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**1: Matrix (basic operations)**

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(a) Solve:

For the matrix below (using paper and sheet):

$$A = \begin{bmatrix} 1 & 4 \\ 2 & 6 \\ 3 & 8 \end{bmatrix} \quad B = \begin{bmatrix} 1 & 3 \\ 1 & 4 \\ 2 & 5 \end{bmatrix} \quad C = \begin{bmatrix} 3 & 8 & 1 \\ 5 & 4 & 0 \end{bmatrix}$$

compute:

- $A + B$
- $A - B$
- $AC$
- $AB^T$
- $B^T A$

(b) Solve:

For the matrix below (using paper and sheet):

$$A = \begin{bmatrix} 2 & 1 \\ 2 & 5 \\ 5 & 7 \\ 4 & 8 \end{bmatrix} \quad B = \begin{bmatrix} 6 \\ 9 \\ 3 \\ 1 \end{bmatrix} \quad C = \begin{bmatrix} 3 & 8 \\ 8 & 6 \\ 5 & 1 \\ 2 & 4 \end{bmatrix}$$

compute:

- $B + B^T$
- $B^T + B$
- $A + C$
- $A - C$
- $B^T A$
- $AC^T$
- $C^T A$

(e) R commands:

Check your answers to the previous two exercise using R.