Solve the following questions on matrix and vector calculation by hand.
If you cannot get right answers to all the questions please read the textbook pp. ~~222-229~~ 220-227 carefully and review the matrix and vector concept.

A number of matrices are defined as

$$A := \begin{pmatrix} 4 & 5 \\ 1 & 2 \\ 5 & 6 \end{pmatrix} \quad B := \begin{pmatrix} 4 & 3 & 7 \\ 1 & 2 & 6 \\ 1 & 0 & 4 \end{pmatrix} \quad C := \begin{pmatrix} 2 \\ 6 \\ 1 \end{pmatrix} \quad D := \begin{pmatrix} 5 & 4 & 3 & 6 \\ 2 & 1 & 7 & 5 \end{pmatrix}$$

$$E := \begin{pmatrix} 1 & 5 & 6 \\ 7 & 1 & 3 \\ 4 & 0 & 5 \end{pmatrix} \quad F := \begin{pmatrix} 2 & 0 & 1 \\ 1 & 6 & 3 \end{pmatrix} \quad G := (8 \quad 6 \quad 4)$$

Perform the following operations:

$E + B$

$A + B$

$B - E$

$5B$

$E \cdot B$

D^T

$B \cdot E$

B^T

$E \cdot C$

Solutoins

$$E + B = \begin{pmatrix} 5 & 8 & 13 \\ 8 & 3 & 9 \\ 5 & 0 & 9 \end{pmatrix}$$

$A + B =$ [redacted] <== this operation is [redacted] not defined!

$$B - E = \begin{pmatrix} 3 & -2 & 1 \\ -6 & 1 & 3 \\ -3 & 0 & -1 \end{pmatrix}$$

$$5B = \begin{pmatrix} 20 & 15 & 35 \\ 5 & 10 & 30 \\ 5 & 0 & 20 \end{pmatrix}$$

$$E \cdot B = \begin{pmatrix} 15 & 13 & 61 \\ 32 & 23 & 67 \\ 21 & 12 & 48 \end{pmatrix}$$

$$D^T = \begin{pmatrix} 5 & 2 \\ 4 & 1 \\ 3 & 7 \\ 6 & 5 \end{pmatrix}$$

$$B \cdot E = \begin{pmatrix} 53 & 23 & 68 \\ 39 & 7 & 42 \\ 17 & 5 & 26 \end{pmatrix}$$

$$B^T = \begin{pmatrix} 4 & 1 & 1 \\ 3 & 2 & 0 \\ 7 & 6 & 4 \end{pmatrix}$$

$$E \cdot C = \begin{pmatrix} 38 \\ 23 \\ 13 \end{pmatrix}$$