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

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

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

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

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

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

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

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

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

$$\begin{array}{c} x^0 \to \\ x^1 \\ x^2 \end{array} \begin{vmatrix} 2 & 0 & 6 \\ -1 & 2 & -5 \\ 0 & -1 & 1 \end{vmatrix} = 0 \qquad \text{Linearly Dependent}$$

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

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

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

$$\begin{bmatrix} 1 & 0 & -2 \\ 0 & 1 & 1 \\ 0 & 1 & 1 \\ -2 & 0 & 4 \end{bmatrix} \begin{array}{l} \\ \\ R_3-R_2 \\ R_4+2R_1 \end{array} \to \begin{bmatrix} 1 & 0 & -2 \\ 0 & 1 & 1 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix} \begin{array}{l} \to x_1 = 2x_3 \\ \to x_2 = -x_3 \end{array}$$

Linearly dependent