Honors Precalculus Name_____ ID: 1

Unit 7 Vectors- Magnitude, Direction and Graph

Date_____ Period____

Find the following information for each vector: Graph, component form, magnitude and direction angle.

1) $\overrightarrow{RS}$ where $R = (7, 2)$ $S = (-1, -10)$

2) $\overrightarrow{PQ}$ where $P = (-4, -10)$ $Q = (-5, 2)$

Find the following information for each vector: Graph, linear combination, magnitude and direction angle.

3) $\overrightarrow{RS}$ where $R = (10, 7)$ $S = (-5, -3)$

4) $\overrightarrow{RS}$ where $R = (-6, -4)$ $S = (-8, -7)$

Write in component form. Draw a diagram to illustrate the horizontal and vertical components of the vector.

5) $|\mathbf{a}| = 45, 298°$

6) $|\mathbf{m}| = 19, 217°$

7) $|\mathbf{a}| = 11, 99°$

8) $|\mathbf{t}| = 17, 41°$

Find the component form of the resultant vector.

9) $\mathbf{u} = \langle 7, -11 \rangle$
$\mathbf{g} = \langle 7, -11 \rangle$
Find: $\mathbf{u} + \mathbf{g}$

10) $\mathbf{u} = \langle 11, -11 \rangle$
$\mathbf{v} = \langle 2, 6 \rangle$
Find: $-\mathbf{u} - \mathbf{v}$

11) $|\mathbf{u}| = 13, 315°$ $|\mathbf{g}| = 11, 138°$
Find: $\mathbf{u} + \mathbf{g}$

12) $|\mathbf{f}| = 3, 257°$ $|\mathbf{v}| = 6, 252°$
Find: $\mathbf{f} + \mathbf{v}$

13) $|\mathbf{u}| = 25, 210°$ $|\mathbf{g}| = 25, 278°$
Find: $\mathbf{u} - \mathbf{g}$

14) $|\mathbf{u}| = 25, 29°$ $|\mathbf{v}| = 23, 222°$
Find: $-\mathbf{u} + \mathbf{v}$

Express the resultant vector as a linear combination of unit vectors i and j.

15) $|\mathbf{f}| = 21, 227°$ $|\mathbf{b}| = 19, 114°$
Find: $-\mathbf{f} + \mathbf{b}$

16) $|\mathbf{a}| = 14, 75°$ $|\mathbf{b}| = 23, 262°$
Find: $\mathbf{a} - \mathbf{b}$

17) $|\mathbf{u}| = 9, 52°$ $|\mathbf{v}| = 12, 250°$
Find: $-\mathbf{u} + \mathbf{v}$

18) $|\mathbf{u}| = 12, 202°$ $|\mathbf{v}| = 19, 296°$
Find: $-\mathbf{u} + \mathbf{v}$

Find the component form of the resultant vector.

19) $\mathbf{u} = \langle -14, -48 \rangle$
Unit vector in the direction of $\mathbf{u}$

20) $\mathbf{f} = \langle \sqrt{3}, 1 \rangle$
Unit vector in the direction of $\mathbf{f}$

Express the resultant vector as a linear combination of unit vectors i and j.

21) $\mathbf{u} = -\mathbf{i} + 2\mathbf{j}$
Unit vector in the direction of $\mathbf{u}$

22) $\mathbf{u} = 5\mathbf{i} - 7\mathbf{j}$
Unit vector in the direction of $\mathbf{u}$

Graph and find the component form of the resultant vector.

23) $\mathbf{f} = \langle -7, 6 \rangle$
$\mathbf{v} = \langle 2, -9 \rangle$
Find: $\mathbf{f} + \mathbf{v}$

24) $\mathbf{u} = \langle 5, -8 \rangle$
$\mathbf{b} = \langle 4, 10 \rangle$
Find: $-\mathbf{u} + \mathbf{b}$

Graph and express the resultant vector as a linear combination of unit vectors i and j.

25) $\mathbf{f} = 11\mathbf{i} + 5\mathbf{j}$
$\mathbf{g} = -2\mathbf{i} - 11\mathbf{j}$
Find: $\mathbf{f} + \mathbf{g}$

26) $\mathbf{a} = -\mathbf{i} + 11\mathbf{j}$
$\mathbf{v} = \mathbf{i}$
Find: $\mathbf{a} - \mathbf{v}$

Find the component form of the resultant vector.(Check by graphing)

27) $\mathbf{f} = \langle 2, 10 \rangle$
$\mathbf{g} = \langle 3, -11 \rangle$
Find: $4\mathbf{f} + 2\mathbf{g}$

28) $\mathbf{f} = \langle 1, -2 \rangle$
$\mathbf{g} = \langle -1, 12 \rangle$
Find: $\mathbf{f} + \mathbf{g}$

29) $\mathbf{f} = \langle -12, -2 \rangle$
$\mathbf{g} = \langle -3, 3 \rangle$
Find: $3\mathbf{f} - 4\mathbf{g}$

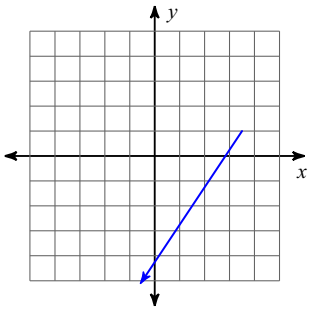
30) $\mathbf{u} = \langle 5, -3 \rangle$
Find: $-4\mathbf{u}$

31) $\mathbf{f} = \langle -2, -1 \rangle$
Find: $5\mathbf{f}$

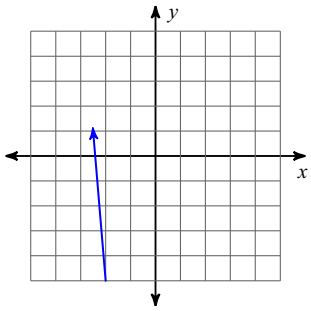
32) $\mathbf{u} = \langle -5, 4 \rangle$
$\mathbf{v} = \langle 1, 9 \rangle$
Find: $-\mathbf{u} - \mathbf{v}$

Answers to Unit 7 Vectors- Magnitude, Direction and Graph (ID: 1)

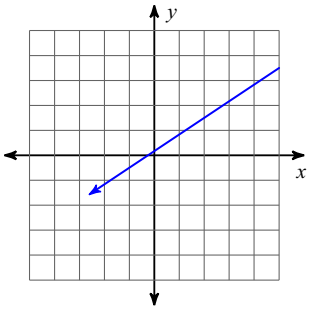
1) $\langle -8, -12 \rangle$
$4\sqrt{13} \approx 14.422$
236.31°



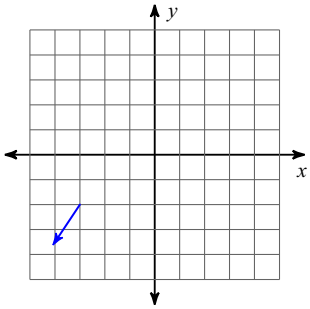
2) $\langle -1, 12 \rangle$
$\sqrt{145} \approx 12.042$
94.76°



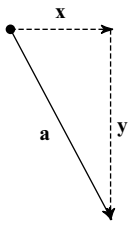
3) $-15\mathbf{i} - 10\mathbf{j}$
$5\sqrt{13} \approx 18.028$
213.69°



4) $-2\mathbf{i} - 3\mathbf{j}$
$\sqrt{13} \approx 3.606$
236.31°

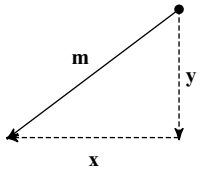


5)



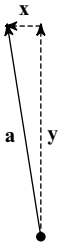
Horizontal: 21.13
Vertical: −39.73

6)



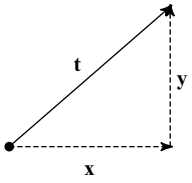
Horizontal: −15.17
Vertical: −11.43

7)



Horizontal: −1.72
Vertical: 10.86

8)



Horizontal: 12.83
Vertical: 11.15

9) $\langle 14, -22 \rangle$

10) $\langle -13, 5 \rangle$

11) $\langle 1.02, -1.83 \rangle$

12) $\langle -2.53, -8.63 \rangle$

13) $\langle -25.13, 12.26 \rangle$

14) $\langle -38.96, -27.51 \rangle$

15) $6.59\mathbf{i} + 32.72\mathbf{j}$

16) $6.82\mathbf{i} + 36.3\mathbf{j}$

17) $-9.65\mathbf{i} - 18.37\mathbf{j}$

18) $19.46\mathbf{i} - 12.58\mathbf{j}$

19) $\left\langle -\frac{7}{25}, -\frac{24}{25} \right\rangle$

20) $\left\langle \frac{\sqrt{3}}{2}, \frac{1}{2} \right\rangle$

21) $-\frac{\sqrt{5} \cdot \mathbf{i}}{5} + \frac{2\sqrt{5} \cdot \mathbf{j}}{5}$

22) $\frac{5\sqrt{74} \cdot \mathbf{i}}{74} - \frac{7\sqrt{74} \cdot \mathbf{j}}{74}$

23) $\langle -5, -3 \rangle$

24) $\langle -1, 18 \rangle$

25) $9\mathbf{i} - 6\mathbf{j}$

26) $-2\mathbf{i} + 11\mathbf{j}$

27) $\langle 14, 18 \rangle$

28) $\langle 0, 10 \rangle$

29) $\langle -24, -18 \rangle$

30) $\langle -20, 12 \rangle$

31) $\langle -10, -5 \rangle$

32) $\langle 4, -13 \rangle$