Dot product of vectors

5/5 points (100%)

Practice Quiz, 5 questions

✓ Congratulations! You passed!

Next Item



1/1 points

1.

As we have seen in the lecture videos, the dot product of vectors has a lot of applications. Here, you will complete some exercises involving the dot product.

What is the size of the vector $\begin{bmatrix} 1\\3\\4\\2 \end{bmatrix}$?

- 30
- $\sqrt{10}$
- 10
- $\sqrt{30}$

Correct

The size of the vector is the square root of the sum of the squares of the components.



1/1 points

2.

What is the dot product of the vectors $\begin{bmatrix} -5 \\ 3 \\ 2 \\ 8 \end{bmatrix}$ and $\begin{bmatrix} 1 \\ 2 \\ -1 \\ 0 \end{bmatrix}$?



5/5 points (100%)

 \bigcirc 1



Correct

The dot product of two vectors is the total of the component-wise products.

1/1 points

3.

Let
$$\mathbf{r}=egin{bmatrix} 3\\ -4\\ 0 \end{bmatrix}$$
 and let $\mathbf{s}=egin{bmatrix} 10\\ 5\\ -6 \end{bmatrix}$.

What is the scalar projection of \mathbf{s} onto \mathbf{r} ?



2

Correct

The scalar projection of of ${f s}$ onto ${f r}$ can be calculated with the formula $\frac{r \cdot s}{|r|}$

- \bigcirc -2
- $\frac{1}{2}$
- $-\frac{1}{2}$

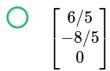


1/1 points

13/05/2018

5/5 points (100%)

What is the vector projection of \mathbf{s} onto \mathbf{r} ?



Correct

The vector projection of ${\bf s}$ onto ${\bf r}$ can be calculated with the formula $\frac{r \cdot s}{r \cdot r} r$.

$$\begin{bmatrix} 6 \\ 4 \\ 0 \end{bmatrix}$$

$$\begin{bmatrix} 30 \\ -20 \\ 0 \end{bmatrix}$$

$$\begin{bmatrix} 6 \\ -8 \\ 0 \end{bmatrix}$$

1/1 points

5

Given Let
$$\mathbf{a}=\begin{bmatrix} 3\\0\\4 \end{bmatrix}$$
 and let $\mathbf{b}=\begin{bmatrix} 0\\5\\12 \end{bmatrix}$.

Which is larger, $|\mathbf{a}+\mathbf{b}|$ or $|\mathbf{a}|+|\mathbf{b}|$?

Correct

This is in general true for any ${\bf a}$ or ${\bf b}$. This is called the "triangle inequality".

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