

MATRIX ADDITION

PURPOSE

Add 2 matrices, a matrix and a vector, or a matrix and a parameter.

DESCRIPTION

Matrix addition is carried out by adding the corresponding elements of the two matrices. If a parameter is added to a matrix, the parameter is added to each element of the matrix. If a vector is added to a matrix, the vector is added to each column of the matrix (i.e., the corresponding rows are added).

SYNTAX 1

LET <mat3> = MATRIX ADDITION <mat1> <mat2> <SUBSET/EXCEPT/FOR qualification>

where <mat1> is a matrix;

<mat2> is a matrix;

<mat3> is a matrix where the resulting matrix addition is saved;

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

This syntax is used to add 2 matrices.

SYNTAX 2

LET <mat3> = MATRIX ADDITION <mat1> <par> <SUBSET/EXCEPT/FOR qualification>

where <mat1> is a matrix;

<par> is a number or a parameter;

<mat3> is a matrix where the resulting matrix addition is saved;

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

This syntax is used to add a matrix and a parameter.

SYNTAX 3

LET <mat3> = MATRIX ADDITION <mat1> <var> <SUBSET/EXCEPT/FOR qualification>

where <mat1> is a matrix;

<var> is a variable;

<mat3> is a matrix where the resulting matrix addition is saved;

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

This syntax is used to add a matrix and a vector.

EXAMPLES

LET C = MATRIX ADDITION A B

LET C = MATRIX ADDITION A 2

LET C = MATRIX ADDITION A V

NOTE

Matrices to be added must have the same number of rows and columns. A matrix and a vector to be added must have the same number of rows. An error message is printed if they do not.

DEFAULT

None

SYNONYMS

None

RELATED COMMANDS

MATRIX SUBTRACTION	=	Perform a matrix subtraction.
MATRIX MULTIPLICATION	=	Perform a matrix multiplication.
MATRIX DETERMINANT	=	Compute a matrix determinant.
MATRIX EUCLIDIAN NORM	=	Compute the matrix Euclidean norm.
MATRIX INVERSE	=	Compute a matrix inverse.
MATRIX SOLUTION	=	Solve a system of linear equations.

REFERENCE

Any standard text on linear algebra.

APPLICATIONS

Linear Algebra

IMPLEMENTATION DATE

87/10

PROGRAM

```
READ MATRIX A
1 2 3
4 5 6
7 8 9
END OF DATA
READ MATRIX B
1 1 1
2 2 2
3 3 3
END OF DATA
LET C = MATRIX ADDITION A B
PRINT C
```

The resulting matrix C contains:

```
2 3 4
6 7 8
10 11 12
```