

1. Given these two matrices, what are these matrices, if they exist? CD , DC^T , CD^T , D^TC ?

$$C := \begin{pmatrix} 3 & -1 & 0 \\ 2 & -2 & 3 \end{pmatrix} D := \begin{pmatrix} -1 & 5 & -1 \\ -1 & 11 & -6 \end{pmatrix}$$

2. What is X if $C = 2X^T + \begin{pmatrix} -2 & 1 \\ -3 & 1 \end{pmatrix} D$?
3. By considering the elements, prove that $(A + B)^T = A^T + B^T$ for 2×2 matrices. Explain why it will also be true for $m \times n$ matrices.
4. If A and B are symmetric explain why $(A + B)$ will also be.
5. If $(A + B)$ is symmetric, do A and B have to be?
6. Use row operations to find all solutions to:

$$\begin{aligned} w - 2x + z &= 2 \\ -2w + 4x + y - 2z &= -8 \\ -w + 2x + y - z &= -6 \end{aligned}$$