Eddie Price

High score: 10; Non-0 Low score: 3; Average score: 7.68 (including 0's)

<u>Problem 1</u> (4 Points). Find 2A + B.

$$A = \begin{bmatrix} 1 & -1 \\ 0 & 2 \end{bmatrix}, B = \begin{bmatrix} 3 & 2 \\ -2 & 1 \end{bmatrix}$$

Solution.

$$2\begin{bmatrix} 1 & -1\\ 0 & 2 \end{bmatrix} + \begin{bmatrix} 3 & 2\\ -2 & 1 \end{bmatrix}$$
$$= \begin{bmatrix} 2 & -2\\ 0 & 4 \end{bmatrix} + \begin{bmatrix} 3 & 2\\ -2 & 1 \end{bmatrix}$$
$$= \begin{bmatrix} 2+3 & -2+2\\ 0+(-2) & 4+1 \end{bmatrix} = \begin{bmatrix} 5 & 0\\ -2 & 5 \end{bmatrix}$$

<u>Problem 2</u> (6 Points). Find AB and BA.

$$A = \begin{bmatrix} 1 & -1 \\ 0 & 2 \end{bmatrix}, B = \begin{bmatrix} 3 & 2 \\ -2 & 1 \end{bmatrix}$$

Solution.

$$\begin{array}{ccc} AB \rightarrow \begin{bmatrix} 3 & 2 \\ -2 & 1 \end{bmatrix} & & BA \rightarrow \begin{bmatrix} 1 & -1 \\ 0 & 2 \end{bmatrix} \\ \begin{bmatrix} 1 & -1 \\ 0 & 2 \end{bmatrix} \begin{bmatrix} 5 & 1 \\ -4 & 2 \end{bmatrix} & \begin{bmatrix} 3 & 2 \\ -2 & 1 \end{bmatrix} \begin{bmatrix} 3 & 1 \\ -2 & 4 \end{bmatrix}$$

The (i, j)-entry of a product of matrices is the *i*th row of the first matrix times the *j*th column of the second matrix. So, as an example, the 1 appearing in row 1 column 2 of AB comes from multiplying row 1 of A by column 2 of B: $\begin{bmatrix} 1 & -1 \end{bmatrix} \begin{bmatrix} 2 \\ 1 \end{bmatrix} = (1)(2) + (-1)(1) = 2 - 1 = 1.$

So
$$AB = \begin{bmatrix} 5 & 1 \\ -4 & 2 \end{bmatrix}$$
 and $BA = \begin{bmatrix} 3 & 1 \\ -2 & 4 \end{bmatrix}$

Common Mistakes

People made calculation errors.

Some people switched the order of multiplication of the matrices.