MATRICES
Model questions ①

1, Construct a 2×2 matrix $A=[a_{ij}]$ whose elements are given by $a_{ij}=2i-j$. Also find A^2.

2, Find values of x, y, z and w if

$$2\begin{bmatrix} x & 3 \\ w & y \end{bmatrix}+3\begin{bmatrix} 1 & -1 \\ 0 & 2 \end{bmatrix}=3\begin{bmatrix} 3 & 5 \\ 4 & 6 \end{bmatrix}.$$

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

show that $AB\neq BA$.

4, Find X and Y if $X+Y=\begin{bmatrix} 5 & 2 \\ 0 & 9 \end{bmatrix}$

and $X-Y=\begin{bmatrix} 3 & 6 \\ 0 & -1 \end{bmatrix}$.

5, Express $A=\begin{bmatrix} 1 & 2 & 3 \\ -1 & 0 & 4 \\ 2 & 1 & 5 \end{bmatrix}$ as the sum of a symmetric and skew-symmetric matrices.

6, If $A=\begin{bmatrix} 3 & -2 \\ 4 & -2 \end{bmatrix}$, find k if $A^2=kA-2I$

7, Find value of x if

$$\begin{bmatrix} 1 & 2 & 1 \end{bmatrix}\begin{bmatrix} 1 & 2 & 0 \\ 2 & 0 & 1 \\ 1 & 0 & 2 \end{bmatrix}\begin{bmatrix} 0 \\ 2 \\ x \end{bmatrix}=0$$

MATRICES

Model questions - (2)

1, Construct a 2×3 matrix, where $A=[a_{ij}]$, $a_{ij}=|i-3j|$

2, Find values of a, b, c and d if

$$\begin{bmatrix} a-b & 2a+c \\ 2a-b & 3c+d \end{bmatrix} = \begin{bmatrix} 1 & 5 \\ 0 & 13 \end{bmatrix}$$

3, If $A=\begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix}$, show that $A^2-5A+7I=0$

4, Find matrix A if

$$\begin{bmatrix} 2 & -1 \\ 3 & 2 \end{bmatrix} A = \begin{bmatrix} 0 & 4 \\ 1 & 7 \end{bmatrix}$$

5, Express $A=\begin{bmatrix} 2 & -2 & -4 \\ -1 & 3 & 4 \\ 1 & -2 & -3 \end{bmatrix}$ as the sum of a symmetric and skew-symmetric matrices.

6, If A and B are symmetric matrices then show that AB-BA is skew-symmetric.

7, If $A=\begin{bmatrix} 1 & 2 \\ -1 & 3 \end{bmatrix}$, $B=\begin{bmatrix} 2 & 4 \\ 1 & 5 \end{bmatrix}$

show that $(AB)^T=B^TA^T$

8, Find x and y if $x\begin{bmatrix} 2 \\ 3 \end{bmatrix}+y\begin{bmatrix} -1 \\ 1 \end{bmatrix}=\begin{bmatrix} 10 \\ 5 \end{bmatrix}$