ΛΥΣΗ

α) Είναι $\vec{\alpha} \cdot \vec{\beta} = |\vec{\alpha}| \cdot |\vec{\beta}| \cdot \sigma\upsilon\nu(\vec{\alpha}, \overset{\wedge}{\vec{\beta}}) = 2 \cdot 4 \cdot \sigma\upsilon\nu\dfrac{\pi}{3} = 8 \cdot \dfrac{1}{2} = 4$.

β) Είναι $\vec{\alpha} \cdot \vec{\gamma} = \vec{\alpha} \cdot (\vec{\alpha} - \vec{\beta}) = \vec{\alpha}^2 - \vec{\alpha} \cdot \vec{\beta} = |\vec{\alpha}|^2 - 4 = 4 - 4 = 0$.

γ) Αφού $\vec{\alpha} \cdot \vec{\gamma} = 0 \Leftrightarrow \vec{\alpha} \perp \vec{\gamma} \Leftrightarrow \left(\vec{\alpha}, \overset{\wedge}{\vec{\gamma}} \right) = \dfrac{\pi}{2}$.