Given are the following matrices:

\[ A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix}, \quad B = \begin{bmatrix} 4 & 3 & 2 \\ 2 & 3 & 4 \end{bmatrix}, \quad C = \begin{bmatrix} 5 \\ 4 \\ 3 \end{bmatrix}, \quad D = \begin{bmatrix} 9 & 6 & 5 \\ 8 & 4 & 3 \\ 7 & 2 & 1 \end{bmatrix}, \quad E = \begin{bmatrix} 2 & 0 & 0 \\ 0 & 0 & 1 \\ 0 & 1 & 0 \end{bmatrix} \]

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.