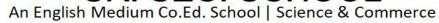


HREE ACADI SEC. SCHOOL =





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Class - 12th

Chapter-5

Subject Maths

Worksheet-25

Inverse of a Matrix and Linear Equations

1. If
$$A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$$
 then prove that $A^2 - 4A - 5I = 0$ and using this find A^{-1} .

Solve the following system of equations using the matrix method.

(i)
$$5x - 7y = 2$$

$$3x - 7y = 2$$
$$7x - 5y = 3$$

(ii)
$$3x + y + z = 3$$
 (iii) $x + 2y - 2z + 5 = 0$

iii)
$$x + 2y - 2z +$$

$$2x - y - z = 2$$

$$-x + 3y + 4 = 0$$

$$-x - y + z = 1$$

$$-2y + z - 4 = 0$$

Find the area triangle ABC for the vertices given below:

(i)
$$A(-3,5)$$
, $B(3,-6)$, $C(7,2)$

(ii)
$$A(2,7)$$
 $B(2,2)$ $C(10,8)$

4. If the points (2, -3), $(\lambda, -2)$ and (0, 5) are collinear then find the value of λ . Find the matrix A where

$$\begin{bmatrix} 1 & 2 \\ 2 & 3 \end{bmatrix} A \begin{bmatrix} 4 & 7 \\ 3 & 5 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

5. If $A = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 2 & -3 \end{bmatrix}$ then find A^{-1} and using this solve the equations:

$$x + y + 2z = 0$$
, $x + 2y - z = 9$, $x - 3y + 3z = -14$

6. If $A = \begin{bmatrix} a & b \\ c & \frac{1+bc}{c} \end{bmatrix}$ then find A^{-1} and solve that $aA^{-1} = (a^2 + bc + 1)I - aA$.