MATRIX SUBTRACTION

PURPOSE

       Subtract two matrices, a vector from a matrix, or a parameter from a matrix.

DESCRIPTION

       Matrix subtraction is carried out by subtracting the corresponding elements of the two matrices. If a parameter is subtracted from a matrix, the parameter is subtracted from each element of the matrix. If a vector is subtracted from a matrix, the vector is subtracted from each column of the matrix (i.e., the corresponding rows are subtracted).

SYNTAX 1

       LET <mat3> = MATRIX SUBTRACTION <mat1> <mat2> <SUBSET/EXCEPT/FOR qualification>
       where <mat1> is a matrix;
              <mat2> is a matrix;
               <mat3> is a matrix where the resulting matrix substraction is saved;
       and where the <SUBSET/EXCEPT/FOR qualification> is optional (and rarely used in this context).

       This syntax is used for 2 matrices.

SYNTAX 2

       LET <mat3> = MATRIX SUBTRACTION <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 substraction is saved;
       and where the <SUBSET/EXCEPT/FOR qualification> is optional (and rarely used in this context).

       This syntax is used for a matrix and a parameter.

SYNTAX 3

       LET <mat3> = MATRIX SUBTRACTION <mat1> <var>   <SUBSET/EXCEPT/FOR qualification>
       where <mat1> is a matrix;
               <var> is a variable;
               <mat3> is a matrix where the resulting matrix substraction is saved;
       and where the <SUBSET/EXCEPT/FOR qualification> is optional (and rarely used in this context).

       This syntax is used for a matrix and a vector.

EXAMPLES

       LET C = MATRIX SUBTRACTION A B
       LET C = MATRIX SUBTRACTION A 2
       LET C = MATRIX SUBTRACTION A V

NOTE

       Matrices to be subtracted must have the same number of rows and columns. A vector to be subtracted from a matrix must have the same number of rows as the matrix. An error message is printed if either of these conditions is violated.

DEFAULT

       None

SYNONYMS

       None

RELATED COMMANDS

MATRIX ADDITION	=	Perform a matrix addition.
MATRIX MULTIPLICATION	=	Perform a matrix multiplication.
MATRIX SOLUTION	=	Solve a system of linear equations.
CORRELATION MATRIX	=	Compute the correlation matrix of a matrix.
VARIANCE-COVA MATRIX	=	Compute the variance-covariance matrix of a matrix.

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 SUBTRACTION A B
PRINT C

The resulting matrix C contains:

0 1 2
2 3 4
4 5 6