

Β ΛΥΚΕΙΟΥ ΑΛΓΕΒΡΑ

20.7 1)

$$\text{Έστω } P(x) = x^3 + \lambda x^2 - 2x - 7$$

$$\text{Πρέπει : } P(1) = -5 \Rightarrow 1^3 + \lambda \cdot 1^2 - 2 \cdot 1 - 7 = -5 \Rightarrow 1 + \lambda - 2 - 7 = -5 \Rightarrow \lambda = 3$$

20.7 2)

$$\text{Έστω } P(x) = x^3 + 2x^2 - \lambda x - 1$$

$$\begin{aligned} \text{Πρέπει : } P(-3) &= -7 \Rightarrow (-3)^3 + 2(-3)^2 - \lambda(-3) - 1 = -7 \Rightarrow \\ &\Rightarrow -27 + 18 + 3\lambda - 1 = -7 \Rightarrow 3\lambda = 3 \Rightarrow \lambda = 1 \end{aligned}$$

20.7 3)

$$\text{Έστω } P(x) = x^3 + (\lambda + 1)x^2 - (3\lambda + 1)x - 7$$

$$\begin{aligned} \text{Πρέπει : } P(2) &= -1 \Rightarrow 2^3 + (\lambda + 1)2^2 - (3\lambda + 1) \cdot 2 - 7 = -1 \Rightarrow \\ &\Rightarrow 8 + 4\lambda + 4 - 6\lambda - 2 - 7 = -1 \Rightarrow -2\lambda = -4 \Rightarrow \lambda = 2 \end{aligned}$$

20.7 4)

$$\text{Έστω } P(x) = x^3 - (\lambda - 4)x^2 - x - \lambda + 1$$

$$\begin{aligned} \text{Πρέπει : } P(3) &= 1 \Rightarrow 3^3 - (\lambda - 4)3^2 - 3 - \lambda + 1 = 1 \Rightarrow \\ &\Rightarrow 27 - 9\lambda + 36 - 3 - \lambda + 1 = 1 \Rightarrow -10\lambda = -60 \Rightarrow \lambda = 6 \end{aligned}$$

20.7 5)

$$\text{Έστω } P(x) = -\lambda x^3 - (\lambda - 1)x^2 + (2\lambda + 3)x + 2\lambda - 5$$

$$\begin{aligned} \text{Πρέπει : } P(-2) &= -3 \Rightarrow -\lambda(-2)^3 - (\lambda - 1)(-2)^2 + (2\lambda + 3)(-2) + 2\lambda - 5 = -3 \Rightarrow \\ &\Rightarrow 8\lambda - 4\lambda + 4 - 4\lambda - 6 + 2\lambda - 5 = -3 \Rightarrow 2\lambda = 4 \Rightarrow \lambda = 2 \end{aligned}$$

20.7 6)

$$\text{Έστω } P(x) = \lambda^2 x^4 - 7\lambda x^2 + 8$$

$$\text{Πρέπει : } P(1) = -4 \Rightarrow \lambda^2 \cdot 1^4 - 7\lambda \cdot 1^2 + 8 = -4 \Rightarrow \lambda^2 - 7\lambda + 12 = 0$$

$$\Delta = 7^2 - 4 \cdot 12 = 1 \Rightarrow \lambda_{1,2} = \frac{7 \pm 1}{2} \begin{cases} 4 \\ 3 \end{cases}$$

20.7 7)

$$\text{Έστω } P(x) = 2\lambda^2 x^2 - 3x + 5\lambda^2$$

$$\begin{aligned} \text{Πρέπει : } P(-1) &= 10 \Rightarrow 2\lambda^2(-1)^2 - 3(-1) + 5\lambda^2 = 10 \Rightarrow 2\lambda^2 + 3 + 5\lambda^2 = 10 \Rightarrow \\ &\Rightarrow 7\lambda^2 = 7 \Rightarrow 7(\lambda^2 - 1) = 0 \Rightarrow (\lambda - 1)(\lambda + 1) = 0 \Rightarrow \lambda = 1 \text{ ή } \lambda = -1 \end{aligned}$$

20.7 8)

$$\text{Έστω } P(x) = \lambda^2 x^5 - x^3 + \lambda x + \lambda$$

$$\text{Πρέπει : } P(1) = 2 \Rightarrow \lambda^2 \cdot 1^5 - 1^3 + \lambda \cdot 1 + \lambda = 2 \Rightarrow \lambda^2 + 2\lambda - 3 = 0$$

$$\Delta = 2^2 + 4 \cdot 3 = 16 \Rightarrow \lambda_{1,2} = \frac{-2 \pm 4}{2} \begin{cases} \nearrow x_1 = -3 \\ \searrow x_2 = 1 \end{cases}$$