1 point

1. Let two matrices be

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

What is A + B?

- ○ $\begin{bmatrix} 2 & 9 \\ 1 & 2 \end{bmatrix}$
- ○ $\begin{bmatrix} 6 & -6 \\ 11 & 7 \end{bmatrix}$
- ○ $\begin{bmatrix} 6 & 12 \\ 11 & 11 \end{bmatrix}$
- ○ $\begin{bmatrix} 2 & 12 \\ 1 & 11 \end{bmatrix}$

Answer: D

1 point

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

What is $2 * x$?

- ○ $\begin{bmatrix} 10 & 10 & 4 & 14 \end{bmatrix}$
- ● $\begin{bmatrix} 10 \\ 10 \\ 4 \\ 14 \end{bmatrix}$
- ○ $\begin{bmatrix} \frac{5}{2} \\ \frac{5}{2} \\ 1 \\ \frac{7}{2} \end{bmatrix}$
- ○ $\begin{bmatrix} \frac{5}{2} & \frac{5}{2} & 1 & \frac{7}{2} \end{bmatrix}$

Answer: B

1 point

3. Let u be a 3-dimensional vector, where specifically

$$u = \begin{bmatrix} 8 \\ 1 \\ 4 \end{bmatrix}$$

What is u^{T}?

- (●) $\begin{bmatrix} 8 & 1 & 4 \end{bmatrix}$
- ( ) $\begin{bmatrix} 8 \\ 1 \\ 4 \end{bmatrix}$
- ( ) $\begin{bmatrix} 4 \\ 1 \\ 8 \end{bmatrix}$
- ( ) $\begin{bmatrix} 4 & 1 & 8 \end{bmatrix}$

Answer: A

1 point

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

$$u = \begin{bmatrix} 4 \\ -4 \\ -3 \end{bmatrix}$$

and

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

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.

Answer: -4

1 point

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

- [ ] If A is the 3x3 identity matrix, then $A * B = B * A$
- [ ] $A * B = B * A$
- [ ] If $C = A * B$, then C is a 6x6 matrix.
- [ ] $A + B = B + A$

Answer:
A
C
D