$$\begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \\ x_5 \\ x_6 \end{bmatrix} = r\begin{bmatrix} 4 \\ 2 \\ 1 \\ 0 \\ 0 \\ 0 \end{bmatrix} + s\begin{bmatrix} -28 \\ 12 \\ 0 \\ 1 \\ 0 \\ 0 \end{bmatrix} + t\begin{bmatrix} -37 \\ 16 \\ 0 \\ 0 \\ 1 \\ 0 \end{bmatrix} + u\begin{bmatrix} 13 \\ -5 \\ 0 \\ 0 \\ 0 \\ 1 \end{bmatrix} \longrightarrow *$$

The four vectors on the right side of (*) form a basis for the solution space so nullity (A) = 4.

Dimension THEORM :-

If A is a matrics with n columns then

$$\text{Rank}(A) + \text{nullity}(A) = n$$

Previous example

$$2 + 4 = 6$$

$$\boxed{6 = 6}$$