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Sub: - Mathematics

Topic – Matrices and Determinants (3)
Holiday Homework

Std: XII

- The value of the determinant $\begin{vmatrix} 1 & 2 & 4 \\ -1 & 3 & 0 \\ 4 & 1 & 0 \end{vmatrix}$
 - 52
 - 13
 - 13
 - 52
- If matrix $A = \begin{bmatrix} 1 & -1 \\ -1 & 1 \end{bmatrix}$ and $A^2 = kA$, then find the value of 'k' is
 - 1
 - 2
 - 1
 - 2
- The matrix $A = \begin{bmatrix} 0 & -5 & 8 \\ 5 & 0 & 12 \\ -8 & -12 & 0 \end{bmatrix}$ is a
 - diagonal matrix
 - symmetric matrix
 - skew-symmetric matrix
 - scalar matrix
- The value of 'x', if $\begin{vmatrix} 3x & 7 \\ -2 & 4 \end{vmatrix} = \begin{vmatrix} 8 & 7 \\ 6 & 4 \end{vmatrix}$ is
 - 1
 - 2
 - 1
 - 2
- If the matrix $A = \begin{bmatrix} 0 & a & -3 \\ 2 & 0 & -1 \\ b & 1 & 0 \end{bmatrix}$ is skew-symmetric, then the value of 'a' and 'b' is
 - a=2, b=-3
 - a=-2, b=3
 - a=-2, b=-3
 - a=2, b=3
- Evaluate $\begin{vmatrix} a+ib & c+id \\ -c+id & a-ib \end{vmatrix}$.
 - $a^2 - b^2$
 - $a^2 + b^2 - c^2$
 - $a^2 - b^2 - c^2 - d^2$
 - $a^2 + b^2 + c^2 + d^2$
- The minor of the element 6 in $\Delta = \begin{vmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{vmatrix}$ is ?
 - 36
 - 6
 - 8
 - 14
- If A is a square matrix of order 3 such that $|adj A| = 64$, then $|A|$ is
- If $\begin{bmatrix} 1 & 0 \\ y & 5 \end{bmatrix} + 2 \begin{bmatrix} x & 0 \\ 1 & -2 \end{bmatrix} = I$, then find $(x - y)$.
- If $M_{11} = -40$, $M_{12} = -10$ and $M_{13} = 35$, of the determinant $\Delta = \begin{vmatrix} 1 & 3 & -2 \\ 4 & -5 & 6 \\ 3 & 5 & 2 \end{vmatrix}$, then value of Δ is ?

11. Find the minors of the diagonal elements of the matrix $\begin{bmatrix} 1 & i & -i \\ -i & 1 & i \\ 1 & -i & i \end{bmatrix}$

12. If A is a matrix of order 2×2 , then find $(A^3)^{-1}$?

13. Examine the consistency of the following equations, using determinants:

$$(i) x + y = 4, 3x - 4y = 2 \quad (ii) 2x + 3y = 10, 4x + 6y = 20$$

14. If $f(x) = \begin{vmatrix} 0 & x-a & x-b \\ x+a & 0 & x-c \\ x+b & x+c & 0 \end{vmatrix}$, then show that $f(0) = 0$?

15. Find $|(adj A^T)|$, if $A = \begin{bmatrix} 2 & -1 \\ 4 & 3 \end{bmatrix}$.

16. Check using determinants, whether the points $(a+5, a-4)$, $(a-2, a+3)$ and (a, a) line on a line?

17. Compute, $(AB)^{-1}$, when $A = \begin{bmatrix} 1 & 1 & 2 \\ 0 & 2 & -3 \\ 3 & -2 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 2 & 0 \\ 0 & 3 & -1 \\ 1 & 0 & 2 \end{bmatrix}$

18. Using matrices solve the following system of linear equations:

$$8x + 4y + 3z = 18, 2x + y + z = 5, x + 2y + z = 5$$

19. In the given determinant, $\Delta = \begin{vmatrix} 2 & -3 & 5 \\ 6 & 0 & 4 \\ 1 & 5 & -7 \end{vmatrix}$, find $M_{13} + M_{21} - M_{32}$

20. If $A = \begin{bmatrix} 1 & 0 & 2 \\ 0 & 2 & 1 \\ 2 & 0 & 3 \end{bmatrix}$ and $A^3 - 6A^2 + 7A + kI = 0$, find the value of 'k'?

21. Find the sum of values of a , which makes the $\Delta = \begin{vmatrix} 1 & -2 & 5 \\ 2 & a & -1 \\ 0 & 4 & 2a \end{vmatrix} = 86$

22. Find $(A + B)^{-1}$, if $A = \begin{bmatrix} 3 & 4 \\ 2 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} -2 & -2 \\ 0 & -1 \end{bmatrix}$.

23. Verify $A.(adj A) = |A|.I = (adj A).A$, for the matrix $A = \begin{bmatrix} 1 & -1 & 2 \\ 3 & 0 & 2 \\ 1 & 0 & 3 \end{bmatrix}$.

24. If A_{ij} is the cofactor of the element a_{ij} of the determinant $\begin{vmatrix} 2 & -3 & 5 \\ 6 & 0 & 4 \\ 1 & 5 & -7 \end{vmatrix}$. Then find the value of $a_{32} \cdot A_{32}$.

25. If $A = \begin{bmatrix} -2 & 3 \\ 1 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} -1 & 0 \\ 1 & 2 \end{bmatrix}$, then find the value of $[A + 2B]'$.

26. Find the inverse of the matrix $A = \begin{bmatrix} 1 & 2 & -2 \\ -1 & 3 & 0 \\ 0 & -2 & 1 \end{bmatrix}$.