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Tarea 0: Vectores (Homework)

 **INSTRUCTOR**

Luz Maria Gonzalez
Tecnologico de Monterrey, Mexico

Current Score

Due Date **Past Due**

QUESTION

1

2

3

4

POINTS

6.66/6.66

6.66/6.66

6.66/6.66

6.66/6.66

6.66/6.66



TOTAL

100/100

100.0%

AGO. 28 11:59 P. M.



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Assignment Submission & Scoring

Assignment Submission

For this assignment, you submit answers by question parts. The number of submissions remaining for each question part only changes if you submit or change the answer.

Assignment Scoring

Your last submission is used for your score.

The due date for this assignment has passed.

Your work can be viewed below, but no changes can be made.

Important! Before you view the answer key, decide whether or not you plan to request an extension. Your Instructor may not grant you an extension if you have viewed the answer key. Automatic extensions are not granted if you have viewed the answer key.



Request Extension



View Key

1. **6.66/6.66 points** [Previous Answers](#) SCalc8 12.1.003.MI.



[My Notes](#)

[Ask Your Teacher](#)

Use the given points to answer the following questions.

$$A(-4, 0, -6), \quad B(3, 3, -4), \quad C(2, 4, 3)$$

Which of the points is closest to the yz -plane?

☐ A

☐ B

☒ C



Which point lies in the xz -plane?

☒ A

☐ B

☐ C



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2.

6.66/6.66 points Previous Answers

SCalc8 12.1.005.

 My Notes[Ask Your Teacher](#)

What does the equation $x = 4$ represent in \mathbb{R}^2 ?

- ☐ a point
- ☒ a line
- ☐ a plane
- ☐ a circle



What does it represent in \mathbb{R}^3 ?

- ☐ a point
- ☐ a line
- ☒ a plane
- ☐ a circle

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3.

6.66/6.66 points Previous Answers

SCalc8 12.1.012.

 My Notes[Ask Your Teacher](#)

Find the distance from $(2, -8, 7)$ to each of the following.

(a) the xy -plane

\$\$7



(b) the yz -plane

\$\$2



(c) the xz -plane

\$\$8



(d) the x -axis

\$\$ $\sqrt{113}$



(e) the y -axis

\$\$ $\sqrt{53}$



(f) the z -axis

\$\$ $\sqrt{68}$



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4.

6.66/6.66 points Previous Answers

SCalc8 12.1.013.

 My Notes

Ask Your Teacher

Find an equation of the sphere with center $(-3, 4, 9)$ and radius 7.

$$(x+3)^2+(y-4)^2+(z-9)^2=49$$



What is the intersection of this sphere with the yz -plane?

$$(y-4)^2+(z-9)^2=40$$



, $x = 0$

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A pair of points is given.

(5, 1), (9, 4)

(a) Plot the points in a coordinate plane.



Flash Player version 10 or higher is required for this question.

You can [get Flash Player free from Adobe's website](#).

[Submission Data](#)



(b) Find the distance between them.

\$\$5



(c) Find the midpoint of the segment that joins them.

(x, y) = (7, 2.5) ✓

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6. 6.66/6.66 points Previous Answers SCalc8 12.3.517.XP.

 My Notes Ask Your Teacher

For what values of b are the given vectors orthogonal? (Enter your answers as a comma-separated list.)

$$\langle -30, b, 5 \rangle, \quad \langle b, b^2, b \rangle$$

$b =$

\$\$-5,0,5



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7. 6.66/6.66 points Previous Answers SCalc8 12.3.JIT.003.

 My Notes Ask Your Teacher


Find the magnitude and direction (in degrees) of the vector. (Assume $0^\circ \leq \theta < 360^\circ$. Round the direction to two decimal places.)

$$\mathbf{v} = \langle 8, 6 \rangle$$

\$\$10

$|\mathbf{v}| =$



$\theta =$  $^\circ$

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Find the cross product $\mathbf{a} \times \mathbf{b}$.

$$\mathbf{a} = \langle 2, 3, 0 \rangle, \quad \mathbf{b} = \langle 1, 0, 7 \rangle$$

$$21\mathbf{i} - 14\mathbf{j} - 3\mathbf{k}$$



Verify that it is orthogonal to both \mathbf{a} and \mathbf{b} .

$$(\mathbf{a} \times \mathbf{b}) \cdot \mathbf{a} = 0$$



$$(\mathbf{a} \times \mathbf{b}) \cdot \mathbf{b} = 0$$



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If $\mathbf{a} = \langle 2, -1, 6 \rangle$ and $\mathbf{b} = \langle 7, 2, 1 \rangle$, find the following.

$$\mathbf{a} \times \mathbf{b} =$$

$$-13\mathbf{i} + 40\mathbf{j} + 11\mathbf{k}$$



$$\mathbf{b} \times \mathbf{a} =$$

$$13\mathbf{i} - 40\mathbf{j} - 11\mathbf{k}$$



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10.

6.66/6.66 points Previous Answers

SCalc8 12.4.019.

 My Notes

Ask Your Teacher

Find two unit vectors orthogonal to both $\langle 7, 2, 1 \rangle$ and $\langle -1, 1, 0 \rangle$.

$$(-i - j + 9k)\sqrt{83}$$

✓ (smaller i -value)

$$(i + j - 9k)\sqrt{83}$$

✓ (larger i -value)

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11.

6.66/6.66 points Previous Answers

SCalc8 12.4.027.

 My Notes

Ask Your Teacher

Find the area of the parallelogram with vertices $A(-3, 0)$, $B(-1, 6)$, $C(8, 5)$, and $D(6, -1)$.

$$56$$

✓

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Consider the points below.

$$P(0, -4, 0), \quad Q(5, 1, -2), \quad R(7, 4, 1)$$

(a) Find a nonzero vector orthogonal to the plane through the points P , Q , and R .

$$21\mathbf{i} - 19\mathbf{j} + 5\mathbf{k}$$



(b) Find the area of the triangle PQR .

$$\sqrt{82}2$$



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Use the scalar triple product to determine if the vectors

$$\mathbf{u} = \mathbf{i} + 3\mathbf{j} - 3\mathbf{k}, \quad \mathbf{v} = 2\mathbf{i} - \mathbf{j}, \quad \text{and} \quad \mathbf{w} = 5\mathbf{i} + 8\mathbf{j} - 9\mathbf{k}$$
 are coplanar.

- ☒ Yes, they are coplanar.
- ☐ No, they are not coplanar.



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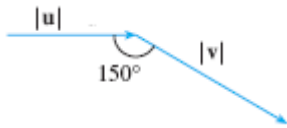
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14. **6.66/6.66 points** [Previous Answers](#)

SCalc8 12.4.513.XP.

[My Notes](#)[Ask Your Teacher](#)

Consider the figure below, where $|\mathbf{u}| = 6$ and $|\mathbf{v}| = 11$.



(a) Find $|\mathbf{u} \times \mathbf{v}|$.

33



(b) Determine whether $\mathbf{u} \times \mathbf{v}$ is directed into the screen or out of the screen.

- ☒ into the screen
☐ out of the screen



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SCalc8 12.4.516.XP.MI.

[My Notes](#)[Ask Your Teacher](#)

Find two unit vectors orthogonal to both given vectors.

$$\langle 5, -5, 5 \rangle, \langle 0, 4, 4 \rangle$$

$$(-40\mathbf{i} - 20\mathbf{j} + 20\mathbf{k})/\sqrt{2400}$$



(smaller \mathbf{i} -value)

$$(40\mathbf{i} + 20\mathbf{j} - 20\mathbf{k})/\sqrt{2400}$$



(larger \mathbf{i} -value)

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