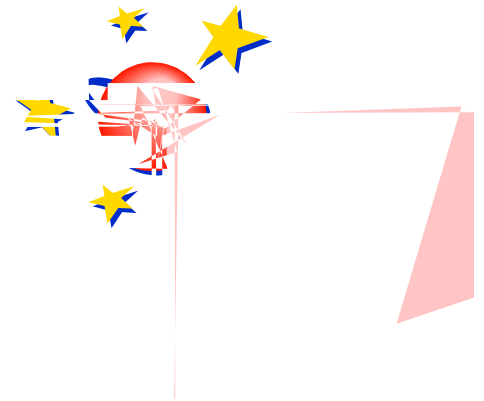


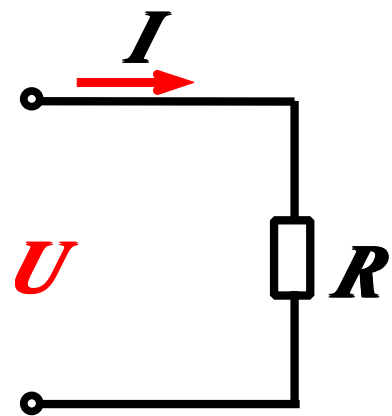
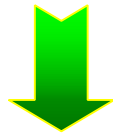
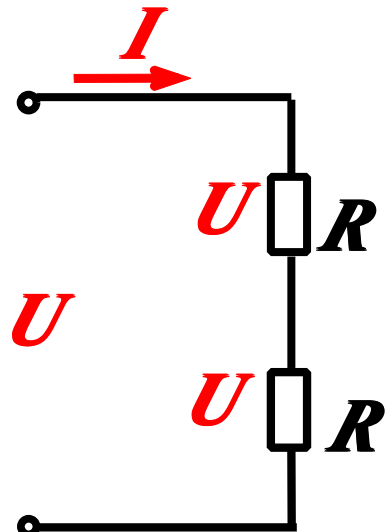




3.

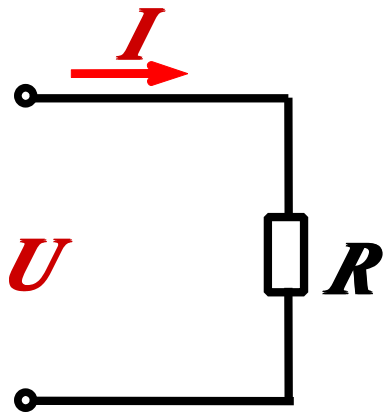
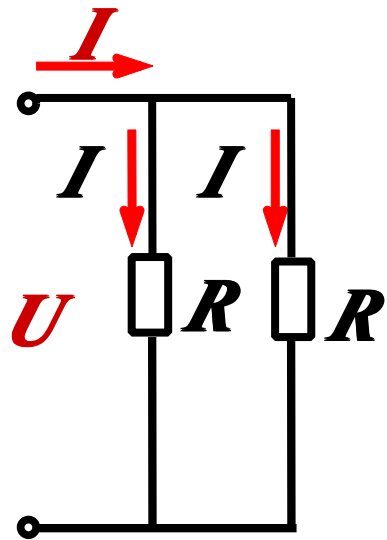






$R \ R \ R$

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



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

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



$U$

$$R'' =$$

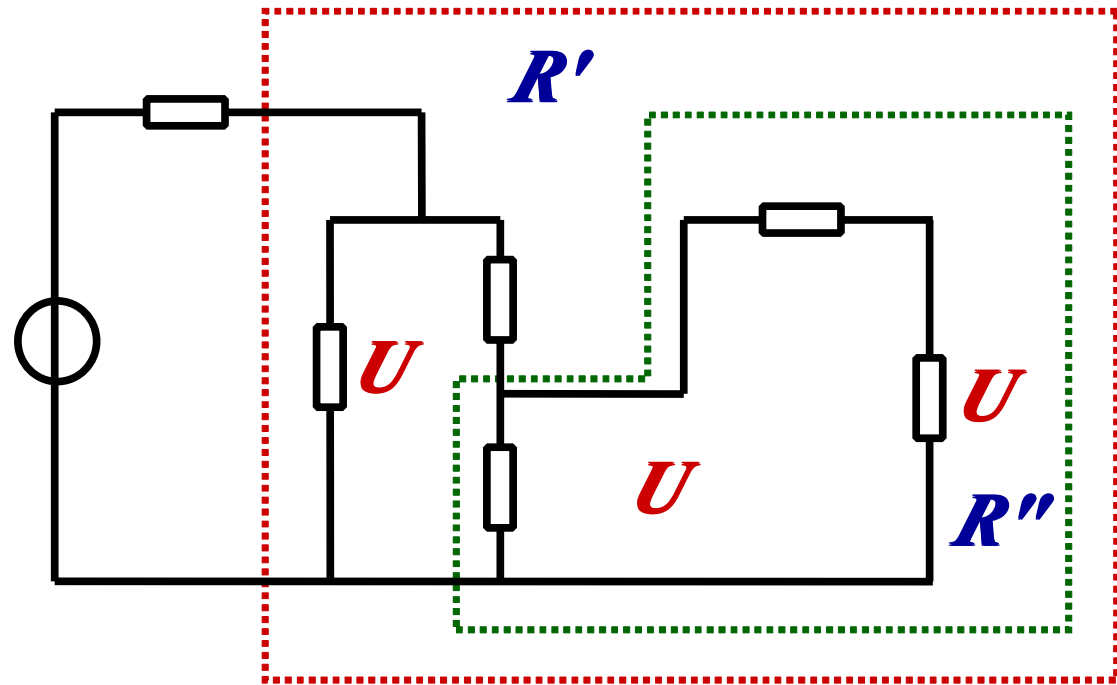
$$R' =$$

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

=

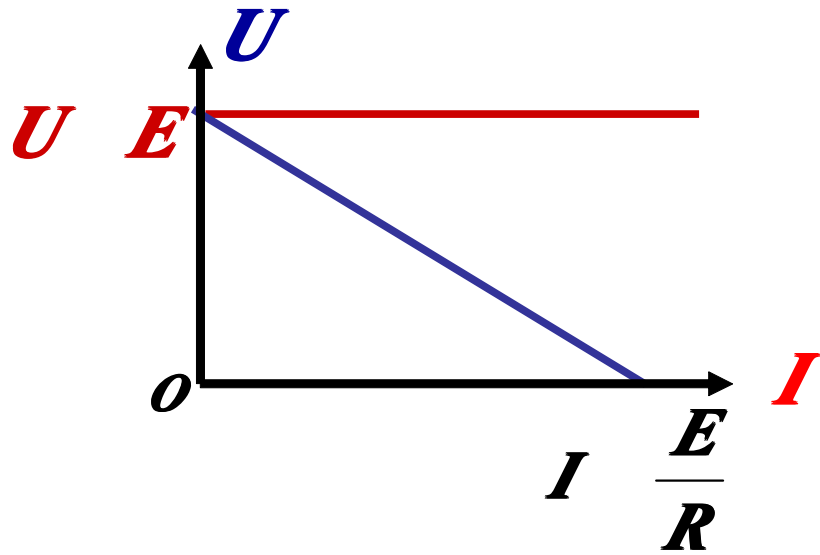
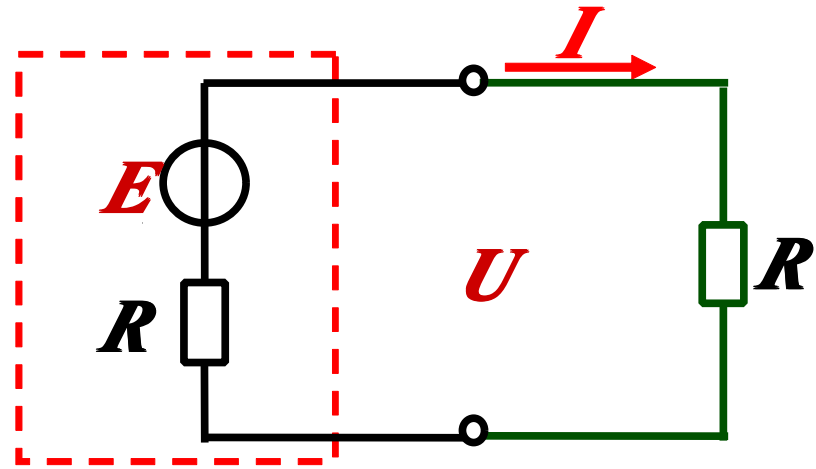
$$U = \frac{R''}{R''} \times U =$$

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





$R$



$$U = E - IR$$

$R$

$U = E$

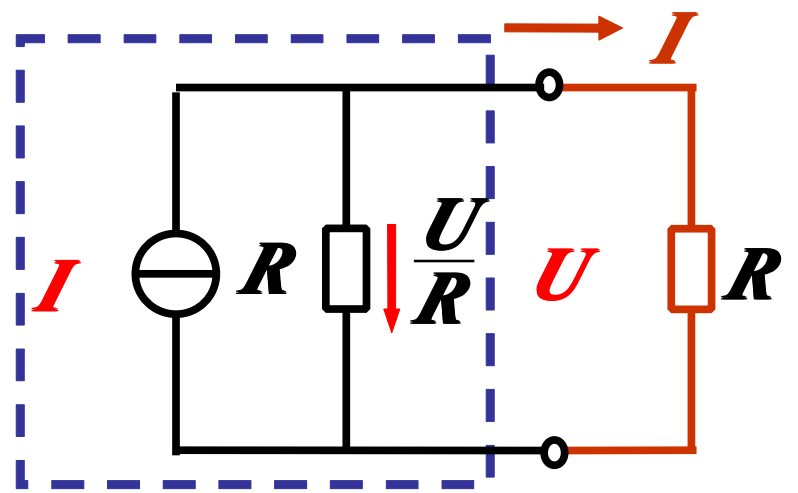
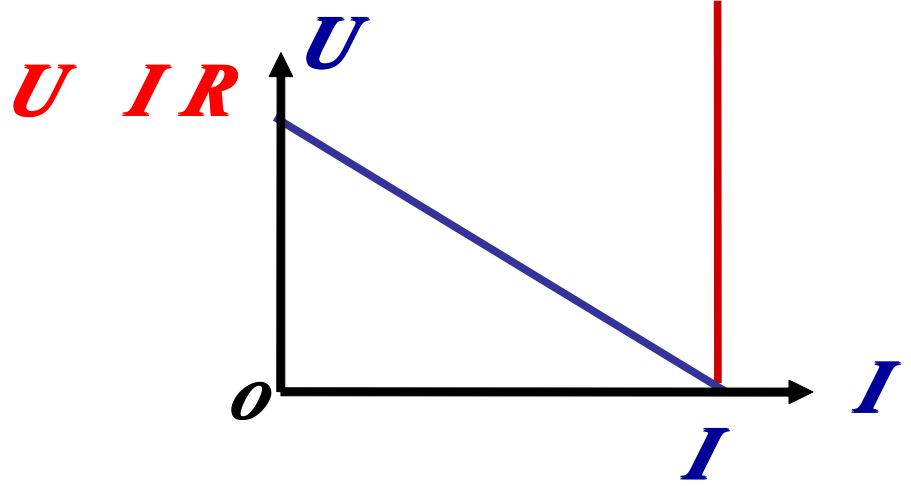
$U = E$

$R$

$R$



$R$



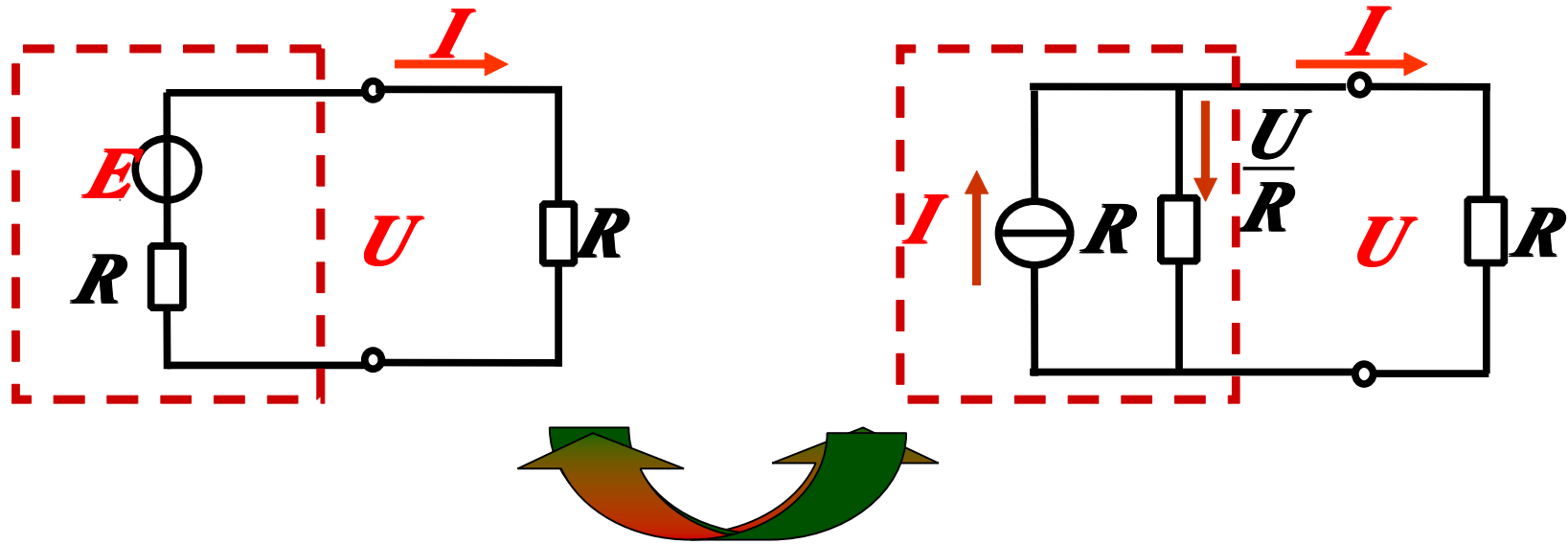
$$I = I - \frac{U}{R}$$

$R$

$I \quad I$

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





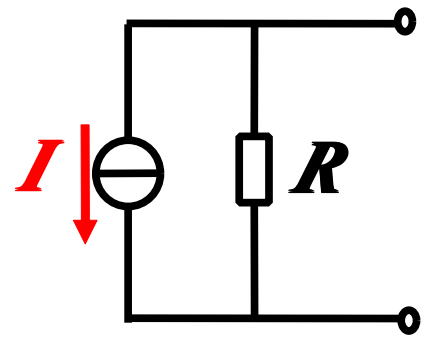
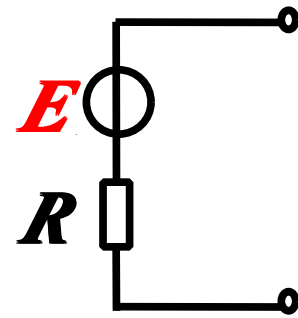
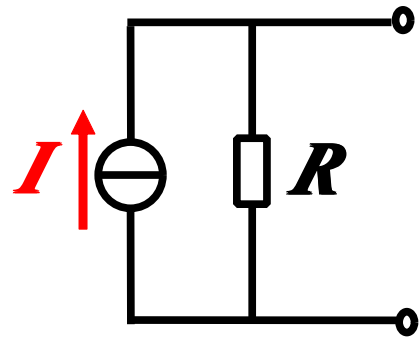
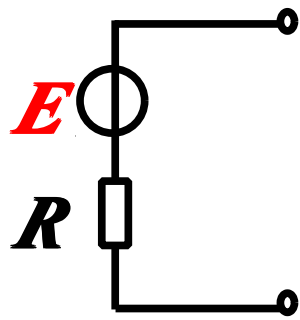
$$U = E - IR$$

$$= \dots$$

$$= \dots$$

$$= \dots$$

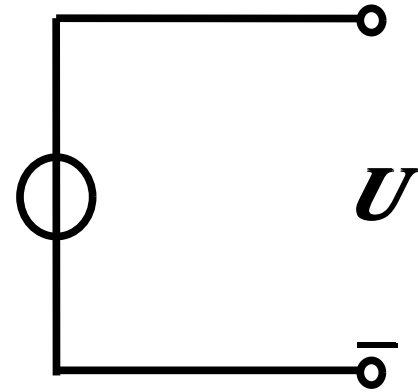
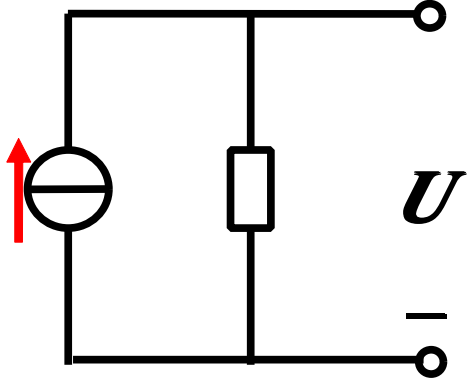
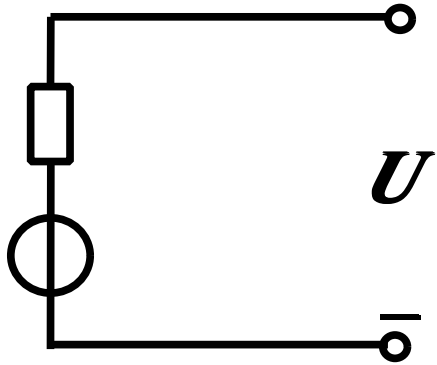
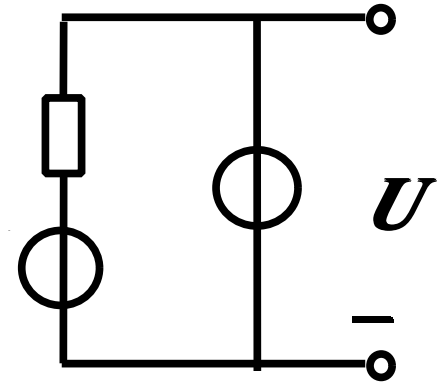
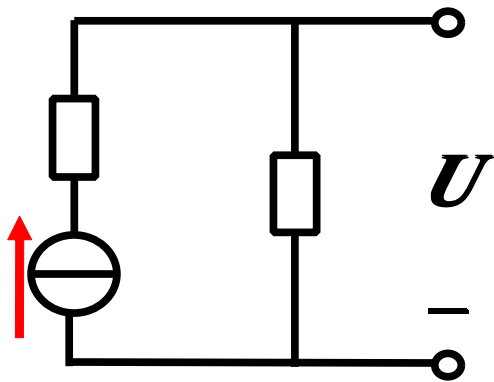
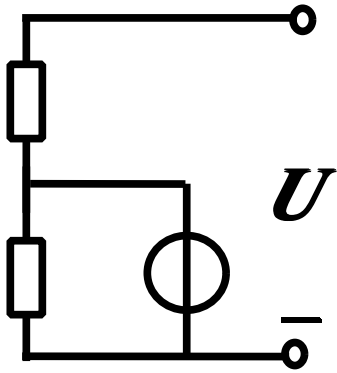
$$\begin{cases} E - IR \\ I = \frac{E}{R} \end{cases}$$

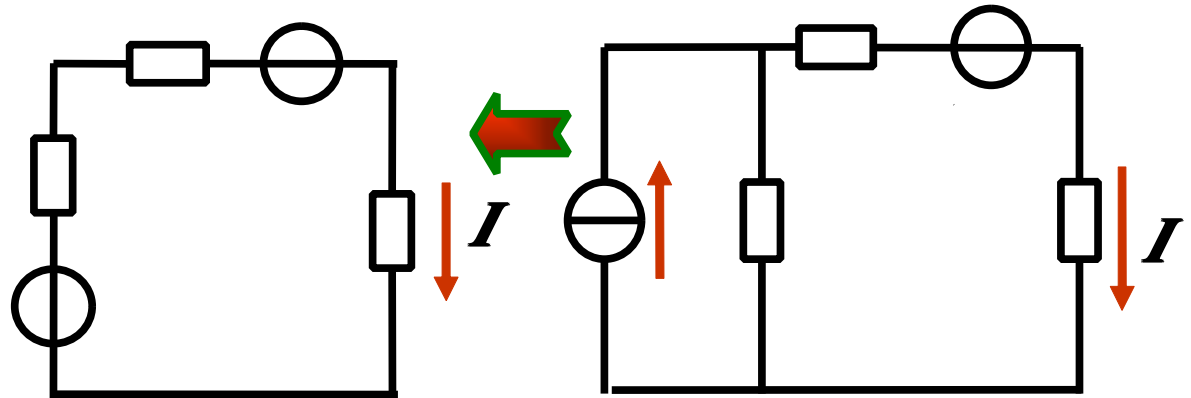
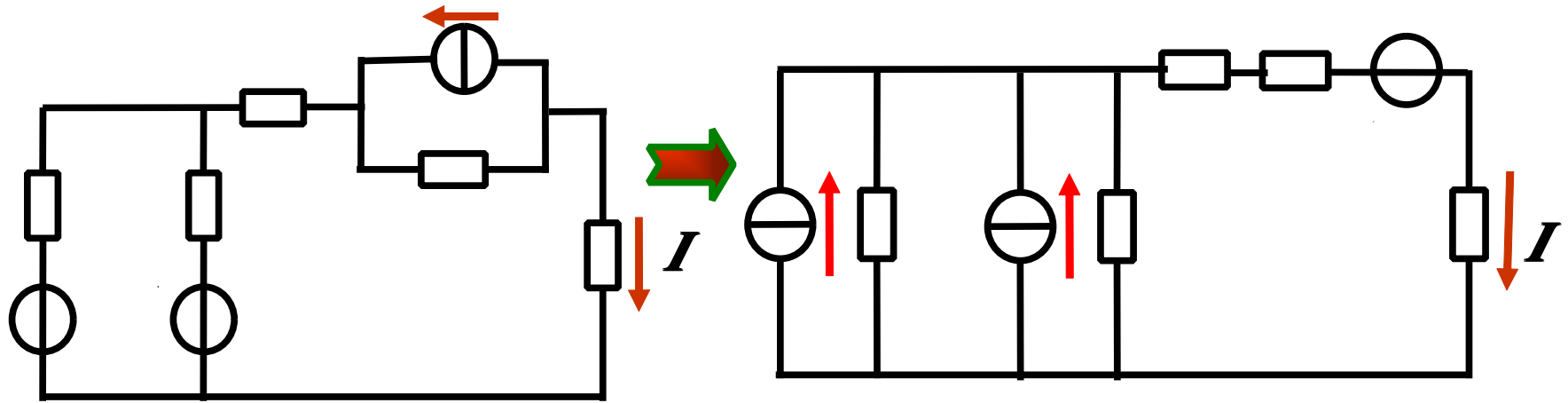


$E$

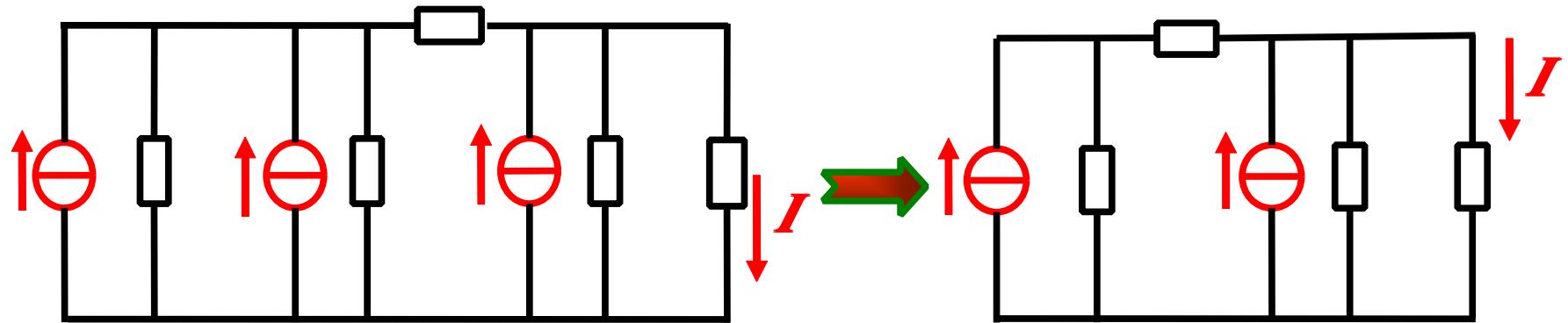
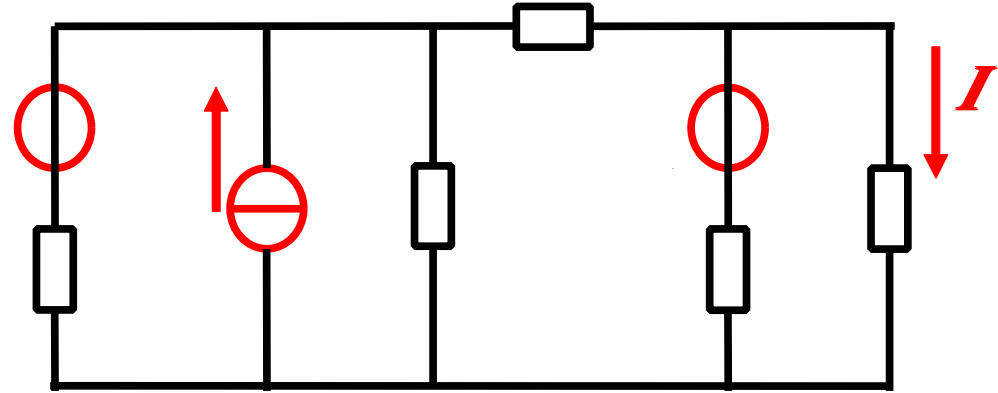
$I$

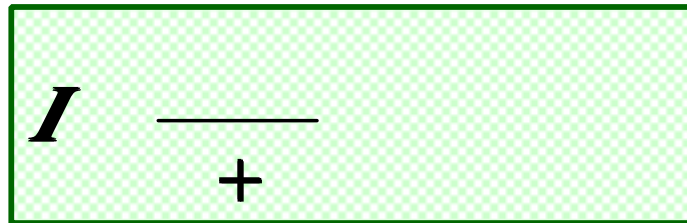
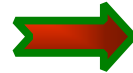
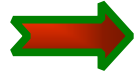
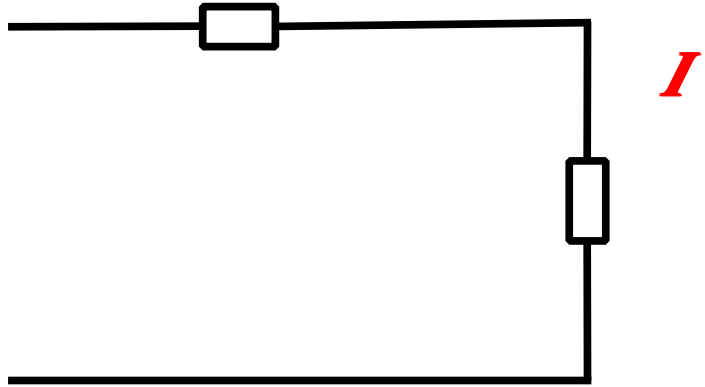
$R$

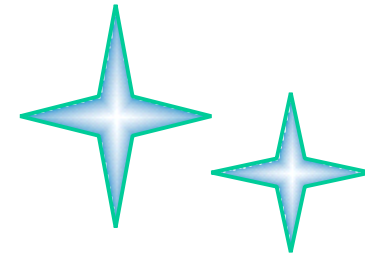




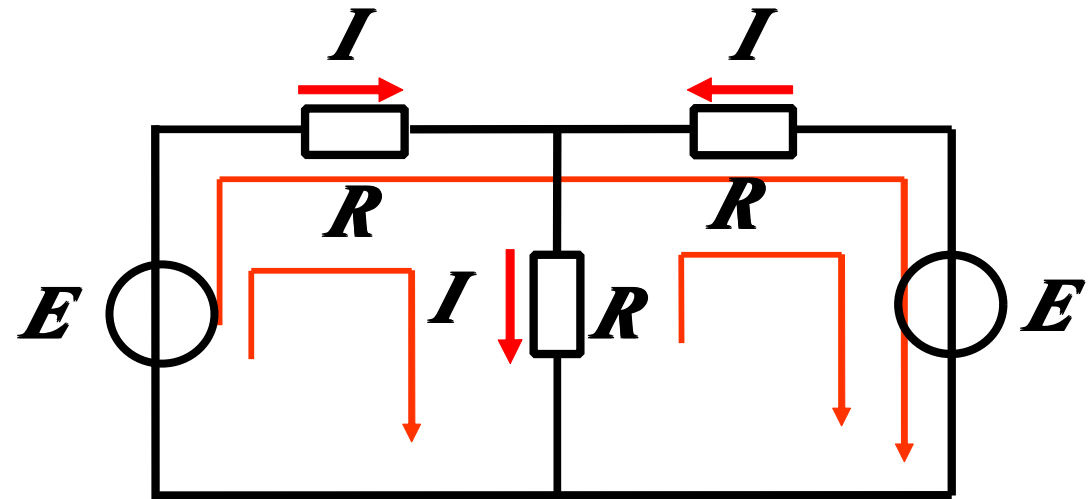
$$I = \frac{-}{+ +}$$





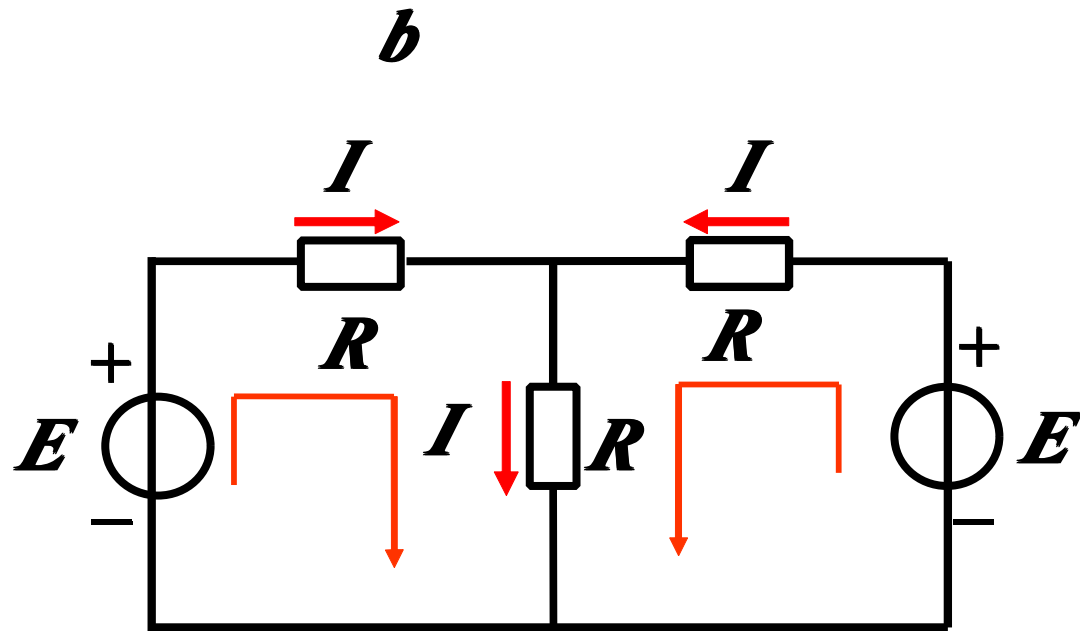


$b$   
 $n$

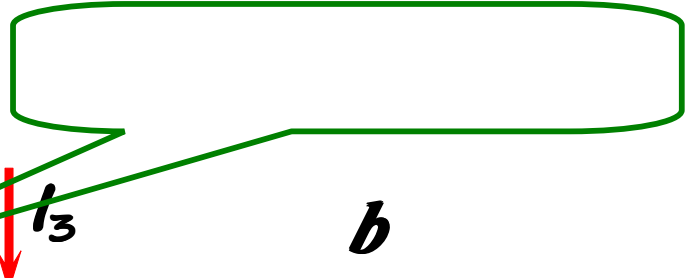
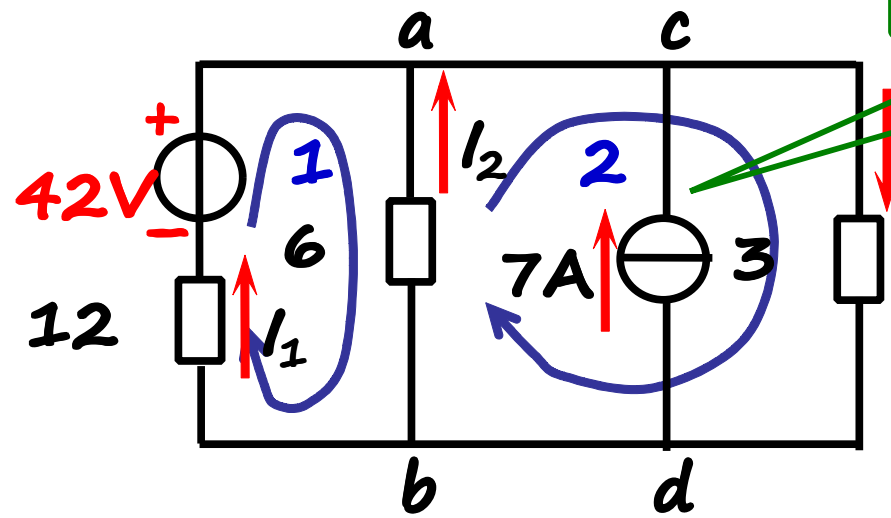




$n$   
 $b \ n$







*b*





*b*



*I I I*

*I I*

*I I*

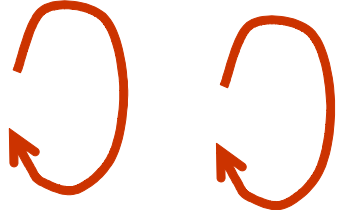
*I I I I*

***b***





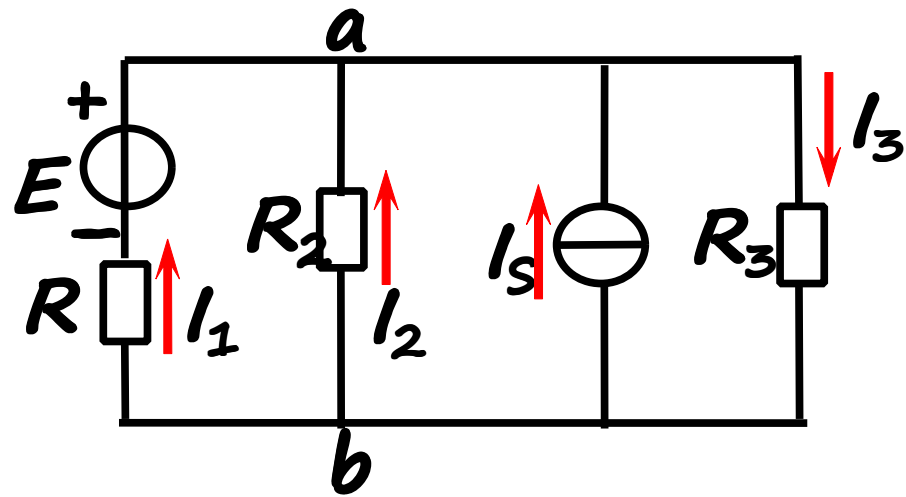
*n*



*I*

*b*







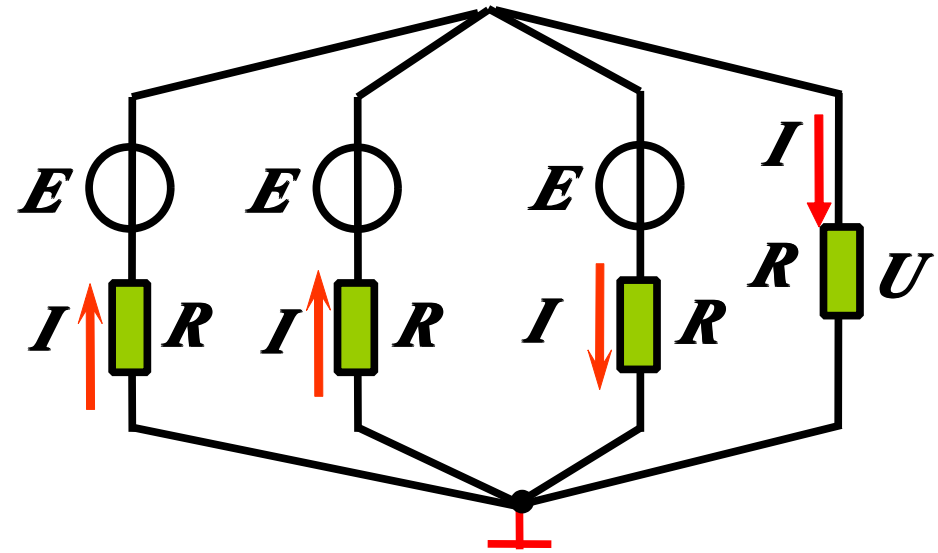
$V$

$U$

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

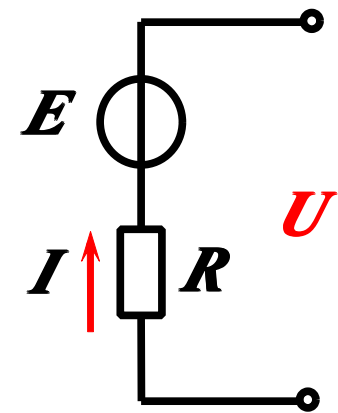
$$I \quad \frac{E - U}{R}$$

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



$U \quad E - IR$

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





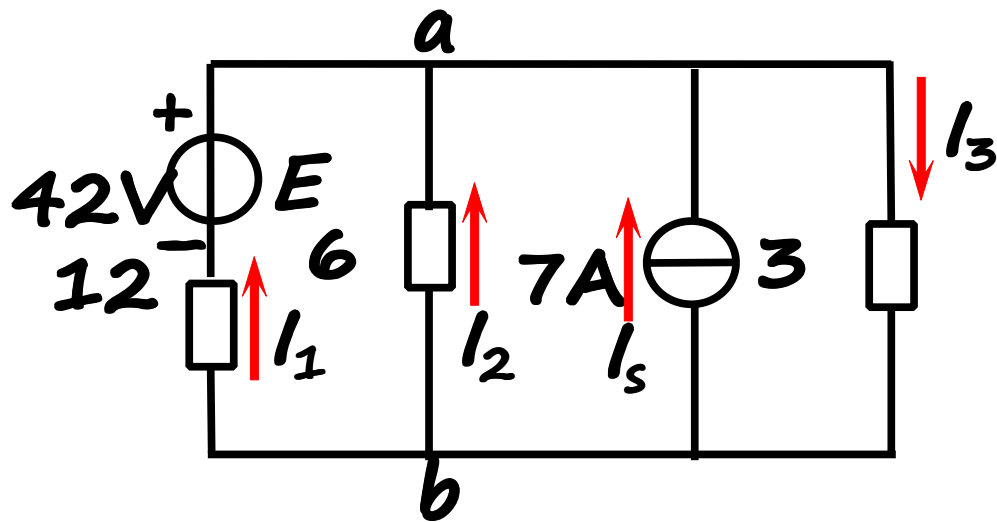
$$\frac{-}{-} + \frac{-}{-} - \frac{-}{-} + \frac{+}{-} - - =$$

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

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

*E*

$U$



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

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

$I \ U$

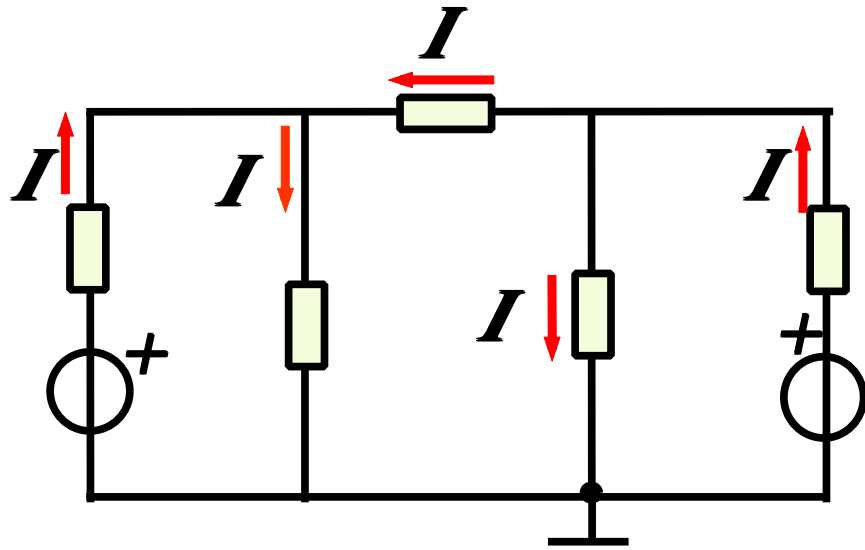
$$I = \frac{U}{-}$$

$U$

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

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





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

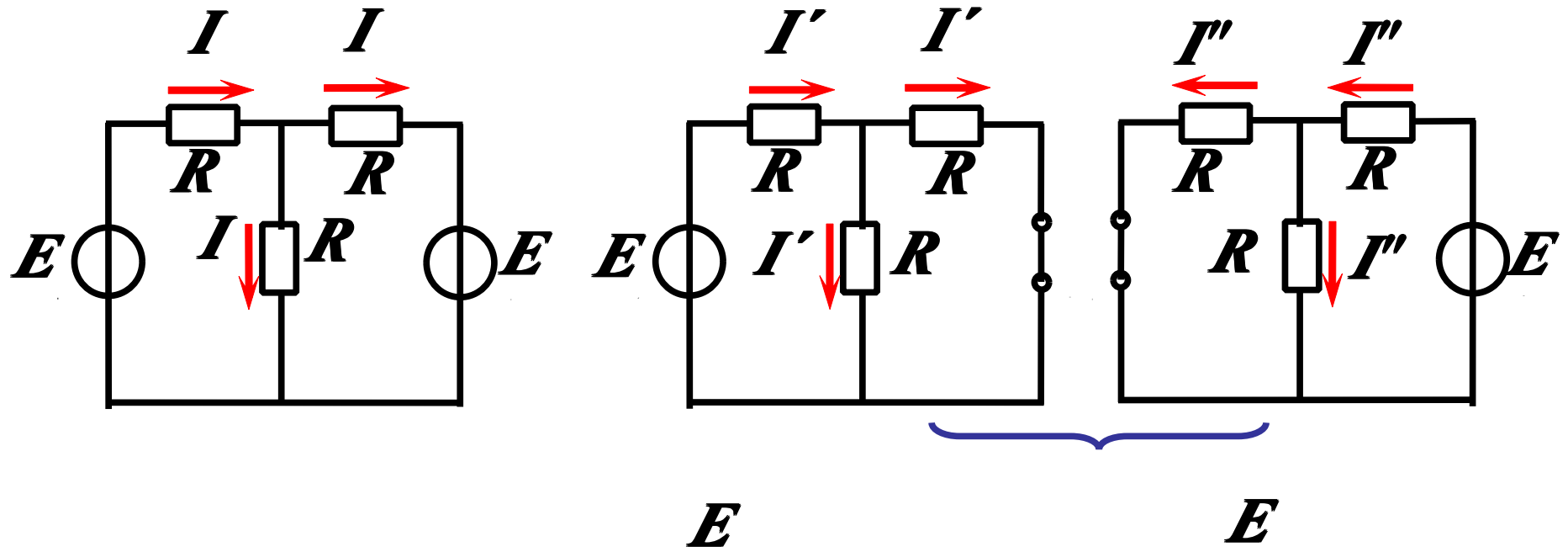
$$\begin{cases} V & V & \\ & V & V \end{cases}$$

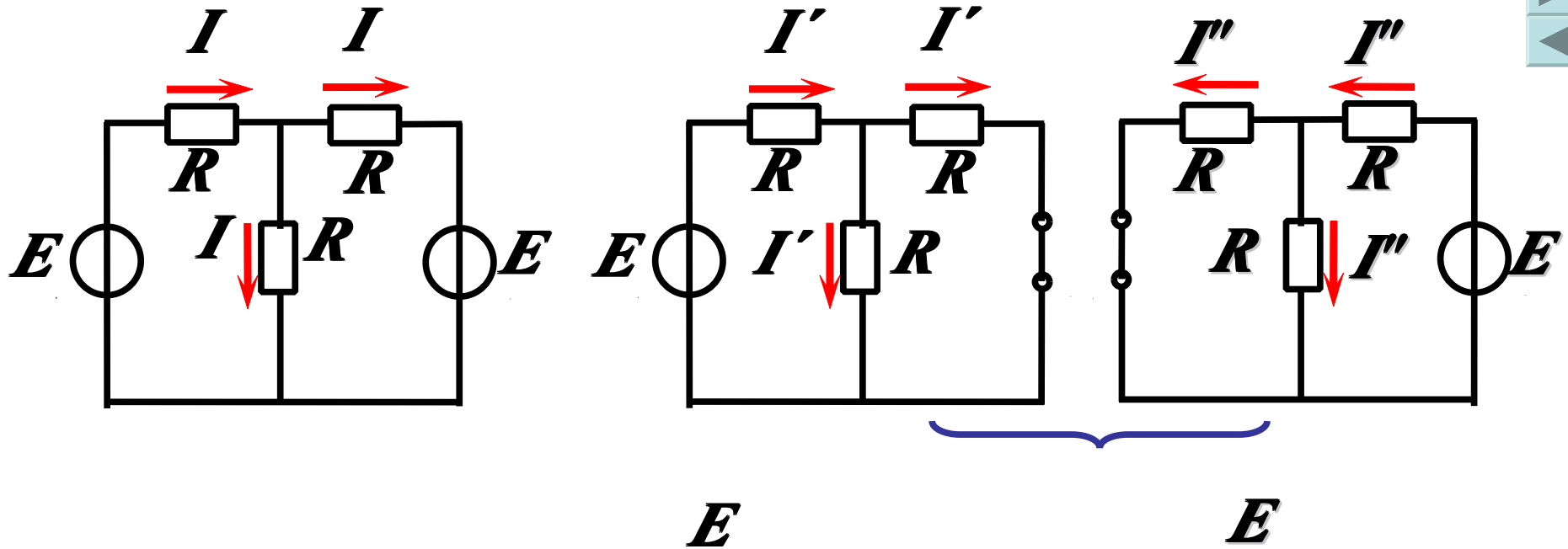
$$I \frac{-V}{\quad} \quad I \frac{V}{\quad}$$

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

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

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



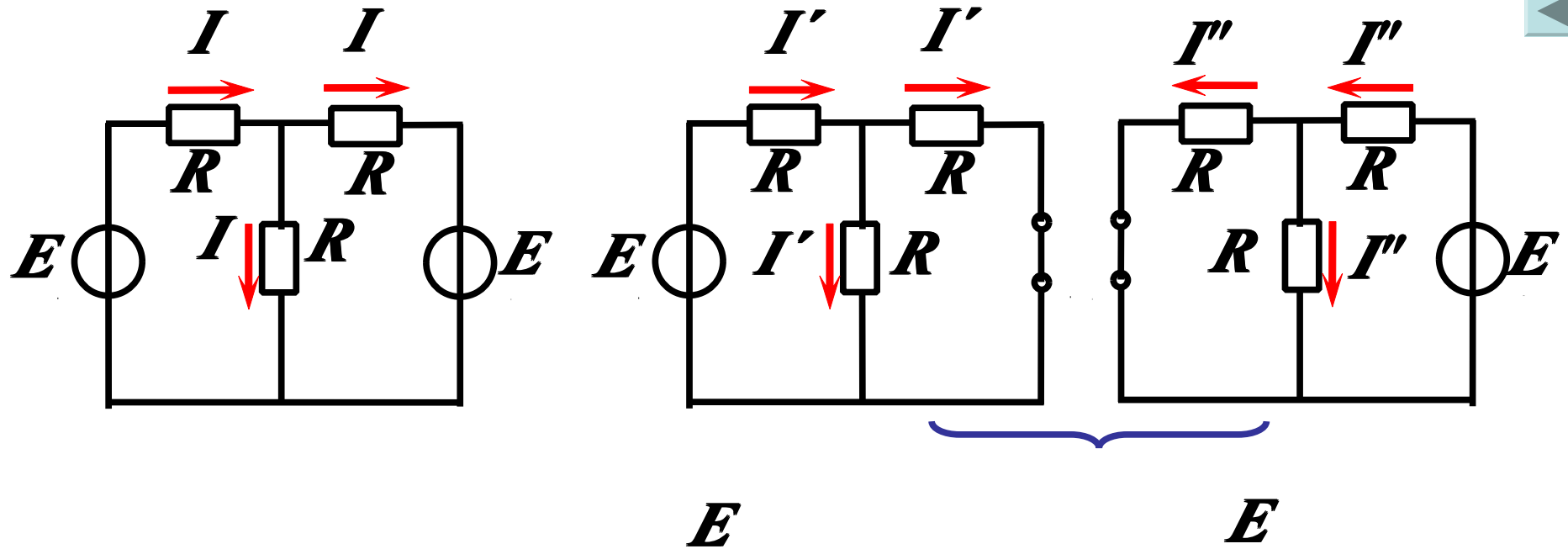


$E$

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

$E$

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





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

***E***

***I***



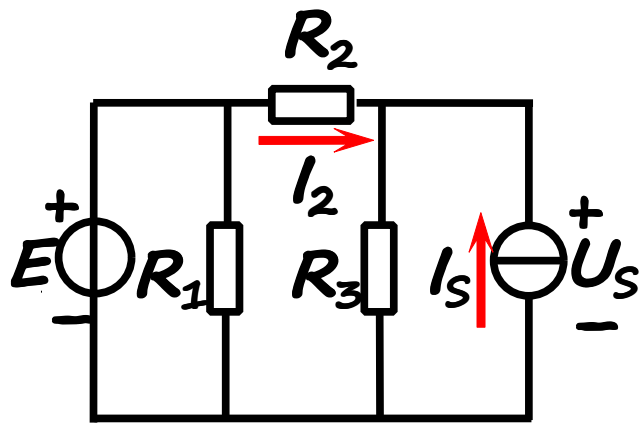
$$R = R =$$

 $I$ 

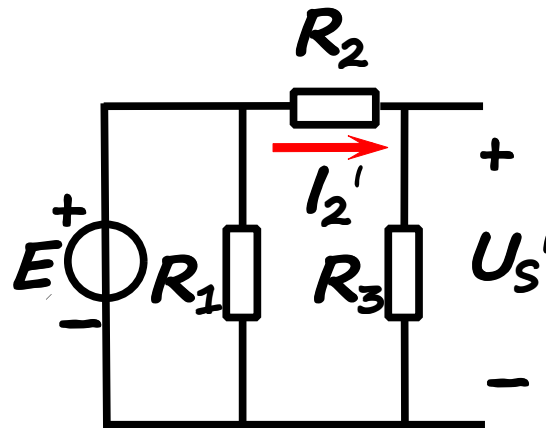
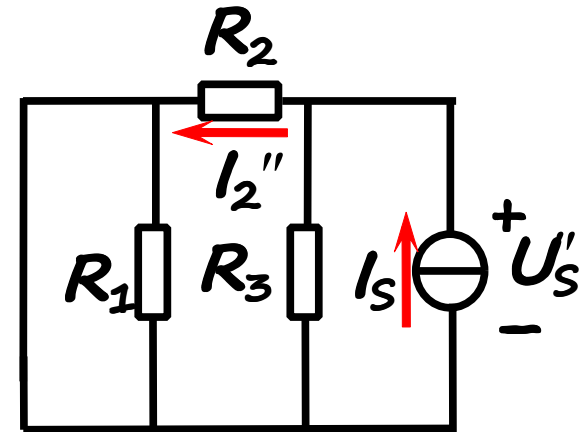
$$E =$$

 $I$ 

$$R =$$

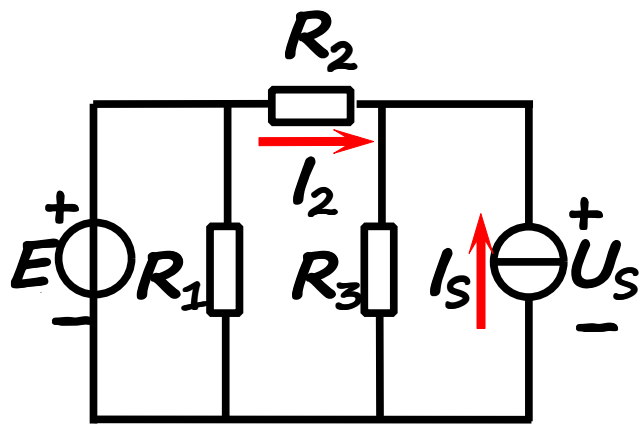
 $R$  $I$  $U$ 

(a)

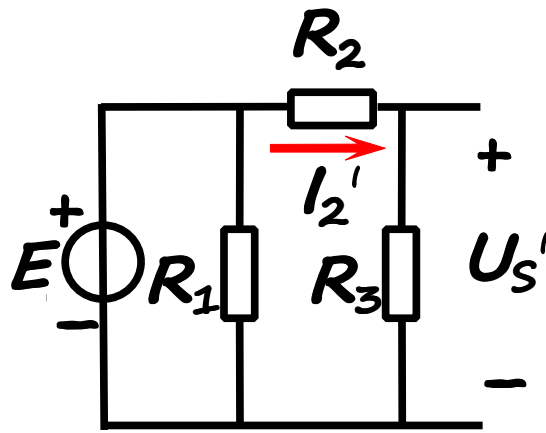
 $E$  $I$  $I$  $E$ 

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

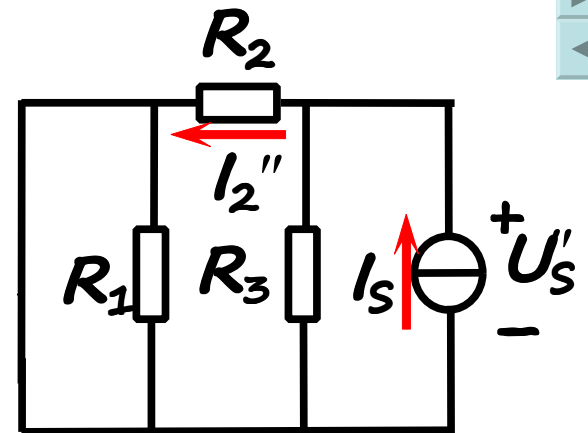
$$U = I R$$



(a)



(b)  $E$



(c)  $I_s$

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

$$I = I_2' - I_2'' = \frac{R}{R + R} U_s' - \frac{R}{R + R} I_s U_s'$$

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

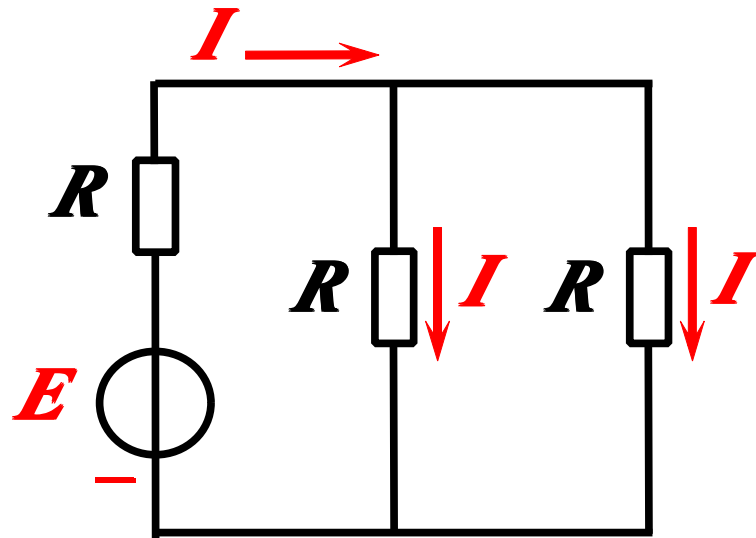






*k*

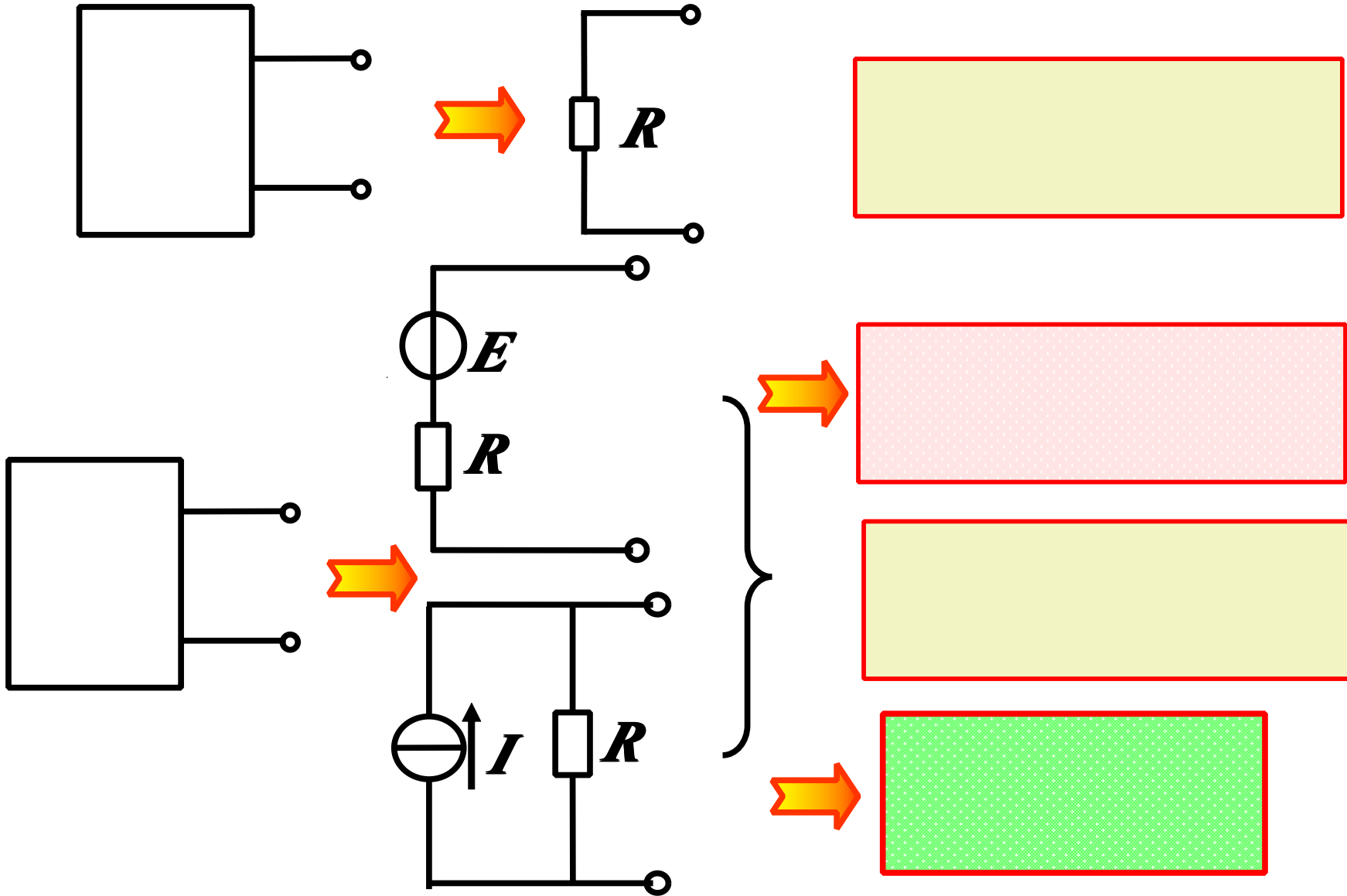
*k*



*E*

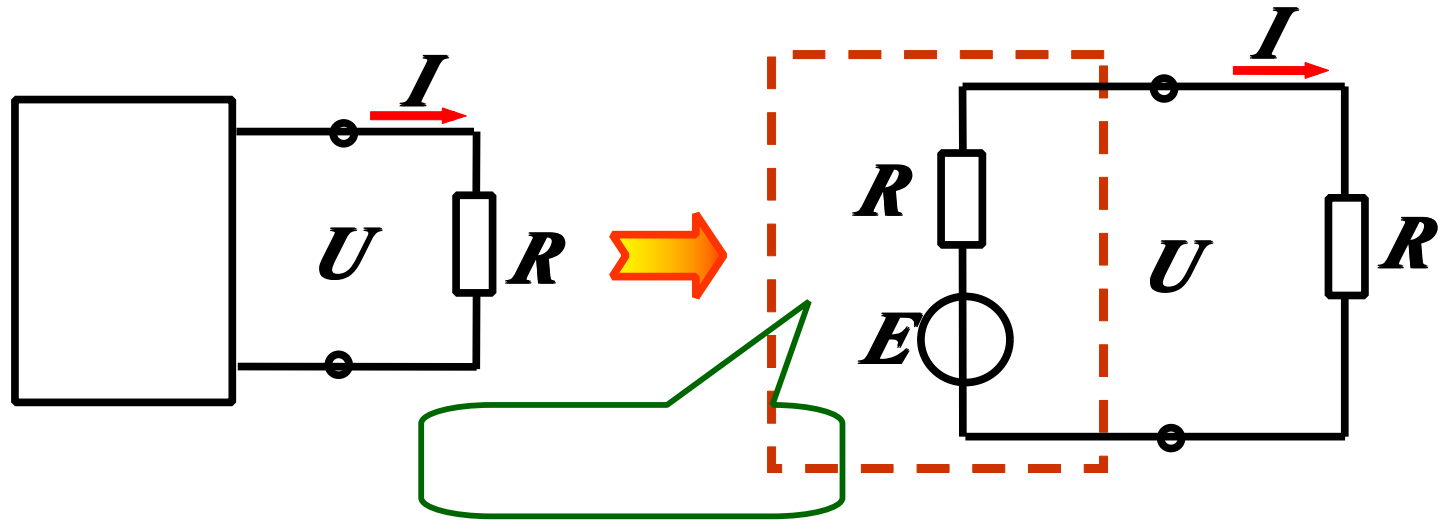
*n*

*n*





$E$   $R$   
 $U$   $E$   
 $R$





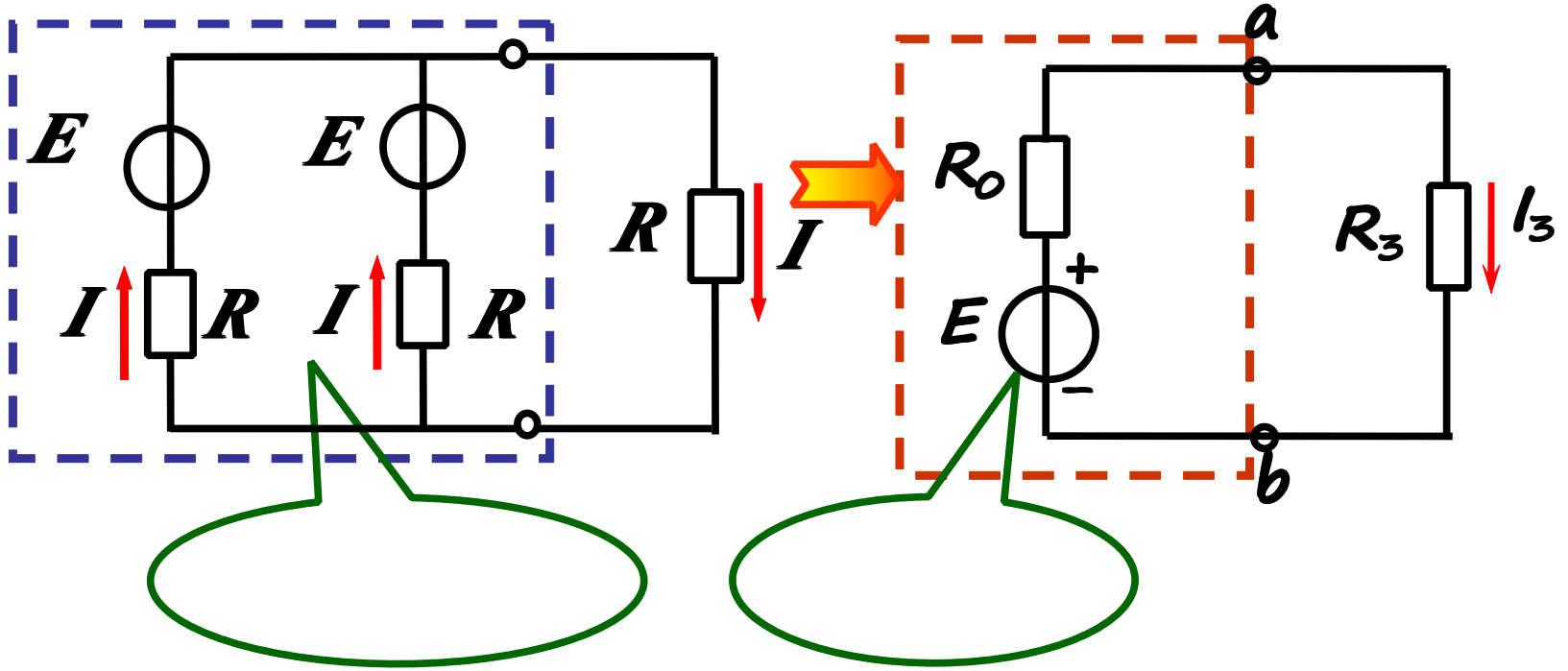
$R$

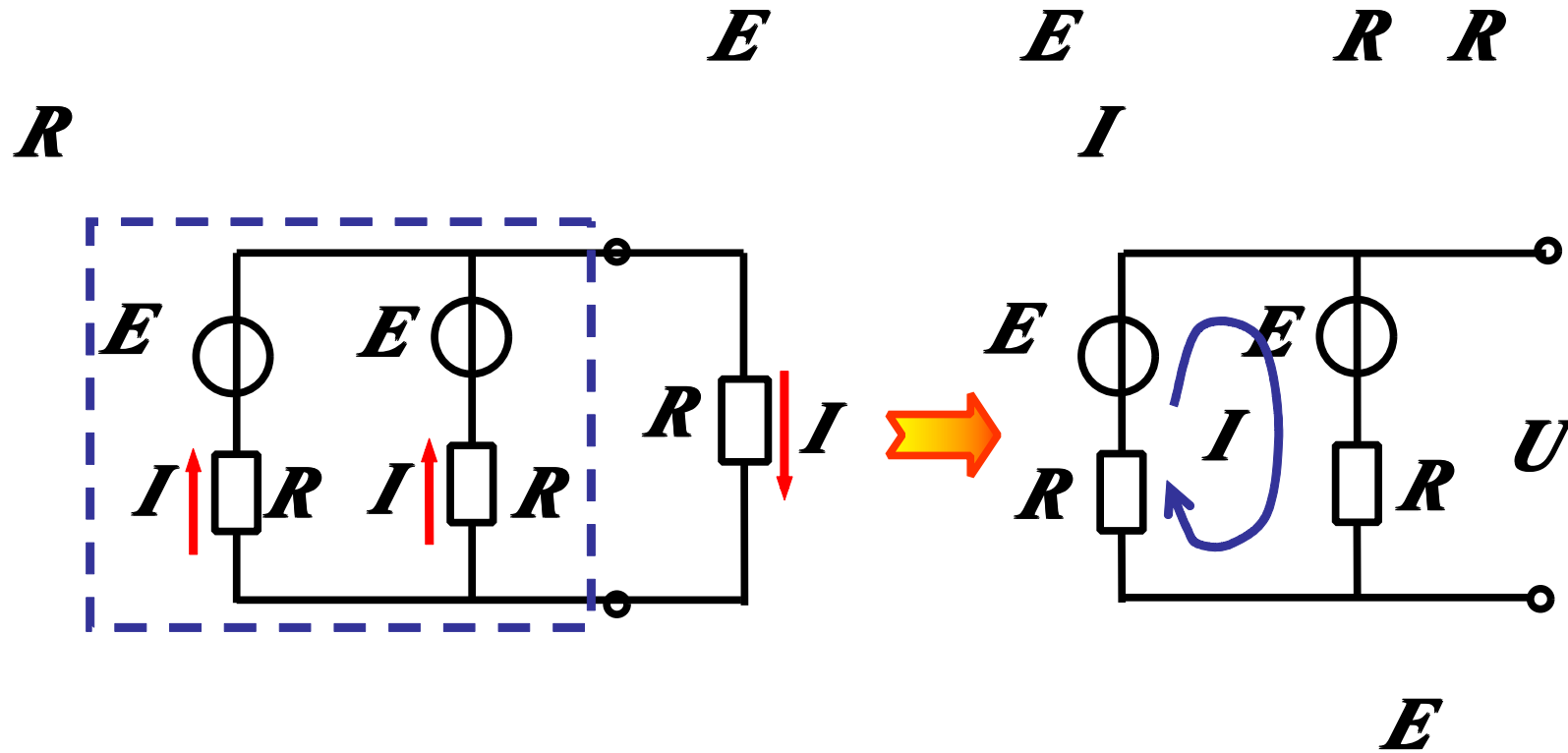
$E$

$E$

$R R$

$I$





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

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

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

**E**



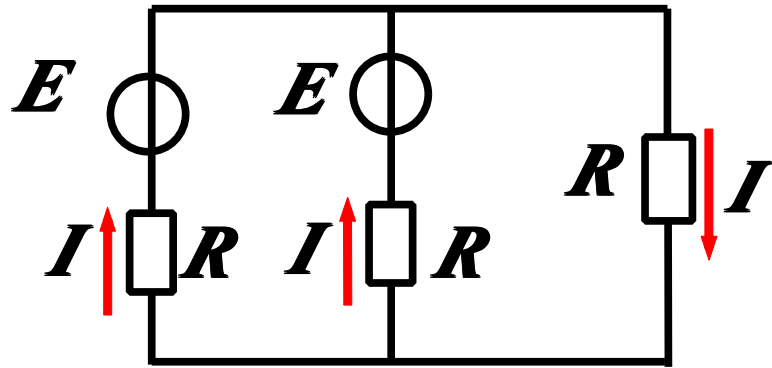
$R$

$E$

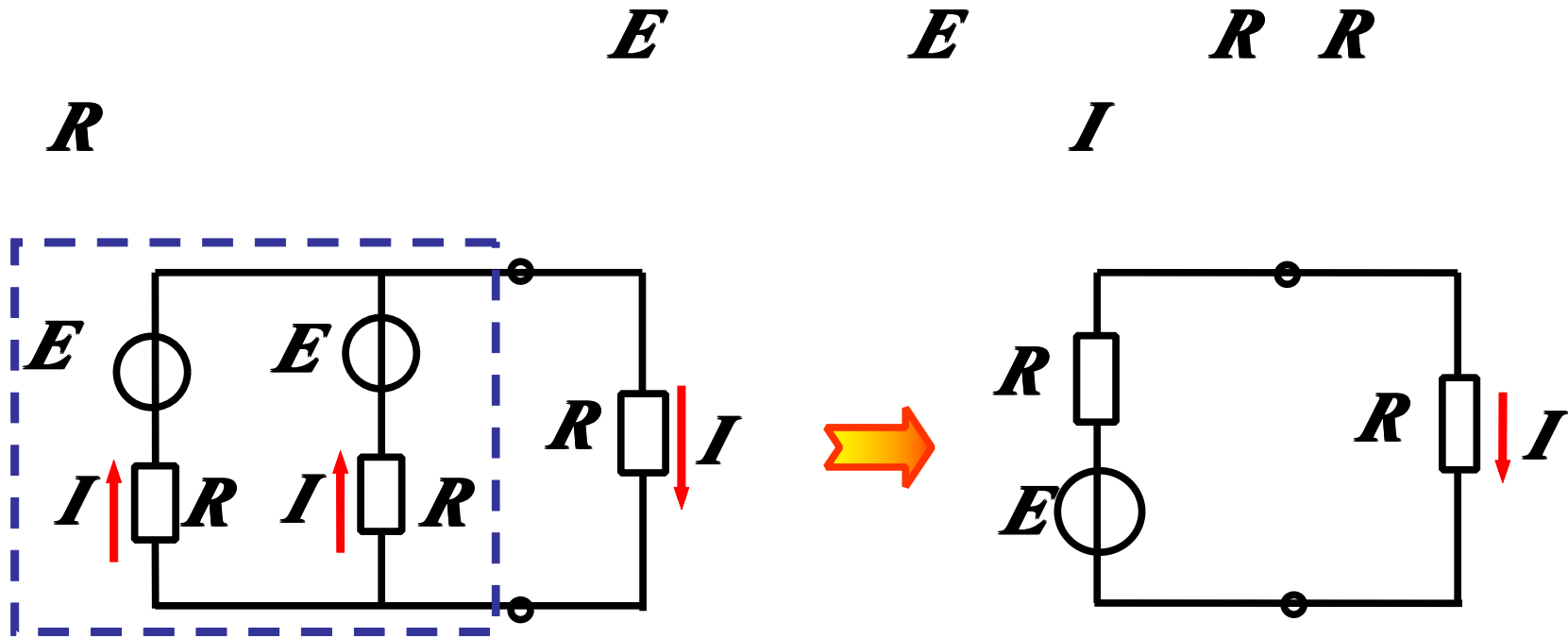
$E$

$R R$

$I$

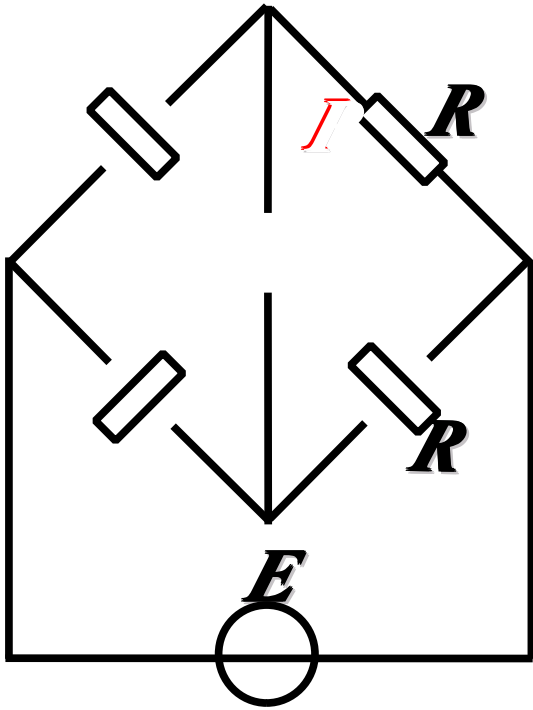


$R$



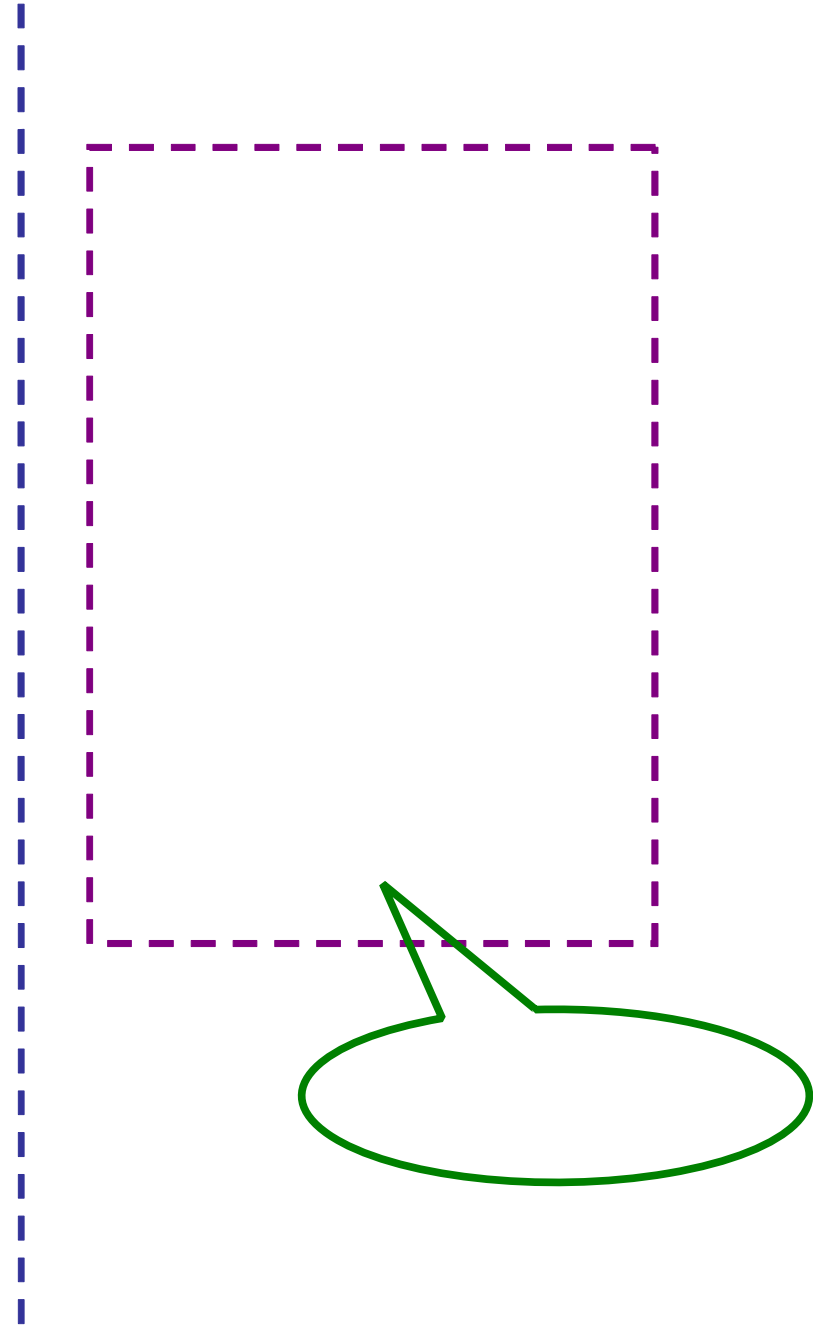
$$I = \frac{E}{R + R} = \frac{E}{2R}$$

$I$

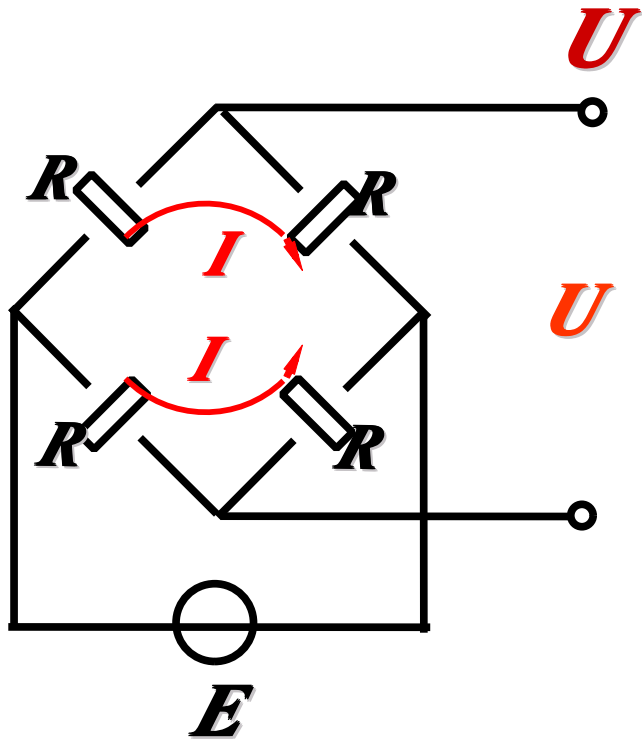


$R$                        $R$   
 $R$                        $R$   
 $E$                        $R$

$I$





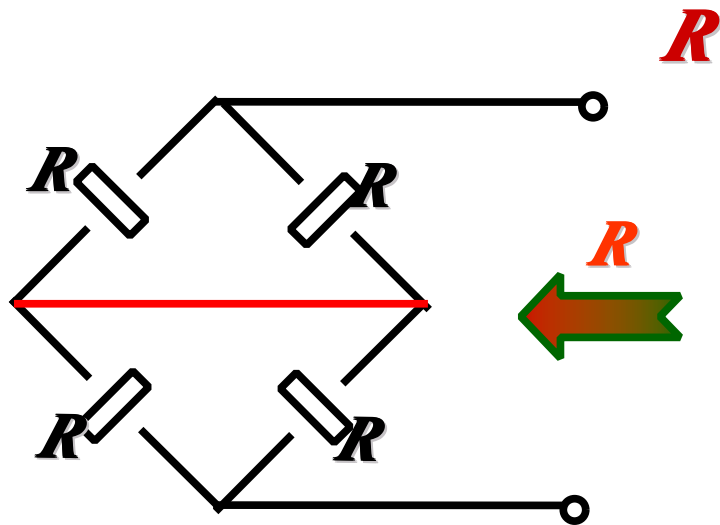


$$I = \frac{E}{R+R} \quad \text{---}$$

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

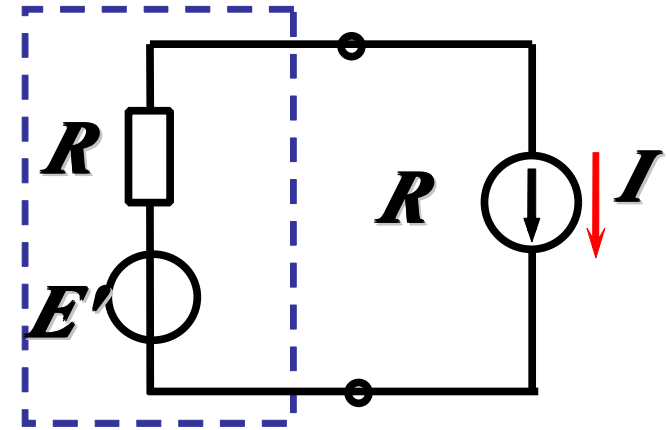
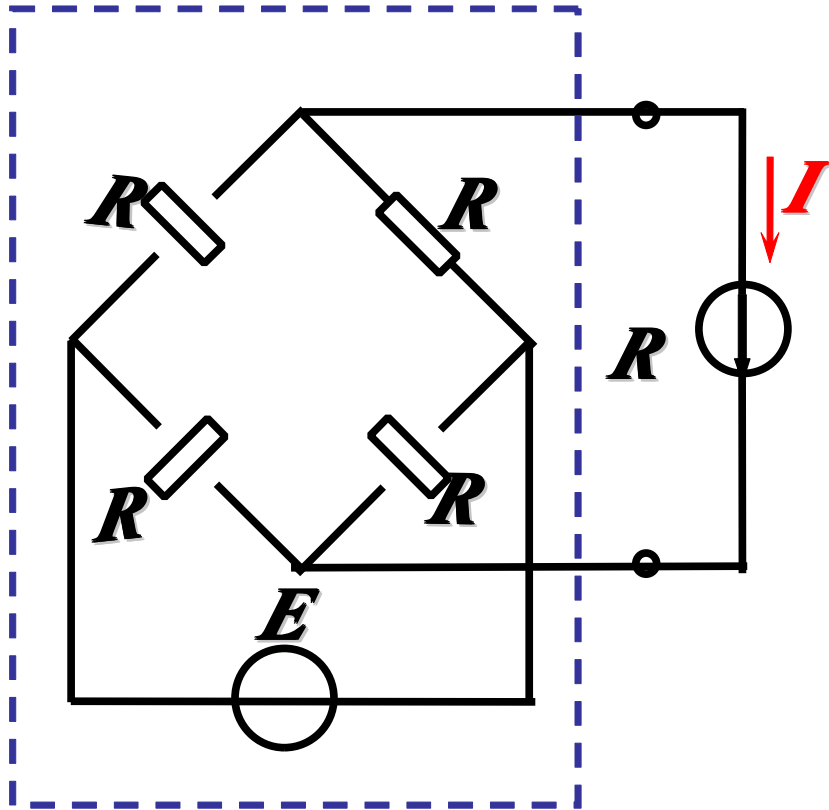
$$E' \quad U \quad IR - IR$$

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



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

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



*I*

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

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

$U$

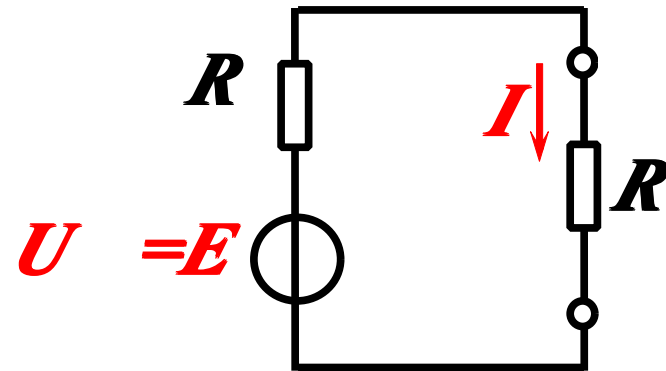
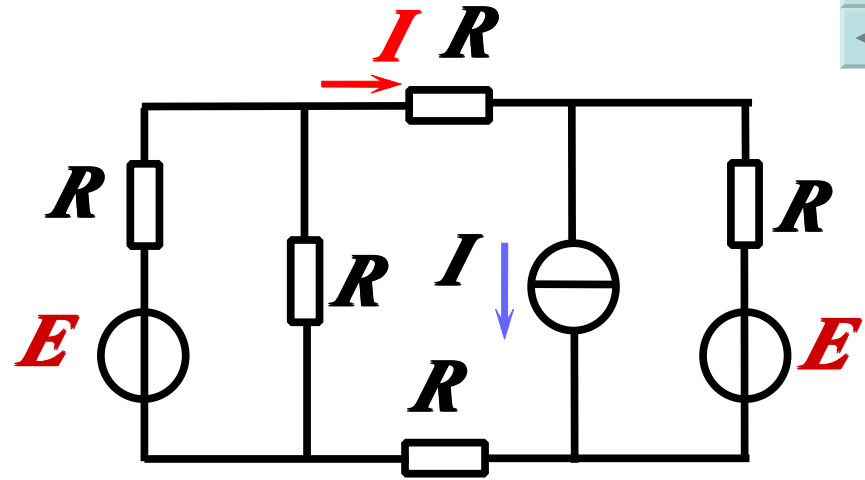
$I$   $\frac{E}{R}$   
 $U$   $IR$   $E$   $IR$

$R$

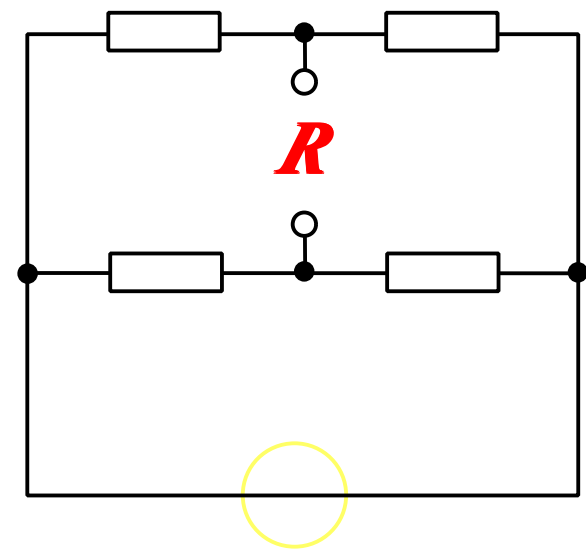
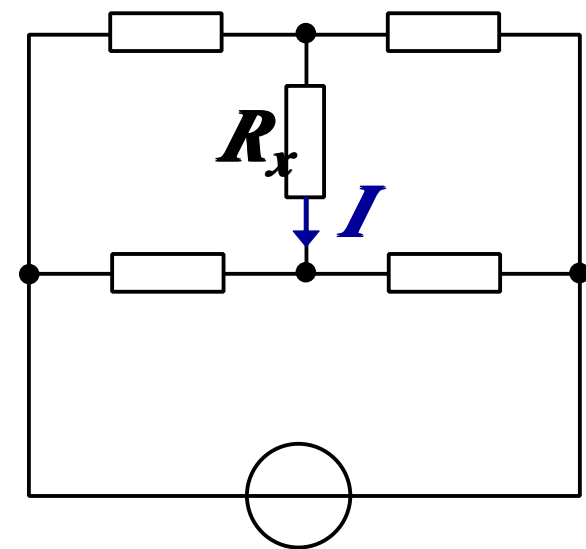
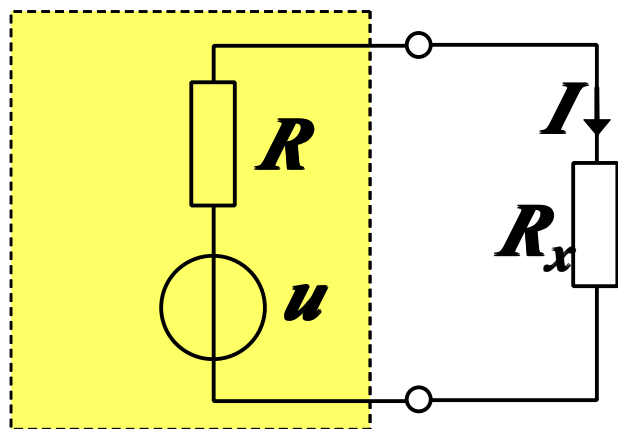
$R = R$   $R$   $R$   $R$

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

$I$

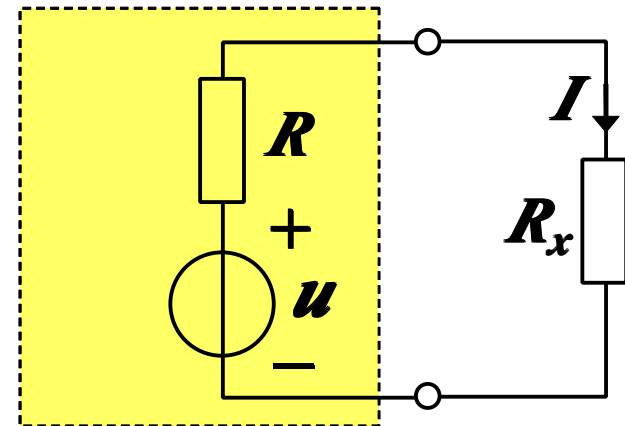
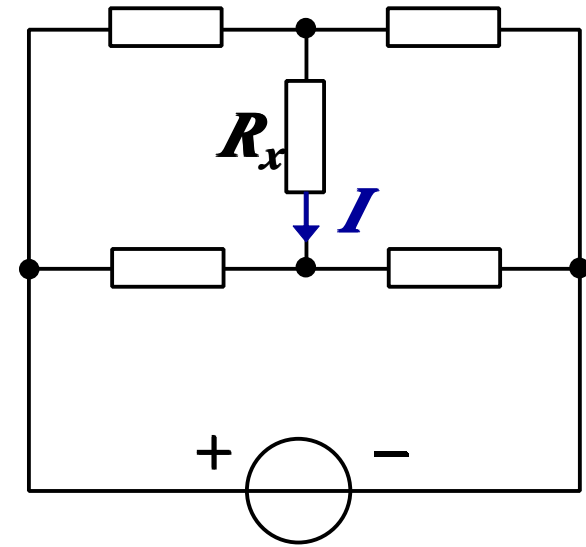


$R_x$   
 $I$   
 $R_x$   
 $U$   
 $U$   $U$   $U$   
 $R$



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

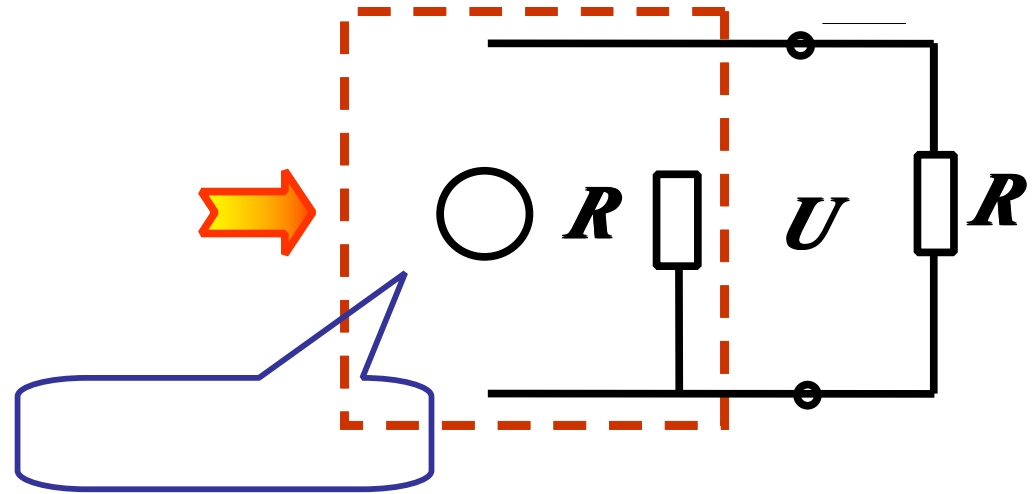
$$I = \frac{U}{R + R_x} \quad \text{---}$$





$I_S$

$R$



$I_S$

$R$



*R*

*R*

*R*

*R*

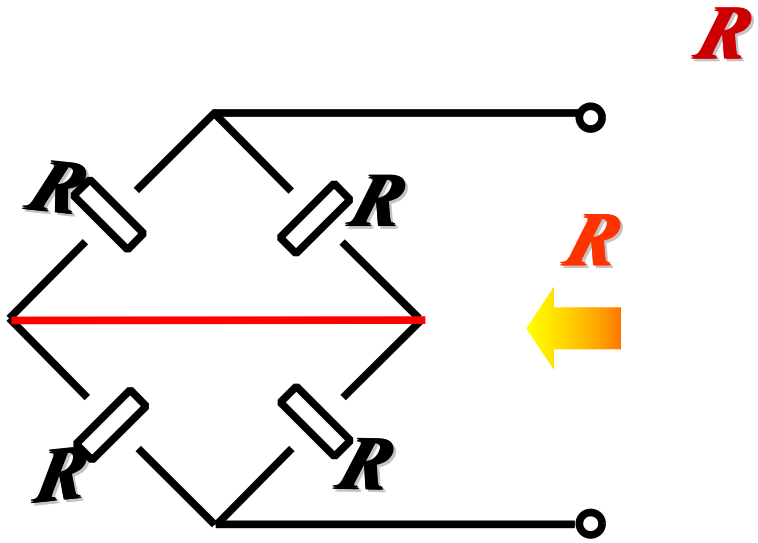
*E*

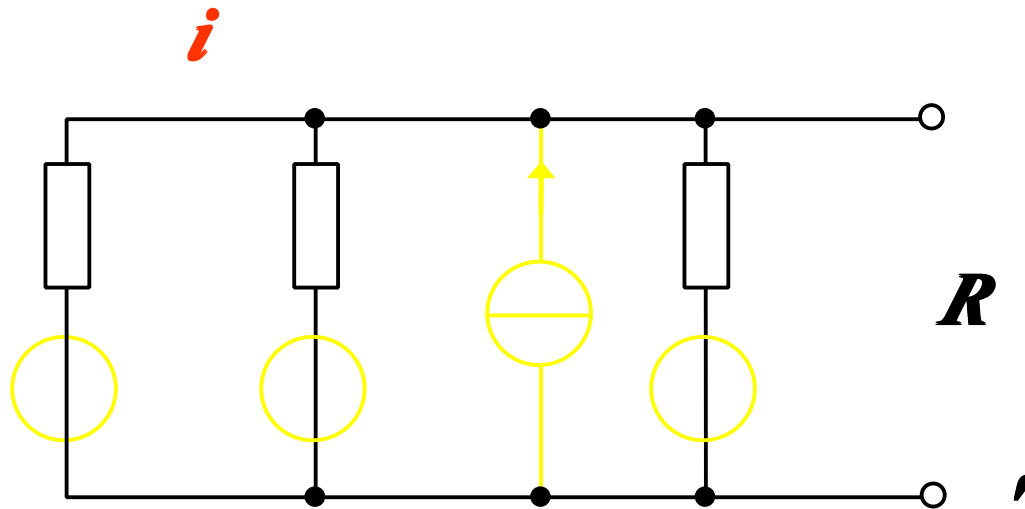
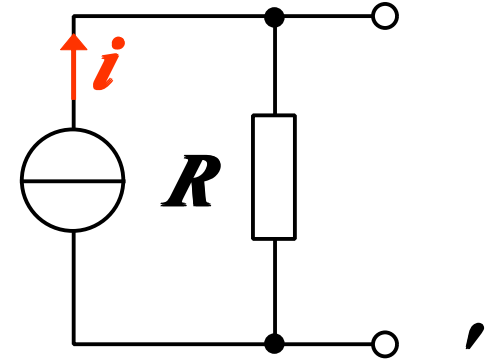
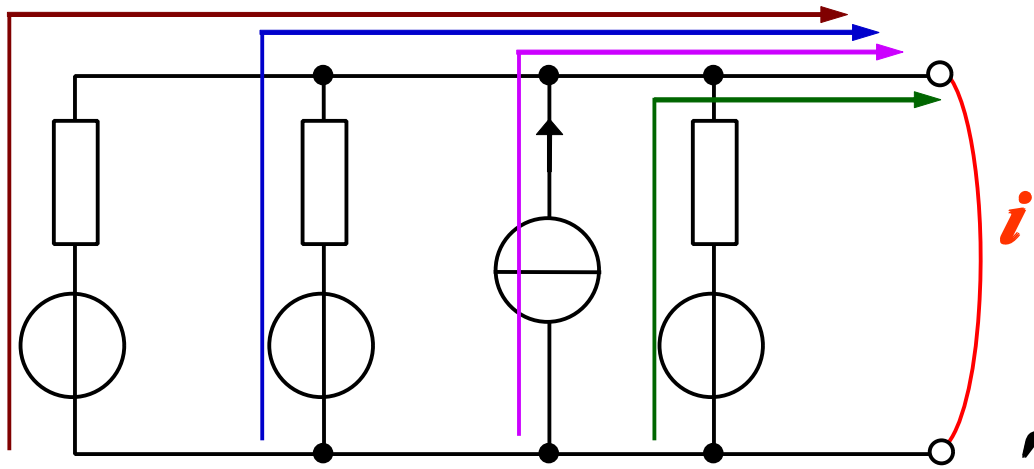
*R*

*I*



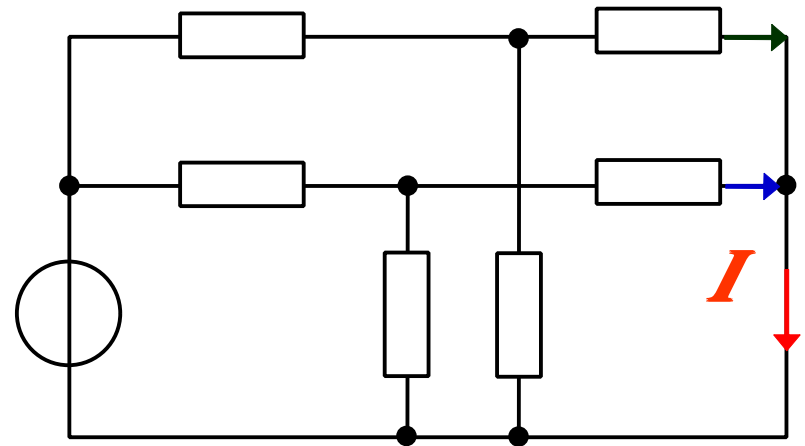
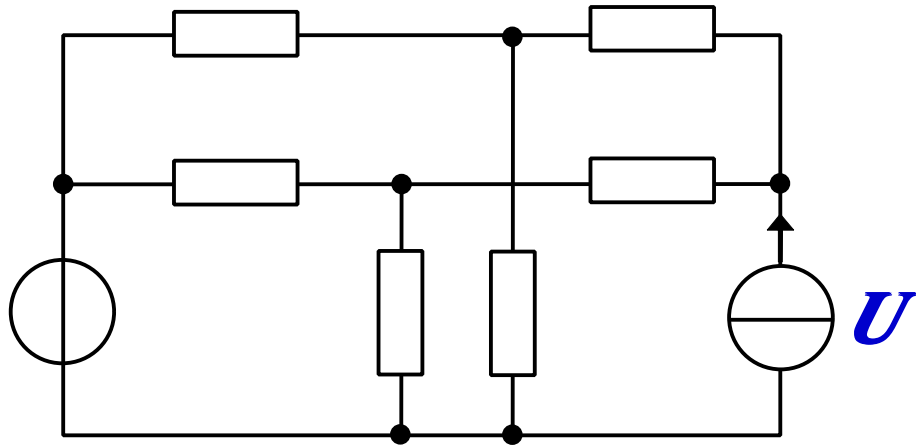








$U$



$a$   $b$

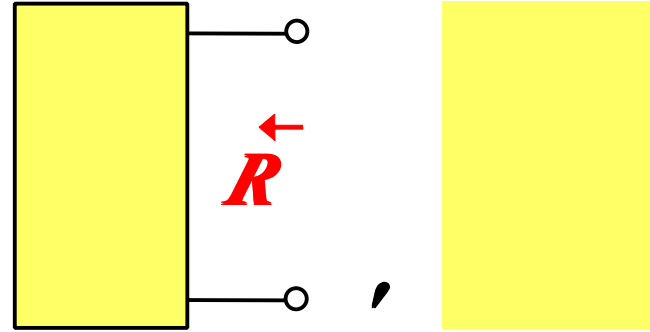
$I$







$R$



$R$

