VECTORS

1 12^{th} Maths - EXERCISE-10.3

1. Find the angle between two vectors $\overrightarrow{a}$ and $\overrightarrow{b}$ with magnitudes $\sqrt{3}$ and 2 respectively having $\overrightarrow{a}.\overrightarrow{b} = \sqrt{6}$.

Solution: Given points are

$$\|\mathbf{a}\| = \sqrt{3} \tag{1}$$
$$\|\mathbf{b}\| = 2 \tag{2}$$
$$\mathbf{a}^\top \mathbf{b} = \sqrt{6} \tag{3}$$

$$\cos\theta = \frac{\mathbf{a}^\top \mathbf{b}}{\|\mathbf{a}\| \, \|\mathbf{b}\|} \tag{4}$$
$$= \frac{\sqrt{6}}{\sqrt{3} \times 2} \tag{5}$$
$$= \frac{1}{\sqrt{2}} \tag{6}$$
$$\implies \theta = 45^\circ \tag{7}$$