

2012/4/4

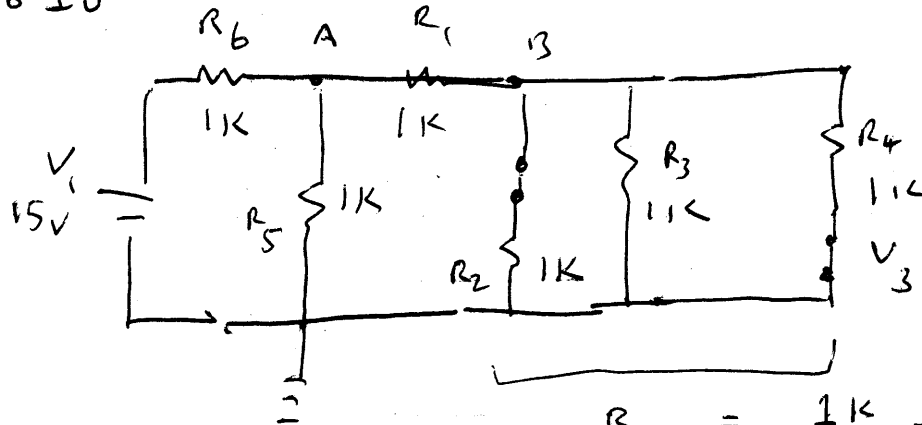
Review Ch. 9

9-1

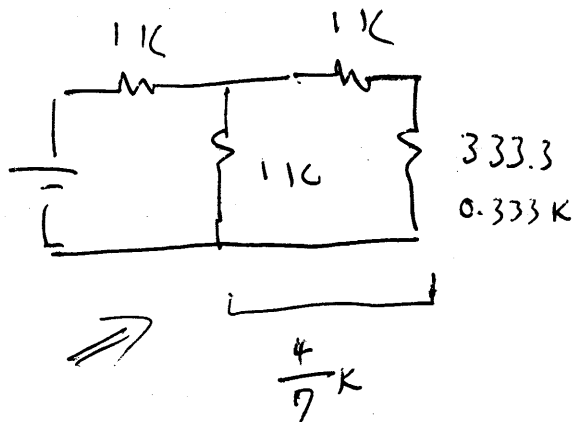
9-2.

(1)

Lab 10



$$R_{234} = \frac{1K}{3} = 333.\Omega$$



$$1K \parallel 1.333K$$

$$= \frac{1K \cdot 1.333K}{2.333K}$$

$$\frac{1 \cdot \frac{1}{3} K}{1 + \frac{1}{3}} = \frac{\frac{1}{3}}{\frac{4}{3}}$$

$$= \frac{1}{3} * \frac{3}{4} = \frac{1}{4} = 250\Omega$$

$$1K \parallel 1\frac{1}{3}K$$

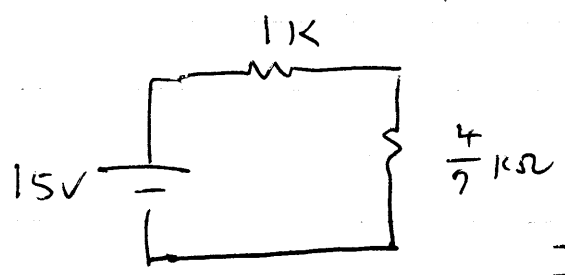
$$= \frac{1K \cdot \frac{4}{3}}{1 + 1\frac{1}{3}}$$

$$\frac{\frac{3}{3} + \frac{4}{3}}{\frac{3}{3} + \frac{4}{3}}$$

$$= \frac{\frac{4}{3}}{\frac{7}{3}} = \frac{4}{7} * \frac{3}{3} = \frac{4}{7} K\Omega$$

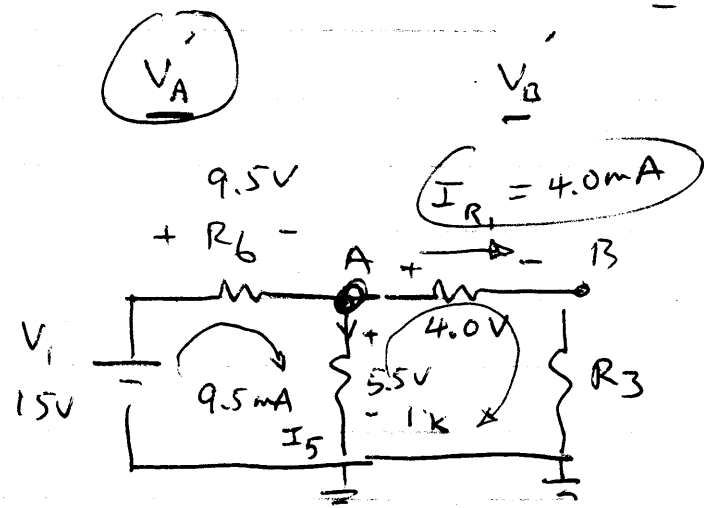
$$R_T = 1K + \frac{4}{7} K\Omega = \frac{11}{7} K\Omega$$

(2)



$$R_T = \frac{11}{7} \text{ k}\Omega$$

$$I' = \frac{15}{\frac{11}{7}} = \frac{105}{11} \text{ mA} = 9.5 \text{ mA}$$



KVL $V_A = 15\text{V} - 9.5\text{V} = 5.5\text{V}$

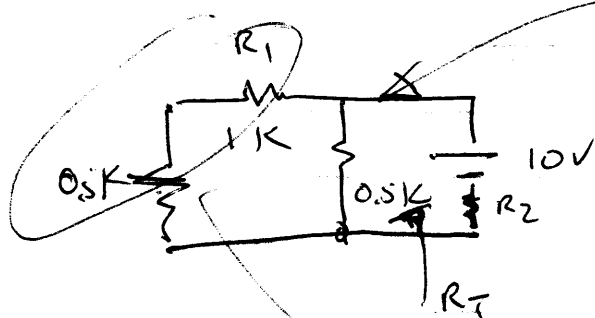
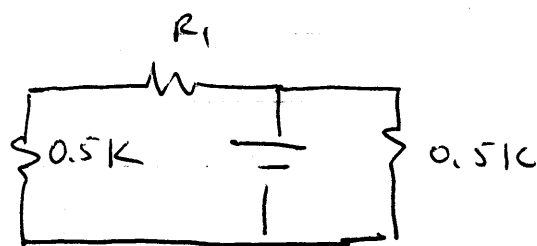
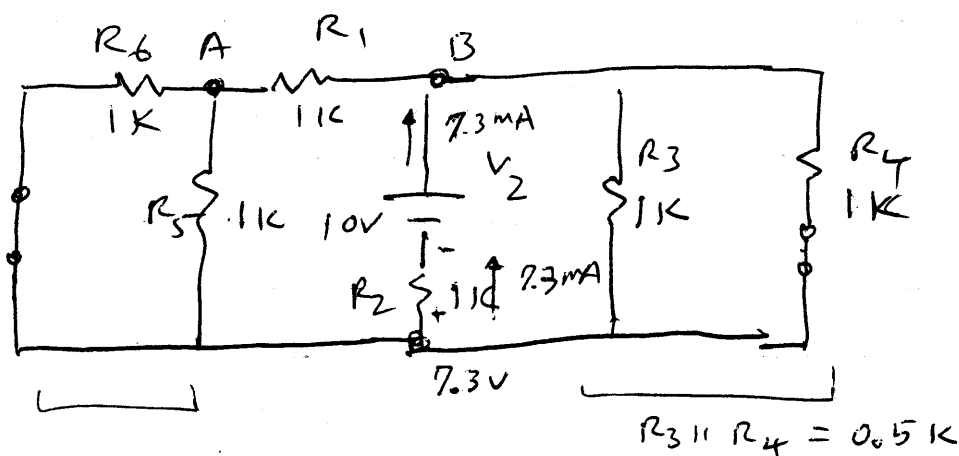
~~$I_S = I_T$~~
$$I_S = \frac{V_A}{R_5} = 5.5 \text{ mA}$$

$$I_T - I_S = I_{R_1} = 9.5 \text{ mA} - 5.5 \text{ mA} = 4.0 \text{ mA}$$

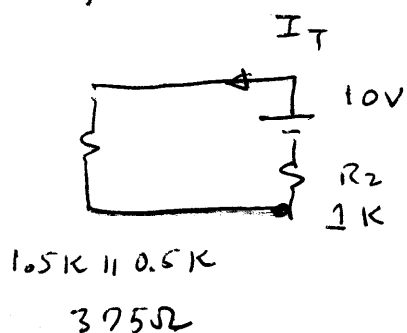
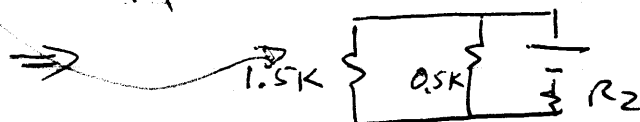
$$5.5\text{V} = V_A = V_{R_1} + V_B \Rightarrow V_B = V_A - V_{R_1} = 5.5\text{V} - 4\text{V} = 1.5\text{V}$$

3

V_2 (10V working alone)



Series, Parallel

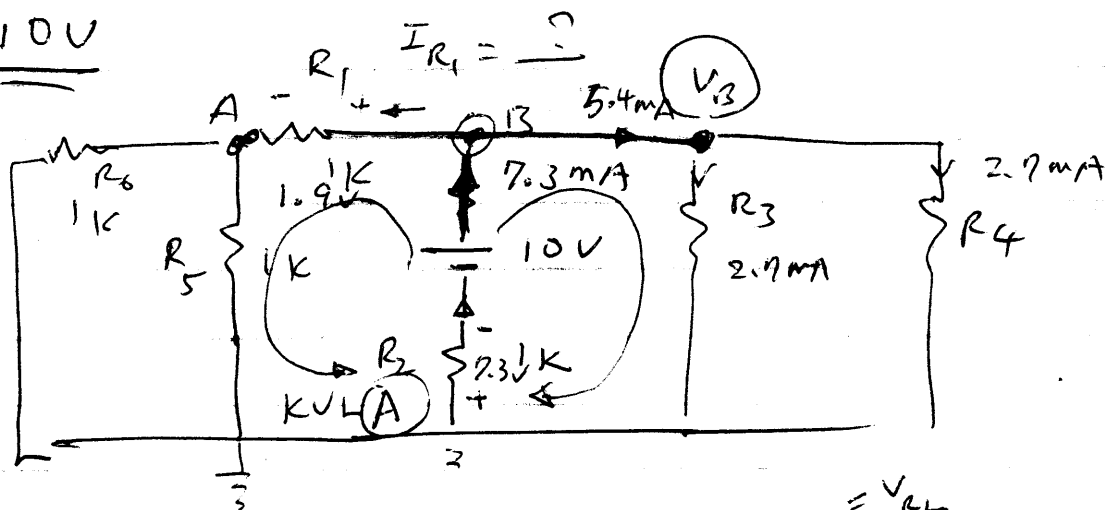


$$R_T = R_2 + 375 \Omega = 1.375 \text{ K} \Omega$$

$$I_T = \frac{10 \text{ V}}{R_T} = \frac{10 \text{ V}}{1.375 \text{ K} \Omega} = 7.3 \text{ mA}$$

10V

(4)



$$10V = 7.3V + V_{R3} = V_{R4}$$

$$V_{R3} \Rightarrow 10 - 7.3 = \underline{2.7V}$$

$$V_B = V_{R3} \text{ By observation}$$

$$I_{R3} = \frac{V_B}{R_3} = \frac{V_{R3}}{R_3} = \frac{2.7V}{1K} = 2.7mA$$

$$I_{R4} = \frac{V_B}{R_4} = \frac{V_{R4}}{R_4} = \frac{2.7V}{1K} = 2.7mA$$

$$I_{R1} = \sum \text{node B} = \underset{\text{out}}{7.3mA} - \underset{\text{in}}{5.4mA} = 1.9mA$$

$$\underline{V_{R1} = 1.9V}$$

KVL(A)

$$10V = V_{R1} + V_{R5} + V_{R2}$$

$$= 1.9V + V_{R5} + 7.3V$$

$$V_{R5} = V_A = 10 - 1.9 - 7.3 = \underline{\underline{0.8V}}$$