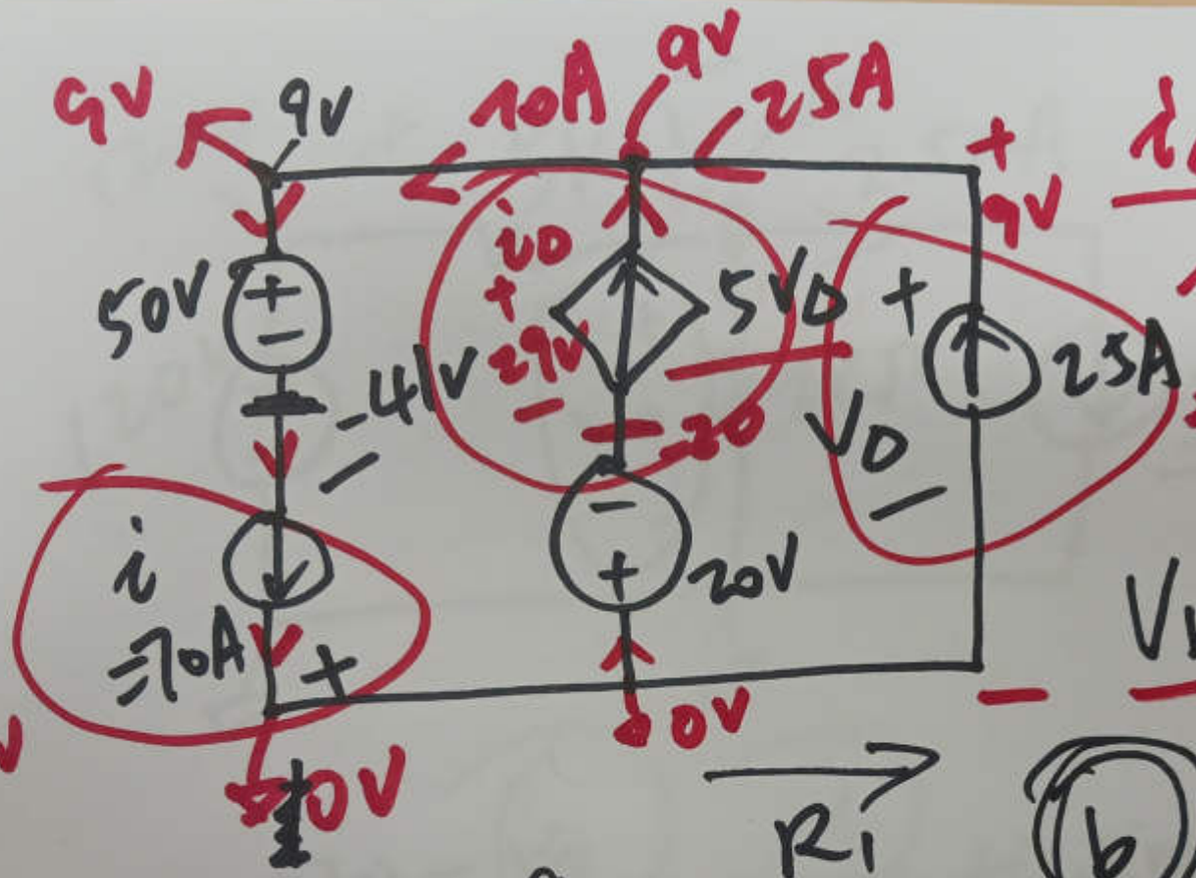


$i_0 = 70A - 25A = 45A$

$i_0 = 5V_0 = 45A$

$V_0 = 9V$

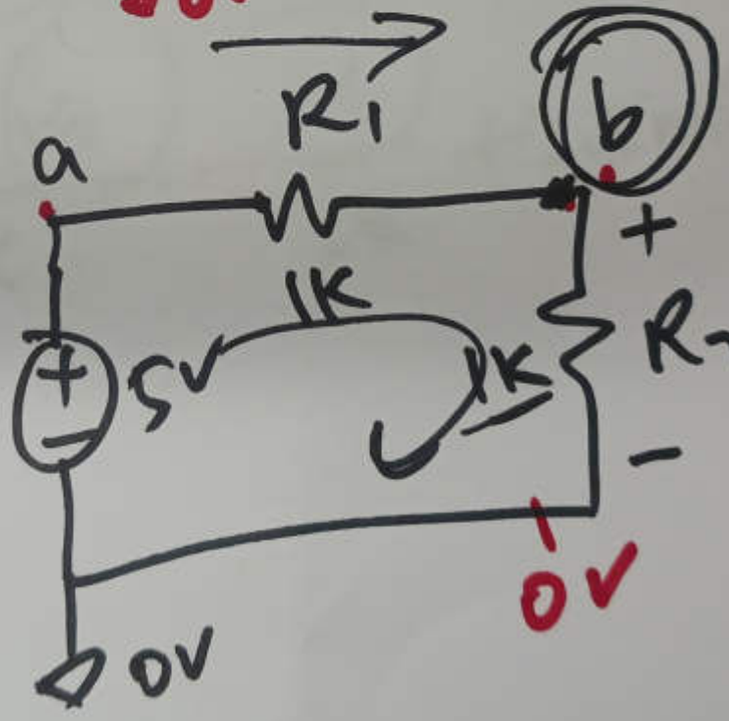
$V_b = 2.5V - 0 = 2.5V$

Pdev

dev/supply

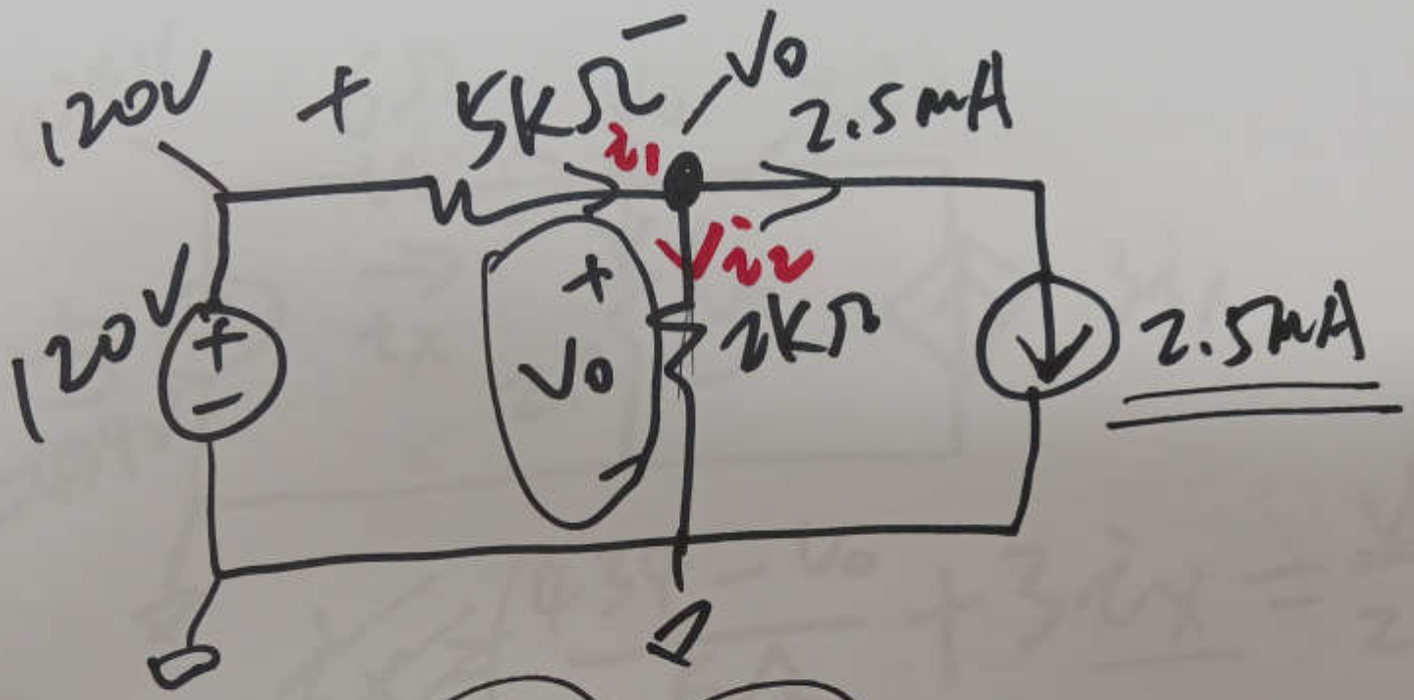
absorb/dissipate

(1)



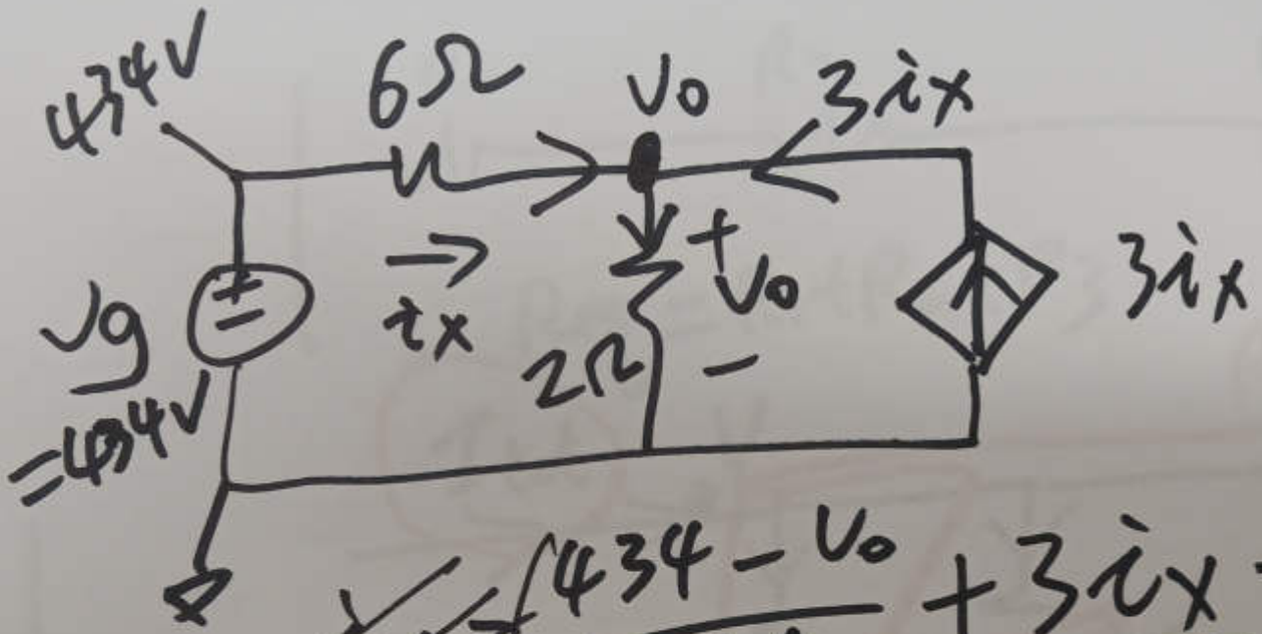
$I = \frac{5V}{2K} = 2.5mA$

$V_{R_2} = 1k\Omega \cdot 2.5mA = 2.5V$



$$\frac{120 - V_o}{5K} = \frac{V_o}{2K} + 2.5mA$$

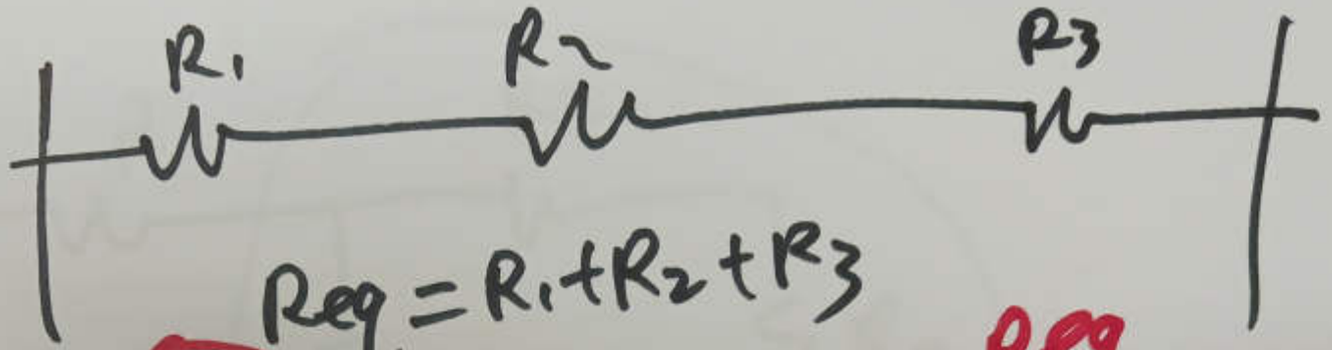
(2)



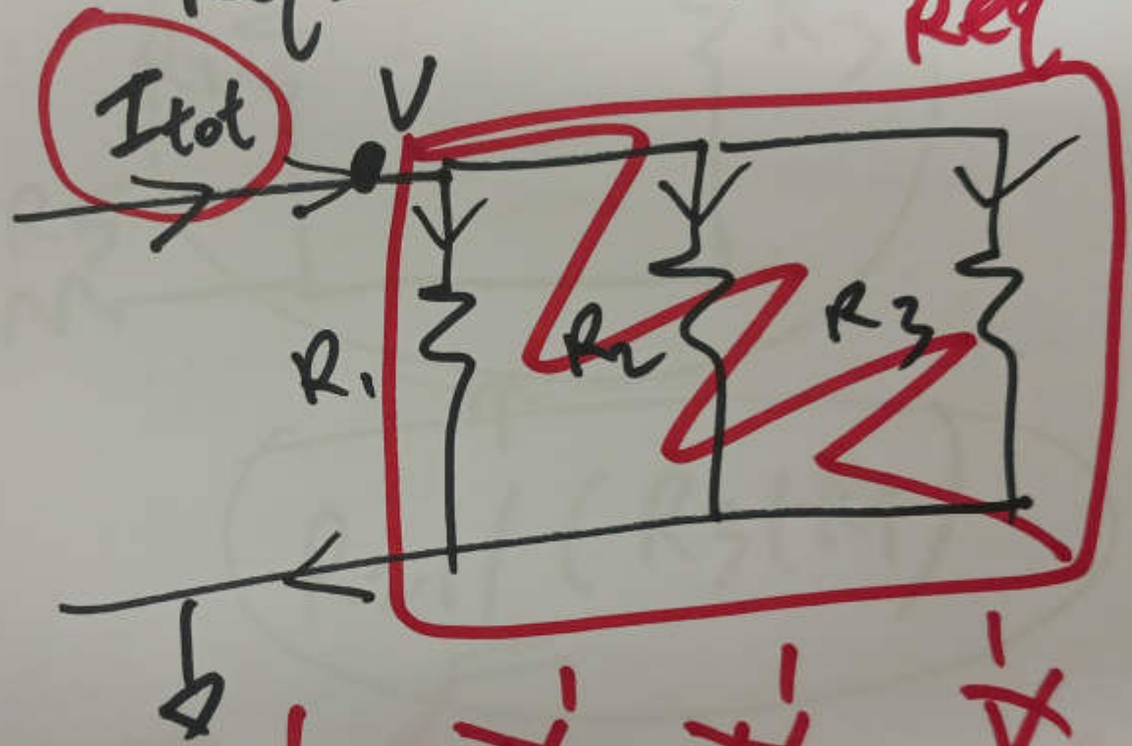
$$\frac{434 - v_o}{6\Omega} + 3i_x = \frac{v_o}{2\Omega}$$

$$\frac{434 - v_o}{6\Omega} = i_x$$

(3)

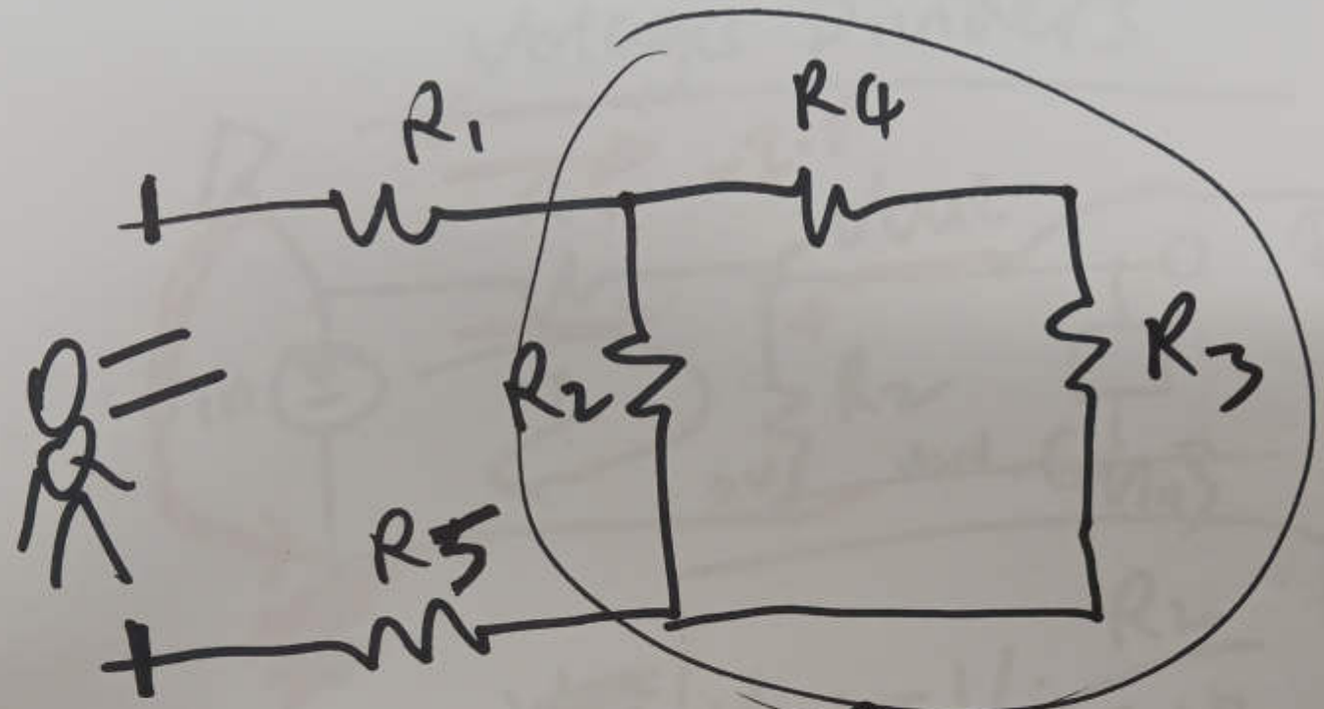


$$R_{eq} = R_1 + R_2 + R_3$$

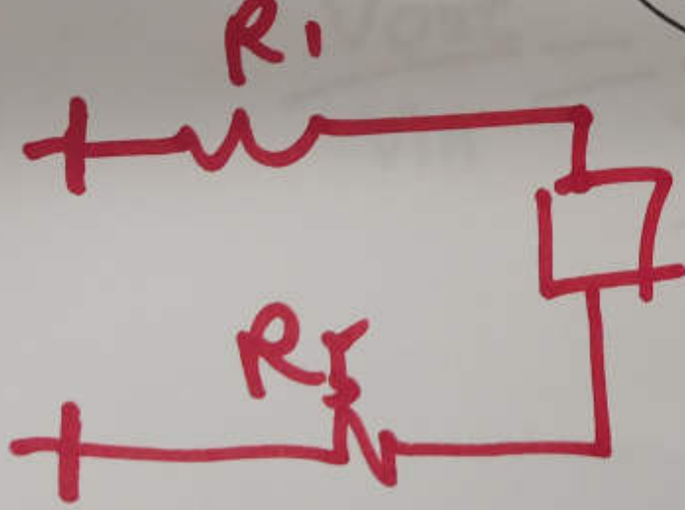


$$\frac{V}{R_{eq}} = \frac{V}{R_1} + \frac{V}{R_2} + \frac{V}{R_3}$$

$$R_{eq} = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}}$$



$R_2 \,//\, (R_3 + R_4)$

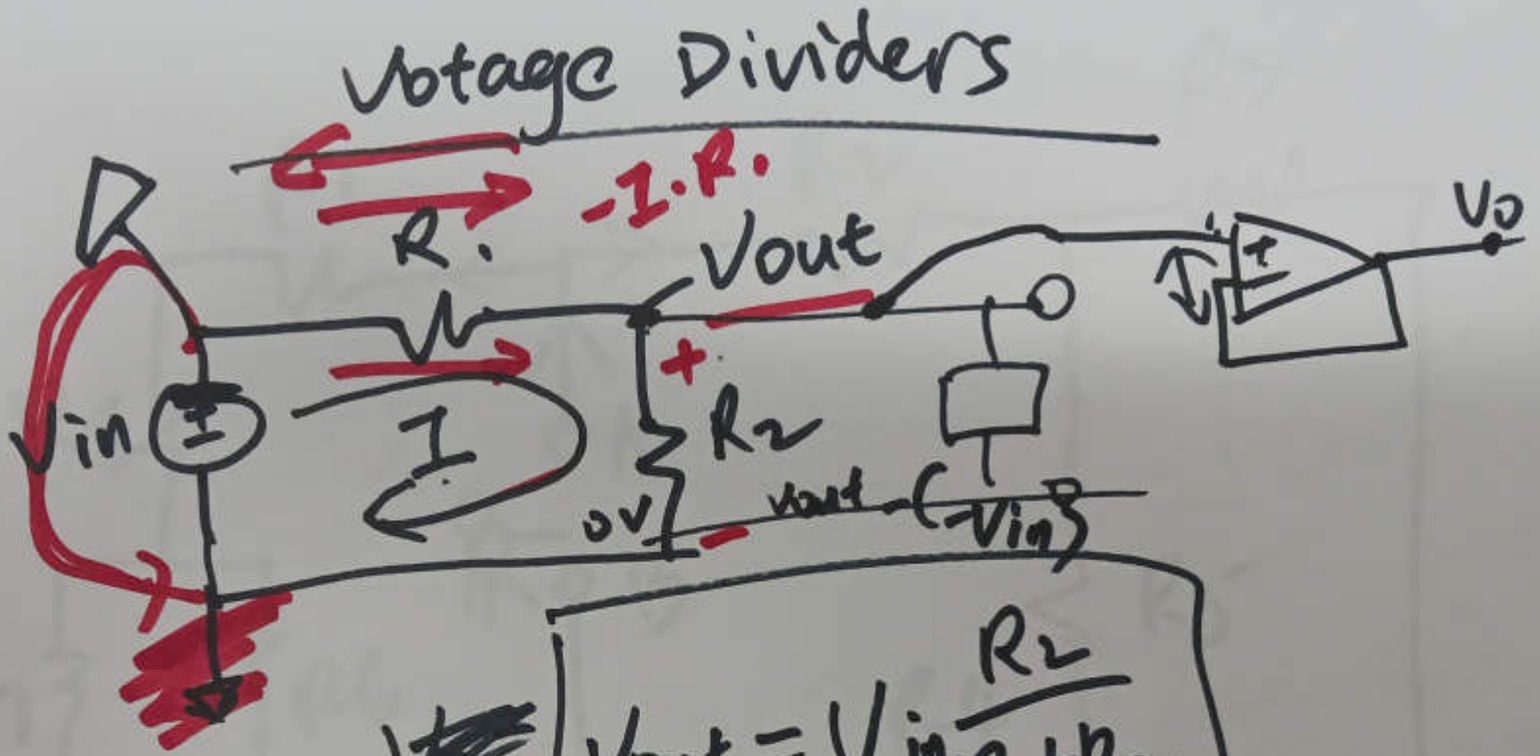


R_{box}

$R_{eq} = R_1 + R_{box} + R_5$

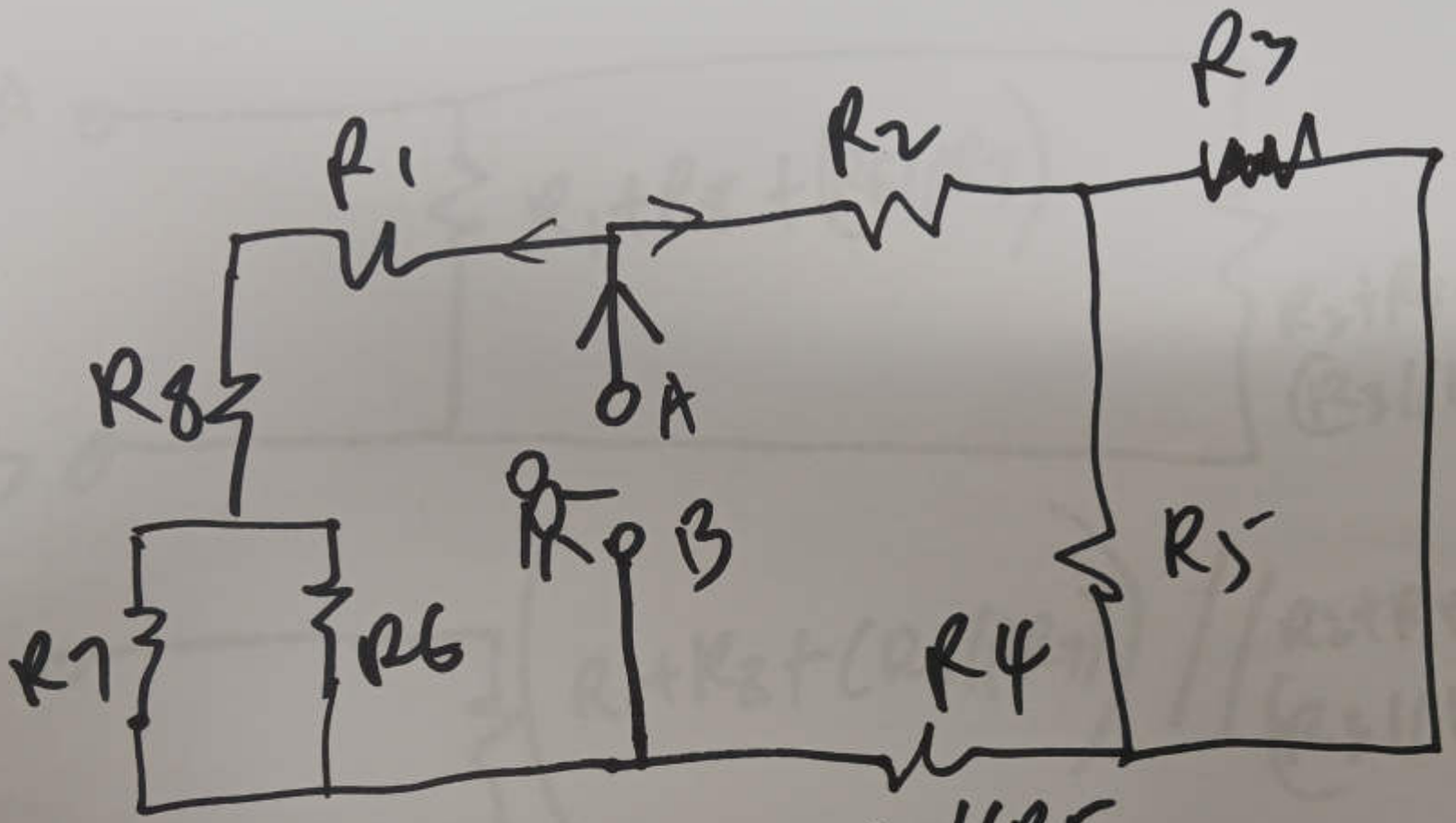
(5)

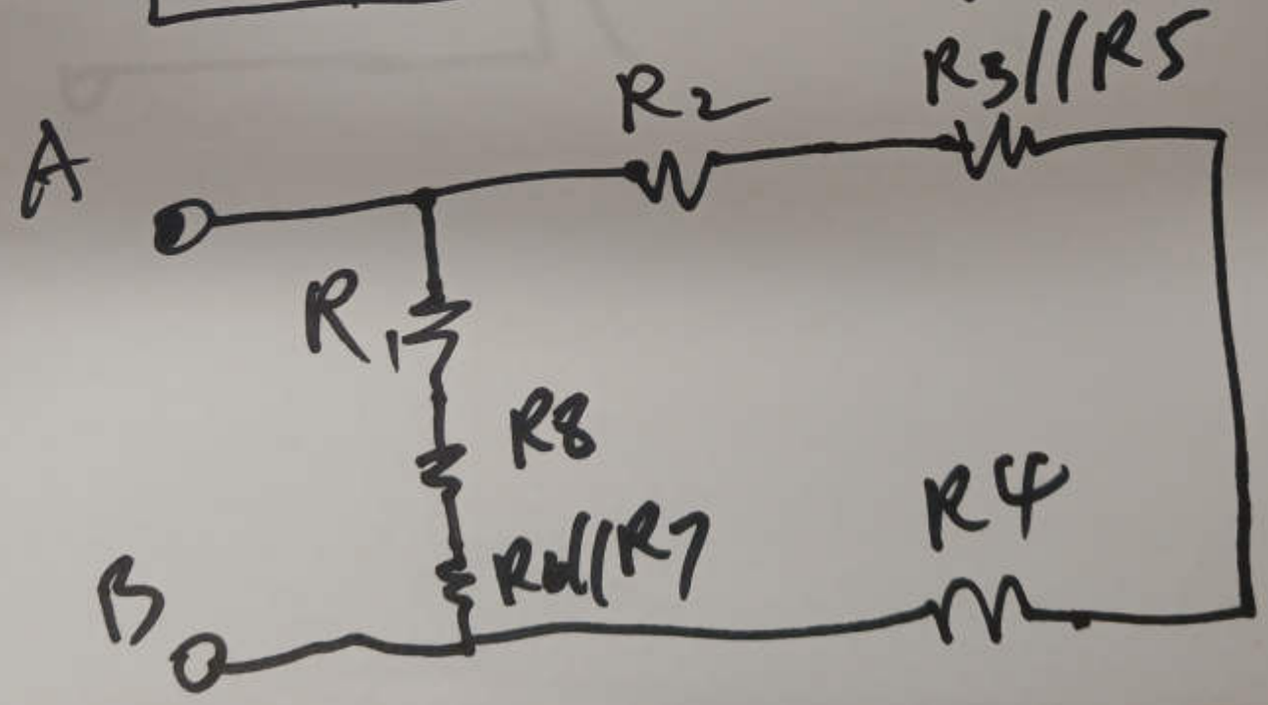
Voltage Dividers

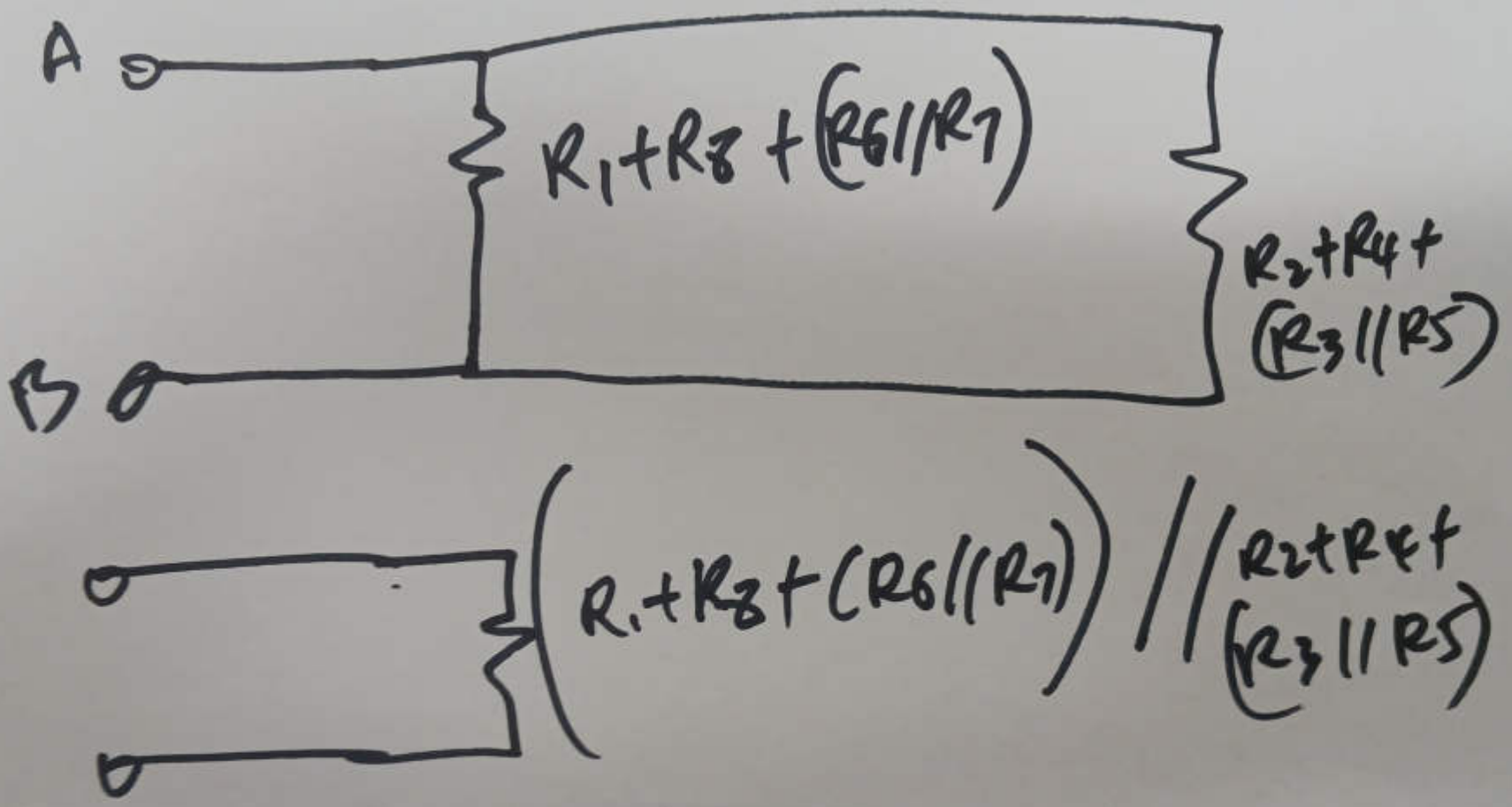


$$V_{out} = V_{in}\frac{R_2}{R_1+R_2}$$

$$\frac{V_{out}}{V_{in}} = \frac{I\cdot R_2}{I\cdot(R_1+R_2)} \Rightarrow V_{out} = V_{in}\frac{R_2}{R_1+R_2}$$


R1
R2
R3
R8
A
B
R7
R6
R5
R4


A
R2
R3//R5
R1
R8
R8//R7
R4
B



$$\left(R_1+R_8+(R_6 \| R_7)\right) \,//\, R_2+R_4+(R_3 \| R_5)$$