

3. Given that the point A has position vector $3\mathbf{i} - 7\mathbf{j}$ and the point B has position vector $8\mathbf{i} + 3\mathbf{j}$,

(a) find the vector \vec{AB}

(b) Find $|\vec{AB}|$. Give your answer as a simplified surd.

FINEVIEW⁽²⁾

(2)

$$\begin{aligned} \underline{\text{(a)}} \quad \vec{AB} &= \vec{OB} - \vec{OA} = (8-3)\mathbf{i} + (3-(-7))\mathbf{j} \\ &= \underline{5}\mathbf{i} + \underline{10}\mathbf{j} \end{aligned} \quad (2 \text{ marks})$$

$$\begin{aligned} \underline{\text{(b)}} \quad \text{by Pythagoras, } |\vec{AB}| &= \sqrt{5^2 + 10^2} \\ &= \sqrt{125} = 5\sqrt{5} \end{aligned} \quad (2 \text{ marks})$$