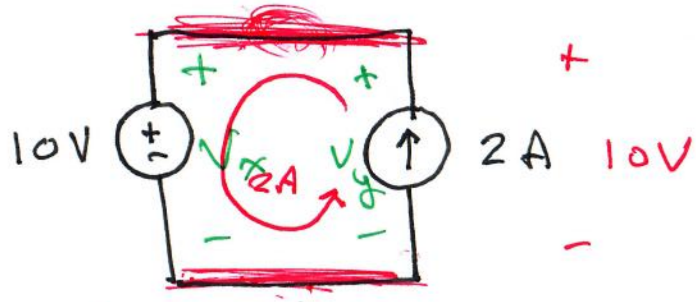


$$-V_x + V_y = 0$$

$$\Rightarrow V_y = V_x = 10V$$

PSC

$\Rightarrow$ absorbing

$$P = (10V)(2A)$$

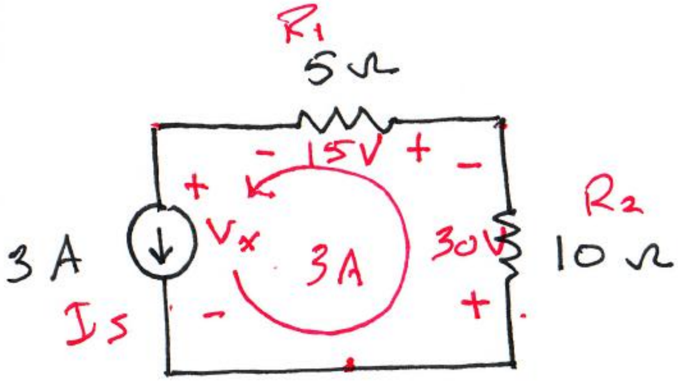
$$= 20W$$

~~PSC~~

$\Rightarrow$ delivering

$$P = (10V)(2A)$$

$$= 20W$$



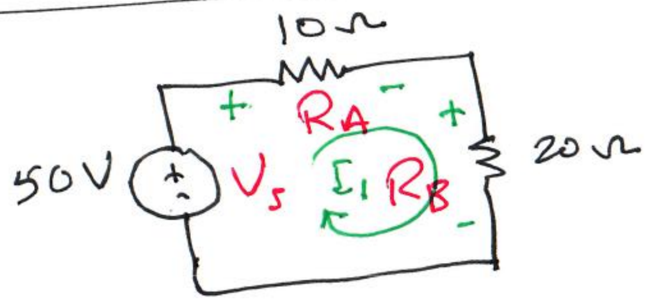
R_1 absorbs $(3A)(15V) = 45W$

R_2 absorbs $(3A)(30V) = 90W$

I_s delivers $(3A)(45V) = 135W$

$$-V_x - 15V - 30V = 0$$

$$\Rightarrow V_x = -45V$$



R_A absorbs $(10\Omega)(\frac{5}{3}A)(\frac{5}{3}A) = \frac{250}{9}W$

R_B absorbs $(20\Omega)(\frac{5}{3}A)(\frac{5}{3}A) = \frac{500}{9}W$

V_s delivers $(50V)(\frac{5}{3}) = \frac{250}{3}W$

KVL: $R_A I_1 + R_B I_1 - 50V = 0$

$$10 I_1 + 20 I_1 = 50V$$

$$30 I_1 = 50$$

$$I_1 = \frac{5}{3} A$$

$$\boxed{P = V I}$$

$$R I \qquad \frac{1}{R} V$$

$$= R I^2$$

$$= \frac{1}{R} V^2$$

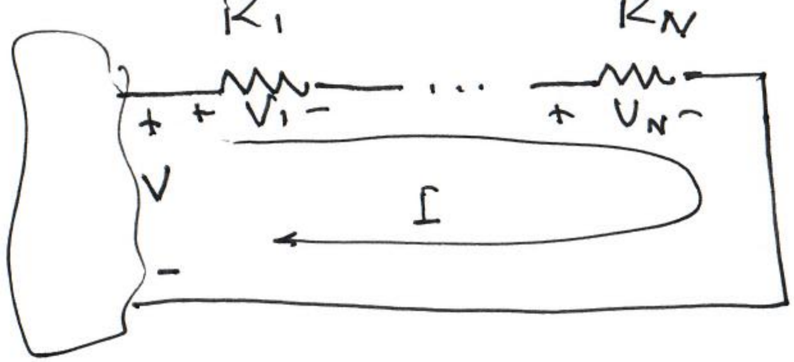
short cuts

KVL

KCL

Ohm's Law

$P = V I$



Resistors in series

$$V_1 = R_1 I$$

$$V_2 = R_2 I$$

$$\vdots$$

$$V_N = R_N I$$

$$V = V_1 + V_2 + \cdots + V_N \quad \text{(KVL)}$$

$$= R_1 I + R_2 I + \cdots + R_N I$$

$$V = \underbrace{(R_1 + R_2 + \cdots + R_N)}_{R_{eq}} I$$

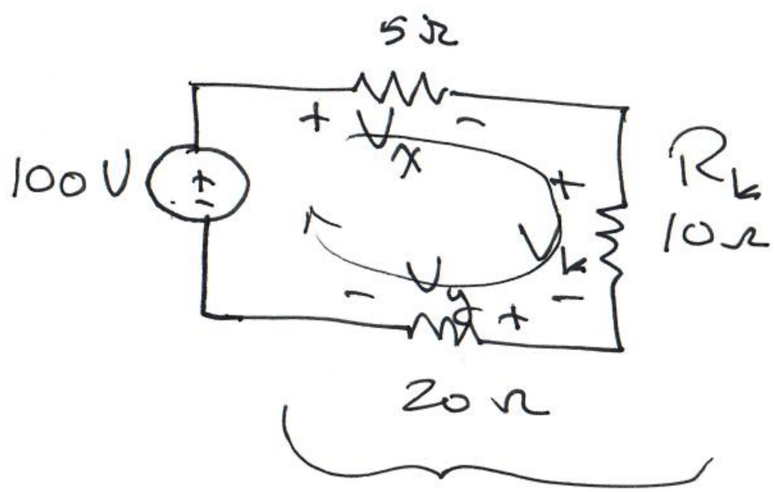
$$V = R_{eq} I \quad \text{where } \boxed{R_{eq} = R_1 + \cdots + R_N}$$

for series resistors

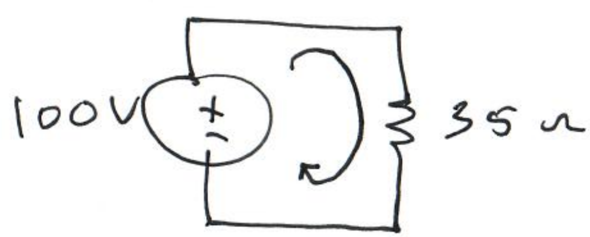
$$V_k = R_k I$$

$$\frac{V_k}{V} = \frac{R_k I}{R_1 I + R_2 I + \cdots + R_N I}$$

$$\frac{V_k}{V} = \frac{R_k}{R_1 + \cdots + R_N}$$ Voltage Divider



R_{eq}

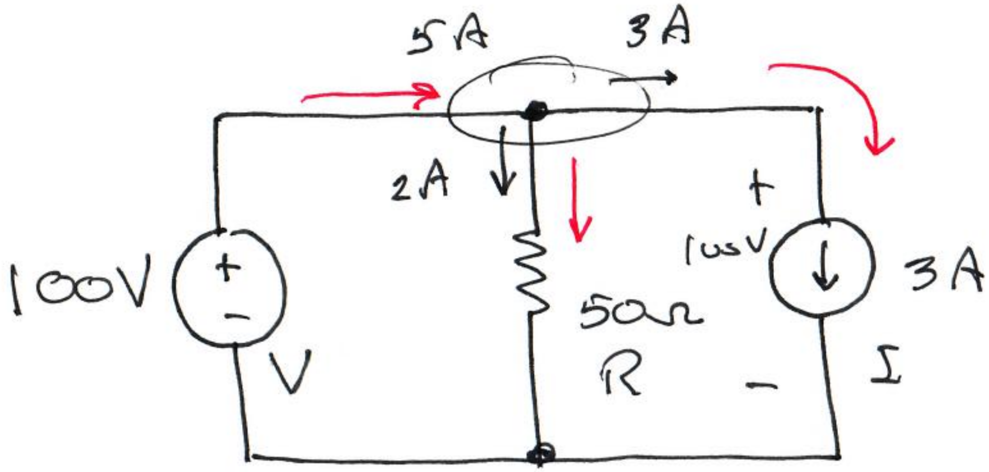


$$\frac{V_k}{100V} = \frac{10}{5+10+20} = \frac{10}{35}$$

$$V_k = \frac{10}{35} \cdot 100V = \frac{1000}{35} V = \frac{200}{7} V$$

$$\frac{V_x}{100V} = \frac{5}{5+10+20} = \frac{5}{35}$$

$$V_x = \frac{500}{35} = \frac{100}{7} V$$

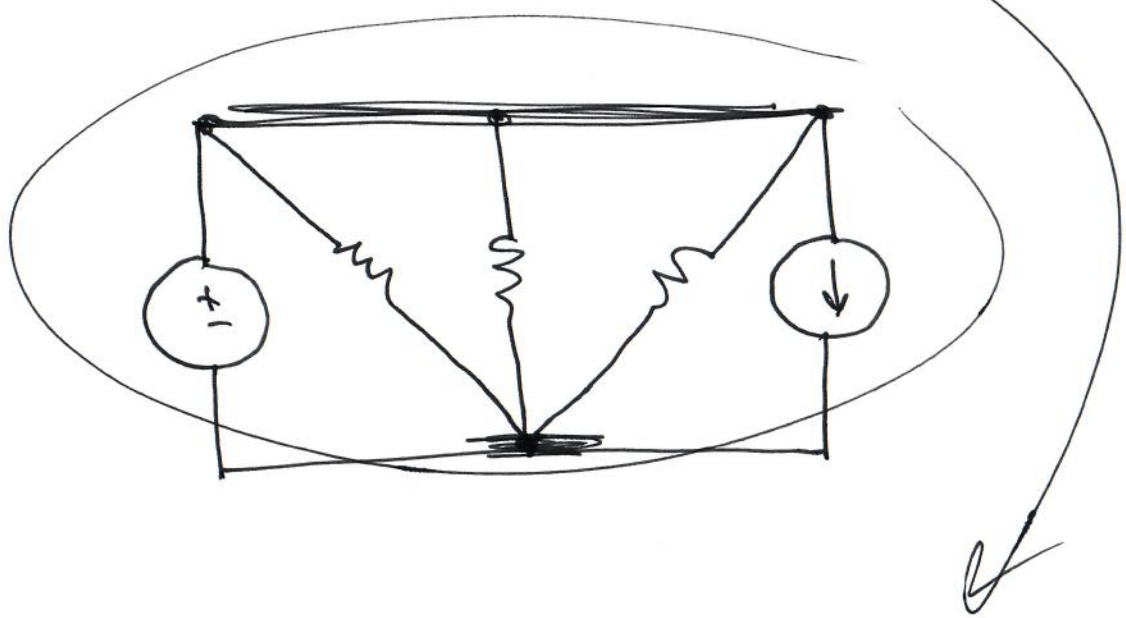


parallel

connection

=> same

voltage



$$R \text{ absorbs } \frac{(100V)^2}{50\Omega} = 200W$$

$$I \text{ absorbs } (100V)(5A) = 300W$$

$$\left.\begin{matrix} 200W \\ 300W \end{matrix}\right\} 500W \text{ absorbed}$$

$$V \text{ delivers } (100V)(5A) = 500W$$