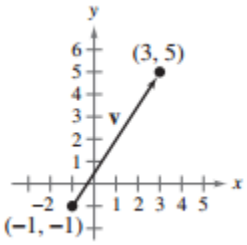
Name_____

Precalculus Unit 9: 9.3 Homework Worksheet
Vectors in the Plane

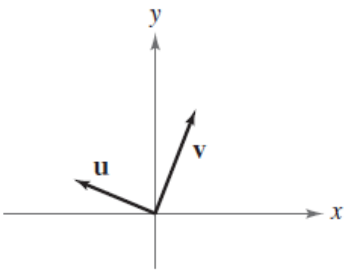
1. Find the component form and the magnitude of the vector pictured below.



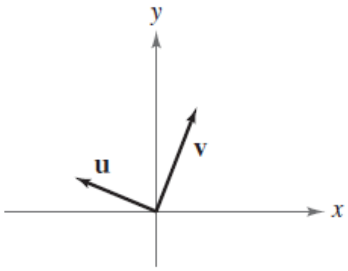
2. Find the component form and the magnitude of the vector that has an initial point of $\left(\frac{2}{5}, 1\right)$ and terminal point of $(-2,3)$.

3. Sketch each indicated vector on the provided graph.

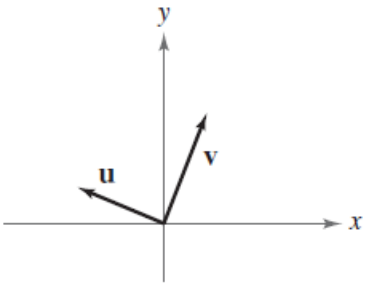
a.) $-\vec{v}$



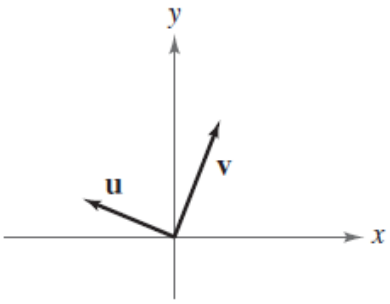
b.) $2\vec{u}$



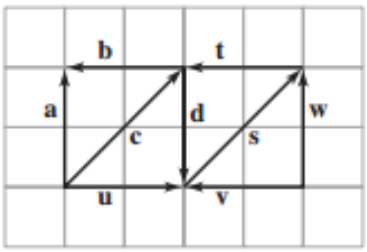
c.) $\vec{u} + \vec{v}$



d.) $\vec{u} - \vec{v}$



4. True or False: Use the picture to determine if each statement is true or false.



a. $\mathbf{a} = -\mathbf{d}$
b. $\mathbf{a} + \mathbf{u} = \mathbf{c}$
c. $\mathbf{a} + \mathbf{w} = -2\mathbf{d}$
d. $\mathbf{u} - \mathbf{v} = -2(\mathbf{b} + \mathbf{t})$
e. $\mathbf{c} = \mathbf{s}$
f. $\mathbf{v} + \mathbf{w} = -\mathbf{s}$
g. $\mathbf{a} + \mathbf{d} = \mathbf{0}$
h. $\mathbf{t} - \mathbf{w} = \mathbf{b} - \mathbf{a}$

5. Find a unit vector in the same direction as $\vec{v} = \langle -24, -7 \rangle$.

6. Given $\vec{v} = \langle 5,3 \rangle$ and $\vec{w} = \langle -3,7 \rangle$, find each of the following:

a. $\vec{v} + \vec{w}$ b. $\vec{v} - \vec{w}$ c. $2\vec{v} - 3\vec{w}$

7. Find the angle between the $\vec{v}$ and $\vec{w}$ as given below.

$\mathbf{v} = 3\mathbf{i} + \mathbf{j}, \quad \mathbf{w} = 2\mathbf{i} - \mathbf{j}$

8. Find the component form of the resultant vector for the vector $\vec{u}$ and $\vec{v}$ with the magnitudes and direction angles given below.

$\|\mathbf{u}\| = 35 \qquad \theta_{\mathbf{u}} = 25°$
$\|\mathbf{v}\| = 50 \qquad \theta_{\mathbf{v}} = 120°$