CIS 2166
HW 13: Matrix Algebra part 2

A = $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix}$, B = $\begin{bmatrix} 4 & 3 & 2 \\ 2 & 3 & 4 \end{bmatrix}$, C = $\begin{bmatrix} 5 \\ 4 \\ 3 \end{bmatrix}$, D = $\begin{bmatrix} 2 & 1 & 0 \\ 4 & 3 & 3 \\ -6 & 2 & 1 \end{bmatrix}$, E = $\begin{bmatrix} 2 & 0 & 0 \\ 0 & 0 & 1 \\ 0 & 1 & 0 \end{bmatrix}$, F = $\begin{bmatrix} 2 & 1 & 0 \\ 4 & 3 & 3 \\ -6 & -2 & 3 \end{bmatrix}$,

1. Use method of Gaussian elimination to find x for the system of linear equations E*x=C. Solve by hand.

2. Use method of Gaussian elimination to find x for the system of linear equations F*x=C. Solve by hand.

3. What is rank of matrices A, B, D and F? Hint: use Gaussian elimination.

4. Use method of Gaussian elimination to find inverse of matrix D, E, F. Solve by hand.

5. Compute Tr(D) (trace of matrix D), Tr(A)

6. Find the determinants of D, E, F using the Sarrus formula.

7. Use method of Gaussian elimination to find det(D), det(E), det(F). Solve by hand.

8. If A and B are any symmetric matrices (A^T=A, B^T=B) , show that A*B=$(B*A)^T$