

# 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  $2 \times 2$  matrix,  $A = [a_{ij}]$ , whose elements are given by:
- (i)  $[a_{ij}] = \frac{(i+j)^2}{2}$
  - (ii)  $[a_{ij}] = \frac{i}{j}$
  - (iii)  $[a_{ij}] = \frac{(i+2j)^2}{2}$
- 2

5. Construct a  $3 \times 4$  matrix, whose elements are given by:

- (i)  $[a_{ij}] = \frac{1}{2} |-3i + j|$
  - (ii)  $[a_{ij}] = 2i - j$
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:

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

8.  $A = [a_{ij}]_{m \times n}$  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:

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

- (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  $3 \times 3$  with each entry 0 or 1 is:

- (a) 27
- (b) 81
- (c) 18
- (d) 512