(B) Δίνεται ευθεία: $\frac{x}{\alpha}+\frac{y}{\beta}=1$ Κάθετη στην ε. σημείο τομής άξονα $x'x$

$$\Leftrightarrow \lambda_1=-\frac{A}{B}=-\frac{\frac{1}{\alpha}}{\frac{1}{\beta}}=-\frac{\beta}{\alpha} \Leftrightarrow \lambda_1=-\frac{\beta}{\alpha}$$

$$\lambda_1\cdot\lambda_2=-1$$

$$\Leftrightarrow -\frac{\beta}{\alpha}\cdot\lambda_2=-1 \Leftrightarrow \boxed{\lambda_2=\frac{\alpha}{\beta}}$$

$$\frac{x}{\alpha}+\frac{y}{\beta}=1 \overset{y=0}{\Longrightarrow} \frac{x}{\alpha}=1 \Rightarrow x=\alpha.$$

$\boxed{A(\alpha,0)}$

$$y-y_0=\lambda(x-x_0)$$

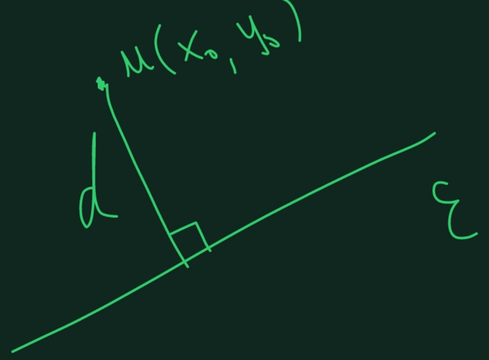
$$y=\frac{\alpha}{\beta}\cdot(x-\alpha)$$

$$\boxed{y=\frac{a}{b}\cdot x-\frac{a^2}{b}}$$

Απόσταση Σημείου Από Ευθεία

Έστω $\varepsilon: Ax + By + \Gamma = 0$

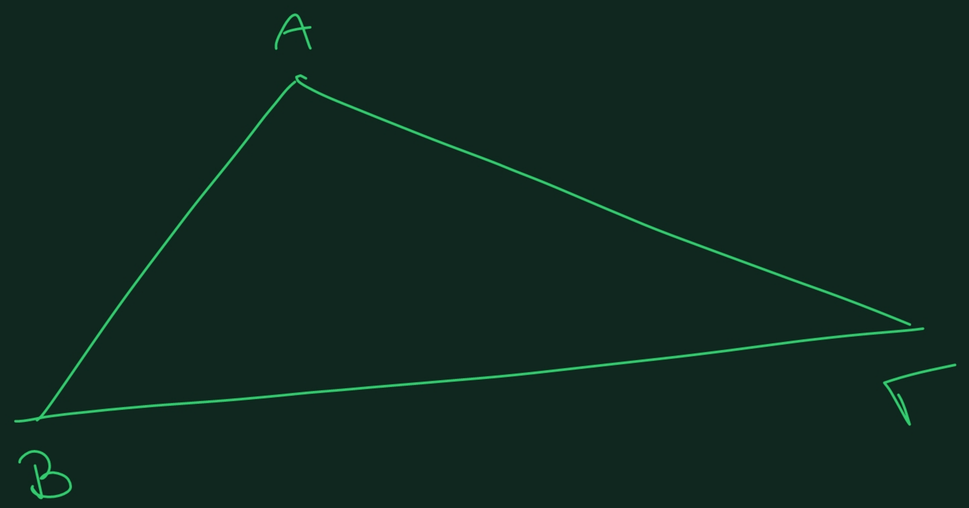
και $M(x_0, y_0)$



η απόσταση

$$d(M, \varepsilon) = \frac{|Ax_0 + By_0 + \Gamma|}{\sqrt{A^2 + B^2}}$$

Εμβαδόν Τριγώνου



$$(AB\Gamma) = \frac{1}{2} \cdot \det\left(\vec{AB}, \vec{A\Gamma}\right)$$

ή

$$(AB\Gamma) = \frac{1}{2} \cdot \det\left(\vec{\Gamma A}, \vec{\Gamma B}\right)$$

1) ii) $\varepsilon: y = 2x - 3$

$A(-2, 3)$

$d(A, \varepsilon) = ;$

$\varepsilon: -2x + y + 3 = 0$

Άρα $d(A, \varepsilon) = \dfrac{|-2 \cdot (-2) + 1 \cdot 3 + 3|}{\sqrt{(-2)^2 + 1^2}} =$

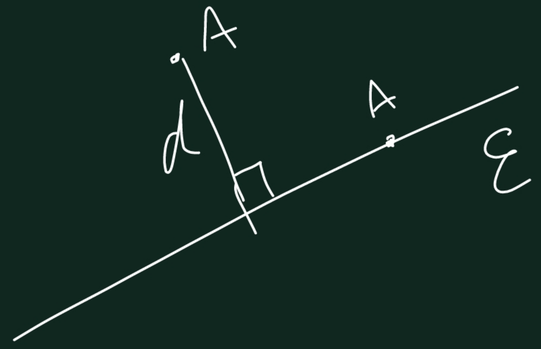
$\dfrac{|4 + 3 + 3|}{\sqrt{4+1}} = \dfrac{10}{\sqrt{5}} = \dfrac{10\sqrt{5}}{5} = \boxed{2\sqrt{5}}$

1) iv) $\varepsilon: 5x+3y+1=0$

$A(-2,3)$

$$d(A,\varepsilon)=\frac{|5\cdot(-2)+3\cdot 3+1|}{\sqrt{5^2+3^2}}=\frac{|-10+9+1|}{\sqrt{25+9}}=$$

$$\frac{0}{\sqrt{34}}=0$$



Αρα $d(\varepsilon, A)=0 \iff A \in \varepsilon$

2) σ.τ.5

$\varepsilon_1: 5x-8y-51=0$

$\varepsilon_2: 5x-8y+68=0$

i) Να υπολογιστούν οι αποστάσεις των $\varepsilon_1, \varepsilon_2$ από το $O(0,0)$

$$d(\varepsilon_1,O)=\frac{|5\cdot 0-8\cdot 0-51|}{\sqrt{5^2+(-8)^2}}=\frac{|-51|}{\sqrt{25+64}}=\frac{51}{\sqrt{89}}$$

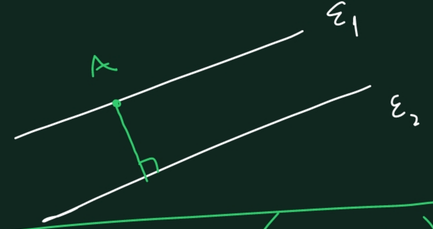
$$d(\varepsilon_2,O)=\frac{|5\cdot 0-8\cdot 0+68|}{\sqrt{5^2+(-8)^2}}=\frac{|68|}{\sqrt{89}}=\frac{68}{\sqrt{89}}$$

ii) Να υπολογιστεί $d(\varepsilon_1,\varepsilon_2)=;$

Θεω $\varepsilon_1 // \varepsilon_2$: $\lambda_1=-\frac{5}{-8}=5/8$, $\lambda_2=-\frac{5}{-8}=5/8$ $\Longrightarrow$

$\lambda_1=\lambda_2 \Leftrightarrow \varepsilon_1 // \varepsilon_2$

Εχει νόημα να ψαξω $d(\varepsilon_1,\varepsilon_2)$



Εχω $d(\varepsilon_1,\varepsilon_2)=d(A,\varepsilon_2)$

$\varepsilon_1 \xrightarrow{x=3} 15-8y-51=0 \Leftrightarrow -8y=36 \Rightarrow$ (:(-8))

$y=-\frac{36}{8} \Leftrightarrow y=-\frac{9}{2}$ Άρα $A\left(3,-\frac{9}{2}\right)$

Άρα $d(\varepsilon_1,\varepsilon_2)=d(A,\varepsilon_2)=$

$$\frac{|5\cdot 3-8\cdot(-\frac{9}{2})+68|}{\sqrt{89}}=\frac{|15+36+68|}{\sqrt{89}}=$$

$$\frac{119}{\sqrt{89}}$$