Linear Algebra - Exercises

1) $A = \begin{pmatrix} 1 & 5 \\ 8 & 6 \\ -6 & 5 \end{pmatrix}$, $B = \begin{pmatrix} -6 & 7 \\ -1 & 4 \\ 3 & 0 \end{pmatrix}$, find $A + B$.

2) $A = \begin{pmatrix} 2 & 1 & 1 \\ 7 & 9 & 0 \end{pmatrix}$, $B = \begin{pmatrix} 4 & -6 & 0 \\ 3 & 10 & -2 \end{pmatrix}$, find $A - B$.

3) $A = \begin{pmatrix} 5 & 1 & 1 \\ -1 & 4 & 3 \end{pmatrix}$, $B = \begin{pmatrix} 24 & -6 \\ 6 & -5 \\ 0 & 2 \end{pmatrix}$, find $A^T + B$.

4) $A = \begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{pmatrix}$, $B = \begin{pmatrix} 1 & -1 \\ 2 & -3 \end{pmatrix}$, find $A^T B$.

5) $A = \begin{pmatrix} -1 & 2 \\ 4 & 1 \end{pmatrix}$, $B = \begin{pmatrix} 1 & -1 & 1 \\ 2 & -3 & 0 \end{pmatrix}$, find $BB^T - A$.

6) $A = \begin{pmatrix} -1 & 3 \\ 0 & 1 \end{pmatrix}$, $B = \begin{pmatrix} 5 & -1 & 4 \\ 1 & -2 & -1 \end{pmatrix}$, find $A^T A + BB^T$.

7) $A = \begin{pmatrix} 3 & 2 \\ -1 & 1 \end{pmatrix}$, find A^{-1}.

8) $A = \begin{pmatrix} -1 & 1 \\ 2 & 1 \end{pmatrix}$, $B = \begin{pmatrix} 3 & 1 & 2 \\ 1 & 1 & 0 \end{pmatrix}$, $C = \begin{pmatrix} 1 & 0 & 5 \\ 2 & -2 & 1 \end{pmatrix}$, find $(A^{-1}B)^T + C^T$.

9) $v = \begin{pmatrix} x \\ y \end{pmatrix}$, $A = \begin{pmatrix} 3x & 2y^2 \end{pmatrix}$, find A'_v.

10) $v = \begin{pmatrix} x \\ y \end{pmatrix}$, $A = \begin{pmatrix} 5x & 2y \end{pmatrix}$, $B = \begin{pmatrix} 3 \\ y + 5 \end{pmatrix}$, find $(AB)'_v$.