Latex Assignment16

30 August, 2023

Ex 12.3.1

1. In the matrix $A = \begin{pmatrix} 2 & 5 & 19 & -7 \\ 25 & -2 & \frac{5}{2} & 12 \\ \sqrt{3} & 1 & -5 & 17 \end{pmatrix}$, write:
   (i) The order of the matrix
   (ii) The number of elements
   (iii) Write the elements $a_{13}, a_{21}, a_{33}, a_{24}, a_{23}$
2. If a matrix has 24 elements, what are the possible order it can have? What if, it has 13 elements?
3. If a matrix has 18 elements, what are the possible orders it can have? What, if it has 5 elements?
4. Construct a 2×2 matrix, $A = [a_{ij}]$, whose elements are given by:
   (i) $a_i j = \frac{(i+j)^2}{2}$
   (ii) $a_i j = \frac{i}{j}$
   (iii) $a_i j = \frac{(i+2j)^2}{2}$
5. Construct a 3×4 matrix, whose elements are given by:
   (i) $a_i j = \frac{1}{2}|-3i + j|$
   (ii) $a_i j = 2i - j$
6. Find the values of x, y and z from the following equations:
   (i) $\begin{pmatrix} 4 & 3 \\ x & 5 \end{pmatrix}\begin{pmatrix} y & z \\ 1 & 5 \end{pmatrix}$
   (ii) $\begin{pmatrix} x+y & 2 \\ 5+z & xy \end{pmatrix}\begin{pmatrix} 6 & 2 \\ 5 & 8 \end{pmatrix}$
   (iii) $\begin{pmatrix} x+y+z \\ x+z \\ y+z \end{pmatrix}\begin{pmatrix} 9 \\ 5 \\ 7 \end{pmatrix}$

7. Find the value of a, b, c and d from the equation:

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

8. $A = \left([\right) a_{ij}]_{m\times n\backslash}$ is a square matrix, if:

   (a) $m \leq n$

   (b) $m \geq n$

   (c) $m = n$

   (d) None of these

9. Which of the given values of x and y make the following pair of matrices equal:

$$\begin{pmatrix} 3x+7 & 5 \\ y+1 & 2-3x \end{pmatrix}, \begin{pmatrix} 0 & y-2 \\ 8 & 4 \end{pmatrix} \tag{2}$$

   (a) $x = \frac{1}{3}, y = 7$

   (b) Not possible to find

   (c) $y = 7, x = \frac{2}{3}$

   (d) $x = \frac{1}{3}, y = \frac{2}{3}$

10. The number of all possible matrices of order 3×3 with each entry 0 or 1 is:

   (a) 27

   (b) 81

   (c) 18

   (d) 512