

KFUPM PREP MATH PROGRAM
MATH002 – TERM 243

9.1 & 9.2 Recitation Exercises

1. Let \mathbf{u} and \mathbf{v} be two orthogonal defined as $\mathbf{u} = k\mathbf{i} + 3\mathbf{j} - 2\mathbf{i}$, and $\mathbf{v} = \langle k, -1 \rangle$, then the sum of all values of k is equal to
- A) -4 B) -2 C) 2 D) 4 E) 0
2. Let $\vec{u} = 2\mathbf{i} - 4\mathbf{j}$ and $\vec{w} = 3\mathbf{i} - 3\mathbf{j}$
- a) Find a unit vector in the opposite direction of \vec{u} .
- b) Find a vector of magnitude 2 in the direction of \vec{w} .
3. Find the value of k such that the two vectors $\vec{u} = \langle 3, 4 \rangle$ and $\vec{v} = \langle 2, k \rangle$ have the same direction.
4. Let \mathbf{u}, \mathbf{v} & \mathbf{w} be three vectors defined as $\mathbf{u} = \langle 1, \sqrt{3} \rangle$ and $\mathbf{v} = \sqrt{3}\mathbf{j} + \mathbf{i}$, and $\mathbf{w} = 2\mathbf{u} - \mathbf{v}$. Then find the direction angle of \mathbf{w} .
5. If θ is an angle between the vectors $\mathbf{v} = -\mathbf{i} + 2\mathbf{j}$ and $\mathbf{w} = 2\mathbf{i} - \mathbf{j}$, then find $\sin(2\theta)$, where $0 \leq \theta \leq \pi$.