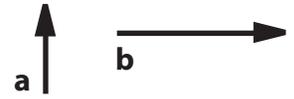


[C] Sketch the following vector approximately to scale given vectors \mathbf{a} and \mathbf{b} shown at right. Show your work with dotted lines and the resultant vector with a solid line. Label each vector drawn.

1. $2\mathbf{a} - \mathbf{b}$



[D] Let \mathbf{u} be $\langle 8, 4 \rangle$ and let \mathbf{v} be $\langle -10, 3 \rangle$.

1. Write the following vectors in terms of \mathbf{i} and \mathbf{j} .

a) \mathbf{v}

b) $\mathbf{u} - 2\mathbf{v}$

2. Write two unit vectors that are both parallel to \mathbf{v} . Round to the nearest hundredth.

3. Find the following angles. Round to the nearest tenth of a degree.

a) between \mathbf{u} and a horizontal line

b) between \mathbf{u} and \mathbf{v} .

4. Change one of the components of \mathbf{v} so that \mathbf{u} and \mathbf{v} are as described.

a) They are parallel to each other.

b) They are orthogonal with each other.

[E] Do the following to organize your group's reviews each day.

1. Make sure your name and your partners' names are at the top of your review the first day.

2. Staple the reviews in order, all facing the same way. Put the staple in the very top left corner if everyone is finished or if the review is due; otherwise put the staple in the top right corner.

Name:

PreCalculus

Date:

Review 8 Version B

[A] Circle whether each statement is true or false.

- T F 1. \mathbf{j} is the vector $\langle 0, 1, 0 \rangle$.
- T F 2. $\langle \frac{1}{3}, \frac{2}{3} \rangle$ is a unit vector.
- T F 3. If $\mathbf{h} = t\mathbf{r}$, then \mathbf{h} and \mathbf{r} are parallel.
- T F 4. The y component of the vector $\langle 3, -4, 8 \rangle$ is -4.
- T F 5. $\mathbf{a} = \langle 2, -5 \rangle$ and $\mathbf{b} = \langle -2, 5 \rangle$ are the same vector.
- T F 6. The line $\mathbf{r} = \langle 2, 5 \rangle + t\langle -6, 8 \rangle$ passes through the point $(11, -7)$.
- T F 7. If the dot product of two vectors is 0, the vectors are orthogonal.
- T F 8. $\langle 4, -9 \rangle$ can be written $4\mathbf{i} - 9\mathbf{j}$, but not as $\langle 4\mathbf{i} - 9\mathbf{j} \rangle$, $\langle 4\mathbf{i}, -9\mathbf{j} \rangle$, or $4\mathbf{i}, -9\mathbf{j}$.
- T F 9. The line $\mathbf{g} = \langle 9, -3 \rangle + q\langle 4, 6 \rangle$ passes through the points $(9, -3)$ and $(4, 6)$.
- T F 10. When written by hand, a letter representing a vector has an arrow drawn above it.
- T F 11. The vector from $(0, 0)$ to $(3, -8)$ and the vector from $(6, -2)$ to $(9, -10)$ are the same vector.
- T F 12. $\mathbf{r} = a\langle 3, -2 \rangle + \langle 0, 9 \rangle$, $\mathbf{s} = b\langle 3, -2 \rangle + \langle 3, 7 \rangle$, and $\mathbf{t} = c\langle -3, 2 \rangle + \langle 0, 9 \rangle$ are all the same line.

[B] Let A be the point $(6, -5, -8)$, and let B be the point $(2, 1, -4)$.

1. Write the vector from point A to point B.

2. Write two vector equations of the line through points A and B.

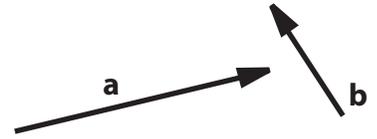
a)

b)

3. Give two points on the line other than A and B.

[C] Sketch the following vector approximately to scale given vectors \mathbf{a} and \mathbf{b} shown at right. Show your work with dotted lines and the resultant vector with a solid line. Label each vector drawn.

1. $2\mathbf{a} - \mathbf{b}$



[D] Let \mathbf{u} be $\langle 6, 1, 4 \rangle$, let \mathbf{v} be $\langle -4, 2, 8 \rangle$, and let \mathbf{w} be $\langle 4, 9 \rangle$.

1. Write the following vectors in terms of \mathbf{i} , \mathbf{j} , and \mathbf{k} .

a) \mathbf{v}

b) $\mathbf{u} - 2\mathbf{v}$

2. Write two unit vectors that are both parallel to \mathbf{v} . Round to the nearest hundredth.

3. Find the following angles. Round to the nearest tenth of a degree.

a) between \mathbf{w} and a horizontal line

b) between \mathbf{u} and \mathbf{v} .

4. Change one of the components of \mathbf{v} so that \mathbf{u} and \mathbf{v} are as described.

a) They are parallel to each other.

b) They are orthogonal with each other.

[E] Bonus.

1. Write the following vectors.

a) a vector with magnitude 2 that is orthogonal to $\langle 8, -6 \rangle$

b) a vector with magnitude 5 that makes a 30° angle with the x -axis

Name:

PreCalculus

Date:

Review 8 Version C

[A] Circle whether each statement is true or false.

- T F 1. \mathbf{j} is the vector $\langle 0, 1, 0 \rangle$.
- T F 2. $\langle \frac{1}{3}, \frac{2}{3} \rangle$ is a unit vector.
- T F 3. If $\mathbf{h} = t\mathbf{r}$, then \mathbf{h} and \mathbf{r} are parallel.
- T F 4. The y component of the vector $\langle 3, -4, 8 \rangle$ is -4.
- T F 5. $\mathbf{a} = \langle 2, -5 \rangle$ and $\mathbf{b} = \langle -2, 5 \rangle$ are the same vector.
- T F 6. The line $\mathbf{r} = \langle 2, 5 \rangle + t\langle -6, 8 \rangle$ passes through the point $(11, -7)$.
- T F 7. If the dot product of two vectors is 0, the vectors are orthogonal.
- T F 8. $\langle 4, -9 \rangle$ can be written $4\mathbf{i} - 9\mathbf{j}$, but not as $\langle 4\mathbf{i} - 9\mathbf{j} \rangle$, $\langle 4\mathbf{i}, -9\mathbf{j} \rangle$, or $4\mathbf{i}, -9\mathbf{j}$.
- T F 9. The line $\mathbf{g} = \langle 9, -3 \rangle + q\langle 4, 6 \rangle$ passes through the points $(9, -3)$ and $(4, 6)$.
- T F 10. When written by hand, a letter representing a vector has an arrow drawn above it.
- T F 11. The vector from $(0, 0)$ to $(3, -8)$ and the vector from $(6, -2)$ to $(9, -10)$ are the same vector.
- T F 12. $\mathbf{r} = a\langle 3, -2 \rangle + \langle 0, 9 \rangle$, $\mathbf{s} = b\langle 3, -2 \rangle + \langle 3, 7 \rangle$, and $\mathbf{t} = c\langle -3, 2 \rangle + \langle 0, 9 \rangle$ are all the same line.

[B] Let A be the point $(-3, 9, -11)$, and let B be the point $(5, -6, -2)$.

1. Write the vector from point A to point B .

2. Without writing the vector $\langle -3, 9, 11 \rangle$, write two vector equations of the line through points A and B .

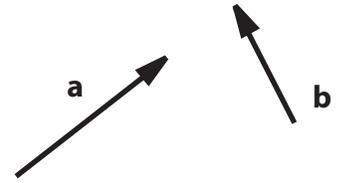
a)

b)

3. Give two points on the line other than A and B .

[C] Sketch the following vector approximately to scale given vectors \mathbf{a} and \mathbf{b} shown at right. Show your work with dotted lines and the resultant vector with a solid line. Label each vector drawn.

1. $2\mathbf{a} - \mathbf{b}$



[D] Let \mathbf{u} be $\langle 8, 6, -20 \rangle$, let \mathbf{v} be $\langle -6, 5, 15 \rangle$, and let \mathbf{w} be $\langle -3, 10 \rangle$.

1. Write the following vectors in terms of \mathbf{i} , \mathbf{j} , and \mathbf{k} .

a) \mathbf{v}

b) $\mathbf{u} - 2\mathbf{v}$

2. Write two unit vectors that are both parallel to \mathbf{v} . Round to the nearest hundredth.

3. Find the following angles. Round to the nearest tenth of a degree.

a) between \mathbf{w} and a horizontal line

b) between \mathbf{u} and \mathbf{v} .

4. Change one of the components of \mathbf{v} so that \mathbf{u} and \mathbf{v} are as described.

a) They are parallel to each other.

b) They are orthogonal with each other.

[E] Bonus.

1. Write the following vectors.

a) a vector with magnitude 4 that is orthogonal to $\langle 12, 15, 7 \rangle$

b) a vector with magnitude 10 that makes a 20° angle with the x -axis

Name:

PreCalculus

Date:

Review 8 Version D

[A] Circle whether each statement is true or false.

- T F 1. \mathbf{j} is the vector $\langle 0, 1, 0 \rangle$.
- T F 2. $\langle \frac{1}{3}, \frac{2}{3} \rangle$ is a unit vector.
- T F 3. If $\mathbf{h} = t\mathbf{r}$, then \mathbf{h} and \mathbf{r} are parallel.
- T F 4. The y component of the vector $\langle 3, -4, 8 \rangle$ is -4.
- T F 5. $\mathbf{a} = \langle 2, -5 \rangle$ and $\mathbf{b} = \langle -2, 5 \rangle$ are the same vector.
- T F 6. The line $\mathbf{r} = \langle 2, 5 \rangle + t\langle -6, 8 \rangle$ passes through the point $(11, -7)$.
- T F 7. If the dot product of two vectors is 0, the vectors are orthogonal.
- T F 8. $\langle 4, -9 \rangle$ can be written $4\mathbf{i} - 9\mathbf{j}$, but not as $\langle 4\mathbf{i} - 9\mathbf{j} \rangle$, $\langle 4\mathbf{i}, -9\mathbf{j} \rangle$, or $4\mathbf{i}, -9\mathbf{j}$.
- T F 9. The line $\mathbf{g} = \langle 9, -3 \rangle + q\langle 4, 6 \rangle$ passes through the points $(9, -3)$ and $(4, 6)$.
- T F 10. When written by hand, a letter representing a vector has an arrow drawn above it.
- T F 11. The vector from $(0, 0)$ to $(3, -8)$ and the vector from $(6, -2)$ to $(9, -10)$ are the same vector.
- T F 12. $\mathbf{r} = a\langle 3, -2 \rangle + \langle 0, 9 \rangle$, $\mathbf{s} = b\langle 3, -2 \rangle + \langle 3, 7 \rangle$, and $\mathbf{t} = c\langle -3, 2 \rangle + \langle 0, 9 \rangle$ are all the same line.

[B] Let A be the point $(-6, 4, -5)$, and let B be the point $(\frac{1}{2}, -12, -5)$.

1. Write the vector from point A to point B.

2. Without writing the vector $\langle -6, 4, -5 \rangle$, write three vector equations of the line through points A and B.

a)

b)

c)

3. Give two points on the line other than A and B.

[C] Sketch the following vector approximately to scale given vectors \mathbf{a} and \mathbf{b} shown at right. Show your work with dotted lines and the resultant vector with a solid line. Label each vector drawn.

1. $2\mathbf{a} - \mathbf{b}$



[D] Let \mathbf{u} be $\langle 14, -6, 7 \rangle$ and let \mathbf{v} be $\langle -4, -13, -2 \rangle$.

1. Write the following vectors in terms of \mathbf{i} , \mathbf{j} , and \mathbf{k} .

a) \mathbf{v}

b) $\mathbf{u} - 2\mathbf{v}$

2. Write two unit vectors that are both parallel to \mathbf{v} . Round to the nearest hundredth.

3. Find the following angles. Round to the nearest tenth of a degree.

a) between $-\mathbf{i} + 2\mathbf{j}$ and a horizontal line

b) between \mathbf{u} and \mathbf{v} .

4. Change one of the components of \mathbf{v} so that \mathbf{u} and \mathbf{v} are as described.

a) They are parallel to each other.

b) They are orthogonal with each other.

[E] Bonus.

1. Write the following vectors.

a) a vector with magnitude 6.5 that is orthogonal to $\langle 12, -15, 7 \rangle$

b) a vector with magnitude 82 that makes a 56° angle with the x -axis