

## Assignment 8

Solve the following system of equations by matrix method (1 to 5)

①  $2x - 2y + z = 1$ ,  $x + 2y + 2z = 2$ ,  $2x + y - 2z = 7$

②  $x + 2y + z = 4$ ,  $2x + y = 3$ ,  $x + z = 2$

③  $x + y + z = 6$ ,  $x + 2y + 3z = 14$ ,  $x + 4y + 9z = 36$

④  $x + y + z = 3$ ,  $x + 2y + 3z = 4$ ,  $x + 4y + 9z = 6$ .

⑤  $2x_1 - x_2 + x_3 = 4$ ,  $x_1 + x_2 + x_3 = 1$ ,  $x_1 - 3x_2 - 2x_3 = 2$

⑥ Determine rank of

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

Use Gauss-Jordan reduction method to find the inverse of

⑦ following matrices (7-8).

⑦  $\begin{bmatrix} 1 & 1 & 2 \\ 1 & 2 & 3 \\ 2 & 3 & 1 \end{bmatrix}$

⑧  $\begin{bmatrix} 7 & 6 & 2 \\ -1 & 2 & 4 \\ 3 & 6 & 8 \end{bmatrix}$

⑨ If  $A = \begin{bmatrix} 3 & -3 & 4 \\ 2 & -3 & 4 \\ 0 & -1 & 1 \end{bmatrix}$  find  $A^{-1}$ . Also find

two non-singular matrices  $P$  and  $Q$  such that

$PAQ = I$ , where  $I$  is the unit matrix and verify that  $A^{-1} = QP$ .

⑩ Examine whether the following equations are consistent and solve them, if they are consistent.

$$x + y + z = 6$$

$$2x + y + 3z = 13$$

$$5x + 2y + z = 12$$

$$2x - 3y - 2z = -10$$

⑪ Solve completely the following system of equations.

$$x + y - 2z + 3w = 0$$

$$x - 2y + z - w = 0$$

$$4x + y - 5z + 8w = 0$$

$$5x - 7y + 2z - w = 0$$

G-1	8
G-2	10
G-3	1
G-4	2
G-5	9
G-6	3
G-7	6
G-8	4
G-9	11

G-10 5

G-11 7

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