

MATRIC NO: 18/SI01/068

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$$X = \begin{bmatrix} 1 & 2 & 8 \\ 4 & 7 & 6 \\ 9 & 5 & 3 \end{bmatrix} \quad Y = \begin{bmatrix} 0 & 5 & 0 \\ -3 & -7 & -1 \\ 2 & 1 & 9 \end{bmatrix}$$

1)i)  $X = 1(21-30) - 2(12-54) + 8(20-63)$

$= -269$  (Non-singular)

ii)  $Y = 0(-63+1) - 5(-27+2) + 0(-3+14)$

$= 125$  (Non-singular)

iii) All the rows in matrix Y are linearly independent, so the rank of matrix Y is 3

iv)  $\begin{bmatrix} 1 & 2 & 8 \\ 4 & 7 & 6 \\ 9 & 5 & 3 \end{bmatrix} + \begin{bmatrix} 0 & 5 & 0 \\ -3 & -7 & -1 \\ 2 & 1 & 9 \end{bmatrix} = \begin{bmatrix} 1 & 7 & 8 \\ 1 & 0 & 5 \\ 11 & 6 & 12 \end{bmatrix}$

$X + Y = 1(0-30) - 7(12-55) + 8(6-0)$

$= 319$  (Non-Singular)

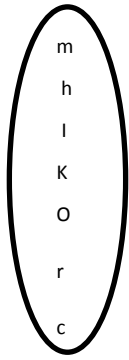
v)  $5Y =$

$$\begin{bmatrix} 0 & 25 & 0 \\ -15 & -35 & -5 \\ 10 & 5 & 45 \end{bmatrix}$$

$5Y = 0 - 25(-675 + 50)$

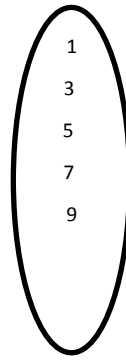
$5Y = 15625$  (Non-Singular)

2) Domain

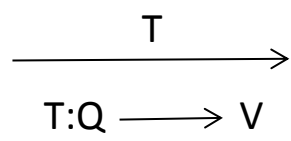


Q

Co-domain



R



$$T(m) = T(h) = 1$$

$$T(i) = T(k) = 3$$

$$T(o) = 5$$

$$T(r) = 7$$