

ΛΥΣΕΙΣ ΔΙΑΓΩΝΙΣΜΑΤΟΣ ΑΛΓΕΒΡΑ

ΠΑΡΑΤΗΡΗΣΕΙΣ

Α' ΛΥΚΕΙΟΥ 9/2/19

ΖΗΤΗΜΑ Α

A2) $\left. \begin{matrix} \text{Α} \text{ ή } \text{Β} \text{ ή } \text{Γ} \\ \alpha \cdot \gamma < 0 \Leftrightarrow -4\alpha\gamma > 0 \\ \beta^2 \geq 0 \end{matrix} \right\} \begin{matrix} (+) \\ \Rightarrow \end{matrix} \beta^2 - 4\alpha\gamma > 0 \Leftrightarrow \Delta > 0$

A3) 1) 1 2) 1 3) Σ 4) Σ 5) Σ

ΖΗΤΗΜΑ Β

B1) $f(x) = -2x^2 + x + 1$ $\Delta = 1 + 8 = 9$ $x_{1,2} = \frac{-1 \pm 3}{-4} \Rightarrow -\frac{1}{2}$ $\frac{1}{4}$
 $\begin{matrix} -1/2 & 1 \\ \hline - & + & - \end{matrix}$

$\left. \begin{matrix} -2019 < -\frac{1}{2} \text{ ή } \alpha \text{ ή } f(-2019) < 0 \\ -\frac{1}{2} < 0,00013 < 1 \text{ ή } \alpha \text{ ή } f(0,00013) > 0 \\ 2^{65} > 1 \text{ ή } \alpha \text{ ή } f(2^{65}) < 0 \end{matrix} \right\} \Rightarrow f(-2019) f(0,00013) f(2^{65}) > 0$

B2) Παράδειγμα 4 σελ. 133 ΒΕΔ

B3) i) Παράδειγμα 3 σελ. 131 ΒΕΔ

ii) $\frac{-x^2 + 4x + 5}{x^2 - 3x - 4} = \frac{-(x+1)(x-5)}{(x-4)(x+1)} = \frac{-(x-5)}{x-4}$

ΖΗΤΗΜΑ Γ

Γ1) Παράδειγμα 6 σελ. 99 ΒΕΔ

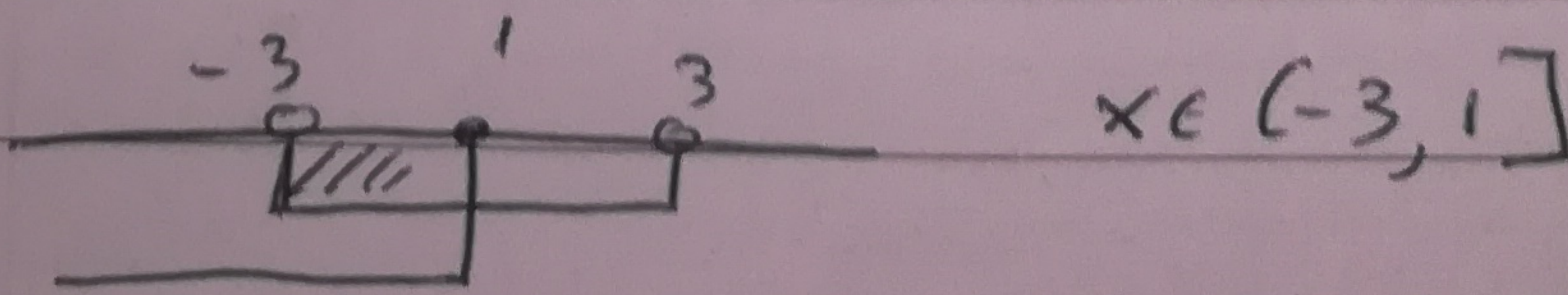
Γ2) Παράδειγμα 10 σελ. 93 ΒΕΔ με ανίσωτα ή όχι εξίσωτα

... ή $|x+3| < 38 \Leftrightarrow -38 < x+3 < 38 \Leftrightarrow -41 < x < 35$

Γ3) $x^2 - 9 < 0 \Leftrightarrow x^2 < 9 \Leftrightarrow \sqrt{x^2} < \sqrt{9} \Leftrightarrow |x| < 3 \Leftrightarrow -3 < x < 3$

$|2x-1| \leq |3-2x| \Leftrightarrow (2x-1)^2 \leq (3-2x)^2 \Leftrightarrow 4x^2 - 4x + 1 \leq 9 + 4x^2 - 12x \Leftrightarrow 8x \leq 8 \Leftrightarrow x \leq 1$

Αρλ



ΖΗΤΗΜΑ Δ

$$1) \Delta = 25 + 16 = 41 > 0, \quad x_1 + x_2 = -5, \quad x_1 \cdot x_2 = -4$$

$$2) i) x_1^2 + x_2^2 = (x_1 + x_2)^2 - 2x_1x_2 = (-5)^2 - 2(-4) = 25 + 8 = 33$$

$$\frac{1}{x_1} + \frac{1}{x_2} = \frac{x_1 + x_2}{x_1x_2} = \frac{-5}{-4} = \frac{5}{4}$$

$$x_1^4 + x_2^4 = (x_1^2)^2 + (x_2^2)^2 = (x_1^2 + x_2^2)^2 - 2x_1^2x_2^2 = (33)^2 - 2(x_1x_2)^2 = 1089 - 32 = 1057$$

$$3) S = p_1 + p_2 = 2x_1 - 3 + 2x_2 - 3 = 2(x_1 + x_2) - 6 = -10 - 6 = -16$$

$$P = p_1 \cdot p_2 = (2x_1 - 3)(2x_2 - 3) = 4x_1x_2 - 6x_1 - 6x_2 + 9 = 4(-4) - 6(x_1 + x_2) + 9 = -16 + 30 + 9 = 23$$

$$x^2 - 5x + P = 0 \Leftrightarrow x^2 + 16x + 23 = 0$$

$$19) i) x^3 - 5x^2 + 7x = 0 \Leftrightarrow x(x^2 - 5x + 7) = 0 \Leftrightarrow \boxed{x=0} \text{ ή } x^2 - 5x + 7 = 0$$

$$\Delta = 25 - 28 = -3 < 0$$

$$ii) \checkmark \checkmark x \neq 0$$

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$$b) x - 5 + \frac{5}{x} + \frac{1}{x(x^2 - 5x + 7)} = 0 \Leftrightarrow x^2 - 5x + 5 + \frac{1}{x^2 - 5x + 7} = 0 \Leftrightarrow$$

$$x^2 - 5x + 7 - 2 + \frac{1}{x^2 - 5x + 7} = 0 \text{ θέλω } x^2 - 5x + 7 = \omega \text{ ή } x$$

$$\omega - 2 + \frac{1}{\omega} = 0 \Leftrightarrow \omega^2 - 2\omega + 1 = 0 \Leftrightarrow (\omega - 1)^2 = 0 \Leftrightarrow \omega = 1$$

$$\text{ή } x^2 - 5x + 7 = 1 \Leftrightarrow x^2 - 5x + 6 = 0$$

$$\Delta = 25 - 24 = 1 \quad x_{1,2} = \frac{5 \pm 1}{2} \rightarrow \begin{matrix} 3 \\ 2 \end{matrix} \quad \Delta \text{ ΕΚΤΕΣ}$$

$$\text{ή } x = 2 \text{ ή } x = 3$$