Name:_____ Class:_____ Date:_____

Precalculus-G11-Ch.8-Test

Indicate the answer choice that best completes the statement or answers the question.

1. Find the dot product of **u** = <–7, –6, –4> and **v** = <–4, –8, 1>. Are **u** and **v** orthogonal?

a. 72; orthogonal
b. 72; not orthogonal
c. –462; orthogonal
d. –462; not orthogonal

2. Find the angle θ between **u** and **v** if **u** = <5, –1 , –2> and **v** = <8, 3, –5>.

a. 60.1°
b. 49.1°
c. 150.1°
d. 29.9°

3. Find the dot product of **u** = <–10, –2, 6> and **v** = <6, –4, 7>. Are **u** and **v** orthogonal?

a. –10; not orthogonal
b. –10; orthogonal
c. 312; orthogonal
d. 312; not orthogonal

4. Find the angle θ between **u** = –**i** – **j** + 8**k** and **v** = **i** – 5**j** + 6**k**.

a. 35.6°
b. 54.4°
c. 144.4°
d. 50.9°

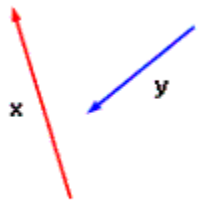
5. Let $\overrightarrow{DE}$ be the vector with initial point $D(11, -4)$ and terminal point $E(-5, -2)$. Write $\overrightarrow{DE}$ as a linear combination of the vectors **i**and **j**.

a. 16**i** – 2**j**
b. 6**i** – 6**j**
c. –16**i** + 2**j**
d. 7**i** – 7**j**

6. Find the magnitude of $\overrightarrow{WX}$ for $W(-4, 9, -1)$ and $X(9, -8, -2)$.

a. 451
b. $3\sqrt{51}$
c. $\sqrt{451}$
d. 454

7. Find the resultant of the pair of vectors shown below. State the magnitude of the resultant in centimeters and its direction relative to the horizontal.

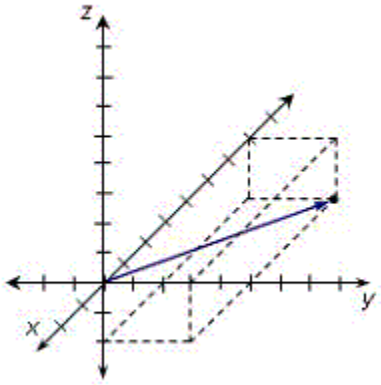


a. 3.8 cm, 148°
b. 4.7 cm, 148°
c. 3.8 cm, 212°
d. 3.8 cm, 58°

Name:_____ Class:_____ Date:_____

Precalculus-G11-Ch.8-Test

8. Which of the following vectors is shown in the graph below?



a. $\langle -7, -3, -2 \rangle$ b. $\langle -7, 3, -2 \rangle$

c. $\langle -7, 3, 2 \rangle$ d. $\langle 7, 3, -2 \rangle$

9. Find the resultant of the pair of vectors shown below. State the magnitude of the resultant in centimeters and its direction relative to the horizontal.

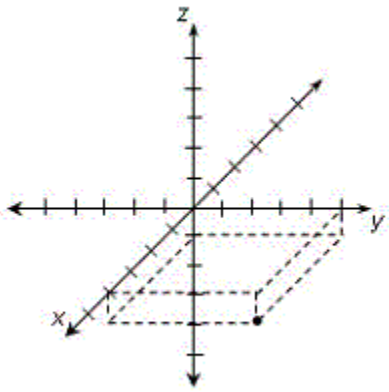
a. 4.0 cm, 210° b. 2.3 cm, 98°

c. 2.3 cm, 30° d. 2.3 cm, 210°

Name:_____ Class:_____ Date:_____

Precalculus-G11-Ch.8-Test

10. Which of the following points is shown in the graph below?

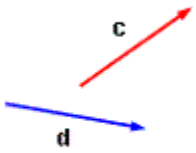


a. $(-4, 5, -1)$ b. $(4, -5, -1)$
c. $(4, 5, -1)$ d. $(4, 5, 1)$

11. Find the cross product <–6, 2, –9> × <–1, –3, 8>. Is the resulting vector perpendicular to the given vectors?

a. <59, 20, –17>; yes b. <–11, 57, 20>; yes
c. <–17, 57, 59>; no d. <–17, 59, 26>; no

12. Find the resultant of the pair of vectors shown below. State the magnitude of the resultant in centimeters and its direction relative to the horizontal.

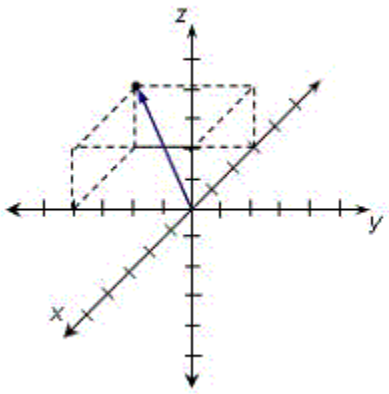


a. 4.9 cm, 102° b. 3.7 cm, 12°
c. 4.9 cm, 12° d. 4.9 cm, 348°

Name:_____ Class:_____ Date:_____

Precalculus-G11-Ch.8-Test

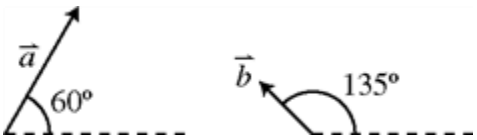
13. Which of the following vectors is shown in the graph below?



a. $\langle -3, -4, 2 \rangle$ b. $\langle -3, -4, -2 \rangle$

c. $\langle -3, 4, 2 \rangle$ d. $\langle 3, -4, 2 \rangle$

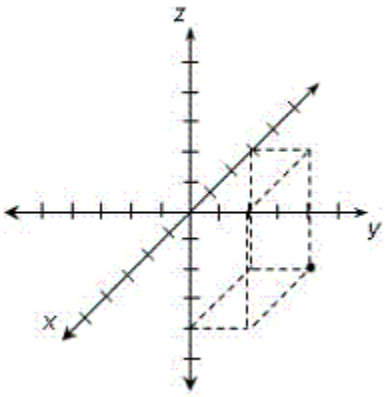
14. Use a metric ruler and a protractor to find $\vec{a} - 2\vec{b}$. Then find the magnitude and amplitude of the resultant.



a. 2.4 cm, 8° b. 4.4 cm, 13°

c. 6.4 cm, 18° d. 7.4 cm, 15°

15. Which of the following points is shown in the graph below?



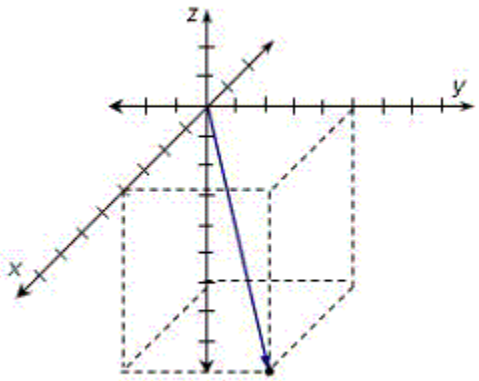
a. $(-3, 2, 4)$ b. $(-3, 2, -4)$

c. $(-3, -2, -4)$ d. $(3, 2, -4)$

Name:_____ Class:_____ Date:_____

Precalculus-G11-Ch.8-Test

16. Which of the following vectors is shown in the graph below?



a. $\langle 4, 5, -6 \rangle$ b. $\langle 4, 5, 6 \rangle$

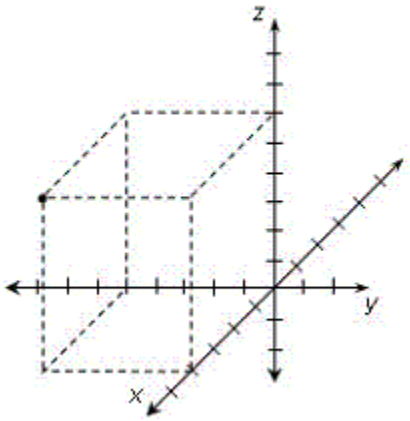
c. $\langle 4, -5, -6 \rangle$ d. $\langle -4, 5, -6 \rangle$

17. Given vectors **u** = <6, 1> and **v** = <–4, 2>, find 3**u** − 2**v**.

a. <9, 5> b. <31, 3>

c. <26, –1> d. <25, 0>

18. Which of the following points is shown in the graph below?



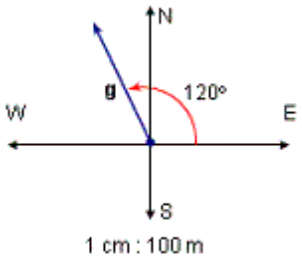
a. $(4, -5, 6)$ b. $(-4, -5, 6)$

c. $(4, -5, -6)$ d. $(4, 5, 6)$

Name:_____ Class:_____ Date:_____

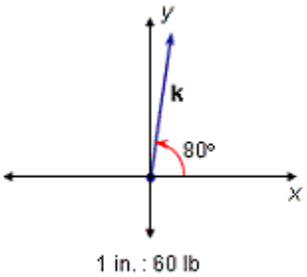
Precalculus-G11-Ch.8-Test

19. Use a ruler to determine which of the following descriptions corresponds to the arrow diagram shown below.



a. **g** = 2.6 meters per second at a true bearing of 120°
b. **g** = 260 meters per second at a true bearing of 120°
c. **g** = 2.6 meters per second at a bearing of N30°W
d. **g** = 260 meters per second at a bearing of N30°W

20. Use a ruler to determine which of the following descriptions corresponds to the arrow diagram shown below.



a. **k** = 68 pounds of force at 80° to the horizontal
b. **k** = 60 pounds of force at 80° to the horizontal
c. **k** = 68 pounds of force at a true bearing of 80°
d. **k** = 72 pounds of force at a bearing of 080°

==========