

1. Let $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$, $B = \begin{bmatrix} 2 & 1 \\ 4 & 3 \end{bmatrix}$, $C = \begin{bmatrix} 1 & 2 & 1 \\ 0 & 1 & 2 \end{bmatrix}$, and $D = \begin{bmatrix} 0 & 1 \\ 1 & 0 \\ 2 & 3 \end{bmatrix}$. Calculate each of the following expressions or explain

why it is not defined.

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|----------------|---------------|
| a. A^T | *g. $C^T A^T$ |
| *b. $2A - B^T$ | h. BD^T |
| c. C^T | i. $D^T B$ |
| d. $C^T + D$ | *j. CC^T |
| *e. $A^T C$ | *k. $C^T C$ |
| f. AC^T | l. $C^T D^T$ |