

Unit 7 Quiz 1 Vectors- Magnitude, Direction and Graph

Date _____

Find the component form, magnitude and direction angle.

1) $\overrightarrow{PQ}$ where $P = (1, 9)$ $Q = (7, 5)$

2) $\overrightarrow{PQ}$ where $P = (2, -5)$ $Q = (-2, 9)$

Find the linear combination form, magnitude and direction angle.

3) $\overrightarrow{AB}$ where $A = (-9, -1)$ $B = (-6, 8)$

4) $\overrightarrow{RS}$ where $R = (2, 0)$ $S = (-9, 8)$

Find the magnitude and direction angle for each vector.

5) $\mathbf{r} = \langle 21, 28 \rangle$

6) $\mathbf{m} = \langle -10, 24 \rangle$

7) $-16\mathbf{i} - 5\mathbf{j}$

8) $3\sqrt{35}\mathbf{i} - 19\mathbf{j}$

Write in component form.

9) $|\mathbf{t}| = 12, 66^\circ$

10) $|\mathbf{a}| = 12, 62^\circ$

Find the component form of the resultant vector.

11) $|\mathbf{f}| = 22, 210^\circ$ $|\mathbf{b}| = 13, 65^\circ$
Find: $\mathbf{f} + \mathbf{b}$

12) $|\mathbf{u}| = 23, 134^\circ$ $|\mathbf{g}| = 22, 278^\circ$
Find: $\mathbf{u} - \mathbf{g}$

Express the resultant vector as a linear combination of unit vectors $\mathbf{i}$ and $\mathbf{j}$.

13) $|\mathbf{a}| = 22, 174^\circ$ $|\mathbf{v}| = 7, 146^\circ$
Find: $\mathbf{a} + \mathbf{v}$

14) $|\mathbf{a}| = 25, 222^\circ$ $|\mathbf{b}| = 11, 208^\circ$
Find: $\mathbf{a} - \mathbf{b}$

Find the component form of the resultant vector.

15) $\mathbf{u} = \langle 24, -32 \rangle$
Unit vector in the direction of $\mathbf{u}$

16) $\mathbf{f} = \langle -2, 12 \rangle$
Unit vector in the direction of $\mathbf{f}$

Express the resultant vector as a linear combination of unit vectors $\mathbf{i}$ and $\mathbf{j}$.

17) $\mathbf{u} = 2\mathbf{i} + 3\mathbf{j}$
Unit vector in the direction of $\mathbf{u}$

18) $\mathbf{u} = -6\mathbf{i} - 4\mathbf{j}$
Unit vector in the direction of $\mathbf{u}$

Graph and find the component form of the resultant vector.

19) $\mathbf{u} = \langle -7, 2 \rangle$
 $\mathbf{g} = \langle 1, -6 \rangle$
Find: $\mathbf{u} - \mathbf{g}$

20) $\mathbf{a} = \langle 6, 7 \rangle$
 $\mathbf{b} = \langle -5, 2 \rangle$
Find: $\mathbf{a} + \mathbf{b}$

Graph and express the resultant vector as a linear combination of unit vectors $\mathbf{i}$ and $\mathbf{j}$.

21) $\mathbf{a} = -7\mathbf{i}$
 $\mathbf{g} = 7\mathbf{i} + 10\mathbf{j}$
Find: $\mathbf{a} + \mathbf{g}$

22) $\mathbf{f} = -8\mathbf{i} - 8\mathbf{j}$
 $\mathbf{v} = -11\mathbf{i} - 9\mathbf{j}$
Find: $\mathbf{f} - \mathbf{v}$

Find the component form of the resultant vector.

23) $\mathbf{u} = \langle 2, -2 \rangle$
 $\mathbf{b} = \langle 11, -12 \rangle$
Find: $8\mathbf{u} - 2\mathbf{b}$

24) $\mathbf{f} = \langle 10, 0 \rangle$
 $\mathbf{g} = \langle 10, -4 \rangle$
Find: $-4\mathbf{f} + 3\mathbf{g}$

Express the resultant vector as a linear combination of unit vectors $\mathbf{i}$ and $\mathbf{j}$.

25) $\mathbf{u} = -3\mathbf{i} - 5\mathbf{j}$
 $\mathbf{g} = 7\mathbf{i} + 7\mathbf{j}$
Find: $-6\mathbf{u} + \mathbf{g}$

26) $\mathbf{u} = -11\mathbf{i} + 5\mathbf{j}$
 $\mathbf{g} = -6\mathbf{i} + 4\mathbf{j}$
Find: $-\mathbf{u} + \mathbf{g}$

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

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|---|--|---|---|
| 1) $\langle 6, -4 \rangle$
$2\sqrt{13} \approx 7.211$
326.31° | 2) $\langle -4, 14 \rangle$
$2\sqrt{53} \approx 14.56$
105.95° | 3) $3\mathbf{i} + 9\mathbf{j}$
$3\sqrt{10} \approx 9.487$
71.57° | 4) $-11\mathbf{i} + 8\mathbf{j}$
$\sqrt{185} \approx 13.601$
143.97° |
| 5) 35
53.13° | 6) 26
112.62° | 7) $\sqrt{281} \approx 16.763$
197.35° | 8) 26
313.05° |
| 9) Horizontal: 4.88
Vertical: 10.96 | 10) Horizontal: 5.63
Vertical: 10.6 | 11) $\langle -13.56, 0.78 \rangle$ | 12) $\langle -19.04, 38.33 \rangle$ |
| 13) $-27.68\mathbf{i} + 6.21\mathbf{j}$ | 14) $-8.87\mathbf{i} - 11.56\mathbf{j}$ | 15) $\left\langle \frac{3}{5}, -\frac{4}{5} \right\rangle$ | 16) $\left\langle -\frac{\sqrt{37}}{37}, \frac{6\sqrt{37}}{37} \right\rangle$ |
| 17) $\frac{2\sqrt{13} \cdot \mathbf{i}}{13} + \frac{3\sqrt{13} \cdot \mathbf{j}}{13}$ | 18) $-\frac{3\sqrt{13} \cdot \mathbf{i}}{13} - \frac{2\sqrt{13} \cdot \mathbf{j}}{13}$ | 19) $\langle -8, 8 \rangle$ | |
| 20) $\langle 1, 9 \rangle$ | 21) $10\mathbf{j}$ | 22) $3\mathbf{i} + \mathbf{j}$ | 23) $\langle -6, 8 \rangle$ |
| 24) $\langle -10, -12 \rangle$ | 25) $25\mathbf{i} + 37\mathbf{j}$ | 26) $5\mathbf{i} - \mathbf{j}$ | |