Class 12 Mathematics · Chapter 4: Determinants

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

Name _____ Class and section _____ Date _____

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1. The value of |A| for A = [[3, 0, 2], [1, 4, 0], [−2, 1, 5]] is [1]

(a) 60 (b) 42
(c) 78 (d) −78

2. If |[[x, 4], [3, x]]| = |[[5, 2], [7, 4]]| and x > 0, then x is [1]

(a) $3\sqrt{2}$ (b) $2\sqrt{3}$
(c) 3 (d) $\sqrt{6}$

3. The system x + 2y = 3, 2x + 4y = 7 is [1]

(a) inconsistent, as it has no solution (b) consistent, with exactly two solutions
(c) consistent, with infinitely many solutions (d) consistent, with a unique solution

4. In the determinant |[[2, 7, −3], [1, 0, 4], [5, −2, 6]]|, the cofactor A_{23} of the element 4 is [1]

(a) −31 (b) 31
(c) −39 (d) 39

5. The matrix [[k, 6], [3, 2]] is singular when k is [1]

(a) −9 (b) 4
(c) 9 (d) 1

6. Using determinants, find the equation of the line joining the points (2, 3) and (−1, −3). [2]

7. For Δ = |[[2, −1, 4], [0, 3, 1], [5, 2, −2]]|, find the cofactors A_{11}, A_{12}, A_{13} and hence the value of Δ. [2]

8. Find the values of λ for which the matrix [[λ, 2, 0], [2, λ, 0], [1, 1, 3]] is singular. [2]

9. For Δ = |[[2, 0, 3], [−1, 4, 1], [5, 0, −2]]|, (a) evaluate Δ using the cofactors of the elements of the second column, and (b) verify that $a_{11}A_{12} + a_{21}A_{22} + a_{31}A_{32} = 0$. [3]

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10. Show that $A = [[0, 1, 1], [1, 0, 1], [1, 1, 0]]$ satisfies $A^2 - A - 2I = O$, and hence find A^{-1}. [3]

11. A sports teacher in Pune pays ₹5,600 for 3 footballs and 4 cricket bats, and ₹4,900 for 5 footballs and 2 cricket bats. Using the matrix method, find the price of a football and of a bat. [3]

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