SARALA BIRLA PUBLIC SCHOOL

Birla Knowledge City, Mahilong, Ranchi

Session - 2021-22

Assignment - I

Class: XII

Subject: Mathematics (Applied)

1) In the matrix $\begin{bmatrix} 2 & 5 & 19 & -7 \\ 35 & -2 & 5/2 & 12 \\ \sqrt{3} & 1 & -5 & 17 \end{bmatrix}$, write :

a. The order of matrix,

b. the number of elements,

c. write the elements a_{13} , a_{21} , a_{33} , a_{24} , a_{23}

2) Construct a 2×2 matrix, $A = [a_{ij}]$, whose element are given by:

a. $a_{ij} = \frac{(i+j)^2}{2}$

b. $a_{ij} = \frac{(i+2j)^2}{4}$

3) If the matrix has 24 elements, what are the possible order it can have? What, if it has 13 elements.

4) $\begin{bmatrix} x+3 & z+4 & 2y-7 \\ -6 & a-1 & 0 \\ b-3 & -21 & 0 \end{bmatrix} = \begin{bmatrix} 0 & 6 & 3y--2 \\ -6 & -3 & 2c+2 \\ 2b+4 & -21 & 0 \end{bmatrix}$. Find the value of *a*, *b*, *c*, *x*, *y* and *z*

5) If $A = \begin{pmatrix} \cos\alpha & -\sin\alpha \\ \sin\alpha & \cos\alpha \end{pmatrix}$, then for what value of α is A an identity matrix?

6) Simplify $\cos\theta \begin{bmatrix} \cos\theta & \sin\theta \\ -\sin\theta & \cos\theta \end{bmatrix} + \sin\theta \begin{bmatrix} \sin\theta & -\cos\theta \\ \cos\theta & \sin\theta \end{bmatrix}$

7) If $A = \begin{bmatrix} 8 & 0 \\ 4 & -2 \\ 3 & 6 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & -2 \\ 4 & 2 \\ -5 & 1 \end{bmatrix}$, then find the matrix X such that $2A + 3X = 5B$.

8) If $A = \begin{bmatrix} 1 & -1 & 2 & 3 \end{bmatrix}$ $B = \begin{bmatrix} 0 \\ 1 \\ 2 \\ 3 \end{bmatrix}$, Find *AB* and *BA*.

9) If $A = \begin{bmatrix} 0 & 0 \\ 4 & 0 \end{bmatrix}$, find A^{16}

10) If matrix $A = \begin{bmatrix} 2 & -2 \\ -2 & 2 \end{bmatrix}$ and $A^2 = pA$, then write the value of *p*.

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