Vectors Review WS Name_____

Write each vector in component form.
Name the quadrant in which each vectors lies in standard position.

1) $\overrightarrow{CD}$ where $C = (-5, -5)$ $D = (1, -6)$

2) $\overrightarrow{PQ}$ where $P = (1, 0)$ $Q = (7, -5)$

3) $\overrightarrow{PQ}$ where $P = (-5, 4)$ $Q = (-9, -10)$

4) $\overrightarrow{CD}$ where $C = (-1, 1)$ $D = (-6, 4)$

Find the magnitude and direction angle for each vector.

5) $-31\mathbf{i} + 6\mathbf{j}$

6) $\mathbf{k} = \langle 11, 10 \rangle$

7) $30\mathbf{i} - 40\mathbf{j}$

8) $\mathbf{b} = \langle -24, -32 \rangle$

Find the component form of the resultant vector.

9) $\mathbf{a} = \langle 5, -7 \rangle$
$\mathbf{v} = \langle -9, -11 \rangle$
Find: $2\mathbf{a} - \mathbf{v}$

10) $\mathbf{u} = \langle 5, -7 \rangle$
$\mathbf{v} = \langle -9, 7 \rangle$
Find: $\mathbf{u} + \mathbf{v}$

11) $\mathbf{a} = \langle -3, -3 \rangle$
$\mathbf{g} = \langle -5, -1 \rangle$
Find: $-\mathbf{a} - \mathbf{g}$

12) $\mathbf{f} = \langle 1, 12 \rangle$
$\mathbf{g} = \langle 12, 10 \rangle$
Find: $3\mathbf{f} - \frac{1}{2}\mathbf{g}$

Find the unit vector in the same direction as the given vector.

13) $\mathbf{u} = \langle -9, 6 \rangle$

14) $\mathbf{f} = \langle 2, 6 \rangle$

15) $\mathbf{f} = -5\mathbf{i} + 12\mathbf{j}$

16) $\mathbf{u} = -7\mathbf{i} + 7\mathbf{j}$

Find the dot product of the given vectors.

17) $\mathbf{u} = \langle -6, 3 \rangle$
$\mathbf{v} = \langle -4, -6 \rangle$

18) $\mathbf{u} = \langle -5, -8 \rangle$
$\mathbf{v} = \langle 8, 8 \rangle$

19) $\mathbf{u} = 6\mathbf{i} - 4\mathbf{j}$
$\mathbf{v} = -9\mathbf{j}$

20) $\mathbf{u} = -2\mathbf{i} - 9\mathbf{j}$
$\mathbf{v} = -7\mathbf{i} + 2\mathbf{j}$

Find the measure of the angle between the two vectors.

21) $\mathbf{u} = \langle 1, 3 \rangle$
$\mathbf{v} = \langle -1, 4 \rangle$

22) $\mathbf{u} = \langle 2, 2 \rangle$
$\mathbf{v} = \langle -7, -6 \rangle$

23) $\mathbf{u} = \langle 8, -9 \rangle$
$\mathbf{v} = \langle 0, 4 \rangle$

24) $\mathbf{u} = \langle 4, -1 \rangle$
$\mathbf{v} = \langle -6, -3 \rangle$

Answers to

1) $\langle 6, -1 \rangle$ Quadrant 4

2) $\langle 6, -5 \rangle$ Quadrant 4

3) $\langle -4, -14 \rangle$ Quadrant 3

4) $\langle -5, 3 \rangle$ Quadrant 2

5) $\sqrt{997} \approx 31.575$
169.05°

6) $\sqrt{221} \approx 14.866$
42.27°

7) 50
306.87°

8) 40
233.13°

9) $\langle 19, -3 \rangle$

10) $\langle -4, 0 \rangle$

11) $\langle 8, 4 \rangle$

12) $\langle -3, 31 \rangle$

13) $\left\langle -\frac{3\sqrt{13}}{13}, \frac{2\sqrt{13}}{13} \right\rangle$

14) $\left\langle -\frac{\sqrt{10}}{10}, -\frac{3\sqrt{10}}{10} \right\rangle$

15) $-\frac{5\mathbf{i}}{13} + \frac{12\mathbf{j}}{13}$

16) $-\frac{\sqrt{2}}{2}\mathbf{i} + \frac{\sqrt{2}}{2}\mathbf{j}$

17) 6

18) −104

19) 36

20) −4

21) 32.47°

22) 175.6°

23) 138.37°

24) 139.4°