

Mahesh public school,jpdhpur
work sheet

CLASS XII SUBJECT:-MATHEMATICS CHAPTER:- DETERMINANTS PREPARED BY :-KHEM SINGH SIR

1.
$$\begin{vmatrix} a-b & b-c & c-a \\ x-y & y-z & z-x \\ p-q & q-r & r-p \end{vmatrix} =$$

(a) $a(x+y+z)+b(p+q+r)+c$

(b) 0

(c) $abc + xyz + pqr$

(d) None of these

2.
$$\begin{vmatrix} 1 & a & a^2 - bc \\ 1 & b & b^2 - ac \\ 1 & c & c^2 - ab \end{vmatrix} =$$

(a) 0 (b) $a^3 + b^3 + c^3 - 3abc$

(c) $3abc$ (d) $(a+b+c)^3$

3.
$$\begin{vmatrix} 1 & 1 & 1 \\ 1 & 1+x & 1 \\ 1 & 1 & 1+y \end{vmatrix} =$$

(a) 1 (b) 0

(c) x (d) xy

4.
$$\begin{vmatrix} 1 & a & a^2 \\ 1 & b & b^2 \\ 1 & c & c^2 \end{vmatrix} =$$

(a) $a^2 + b^2 + c^2$ (b) $(a+b)(b+c)(c+a)$

(c) $(a-b)(b-c)(c-a)$ (d) None of these

5. The roots of the equation

$$\begin{vmatrix} 1 & 4 & 20 \\ 1 & -2 & 5 \\ 1 & 2x & 5x^2 \end{vmatrix} = 0$$
 are

(a) -1, -2 (b) -1, 2

(c) 1, -2 (d) 1, 2

6. The determinant $\begin{vmatrix} 1 & 1 & 1 \\ 1 & 2 & 3 \\ 1 & 3 & 6 \end{vmatrix}$ is not

equal to

(a) $\begin{vmatrix} 2 & 1 & 1 \\ 2 & 2 & 3 \\ 2 & 3 & 6 \end{vmatrix}$

(b) $\begin{vmatrix} 2 & 1 & 1 \\ 3 & 2 & 3 \\ 4 & 3 & 6 \end{vmatrix}$

(c) $\begin{vmatrix} 1 & 2 & 1 \\ 1 & 5 & 3 \\ 1 & 9 & 6 \end{vmatrix}$

(d) $\begin{vmatrix} 3 & 1 & 1 \\ 6 & 2 & 3 \\ 10 & 3 & 6 \end{vmatrix}$

7. If ω is the cube root of unity, then

$$\begin{vmatrix} 1 & \omega & \omega^2 \\ \omega & \omega^2 & 1 \\ \omega^2 & 1 & \omega \end{vmatrix} =$$

(a) 1 (b) 0

(c) ω (d) ω^2

8.
$$\begin{vmatrix} 1+i & 1-i & i \\ 1-i & i & 1+i \\ i & 1+i & 1-i \end{vmatrix} =$$

(a) $-4-7i$ (b) $4+7i$

(c) $3+7i$ (d) $7+4i$

9. If $\begin{vmatrix} x+1 & 3 & 5 \\ 2 & x+2 & 5 \\ 2 & 3 & x+4 \end{vmatrix} = 0$, then $x =$

(a) 1, 9 (b) -1, 9

(c) -1, -9 (d) 1, -9

10.
$$\begin{vmatrix} a-b-c & 2a & 2a \\ 2b & b-c-a & 2b \\ 2c & 2c & c-a-b \end{vmatrix} =$$

(a) $(a+b+c)^2$ (b) $(a+b+c)^3$

(c) $(a+b+c)(ab+bc+ca)$ (d) None of these

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11.
$$\begin{vmatrix} a+b & a+2b & a+3b \\ a+2b & a+3b & a+4b \\ a+4b & a+5b & a+6b \end{vmatrix} =$$

(a) $a^2 + b^2 + c^2 - 3abc$ (b) $3ab$

(c) $3a + 5b$ (d) 0

12.
$$\begin{vmatrix} b+c & a & a \\ b & c+a & b \\ c & c & a+b \end{vmatrix} =$$

(a) abc (b) $2abc$

(c) $3abc$ (d) $4abc$

13. The roots of the equation

$$\begin{vmatrix} 1+x & 1 & 1 \\ 1 & 1+x & 1 \\ 1 & 1 & 1+x \end{vmatrix} = 0 \text{ are}$$

(a) 0, -3 (b) 0, 0, -3

(c) 0, 0, 0, -3 (d) None of these

14. One of the roots of the given

equation
$$\begin{vmatrix} x+a & b & c \\ b & x+c & a \\ c & a & x+b \end{vmatrix} = 0$$
 is

(a) $-(a+b)$ (b) $-(b+c)$

(c) $-a$ (d) $-(a+b+c)$

15. The inverse of a symmetric matrix is

(a) Symmetric (b) Skew symmetric

(c) Diagonal matrix (d) None of these

16.
$$\begin{bmatrix} 1 & 3 \\ 3 & 10 \end{bmatrix}^{-1} =$$

(a) $\begin{bmatrix} 10 & 3 \\ 3 & 1 \end{bmatrix}$ (b) $\begin{bmatrix} 10 & -3 \\ -3 & 1 \end{bmatrix}$

(c) $\begin{bmatrix} 1 & 3 \\ 3 & 10 \end{bmatrix}$ (d) $\begin{bmatrix} -1 & -3 \\ -3 & -10 \end{bmatrix}$

17. If $A = \begin{bmatrix} 1 & -2 \\ 5 & 3 \end{bmatrix}$, then $A + A^T$ equals

(a) $\begin{bmatrix} 2 & 3 \\ 3 & 6 \end{bmatrix}$ (b) $\begin{bmatrix} 2 & -4 \\ 10 & 6 \end{bmatrix}$

(c) $\begin{bmatrix} 2 & 4 \\ -10 & 6 \end{bmatrix}$ (d) None of these

18. If d is the determinant of a square matrix A of order n , then the determinant of its adjoint is

(a) d^n (b) d^{n-1}

(c) d^{n+1} (d) d

19. If A and B are non-singular square matrices of same order, then $adj(AB)$ is equal to

(a) $(adj A)(adj B)$ (b) $(adj B)(adj A)$

(c) $(adj B^{-1})(adj A^{-1})$ (d) $(adj A^{-1})(adj B^{-1})$

20. For any square matrix A , AA^T is a

- (a) Unit matrix (b) Symmetric matrix
(c) Skew symmetric matrix (d) Diagonal matrix

21. For any 2×2 matrix A , if $A(\text{adj } A) =$

$$\begin{bmatrix} 10 & 0 \\ 0 & 10 \end{bmatrix}, \text{ then } |A| =$$

- (a) 0 (b) 10
(c) 20 (d) 100

22. $A = \begin{bmatrix} 0 & 3 \\ 2 & 0 \end{bmatrix}$ and $A^{-1} = \lambda(\text{adj}(A))$, then $\lambda =$

- (a) $-\frac{1}{6}$ (b) $\frac{1}{3}$
(c) $\frac{-1}{3}$ (d) $\frac{1}{6}$

23. Which of the following is true for matrix AB

- (a) $(AB)^{-1} = A^{-1}B^{-1}$ (b) $(AB)^{-1} = B^{-1}A^{-1}$
(c) $AB = BA$ (d) All of these

24. If $A = \begin{bmatrix} 3 & 4 \\ 5 & 7 \end{bmatrix}$, then $A(\text{adj } A) =$

- [RPET 2002]
(a) I (b) $|A|$
(c) $|A| I$ (d) None of these

25. For any 2×2 matrix A , if $A(\text{adj } A) = \begin{bmatrix} 10 & 0 \\ 0 & 10 \end{bmatrix}$ then $|A|$ is equal

- [Pb. CET 2002]
(a) 0 (b) 10
(c) 20 (d) 100

26. If A, B, C are three $n \times n$ matrices, then

$$(ABC)' =$$

- (a) $A'B'C'$ (b) $C'B'A'$
(c) $B'C'A'$ (d) $B'A'C'$

27. If A and B are square matrices of order 3 such that $|A| = -1$, $|B| = 3$, then

$$|3AB| =$$

- (a) -9 (b) -81
(c) -27 (d) 81



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