You submitted this guiz on Wed 30 Oct 2013 11:53 AM PDT (UTC -0700). You got a score of 4.75 out of 5.00. You can attempt again in 10 minutes.

## **Question 1**

Let two matrices be

$$A = egin{bmatrix} 1 & -4 \ -2 & 1 \end{bmatrix}, \qquad B = egin{bmatrix} 0 & 3 \ 5 & 8 \end{bmatrix}$$

$$B = \begin{bmatrix} 0 & 3 \\ 5 & 8 \end{bmatrix}$$

What is A - B?

Your Answer Score **Explanation** 

1.00

Total 1.00 / 1.00

## **Question 2**

Let 
$$x = egin{bmatrix} 2 \\ 7 \\ 4 \\ 1 \end{bmatrix}$$

What is  $\frac{1}{2} * x$ ?

Your Answer Score Explanation

0

 $\begin{bmatrix} 1 & \frac{7}{2} & 2 & \frac{1}{2} \end{bmatrix}$ 

 $\frac{8}{2}$ 

 $\begin{bmatrix} 1 \\ \frac{7}{2} \\ 2 \end{bmatrix}$ 

1.00 To multiply the vector x by  $\frac{1}{2}$ , take each element of x and multiply that element by  $\frac{1}{2}$ .

0

Total 1.00 /

1.00

# **Question 3**

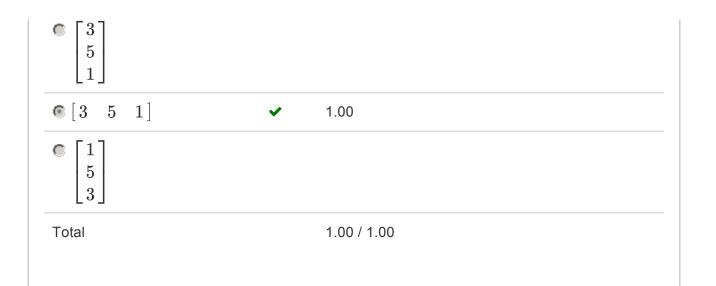
Let  $\boldsymbol{u}$  be a 3-dimensional vector, where specifically

$$u = \begin{bmatrix} 3 \\ 5 \\ 1 \end{bmatrix}$$

What is  $u^{\mathrm{T}}$ ?

Your Answer Score Explanation

**○** [1 5 3]



## **Question 4**

Let u and v be 3-dimensional vectors, where specifically

$$u=egin{bmatrix} -3 \ 4 \ 3 \end{bmatrix}$$
 and  $v=egin{bmatrix} 3 \ 1 \ 5 \end{bmatrix}$ 

What is  $u^T v$ ?

(Hint:  $u^T$  is a 1x3 dimensional matrix, and v can also be seen as a 3x1 matrix. The answer you want can be obtained by taking the matrix product of  $u^T$  and v.)

#### You entered:

10

Your Answer		Score	Explanation
10	~	1.00	
Total		1.00 / 1.00	

## **Question 5**

Let A and B be 3x3 (square) matrices. Which of the following must necessarily hold true?

Your Answer		Score	Explanation	
	~	0.25	Since A and B are both 3x3 matrices, their product is 3x3. More generally, if A were an $m\times n$ . matrix, and I a $n\times o$ matrix, then C would be $m\times o$ . (In our example, $m=n=o=3$ .)	
	<b>~</b>	0.25	Since A and B are both 3x3 matrices, their product is 3x3. More generally, if A were an $m\times n$ . matrix, and B a $n\times o$ matrix, then C would be $m\times o$ . (In our example, $m=n=o=3$ .)	
If v is a 3 dimensional vector, then $A*B*v$ is a 3 dimensional vector.	×	0.00	Since A and B are both 3x3 matrices, $A*B$ is 3x3 matrix. Thus, $(A*B)*v$ is a 3x3 matrix times a $3\times 1$ matrix (since v is a 3 dimensional vector, and thus also a 3x1 matrix), and the result gives a 3x1 vector.	
$\blacksquare \ A*B = B*A$	<b>~</b>	0.25	We saw in the lecture that matrix multiplication is not commutative in general.	
Total		0.75 / 1.00		