CIS 2166
HW1 for Matrix Algebra

Given are the following matrices:

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 = $\begin{bmatrix} 9 & 6 & 5 \\ 8 & 4 & 3 \\ 7 & 2 & 1 \end{bmatrix}$, E = $\begin{bmatrix} 2 & 0 & 0 \\ 0 & 0 & 1 \\ 0 & 1 & 0 \end{bmatrix}$

+1. What is (it may be undefined):

A + 2B
$(A – B)^T$
B*B*C
$C*C^T$
C^T*C
D*A
A*D*C
C^T*D
$D+D^T$
$(D+D^T)^T$
D*D
D^T*D

2. You can easily manipulate with rows and columns of a matrix by multiplying it with another matrix. You will see how by answering the following questions.
a) Show that multiplying D from left with E, E*D, transforms matrix D such that its first row is multiplied by two, and its second and third rows are swapped.

b) How does multiplying D from right with E, D*E, transform matrix D?

c) Create matrix E, such that multiplying D from left with E, E*D, transforms D such that its second row is divided by 2 and its first and third rows are swapped.

d) Create matrix E, such that multiplying D from left with E, E*D, transforms D such that its second row is the original second row minus the original first row of D.