

2 $A^2 + 2A + \text{tr}(A)A$. Hence, $A = \begin{bmatrix} 5 & -7 & 1 \\ -7 & 8 & 1 \\ 1 & 2 & -4 \end{bmatrix}$

Hence, $A^2 = A \cdot A$

$$= \begin{bmatrix} 5 & -7 & 1 \\ -7 & 8 & 1 \\ 1 & 2 & -4 \end{bmatrix} \begin{bmatrix} 5 & -7 & 1 \\ -7 & 8 & 1 \\ 1 & 2 & -4 \end{bmatrix}$$

$$= \begin{bmatrix} -23 & 23 & 8 \\ 22 & -13 & -19 \\ 15 & -31 & 15 \end{bmatrix}$$

From A^2 we obtain the result for A^2 .

Now, $2A = 2 \cdot \begin{bmatrix} 5 & -7 & 1 \\ -7 & 8 & 1 \\ 1 & 2 & -4 \end{bmatrix}$

$$= \begin{bmatrix} 10 & -14 & 2 \\ -14 & 16 & 2 \\ 2 & 4 & -8 \end{bmatrix}$$

$$A^T = \begin{vmatrix} 5 & -7 & 1 \\ -7 & 8 & 1 \\ 1 & 2 & -4 \end{vmatrix}$$

$$= \begin{vmatrix} 5 & -7 & 1 \\ -7 & 8 & 2 \\ 1 & 1 & -4 \end{vmatrix}$$

$$\begin{aligned} & -23 \\ & -35 + 56 + 2 \\ & 5 + 7 - 4 \\ & -35 + 56 + 1 \\ & 49 - 64 + 2 \\ & -7 - 8 - 4 \\ & 5 + 14 - 4 \\ & -7 - 16 - 8 \\ & = - \\ & 1 - 2 + 16 \\ & \text{w.r.} \end{aligned}$$

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Quiz-1

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Sec: 11

$$1. x_1 + 2x_2 - 3x_3 + 4x_4 = 2$$

$$2x_1 + 5x_2 - 2x_3 + x_4 = 1$$

$$5x_1 + 12x_2 - 7x_3 + 6x_4 = 3$$

A. Matrix:

$$\begin{bmatrix} 1 & 2 & -3 & 4 & 2 \\ 2 & 5 & -2 & 1 & 1 \\ 5 & 12 & -7 & 6 & 3 \end{bmatrix}$$