Practice Assignment 2A

1. Find the value (s) of x, if

(i) $\begin{vmatrix} 3 & 5 \\ 6 & 2 \end{vmatrix} = \begin{vmatrix} 3x & 5 \\ 6 & 2x \end{vmatrix}$

(ii) $\begin{vmatrix} 3 & 4 \\ 5 & 6 \end{vmatrix} = \begin{vmatrix} 2x & 3 \\ 3x & 6 \end{vmatrix}$.

2. Using the property of determinants and without expanding, prove that:

$$\begin{vmatrix} p & d & p+d \\ q & e & q+e \\ r & f & r+f \end{vmatrix} = 0.$$

3. Using the property of determinants and without expanding, prove that:

$$\begin{vmatrix} 1 & 6 & 55 \\ 2 & 7 & 65 \\ 3 & 8 & 75 \end{vmatrix} = 0.$$

4. Find values of k if area of triangle is 5 square units and vertices are

$(1, k), (3, 0), (0, 5)$.

5. Find equation of line joining $(2, 3)$ and $(4, 7)$ using determinants.

6. Using cofactors of elements of second row, evaluate $\Delta = \begin{vmatrix} 4 & 5 & 7 \\ 1 & 0 & 2 \\ 2 & 3 & 5 \end{vmatrix}$.

7. If $A = \begin{bmatrix} 1 & -2 & 0 \\ -2 & 1 & -2 \\ 0 & -2 & 1 \end{bmatrix}$ verify that $A^3 - 3A^2 - 5A + 7I = O$ and hence find A^{-1}.

8. Examine the consistency of the system of equations.

$2x + 3y = 4$

$x + 5y = 7.$

9. Solve the given system of linear equations, using matrix method.

$x + 2y + 2z = 4$

$2x - y + z = -3$

$2x - 3y - z = 5.$