

Ενότητα 13

6. $\lambda x^2 - (\lambda - 1)x - 1 = 0 \quad \lambda \neq 0$

α) Έχουμε ρίζα $\omega = -2$ σημαίνει ότι
όπου $x = -2$

$$\lambda \cdot (-2)^2 - (\lambda - 1)(-2) - 1 = 0$$

$$4\lambda + 2(\lambda - 1) - 1 = 0$$

$$4\lambda + 2\lambda - 2 - 1 = 0$$

$$6\lambda = 3$$

$$\underline{\underline{\lambda = \frac{1}{2}}}$$

β) $\Delta = b^2 - 4ac = [(\lambda - 1)]^2 - 4 \cdot \lambda \cdot (-1)$

$$\Delta = \lambda^2 - 2\lambda + 1 + 4\lambda = \lambda^2 + 2\lambda + 1$$

$$\Delta = (\lambda + 1)^2 \geq 0$$



$$7. \textcircled{a} \quad \lambda x^2 - 2x - \lambda = 0 \quad \lambda \neq 0$$

$$\Delta = B^2 - 4ac = (-2)^2 - 4\lambda(-\lambda) = 4 + 4\lambda^2 > 0$$

$$\textcircled{b} \quad \lambda x^2 + 2x - \lambda - 2 = 0 \quad , \quad \lambda \neq 0$$

$$\Delta = B^2 - 4ac = 2^2 - 4 \cdot \lambda \cdot (-\lambda - 2) =$$

$$= 4 - 4\lambda(-\lambda - 2) =$$

$$= 4 + 4\lambda^2 + 8\lambda = 4\lambda^2 + 8\lambda + 4$$

$$= 4(\lambda^2 + 2\lambda + 1) =$$

$$= 4(\lambda + 1)^2 \geq 0,$$



$$8. \textcircled{a} \quad x^2 - 2\lambda x + \lambda^2 - 1 = 0$$

$$\Delta = (-2\lambda)^2 - 4 \cdot 1 \cdot (\lambda^2 - 1)$$

$$\Delta = 4\lambda^2 - 4(\lambda^2 - 1)$$

$$\Delta = 4\lambda^2 - 4\lambda^2 + 4$$

$$\Delta = 4 > 0$$

$$x_{1,2} = \frac{-B \pm \sqrt{\Delta}}{2a} = \frac{-(-2\lambda) \pm 2}{2} = \frac{2\lambda \pm 2}{2} \begin{cases} \frac{2\lambda+2}{2} \\ \frac{2\lambda-2}{2} \end{cases}$$

$$\textcircled{b} \quad x^2 - (\lambda-2)x - \lambda+1 = 0$$

$$\Delta = B^2 - 4ac = [-(\lambda-2)]^2 - 4 \cdot 1 \cdot (-\lambda+1)$$

$$\Delta = \lambda^2 - \cancel{4\lambda} + \cancel{4} + \cancel{4\lambda} - \cancel{4}$$

$$\Delta = \lambda^2$$

- $\Delta \checkmark \quad \lambda = 0 \quad \text{τοτε} \quad \Delta = 0 \quad \text{αρα}$
 $\epsilon\chi\omega \quad \delta\iota\eta\delta\eta\iota \quad \rho\iota\tau\alpha \quad \kappa \quad \sigma\eta\mu\alpha \quad \alpha\lambda\omega\varsigma$

$$x = - \frac{B}{2a} = - \frac{-(\lambda-2)}{2 \cdot 1} = \frac{\lambda-2}{2}$$

Αφου $\lambda = 0$ προφανως $x = \frac{0-2}{2}$

$$x = -1$$

- $\Delta \checkmark \quad \lambda \neq 0 \quad \text{τοτε} \quad \Delta = \lambda^2 > 0$
 $\text{αρα} \quad \epsilon\chi\omega \quad \delta\iota\omega \quad \rho\iota\tau\alpha,$

$$x_{1,2} = \frac{-B \pm \sqrt{\Delta}}{2a} = \frac{-(-(\lambda-2)) \pm \lambda}{2}$$

$$x_{1,2} = \frac{\lambda-2 \pm \lambda}{2} \begin{cases} \frac{\lambda-2+\lambda}{2} = \frac{2\lambda-2}{2} \\ \frac{\lambda-2-\lambda}{2} = -1 \end{cases}$$

14.

$$(A) x^2 - 2x + \lambda = 0$$

$$\Delta = 4 - 4\lambda = 4(1 - \lambda)$$

$$1. \text{ Av } \Delta > 0 \Rightarrow 1 - \lambda > 0 \Rightarrow \underline{\underline{\lambda < 1}} \quad 2 \text{ pilas}$$

$$2. \text{ Av } \Delta < 0 \Rightarrow \lambda > 1 \quad 0 \text{ pilas}$$

$$3. \text{ Av } \Delta = 0 \Rightarrow \lambda = 1 \quad 1 \text{ pila di titik}$$

$$(B) x^2 - x - \lambda + 1 = 0$$

$$\Delta = 1 - 4(-\lambda + 1) = 1 + 4\lambda - 4$$

$$\Delta = 4\lambda - 3$$

$$1. \text{ Av } \Delta > 0 \Rightarrow 4\lambda - 3 > 0 \Rightarrow \lambda > \frac{3}{4} \quad 2 \text{ pilas}$$

$$2. \text{ Av } \Delta < 0 \Rightarrow \lambda < \frac{3}{4} \quad 0 \text{ pilas}$$

$$3. \text{ Av } \Delta = 0 \quad \lambda = \frac{3}{4} \quad 1 \text{ pila di titik}$$

10. Η εξίσωση $x^2 - (2\lambda - 1)x + 1 - 2\lambda = 0$

εχει δινη ριζα!

Αρα $\Delta = 0$.

$$B^2 - 4\alpha\gamma = 0$$

$$[-(2\lambda - 1)]^2 - 4 \cdot 1 \cdot (1 - 2\lambda) = 0$$

$$4\lambda^2 - 4\lambda + 1 - 4 + 8\lambda = 0$$

$$4\lambda^2 + 4\lambda - 3 = 0$$

$$\Delta^* = 16 + 48 = 64$$

$$\lambda = \frac{-4 \pm 8}{8}$$

$$\frac{1}{2}$$

$$-\frac{3}{2}$$

$$X = \frac{-B}{2\alpha} = \frac{+2\lambda - 1}{2}$$

$\lambda = \frac{1}{2} \rightarrow \underline{\underline{0}}$

$\lambda = -\frac{3}{2} \rightarrow \underline{\underline{-2}}$

ΕΥΟΤΗΤΑ II

6. (B) $d(3x, -1) = 3 + 5x$

$$|3x - (-1)| = 3 + 5x$$

$$|3x + 1| = 3 + 5x$$

ΠΡΟΤΥ $3 + 5x > 0 \Rightarrow 5x > -3 \Rightarrow x > -\frac{3}{5}$

$$|3x + 1| = 3 + 5x$$

$$3x + 1 = 3 + 5x$$

$$3x - 5x = 3 - 1$$

$$-2x = 2$$

$$\cancel{x = -1}$$

$$| \quad 3x + 1 = -3 - 5x$$

$$3x + 5x = -3 - 1$$

$$8x = -4$$

$$\cancel{x = -\frac{1}{2}}$$

Αδυναμία.

$$\textcircled{8} \quad d(x, 1) = x + 2$$

$$|x-1| = x+2$$

$$\text{при } x+2 \geq 0$$

$$\underline{\underline{x \geq -2}}$$

$$\cancel{x-1 = x+2}$$

$$\vee \quad x-1 = -x-2$$

Абсурт

$$x+x = -2+1$$

$$2x = -1$$

$$x = -\frac{1}{2}$$



$$9. \quad d(2x, 3) = 3 - 2x$$

$$(a) \text{ Nds } x \leq \frac{3}{2}$$

$$\text{поэтому } |2x-3| = 3-2x$$

$$\text{при } 2x-3 \leq 0$$

$$2x \leq 3$$

$$x \leq \frac{3}{2}$$

$$(b) \quad K = |2x-3| - 2|3-x|$$

$$\bullet \quad x \leq \frac{3}{2} \Rightarrow 2x \leq 3 \Rightarrow 2x-3 \leq 0$$

$$\bullet \quad x \leq \frac{3}{2} \Rightarrow -x \geq -\frac{3}{2}$$

$$3-x \geq 3-\frac{3}{2}$$

$$3-x \geq 3$$

$$K = -2x + 3 - 2(3-x)$$

$$K = -2x + 3 - 6 + 2x$$

$$K = -3$$

10. (B) $||x-2|+3|=5$

$$|x-2|+3=5$$

$$\vee \quad |x-2|+3=-5$$

$$|x-2|=2$$

$$|x-2|=-8$$

$$x-2=2 \quad \vee \quad x-2=-2$$

Answer



$$(x=4)$$

$$(x=0)$$

8) $| \overset{+}{|x|-x} | + | \overset{+}{|x|+x} | = 2$

$$\bullet |x| \geq x \Rightarrow |x|-x \geq 0$$

$$\bullet |x| \geq -x \Rightarrow |x|+x \geq 0$$

$$|x| - \cancel{x} + |x| + \cancel{x} = 2$$

$$2|x| = 2$$

$$\Rightarrow |x|=1$$

$$(x=1)$$

$$(x=-1)$$

$$11. \textcircled{B} |3|x|-2| = 2$$

$$3|x|-2 = 2$$

$$3|x| = 4$$

$$|x| = \frac{4}{3}$$

$$x = \frac{4}{3} \quad \vee \quad x = -\frac{4}{3}$$

$$\vee \quad 3|x|-2 = -2$$

$$3|x| = 0$$

$$\underline{\underline{x=0}}$$

15. (a) $|x^2 - 2x| + |x^2 - 4| = 0$

$$x^2 - 2x = 0$$

or

$$x^2 - 4 = 0$$

$$x(x-2) = 0$$

$$(x-2)(x+2) = 0$$

~~$x = 0$~~

$x = 2$ ✓

✓
 $x = 2$

~~$x = -2$~~

Εποραιο Μαθημα

Ενοτητα 11

(4) α γ ε

(5) α γ ε

(6) α γ

(10) α γ

(11) α γ ε

(12)

Ενοτητα 12

(5)

(9)

(10)

Ενοτητα 13

(4)