

# VECTOR ASSIGNMENT

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## 1 PROBLEM 1

1. Let the vectors **a** and **b** be such that  $\|\mathbf{a}\| = 3$  ,  $\|\mathbf{b}\| = \frac{\sqrt{2}}{3}$ , then  $\mathbf{a} \times \mathbf{b}$  is a unit vector, if the angle between **a** and **b** is

1)  $\frac{\pi}{6}$

2)  $\frac{\pi}{4}$

3)  $\frac{\pi}{3}$

4)  $\frac{\pi}{2}$

SOLUTION:

Correct option is 2,  $\mathbf{a} \times \mathbf{b}$  is a unit vector, if the angle between **a** and **b** is  $\frac{\pi}{4}$

$$\theta = \frac{\pi}{4} \quad (1.0.1)$$

$$\mathbf{a} \times \mathbf{b} = \|\mathbf{a}\| \|\mathbf{b}\| \sin \theta \quad (1.0.2)$$

$$= (3)\left(\frac{\sqrt{2}}{3}\right)\left(\frac{1}{\sqrt{2}}\right) \quad (1.0.3)$$

$$= 1 \quad (1.0.4)$$