CALCMATR

Calculations with matrices of integers or fractions of up to 4 rows x 5 columns

The main window

Collection of generated matrices

Matrix intro. /edition

Introducing/editing matrices

Rows and columns number selection
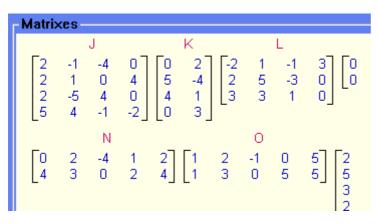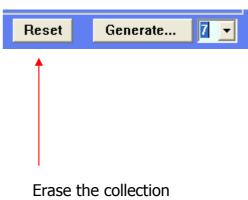
Random elements generation

Erase all

You can:

- Introduce the elements manually
- Generate random elements
- Incorporate a matrix from the collection

Generation of N aleatory matrices

To practice operations, properties, etc.

Selecting their number of the list and pressing the button **Generate...**
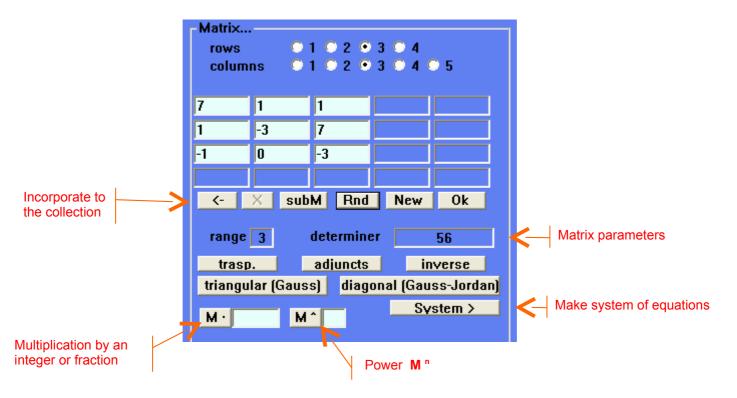

Erase the collection

Operations with one matrix (introduced or selected)

According to the matrix type they will be activated the buttons for the possible operations with it.

The result will appear on the same edition zone (therefore, if the original interests and it is not in the collection it is necessary to incorporate it previously)

Incorporate to the collection

Matrix parameters

Make system of equations

Multiplication by an integer or fraction

Power M^n

```
Matrix...
    rows        ○1 ○2 ◉3 ○4
    columns     ○1 ○2 ◉3 ○4 ○5

    [7]    [1]    [1]    [ ]    [ ]
    [1]    [-3]   [7]    [ ]    [ ]
    [-1]   [0]    [-3]   [ ]    [ ]
    [ ]    [ ]    [ ]    [ ]    [ ]

    [<-]  [X]  [subM]  [Rnd]  [New]  [Ok]

    range [3]    determiner        [56]
    [trasp.]        [adjuncts]       [inverse]
    [triangular (Gauss)]   [diagonal (Gauss-Jordan)]
    [M·][    ]    [M^][    ]     [System >]
```

Operations betwen matrices

```
Operation matrixes
    [K*M+P^2              ▼]  [Ok]
```
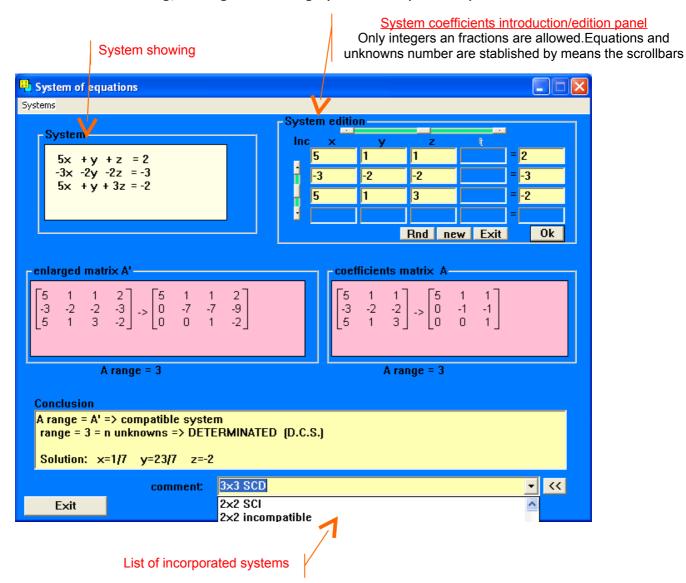
Introducing a chain of operations (addition, subtraction, product, raising to power) among matrices of the collection, the result will appear in the edition panel

Naturally, the chain of operations should respect them compatibilities among the operands: equal dimensions for the addition, columns of A = rows of B in A*B, etc...

Systems of equations

New
Generate
Erase

Option of the menu **matrices**

System of equations

It's possible also make a sytem from the
current matrix with the option Make system of the menu **Operations**

It allows introducing, editing and solving systems of up to 4 equations and 4 unknowns

System coefficients introduction/edition panel
Only integers an fractions are allowed.Equations and
unknowns number are stablished by means the scrollbars

System showing

System of equations

Systems

System

$$5x + y + z = 2$$
$$-3x -2y -2z = -3$$
$$5x + y + 3z = -2$$

System edition

Inc   x   y   z   t

5	1	1		=	2
-3	-2	-2		=	-3
5	1	3		=	-2
				=	

Rnd new Exit   Ok

enlarged matrix A'

$$\begin{bmatrix} 5 & 1 & 1 & 2 \\ -3 & -2 & -2 & -3 \\ 5 & 1 & 3 & -2 \end{bmatrix} -> \begin{bmatrix} 5 & 1 & 1 & 2 \\ 0 & -7 & -7 & -9 \\ 0 & 0 & 1 & -2 \end{bmatrix}$$

A range = 3

coefficients matrix A

$$\begin{bmatrix} 5 & 1 & 1 \\ -3 & -2 & -2 \\ 5 & 1 & 3 \end{bmatrix} -> \begin{bmatrix} 5 & 1 & 1 \\ 0 & -1 & -1 \\ 0 & 0 & 1 \end{bmatrix}$$

A range = 3

Conclusion

A range = A' => compatible system
range = 3 = n unknowns => DETERMINATED (D.C.S.)

Solution: $x=1/7$ $y=23/7$ $z=-2$

comment: | 3x3 SCD | ▼ | << |

2x2 SCI
2x2 incompatible

Exit

List of incorporated systems

Menu

Systems

New
Generate
Open
Save
Add to a file

Erases the edition panel for a new system
Generates a system with aleatory coefficients
Opens a systems relationship (file .sts)
Saves the current systems list in a new file
Add the current systems list to an existent file