1st Week Wednesday

24 Şubat 2021 Çarşamba 12:42

→ * Exchange two egns. i ↔ i

* Multiply an eqn. with a constant

c.i → i

-> * Multiply another eqn with a constant and add this to an eqn.

$$(c.j)+[i \rightarrow i]$$

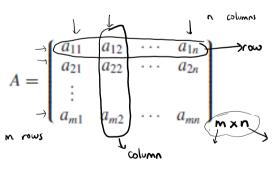
Definition

A system is said to be in strict triangular form if, in the kth equation, the coefficients of the first k-1 variables are all zero and the coefficient of x_k is nonzero $(k=1,\ldots,n)$.

(a)
$$3x_1 + 2x_2 - x_3 = -2$$

 $3x_1 + 2x_2 - x_3 = -2$
 $3x_1 + 2x_2 - x_3 = -2$
 $3x_1 + 2x_2 + x_3 = 5$
 $3x_1 + 2x_2 + x_3 = 2$
 $3x_1 + 2x_2$

* Same variables + Same solutions > Equivalent Systems



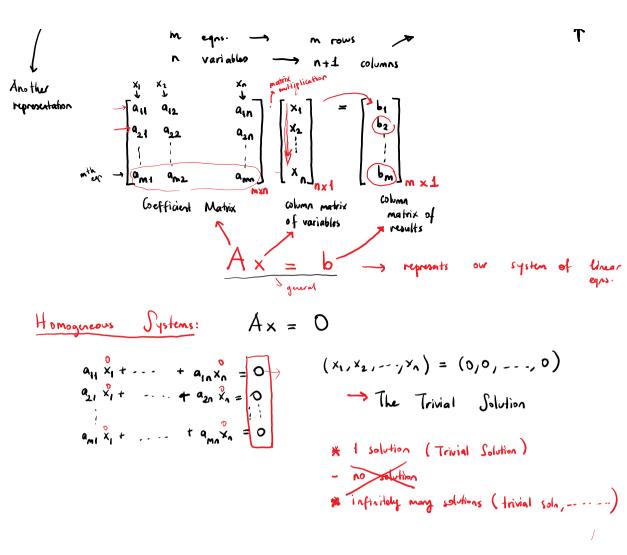
matrix

System of Linear Egns (>> Matrice.

$$a_{11}x_1 + a_{12}x_2 + \cdots + a_{1n}x_n \neq b_1 \quad \text{ister} \rightarrow \begin{bmatrix} a_{11} & a_{12} & \cdots & a_{1n}x_n \\ a_{21}x_1 & a_{22}x_2 & \cdots & a_{2n}x_n \\ \vdots & \vdots & \vdots & \vdots \\ a_{m1}x_1 & a_{m2}x_2 + \cdots + a_{mn}x_n \neq b_m \\ n \quad \text{variables} \rightarrow n+1 \quad \text{columns}$$

Augmented Matrix

$$a_{11}x_1 + a_{12}x_2 + \cdots + a_{1n}x_n \neq b_1 \quad \text{ister} \rightarrow \begin{bmatrix} a_{11} & a_{12} & \cdots & a_{1n} \\ a_{21} & a_{22} & \cdots & a_{2n} \\ a_{m1}x_1 & \cdots & \cdots & a_{mn}x_n \\ a_{m2} & \cdots & \cdots & \cdots \\ n & \text{variables} \rightarrow n+1 \quad \text{columns}$$



EXAMPLE 4 Solve the system

Apply Elementary Row Operations

*
$$r_i \leftrightarrow r_j$$

* $c.r_i \rightarrow r_i$

* $c.r_i + r_i \rightarrow r_i$