

Name _____

Homework 6
Sections 13.1 & 13.2

1. (1ea) Use the vectors

$$\vec{v} = 3\vec{i} - 2\vec{j} + 5\vec{k}, \quad \vec{w} = 3\vec{j} - 8\vec{k}, \quad \vec{q} = \sqrt{10}\vec{i} + 7\vec{j} + 6\vec{k}$$

to compute the following:

(a) $-2\vec{v}$

(b) $\vec{v} + \vec{w} - \vec{q}$

(c) $\|\vec{q}\|$

(d) $\|\vec{v} + \vec{w}\|$

(e) $\|\vec{v}\| + \|\vec{w}\|$

2. (3) Find a unit vector that points from $(1, 4, 0)$ toward $(9, -3, 6)$.

3. (3) Find a vector of length 3 that points in the opposite direction of $-5\vec{i} + 12\vec{k}$.

4. (4) Find all vectors in 2 dimensions having magnitude 5 and \vec{j} -component equal to $-3\vec{j}$.

5. (5) A lion, a tiger, and a bear are all pulling on a certain object. The lion is pulling on the object with a force of 30 newtons in a direction 50° north of due east, while the tiger is pulling on the object with a force of 40 newtons in a direction 75° south of east. If the object is remaining stationary, determine the force and the direction that the bear is pulling on the object. [Round answers to the nearest 0.01]