⑤ a) $\langle \vec{a}, \vec{v} \rangle = 4.1 + 2.2 + 1.3 = 11$

$$\cos \theta = \frac{\langle \vec{x}, \vec{y} \rangle}{|\vec{x}| \cdot |\vec{y}|} = \frac{11}{\sqrt{4^2 + 2^2 + 1^2} \cdot \sqrt{1^2 + 2^2 + 3^2}} = \frac{11}{7 \cdot \sqrt{6}}$$

$\vec{x} \cdot \vec{y} = ((2.3 - 1.2), (1.1 - 4.3), (4.2 - 2.1)) = (4, -11, 6)$

b) $\langle \vec{x}, \vec{y} \rangle = -1.0 + 0.1 + 0.0 = 0$

$$\cos \theta = \frac{\langle \vec{x}, \vec{y} \rangle}{|\vec{x}| \cdot |\vec{y}|} = \frac{0}{\sqrt{(-1)^2 + 0^2 + 0^2} \cdot \sqrt{0^2 + 1^2 + 1^2}} = 0$$

$\vec{x} \cdot \vec{y} = ((0.1 - 0.1), (0.0 - (-1).0), ((-1).1 - 0.0)) = (0, 0, -1)$

c) $\langle \vec{x}, \vec{y} \rangle = 1.2 + 2.4 + 0.0 = 10$

$$\cos \theta = \frac{\langle \vec{x}, \vec{y} \rangle}{|\vec{x}| \cdot |\vec{y}|} = \frac{10}{\sqrt{1^2 + 2^2 + 0^2} \cdot \sqrt{2^2 + 4^2 + 0^2}} = 1$$

$\vec{x} \cdot \vec{y} = ((2.0 - 0.4), (0.2 - 1.0), (1.4 - 2.2)) = (0, 0, 0)$

- O item c) as retas são paralelas
- O item b) as retas são perpendiculares.