1) iii) Να βρεθεί η ε: που διέρχ O και $\varepsilon \perp \Gamma\Delta$

σ. 64

$\Gamma(-1,0)$, $\Delta(0,2)$ έχω $\varepsilon \perp \Gamma\Delta \Leftrightarrow \lambda_\varepsilon \cdot \lambda_{\Gamma\Delta} = -1 \Leftrightarrow$

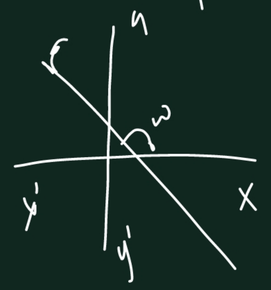
$\lambda_\varepsilon \cdot \frac{0-2}{-1-0} = -1 \Leftrightarrow \lambda_\varepsilon \cdot \frac{-2}{-1} = -1 \Leftrightarrow \frac{\lambda_\varepsilon \cdot 2}{2} = \frac{-1}{2} \Leftrightarrow \lambda_\varepsilon = -1/2$

Έχω ε: διέρχ $O(0,0) \Longrightarrow \varepsilon: y = \lambda x \Leftrightarrow$ $\varepsilon: y = -1/2 \cdot x$

2) ii) $A(-1,3)$ Να βρεθεί η γωνία που σχηματίζει η ε: με

σ. 64 $B(0,4)$ τον $x'x$ η διέρχ A, B

Πρέπει να βρω το $\lambda = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3-4}{-1-0} = \frac{-1}{-1} = 1 \Leftrightarrow \lambda = -1$



Έχω $\varepsilon\phi\hat{\omega} = -1 \xrightarrow{2^{\circ}}$ $\hat{\omega} = 135^{\circ}$

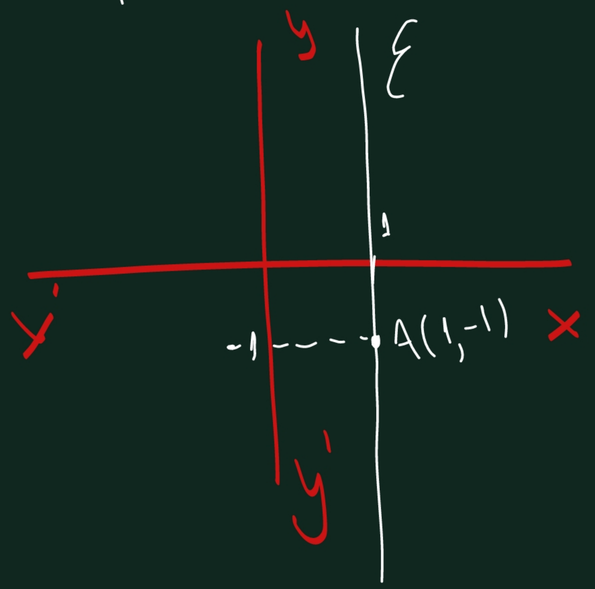
$0 \le \omega < \pi$

3) ii) Να βρεθεί ε: που διέρχ $A(1,-1)$

σ. 64

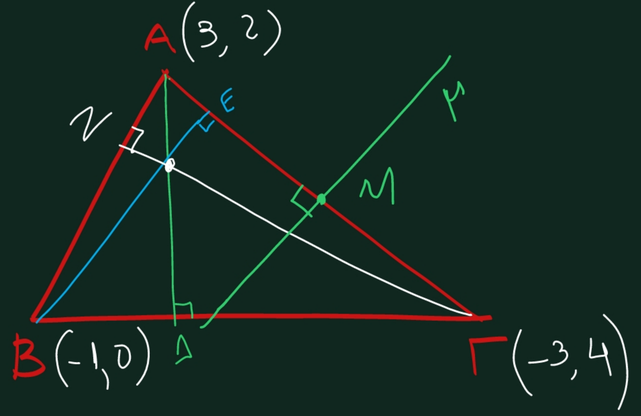
$\varepsilon \parallel \vec{\delta}=(0,1) \Longleftrightarrow \lambda_\varepsilon = \lambda_\delta \Longrightarrow \lambda_\varepsilon = \frac{1}{0}$ δεν ορίζ[ε]ται

Άρα $\varepsilon \perp x'x \Longrightarrow \varepsilon: x = x_0 \xrightarrow{x_0=1}$ $\varepsilon: x = 1$



4) Έστω $A\hat{B}\Gamma$ με $A(3,2)$, $B(-1,0)$ και $\Gamma(-3,4)$

σ. 64



i) $A\Delta$ Έχω $A\Delta \perp B\Gamma \Leftrightarrow$

$\lambda_{A\Delta} \cdot \lambda_{B\Gamma} = -1 \Leftrightarrow \lambda_{A\Delta} \cdot \frac{4-0}{-3-(-1)} = -1$

$\lambda_{A\Delta} \cdot \frac{4}{-2} = -1 \Leftrightarrow \lambda_{A\Delta} \cdot (-2) = -1 \Leftrightarrow$

$\lambda = 1/2$

Έχω $A\Delta$: $y - y_0 = \lambda(x - x_0) \xrightarrow[A(3,2)]{\lambda = 1/2}$

$y - 2 = \frac{1}{2} \cdot (x-3) \Leftrightarrow y - 2 = \frac{1}{2}x - \frac{3}{2} \Leftrightarrow$

$A\Delta$: $y = \frac{1}{2}x - \frac{3}{2} + 2 \Leftrightarrow$ $\underline{A\Delta}$: $y = \frac{1}{2}x + \frac{1}{2}$

ii) Έστω μ: μεσοκ του $A\Gamma$

Έχω $\mu \perp A\Gamma \Leftrightarrow \lambda_\mu \cdot \lambda_{A\Gamma} = -1$

$\lambda_\mu \cdot \frac{2-4}{3-(-3)} = -1 \Leftrightarrow \lambda_\mu \cdot \frac{-2}{6} = -1$

$\lambda_\mu \cdot \left(-\frac{1}{3}\right) = -1 \xLeftrightarrow{\cdot(-3)}$ $\boxed{\lambda_\mu = 3}$

Έχω $M\left(\frac{-3+3}{2}, \frac{4+2}{2}\right) \equiv \underline{M(0,3)}$

μ: $y - y_0 = \lambda(x - x_0) \xrightarrow[M(0,3)]{\lambda_\mu = 3}$ $\underline{\mu}$: $y - 3 = 3(x-0) \Leftrightarrow y - 3 = 3x \Leftrightarrow$ $\boxed{\mu: y = 3x + 3}$

6 σ. 64) Να δ. $A(1,-1)$, $B(2,0)$, $\Gamma(-1,-3)$ είναι συνευθειακά

Έχω $\overrightarrow{AB}$ και $\overrightarrow{B\Gamma}$

με $\lambda_{\overrightarrow{AB}} = \frac{0+1}{2-1} = \frac{1}{1} \Rightarrow \lambda_{AB} = 1$

$\lambda_{\overrightarrow{B\Gamma}} = \frac{-3-0}{-1-2} = \frac{-3}{-3} = 1$

Άρα $\lambda_{\overrightarrow{AB}} = \lambda_{\overrightarrow{B\Gamma}} \Leftrightarrow \overrightarrow{AB} // \overrightarrow{B\Gamma}$

Άρα Α, Β, Γ συνευθειακά

7) Να βρεθεί ε: που διερχ $A(\sigma\upsilon\nu\theta, \eta\mu\theta)$, $B(\eta\mu\theta, \sigma\upsilon\nu\theta)$

σ. 64 $-\frac{\pi}{2} < \theta < \frac{\pi}{2}$, $\theta \neq \frac{\pi}{4}$ Εχω $\lambda = \frac{\sigma\upsilon\nu\theta - \eta\mu\theta}{\eta\mu\theta - \sigma\upsilon\nu\theta} = \frac{-(\eta\mu\theta - \sigma\upsilon\nu\theta)}{\eta\mu\theta - \sigma\upsilon\nu\theta} = -1 \Rightarrow$

$\underline{\lambda = -1}$

$\varepsilon: y - y_0 = \lambda(x - x_0) \xrightarrow{\lambda = -1} A(\sigma\upsilon\nu\theta, \eta\mu\theta)$

$\varepsilon: y - \eta\mu\theta = -1(x - \sigma\upsilon\nu\theta) \Leftrightarrow y - \eta\mu\theta = -x + \sigma\upsilon\nu\theta \Leftrightarrow \boxed{\varepsilon: y = -x + \eta\mu\theta + \sigma\upsilon\nu\theta}$

• Αν ε διερχ $O(0,0) \Rightarrow \eta\mu\theta + \sigma\upsilon\nu\theta = 0 \xrightarrow[(-\frac{\pi}{2}, \frac{\pi}{2})]{: \sigma\upsilon\nu\theta \neq 0} \frac{\eta\mu\theta}{\sigma\upsilon\nu\theta} + 1 = 0 \Leftrightarrow$

$\left.\begin{array}{l} \varepsilon\varphi\theta = -1 \\ \theta \in (-\frac{\pi}{2}, \frac{\pi}{2}) \end{array}\right\} \theta = \pi - \frac{\pi}{4} \Leftrightarrow \boxed{\theta = \frac{3\pi}{4}}$