

$$27/ \quad S = \{(-2, 2), (3, 5)\}$$

$$\begin{vmatrix} -2 & 3 \\ 2 & 5 \end{vmatrix} = -16 \neq 0 \quad \therefore S \text{ is L.I.}$$

$$29/ \quad S = \{(0, 0), (1, -1)\}$$

$$\begin{vmatrix} 0 & 1 \\ 0 & -1 \end{vmatrix} = 0 \quad \therefore S \text{ is linearly dependent}$$

$$33/ \quad S = \{(-2, 1, 3), (2, 9, -3), (2, 3, -3)\}$$

$$\begin{vmatrix} -2 & 2 & 2 \\ 1 & 9 & 3 \\ 3 & -3 & -3 \end{vmatrix} = 0 \quad \therefore \text{Linearly Dependent}$$

$$35/ \quad S = \left\{ \left(\frac{3}{4}, \frac{5}{2}, \frac{7}{2} \right), (3, 4, \frac{7}{2}), \left(-\frac{3}{2}, 6, 2 \right) \right\}$$

$$\begin{vmatrix} \frac{3}{4} & 3 & -3/2 \\ \frac{5}{2} & 4 & 6 \\ \frac{7}{2} & \frac{7}{2} & 2 \end{vmatrix} = -\frac{23}{8} \neq 0 \quad \therefore \text{L.I.}$$

$$41/ \quad S = \{ 2-x, 2x-x^2, 6-5x+x^2 \}$$

$$\begin{matrix} x^2 & & \\ x^1 & & \\ x^0 & & \end{matrix} \begin{vmatrix} 2 & 0 & 6 \\ -1 & 2 & -5 \\ 0 & -1 & 1 \end{vmatrix} = 0 \quad \text{Linearly Dependent}$$

$$43/ \quad S = \{ 1+3x+x^2, -1+x+2x^2, 4x \}$$

$$\begin{vmatrix} 1 & -1 & 0 \\ 3 & 1 & 4 \\ 1 & 2 & 0 \end{vmatrix} = -12 \neq 0 \quad \text{L.I.}$$

$$49/ \quad A = \begin{bmatrix} 1 & 0 \\ 0 & -2 \end{bmatrix} \quad B = \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix} \quad C = \begin{bmatrix} -2 & 1 \\ 1 & 4 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 0 & -2 \\ 0 & 1 & 1 \\ 0 & 1 & 1 \\ -2 & 0 & 4 \end{bmatrix} \xrightarrow{\substack{R_3 - R_2 \\ R_4 + 2R_1}} \begin{bmatrix} 1 & 0 & -2 \\ 0 & 1 & 1 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix} \rightarrow \begin{matrix} x_1 = 2x_3 \\ x_2 = -x_3 \end{matrix}$$

Linearly dependent