

Name : _____

Class Number: _____

1. T F Let $c \in \mathbb{R}$ and let $\mathbf{x} \in \mathbb{R}^2$. Then $\|c\mathbf{x}\|_2 = c\|\mathbf{x}\|_2$.

2. Find the vector in the direction of $\langle 10, 24 \rangle$ with length 4.

3. Consider the following three vectors

$$\mathbf{u} = \langle 4, -9 \rangle,$$

$$\mathbf{v} = \langle -5, 9 \rangle,$$

$$\mathbf{w} = \langle -2, -7 \rangle.$$

Which vector has the greater magnitude: $\mathbf{u} - \mathbf{v}$ or $\mathbf{w} - \mathbf{u}$.

4. Let $\mathbf{u} = \langle a, 5 \rangle$ and $\mathbf{v} = \langle 3, 7 \rangle$

- a. Find the value of parameter a such that \mathbf{u} is parallel to \mathbf{v}
- b. As we will see in lesson 3, two nonzero vectors $\mathbf{u} = \langle u_1, u_2 \rangle$ and $\mathbf{v} = \langle v_1, v_2 \rangle$ are orthogonal if and only if $u_1v_1 + u_2v_2 = 0$. Find the value of a such that \mathbf{u} is orthogonal to \mathbf{v} .