	Extract a row of a matrix.
MATRIX REPLACE ELEMENT	=	Replace an element of the matrix.
MATRIX DEFINITION	=	Set a matrix definition.
MATRIX ELEMENT	=	Extract an element of the matrix.
MATRIX SUBMATRIX	=	Define a matrix submatrix.

APPLICATIONS
Linear Algebra

IMPLEMENTATION DATE
93/10

PROGRAM

```
        . MULTIPLYING A MATRIX BY A DIAGONAL MATRIX IS EQUIVALENT TO
        . MULTIPLYING EACH ROW BY THE CORRESPONDING DIAGONAL ELEMENT.
        READ MATRIX M
        14 37 32
        19 42 17
        12 17 10
        END OF DATA
        .
        LET DIAG = DATA -6 8 4
        LET NROW = MATRIX NUMBER OF COLUMNS M
        .
        LOOP FOR K = 1 1 NROW
              LET TEMP = MATRIX ROW M K
              LET A = DIAG(K)
              LET TEMP = A*TEMP
              LET M = MATRIX REPLACE ROW M TEMP K
        END OF LOOP
        PRINT M
```

The following output is generated.

```
            MATRIX M          --              3 ROWS
                              --              3 COLUMNS


VARIABLES--M1             M2              M3

 -0.8400000E+02 -0.2220000E+03 -0.1920000E+03
  0.1520000E+03  0.3360000E+03  0.1360000E+03
  0.4800000E+02  0.6800000E+02  0.4000000E+02
```