

20.21

α) Είναι $E(\gamma, 0) = E(\sqrt{\alpha^2 - \beta^2}, 0)$ και $E'(-\gamma, 0) = E'(-\sqrt{\alpha^2 - \beta^2}, 0)$

Επίσης είναι $B(0, \beta)$ και $B'(0, -\beta)$

Άρα $\overrightarrow{EB} = (0 - \gamma, \beta - 0) = (-\gamma, \beta)$ και $\overrightarrow{EB'} = (0 - \gamma, -\beta - 0) = (-\gamma, -\beta)$

Έχουμε $EB \perp EB' \Rightarrow \overrightarrow{EB} \cdot \overrightarrow{EB'} = 0 \Rightarrow \gamma^2 - \beta^2 = 0 \Rightarrow$

$$\Rightarrow (\gamma - \beta)(\gamma + \beta) = 0 \stackrel{\beta > 0, \gamma > 0}{\Rightarrow} \beta = \gamma$$

β) Έχουμε $\gamma = \beta \Rightarrow \gamma = \sqrt{\alpha^2 - \gamma^2} \Rightarrow \gamma^2 = \alpha^2 - \gamma^2 \Rightarrow$

$$\Rightarrow 2\gamma^2 = \alpha^2 \Rightarrow \gamma = \sqrt{\frac{\alpha^2}{2}} = \frac{\alpha\sqrt{2}}{2}$$