

Quiz 3

$$\text{Given } \vec{a} = \langle 1, -1, 5 \rangle$$

$$\vec{b} = \langle 2, 1, 0 \rangle$$

$$\begin{aligned} \text{a) find } \vec{a} + \vec{b} &= \langle 1+2, -1+1, 5+0 \rangle \\ &= \langle 3, 0, 5 \rangle \end{aligned}$$

$$\begin{aligned} \text{b) find } \vec{a} \cdot \vec{b} &= 1 \cdot 2 + (-1) \cdot 1 + 5 \cdot 0 \\ &= 2 - 1 = 1 \end{aligned}$$

c) find $\cos \theta$, where θ is the angle between \vec{a} and \vec{b}

$$\cos \theta = \frac{\vec{a} \cdot \vec{b}}{|\vec{a}| |\vec{b}|} = \frac{1}{\sqrt{1^2 + (-1)^2 + 5^2} \sqrt{2^2 + 1^2 + 0^2}}$$

$$= \frac{1}{\sqrt{27} \cdot \sqrt{5}} = \frac{1}{3\sqrt{15}}$$