

Topic List



Type – 01



Type – 02

Cat - 01

$$A = \begin{bmatrix} 1 & 2 \\ 4 & -3 \end{bmatrix} \quad A^2 + 2A - \underline{11I} = ?$$

Cat - 02

$$A = \begin{bmatrix} 1 & 2 \\ 4 & -3 \end{bmatrix} \quad A^2 + 2A - \underline{11} = ?$$

Cat - 03

$$f(x) = x^2 + \checkmark 3x \quad A = \begin{bmatrix} 1 & 2 \\ 4 & -3 \end{bmatrix} \quad f(A) \checkmark + I = ?$$

Cat - 04

$$[a_{ij}]_{2 \times 2} \checkmark \quad a_{ij} = i + j \text{ হলে } \underline{A^2 + 2A - 11I} = ?$$

$$A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix} \quad \text{হলে } \boxed{A^2 - 4A - 5I = ?}$$

$$A^2 = A \times A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix} \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$$

$$- 4A - 5I$$

$$\begin{bmatrix} 8 & 8 & 8 \\ 8 & 8 & 8 \\ 8 & 8 & 8 \end{bmatrix} - \begin{bmatrix} 4 & 8 & 8 \\ 8 & 4 & 8 \\ 8 & 8 & 4 \end{bmatrix} - \begin{bmatrix} 5 & 0 & 0 \\ 0 & 5 & 0 \\ 0 & 0 & 5 \end{bmatrix}$$

$$1 \times 1 + 2 \times 2 + 2 \times 2$$

$$2 \times 1 + 1 \times 2 + 2 \times 2$$

$$2 \times 1 + 2 \times 2 + 1 \times 2$$

$$1 \times 2 + 2 \times 1 + 2 \times 2$$

$$2 \times 2 + 1 \times 1 + 2 \times 2$$

$$2 \times 2 + 2 \times 1 + 1 \times 2$$

$$4A = \begin{bmatrix} 4 & 8 & 8 \\ 8 & 4 & 8 \\ 8 & 8 & 4 \end{bmatrix}$$

$$5I = 5 \times \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

$$\begin{bmatrix} 1 \times 2 + 2 \times 2 + 2 \times 1 \\ 2 \times 2 + 1 \times 2 + 2 \times 1 \\ 2 \times 2 + 2 \times 2 + 1 \times 1 \end{bmatrix} = \begin{bmatrix} 9 & 8 & 8 \\ 8 & 9 & 8 \\ 8 & 8 & 9 \end{bmatrix}$$

$$\begin{bmatrix} 9 & 8 & 8 \\ 8 & 9 & 8 \\ 8 & 8 & 9 \end{bmatrix}$$

$$A = \begin{bmatrix} 1 & 3 & 2 \\ 2 & 0 & 3 \\ 1 & -1 & 1 \end{bmatrix}_{3 \times 3} \text{ হলে, } \underline{A^3} - \underline{2A^2} + \underline{A} - \underline{2I} = ?$$

HW

$$A^2 = A \times A = ?$$

$$A^3 = A^2 \times A = ?$$

$$2A^2 = ?$$

$$2I = 2 \times \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} = ?$$

$$A^3 - 2A^2 + A - 2I$$

$$= ? - ? + ? - ?$$

$$= ?$$

$$A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}_{3 \times 3} \text{ হলে } A^2 - 4A - \boxed{5} = ?$$

→ I ধরে
মিউল্টিপল

$$A^2 - 4A - 5I = ?$$

$$A^2 = A \times A = ?$$

$$4A = ?$$

$$5I = 5 \times \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} = ?$$

$$\begin{aligned} A^2 - 4A - 5I \\ = ? - ? - ? \\ = ? \end{aligned}$$

$$A = \begin{bmatrix} 2 & 3 & -1 \\ 2 & 0 & 2 \\ 1 & -2 & 0 \end{bmatrix}_{3 \times 3} \text{ এবং } f(t) = t^2 - 3t + 2 \text{ হলে, } f(A) = ?$$

$$\begin{aligned} f(A) &= A^2 - 3A + 2I \\ &= A^2 - 3A + 2I \end{aligned}$$

$$A^2 = A \times A = ?$$

$$3A = ?$$

$$2I = ?$$

$$\begin{aligned} &A^2 - 3A + 2I \\ &= ? - ? + ? \\ &= ? \end{aligned}$$

$A = [a_{ij}]_{2 \times 2}, a_{ij} = 2i - j$ হলে $f(x) = x^2 + 3x$, $f(A) + 2I_3 = ?$

$$A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$$

$$= \begin{bmatrix} 1 & 0 \\ 3 & 2 \end{bmatrix}_{2 \times 2}$$

$$f(A) + 2I_3$$

$$= \boxed{A^2 + 3A + 2I_3} \rightarrow \text{সমস্যা}$$

$$f(A) + 2I_2$$

$$= A^2 + 3A + 2I_2$$

$$A^2 = ?$$

$$3A = ?$$

$$2I_2 = ?$$

$C = \begin{bmatrix} 1 & -1 \\ 0 & 0 \end{bmatrix}$ হলে দেখাও যে, $I - C$ একটি সমঘাতি ম্যাট্রিক্স

ধরি, $P = I - C = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} - \begin{bmatrix} 1 & -1 \\ 0 & 0 \end{bmatrix}$

$= \begin{bmatrix} 0 & 1 \\ 0 & 1 \end{bmatrix}$

$P^T = P \times P = \begin{bmatrix} 0 & 1 \\ 0 & 1 \end{bmatrix} \times \begin{bmatrix} 0 & 1 \\ 0 & 1 \end{bmatrix} = \begin{bmatrix} 0 \times 0 + 1 \times 0 & 0 \times 1 + 1 \times 1 \\ 0 \times 0 + 1 \times 0 & 0 \times 1 + 1 \times 1 \end{bmatrix}$
 $= \begin{bmatrix} 0 & 1 \\ 0 & 1 \end{bmatrix}$

$P = P^T$

* স্বয়ং → $A \cdot A^t = I$

* অন্যথা → $\tilde{A} = A$

* অন্যথা → $\tilde{A} = I$

* শূন্য → $A^0 = 0$

দেখাও যে, $A = \begin{bmatrix} -5 & -8 & 0 \\ 3 & 5 & 0 \\ 1 & 2 & 1 \end{bmatrix}$ ম্যাট্রিক্সটি একটি অভেদঘাতি ম্যাট্রিক্স।

$\rightarrow A^2 = I$

$$A^2 = A \times A$$
$$= ?$$

Hw

দেখাও যে, $A = \begin{bmatrix} 2 & 0 & -4 \\ 3 & 0 & 0 \\ 1 & 0 & -2 \end{bmatrix}_{3 \times 3}$

একটি শূন্যঘাতি ম্যাট্রিক্স এবং শূন্যঘাতির সূচক নির্ণয় কর।

$A^3 = A^T \times A$
 $= ? \times ? = \begin{bmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$
 $n \times n = 3$

$A^3 = \begin{bmatrix} 2 & 0 & -4 \\ 3 & 0 & 0 \\ 1 & 0 & -2 \end{bmatrix} \begin{bmatrix} 2 & 0 & -4 \\ 3 & 0 & 0 \\ 1 & 0 & -2 \end{bmatrix}$

$\begin{bmatrix} 0 & 0 & 0 \\ 6 & 0 & -12 \\ 0 & 0 & 0 \end{bmatrix}$

$= \begin{bmatrix} 2 \times 2 + 0 \times 3 + (-4) \times 1 & 2 \times 0 + 0 \times 0 + (-4) \times 0 & 2 \times (-4) + 0 \times 0 + (-4) \times (-2) \\ 3 \times 2 + 0 \times 3 + 0 \times 1 & 3 \times 0 + 0 \times 0 + 0 \times 0 & 3 \times (-4) + 0 \times 0 + 0 \times (-2) \\ 1 \times 2 + 0 \times 3 + (-2) \times 1 & 1 \times 0 + 0 \times 0 + (-2) \times 0 & 1 \times (-4) + 0 \times 0 + (-2) \times (-2) \end{bmatrix}$

$\begin{bmatrix} 0 & 0 & 0 \\ 6 & 0 & -12 \\ 0 & 0 & 0 \end{bmatrix}$