CLASS 12 MATHEMATICS PRACTICE SHEET

20/05/2023 **MATRICES & DETERMINANTS** Er. Renji Thomas

1. Find area of the triangle with vertices at the point given in each of the following : (i) (1, 0), (6, 0), (4, 3) (ii) (2, 7), (1, 1), (10, 8) (iii) (–2, –3), (3, 2), (–1, –8) (2)

2. Find values of k if area of triangle is 4 sq. units and vertices are (i) (k, 0), (4, 0), (0, 2) (ii) (–2, 0), (0, 4), (0, k) (2)

3. Using Cofactors of elements of third column, evaluate. $A = \begin{vmatrix} 1 & x & yz \\ 1 & y & zx \\ 1 & z & xy \end{vmatrix}$ (4)

4. Solve system of linear equations, using matrix method: (5)

$$2x + 3y + 3z = 5$$
$$x - 2y + z = -4$$
$$3x - y - 2z = 3$$

5. The cost of 4 kg onion, 3 kg wheat and 2 kg rice is ₹60. The cost of 2 kg onion, 4 kg wheat and 6 kg rice is ₹90. The cost of 6 kg onion 2 kg wheat and 3 kg rice is ₹70. Find cost of each item per kg by matrix method. (5)

6. If A, B are symmetric matrices of same order, then AB – BA is a
(A) Skew symmetric matrix (B) Symmetric matrix (C) Zero matrix (D) Identity matrix (1)

7. If $A = \begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix}$, Show that $A^2 - 5A + 7I = 0$ (4)

8. Show that the matrix $A = \begin{bmatrix} 0 & 1 & -1 \\ -1 & 0 & 1 \\ 1 & -1 & 0 \end{bmatrix}$ is a skew symmetric matrix. (4)

9. Let $A = \begin{bmatrix} 3 & 7 \\ 2 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 6 & 8 \\ 7 & 9 \end{bmatrix}$. verify that $(AB)^{-1} = B^{-1}A^{-1}$ (4)

10.(a) For the matrix $A = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 2 & -3 \\ 2 & -1 & 3 \end{bmatrix}$, Show that (5)

$$A^3 - 6A^2 + 5A + 11I = 0$$. Hence, find A^{-1}.

OR

(b) If $A = \begin{bmatrix} 2 & -3 & 5 \\ 3 & 2 & -4 \\ 1 & 1 & -2 \end{bmatrix}$, find A^{-1}. Using A^{-1}, solve the system of equations. (2020)

$$2x - 3y + 5z = 11$$
$$3x + 2y - 4z = -5$$
$$x + y - 2z = -3$$