

$$\Leftrightarrow 16y^2 + 9y^2 = 900 \Leftrightarrow 25y^2 = 900 \Leftrightarrow$$

$$\Leftrightarrow y^2 = 36 \Leftrightarrow y = \pm 6$$

$$\text{Si } y = -6 \Rightarrow x = -\frac{4 \cdot (-6)}{3} = 8$$

$$\text{Si } y = 6 \Rightarrow x = -\frac{4 \cdot 6}{3} = -8$$

Tenim dos vectors que compleixen les dues condicions que ens demanen:

$v_1 (8, -6)$ obtenem que:

$$a) (8, -6) \cdot (3, 4) = 24 - 24 = 0$$

$$b) |v_1| = \sqrt{8^2 + (-6)^2} = \sqrt{64 + 36} = \sqrt{100} = 10$$

$$|\vec{u}| = \sqrt{3^2 + 4^2} = \sqrt{9 + 16} = \sqrt{25} = 5$$

$$v_2 (-8, 6)$$

$$a) (-8, 6) \cdot (3, 4) = -24 + 24 = 0$$

$$b) |v_2| = \sqrt{(-8)^2 + 6^2} = \sqrt{64 + 36} = \sqrt{100} = 10$$

$$(19) \vec{a} (2, 1), \vec{b} (6, 2) \quad \vec{v} (v_1, v_2)$$

$$\left. \begin{array}{l} \vec{v} \cdot \vec{a} = 1 \\ \vec{v} \perp \vec{b} \end{array} \right\} \Leftrightarrow \left. \begin{array}{l} (v_1, v_2) \cdot (2, 1) = 1 \\ \vec{v} \cdot \vec{b} = 0 \end{array} \right\} \Leftrightarrow$$

$$\left. \begin{array}{l} \Leftrightarrow 2v_1 + v_2 = 1 \\ (v_1, v_2) \cdot (6, 2) = 0 \end{array} \right\} \Leftrightarrow \left. \begin{array}{l} v_2 = 1 - 2v_1 \\ 6v_1 + 2v_2 = 0 \end{array} \right\} \Leftrightarrow$$

$$\left. \begin{array}{l} \Leftrightarrow v_2 = 1 - 2v_1 \\ 3v_1 + v_2 = 0 \end{array} \right\} \Rightarrow 3v_1 + 1 - 2v_1 = 0 \Leftrightarrow$$

$$\Leftrightarrow \boxed{v_1 = -1} \quad \boxed{v_2 = 1 - 2 \cdot v_1 = 1 - 2(-1) = 1 + 2 = 3}$$