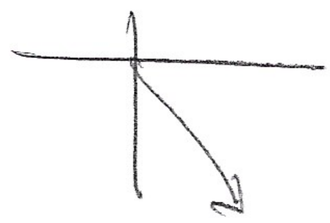
Vectors – Practice Quiz Name _____

1. Write the vector with initial point (–4, 3) and terminal point (–1, –7) in ...

a. component form $\langle -1-(-4), -7-3 \rangle = \langle 3, -10 \rangle$

b. sum of unit vectors form $3\vec{i} - 10\vec{j}$

2. In what quadrant does the vector above lie when it is in standard position? 4



3. Given $\vec{v} = \langle 3, -5 \rangle$ and $\vec{w} = \langle -2, 6 \rangle$, find the following:

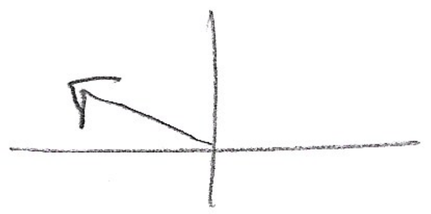
a. $\vec{v} + \vec{w} = \langle 1, 1 \rangle$

b. $\vec{w} - \vec{v} = \langle -5, 11 \rangle$

c. $-2\vec{v} + \frac{1}{2}\vec{w} = \langle -6, 10 \rangle + \langle -1, 3 \rangle = \langle -7, 13 \rangle$

4. Given $\vec{v} = \langle -3, \sqrt{5} \rangle$, find the following, to the nearest tenth: ~~(3 points each)~~

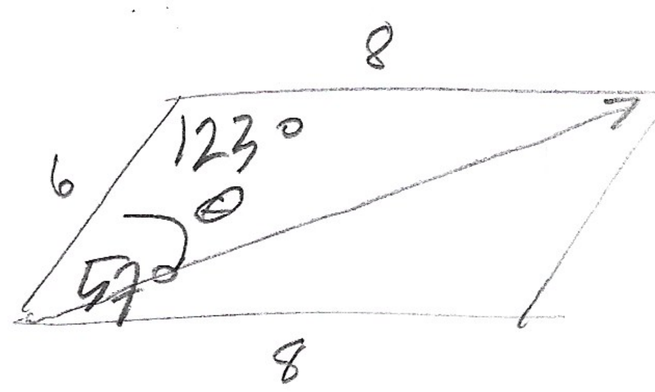
a. the magnitude of $\vec{v}$: $\|\vec{v}\|$ = 3.7 $\sqrt{9+5} = \sqrt{14}$



b. the direction of $\vec{v}$: θ = 143.3° $\theta' = \tan^{-1}\left(-\frac{\sqrt{5}}{3}\right) =$

5. Given: $\|\vec{a}\| = 6$, $\|\vec{b}\| = 8$, and the angle between the vectors $\theta = 57°$

a. Draw and label a parallelogram, including the given information and the resultant vector.



b. Find the magnitude of the resultant vector to the nearest tenth.

$v = \sqrt{6^2+8^2-2\cdot 6\cdot 8\cdot \cos 123°} = \boxed{12.3}$

b. Find the measure of the angle between the resultant vector and $\vec{a}$ to the nearest tenth.

$8^2 = 6^2 + 12.3^2 - 2(6)(12.3)\cos\theta$

$\theta = \cos^{-1}\left(\frac{-123.29}{-147.6}\right)$

6. Given: $\vec{w} = -2\vec{i} - 6\vec{j}$ $\|\vec{w}\| = \sqrt{40} = 2\sqrt{10}$ $\theta = 33.4°$

a. Write the vector in components form. $\langle -2, -6 \rangle$

b. Find the unit vector in the direction of $\vec{w}$. (No decimals in your answer!)

$\left\langle \frac{-2}{2\sqrt{10}}, \frac{-6}{2\sqrt{10}} \right\rangle = \left\langle -\frac{\sqrt{10}}{10}, -\frac{3\sqrt{10}}{10} \right\rangle$