

Quiz 1

1. Give a vector of length 6 that has opposite direction of $\mathbf{v} = \langle 1, 2, 1 \rangle$.

2. By using vectors, decide whether the three points $P(2, 9, 1)$, $Q(0, 0, 1)$ and $R(8, 1, 5)$ are colinear (i.e. they belong to the same line).

3. Mark as true or false the following statements and if they are false find a counterexample.
 - (a) If $\mathbf{v} = \langle x, y, z \rangle$ is a vector in the 3-dimensional space then $\mathbf{v} \cdot \mathbf{v}$ is equal to the magnitude of \mathbf{v} .

 - (b) Let $\mathbf{v} = \langle 0, 1, 1 \rangle$ and $\mathbf{w} = \langle x, y, z \rangle$ be vectors in the 3-dimensional space. If $\mathbf{w} \cdot \mathbf{v} = 0$ then $\mathbf{w} = \mathbf{0}$ (the zero vector).

 - (c) Let \mathbf{w} , \mathbf{v} and \mathbf{z} be three vectors in the 3-dimensional space. If $\mathbf{w} \cdot \mathbf{v} = \mathbf{w} \cdot \mathbf{z}$ then $\mathbf{v} = \mathbf{z}$.