

1. Given the vectors:

1 point

$$\vec{v} = (1, 0, 7)$$

$$\vec{w} = (0, -1, 2)$$

find the distance between them, $d(\vec{v}, \vec{w})$.

- ☐ -2
- ☐ $\sqrt{(23)}$
- ☒ $\sqrt{(27)}$
- ☐ 5

2. You are given the points $P: (1, 0, -3)$ and $Q: (-1, 0, -3)$. The magnitude of the vector from P to Q is:

1 point

- ☐ -2
- ☐ 3
- ☒ 2

3. Select the correct statements pertaining to the dot product.

1 point

- ☐ The dot product of orthogonal vectors is always 1.
- ☒ The dot product of orthogonal vectors is always 0.
- ☒ The dot product of two vectors is always a scalar.
- ☐ The dot product vector is the diagonal in a parallelogram formed by the two vectors \vec{u} and \vec{v} .

4. Calculate the norm $\|\vec{v}\|$ of the vector $\vec{v} = (1, -5, 2, 0, -3)$ and select the correct answer.

1 point

- ☒ $\|\vec{v}\| = \sqrt{39}$
- ☐ $\|\vec{v}\| = 5$
- ☐ $\|\vec{v}\| = 39$
- ☐ $\|\vec{v}\| = \sqrt{35}$

5. Which of the vectors has the greatest norm?

1 point

- ☐ $\begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}$
- ☐ $\begin{bmatrix} 1 \\ 2 \\ -3 \end{bmatrix}$
- ☐ $\begin{bmatrix} 1 \\ 0 \\ -2 \\ 0 \\ -1 \end{bmatrix}$
- ☐ $\begin{bmatrix} 2 \\ 2 \\ 2 \\ 2 \end{bmatrix}$
- ☒ $\begin{bmatrix} 2 \\ 5 \end{bmatrix}$

6. Calculate the dot product $\vec{a} \cdot \vec{b}$ and select the correct answer.

1 point

$$\vec{a} = \begin{bmatrix} 3 \\ 7 \\ 1 \end{bmatrix}, \vec{b} = \begin{bmatrix} 4 \\ 0 \\ 3 \end{bmatrix}$$

- ☒ 15
- ☐ 30
- ☐ $\begin{bmatrix} 12 \\ 0 \\ 3 \end{bmatrix}$
- ☐ $\begin{bmatrix} 1 \\ 0 \\ 1 \end{bmatrix}$

7. Which of the following is the result of performing the multiplication $M_1 \cdot M_2$? Where M_1 and M_2 are given by:

1 point

$$M_1 = \begin{bmatrix} 2 & -1 \\ 3 & -3 \end{bmatrix}, M_2 = \begin{bmatrix} 5 & -2 \\ 0 & 1 \end{bmatrix}.$$

- ☐ $\begin{bmatrix} 10 & 3 \\ 15 & 4 \end{bmatrix}$
- ☐ $\begin{bmatrix} 10 & -3 & 1 \\ 15 & -4 & 0 \\ 1 & 0 & 1 \end{bmatrix}$
- ☐ $\begin{bmatrix} 10 & 15 \\ -3 & -4 \end{bmatrix}$
- ☐ $\begin{bmatrix} 10 & 15 \\ -3 & -4 \end{bmatrix}$

☒ $\begin{bmatrix} 10 & -5 \\ 15 & -9 \end{bmatrix}$

8. Calculate the dot product $\vec{w} \cdot \vec{z}$ and select the correct answer.

1 point

$$\vec{w} = \begin{bmatrix} -9 \\ -1 \end{bmatrix}, \vec{z} = \begin{bmatrix} -3 \\ -5 \end{bmatrix}$$

☐ $\begin{bmatrix} -27 \\ -5 \end{bmatrix}$

☐ 35

☐ $\begin{bmatrix} 27 \\ 5 \end{bmatrix}$

☒ 32