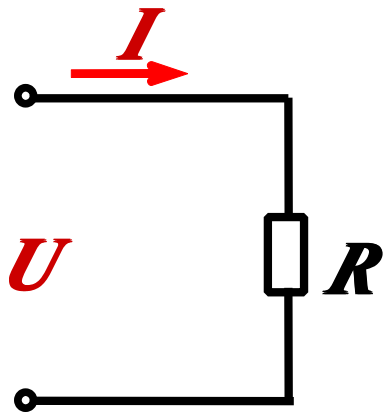
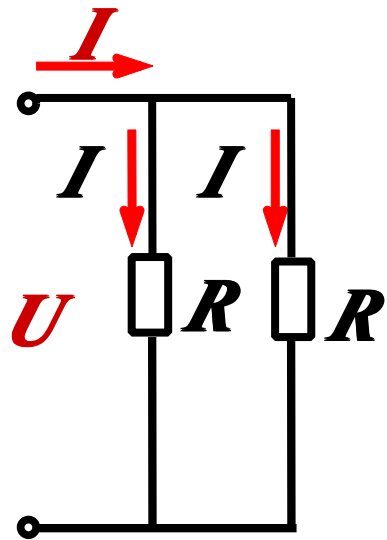


$R \quad R \quad R$

$$U \quad \frac{R}{R + R} U \quad U \quad \frac{R}{R + R} U$$



$$\frac{1}{R} = \frac{1}{R} + \frac{1}{R}$$

$$I = \frac{R}{R+R} I \quad I = \frac{R}{R+R} I$$



U

$$R'' =$$

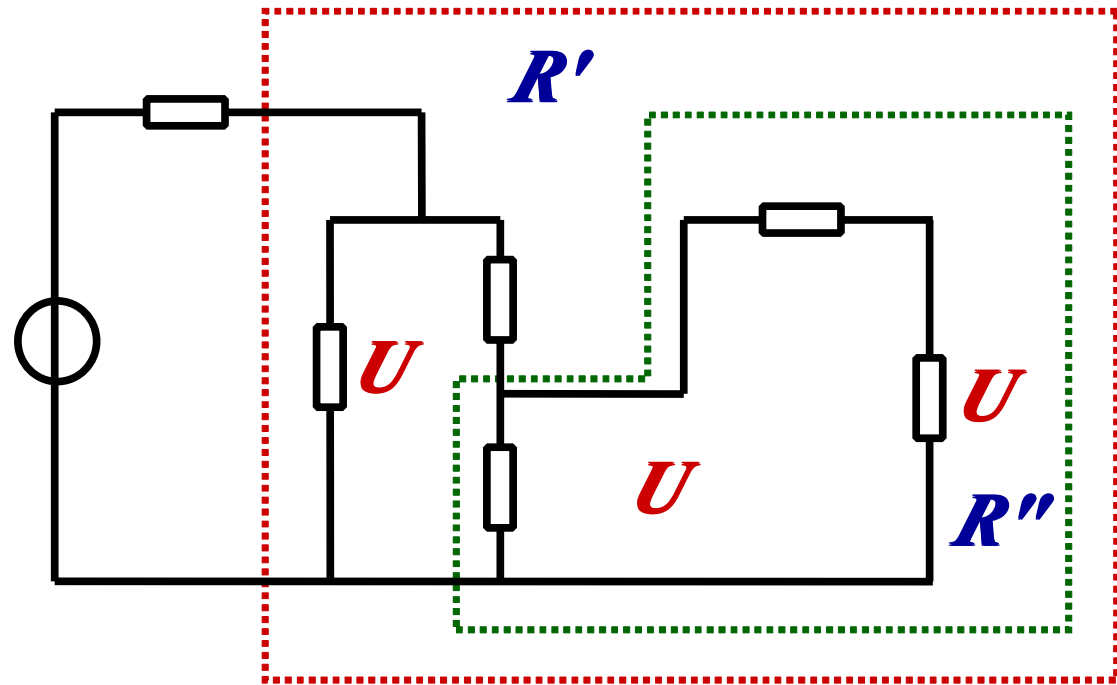
$$R' =$$

$$U = \frac{R'}{R'}$$

=

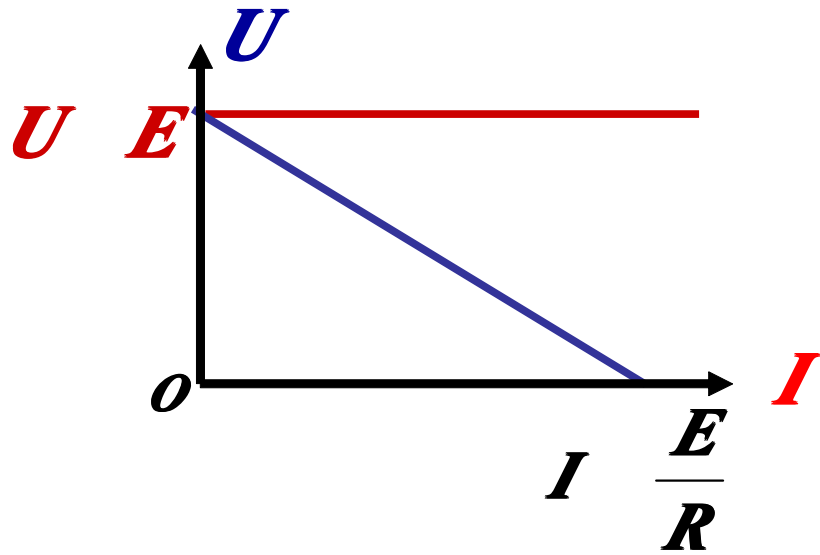
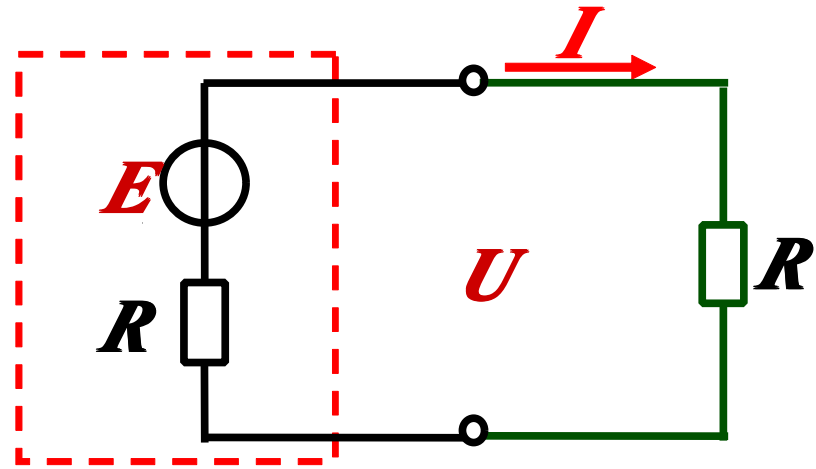
$$U = \frac{R''}{R''} \quad U =$$

$$U = \text{---} \quad U =$$





R



$$U = E - IR$$

R

$U = E$

R

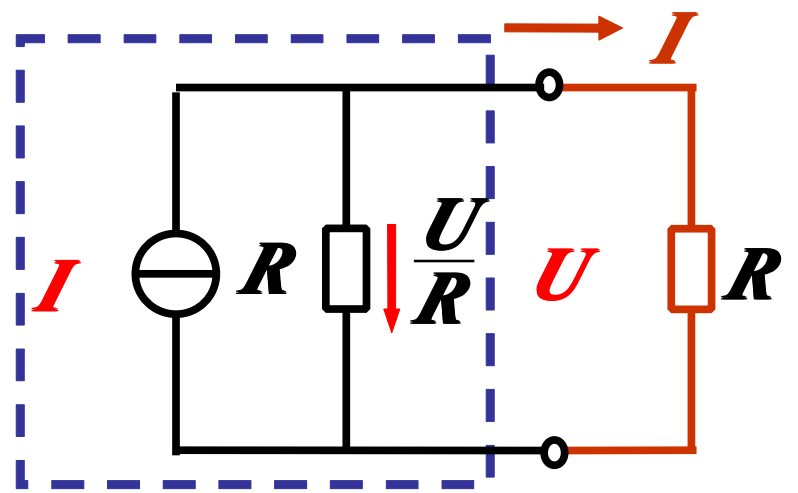
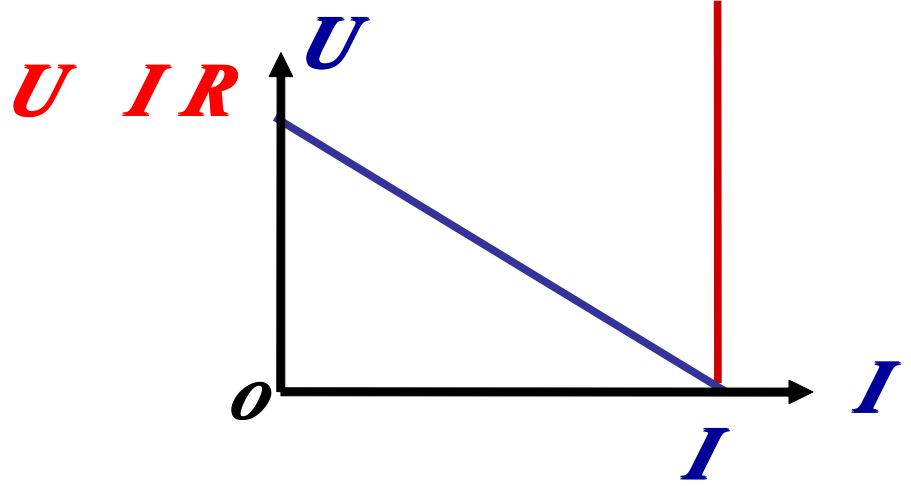
R

U

E



R

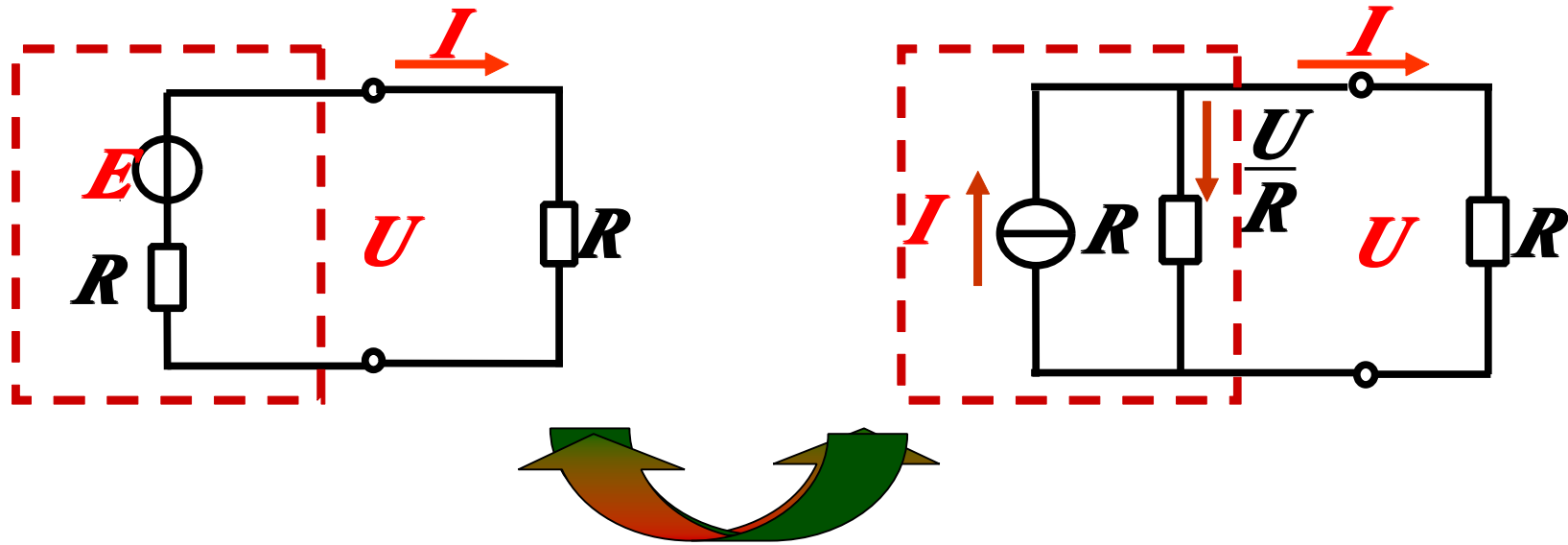


$$I = I - \frac{U}{R}$$

R

$I \quad I$

$R \quad R \quad I \quad I$



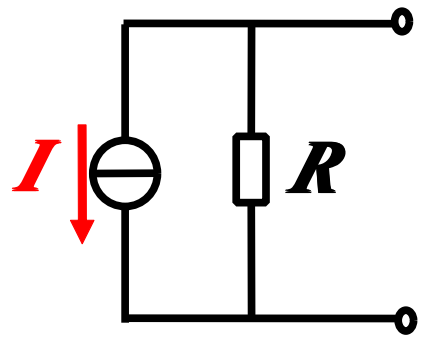
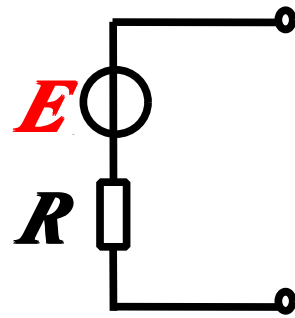
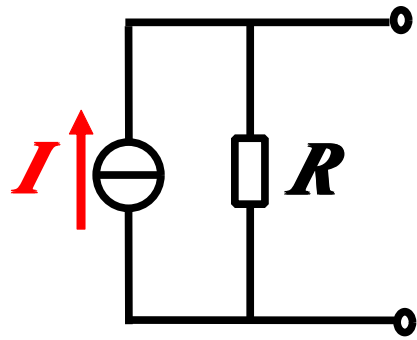
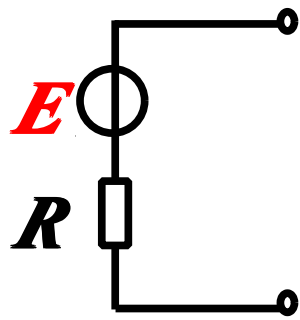
$$U = E - IR$$

$$= \dots$$

$$= \dots$$

$$= \dots$$

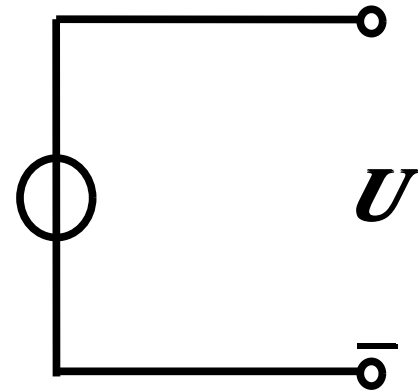
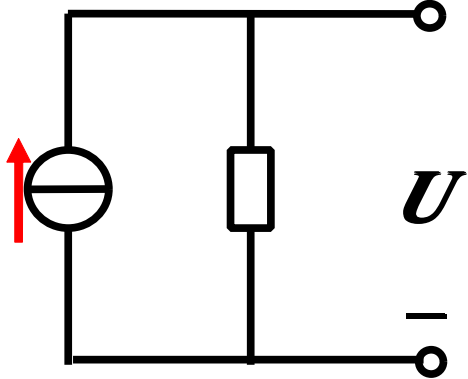
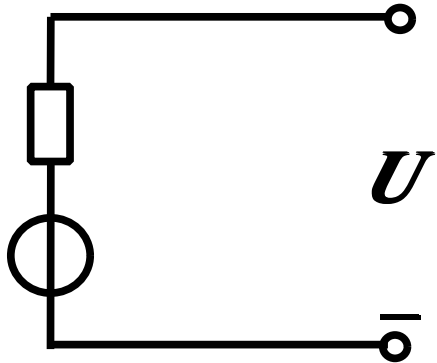
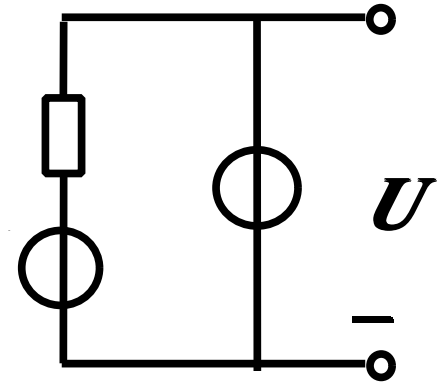
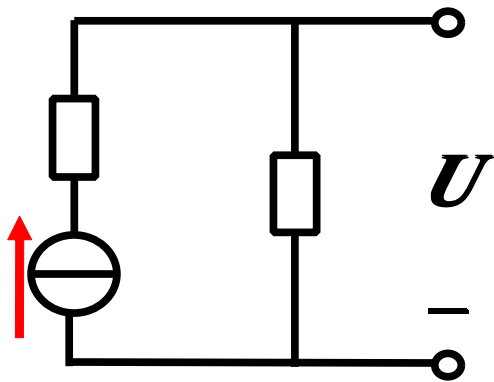
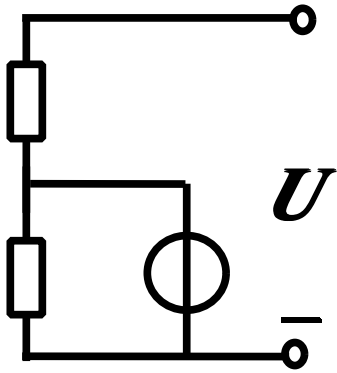
$$\begin{cases} E - IR \\ I = \frac{E}{R} \end{cases}$$

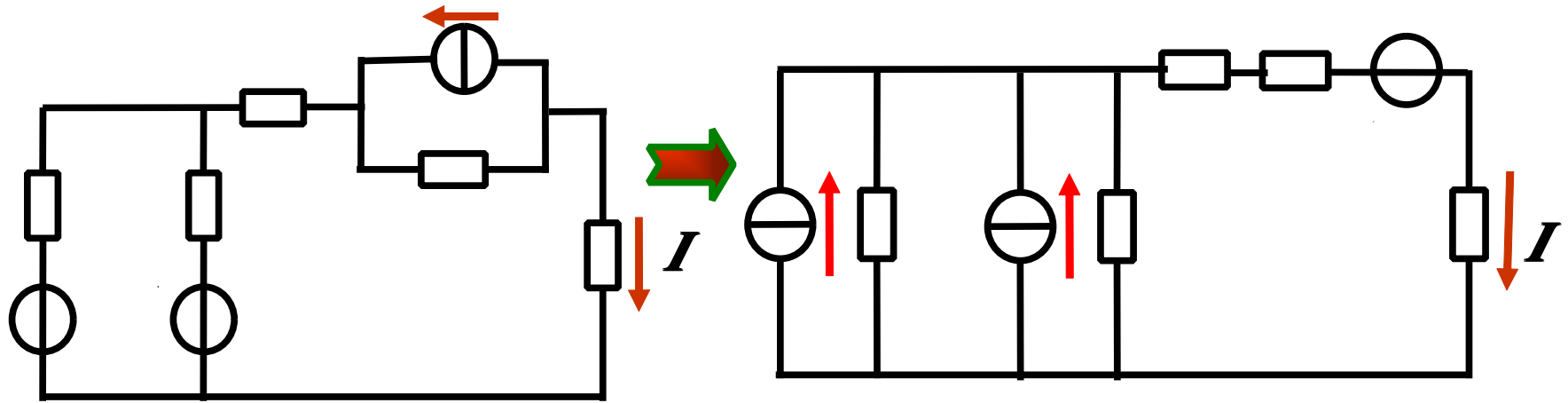


E

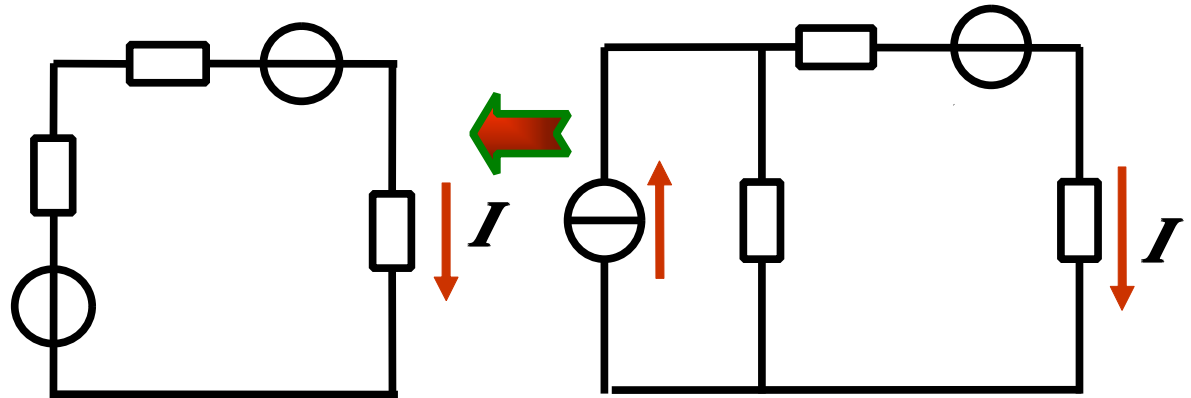
I

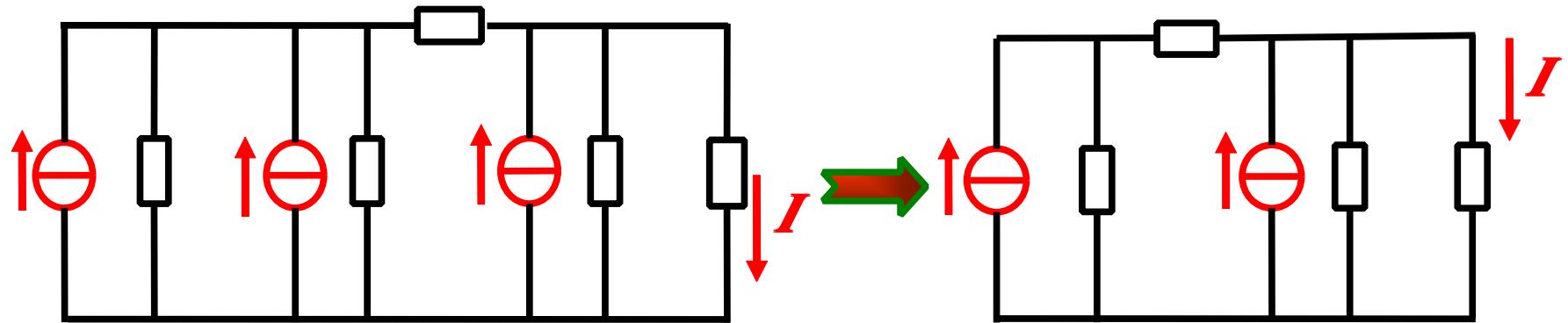
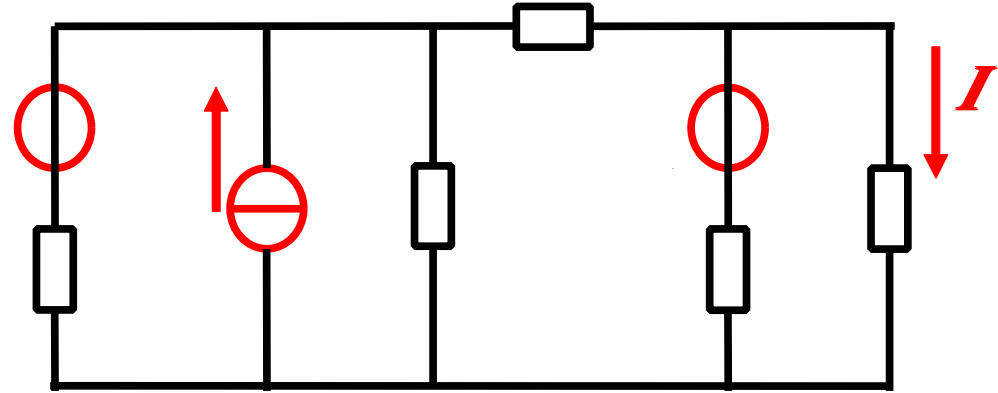
R

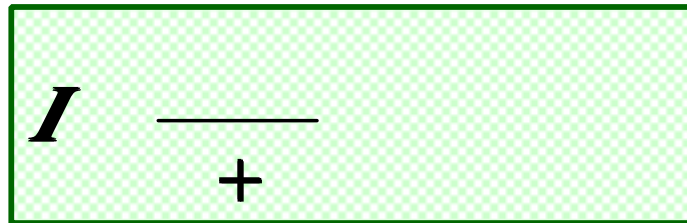
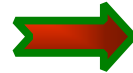
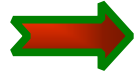
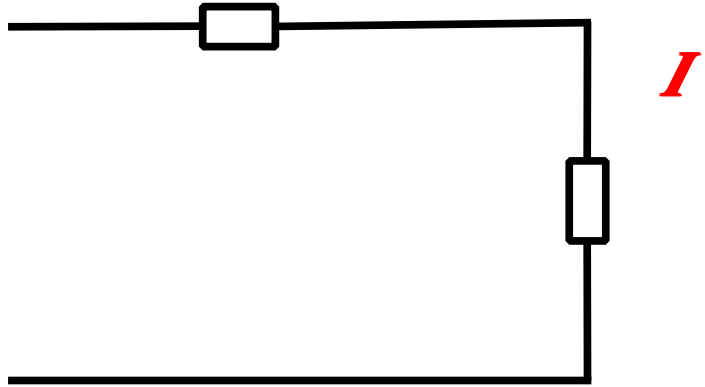


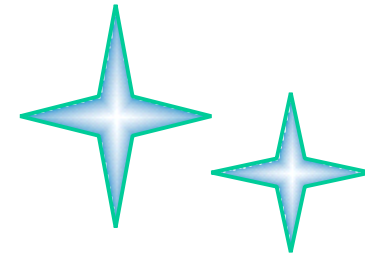


$$I = \frac{-}{+ +}$$

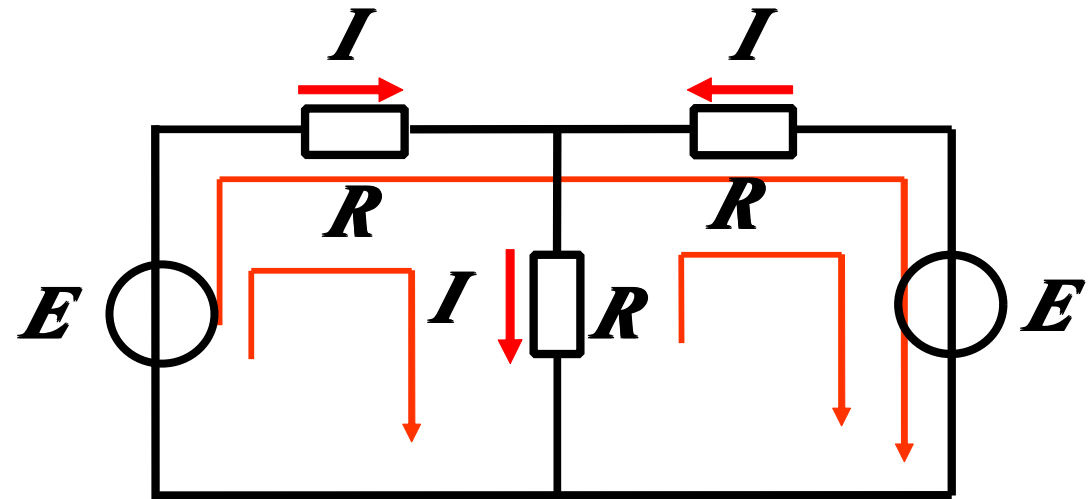






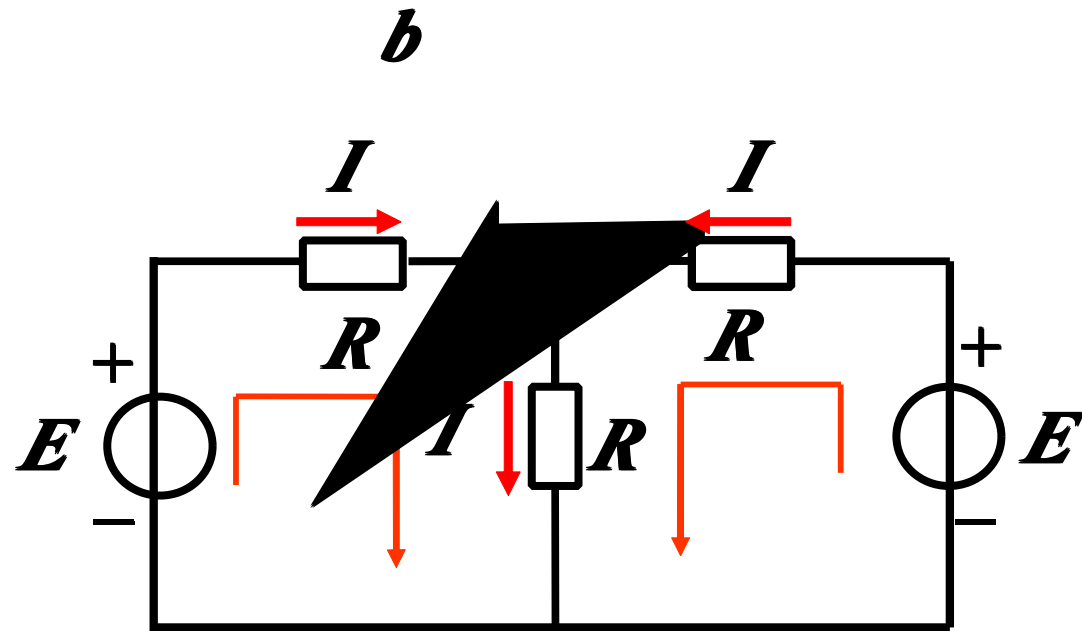


b
 n

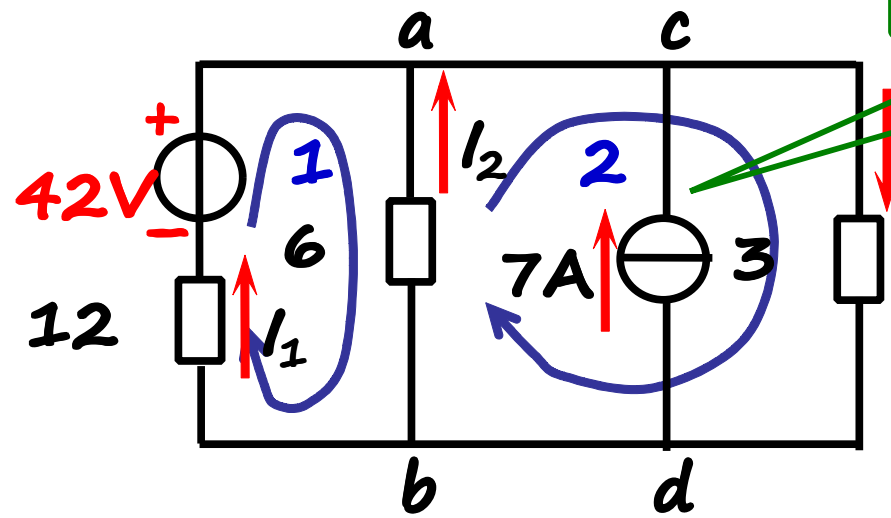




n
 $b \ n$



$I \ I \ I$
 $I R \ I R \ E$
 $I R \ I R \ E$





b



I I I

I I

I I

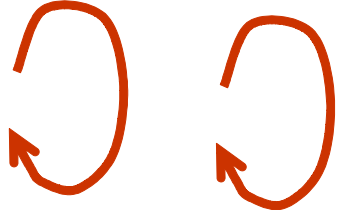
I I I I

b





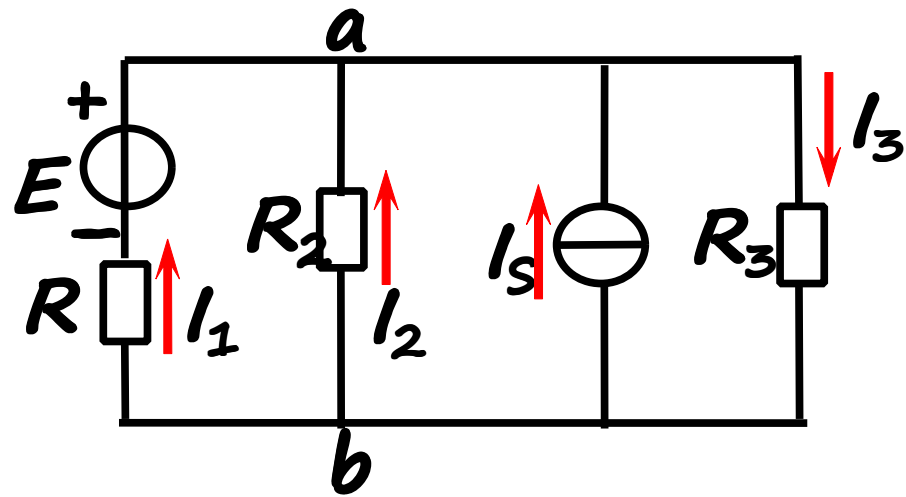
n



I

b







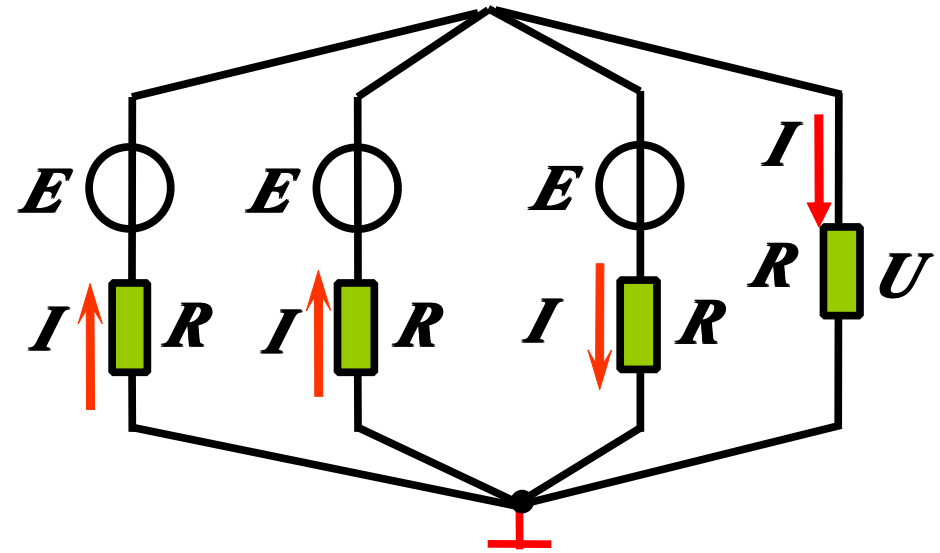
V

U

$I \quad I \quad I \quad I$

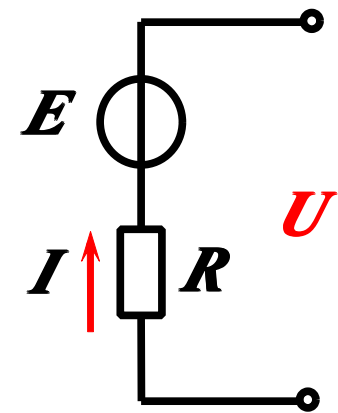
$$I \quad \frac{E - U}{R}$$

$$I \quad \frac{-E + U}{R} \quad I \quad \frac{U}{R}$$



$U \quad E - IR$

$$I \quad \frac{E - U}{R}$$





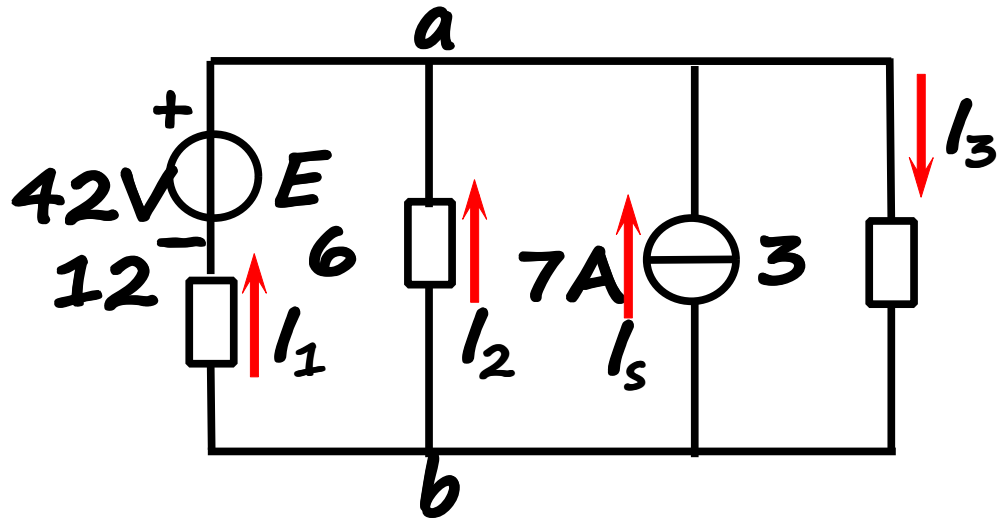
$$\frac{-}{-} + \frac{-}{-} - \frac{-}{-} + \frac{+}{-} - - =$$

$$U \frac{\frac{E}{R} + \frac{E}{R} + \frac{E}{R}}{\frac{R}{R} + \frac{R}{R} + \frac{R}{R} + \frac{R}{R}}$$

$$U \frac{\frac{E}{R}}{R}$$

E

U



$$U = \frac{\frac{E}{R} + I}{\frac{1}{R} + \frac{1}{R} + \frac{1}{R}}$$

$$I = \frac{-U}{-}$$

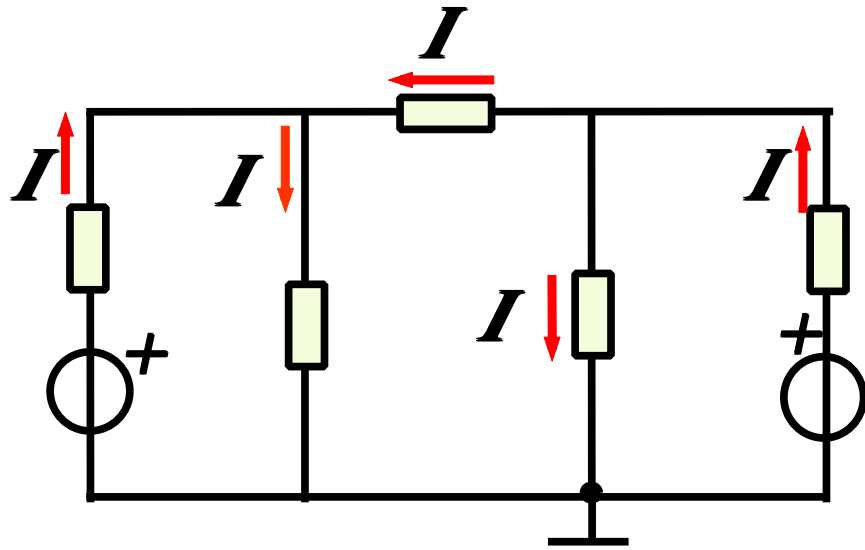
$I \ U$

$$I = \frac{U}{-}$$

$$U = \frac{-}{+}$$

$$I = \frac{U}{-}$$

$$- + - + -$$



$$\begin{cases} I & I & I \\ I & I & I \end{cases}$$

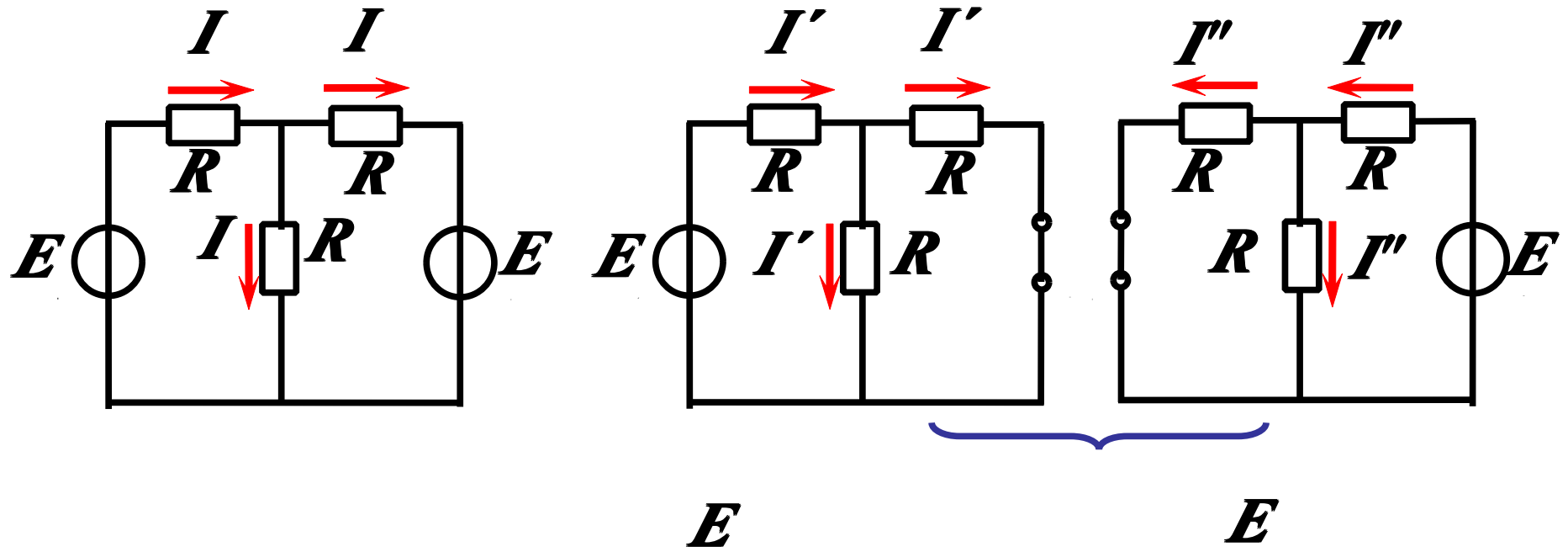
$$\begin{cases} V & V \\ V & V \end{cases}$$

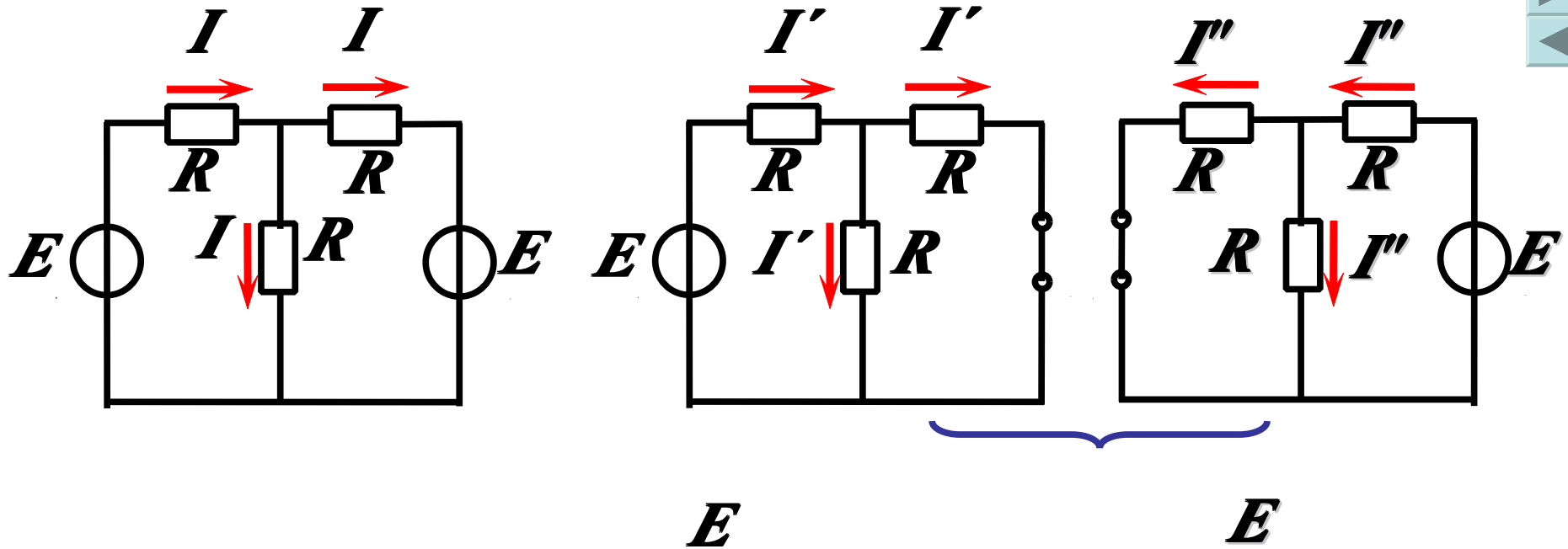
$$I \frac{-V}{\quad} \quad I \frac{V}{\quad}$$

$$I \frac{V-V}{\quad} \quad I \frac{V}{\quad}$$

$$I \frac{-V}{\quad}$$

$$\begin{matrix} V \\ V \end{matrix}$$



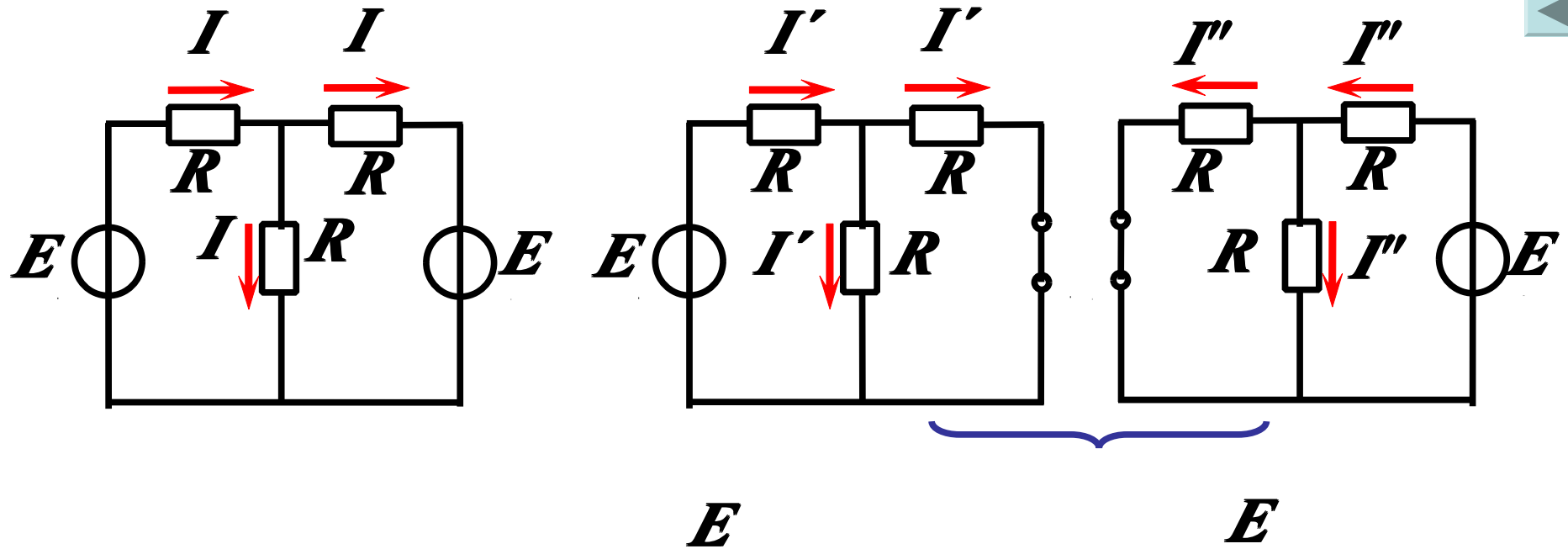


E

$$I' = \frac{E}{R + R // R} = \frac{R + R}{RR + RR + RR} E$$

E

$$I = \frac{R}{R + R} \cdot \frac{E}{R + R} \cdot \frac{R}{RR + RR + RR} E$$





P
P I R I + I R I R + I R

E

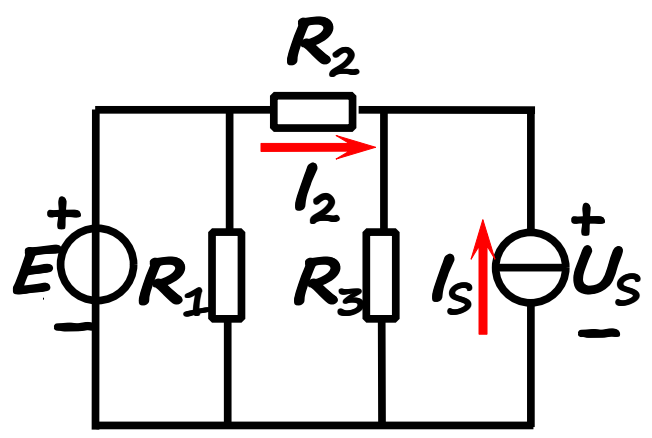
I



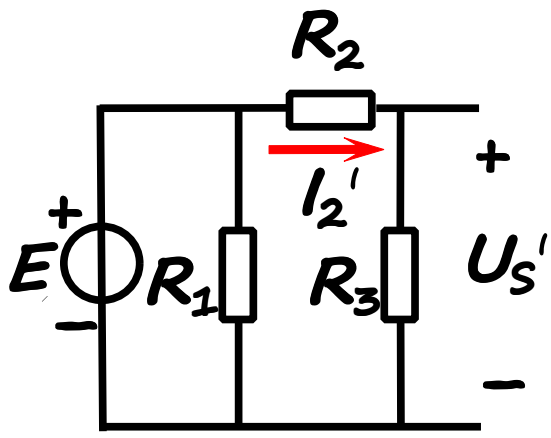
$$R = R = \frac{U}{I}$$

$$E = \frac{I}{R}$$

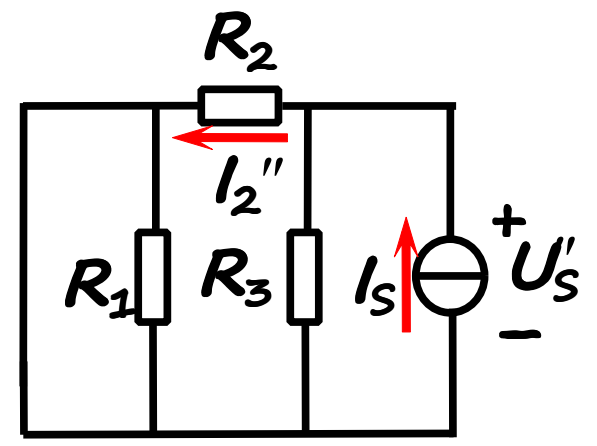
$$R = \frac{U}{I}$$



(a)



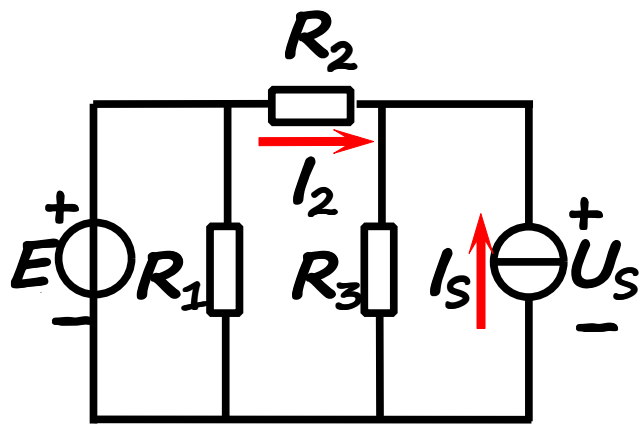
E



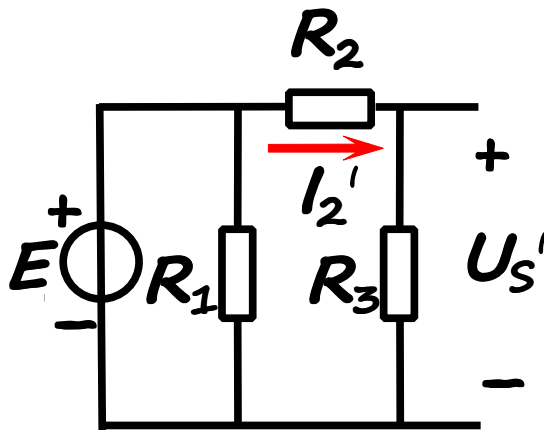
I

$$I = \frac{E}{R + R}$$

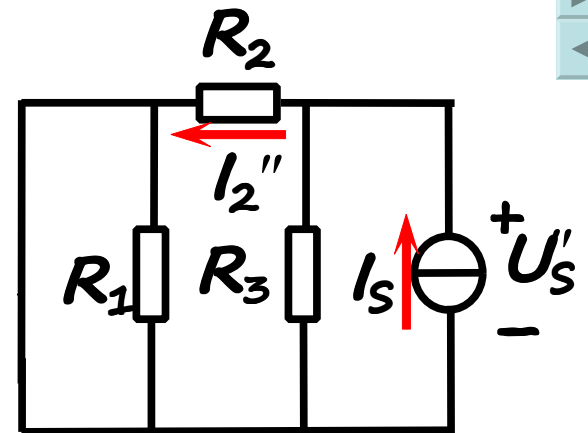
$$U = I R$$



(a)



(b) E



(c) I_s

$$I = \frac{R}{R + R} I_s = \frac{R}{2R} I_s = \frac{1}{2} I_s$$

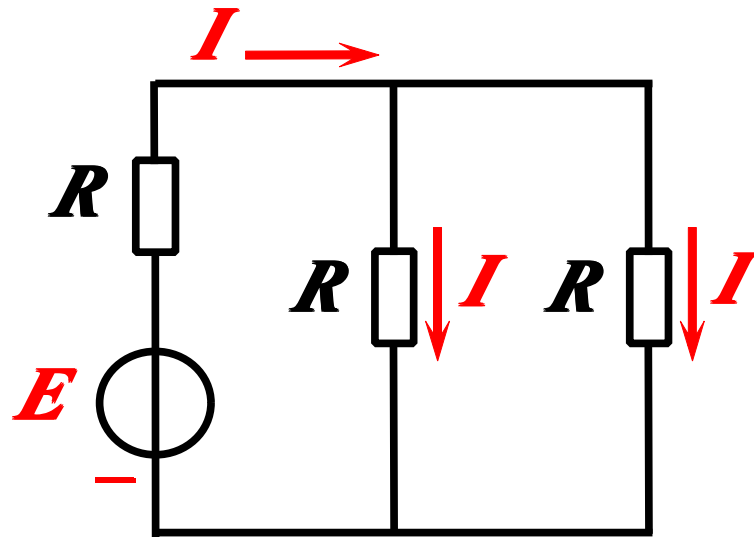
$$U = U_s + U_s = 2U_s$$





k

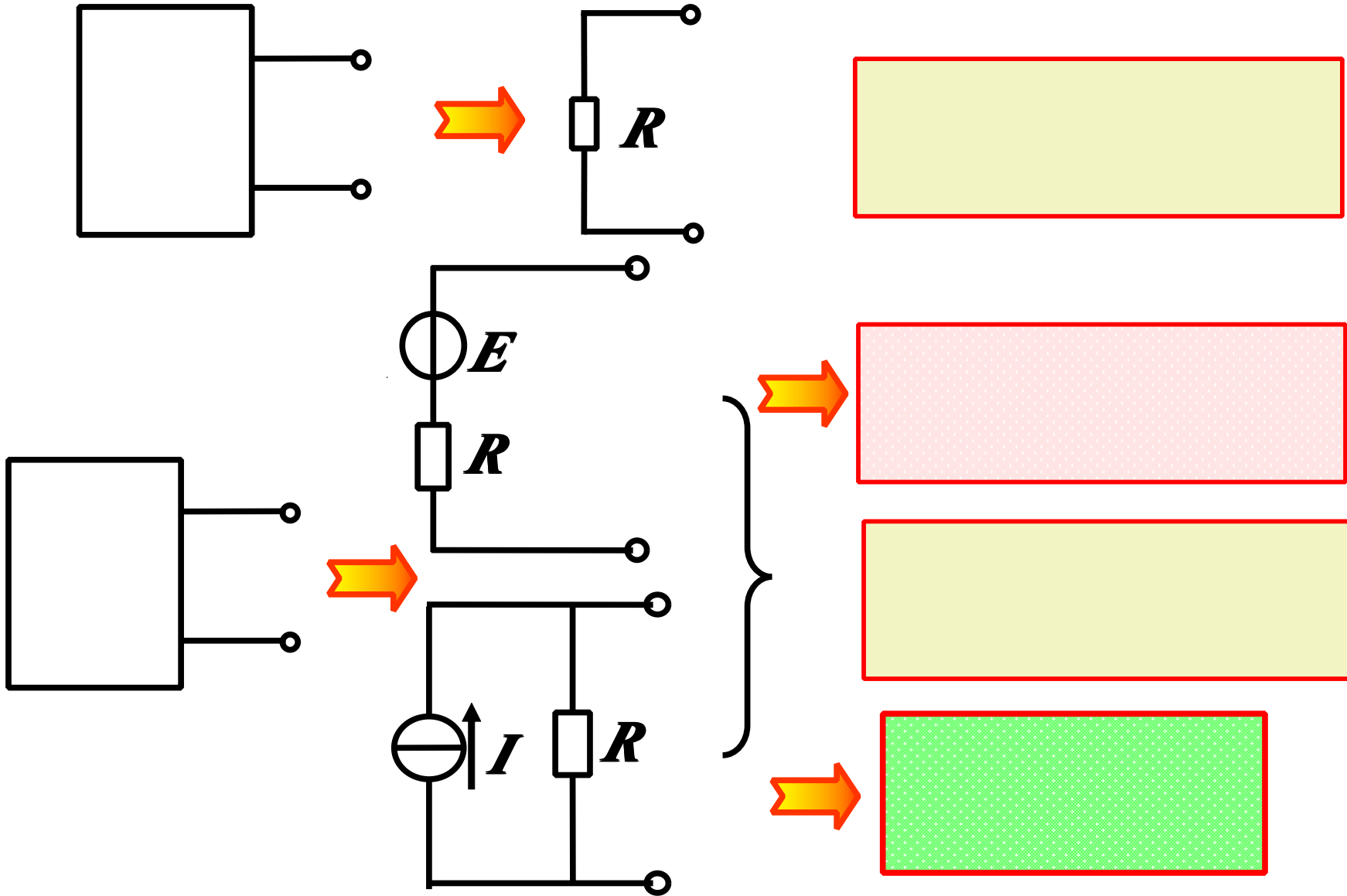
k



E

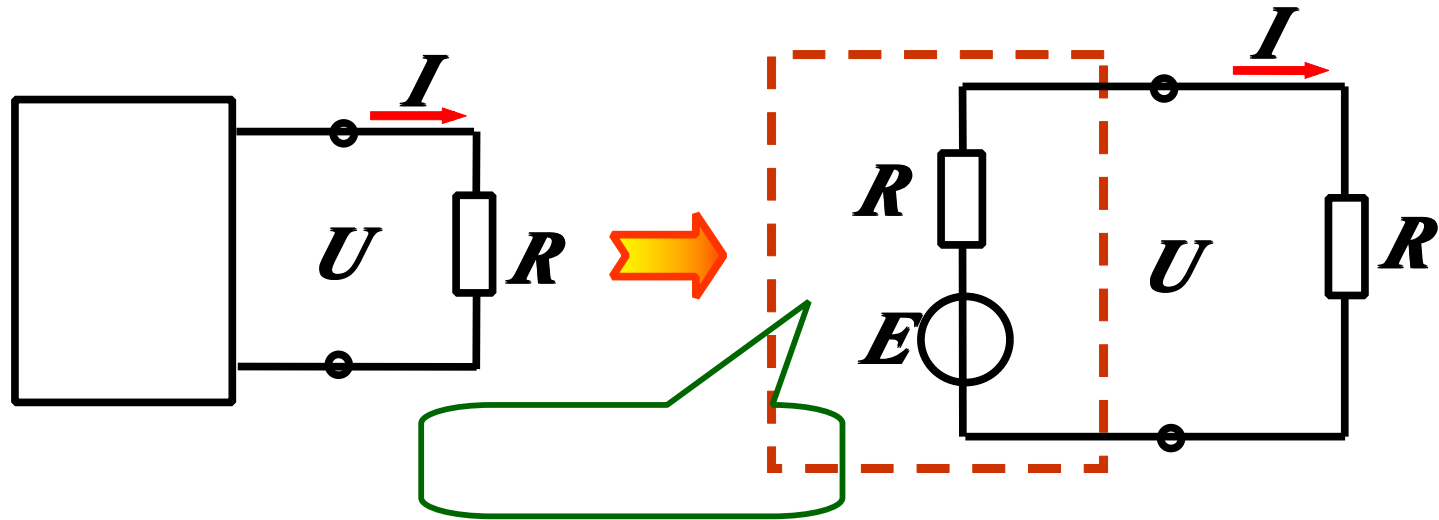
n

n





E R
 U E
 R





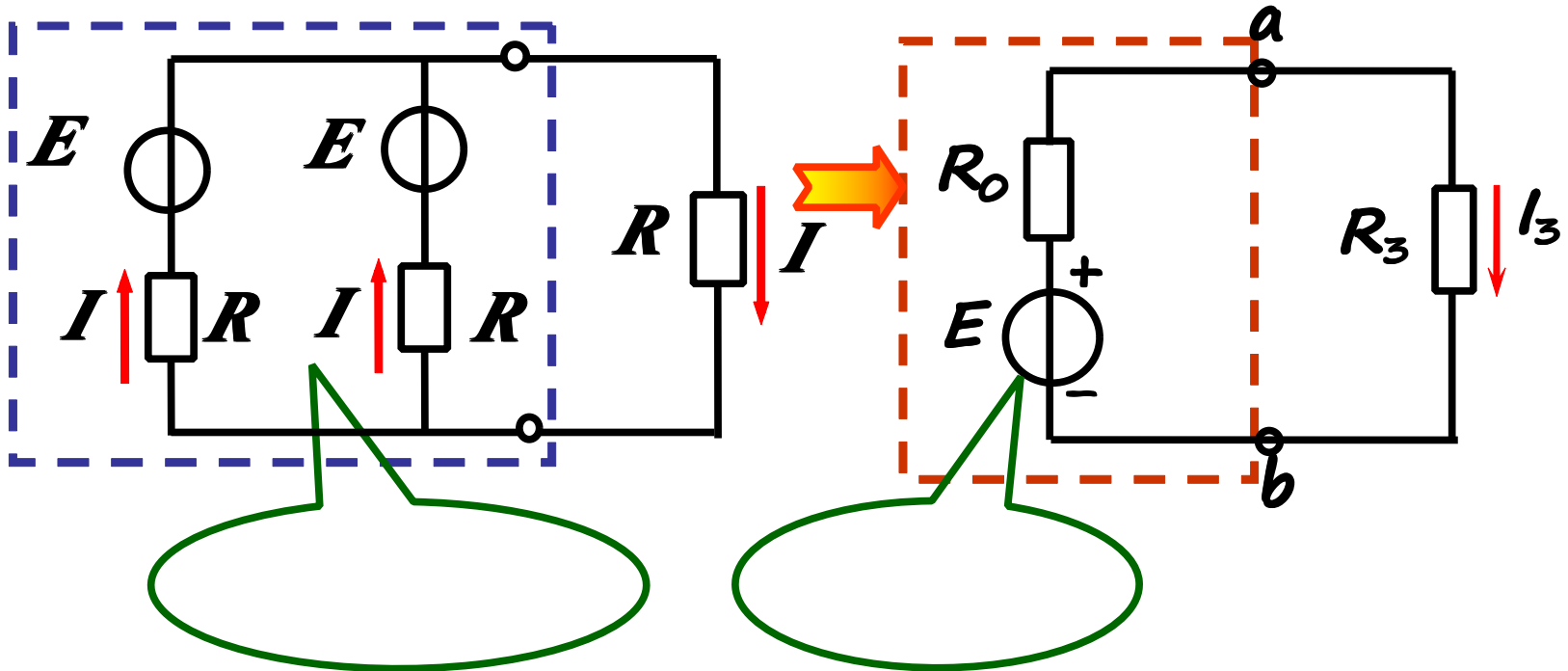
R

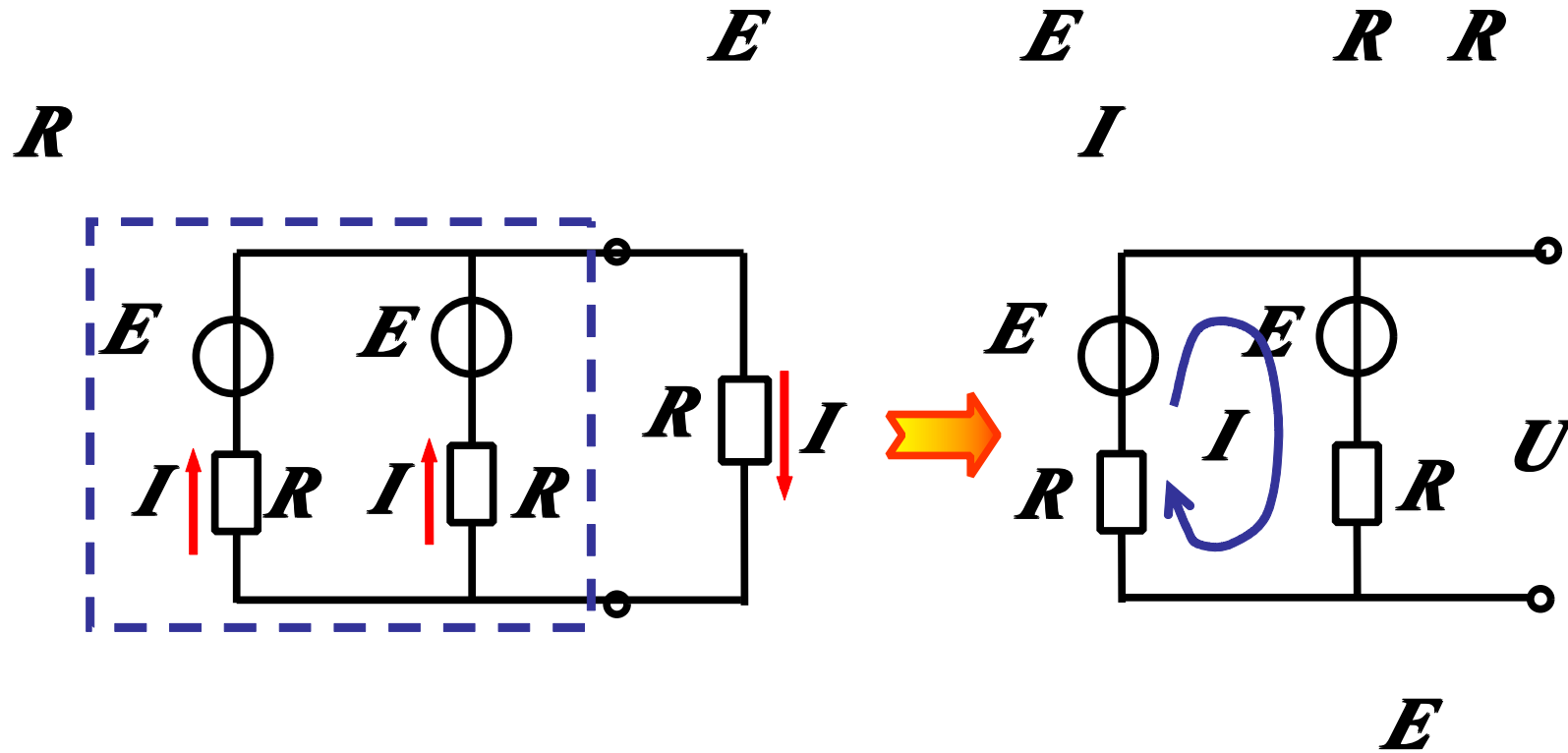
E

E

$R R$

I





$$I = \frac{E - E}{R + R} = \frac{-}{+}$$

$$E \quad U \quad E + IR$$

$$E \quad U \quad E - IR$$

E



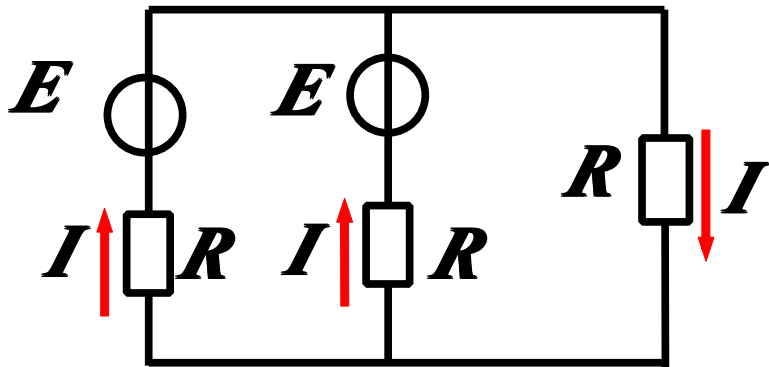
R

E

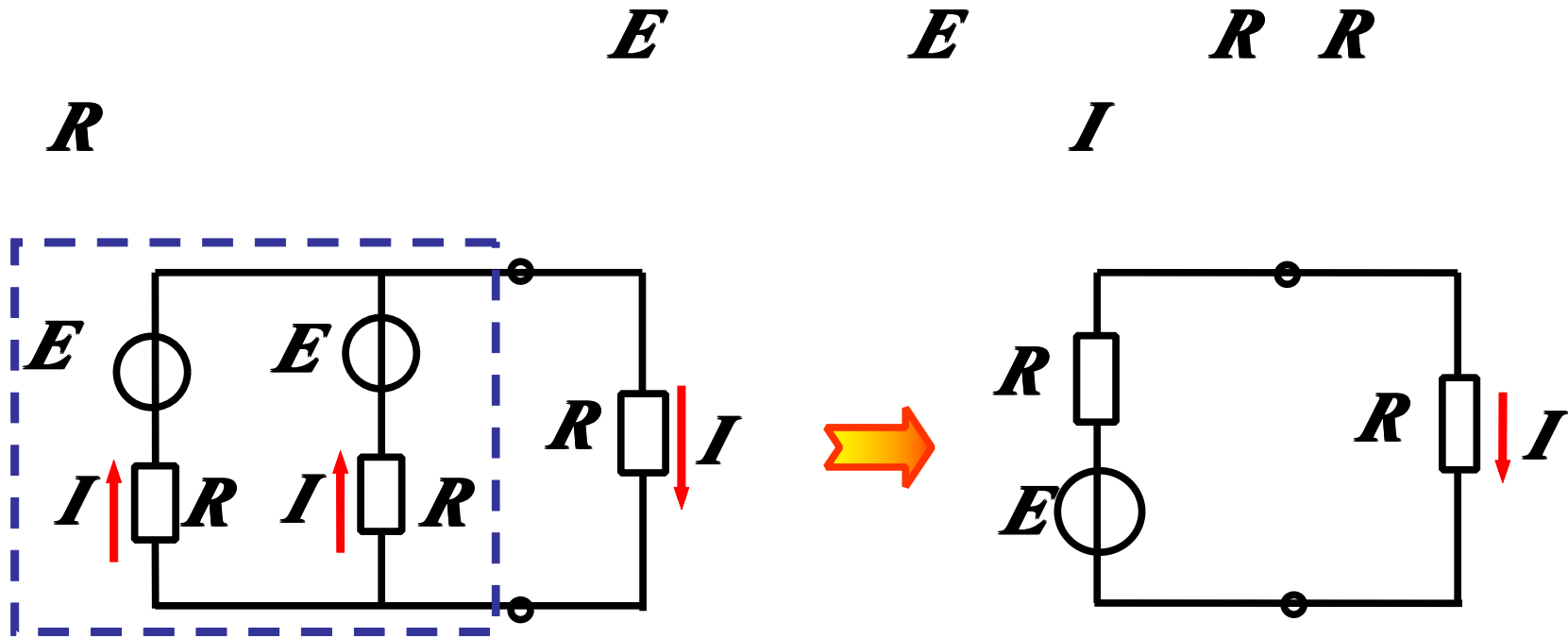
E

$R R$

I



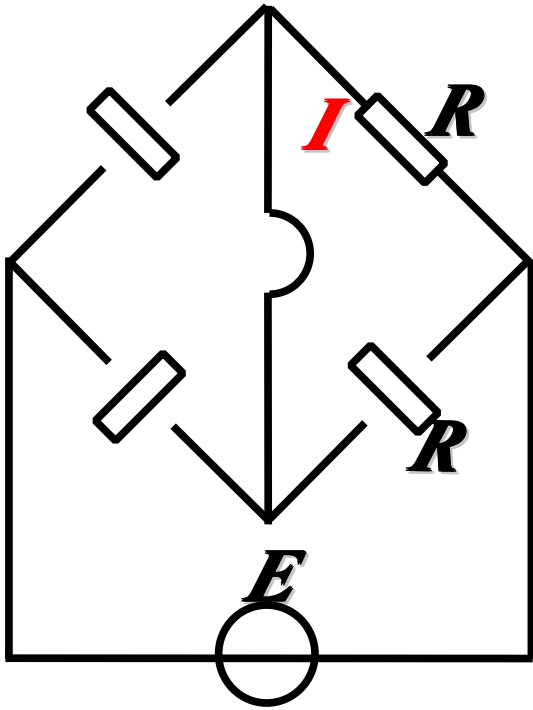
R



I

$$I = \frac{E}{R + R} = \frac{E}{2R}$$

I



R

R

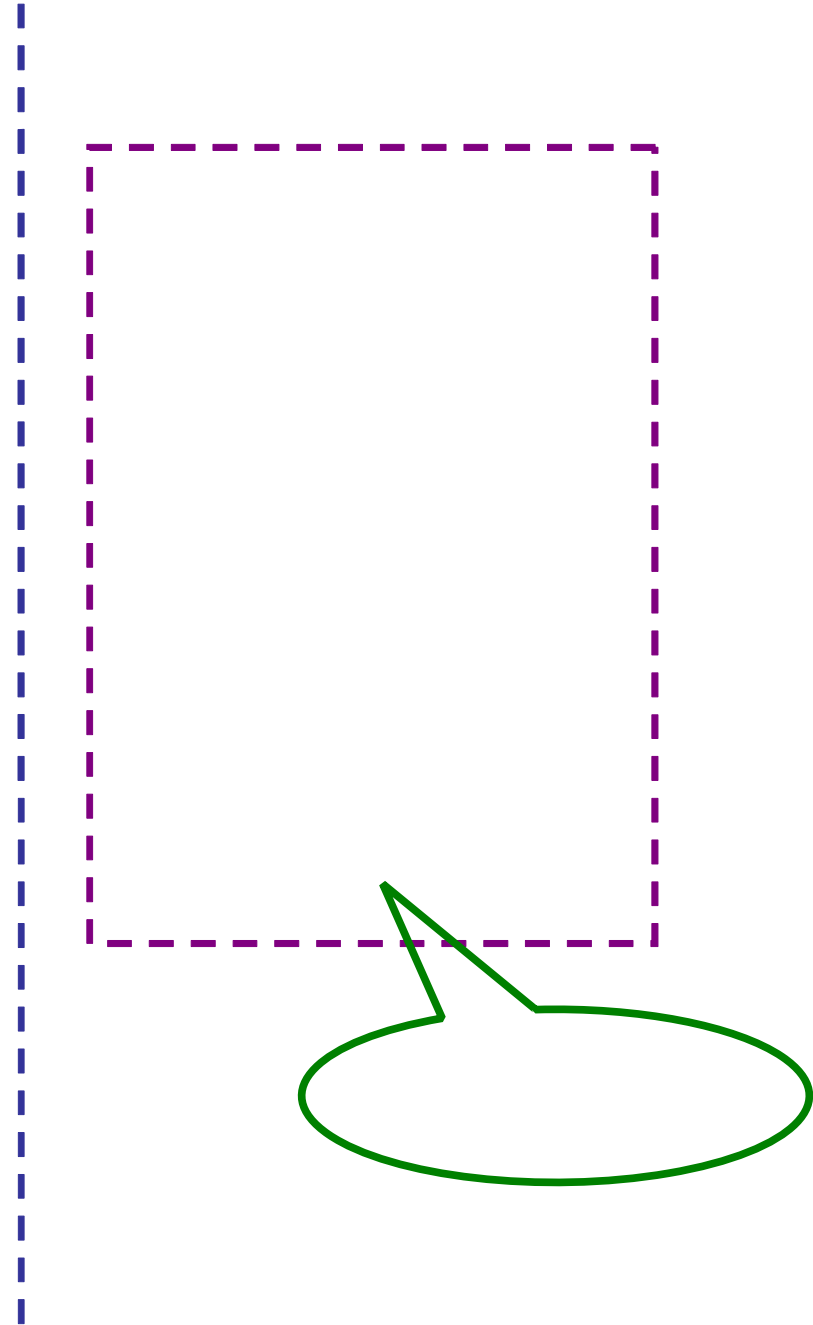
R

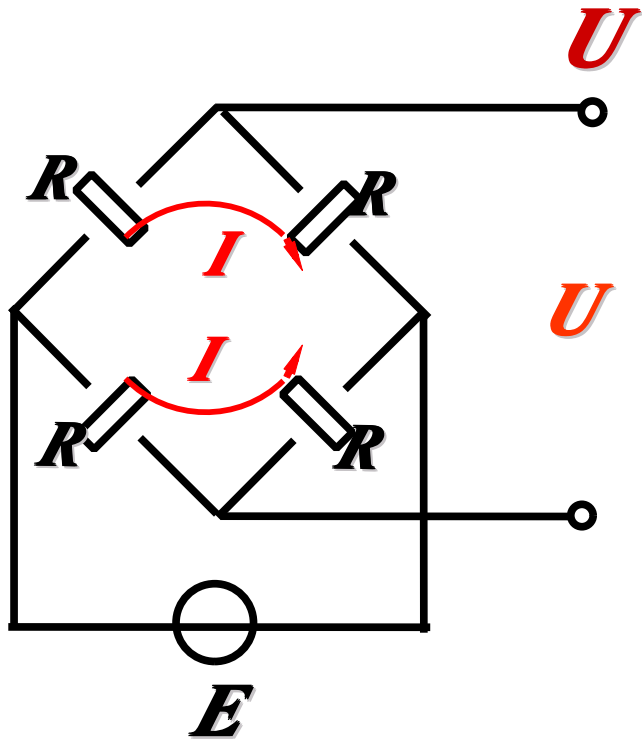
R

E

R

I



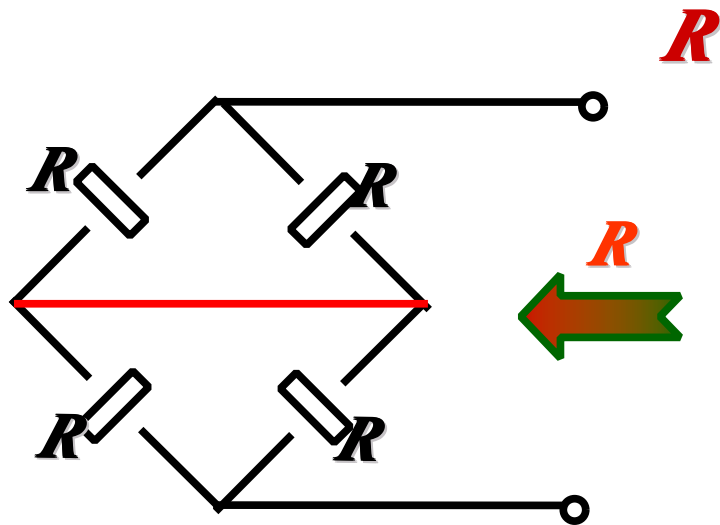


$$I = \frac{E}{R+R} \quad \text{---}$$

$$I = \frac{E}{R+R} \quad \text{---}$$

$$E' \quad U \quad I R \quad - I R$$

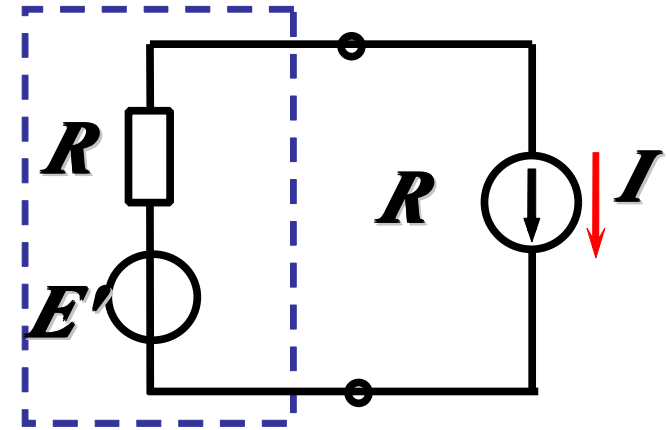
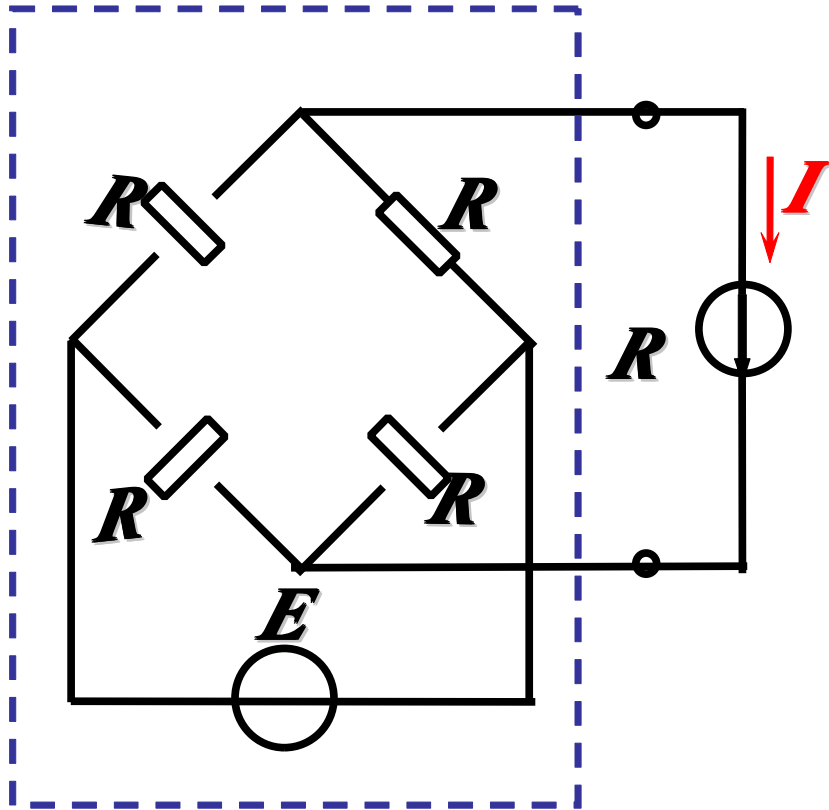
$$E' \quad U \quad I R \quad - I R$$



$$R \quad R \quad R \quad R$$

$$R \quad R \quad R \quad R$$

$$R \quad \frac{R \quad R}{R+R} + \frac{R \quad R}{R+R}$$



$$I = \frac{E}{R + R} +$$

I

R R R
 E R E
 I

U

I $\frac{E}{R}$

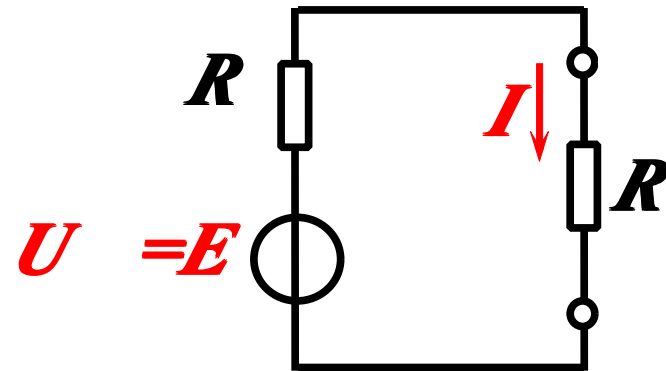
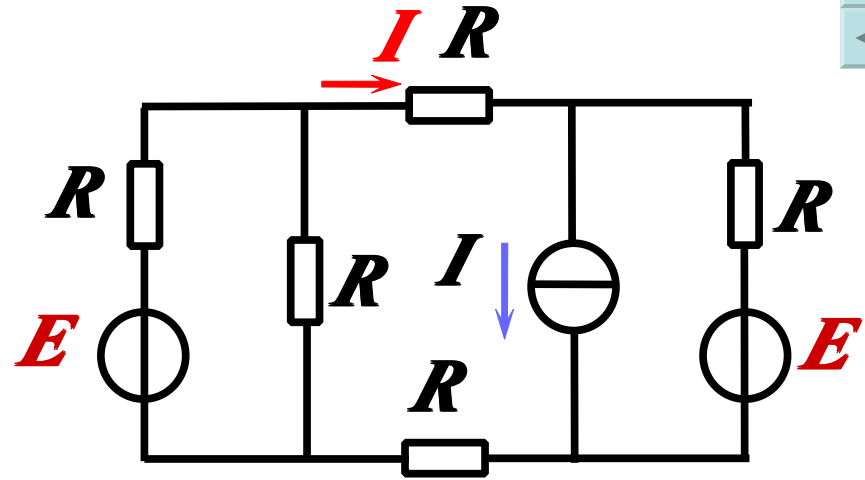
U IR E IR

R

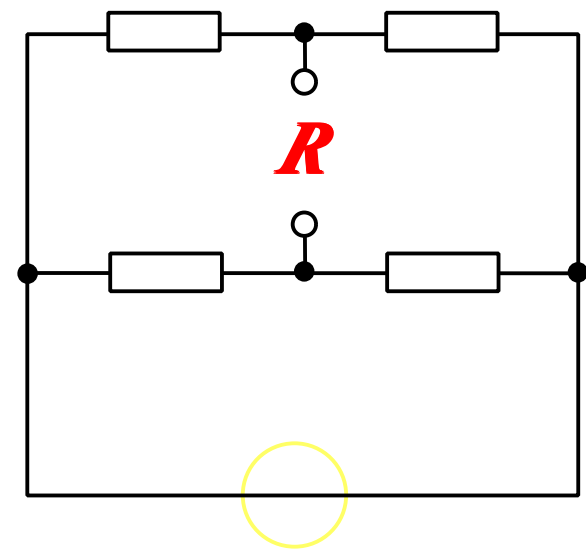
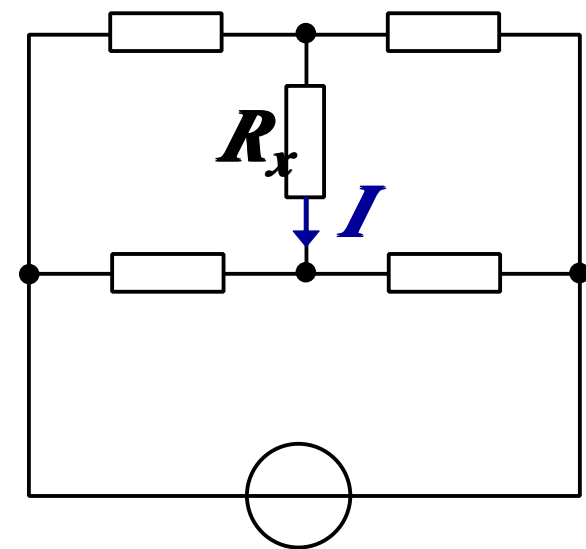
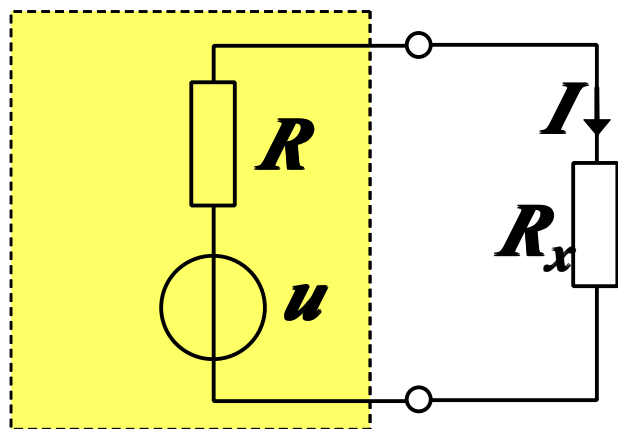
$R = R$ R R R

$I = \frac{E}{R} =$

I

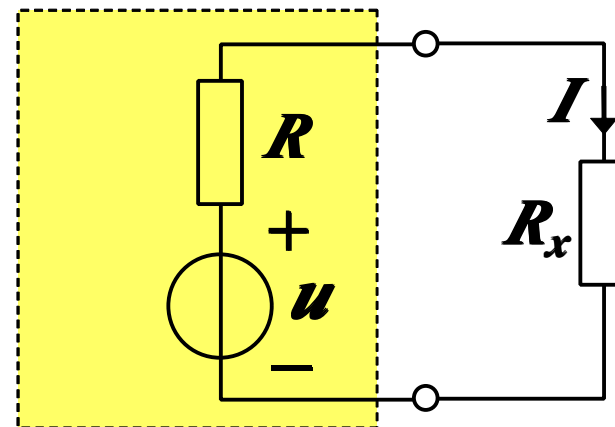
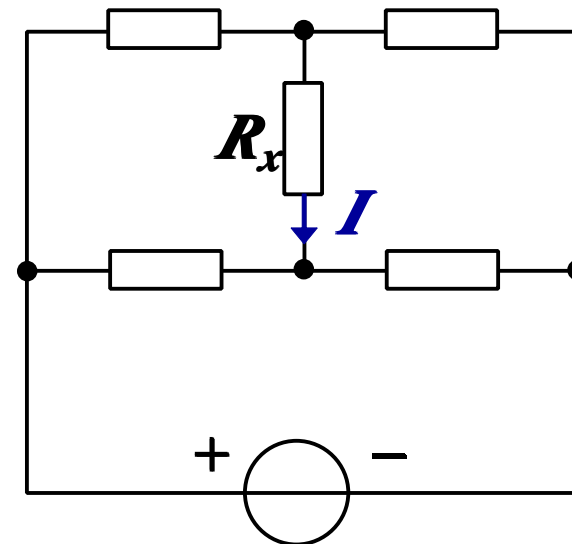


R_x
 I
 R_x
 U
 U U U
 R



$$I = \frac{U}{R + R_x} \quad \text{---}$$

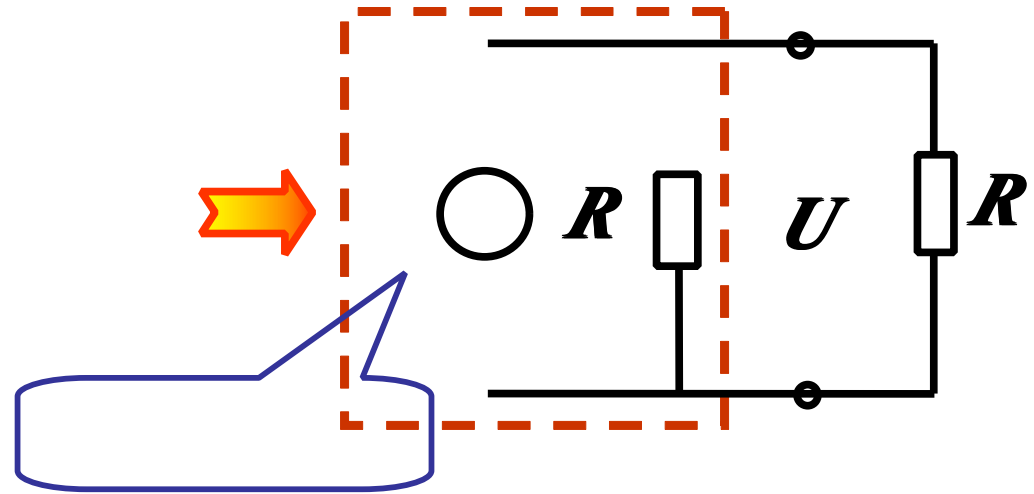
$$I = \frac{U}{R + R_x} \quad \text{---}$$





I_S

R



I_S

R



R

R

R

R

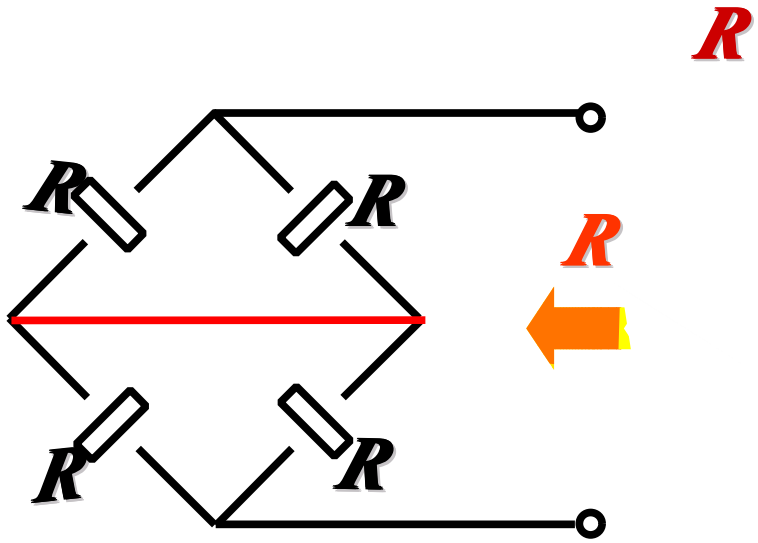
E

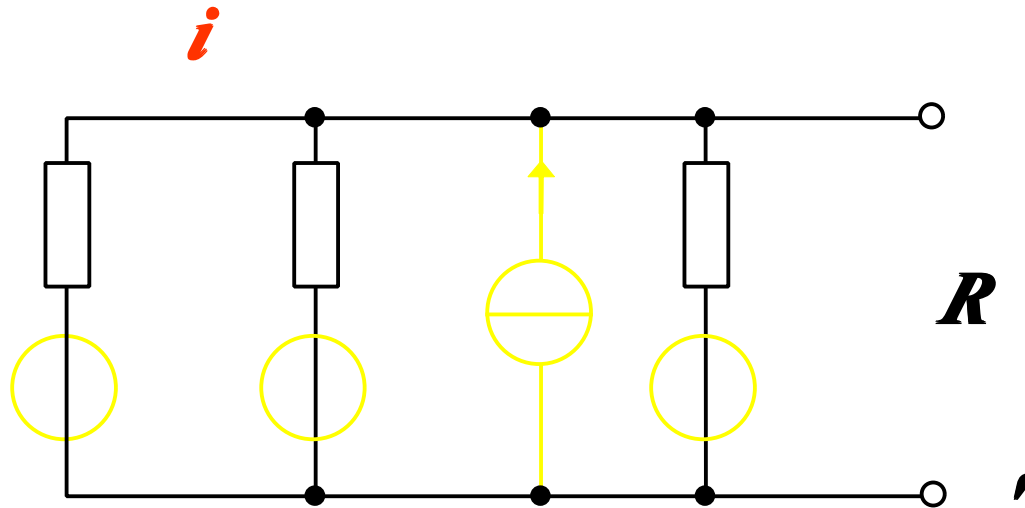
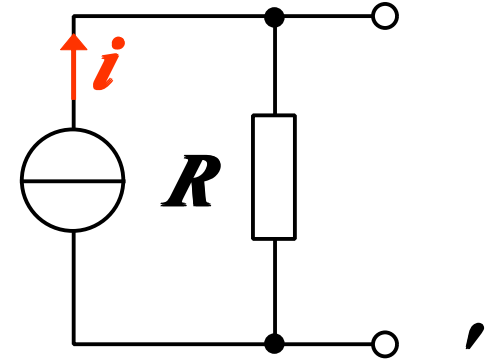
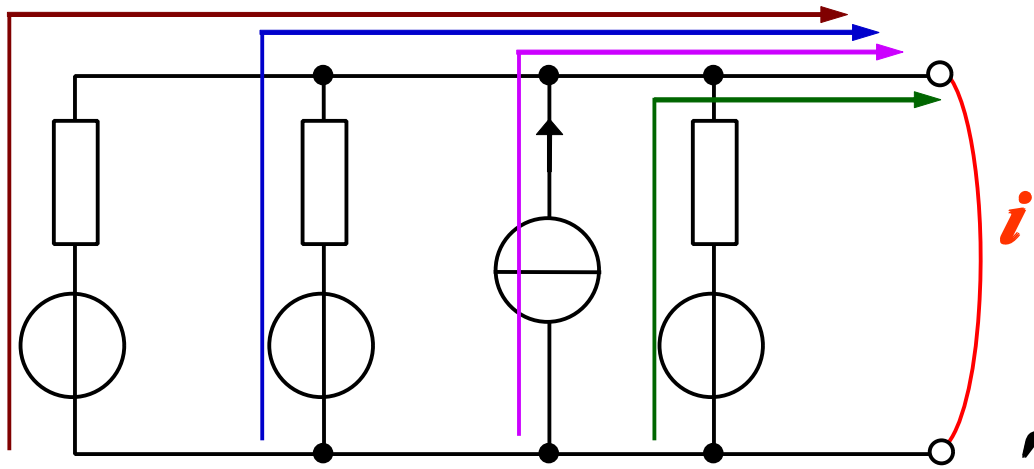
R

I



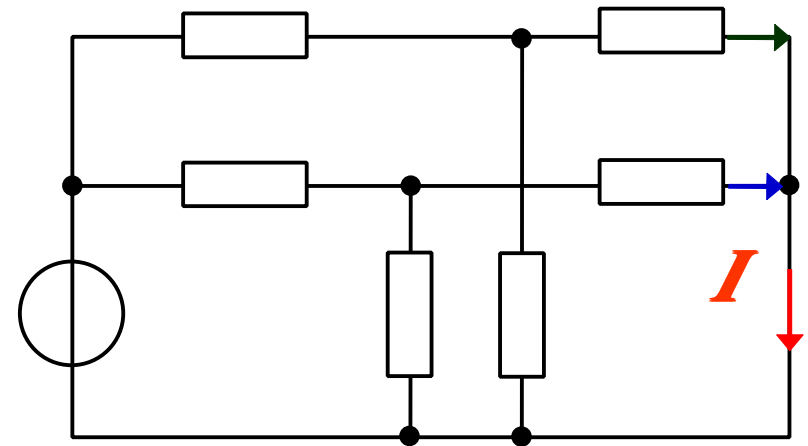
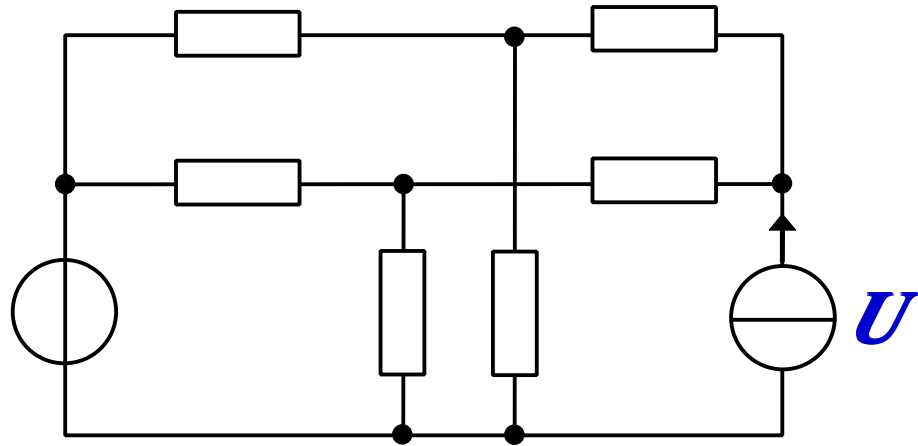
$$\begin{array}{ccccccc} & & & \mathbf{I} & & & \\ & \mathbf{R} & \mathbf{I} & \mathbf{R} & & \mathbf{E} & \mathbf{R} & \mathbf{R} \\ & & & & \mathbf{R} & \mathbf{R} & & \\ \left| \begin{array}{ccc} \mathbf{R} & \mathbf{I} & \mathbf{R} \end{array} \right| & & & & & \mathbf{R} & \mathbf{R} & \mathbf{R} & \mathbf{R} & \mathbf{R} \\ & & & & & & & & & & \\ & & & & & \mathbf{I} & \frac{\mathbf{E}}{\mathbf{R}} & \text{---} & & & \\ & & & & & & & & & & \\ \mathbf{I} & \frac{\mathbf{E}}{\mathbf{R}} & \mathbf{I} & \text{---} & & & & & & & \\ & & & + & & & & & & & \\ & \cdot & & & & & & & & & \cdot \end{array}$$







U



a b

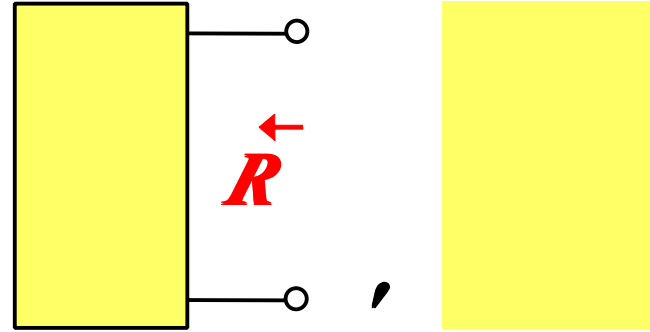
I







R



R

