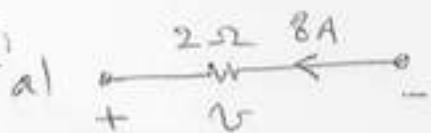


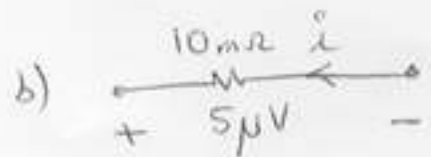
HW #2 Solution

2.2-5:



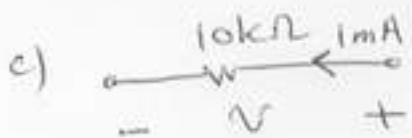
$$v = -Ri = -2 \times 8 = \underline{-16V}$$

$$p = -vi = -(-16)8 = \underline{128W}$$



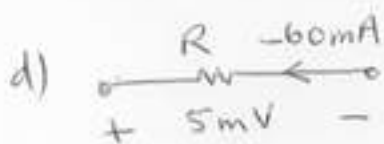
$$i = -\frac{v}{R} = -\frac{5 \times 10^{-6}}{10 \times 10^{-3}} = \underline{-0.5mA}$$

$$p = -vi = -(0.5)(5)10^{-9} = \underline{2.5nW}$$



$$v = Ri = 10 \times 10^3 \times 1 \times 10^{-3} = \underline{10V}$$

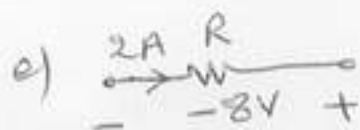
$$p = vi = 10 \times 1mA = \underline{10mW}$$



$$v = -Ri$$

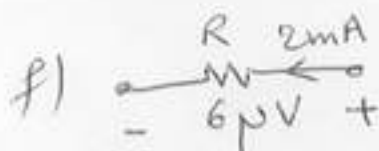
$$R = -\frac{v}{i} = -\frac{5mV}{-60mA} = \underline{0.083\Omega}$$

$$p = -vi = 5 \times (-60) \times 10^{-6} = \underline{0.3mW}$$



$$R = -\frac{v}{i} = -\frac{-8}{2} = \underline{4\Omega}$$

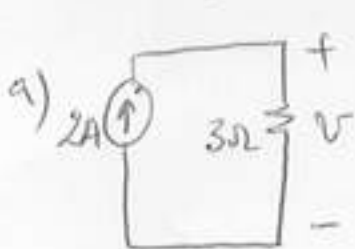
$$p = -(-8)(2) = \underline{16W}$$



$$R = +\frac{v}{i} = \frac{6\mu}{2m} = \underline{3m\Omega}$$

$$p = vi = 6\mu \times 2m = \underline{12nW}$$

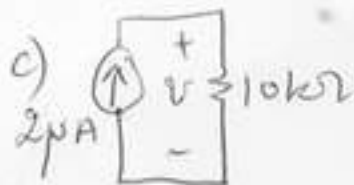
2.2-7:



a) $v = Ri = 3 \times 2 = \underline{6V}$



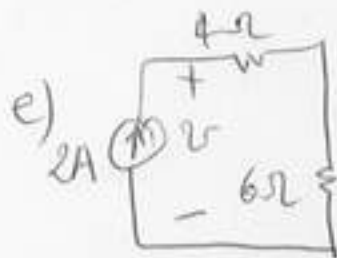
b) $v = -Ri = -8 \times 4 = \underline{32V}$



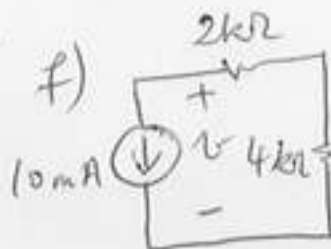
c) $v = Ri = 20mV$



d) $v = -Ri = -5 \times 10 = \underline{-50V}$

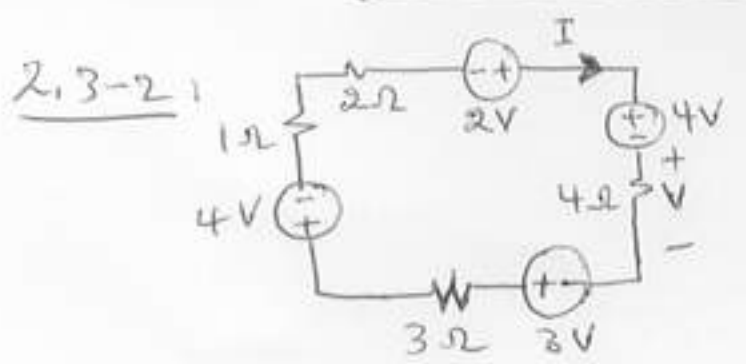


e) $v = Ri = 10 \times 2 = \underline{20V}$



f) $v = -Ri = -6k \times 10m = \underline{-60V}$

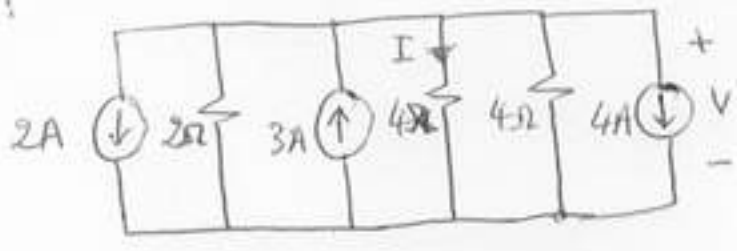
HW #2 Solution (cont)



$$I = \frac{\sum \text{Voltage}_s}{\sum \text{Resistance}_s} = \frac{2 - 4 + 3 - 4}{1 + 2 + 4 + 3} = -0.3 \text{ A}$$

$$V = RI = 4 \times (-0.3) = -1.2 \text{ V}$$

2.3-8



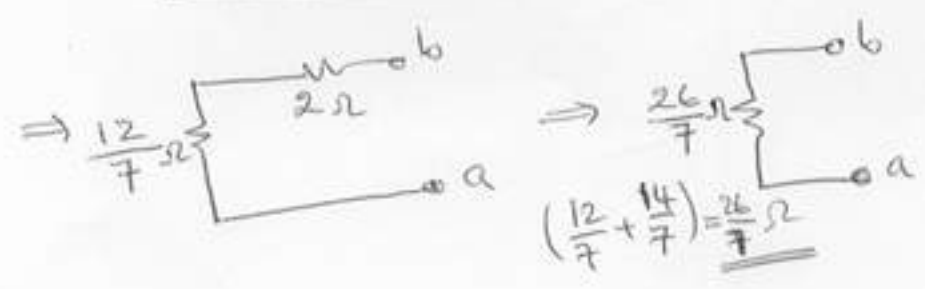
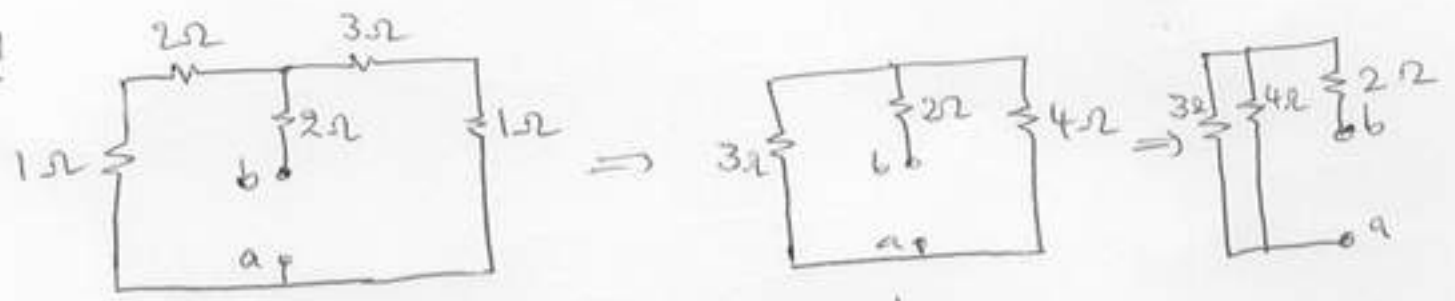
$$2 + \frac{V}{2} - 3 + \frac{V}{4} + \frac{V}{4} + 4 = 0$$

$$V\left(\frac{1}{2} + \frac{1}{4} + \frac{1}{4}\right) + 2 - 3 + 4 = 0$$

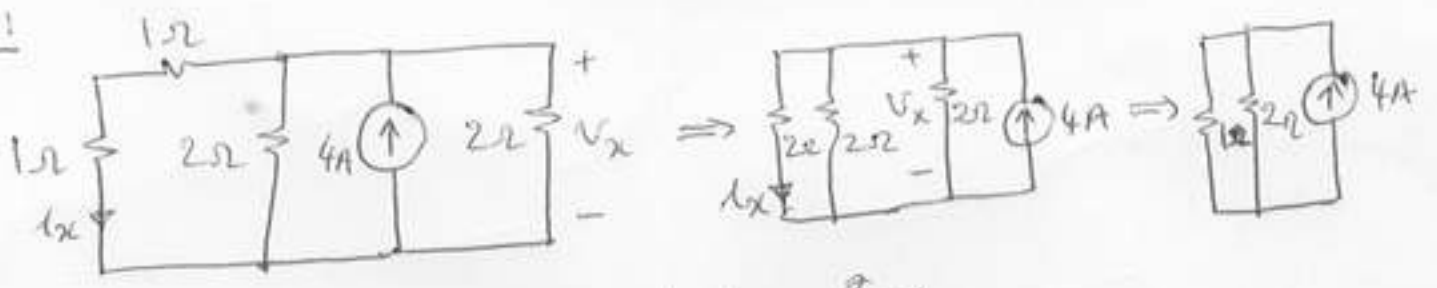
$$V + 3 = 0 \Rightarrow V = -3 \text{ V}$$

$$I = \frac{V}{4} = -\frac{3}{4} \text{ A}$$

2.4-31



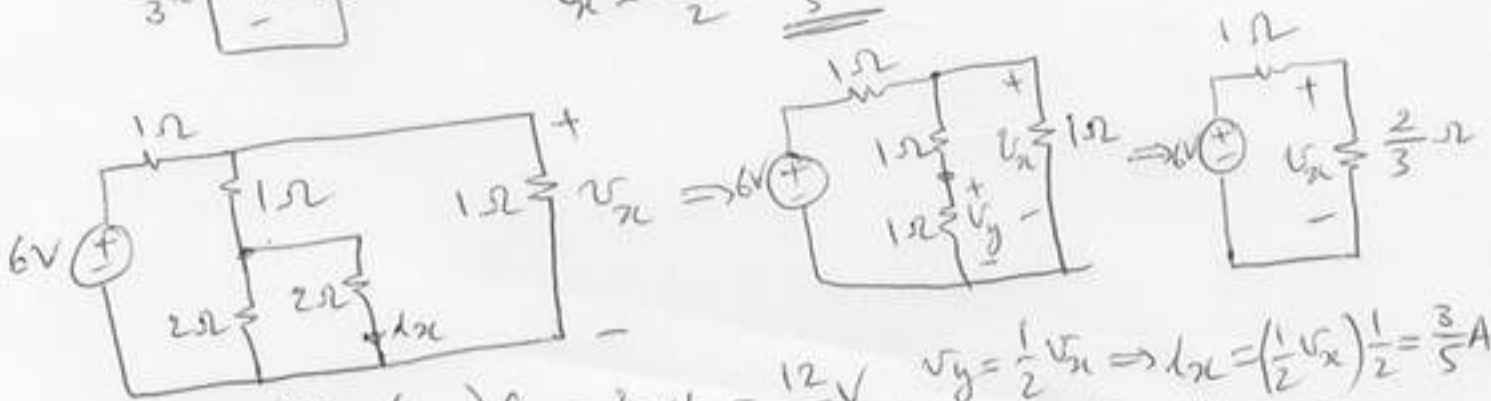
2.4-10



$$V_x = 4 \times \frac{2}{3} = \frac{8}{3} \text{ V}$$

$$I_x = \frac{V_x}{2} = \frac{4}{3} \text{ A}$$

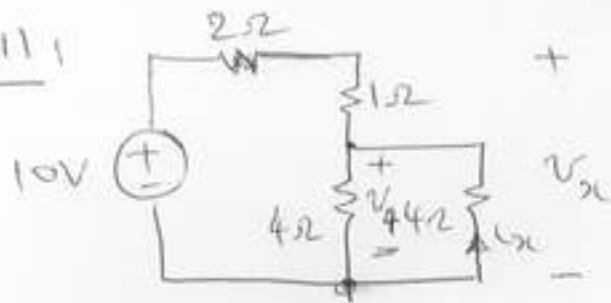
2.5-7



$$V_x = \left(\frac{2}{3} / \left(\frac{2}{3} + 1\right)\right) 6 = \frac{2}{5} \times 6 = \frac{12}{5} \text{ V}$$

$$I_x = \frac{V_y}{2} = \frac{6}{5} / 2 = \frac{3}{5} \text{ A}$$

2.5-111



$$v_4 = \frac{2}{2+3} \cdot 10 = 4V$$

$$v_x = \frac{3}{2+3} \cdot 10 = 6V$$

v_x is applied through $1\Omega + (4/4)\Omega$ i.e. 3Ω

$$i_x = -\frac{v_4}{4} = -\frac{4}{4} = \underline{\underline{-1A}}$$

v_4 can also be found from:

$$v_4 = \frac{2}{1+2} v_x = \frac{2}{3} \times 6 = \underline{\underline{4V}}$$