

Column Space

$$\sim \begin{bmatrix} \textcircled{1} & 0 & \frac{1}{3} & \frac{8}{3} \\ 0 & \textcircled{1} & \frac{4}{3} & -\frac{1}{3} \\ 0 & 0 & 0 & 0 \end{bmatrix}$$

$$\{C_1 = (1, 3, 2), C_2 = (2, 0, -2)\} \text{ Ans.}$$

Null Space :-

$$\begin{bmatrix} 1 & 0 & \frac{1}{3} & \frac{8}{3} \\ 0 & 1 & \frac{4}{3} & -\frac{1}{3} \\ 0 & 0 & 0 & 0 \end{bmatrix}$$

$$x_1 + \frac{1}{3}x_3 + \frac{8}{3}x_4 = 0$$

$$x_2 + \frac{4}{3}x_3 - \frac{1}{3}x_4 = 0$$

$$\boxed{x_3 = t}, \boxed{x_4 = s}$$

$$x_1 + \frac{1}{3}t + \frac{8}{3}s = 0$$

$$\boxed{x_1 = -\frac{1}{3}t - \frac{8}{3}s}$$

$$x_2 + \frac{4}{3}t - \frac{1}{3}s = 0$$

$$\boxed{x_2 = -\frac{4}{3}t + \frac{1}{3}s}$$