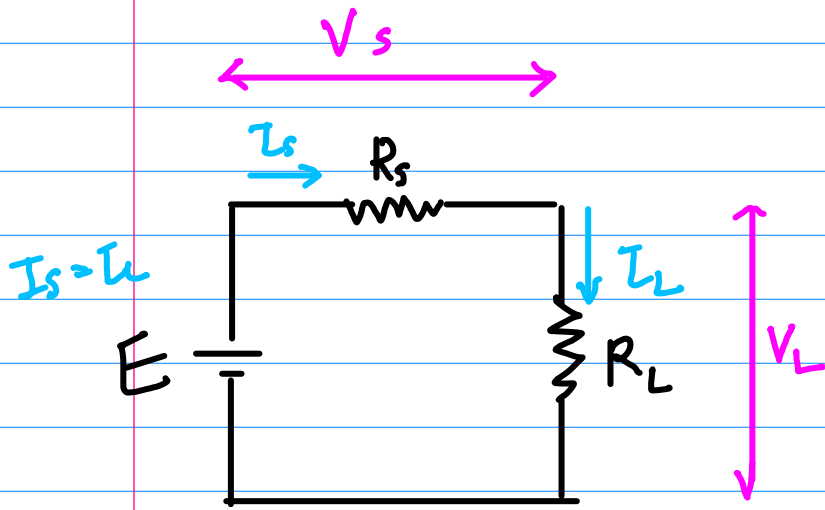


Network Analysis (H1)

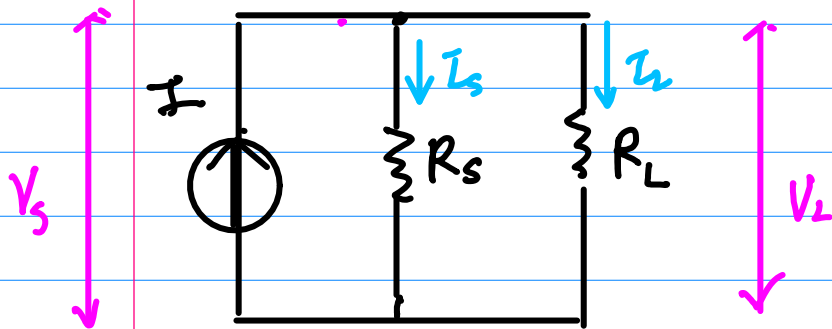
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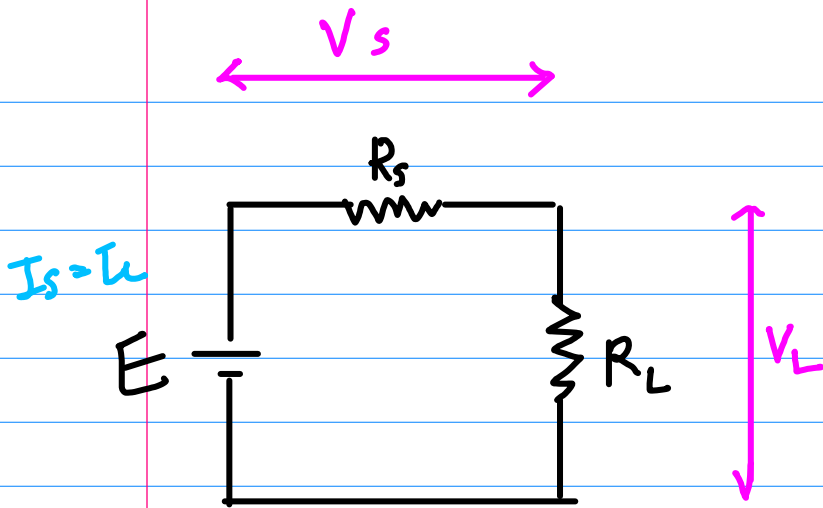


Voltage Divider

$$V_s = V_L$$



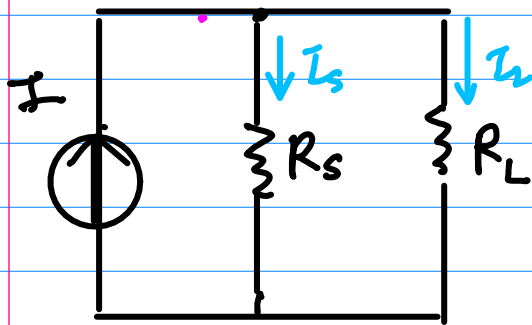
Current Divider



Voltage Divider

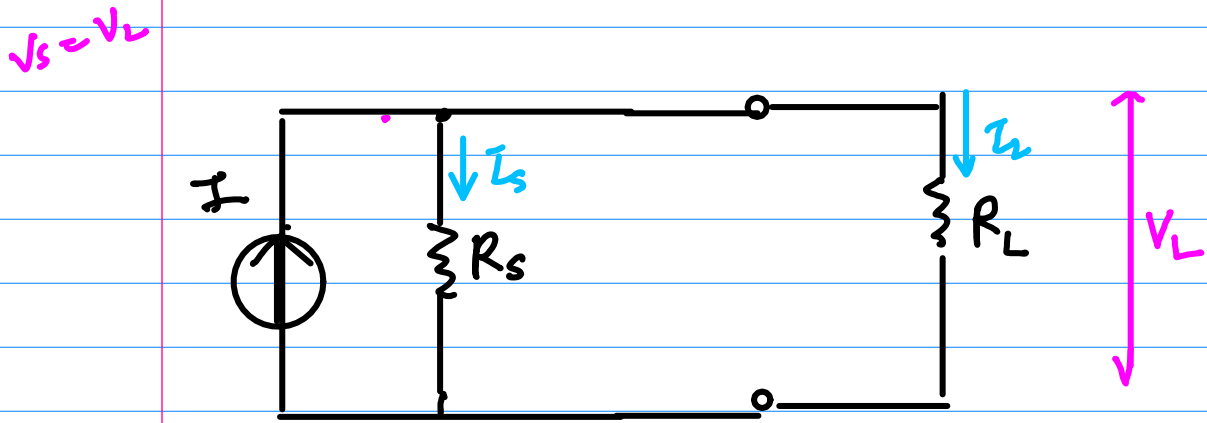
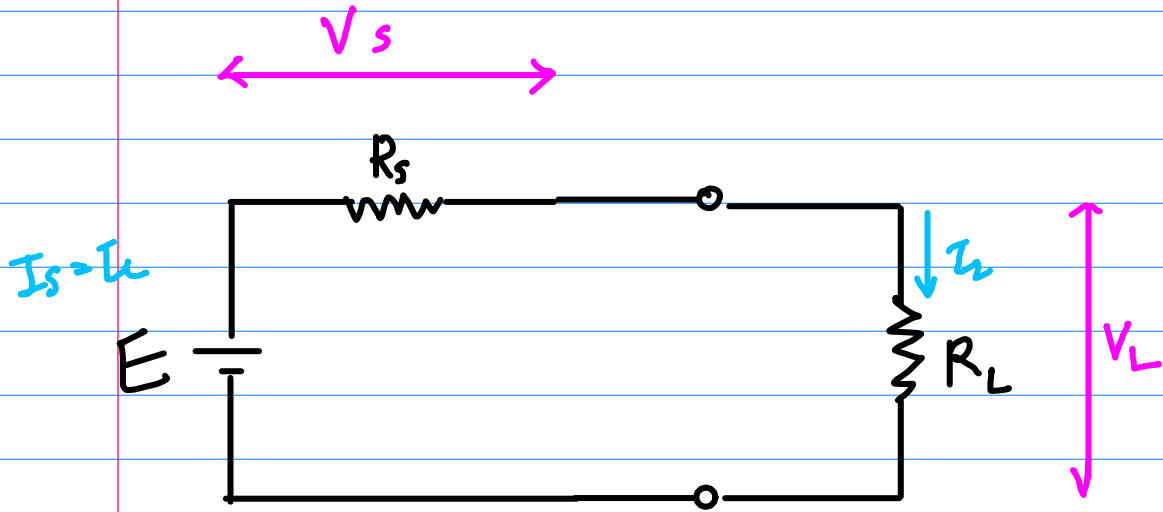
$$V_s : V_L = R_s : R_L$$

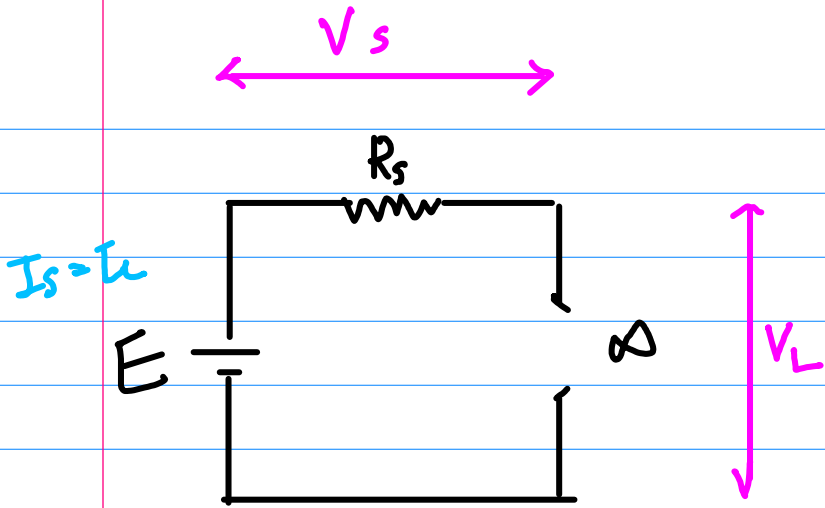
$$V_s = V_L$$



Current Divider

$$I_s : I_L = R_L : R_s$$

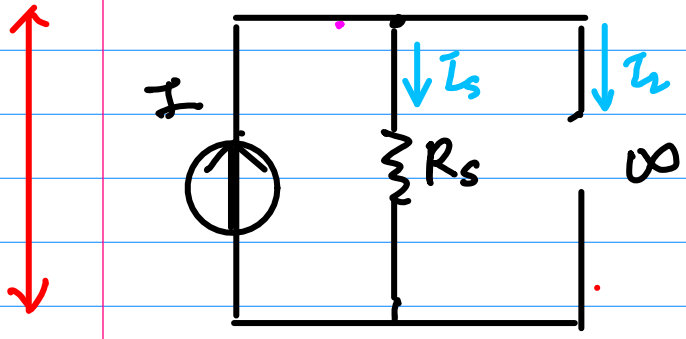




Voltage Divider

$$V_s : \overset{\text{G}}{\text{V}_L} = R_s : \infty$$

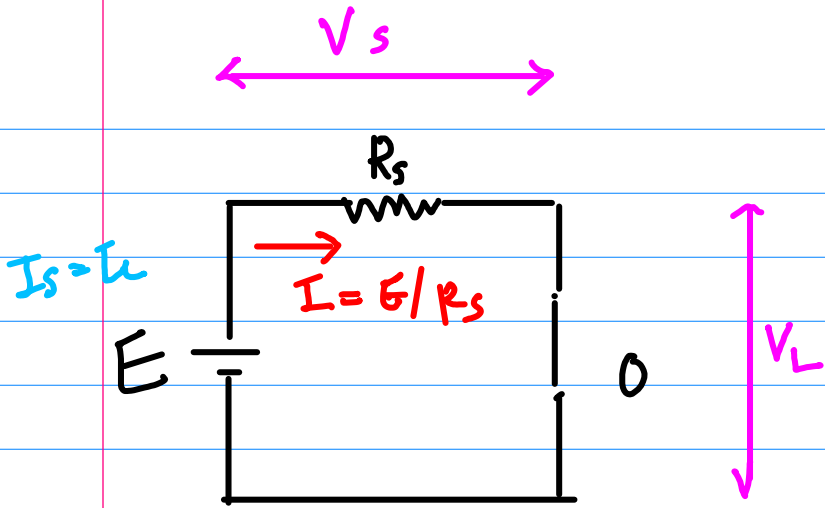
$$V_s = V_L$$



Current Divider

$$\overset{\text{I}}{\text{I}_s} : \text{I}_L = \infty : R_s$$

$$V = I \cdot R_s$$



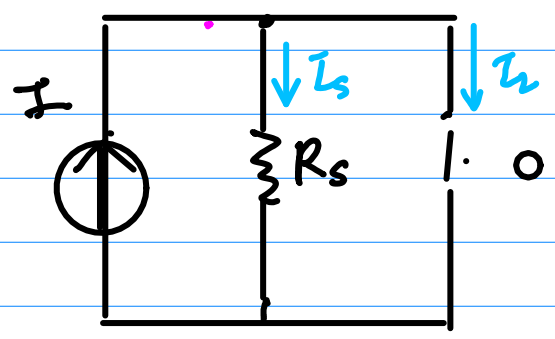
Voltage Divider

$$V_s : V_L = R_s : 0$$

$$\parallel \quad \parallel$$

$$E \quad 0$$

$V_s = V_L$



Current Divider

$$I_s : I_L = 0 : R_s$$

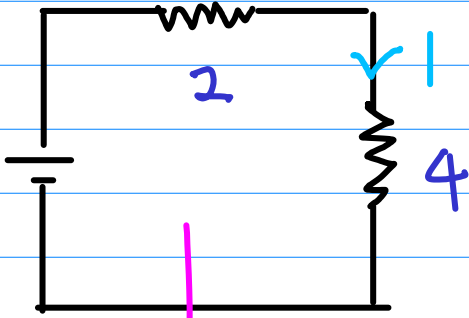
$$\uparrow \quad \parallel$$

$$0 \quad I$$

V_s

$I_s = I_L$

6 E

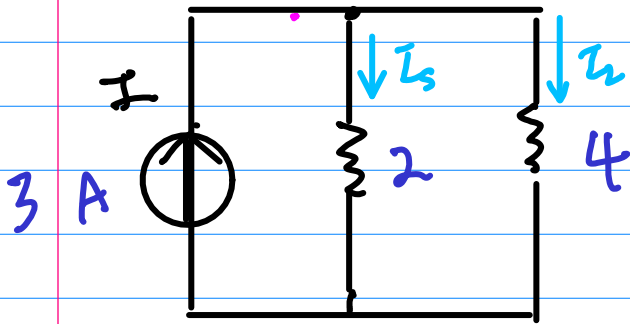


Voltage Divider

$V_s : V_L = 2 : 4$

$6V \Rightarrow 2V, 4V$

$V_s = V_L$



Current Divider

$I_s : I_L = 4 : 2$

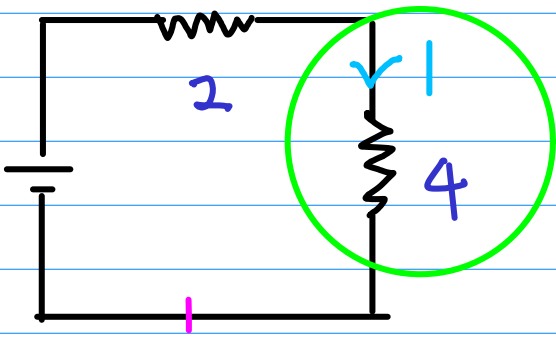
$1A \Rightarrow \frac{2}{3}A, \frac{1}{3}A$

$3A \Rightarrow 2A, 1A$

V_s

$I_s = I_2$

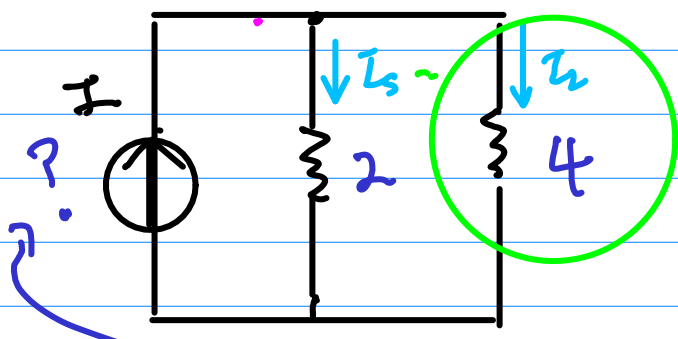
$6 E$

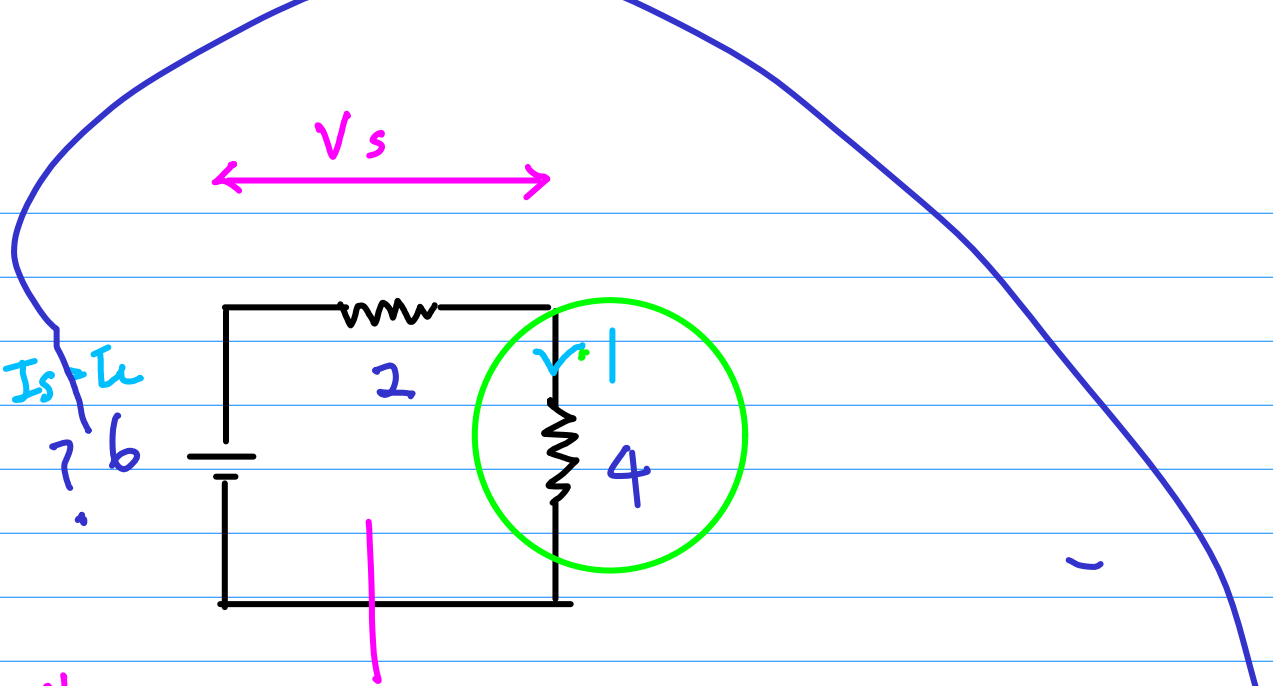


$6 = I \cdot 2$

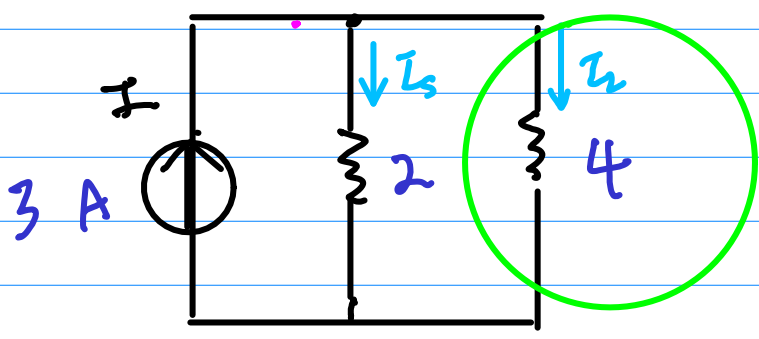
$I = 3$

$V_s = V_L$



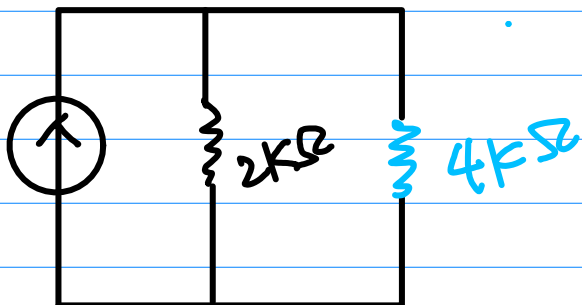


$V_s = V_2$



$V = 3 \cdot 2 = 6$

3.15 mA

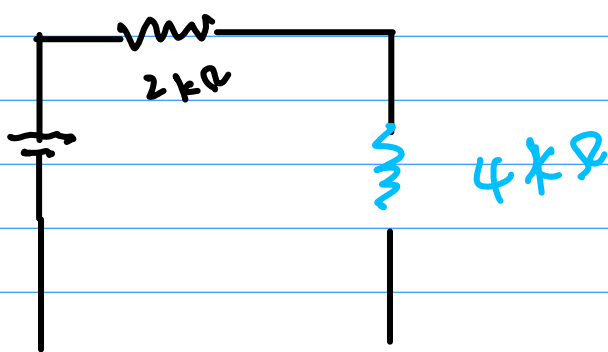


$$I_L = 3.15 \times \frac{1}{3}$$

$$V_L = \frac{4}{3} \times 3.15$$

$$\frac{3.15 \times 2}{1} =$$

7.5 V.

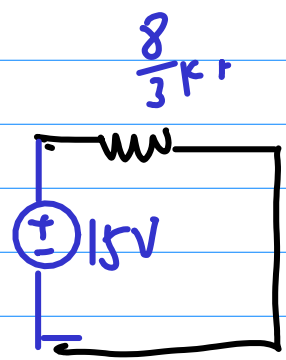
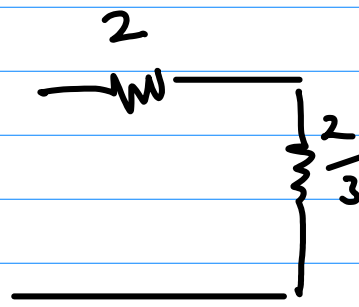
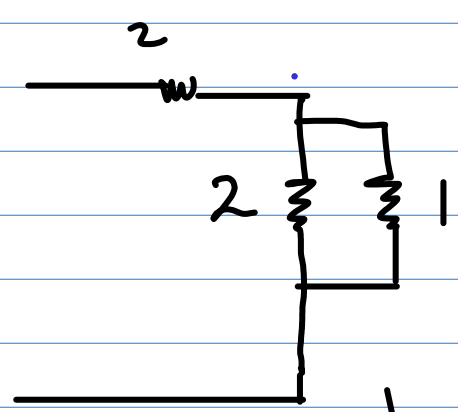
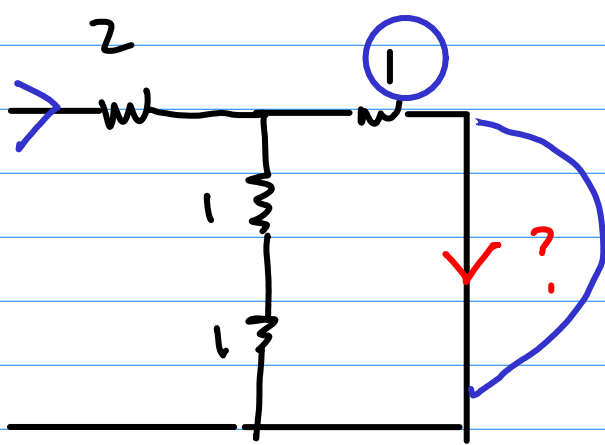


$$V_L = 7.5 \times \frac{2}{3}$$

$$I_L = 7.5 \times \frac{2}{3} \times \frac{1}{4}$$
$$= 3.15 \times \frac{1}{3} \times \frac{1}{4}$$

5.625

15V - 5.625 x 2

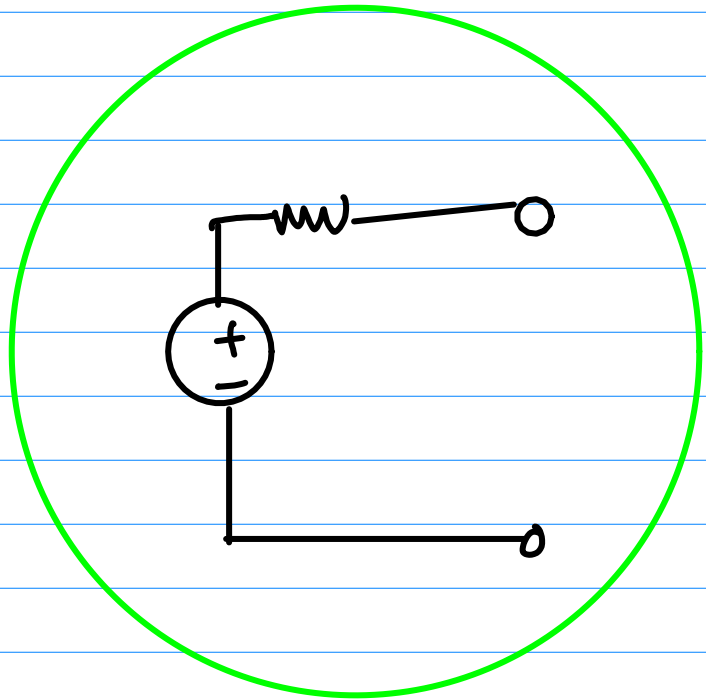
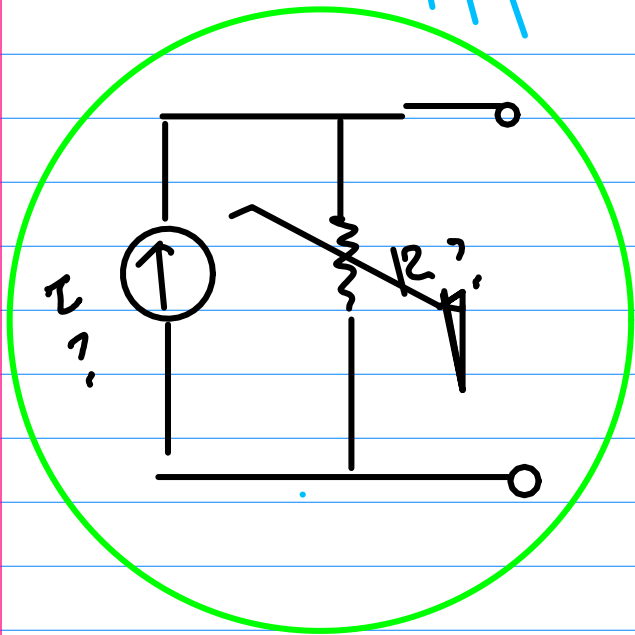
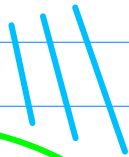
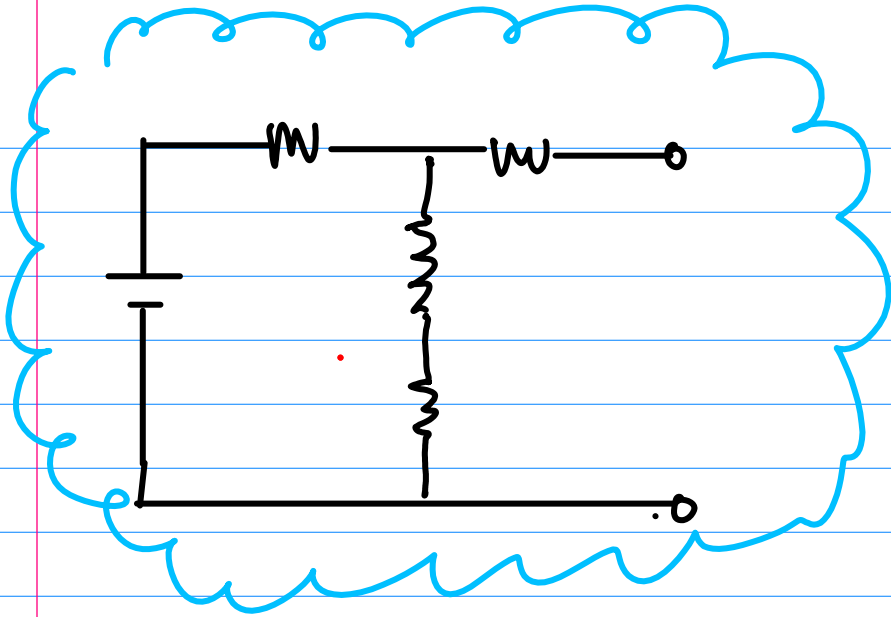


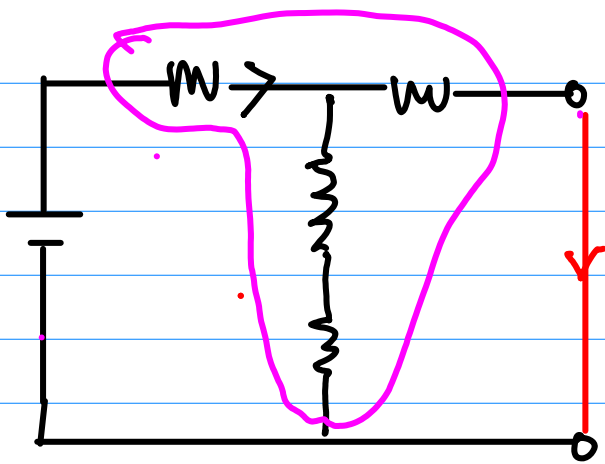
$$\frac{1}{\frac{1}{2} + \frac{1}{1}} = \frac{1}{\frac{3}{2}} = \frac{2}{3}$$

$$I_{sc} \frac{1}{R} = 15 \times \frac{3}{8} \quad 2 + \frac{2}{3} = \frac{8}{3}$$

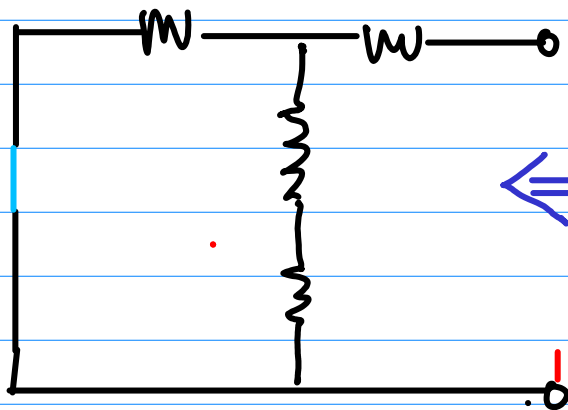
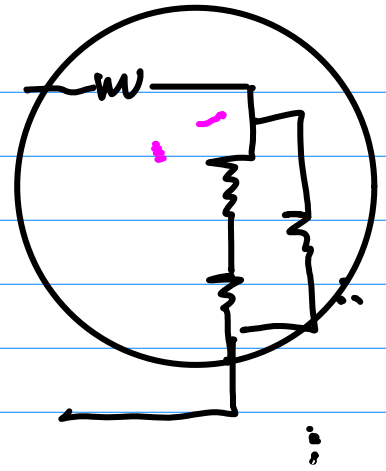
$$= \frac{45}{8} = 5$$

—



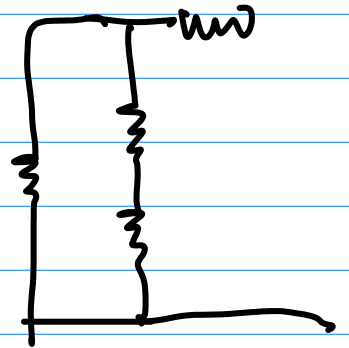


3.25mA

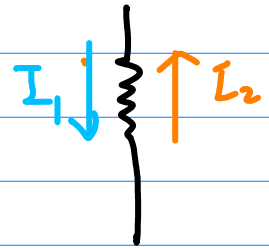
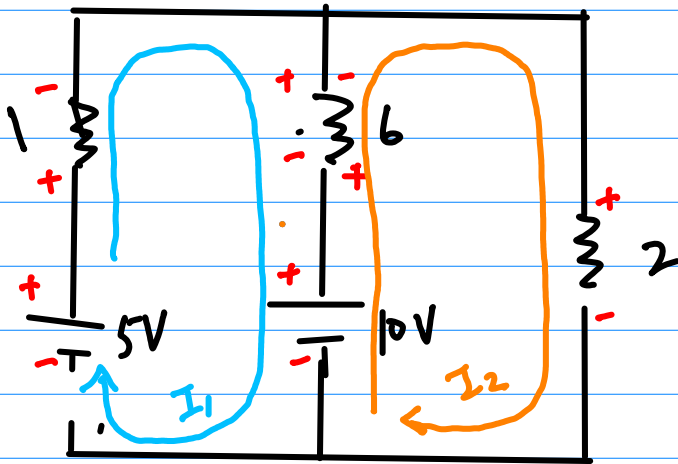


2kΩ

A resistor symbol drawn below the text.



Mesh analysis

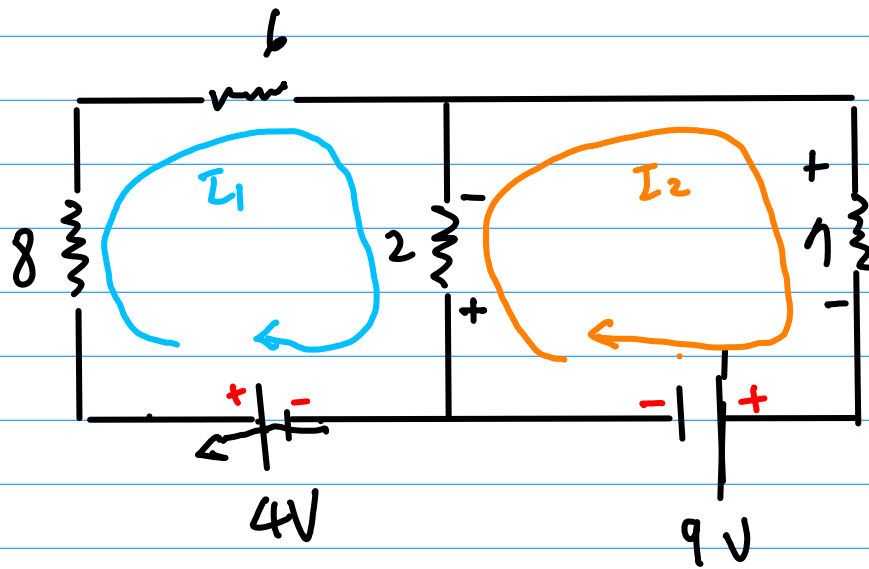


$$5 - 1(I_1) - 6(I_1 - I_2) - 10 = 0$$

$$10 - 6(I_2 - I_1) - 2(I_2) = 0$$

$$-7I_1 + 6I_2 = 5$$

$$6I_1 - 8I_2 = -10$$

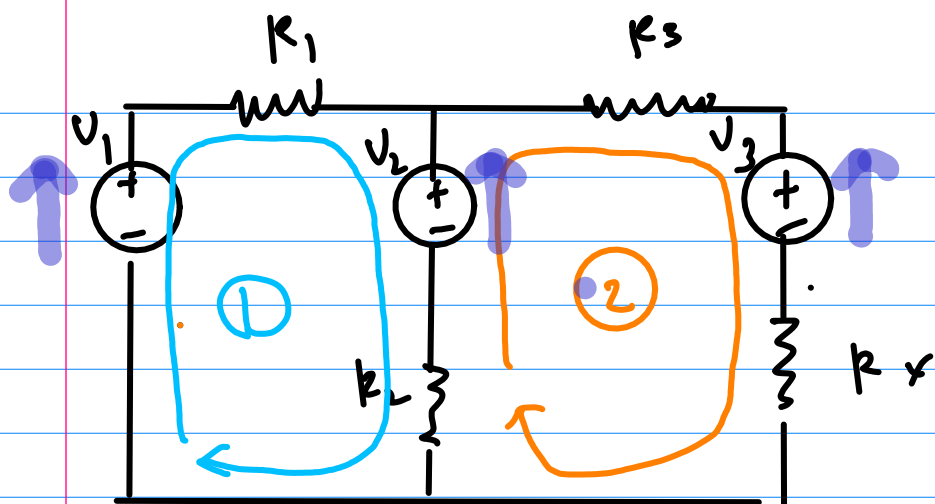


$$4 - 8(I_1) - 6(I_1) - 2(I_1 - I_2) = 0$$

$$-16I_1 + 2I_2 = -4$$

$$\textcircled{-9} - 2(I_2 - I_1) - 7(I_2) = 0$$

$$2I_1 - 9I_2 = 9$$

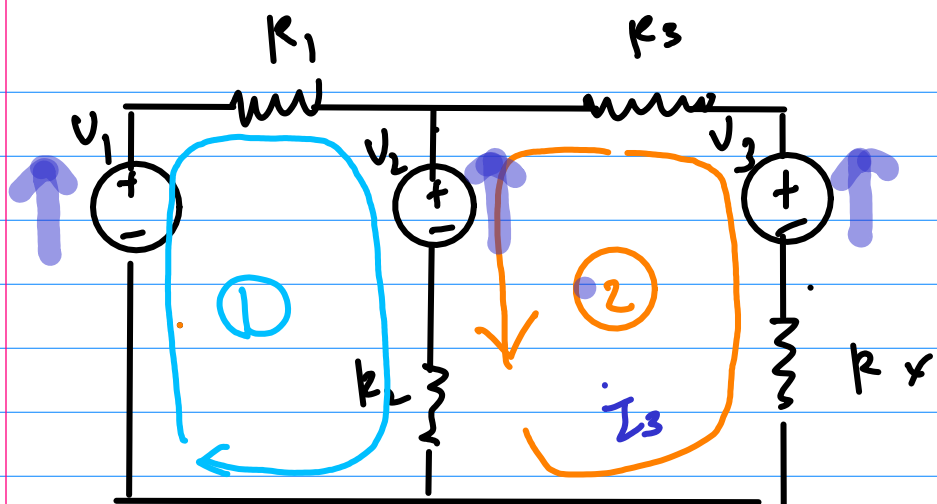


$$V_1 - R_1 (I_1) - V_2 - R_2 (I_1 - I_2) = 0$$

$$\textcircled{V_2} - R_3 (I_2) \textcircled{-V_3} - R_4 (I_2) - R_2 (I_2 - I_1) = 0$$

$$V_2 - V_3 - (R_2 + R_3 + R_4) I_2 + R_2 I_1 = 0$$

$$-V_2 + V_3 + (R_2 + R_3 + R_4) I_2 - R_2 I_1 = 0$$

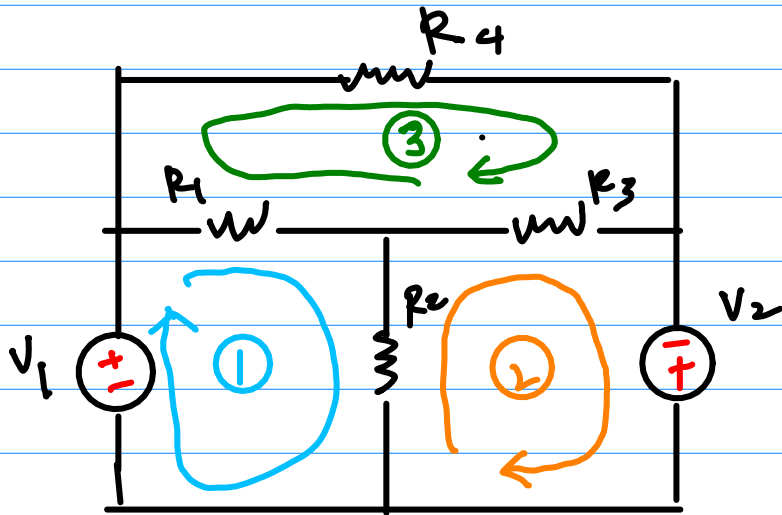


$$-V_2 - R_2(I_3 + I_1) - R_4(I_3) + V_3 - R_3(I_3) = 0$$

$$-V_2 + V_3 - (R_2 + R_3 + R_4)I_3 - R_2I_1 = 0$$

$$-V_2 + V_3 + (R_2 + R_3 + R_4)I_2 - R_2I_1 = 0$$

예제 3.8 p85 2번 3.19

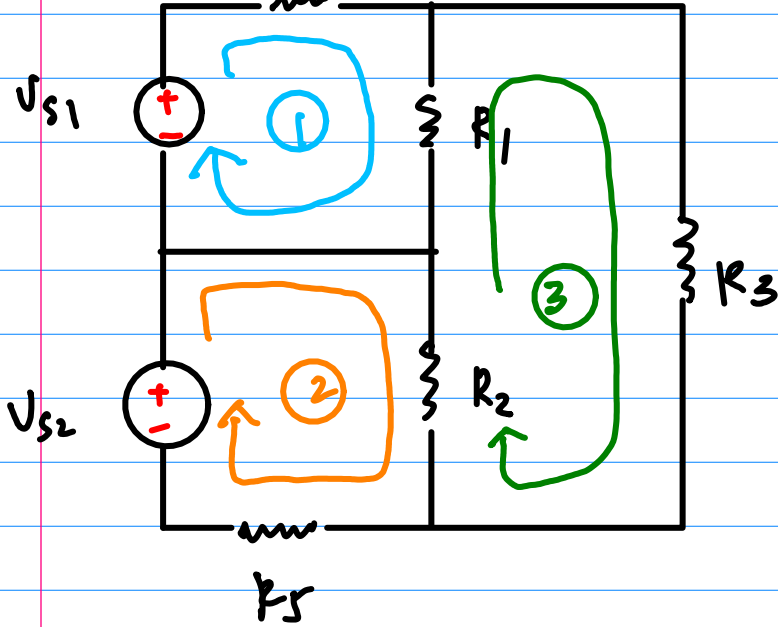


$$\textcircled{1} \quad V_1 - R_1 (I_1 - I_3) - R_2 (I_1 - I_2) = 0$$

$$\textcircled{2} \quad -R_2 (I_2 - I_1) - R_3 (I_2 - I_3) + V_2 = 0$$

$$\textcircled{3} \quad -R_1 (I_3 - I_1) - R_4 (I_3) - R_3 (I_3 - I_2) = 0$$

0.1271 3.9
kV
m



- ① $+V_{S1} - R_4 (I_1) - R_1 (I_1 - I_3) = 0$
- ② $V_{S2} - R_2 (I_2 - I_3) - R_5 (I_2) = 0$
- ③ $-R_1 (I_3 - I_1) - R_3 (I_3) - R_2 (I_3 - I_2) = 0$

p85 max.

$$\begin{aligned} -15 i_1 - 10 i_2 &= 1 \\ -10 i_1 + 20 i_2 &= 8 \end{aligned}$$

$$\begin{bmatrix} 15 & -10 \\ -10 & 0 \end{bmatrix} \begin{bmatrix} i_1 \\ i_2 \end{bmatrix} = \begin{bmatrix} 1 \\ 8 \end{bmatrix}$$

$$\begin{vmatrix} 15 & -10 \\ -10 & 20 \end{vmatrix} = +300 - (100) = 200$$

$$\begin{vmatrix} 1 & -10 \\ 8 & 20 \end{vmatrix} = 20 + 80 = 100 \quad \frac{100}{200}$$

$$\begin{vmatrix} 15 & 1 \\ -10 & 8 \end{vmatrix} = 120 + 10 = 130 \quad \frac{130}{200}$$

