9.1 & 9.2 Recitation Exercises

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1. Let u and v be two orthogonal defined as $u = k\,i + 3j - 2\,i$, and $v = \langle k, -1 \rangle$, then the sum of all values of k is equal to

   A) - 4   **B)** -2   **C)** 2   **D)** 4   **E)** 0

2. Let $\vec{u} = 2i - 4j$ and $\vec{w} = 3i - 3j$

   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 u, v & w be three vectors defined as $u = \,< 1, \sqrt{3} >$ and $v = \sqrt{3}\,j + i$, and $w = 2u - v$. Then find the direction angle of w.

5. If θ is an angle between the vectors $v = -i + 2j$ and $w = 2i - j$, then find $\sin(2\theta)$, where $0 \le \theta \le \pi$.