

Β ΛΥΚΕΙΟΥ ΑΛΓΕΒΡΑ

4.2 1)

Λύνουμε με την μέθοδο των αντιθέτων συντελεστών

$$-\sqrt{3} \cdot \begin{cases} \sqrt{3}x + 2y = 5 \\ x + \sqrt{3}y = 2\sqrt{3} \end{cases} \Rightarrow \begin{cases} \cancel{\sqrt{3}x} + 2y = 5 \\ \cancel{-\sqrt{3}x} - 3y = -6 \end{cases} (+)$$

$$-y = -1 \Rightarrow y = 1$$

Ακόμη $x + \sqrt{3}y = 2\sqrt{3} \Rightarrow x + \sqrt{3} \cdot 1 = 2\sqrt{3} \Rightarrow x = 2\sqrt{3} - \sqrt{3} \Rightarrow x = \sqrt{3}$

Άρα $(x, y) = (\sqrt{3}, 1)$

4.2 2)

Λύνουμε με τη μέθοδο των αντίθετων συντελεστών :

$$-\sqrt{2} \cdot \begin{cases} 2x - \sqrt{2}y = 4 \\ \sqrt{2}x + y = 4\sqrt{2} \end{cases} \Rightarrow \begin{cases} 2x - \sqrt{2}y = 4 \\ -2x - \sqrt{2}y = -8 \end{cases} (+)$$

$$-2\sqrt{2}y = -4 \Rightarrow y = \frac{2}{\sqrt{2}} = \frac{2\sqrt{2}}{2} = \sqrt{2}$$

Ακόμη $2x - \sqrt{2}y = 4 \Rightarrow 2x - \sqrt{2} \cdot \sqrt{2} = 4 \Rightarrow 2x - 2 = 4 \Rightarrow 2x = 6 \Rightarrow x = 3$

Άρα $(x, y) = (3, \sqrt{2})$

4.2 3)

$$\cdot\sqrt{2} \cdot \begin{cases} x - y = \sqrt{3} - \sqrt{2} \\ \sqrt{3}x + \sqrt{2}y = 5 \end{cases} \Rightarrow \begin{cases} \sqrt{2}x - \sqrt{2}y = \sqrt{6} - 2 \\ \sqrt{3}x + \sqrt{2}y = 5 \end{cases} (+)$$

$$(\sqrt{2} + \sqrt{3})x = \sqrt{6} + 3 \Rightarrow x = \frac{\sqrt{6} + 3}{\sqrt{2} + \sqrt{3}} = \frac{(\sqrt{6} + 3)(\sqrt{2} - \sqrt{3})}{(\sqrt{2} + \sqrt{3})(\sqrt{2} - \sqrt{3})} \Rightarrow$$

$$\Rightarrow \frac{\sqrt{6}\sqrt{2} - \sqrt{3}\sqrt{6} + 3\sqrt{2} - 3\sqrt{3}}{-1} \Rightarrow \frac{2\sqrt{3} - 3\sqrt{2} + 3\sqrt{2} - 3\sqrt{3}}{-1} \Rightarrow \sqrt{3}$$

Ακόμη $x - y = \sqrt{3} - \sqrt{2} \Rightarrow \sqrt{3} - y = \sqrt{3} - \sqrt{2} \Rightarrow y = \sqrt{2}$

Άρα $(x, y) = (\sqrt{3}, \sqrt{2})$

4.2 4)

$$2 \cdot \begin{cases} \sqrt{5}x + 3y = 7 \\ 2x + \sqrt{5}y = 3\sqrt{5} \end{cases} \Rightarrow \begin{cases} 2\sqrt{5}x + 6y = 14 \\ -2\sqrt{5}x - 5y = -15 \end{cases} (+)$$

$$y = -1$$

Ακόμη $2x + \sqrt{5}y = 3\sqrt{5} \Rightarrow 2x - \sqrt{5} = 3\sqrt{5} \Rightarrow x = 2\sqrt{5}$

Άρα $(x, y) = (2\sqrt{5}, -1)$

4.2 5)

$$-\sqrt{3} \cdot \begin{cases} \sqrt{3}x + \sqrt{2}y = -4 \\ 3\sqrt{2}x + \sqrt{3}y = \sqrt{6} \end{cases} \Rightarrow \begin{cases} -3x - \sqrt{6}y = 4\sqrt{3} \\ 6x + \sqrt{6}y = \sqrt{6}\sqrt{2} \end{cases} (+)$$

$$3x = 4\sqrt{3} + \sqrt{6}\sqrt{2} \Rightarrow 3x = 4\sqrt{3} + 2\sqrt{3} \Rightarrow x = \frac{6\sqrt{3}}{3} = 2\sqrt{3}$$

Ακόμη $\sqrt{3}x + \sqrt{2}y = -4 \Rightarrow 2\sqrt{3}\sqrt{3} + \sqrt{2}y = -4 \Rightarrow 6 - \sqrt{2}y = -4 \Rightarrow$

$$\Rightarrow \sqrt{2}y = -10 \Rightarrow y = \frac{-10}{\sqrt{2}} \Rightarrow y = \frac{-10\sqrt{2}}{2} = -5\sqrt{2}$$

$$\text{Apr}\alpha \text{ (x,y)}=\left(2\sqrt{3},-5\sqrt{2}\right)$$