

$$\alpha) \vec{\alpha}^2 = |\vec{\alpha}|^2 = \sqrt{2^2 + (-3)^2}^2 = 13$$

$$\beta) \vec{\beta}^2 = |\vec{\beta}|^2 = \sqrt{1^2 + (-1)^2}^2 = 2$$

$$\gamma) \vec{\alpha} \cdot \vec{\beta} = 2 \cdot 1 + (-3) \cdot (-1) = 5$$

$$\delta) \vec{\alpha} \cdot (\vec{\alpha} + 2\vec{\beta}) = \vec{\alpha}^2 + 2\vec{\alpha} \cdot \vec{\beta} \stackrel{\text{ερώτημα } \alpha) \beta) \gamma)}{=} 13 + 2 \cdot 5 = 23$$

$$\epsilon) (\vec{\alpha} - 3\vec{\beta})^2 = \vec{\alpha}^2 - 6\vec{\alpha} \cdot \vec{\beta} + 9\vec{\beta}^2 \stackrel{\text{ερώτημα } \alpha) \beta) \gamma)}{=} 13 - 6 \cdot 5 + 9 \cdot 2 = 1$$

$$\alpha) \vec{\alpha}^2 = |\vec{\alpha}|^2 = \sqrt{4^2 + (-1)^2}^2 = \sqrt{17}^2 = 17$$

$$\beta) \vec{\beta}^2 = |\vec{\beta}|^2 = \sqrt{2^2 + 5^2}^2 = \sqrt{29}^2 = 29$$

$$\gamma) \vec{\alpha} \cdot \vec{\beta} = (4, -1) \cdot (2, 5) = 8 + (-5) = 3$$

$$\delta) 2\vec{\beta} \cdot (3\vec{\alpha} - \vec{\beta}) = 6\vec{\alpha} \cdot \vec{\beta} - 2\vec{\beta}^2 = 6 \cdot 3 - 2 \cdot 29 = -40$$

$$\epsilon) (2\vec{\alpha} - \vec{\beta})^2 = 4\vec{\alpha}^2 - 4\vec{\alpha} \cdot \vec{\beta} + \vec{\beta}^2 = 4 \cdot 17 - 4 \cdot 3 + 29 = 85$$

$$\alpha) \vec{\alpha}^2 = |\vec{\alpha}|^2 = \sqrt{3^2 + (-2)^2}^2 = \sqrt{13}^2 = 13$$

$$\beta) \vec{\beta}^2 = |\vec{\beta}|^2 = \sqrt{1^2 + 2^2}^2 = \sqrt{5}^2 = 5$$

$$\gamma) \vec{\alpha} \cdot \vec{\beta} = (3, -2) \cdot (1, 2) = 3 - 4 = -1$$

$$\delta) 2\vec{\beta} \cdot (3\vec{\alpha} - \vec{\beta}) = 6\vec{\alpha} \cdot \vec{\beta} - 2\vec{\beta}^2 = 6 \cdot (-1) - 2 \cdot 5 = -16$$

$$\epsilon) (2\vec{\alpha} - \vec{\beta})^2 = 4\vec{\alpha}^2 - 4\vec{\alpha} \cdot \vec{\beta} + \vec{\beta}^2 = 4 \cdot 13 - 4 \cdot (-1) + 5 = 81$$