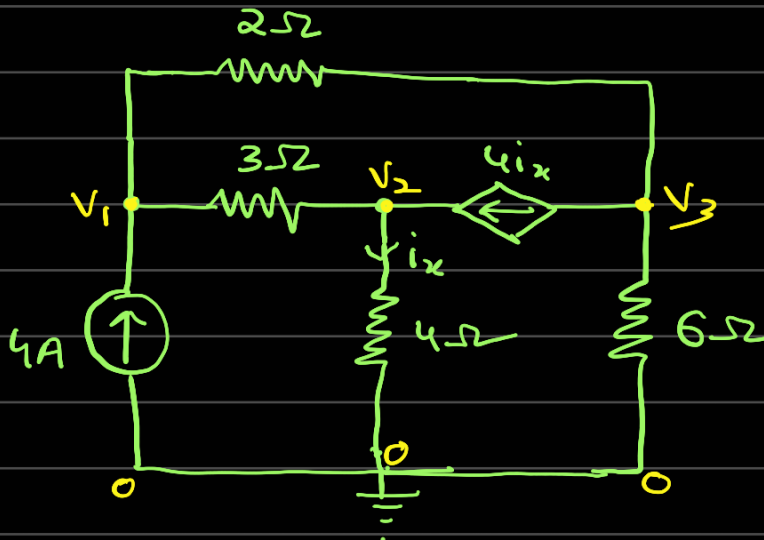


## Day-3

1.)



Find  $V_1, V_2, V_3$

Ans.)

$$\frac{V_1 - V_3}{2} + (-4i_x) + \frac{-V_3}{6} = 0$$

$$\Rightarrow 3(V_1 - V_3) - 24i_x - V_3 = 0$$

$$\Rightarrow 3V_1 - 4V_3 = 24i_x \quad (i_x = V_2/4)$$
$$= 6V_2 \quad \text{--- (1)}$$

$$\frac{V_3 - V_1}{2} + 4 + \frac{V_2 - V_1}{3} = 0$$

$$\Rightarrow 3V_3 - 3V_1 + 24 + 2V_2 - 2V_1 = 0$$

$$\Rightarrow 3V_3 + 2V_2 - 5V_1 + 24 = 0 \quad \text{--- (2)}$$

$$\frac{V_1 - V_2}{3} + \frac{-V_2}{4} + 4i_x = 0$$

$$\Rightarrow 4V_1 - 4V_2 - 3V_2 + 12V_2 = 0$$

$$\Rightarrow 4V_1 + 5V_2 = 0 \quad \text{--- (3)}$$

$$\text{80} \quad 3V_3 + 2\left(-\frac{4V_1}{5}\right) - 5V_1 + 24 = 0$$

$$\Rightarrow 3V_3 - \frac{33V_1}{5} + 24 = 0$$

$$3V_1 - 4V_3 = 6\left(-\frac{4V_1}{5}\right)$$

$$\Rightarrow 4V_3 = \frac{39V_1}{5}$$

$$\Rightarrow 20V_3 = 39V_1$$

$$\text{80} \quad \frac{117V_1}{20} - \frac{33V_1}{5} + 24 = 0$$

$$\Rightarrow 24 = \frac{15V_1}{20} = \frac{3V_1}{4}$$

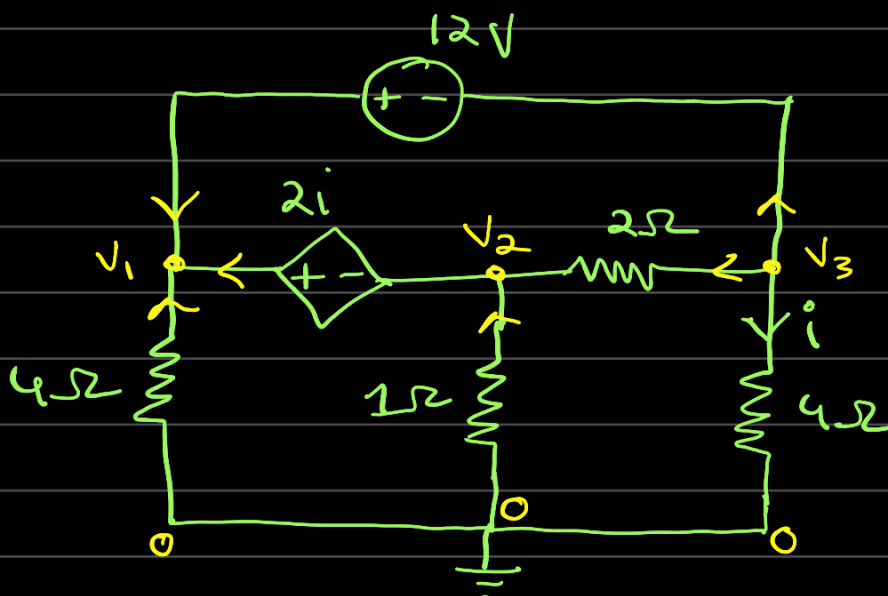
$$\Rightarrow V_1 = 32 \text{ V}$$

$$V_2 = -\frac{128}{5} \text{ V}$$

$$= -25.6 \text{ V}$$

$$V_3 = 62.4 \text{ V}$$

2.7



Find  $V_1, V_2, V_3$

Ans.)

$$V_1 = V_3 + 12 = V_2 + 2i$$

$$= V_2 + \frac{V_3}{2} \quad \left( i = \frac{V_3}{4} \right)$$

$$\text{so } \frac{V_3}{2} + 12 = V_2$$

$$V_1 = V_3 + 12$$

$$V_1 = V_2 + \frac{V_3}{2} = 2V_2 - 12$$

$$\frac{-V_1}{4} + \frac{-V_2}{1} + \frac{V_3 - V_2}{2} + -\left(\frac{V_3 - V_2}{2}\right) + \left(\frac{-V_3}{4}\right) = 0$$

$$\Rightarrow \frac{-V_1}{4} - V_2 - \frac{V_3}{4} = 0$$

$$\Rightarrow \frac{V_1}{4} + \frac{V_1 + 12}{2} + \frac{V_1 - 12}{4} = 0$$

$$\Rightarrow V_1 + 2V_1 + 24 + V_1 - 12 = 0$$

$$\Rightarrow 4V_1 + 12 = 0$$

$$\Rightarrow V_1 = -3V$$

$$V_2 = 4.5$$

$$V_3 = -15V$$

