MALEK ALISMAIL / 20253833 / ~~2~~

2 $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} \cdot X = \begin{bmatrix} 3 & 0 \\ 7 & 2 \end{bmatrix}$

$X_{2\times 2}$ bir matrisidir.

$X = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$ varsayalım.

$$\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} \cdot \begin{bmatrix} a & b \\ c & d \end{bmatrix} = \begin{bmatrix} 3 & 0 \\ 7 & 2 \end{bmatrix}$$

$$\begin{bmatrix} a+2c & b+2d \\ 3a+4c & 3b+4d \end{bmatrix} = \begin{bmatrix} 3 & 0 \\ 7 & 2 \end{bmatrix}$$

$$\left.\begin{aligned} a+2c &= 3 \\ 3a+4c &= 7 \\ b+2d &= 0 \\ 3b+4d &= 2 \end{aligned}\right\} \Rightarrow \left[\begin{array}{cccc|c} 1 & 0 & 2 & 0 & 3 \\ 3 & 0 & 4 & 0 & 7 \\ 0 & 1 & 0 & 2 & 0 \\ 0 & 3 & 0 & 4 & 2 \end{array}\right]$$

Birim matrisine dönüştürelim.

$\xrightarrow{R_2 \longrightarrow R_2 - 3R_1}$ $\left[\begin{array}{cccc|c} 1 & 0 & 2 & 0 & 3 \\ 0 & 0 & -2 & 0 & -2 \\ 0 & 1 & 0 & 2 & 0 \\ 0 & 3 & 0 & 4 & 2 \end{array}\right]$

MALEK ALISMAIL /20253833 / 2

2

$$\xrightarrow{R_2 \longleftrightarrow R_3} \left[\begin{array}{cccc|c} 1 & 0 & 2 & 0 & 3 \\ 0 & 1 & 0 & 2 & 0 \\ 0 & 0 & -2 & 0 & 2 \\ 0 & 3 & 0 & 4 & 2 \end{array}\right]$$

$$\begin{matrix} R_4 \to R_4 - 3 \cdot R_2 \\ R_3 \to (-\frac{1}{2}) \cdot R_3 \end{matrix} \left[\begin{array}{cccc|c} 1 & 0 & 2 & 0 & 3 \\ 0 & 1 & 0 & 2 & 0 \\ 0 & 0 & 1 & 0 & 1 \\ 0 & 0 & 0 & -2 & 2 \end{array}\right]$$

$$\xrightarrow{R_4 \to (-\frac{1}{2}) R_4} \left[\begin{array}{cccc|c} 1 & 0 & 2 & 0 & 3 \\ 0 & 1 & 0 & 2 & 0 \\ 0 & 0 & 1 & 0 & 1 \\ 0 & 0 & 0 & 1 & -1 \end{array}\right]$$

$$\begin{matrix} R_2 \to R_2 - 2 \cdot R_4 \\ R_1 \to R_1 - 2 \cdot R_3 \end{matrix} \left[\begin{array}{cccc|c} 1 & 0 & 0 & 0 & 1 \\ 0 & 1 & 0 & 0 & 2 \\ 0 & 0 & 1 & 0 & 1 \\ 0 & 0 & 0 & 1 & -1 \end{array}\right] \Rightarrow \begin{matrix} a = 1 \\ b = 2 \\ c = 1 \\ d = -1 \end{matrix}$$

$$\Rightarrow X = \underbrace{\begin{bmatrix} 1 & 2 \\ 1 & -1 \end{bmatrix}}_{2 \times 2} \text{'dir.} \Rightarrow \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} \cdot \begin{bmatrix} 1 & 2 \\ 1 & -1 \end{bmatrix} = \begin{bmatrix} 3 & 0 \\ 7 & 2 \end{bmatrix}$$