AT 1311, College Algebra, Fall 2009 Quiz 5 - Sections 3.1-3.4 Name: Key-d

This quiz contains problems on the front and back of this page! Use the following matrices for problems 1 and 2 on this quiz. If I ask you to multiply or add two matrices that can't be multiplied because of their sizes being wrong, just say "Can't do" for your answer.

$$A = \begin{bmatrix} 3 & -4 \\ 1 & -6 \end{bmatrix} \quad B = \begin{bmatrix} 3 & -4 \\ -2 & 7 \end{bmatrix} \quad C = \begin{bmatrix} 1 & -2 & 3 \\ 3 & 1 & -3 \end{bmatrix} \quad D = \begin{bmatrix} -1 & 2 & -3 \\ 2 & 5 & 4 \end{bmatrix} \quad E = \begin{bmatrix} 1 & 2 \\ 2 & 3 \\ 1 & -5 \end{bmatrix}$$

$2D = \begin{bmatrix} -2 & 4 & -6 \\ 4 & 10 & 8 \end{bmatrix}$

1. Perform the indicated matrix operations using the matrices given above:

a) $A - B$

$\begin{bmatrix} 0 & 0 \\ 3 & -13 \end{bmatrix}$

b) $C - A$

Can't Do

c) $2 \cdot D - C$

$\begin{bmatrix} -3 & 6 & -9 \\ 1 & 9 & 11 \end{bmatrix}$

2. Perform the indicated matrix operations using the matrices given above:

a) $C * A$ (2x3 2x2)

Can't Do

b) $A * C$ (2x2 2x3)

$\begin{bmatrix} -9 & -10 & 21 \\ -17 & -8 & 21 \end{bmatrix}$

3. For the given system of equations, find the solution using any MATRIX method of your choice. SHOW YOUR WORK!!! I MUST be able to see the method you are using!!! If all you do is write an answer, you will NOT receive any credit for the problem!!!

$$4x - 3y = 33$$
$$-2x + y = -13$$

$A^{-1} = \frac{1}{4-(-3)(-2)} \begin{bmatrix} 1 & 3 \\ 2 & 4 \end{bmatrix} = -\frac{1}{2} \begin{bmatrix} 1 & 3 \\ 2 & 4 \end{bmatrix}$

$A^{-1} \cdot B = -\frac{1}{2} \begin{bmatrix} 1 & 3 \\ 2 & 4 \end{bmatrix} \times \begin{bmatrix} 33 \\ -13 \end{bmatrix} = -\frac{1}{2} \begin{bmatrix} (1)(33) + 3(-13) \\ (2)(33) + 4(-13) \end{bmatrix} = -\frac{1}{2} \begin{bmatrix} -6 \\ 14 \end{bmatrix}$

$\begin{bmatrix} 4 & -3 & 33 \\ 2 & -3/2 & 33/2 \\ -2 & 1 & -13 \end{bmatrix} \xleftarrow{\times 2} \begin{bmatrix} 1 & -3/4 & 33/4 \\ 0 & 3/4 & 21/4 \\ 0 & -\frac{1}{2} & \frac{7}{2} \end{bmatrix} \Rightarrow \begin{bmatrix} 1 & 0 & 3 \\ 0 & 1 & -7 \end{bmatrix}$

$= \begin{bmatrix} 3 \\ -7 \end{bmatrix}$

3x3 3x2 3x2