Math 270 HW#3

Name:_____ Date:_____

Show your work very clearly, neatly, and box your final answer.

One Side Only

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1. Find AB and BA for $A = \begin{bmatrix} 2 & -17 & 11 \\ -1 & 11 & -7 \\ 0 & 3 & -2 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & -1 & 0 \\ 2 & -3 & 5 \\ 0 & -1 & 2 \\ 1 & 2 & 3 \end{bmatrix}$.

2. Prove that if the product AB is a square matrix, then the product BA is defined.

3. Given: $\mathbf{A}$ is $m \times n$ matrix and c is a scalar, Prove that if $c\mathbf{A} = \mathbf{0}$, then $c = 0$ or $\mathbf{A} = \mathbf{0}$.

4. Prove that if A and B are square matrices of order n and c and d are scalars, then $\mathrm{Tr}(cA - dB) = c\mathrm{Tr}(A) - d\mathrm{Tr}(B)$.

4a. What is an underdetermined system of equations? Give an example.

4b. What is an overdetermined system of equations? Give an example.

5. Let $A = \begin{bmatrix} 1 & 2 \\ -2 & 1 \end{bmatrix}$, find $A^2 - 2A + 5I$, where I is the identity matrix of order 2. Describe your answer.

6) Write a brief summary about ***LaTex***.

7) Write a brief summary about ***Winedt***.

8) Write a brief summary about ***TexWorks***.

9) Write a brief summary about ***TexShop***.