

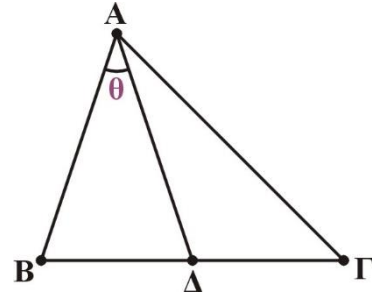
Από τον κανόνα της διαμέσου, γνωρίζουμε ότι

$$\overrightarrow{A\Delta} = \frac{1}{2}(\overrightarrow{A\Gamma} + \overrightarrow{AB})$$

$$\text{Είναι λοιπόν : } \overrightarrow{A\Delta} \cdot \overrightarrow{AB} = \frac{1}{2}(\overrightarrow{A\Gamma} + \overrightarrow{AB}) \cdot \overrightarrow{AB} =$$

$$= \frac{1}{2}(\overrightarrow{A\Gamma} \cdot \overrightarrow{AB} + \overrightarrow{AB}^2) = \frac{1}{2}(|\overrightarrow{A\Gamma}| \cdot |\overrightarrow{AB}| \cdot \cos \hat{A} + |\overrightarrow{AB}|^2) \Rightarrow$$

$$\Rightarrow \overrightarrow{A\Delta} \cdot \overrightarrow{AB} = \frac{1}{2}(\kappa \lambda \cos \hat{A} + \kappa^2) \quad (1)$$



$$\text{Ακόμη : } \overrightarrow{A\Delta} \cdot \overrightarrow{AB} = |\overrightarrow{A\Delta}| \cdot |\overrightarrow{AB}| \cdot \cos \hat{\theta}$$

$$\text{Όπου : } |\overrightarrow{A\Delta}|^2 = \frac{1}{4}|\overrightarrow{A\Gamma} + \overrightarrow{AB}|^2 = \frac{1}{4}(|\overrightarrow{A\Gamma}|^2 + 2|\overrightarrow{A\Gamma}| \cdot |\overrightarrow{AB}| \cdot \cos \hat{A} + |\overrightarrow{AB}|^2) =$$

$$= \frac{1}{4}(\lambda^2 + 2\kappa \lambda \cos \hat{A} + \kappa^2) \Rightarrow$$

$$\Rightarrow |\overrightarrow{A\Delta}| = \frac{1}{2}\sqrt{\lambda^2 + 2\kappa \lambda \cos \hat{A} + \kappa^2}$$

$$\text{Επομένως : } \overrightarrow{A\Delta} \cdot \overrightarrow{AB} = \frac{1}{2}\sqrt{\lambda^2 + 2\kappa \lambda \cos \hat{A} + \kappa^2} \cdot \kappa \cdot \cos \hat{\theta} \Rightarrow$$

$$\stackrel{(1)}{\Rightarrow} \frac{1}{2}(\kappa \lambda \cos \hat{A} + \kappa^2) = \frac{1}{2}\sqrt{\kappa^2 + \lambda^2 + 2\kappa \lambda \cos \hat{A}} \cdot \kappa \cdot \cos \hat{\theta} \Rightarrow$$

$$\Rightarrow \cos \hat{\theta} = \frac{\kappa \lambda \cos \hat{A} + \kappa^2}{\kappa \sqrt{\kappa^2 + \lambda^2 + \kappa \lambda \cos \hat{A}}} \Rightarrow$$

$$\Rightarrow \cos \hat{\theta} = \frac{\lambda \cos \hat{A} + \kappa}{\sqrt{\kappa^2 + \lambda^2 + \kappa \lambda \cos \hat{A}}}$$