

**ΑΠΑΝΤΗΣΕΙΣ ΣΤΟ ΔΙΑΓΩΝΙΣΜΑ ΤΩΝ ΜΑΘΗΜΑΤΙΚΩΝ ΠΡΟΣΑΝΑΤΟΛΙΣΜΟΥ  
Β' ΛΥΚΕΙΟΥ**

**Κυριακή 20 Μαρτίου 2016**

**ΘΕΜΑ Α**

**A1.**  $(x-x_0)^2 + (y-y_0)^2 = p^2$

**A2.** Πρέπει  $A^2 + B^2 - 4\Gamma > 0$ ,  $K\left(-\frac{A}{2}, \frac{-B}{2}\right)$  και  $\rho = \frac{\sqrt{A^2 + B^2 - 4\Gamma}}{2}$

**A3.**  $\gamma$

**A4.**  $\alpha \rightarrow 3$

$\beta \rightarrow 1$

**A5.** α. Σ

β. Λ

γ. Λ

**ΘΕΜΑ Β**

**B1.**  $M(4, 4)$

**B2.**  $\lambda_{AM} = \frac{3}{5}$  οπότε AM:  $y-4 = \frac{3}{5}(x-4) = \dots$

**B3.**  $\lambda_{AD} = 1$  οπότε AD:  $y-1 = 1(x+1) = \dots$

**B4.**  $d(A, B\Gamma) = \frac{|1 \cdot (-1) + 1 \cdot 1 - 8|}{\sqrt{1^2 + 1^2}} = \frac{8}{\sqrt{2}} = 4\sqrt{2}$

**B5.**  $\frac{\overrightarrow{AB}}{\overrightarrow{A\Gamma}} = \begin{pmatrix} 4 \\ 6 \end{pmatrix}$   $\det(\overrightarrow{AB}, \overrightarrow{A\Gamma}) = \begin{vmatrix} 4 & 4 \\ 6 & 2 \end{vmatrix} = 8 - 24 = -16$

Αρχ. (ΑΒΓ) =  $\frac{1}{2} |-16| = 8\text{τ.μ.}$

## ΘΕΜΑ Γ

$$\left. \begin{array}{l} (\text{AB}) = \sqrt{(1+2)^2 + (3-2)^2} = \sqrt{10} \\ \text{d}(A, \varepsilon) = \frac{|3 \cdot 1 + 1 \cdot 3 + \alpha|}{\sqrt{3^2 + 1^2}} = \frac{|6 + \alpha|}{\sqrt{10}} \end{array} \right\} \text{οπότε } |6 + \alpha| = 10$$

$$\begin{aligned} \alpha + 6 &= 10 \quad \text{ή } \alpha + 6 = -10 \\ \alpha &= 4 \quad \text{ή } \alpha = -16 \end{aligned}$$

Γ2.

i) Για  $\alpha = 4$  έχουμε ε:  $3x+y+4=0$

Η ε τέμνει τον γραμμή  $x=0$  δηλαδή  $y = -4$  αριθμό  $\Gamma(0, -4)$

$$\left. \begin{array}{l} \vec{AB} = (-3, -1) \\ \vec{AG} = (-1, -7) \end{array} \right\} \det \begin{pmatrix} \vec{AB}, \vec{AG} \end{pmatrix} = \begin{vmatrix} -3 & -1 \\ -1 & -7 \end{vmatrix} = 21 - (1) = 20$$

$$\text{Οπότε } (ABG) = \frac{1}{2} |20| = 10 \text{ τ.μ.}$$

$$ii) \text{ Εστω } OM \perp \varepsilon \text{ τότε } \left. \begin{array}{l} \lambda_{OM} \cdot \lambda_{\varepsilon} = -1 \\ \lambda_3 = \frac{-3}{1} = -3 \end{array} \right\} \lambda_{OM} = \frac{1}{3}$$

$$\text{Οπότε } OM: y = \frac{1}{3}x$$

Βρίσκουμε το σημείο τομής

$$\left. \begin{array}{l} y = \frac{1}{3}x \\ 3x + y + 4 = 0 \end{array} \right\} \Leftrightarrow \left. \begin{array}{l} y = \frac{1}{3}x \\ 3x + \frac{1}{3}x = -4 \end{array} \right\} \Leftrightarrow \left. \begin{array}{l} y = \frac{1}{3}x \\ 10x = -12 \end{array} \right\} \Leftrightarrow \left. \begin{array}{l} y = \frac{1}{3} \left( -\frac{6}{5} \right) = -\frac{2}{5} \\ x = -\frac{6}{5} \end{array} \right.$$

$$\text{Οπότε } M \left( -\frac{6}{5}, -\frac{2}{5} \right)$$

## ΘΕΜΑ Δ

Δ1.  $A = -6\lambda$ ,  $B = 2\lambda$ ,  $G = 0$  οπότε  $A^2 + B^2 - 4G = 40\lambda^2 > 0$  για κάθε  $\lambda \in \mathbb{R}^*$

$$\text{Άριθμό } K(3\lambda, -\lambda) \text{ και } p = \frac{\sqrt{40\lambda^2}}{2} = \frac{2\sqrt{10}|\lambda|}{2} = \sqrt{10}|\lambda|$$

$$\Delta 2. d(\kappa, \varepsilon) = \frac{|3\lambda \cdot 3 + (-1)(-\lambda) + 0|}{\sqrt{3^2 + (-1)^2}} = \frac{|10\lambda|}{\sqrt{10}} = \frac{10|\lambda|}{\sqrt{10}} = \sqrt{10}|\lambda| = p$$

Οπότε οι κύκλοι από την (I) εφάπτονται στην ε.

$$\Delta 3. \left. \begin{array}{l} x = 3\lambda \\ y = -\lambda \end{array} \right\} \left. \begin{array}{l} x = 3(-y) \\ y = -\lambda \end{array} \right\} \left. \begin{array}{l} x + 3y = 0 \\ y = -\lambda \end{array} \right\}$$