

Κεφάλαιο: Συστήματα Γραμμικών Εξισώσεων

(1) (a) $\alpha \neq 4, -4$

(b) $\alpha = 4$

(γ) $\alpha = -4$

(2) (a)
$$\begin{bmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 \\ 0 & 0 & 1 & 0 & 2 \\ 0 & 0 & 0 & 1 & 3 \end{bmatrix}$$

(b)
$$\begin{bmatrix} 1 & 0 & 7/8 & 3/4 & 0 \\ 0 & 1 & 5/8 & -27/8 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{bmatrix}$$

(3) (i) Το σύστημα δεν έχει λύση

(ii) $x_1 = 3 - 2t + k$

$$x_2 = t$$

$$x_3 = k$$

$$x_4 = -1$$

$$x_5 = 2$$

$$\begin{aligned} \text{(iii)} \quad x_1 &= 1 \\ x_2 &= 2 \\ x_3 &= -1 \\ x_4 &= -2 \end{aligned}$$

$$(4) \text{ (i)} \quad x_1 = 3, \quad x_2 = -1, \quad x_3 = 2$$

$$\text{(ii)} \quad x_1 = -\frac{6}{5}, \quad x_2 = \frac{4}{5}, \quad x_3 = -1$$

$$\text{(iii)} \quad x_1 = 1, \quad x_2 = 1, \quad x_3 = 1, \quad x_4 = 1$$

$$\text{(iv)} \quad x_1 = 1, \quad x_2 = 0, \quad x_3 = -1, \quad x_4 = -2$$

$$\text{(v)} \quad x_1 = \frac{7t}{4}, \quad x_2 = \frac{2t}{4}, \quad x_3 = t$$

$$\text{(vi)} \quad x_1 = 1, \quad x_2 = 0, \quad x_3 = -3, \quad x_4 = 2$$

$$(5) \text{ (i)} \quad x_1 = x_2 = x_3 = 0$$

$$\text{(ii)} \quad x_1 = \frac{7k-5t}{2}, \quad x_2 = -3k+2t, \quad x_3 = k, \quad x_4 = t$$

$$\text{(iii)} \quad x_1 = x_2 = x_3 = x_4 = 0$$