

Find $|\vec{a} - \vec{b}|$, if two vectors \vec{a} and \vec{b} are such that $|\vec{a}| = 2$, $|\vec{b}| = 3$ and $\vec{a} \cdot \vec{b} = 4$

Given $|\vec{a}| = 2$, $|\vec{b}| = 3$ and $\vec{a} \cdot \vec{b} = 4$

$$\begin{aligned} \text{w.k.t. } |\vec{a} - \vec{b}|^2 &= |\vec{a}|^2 - 2(\vec{a} \cdot \vec{b}) + |\vec{b}|^2 \\ &= 2^2 - 2(4) + 3^2 = 4 - 8 + 9 \end{aligned}$$

$$|\vec{a} - \vec{b}|^2 = 5$$

$$|\vec{a} - \vec{b}| = \sqrt{5}$$