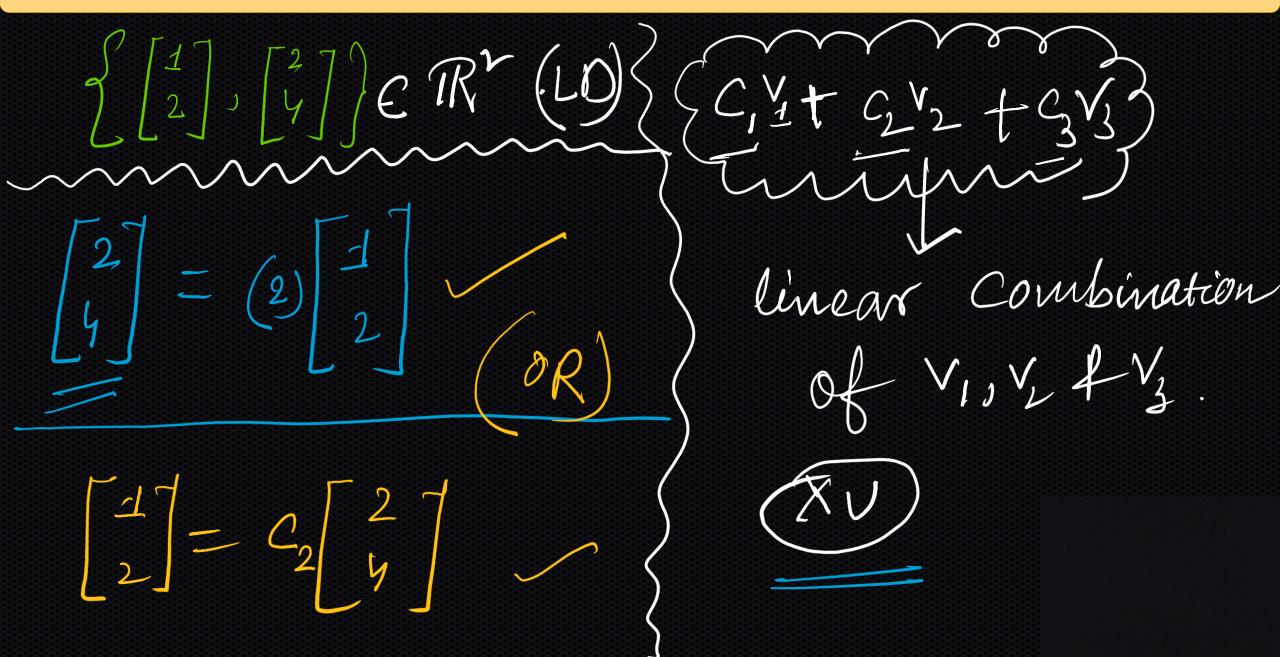
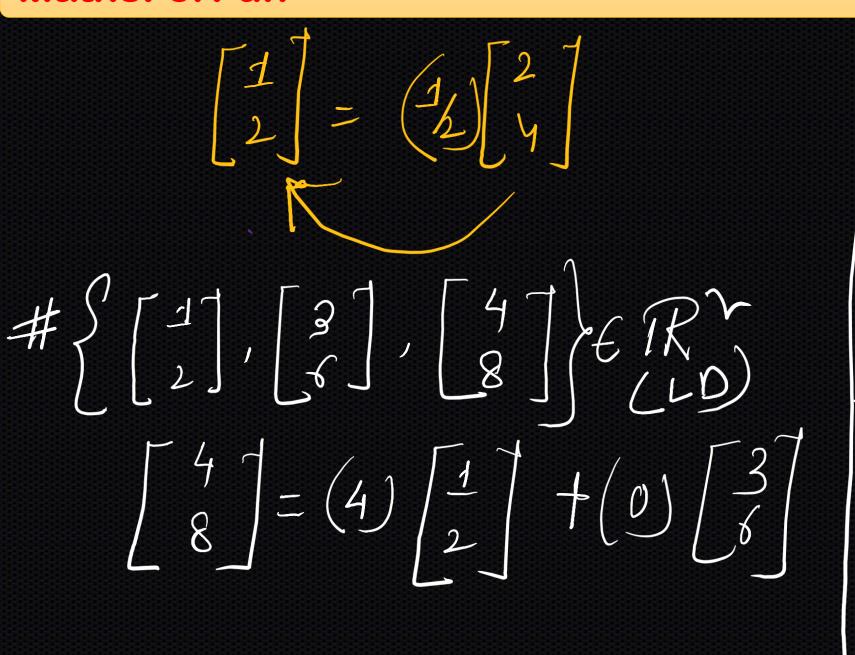
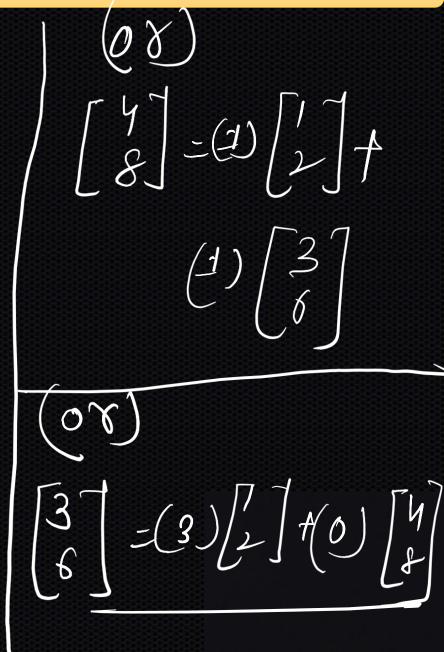
Linear Dependence of Vectors: -> L.D is defined for a Set of vectors. It atteast one vector can be represented as a linear combination of the other vectors, then the Set of vectors is L.D.







$$\begin{cases}
\begin{bmatrix} \frac{1}{2} \\ \frac{1}{3} \end{bmatrix}, \begin{bmatrix} \frac{2}{4} \\ \frac{1}{7} \end{bmatrix}, \begin{bmatrix} \frac{3}{60} \\ \frac{10}{10} \end{bmatrix} \in \mathbb{R}^{3}$$

$$\begin{pmatrix}
\frac{3}{60} \\ \frac{1}{10} \end{bmatrix} = \begin{pmatrix} \frac{1}{2} \\ \frac{1}{2} \end{bmatrix} + \begin{pmatrix} \frac{3}{2} \\ \frac{1}{2} \end{bmatrix}$$

$$\begin{bmatrix} 3 \\ 10 \end{bmatrix} = G_{1} \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix} + G_{2} \begin{bmatrix} 2 \\ 4 \\ 2 \\ 4 \end{bmatrix}$$

$$\Rightarrow \begin{bmatrix} 3 \\ 6 \\ 10 \end{bmatrix} = \begin{bmatrix} C_{1} \\ 2C_{1} \\ 3C_{1} \end{bmatrix} + \begin{bmatrix} 2C_{2} \\ 4C_{2} \\ 4C_{2} \end{bmatrix}$$

$$\Rightarrow \begin{bmatrix} 3 \\ 6 \\ 10 \end{bmatrix} = \begin{bmatrix} C_{1} + 2C_{2} \\ 2C_{1} + 4C_{2} \\ 3C_{1} + 4C_{2} \end{bmatrix}$$

$$C_1 + 2C_2 = 3$$
  
 $C_1 + 4C_2 = 3$   
 $3C_1 + 4C_2 = 6$   
 $3C_1 + 4C_2 = 6$ 

$$3C_{1} + 7 = 10$$
  
 $3C_{1} + 7 = 10$   
 $3C_{1} = 3$   
 $C_{1} = 4$ 

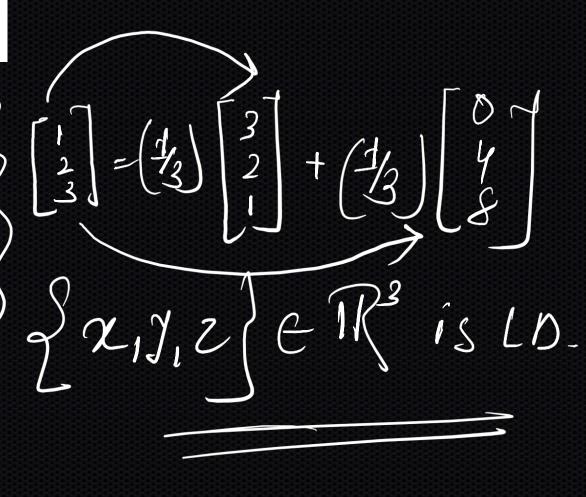
$$C_1 + 2C_2 = 3 \times (3)$$
  
 $3C_1 + 4C_2 = 10$ 

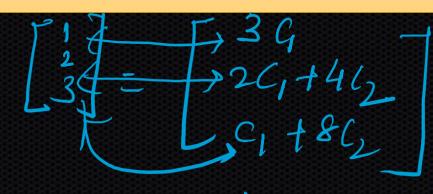
$$\frac{3c/+c_2=9}{3/c_1++c_2=10}$$

$$-c_2=-1 \Rightarrow (c_2=3)$$

Let 
$$x = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$$
  $y = \begin{bmatrix} 3 \\ 2 \\ 1 \end{bmatrix}$  and  $z = \begin{bmatrix} 0 \\ 4 \\ 8 \end{bmatrix}$ . Is  $\{x_1, x_2, x_3\}$  linearly dependent?

$$\begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix} = \begin{bmatrix} 3 \\ 4 \\ 8 \end{bmatrix} + \begin{bmatrix} 3 \\ 4 \\ 8 \end{bmatrix} + \begin{bmatrix} 3 \\ 4 \\ 4 \\ 4 \end{bmatrix} + \begin{bmatrix} 3 \\ 4 \\ 4 \\ 4 \end{bmatrix} + \begin{bmatrix} 3 \\ 4 \\ 4 \\ 4 \end{bmatrix}$$





$$(:, c_1 = \frac{4}{3})$$

$$\frac{2}{3} + 4(2-2)$$

$$\frac{346}{2} = 2 - 2 = 1$$