

TO PASS 80% or higher

GRADE
100%

TOTAL POINTS 5

- 1 / 1 point**

$$\begin{bmatrix} 4 & 3 \\ 6 & 9 \end{bmatrix}$$

 $\text{B} =$

$$\begin{bmatrix} -2 & 9 \\ -5 & 2 \end{bmatrix}$$

$$A = \begin{bmatrix} 4 & 3 \\ 6 & 9 \end{bmatrix}, \quad B = \begin{bmatrix} -2 & 9 \\ -5 & 2 \end{bmatrix}$$

What is $A + B$?

$$\begin{bmatrix} 2 & 12 \\ 1 & 11 \end{bmatrix}$$

$$\begin{bmatrix} 2 & 12 \\ 1 & 11 \end{bmatrix}$$

$$\begin{bmatrix} 6 & -6 \\ 11 & 7 \end{bmatrix}$$

$$\begin{bmatrix} 6 & -6 \\ 11 & 7 \end{bmatrix}$$



$$\begin{bmatrix} 2 & 9 \\ 1 & 2 \end{bmatrix}$$

$$\begin{bmatrix} 2 & 9 \\ 1 & 2 \end{bmatrix}$$



$$\begin{bmatrix} 6 & 12 \\ 11 & 11 \end{bmatrix}$$

$$\begin{bmatrix} 6 & 12 \\ 11 & 11 \end{bmatrix}$$



Correct

To add two matrices, add them element-wise.

2. Let

1 / 1 point

$$\begin{bmatrix} 5 \\ 5 \\ 2 \\ 7 \end{bmatrix}$$

$$x = \begin{bmatrix} 5 \\ 5 \\ 2 \\ 7 \end{bmatrix}$$

What is $2 * x$?



$$\begin{bmatrix} \frac{5}{2} & \frac{5}{2} & 1 & \frac{7}{2} \end{bmatrix}$$

$$\begin{bmatrix} \frac{5}{2} & \frac{5}{2} & 1 & \frac{7}{2} \end{bmatrix}$$



$$\begin{bmatrix} 10 \\ 10 \\ 4 \\ 14 \end{bmatrix}$$

$$\begin{bmatrix} 10 \\ 10 \\ 4 \\ 14 \end{bmatrix}$$



$$[10 \quad 10 \quad 4 \quad 14]$$

$$[10 \quad 10 \quad 4 \quad 14]$$



$$\begin{bmatrix} \frac{5}{2} \\ \frac{5}{2} \\ \frac{1}{2} \\ \frac{7}{2} \end{bmatrix}$$

$$\begin{bmatrix} \frac{5}{2} \\ \frac{5}{2} \\ \frac{1}{2} \\ \frac{7}{2} \end{bmatrix}$$



Correct

To multiply the vector x by 2, take each element of x and multiply that element by 2.

3.

1 / 1 point

Let u be a 3-dimensional vector, where specifically

$$\begin{bmatrix} 5 \\ 1 \\ 9 \end{bmatrix}$$

$$u = \begin{bmatrix} 5 \\ 1 \\ 9 \end{bmatrix}$$

What is u^T ?

☐

$$\begin{bmatrix} 9 & 1 & 5 \end{bmatrix}$$

$$\begin{bmatrix} 9 & 1 & 5 \end{bmatrix}$$

☐

$$\begin{bmatrix} 9 \\ 1 \\ 5 \end{bmatrix}$$

$$\begin{bmatrix} 9 \\ 1 \\ 5 \end{bmatrix}$$

☒

$$\begin{bmatrix} 5 & 1 & 9 \end{bmatrix}$$

$$\begin{bmatrix} 5 & 1 & 9 \end{bmatrix}$$

☐

$$\begin{bmatrix} 5 \\ 1 \\ 9 \end{bmatrix}$$

$$\begin{bmatrix} 5 \\ 1 \\ 9 \end{bmatrix}$$



Correct

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

1 / 1 point

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

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

and

$$\begin{bmatrix} 2 \\ 2 \\ 4 \end{bmatrix}$$

$$v = \begin{bmatrix} 2 \\ 2 \\ 4 \end{bmatrix}$$

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 .) Do not add brackets to your answer.

4



Correct

- 5.

1 / 1 point

Let A and B be 3×3 (square) matrices. Which of the following

must necessarily hold true? Check all that apply.

☐ If $C = A * B$, then C is a 6×6 matrix.

☐ $A * B = B * A$

☒ If A is the 3×3 identity matrix, then $A * B = B * A$



Correct

Even though matrix multiplication is not commutative in general ($A * B \neq B * A$ for general matrices A, B), for the special case where $A = I$, we have $A * B = I * B = B$, and also $B * A = B * I = B$. So, $A * B = B * A$.

☒ $A + B = B + A$



Correct

We add matrices element-wise. So, this must be true.