

Quiz 5 Solution

Problem 1

$$V = \overrightarrow{P_1 P_2} = \langle 2-5, 9-7, -2-(-1) \rangle = \langle -3, 2, -1 \rangle$$

$$\text{So } V = -3i + 2j - k$$

Problem 2

$$U \cdot V = 1 \cdot (-1) + \sqrt{2} \cdot 1 + (-\sqrt{2}) \cdot 1 = -1$$

$$|U| = \sqrt{1^2 + \sqrt{2}^2 + (-\sqrt{2})^2} = \sqrt{5}$$

$$|V| = \sqrt{(-1)^2 + 1^2 + 1^2} = \sqrt{3}$$

$$\cos \theta = \frac{U \cdot V}{|U||V|} = \frac{-1}{\sqrt{15}}$$

$$\theta = \arccos -\frac{1}{\sqrt{15}}$$