More Vector Practice!   Name_____

**Simplify all roots and fractions; also round all decimals to the hundredth place.

For each of the following points find the component form, magnitude, and direction of each vector:

1. Point S is at (-3, -2) and T is at (5, -7). Find $\overrightarrow{ST}$.

2. Point F is at (-5, 2) and G is at (-8, 15). Find $\overrightarrow{FG}$.

3. Point J is at (6, -7) and K is at (-9, -11). Find $\overrightarrow{JK}$.

4. Point L is at (0, 6) and M is at (2, 2). Find $\overrightarrow{LM}$.

5. Point Q is at (1.9, -4.7) and R is at (6.8, -12.3). Find $\overrightarrow{QR}$.

For each of the following use the triangle or parallelogram method to find: a) the magnitude of the resultant, and b) the angle the resultant makes with vector $\vec{d}$. (SHOW ALL WORK)

6. $||\vec{c}|| = 13$, $||\vec{d}|| = 8$ and the angle between the vectors is 97°

7. $||\vec{c}|| = 4$, $||\vec{d}|| = 11$ and the angle between the vectors is 38°

8. $||\vec{c}|| = 15$, $||\vec{d}|| = 17$ and the angle between the vectors is 56°

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1) $\langle 8,-5 \rangle$; $\sqrt{89}$; 327.99°   2) $\langle -3,13 \rangle$; $\sqrt{178}$; 102.99°   3) $\langle -15,-4 \rangle$; $\sqrt{241}$; 194.93°

4) $\langle 2,-4 \rangle$; $2\sqrt{5}$; 296.57°   5) $\langle 4.9,-7.6 \rangle$; 9.04; 302.81°   6) 14.41; 63.56°   7) 14.36; 9.91°   8) 28.27; 26.10°

For the following problems, write each as a sum of unit vectors; also find the a) magnitude and b) direction of each.

9. Initial Point (-8, 15) , Terminal Point (0, 6)

10. Initial Point (2, -6) , Terminal Point (-1, -9)

11. Initial Point (3.7, 1.2) , Terminal Point (6.5, 8.5)

12. Initial Point (2.6, -6) , Terminal Point (7, 3)

Find: a) $-\frac{1}{2}\vec{u} - 5\vec{v}$ **and b)** $-3\vec{u} + 6\vec{v}$ **for each of the following**

13. $\vec{u} =< 4, -4 >$ and $\vec{v} =< 6, 9 >$

14. $\vec{u} = 2\vec{i} - 3\vec{j}$ and $\vec{v} = -\vec{i} + 5\vec{j}$

For the following find the unit vector in the direction of the given vector:

15. $\vec{v} = < -3, 9 >$ 16. $\vec{v} =< 8, 2 >$

17. $\vec{w} =< -5, 5 >$ 18. $\vec{w} = 3\vec{i} + 3\vec{j}$

19. $\vec{v} = -\frac{1}{2}\vec{i} + \frac{3}{2}\vec{j}$ 20. $\vec{w} = -7\vec{j}$

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9) $8\vec{i} - 9\vec{j}$; $\sqrt{145}$; $311.63°$ 10) $-3\vec{i} - 3\vec{j}$; $3\sqrt{2}$; $225°$ 11) $2.8\vec{i} + 7.3\vec{j}$; 7.82; $69.02°$

12) $4.4\vec{i} + 9\vec{j}$; 10.02; $63.95°$ 13) $\langle -32, -43\rangle$; $\langle 24, 66\rangle$ 14) $4\vec{i} - \frac{47}{2}\vec{j}$; $-12\vec{i} + 39\vec{j}$ 15) $\left\langle \frac{-\sqrt{10}}{10}, \frac{3\sqrt{10}}{10}\right\rangle$

16) $\left\langle \frac{4\sqrt{17}}{17}, \frac{\sqrt{17}}{17}\right\rangle$ 17) $\left\langle \frac{-\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right\rangle$ 18) $\frac{\sqrt{2}}{2}\vec{i} + \frac{\sqrt{2}}{2}\vec{j}$ 19) $-\frac{\sqrt{10}}{10}\vec{i} + \frac{3\sqrt{10}}{10}\vec{j}$ 20) $-\vec{j}$