Class 12 Mathematics · Chapter 3: Matrices

Worksheet · 20 marks · about 40 minutes · based on NCERT

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1. A matrix has 12 elements and more rows than columns. The number of different orders it can have is [1]

(a) 6 (b) 2
(c) 4 (d) 3

2. If A = [[2, −1, 3], [0, 4, 1]] and B = [[1, 2], [5, −3], [−2, 0]], the element in the second row and first column of AB is [1]

(a) −9 (b) −12
(c) 18 (d) 22

3. A = $[a_{ij}]$ is a 2 × 3 matrix with $a_{ij} = ij - 2$. The sum of the elements in the second row of A is [1]

(a) 12 (b) 2
(c) 0 (d) 6

4. The matrix [[2x − 1, y − 3], [0, 5]] is a scalar matrix. Then x + y equals [1]

(a) 6 (b) 3
(c) 9 (d) 0

5. Which of the following statements is true? [1]

(a) Every scalar matrix is an identity matrix. (b) Every diagonal matrix is a scalar matrix.
(c) Every zero matrix is a square matrix. (d) Every identity matrix is a scalar matrix.

6. Find p, q, r and s if [[p + q, q − r], [2r + s, p − s]] = [[6, 1], [9, 2]]. [2]

7. Find x, y and z if the matrix [[0, 2x − 1, 4], [3, 0, y + 2], [z, −5, 0]] is skew symmetric. [2]

8. Construct the 2 × 3 matrix A = $[a_{ij}]$ whose elements are given by $a_{ij} = |2i - 3j|$. [2]

9. Express C = [[1, 4, −2], [0, 3, 5], [6, −1, 2]] as the sum of a symmetric and a skew symmetric matrix. [3]

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10. For a real number t, let G(t) = [[1, t], [0, 1]]. (a) Show that G(s)G(t) = G(s + t). (b) Hence show that G(t) is invertible with $G(t)^{-1} = G(-t)$, and find $[G(2)]^3$. [3]

11. Find matrices X and Y if 2X + Y = [[5, 0], [−3, 10]] and X − 2Y = [[0, 5], [−4, 0]]. [3]