

HOLIDAYS HOMEWORK –XII (MATHS)

1. Do 25 questions of chapters 3,4,5 from CBSE board questions papers of last 10 years.
2. Do set1 and set2 Question papers of May Exam.
3. Prepare a mind twister or a puzzle based on class12 th concepts.
4. Do the following assignment

ASSIGNMENT

1. Write the element a_{12} of the matrix $A = (a_{ij})$ whose elements a_{ij} are given by $e^{2ix} \sin jx$.

2 If A is matrix of 3 by . Find the value of $\det 3A$ where $\det A = 4$

3 If A is square matrix s. t. $A^2=A$ then find $(I + A)^3 - 7A$

4 If $A = \begin{pmatrix} 3 & -2 \\ 4 & -2 \end{pmatrix}$ and $I = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$ find K so that $A^2 = Ka - 2I$

5 Find A^{-1} If it exist given that $A = \begin{pmatrix} 6 & -3 \\ -2 & 1 \end{pmatrix}$

6 Using cofactors of elements of third column evaluate $\begin{vmatrix} 1 & x & yz \\ 1 & y & zx \\ 1 & z & xy \end{vmatrix}$

7(A) without expanding the det ,prove that $\begin{vmatrix} a & a^2 & bc \\ b & b^2 & ca \\ c & c^2 & ab \end{vmatrix} = \begin{vmatrix} 1 & a^2 & a^3 \\ 1 & b^2 & b^3 \\ 1 & c^2 & c^3 \end{vmatrix}$

(B) Prove that by using properties $\begin{vmatrix} 1 & a & a^2 \\ a^2 & 1 & a \\ a & a^2 & 1 \end{vmatrix} = (1 - a^3)^2$

8 Three school X,Y,Z organized a fete for collecting funds for flood victims in which they sold hand held fans mats and toys made from recycled material, the sale price of each being 25 , 100 , 50 respectively. The following table shows the number of articles of each sold .

Articles\schools	X	Y	Z
HAND HELD FANS	30	40	35
MATS	12	15	20
TOYS	70	55	75

USING matrices ,find the funds collecting by each school by selling the above articles and the total funds collecting . Also write any one value generated by the above situation.

9 Solve the system of the following equations $2/x + 3/y + 10/z = 4$; $4/x - 6/y + 5/z = 1$; $6/x + 9/y - 20/z = 2$

10 If a,b,c are positive and unequal ,show that value of the determinant . $\det = \begin{vmatrix} a & b & c \\ b & c & a \\ c & a & b \end{vmatrix}$ is negative

11 Given that $A = \begin{bmatrix} -4 & 4 & 4 \\ -7 & 1 & 3 \\ 5 & -3 & -1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & -1 & 1 \\ 1 & -2 & -2 \\ 2 & 1 & 3 \end{bmatrix}$ find AB use this ,to solve the following system of equations $x-y+z=4$; $x-2y-2z=9$; $2x+y+3z=1$.

12 `Using elementary row transformation find the inverse of the matrix

$$A = \begin{pmatrix} 3 & -1 & -2 \\ 2 & 0 & -1 \\ 3 & -5 & 0 \end{pmatrix}$$

13.If $x=a(t+\sin t)$, $y= (1+\cos t)$ find d^2y/dx^2 at $t=\pi/2$

14 if $y= x/2\sqrt{a^2 - x^2} + a^2/2 \sin^{-1}(x/a)$ then prove that $dy/dx = \sqrt{a^2 - x^2}$

15 Find the value of K so that the given fn is conts at the indicated point

$$F(x) = Kx+1, \text{ if } x \leq \pi$$

$$\text{And } \cos x \text{ if } x > \pi \quad \text{at } x = \pi$$

16 Show that the fndefind by $f(x) = \text{mod } \cos x$ is a conts fn.

17 The cost of 4kg onion ,3kg wheat and 2kg rice is Rs 60 .The cost of 2kg onion , 4kg wheat and 6kg rice is Rs 90. The cost of 6kg onion ,2kg wheat, 3kg rice is Rs 70. Find the cost of each item by matrix method.

18 If $a \neq b$ and x,y,z are not all zero and if $ax+by+cz=0$, $bx+caz=0$, $cx+ay+bz=0$. Prove that $x:y:z=1:1:1$.

19 Discuss the continuity of the function $\sin x$.

20 Discuss the continuity of the greatest integer functio

21 If $(\tan^{-1}x)^2$, Show that $(x^2+1)^2 y_2 + 2x(x^2+1) y_1 = 2$.

22 An amount of Rs.5000 is put into three investments at the rate of interest 6%,7% &8% p.a. respectively.The total annual income is Rs. 358. If the combined income from the first

two investments is Rs.70 more than the income from 3rd investment, find the amount of each investment by Matrix Method.

23 If $A(x_1, y_1)$, $B(x_2, y_2)$ & $C(x_3, y_3)$ are the vertices of an equilateral triangle whose each side is equal to a , then prove that

$$\begin{vmatrix} x_1 & y_1 & 2 \\ x_2 & y_2 & 2 \\ x_3 & y_3 & 2 \end{vmatrix} = a^4$$

24 Prove that $\begin{vmatrix} -2a & a+b & a+c \\ b+a & -2b & b+c \\ c+a & c+b & -2c \end{vmatrix} = 4(a+b)(b+c)(c+a)$

25 Verify that $dy/dx \times dx/dy = 1$ if $ax^2+2hxy+by^2=0$.