

KENDRIYA VIDYALAYA PATTOM SHIFT-2

HOLIDAY ASSIGNMENT 2011-12

MATHEMATICS

CLASS- XII A & C

JAYA.S PGT (MATHS)

MATRICES

$$\begin{bmatrix} x & -5 & -1 \end{bmatrix} \begin{bmatrix} 1 & 0 & 2 \\ 0 & 2 & 1 \\ 2 & 0 & 3 \end{bmatrix} \begin{bmatrix} x \\ 4 \\ -1 \end{bmatrix} = 0$$

1. Find x,

2. If  $A = \begin{bmatrix} \cos \alpha & \sin \alpha \\ -\sin \alpha & \cos \alpha \end{bmatrix}$  then prove by M.I that  $A^n = \begin{bmatrix} \cos n \alpha & \sin n \alpha \\ -\sin n \alpha & \cos n \alpha \end{bmatrix}$

3.  $A = \begin{bmatrix} 3 & 4 \\ -4 & -3 \end{bmatrix}$ , find  $f(A)$ , where  $f(x) = x^2 - 5x + 7$

4. Find K such that  $A^2 - 8A + kA = 0$ , if  $A = \begin{bmatrix} 1 & 0 \\ -1 & 7 \end{bmatrix}$ .

5. If  $A =$  and  $B =$  Express  $3A + 2B$  as the sum of symmetric and skew symmetric matrices.

DETERMINANTS

1. If A is a 3 x 3 matrix,  $|A| = 12$ , Find  $|2A|$

2. If A is a 3 x 3 matrix  $|A| = -4$ . Find  $|3A|$

3. Find  $|A|$ ,  $|B| = 3$  and A is a 4 x 4 matrix.

4. For what values of k,  $A =$  is not invertible.

5. Show that the points ( a, b+c ) ; ( b, c+a ) ; ( c, a+b ) are collinear using determinants.

6. Find the equation of the line joining (1,2) ; (3,6) using determinants.

7. If the area of triangle is 35 sq. units with vertices (2,-6) ; (5,4) ; (k,4) . Find the value of k using determinants.

8. If  $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$ , Find  $\text{adj}(\text{adj}A)$ , with out finding  $\text{adj}A$ .

9. If  $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$ , Find  $A \cdot \text{adj} A$ , without finding  $\text{adj}A$ .

10. Show that the matrix,  $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$  satisfies the equation  $A^{-1} = \frac{1}{\det A} \text{adj} A$ . Hence find  $\det A$ .

11. Using properties of determinants, prove that

12. Using properties of determinants, prove that

$$\begin{vmatrix} a & b & c \\ b & c & a \\ c & a & b \end{vmatrix} = 0$$

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14. Using properties of determinants, prove that

$$\begin{vmatrix} a & b & c \\ b & c & a \\ c & a & b \end{vmatrix} = 0$$

15. Using properties of determinants, prove that

$$\begin{vmatrix} 1 & 1 & 1 \\ x & y & z \\ x^2 & y^2 & z^2 \end{vmatrix}$$

16. If  $x, y, z$  are different and  $\begin{vmatrix} 1 & 1 & 1 \\ x & y & z \\ x^2 & y^2 & z^2 \end{vmatrix} = 0$ , then show that  $1+xyz=0$ .

17. Solve the equation  $\begin{vmatrix} 1 & 1 & 1 \\ x & y & z \\ x^2 & y^2 & z^2 \end{vmatrix} = 0$ ,

18. Using properties of determinants, Solve the equation, if  $\begin{vmatrix} 1 & 1 & 1 \\ x & y & z \\ x^2 & y^2 & z^2 \end{vmatrix} = 0$ .

$$\begin{vmatrix} 1 & 1 & 1 \\ x & y & z \\ x^2 & y^2 & z^2 \end{vmatrix} = 0$$

19. Show that  $A \cdot \text{adj } A = |A| I$  where  $A = \begin{vmatrix} a & b & c \\ d & e & f \\ g & h & i \end{vmatrix}$ .

20. Find the inverse of A, If  $A = \begin{vmatrix} 1 & 1 & 1 \\ x & y & z \\ x^2 & y^2 & z^2 \end{vmatrix}$ .

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Prepared by JAYA.S

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