

## PreCalculus: Vector Basics Review for Quiz 1

*Whenever possible, find exact answers. If you must approximate, round to the nearest hundredth.*

A vector  $\mathbf{v}$  has initial point  $R(-9, 2)$  and terminal point  $S(-4, 6)$ .

1. Write the vector using the following notations:

\_\_\_\_\_ a) Using its name (“ $\mathbf{v}$ ”)

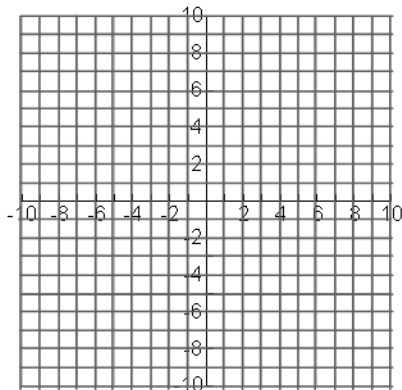
\_\_\_\_\_ b) Using its points

\_\_\_\_\_ c) In component form

\_\_\_\_\_ d) As a linear combination of  $\mathbf{i}$  and  $\mathbf{j}$ .

2. Find  $\|\vec{v}\|$

3. Sketch  $\mathbf{v}$  in *standard position*.



4. Find the Direction Angle of  $\mathbf{v}$ .

5. Verify whether vectors  $\mathbf{r}$  and  $\mathbf{s}$  are equal. If not, explain why not.

$$\overline{ST} \text{ (with } S(11, -29) \text{ and } T(2, -23)) \text{ and } \mathbf{r} = \langle -9, 6 \rangle$$

6. Find a unit vector in the direction of  $\mathbf{u}$  if  $\mathbf{u} = -6\mathbf{i} + 11\mathbf{j}$

Given vectors  $\mathbf{u} = \langle -5, 2 \rangle$  and  $\mathbf{v} = \langle -6, 12 \rangle$ , find the following.

7.  $2\mathbf{v} + 4\mathbf{u}$

8.  $5\mathbf{v}$

9.  $5(\mathbf{u} - \mathbf{v})$

10. Find the component form of the vector  $\mathbf{w}$  with  $\|\mathbf{w}\| = 15$  in the same direction as  $\mathbf{u} = \langle 4, 3 \rangle$ .

Find the direction angle of the vector.

11.  $\mathbf{v} = \langle -8, -4 \rangle$

12.  $\mathbf{w} = 12\mathbf{i} - 10\mathbf{j}$

13. A vector has magnitude 8 and direction angle  $136^\circ$ . Write the vector in component form.