Congratulations! You passed!

received 100%

Latest Submission Grade 100%

To pass 75% or

Go to next item

1/1 point

1. Given the vectors:

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

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

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

 $\bigcirc$  -2

 $\bigcirc$   $\sqrt{(23)}$ 

O 5

 $\bigodot$  Correct  $\operatorname{Correctt} d(\vec{v},\vec{w}) = \sqrt{(0-1)^2 + (-1-0)^2 + (2-7)^2}$ 

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:

O -2 O 3

2

 $\bigodot$  Correct Correct The magnitude of the vector is the distance between points P and Q, which you find by using the following:  $\sqrt{((-1)-1)^2+\theta^2+((-3)-(-3))}=\sqrt{4}=2$ 

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

○ Correct Correct! Since both vectors are perpendicular to each other, the dot product is always 0.

The dot product of two vectors is always a scalar.

○ Correct
 Correct! The dot product gives us a real number, therfore a scalar.

☐ The dot product of orthogonal vectors is always 1.

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

 $\bigcirc \ \|v\| = 39$ 

||v|| = 5

 $\bigcirc \ \|v\| = \sqrt{35}$ 

 $\bigcirc$  Correct Correct  $\|v\| = \sqrt{((1^2) + (-5)^2 + 2^2 + 0^2 + (-3)^2)} = \sqrt{3}9$ 

5. Which of the vectors has the greatest norm?

0 [2]

 $\begin{bmatrix}
1 \\
2 \\
-3
\end{bmatrix}$ 

 $\odot$   $\begin{bmatrix} 2 \\ 5 \end{bmatrix}$ 

 $\begin{array}{c}
 \begin{bmatrix} 5 \\ 0 \\ -2 \\ 0 \\ -1 \end{bmatrix}
\end{array}$ 

 $\bigodot$  Correct Correct! The norm of the vector is  $\sqrt{(2^2)+(5^2)}=\sqrt{29}$  which is larger than the other vectors in the

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

 $\vec{a} = \begin{bmatrix} -1 \\ 5 \\ 2 \end{bmatrix}, \vec{b} = \begin{bmatrix} -3 \\ 6 \\ -4 \end{bmatrix}$ 

 $\begin{bmatrix}
-3 \\
30 \\
-8
\end{bmatrix}$ 

 $\begin{bmatrix}
1 \\
0 \\
1
\end{bmatrix}$ 

25 O 30

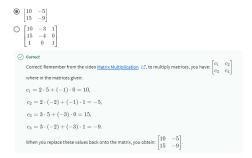
Correct By applying the formula you saw in the video The dot product. L'as follows:  $\vec{a}\cdot\vec{b}=ax\cdot bx+ay\cdot by+az\cdot bz$ , you have:

 $\vec{a} \cdot \vec{b} = (-1) \cdot (-3) + 5 \cdot 6 + 2 \cdot (-4) = 3 + 30 - 8 = 25.$ 

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

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

 $\bigcirc \begin{bmatrix} 10 & 15 \\ -3 & -4 \end{bmatrix}$  $\bigcirc \begin{bmatrix} 10 & 3 \\ 15 & 4 \end{bmatrix}$ 



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

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

1/1 point

$$\bigcirc 35$$

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

$$\bigcirc 32$$

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

$$\bigcirc \text{ Correct} \\ \text{Correct} \ \vec{w} \cdot \vec{z} = \begin{bmatrix} -9 \\ -1 \end{bmatrix} \cdot \begin{bmatrix} -3 \\ -5 \end{bmatrix} = (-9) \left( -3 \right) + (-1) \left( -5 \right) = 32$$