Matrices

matrix = rectangular array of numbers

Note

Every system of linear equations can be represented by a matrix.

Example.

$$\begin{cases} -x_1 + 2x_2 + 3x_3 = 4 \\ 2x_1 + 6x_3 = 9 \\ 4x_1 - x_2 - 3x_3 = 0 \end{cases}$$

Elementary row operations:

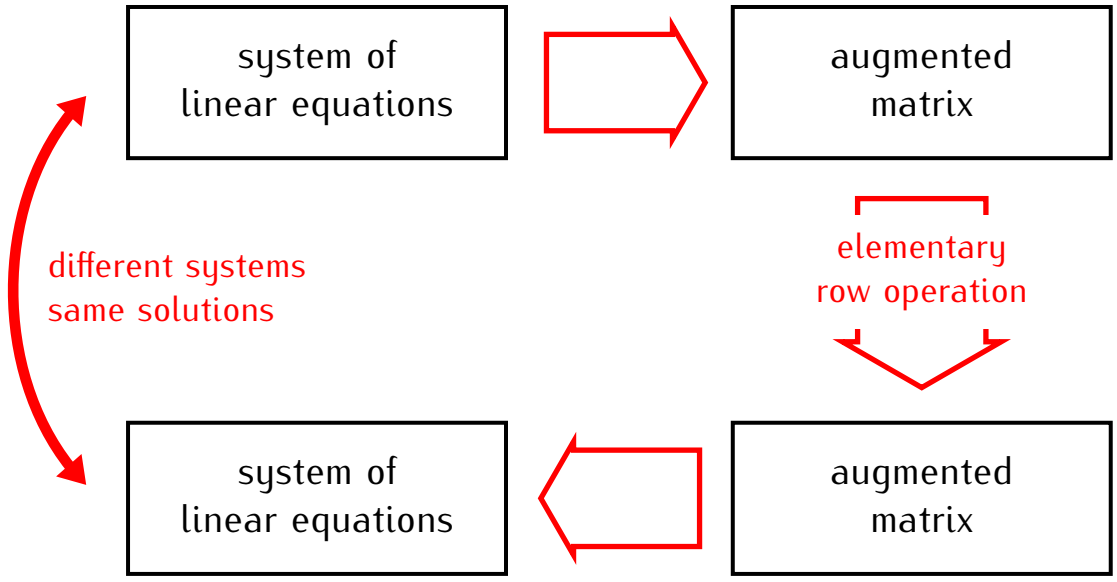
1) Interchange of two rows.

2) Multiplication of a row by a non-zero number.

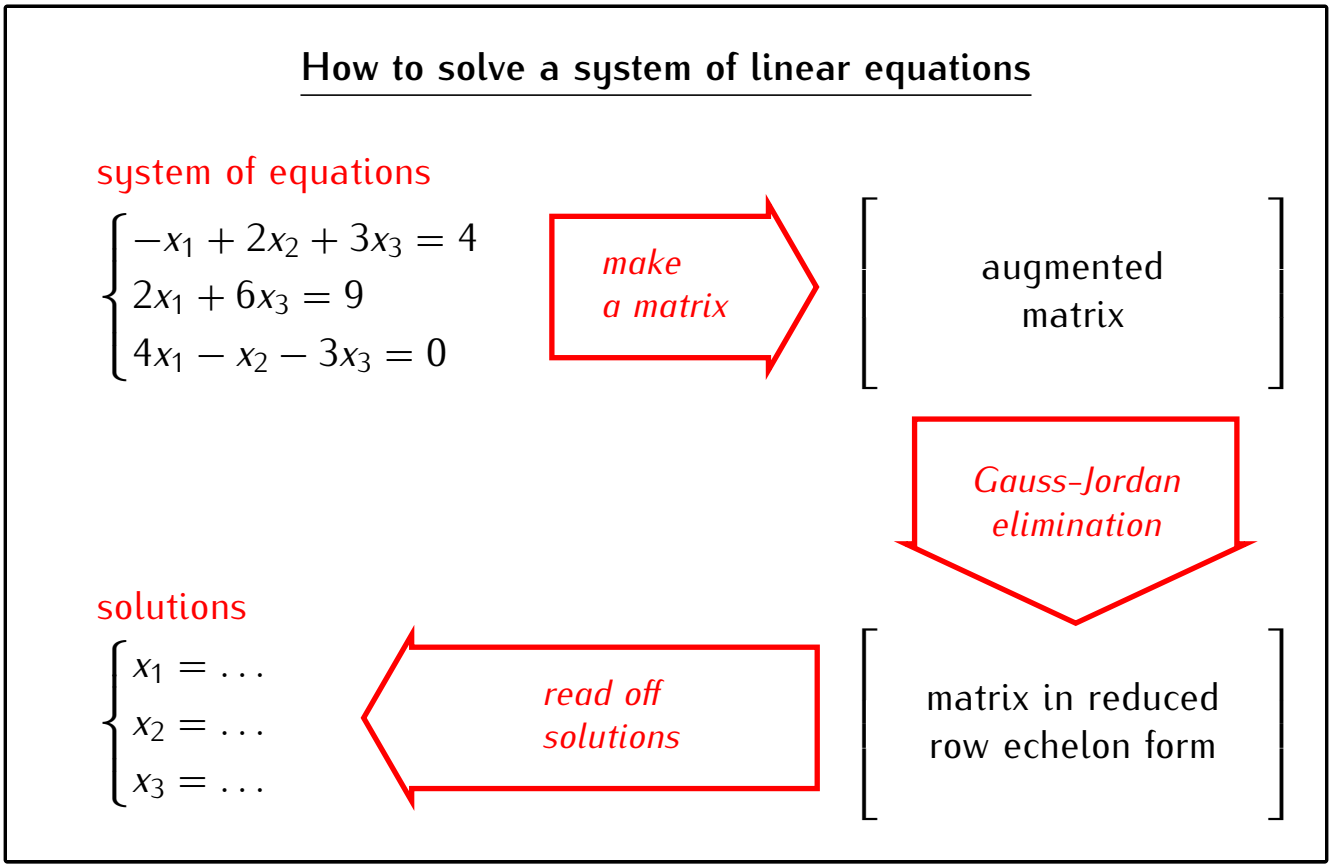
3) Addition of a multiple of one row to another row.

Proposition

Elementary row operations do not change solutions of the system of equations represented by a matrix.



Recall:



- Every system of linear equations can be represented by a matrix
- Elementary row operations:
  - interchange of two rows
  - multiplication of a row by a non-zero number
  - addition of a multiple of one row to another row.
- Elementary row operations do not change solutions of systems of linear equations.