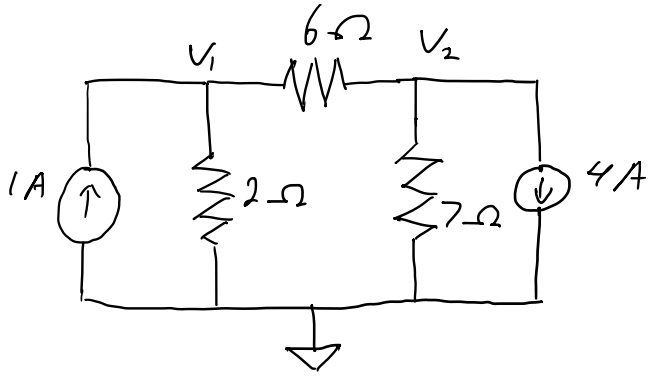
M. Hasyim Abdillah P.
1401191095
TT-43-11



$\Sigma i = 0$

$$\frac{V_1 - V_2}{6} + \frac{V_1}{2} - 1 = 0$$

$$\frac{V_1 - V_2}{6} + \frac{V_1}{2} = 1$$

$$V_1 - V_2 + 3V_1 = 6$$

$$4V_1 - V_2 = 6 \quad \text{...(1)}$$

$\Sigma i = 0$

$$\frac{V_2 - V_1}{6} + \frac{V_2}{7} + 4 = 0$$

$$\frac{V_2 - V_1}{6} + \frac{V_2}{7} = -4$$

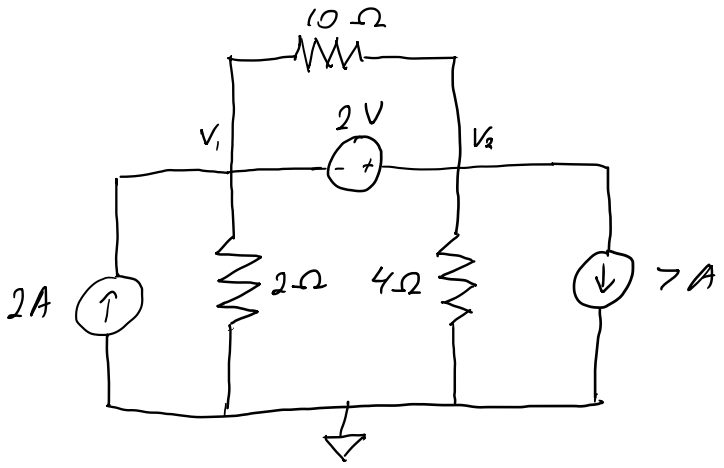
$$7(V_2 - V_1) + 6V_2 = -168$$

$$13V_2 - 7V_1 = -168 \quad \text{...(2)}$$

$$4V_1 - V_2 = 6 \quad | \times 13$$
$$-7V_1 + 13V_2 = -168 \quad | \times 1$$

$$52V_1 - 13V_2 = 78$$
$$-7V_1 + 13V_2 = -168$$
$$+$$
$$45V_1 = -90$$
$$V_1 = -2\ V$$

$$4V_1 - V_2 = 6$$
$$4(-2) - V_2 = 6$$
$$-8 - V_2 = 6$$
$$V_2 = -14\ V$$



$$V_2 - V_1 = 2V$$

$$V_2 = V_1 + 2$$

$$\Sigma i = 0$$

$$\frac{V_1 - V_2}{10} + \frac{V_1}{2} - 2 = 0$$

$$\frac{V_1 - (V_1 + 2)}{10} + \frac{V_1}{2} = 2$$

$$(-2) + 5V_1 = 20$$

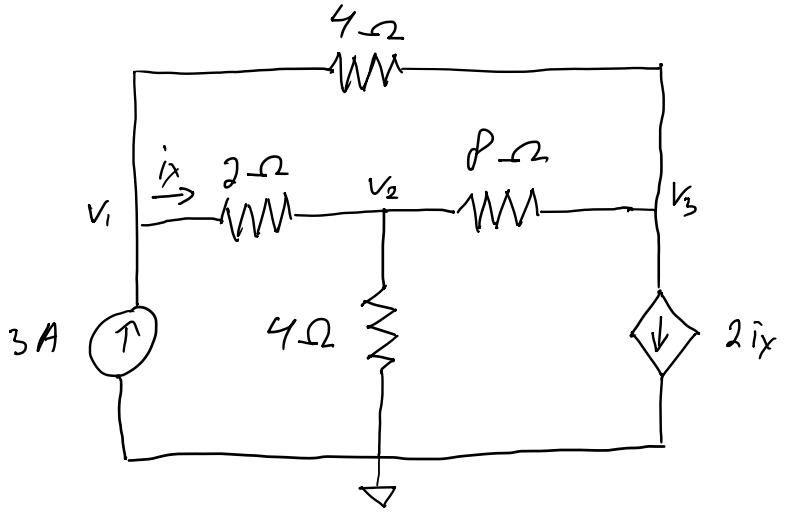
$$5V_1 = 22$$

$$V_1 = 4{,}4\ V$$

$$V_2 - V_1 = 2$$

$$V_2 - 4{,}4 = 2$$

$$V_2 = 6{,}4\ V$$



$$\sum i = 0$$

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

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

$$2(V_1 - V_2) + V_1 - V_3 = 12$$

$$3V_1 - 2V_2 - V_3 = 12$$

$$\sum i = 0$$

$$\frac{V_2 - V_1}{2} + \frac{V_2 - V_3}{8} + \frac{V_2}{4} = 0$$

$$4(V_2 - V_1) + V_2 - V_3 + 2V_2 = 0$$

$$-4V_1 + 7V_2 - V_3 = 0$$

$$\sum i = 0$$

$$\frac{V_3 - V_2}{8} + \frac{V_3 - V_1}{4} + 2i_x = 0$$

$$\frac{V_3 - V_2}{8} + \frac{V_3 - V_1}{4} + 2\left(\frac{V_1 - V_2}{2}\right) = 0$$

$$V_3 - V_2 + 2(V_3 - V_1) + 8(V_1 - V_2) = 0$$

$$6V_1 - 9V_2 + 3V_3 = 0$$

$$2V_1 - 3V_2 + V_3 = 0$$

$$\begin{aligned} 3V_1 - 2V_2 - V_3 &= 12 \\ -4V_1 + 7V_2 - V_3 &= 0 \\ 2V_1 - 3V_2 + V_3 &= 0 \end{aligned} \Rightarrow \left|\begin{array}{cccc} 3 & -2 & -1 & 12 \\ -4 & 7 & -1 & 0 \\ 2 & -3 & 1 & 0 \end{array}\right| \begin{array}{c} -b_3 + b_1 \\ \sim \end{array} \left|\begin{array}{cccc} 1 & 1 & -2 & 12 \\ -4 & 7 & -1 & 0 \\ 2 & -3 & 1 & 0 \end{array}\right| \begin{array}{c} 2b_3 + b_2 \\ \sim \end{array}$$

$$\left|\begin{array}{cccc} 1 & 1 & -2 & 12 \\ 0 & 1 & 1 & 0 \\ 2 & -3 & 1 & 0 \end{array}\right| \begin{array}{c} -2b_1 + b_3 \\ \sim \end{array} \left|\begin{array}{cccc} 1 & 1 & -2 & 12 \\ 0 & 1 & 1 & 0 \\ 0 & -5 & 5 & -24 \end{array}\right| \begin{array}{c} -b_2 + b_1 \\ 5b_2 + b_3 \\ \sim \end{array} \left|\begin{array}{cccc} 1 & 0 & -3 & 12 \\ 0 & 1 & 1 & 0 \\ 0 & 0 & 10 & -24 \end{array}\right| \begin{array}{c} \frac{1}{10} b_3 \\ \sim \end{array}$$

$$\left|\begin{array}{cccc} 1 & 0 & -3 & 12 \\ 0 & 1 & 1 & 0 \\ 0 & 0 & 1 & -2,4 \end{array}\right| \begin{array}{c} -b_3 + b_2 \\ 3b_3 + b_1 \\ \sim \end{array} \left|\begin{array}{cccc} 1 & 0 & 0 & 4,8 \\ 0 & 1 & 0 & 2,4 \\ 0 & 0 & 1 & -2,4 \end{array}\right| \Rightarrow \begin{aligned} V_1 &= 4,8\ V \\ V_2 &= 2,4\ V \\ V_3 &= -2,4\ V \end{aligned}$$