

MATRIX EUCLIDEAN NORM

PURPOSE

Compute the euclidean norm of a matrix.

DESCRIPTION

The euclidean norm of a matrix A is:

$$EN = \sqrt{\sum_{ij} a_{ij}^2} \quad (\text{EQ 4-69})$$

where a_{ij} is the i th row and j th column of the matrix A.

SYNTAX

LET <par> = MATRIX EUCLIDEAN NORM <mat> <SUBSET/EXCEPT/FOR qualification>

where <mat> is a matrix for which the euclidean norm is to be computed;

<par> is a parameter where the resulting euclidean norm is saved;

and where the <SUBSET/EXCEPT/FOR qualification> is optional and rarely used in this context.

EXAMPLES

LET C = MATRIX EUCLIDEAN NORM A

DEFAULT

None

SYNONYMS

None

RELATED COMMANDS

MATRIX DETERMINANT	=	Compute a matrix determinant.
MATRIX EIGENVALUES	=	Compute the matrix eigenvalues.
MATRIX INVERSE	=	Compute a matrix inverse.
MATRIX SOLUTION	=	Solve a system of linear equations.
MATRIX SPECTRAL NORM	=	Compute the matrix spectral norm.
MATRIX SPECTRAL RADIUS	=	Compute the matrix spectral radius.

REFERENCE

"A First Course in Numerical Analysis," 2nd ed., Ralston and Rabinowitz, 1978, McGraw-Hill.

APPLICATIONS

Linear Algebra

IMPLEMENTATION DATE

87/10

PROGRAM

```

READ MATRIX X
16 16 19 21 20 23
14 17 15 22 18 22
24 23 21 24 20 23
18 17 16 15 20 19
18 11 9 18 7 14
END OF DATA
LET EN = MATRIX EUCLIDEAN NORM X
PRINT EN

```

The resulting Euclidean norm is 101.23.