



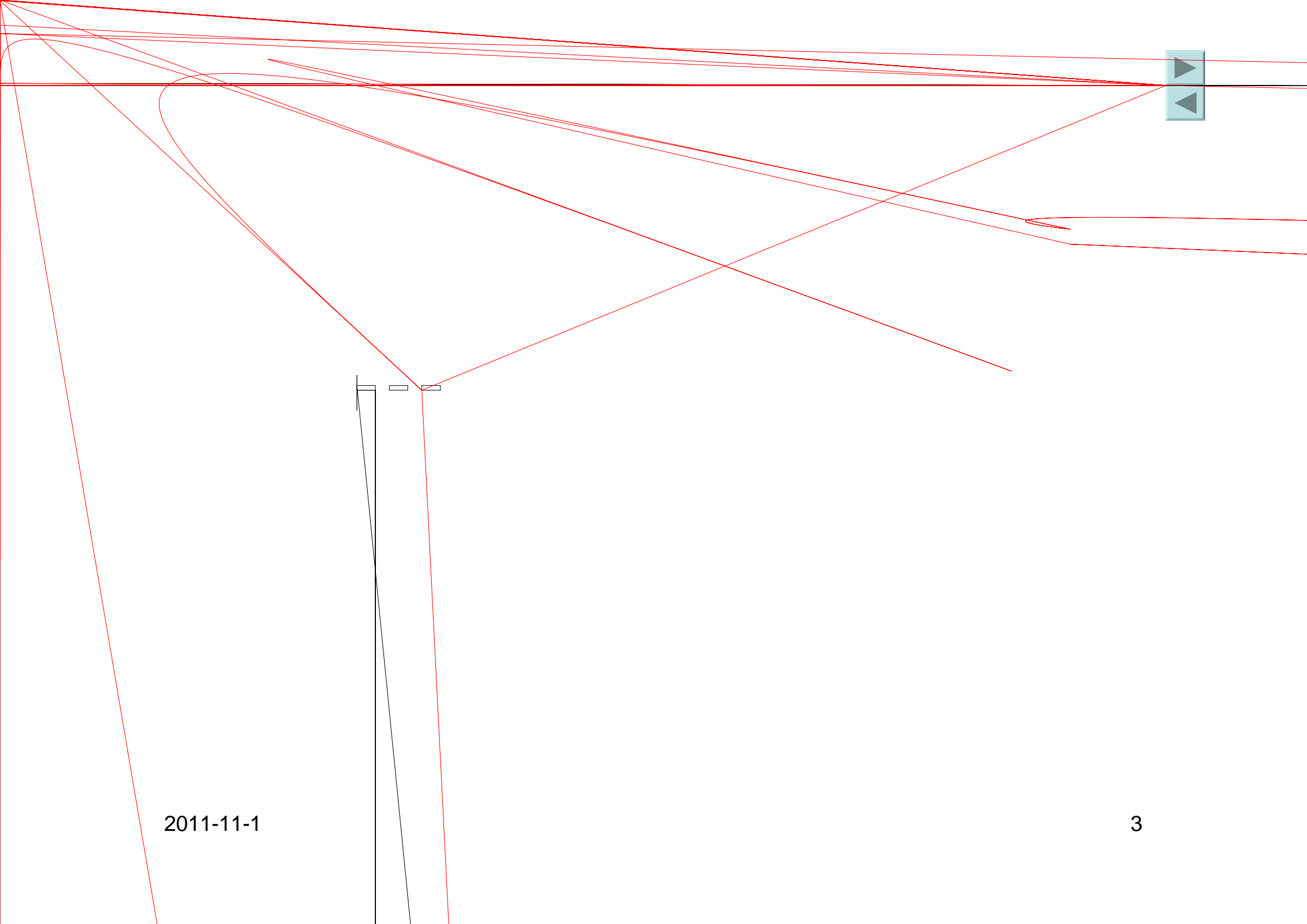


3.



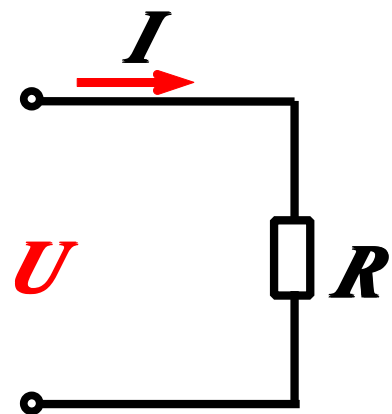
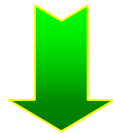
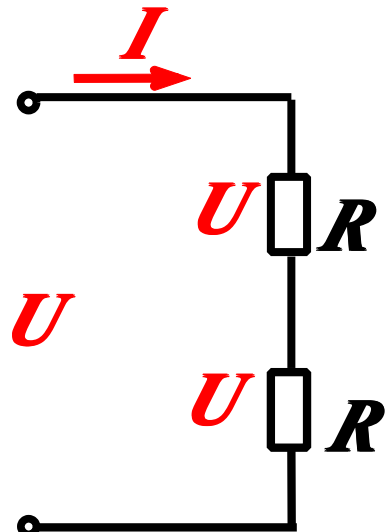
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2



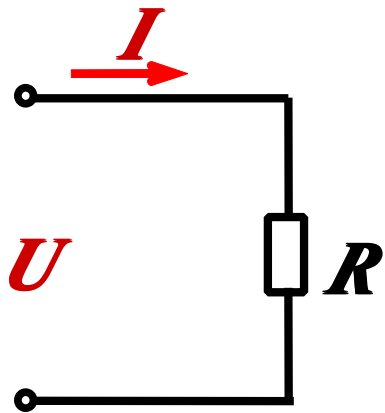
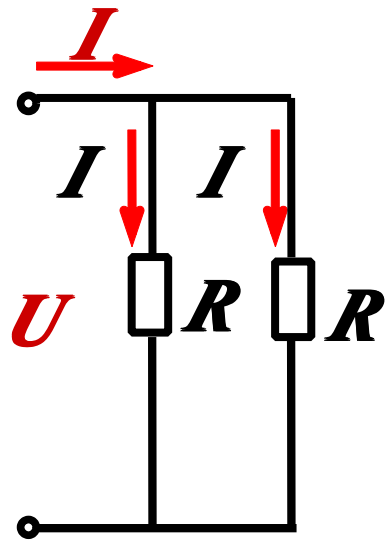
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3



$R \ R \ R$

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



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

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



$U$

$$R'' =$$

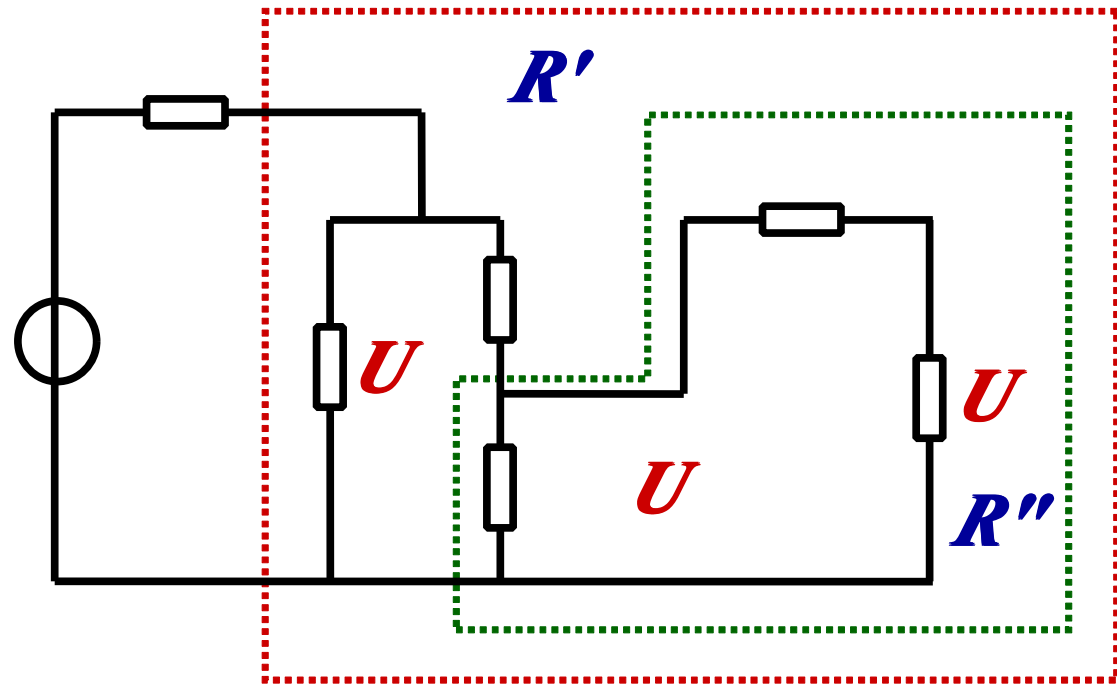
$$R' =$$

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

=

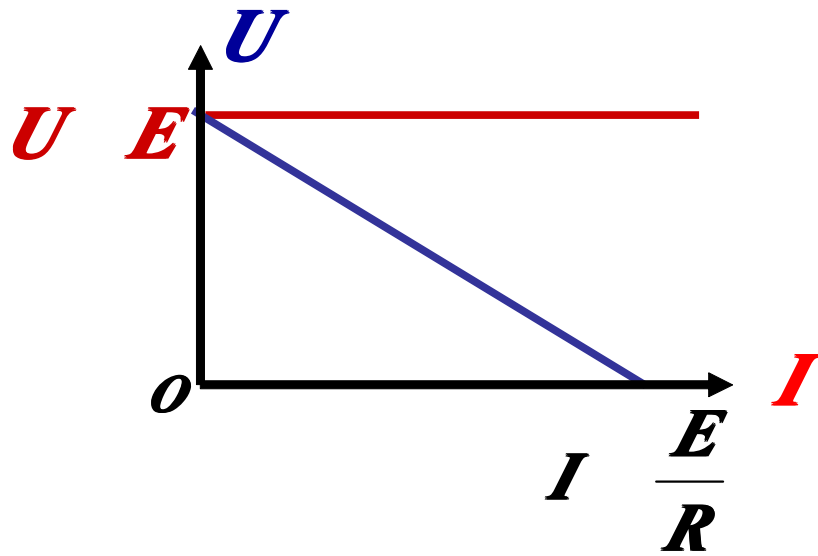
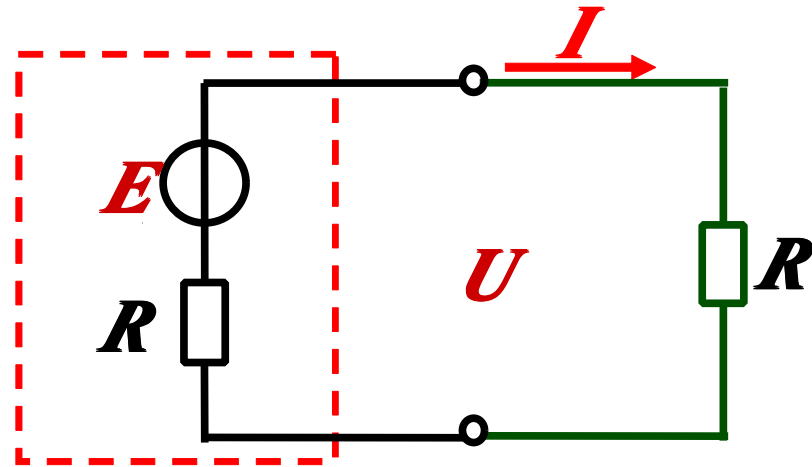
$$U = \frac{R''}{R''} \times U =$$

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





$R$



$$U = E - IR$$

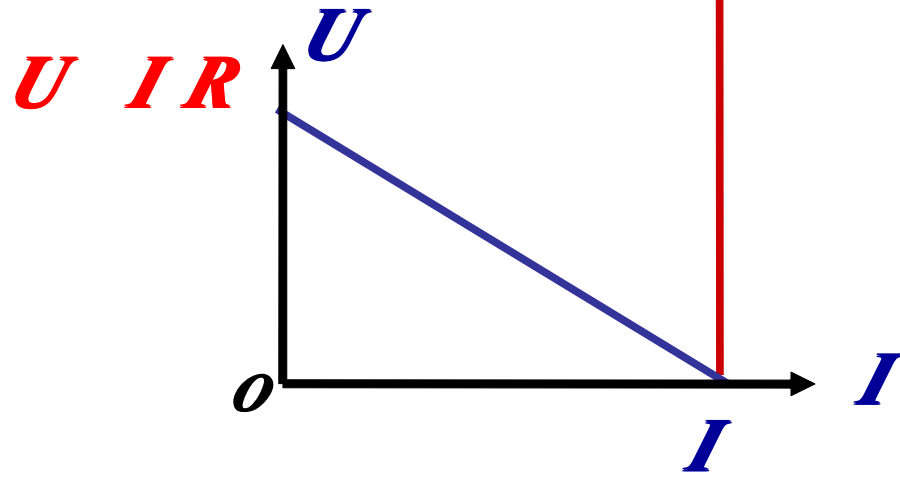
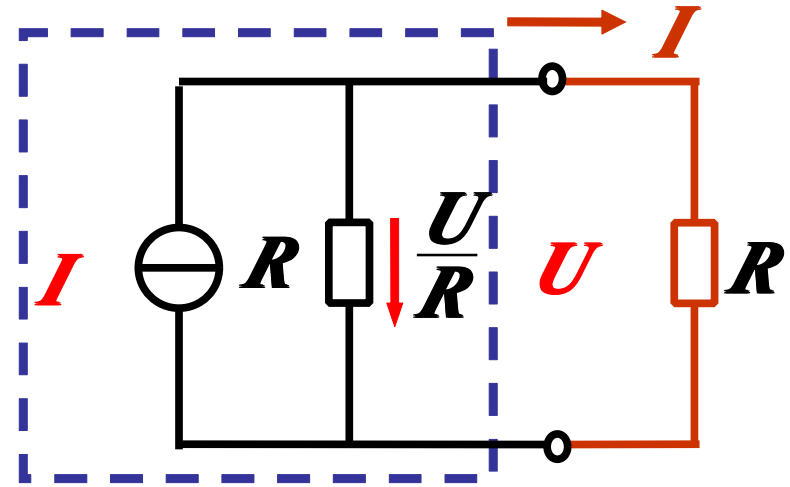
$R$

$U = E$

$R = R$



$R$



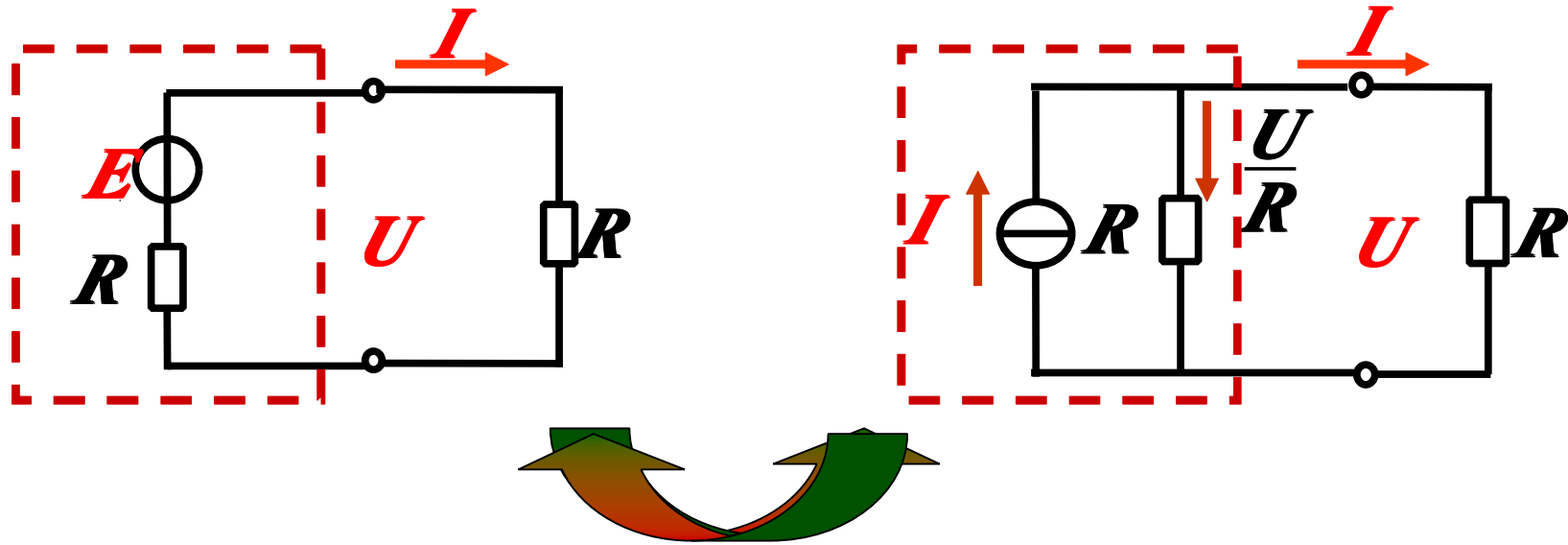
$$I = I - \frac{U}{R}$$

$R$

$I \quad I$

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





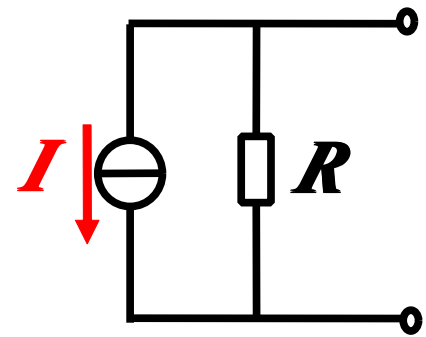
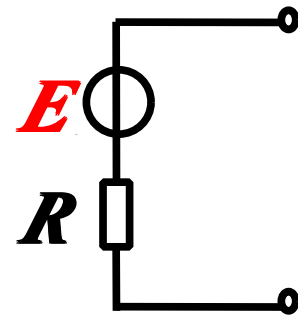
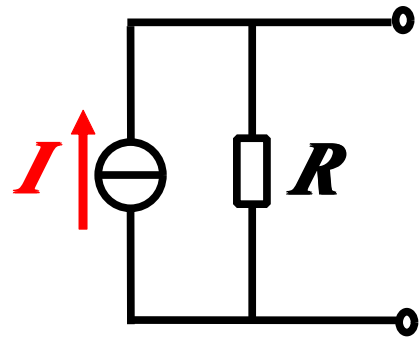
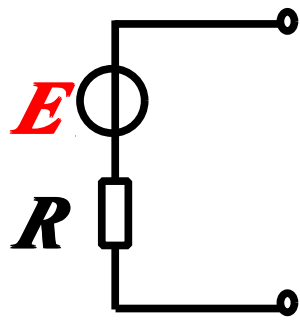
$$U = E - IR$$

$$U = \dots$$

$$= \dots$$

$$= \dots$$

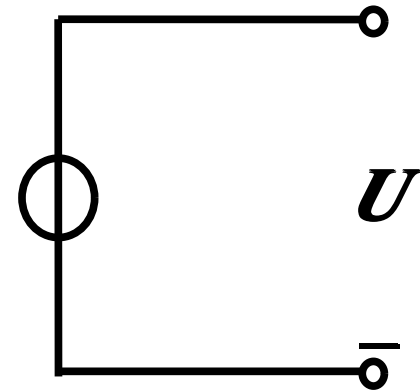
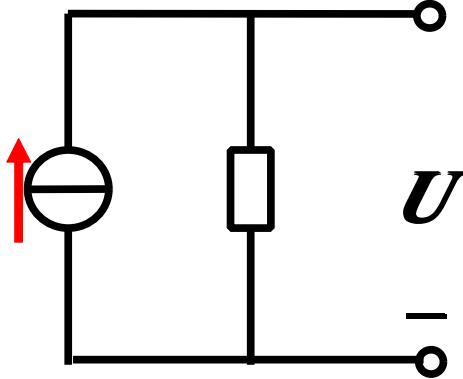
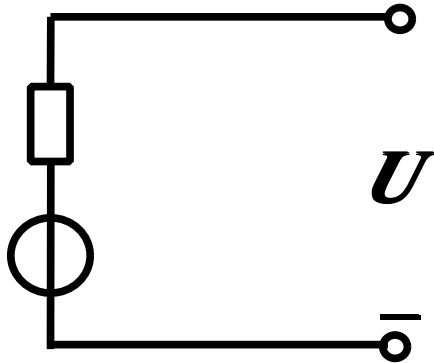
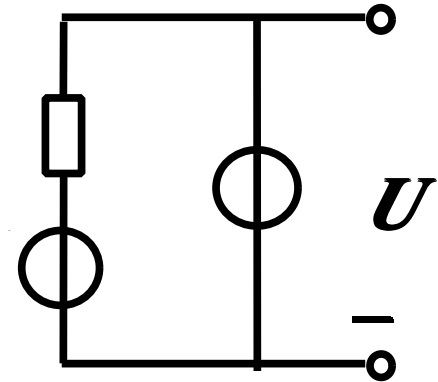
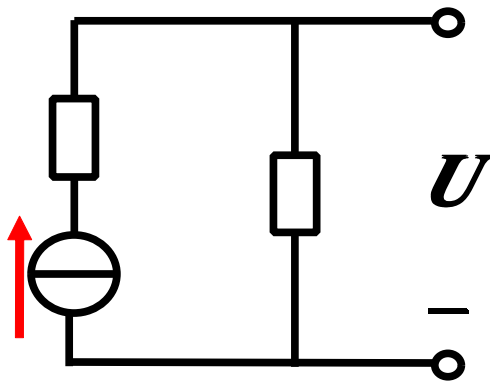
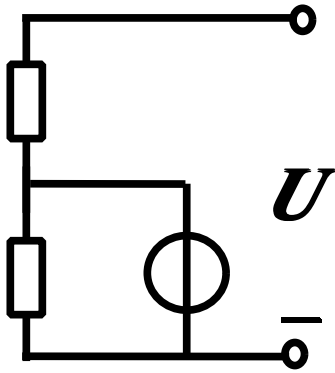
$$\begin{cases} E - IR \\ I = \frac{E}{R} \end{cases}$$

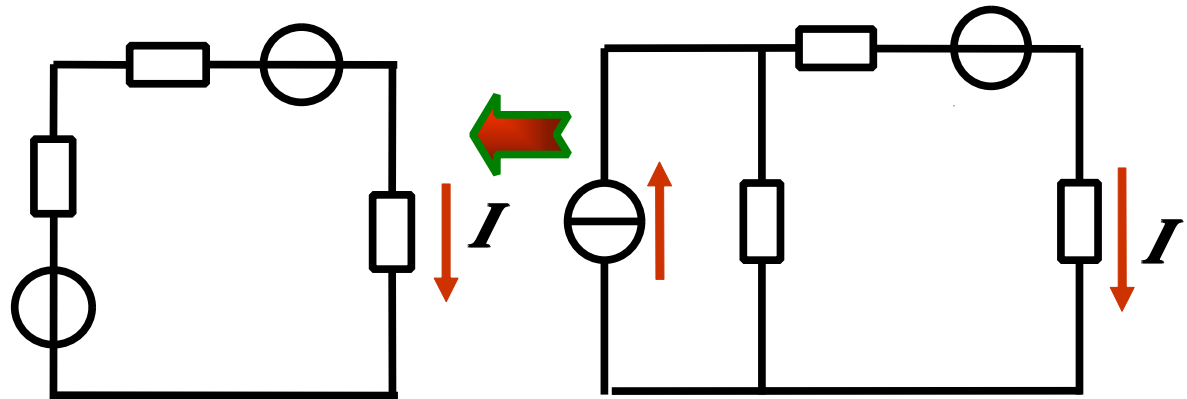
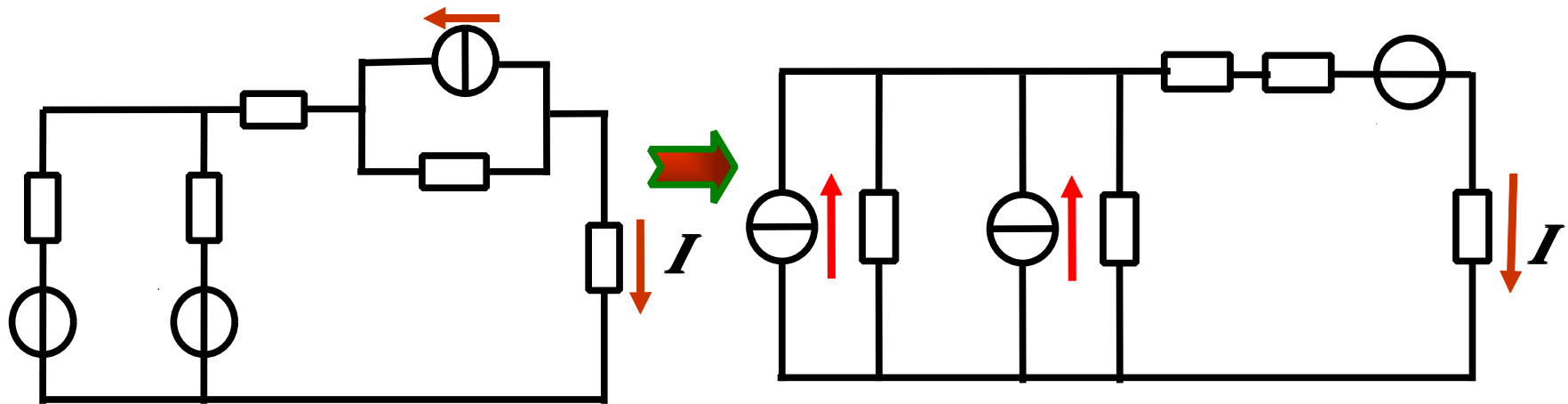


$E$

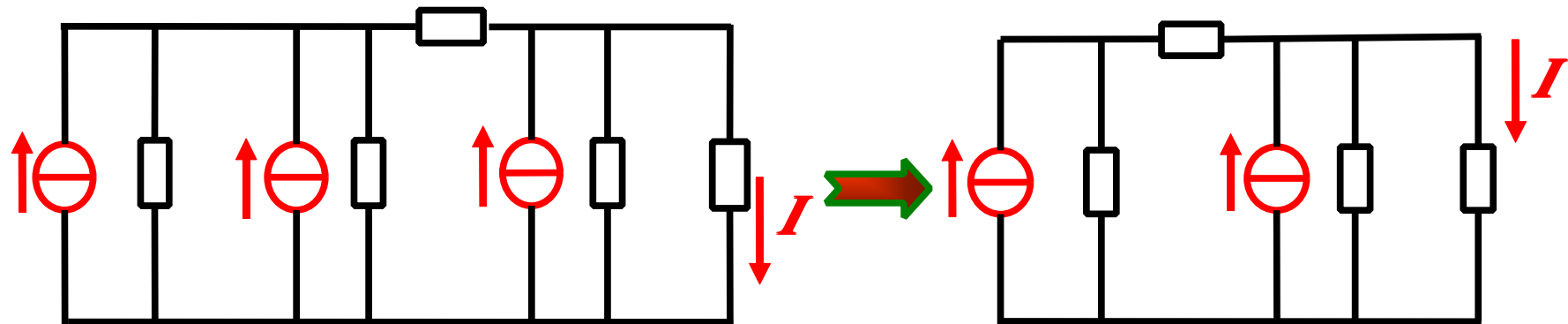
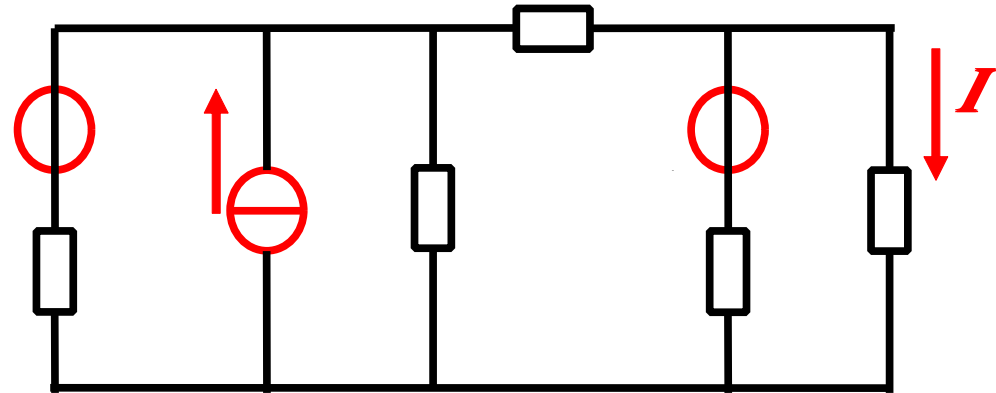
$I$

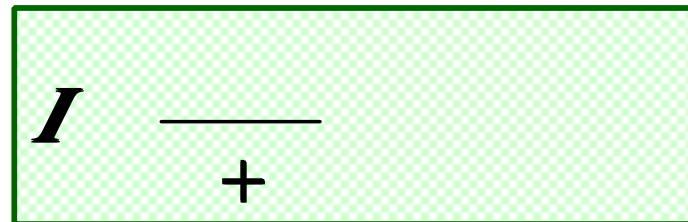
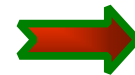
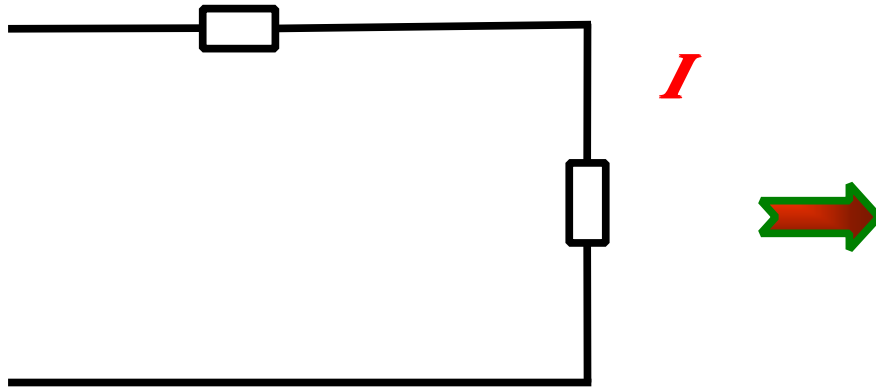
$R$

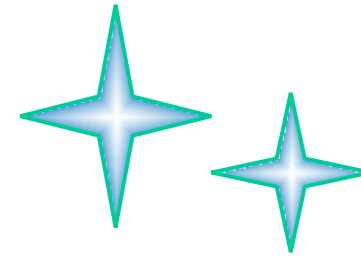




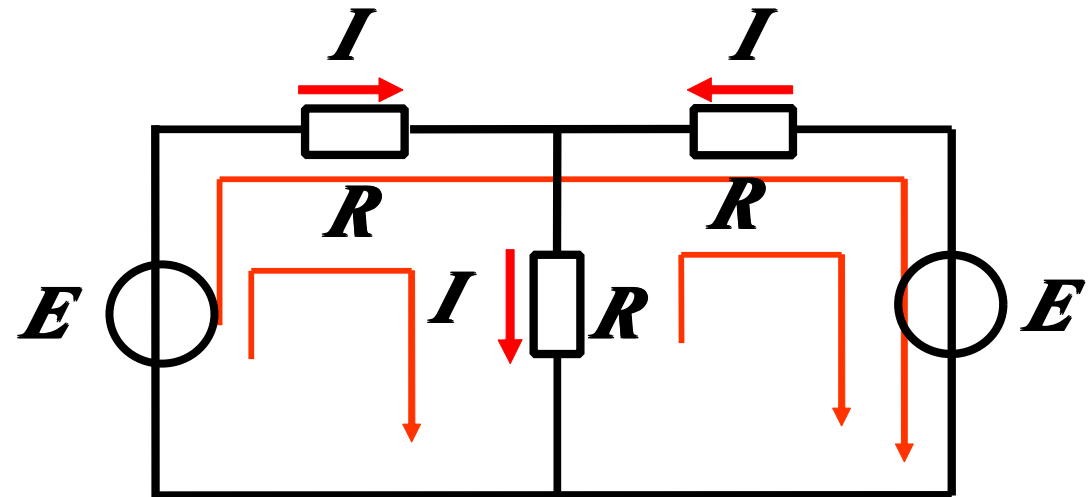
$$I \quad \frac{-}{+ \quad +}$$





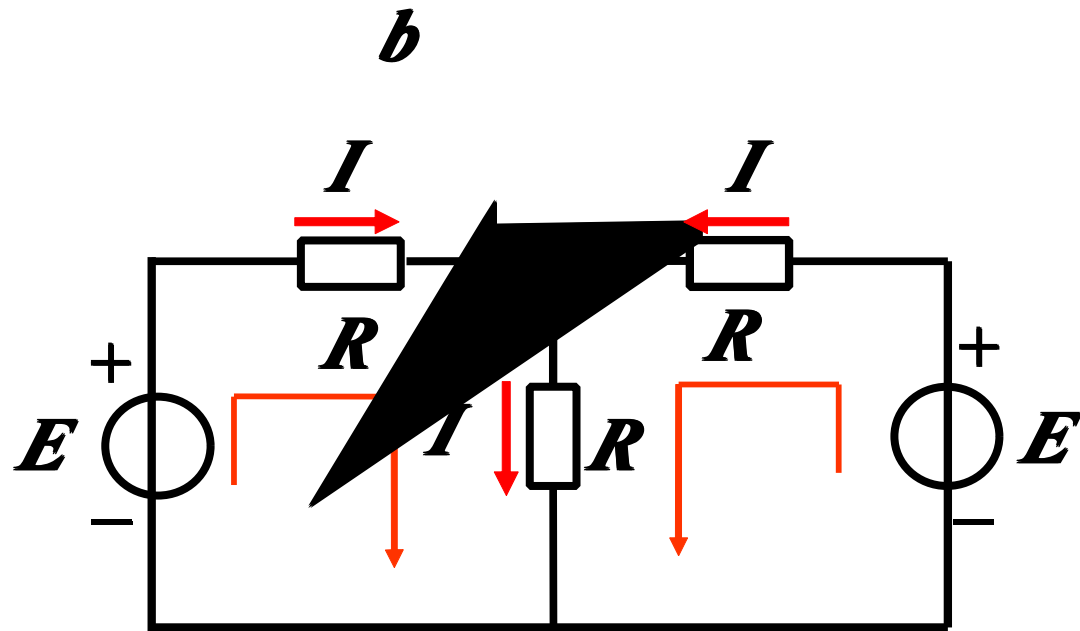


*b*  
*n*



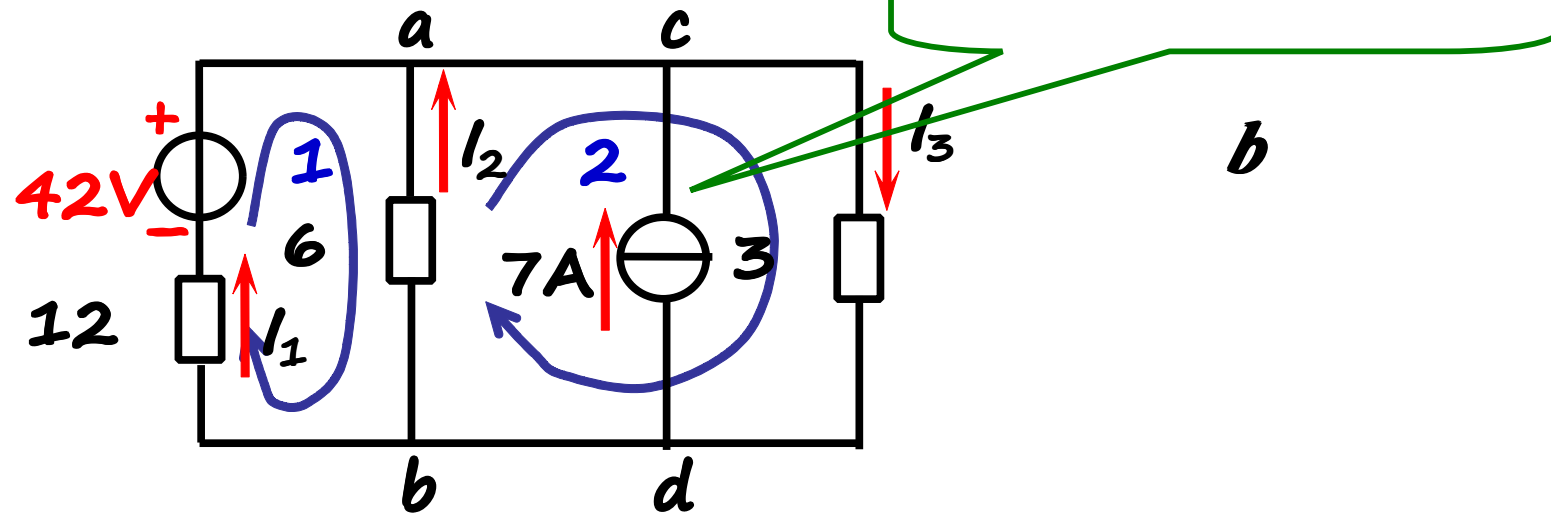


$n$   
 $b \ n$



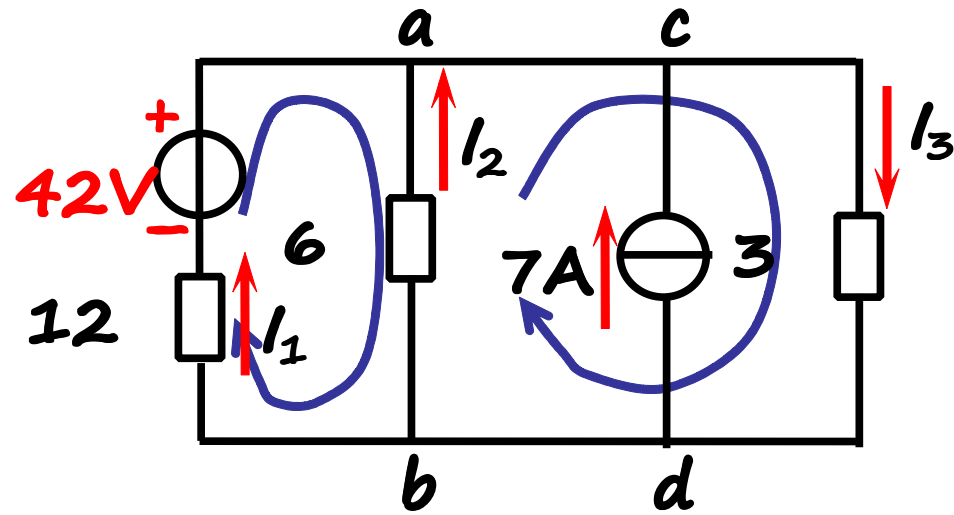
$I \ I \ I$   
 $I R \ I R \ E$   
 $I R \ I R \ E$







*b*



*I I I*

*I I*

*I I*

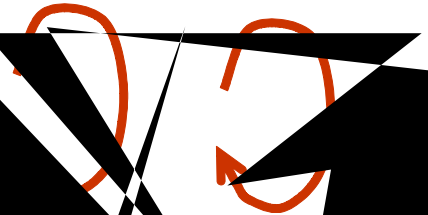
*I I I I*

***b***

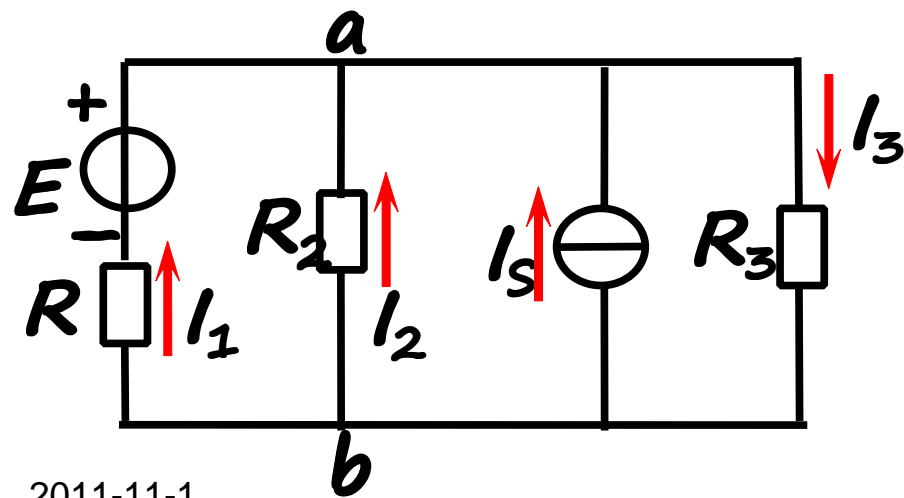




*n*



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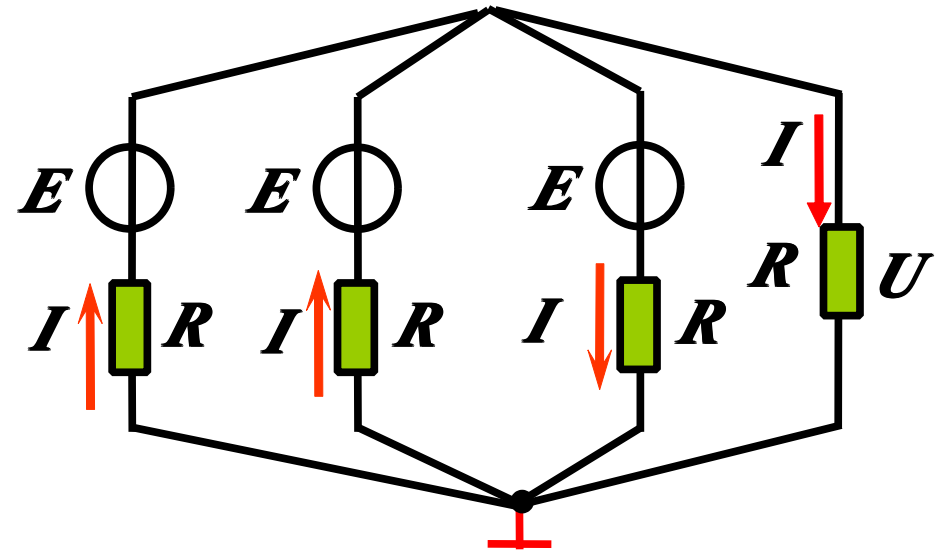
$V$

$U$

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

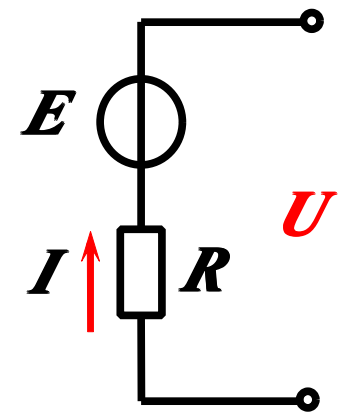
$$I = \frac{E - U}{R}$$

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



$$U = E - IR$$

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





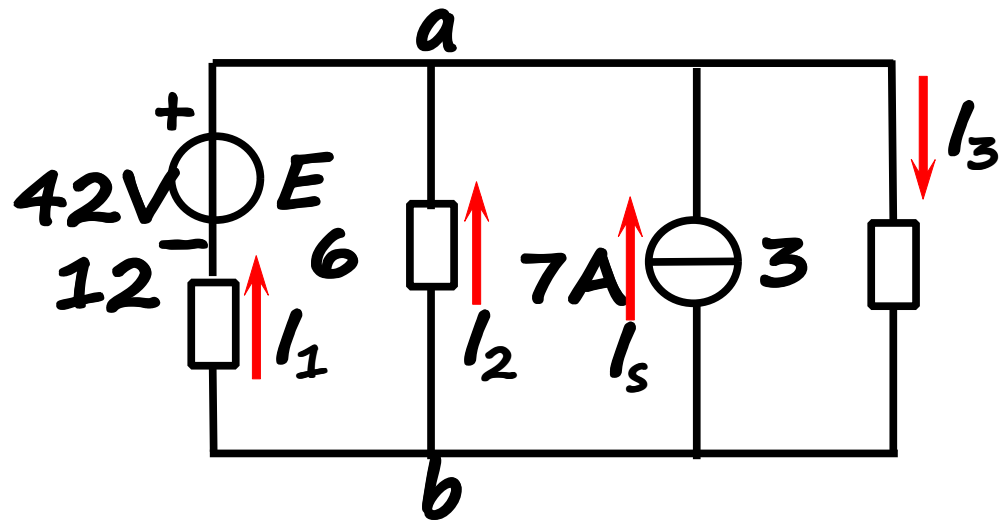
$$\frac{-}{-} + \frac{-}{-} - \frac{-}{-} + \frac{+}{-} - - =$$

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

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

*E*

$U$



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

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

$I \quad U$

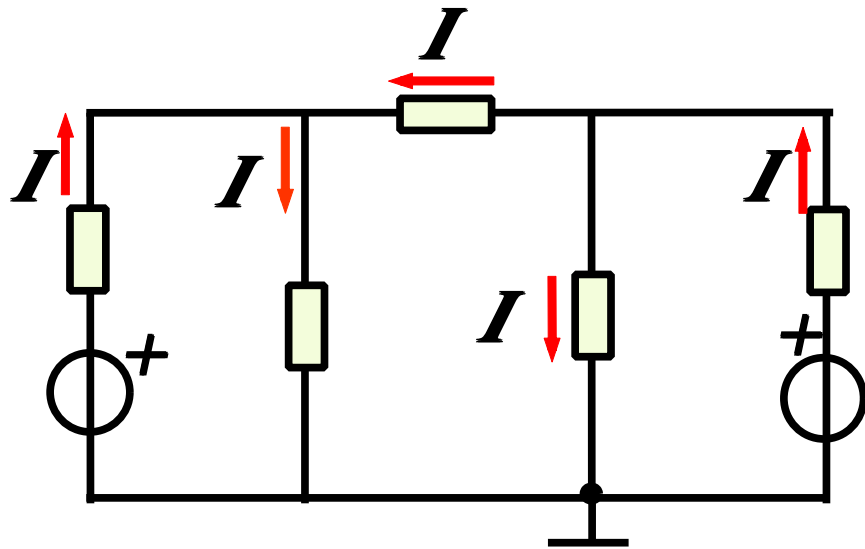
$$I = \frac{U}{-}$$

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

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

$$- + - + -$$





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

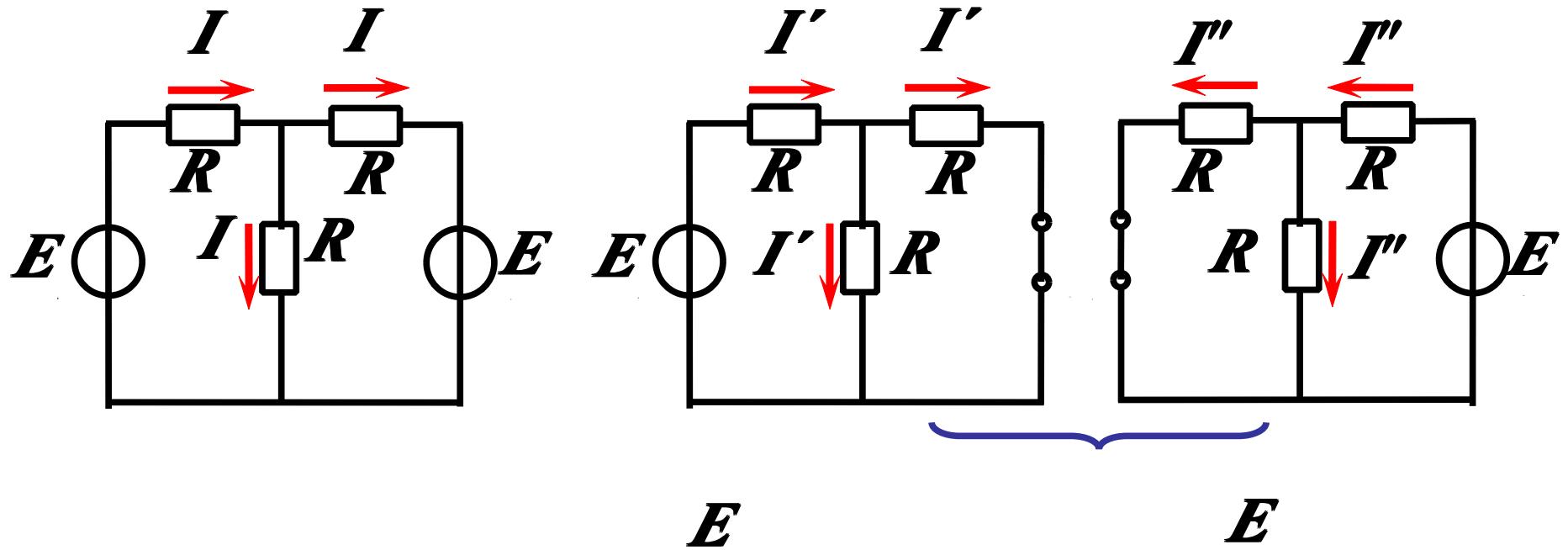
$$\begin{cases} V & V & V \\ V & & V \end{cases}$$

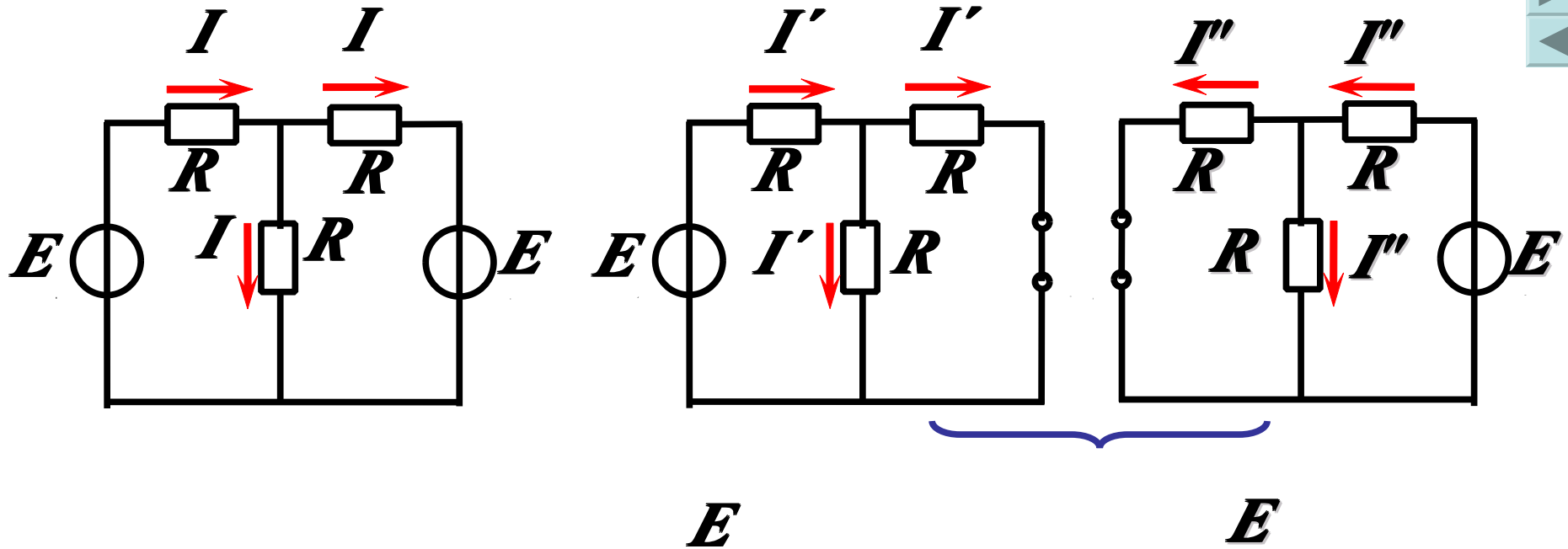
$$I \frac{-V}{\quad} \quad I \frac{V}{\quad}$$

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

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

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



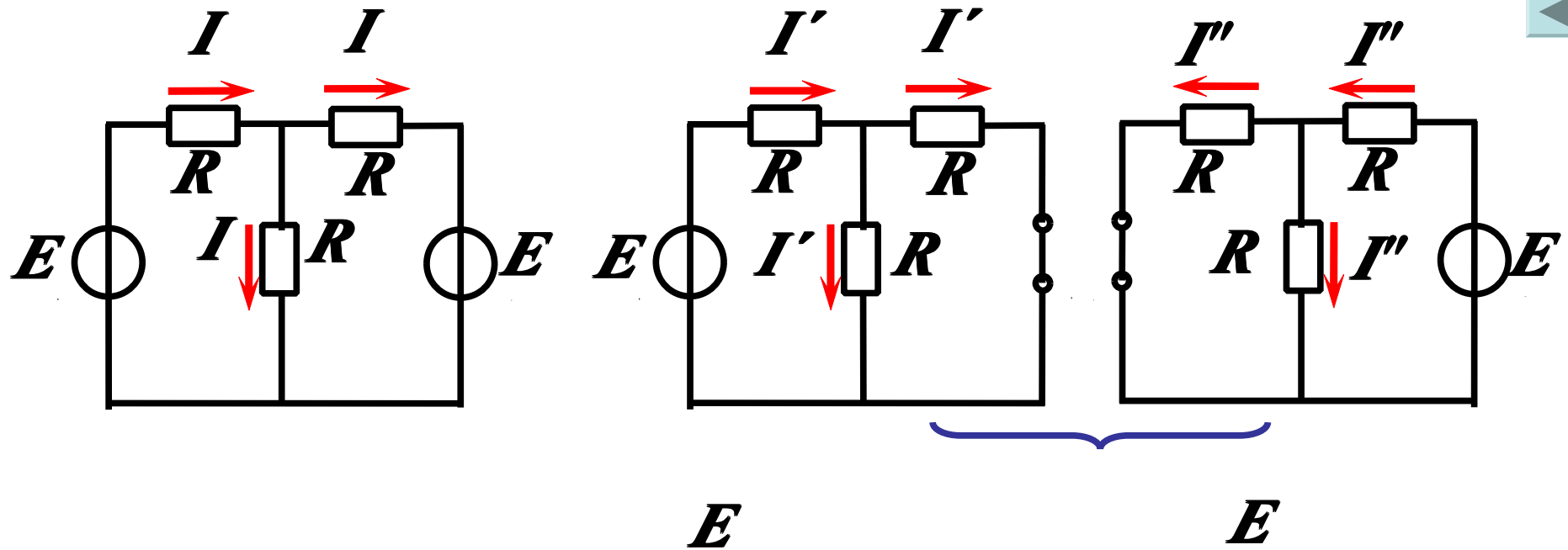


$E$

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

$E$

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





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

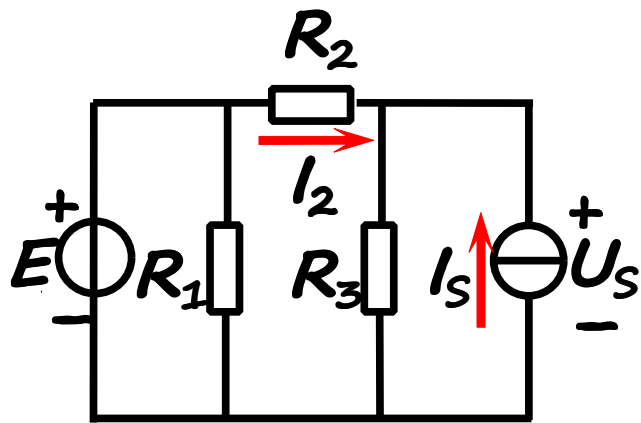
***E***

***I***

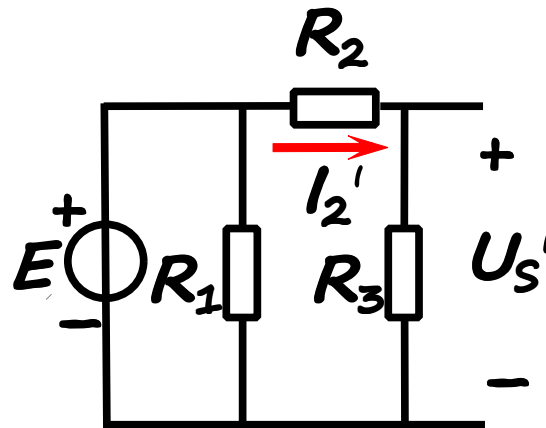


$$R = R = \frac{U}{I}$$

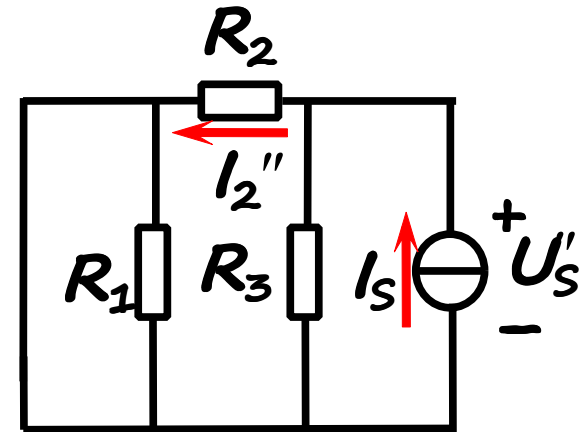
$$E = \frac{I}{R} \quad R = \frac{U}{I}$$



(a)

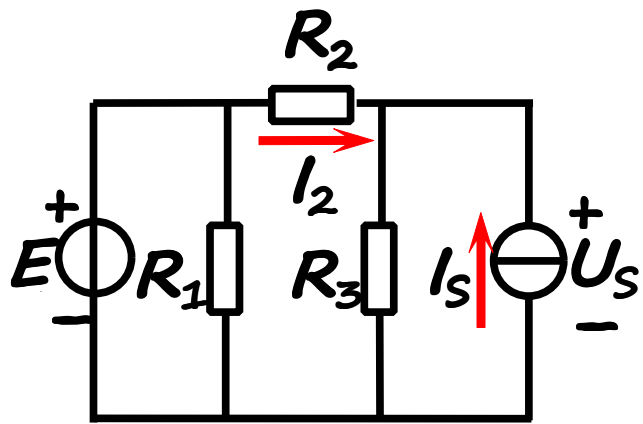


$E$

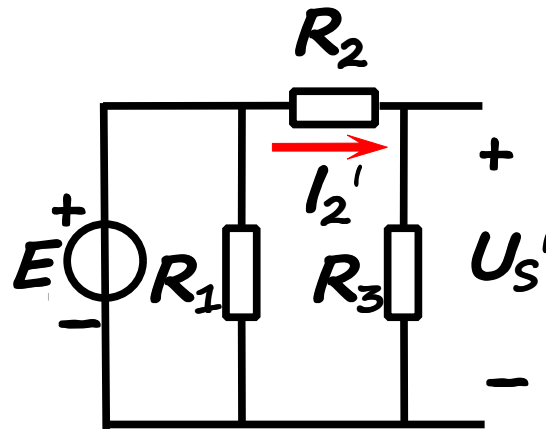


$I$

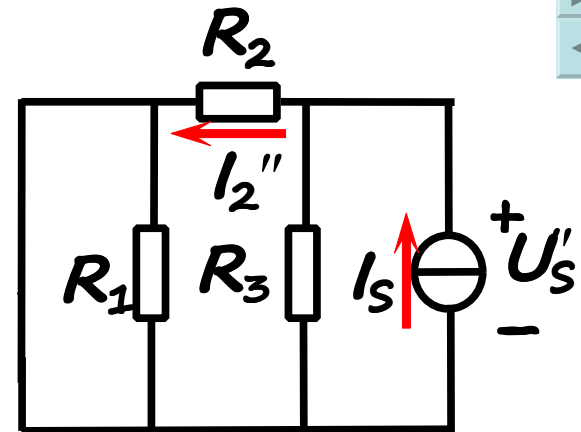
$$I = \frac{E}{R + R} \quad U = I R$$



(a)



(b)  $E$



(c)  $I_s$

$$\begin{array}{r}
 I \\
 \frac{R}{R+R} I \\
 \text{"} = \text{"} = \times = \\
 I \quad I - I \\
 U \quad U + U
 \end{array}
 \begin{array}{r}
 \text{---} \\
 + \\
 \\
 - \\
 +
 \end{array}$$

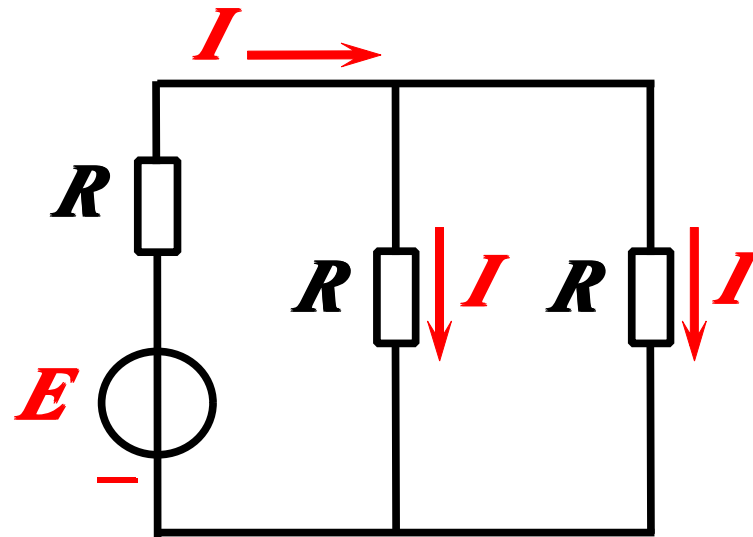






***k***

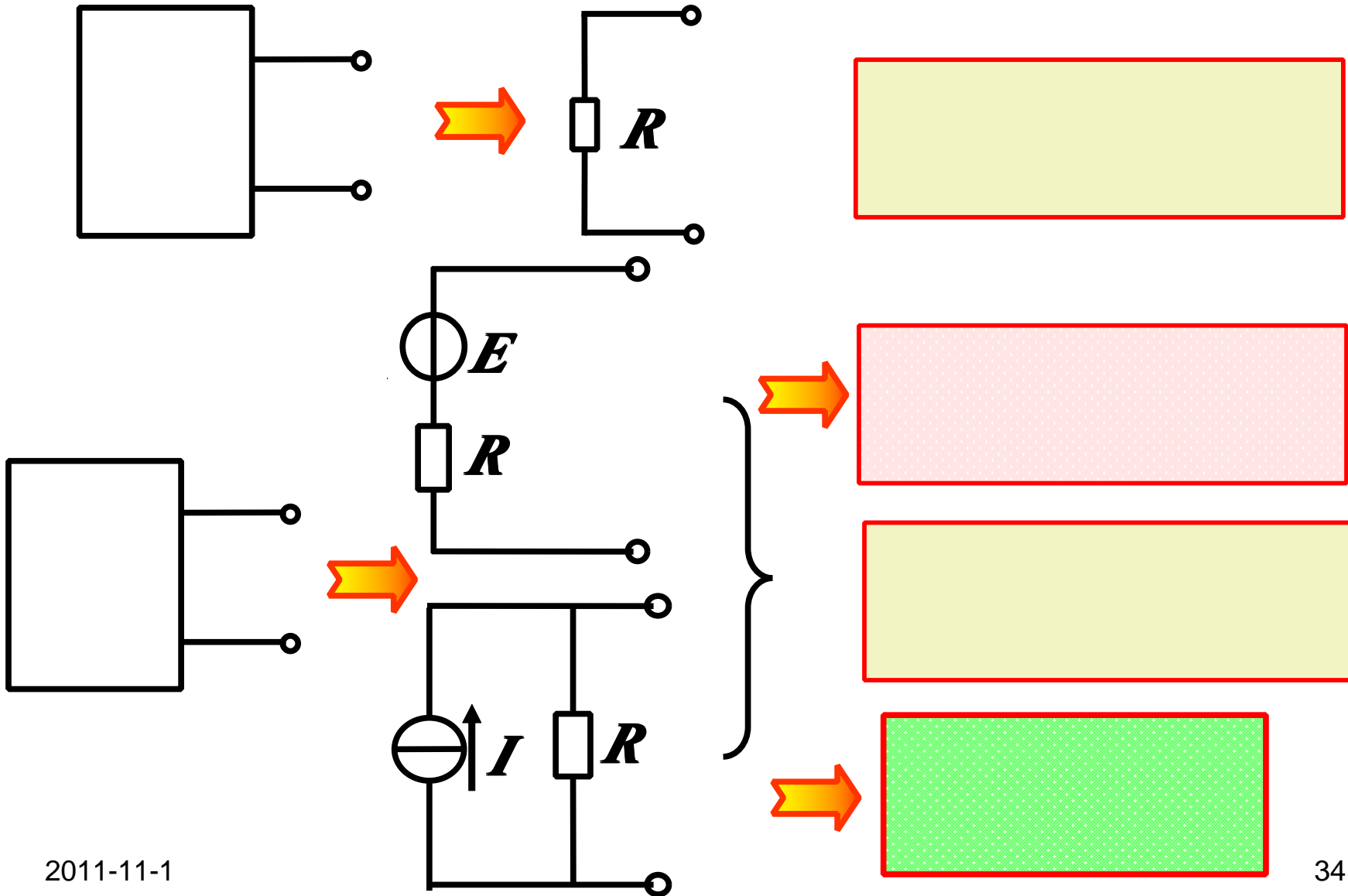
***k***



***E***

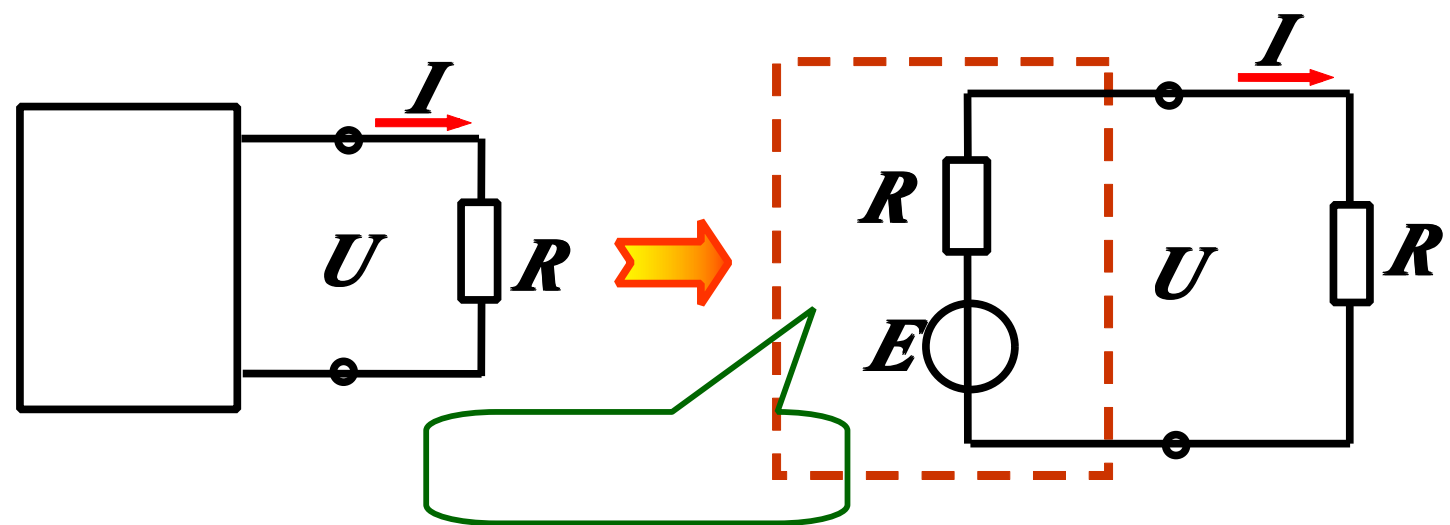
***n***

***n***



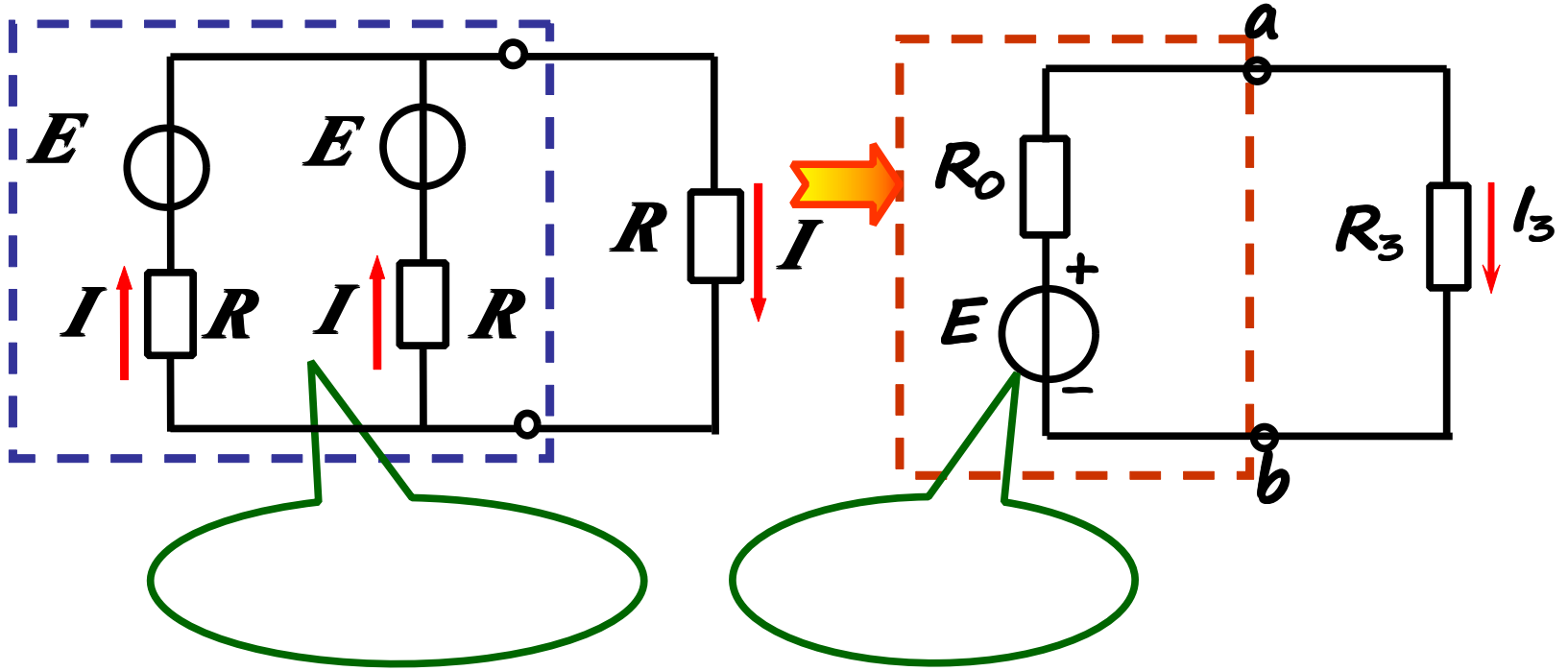


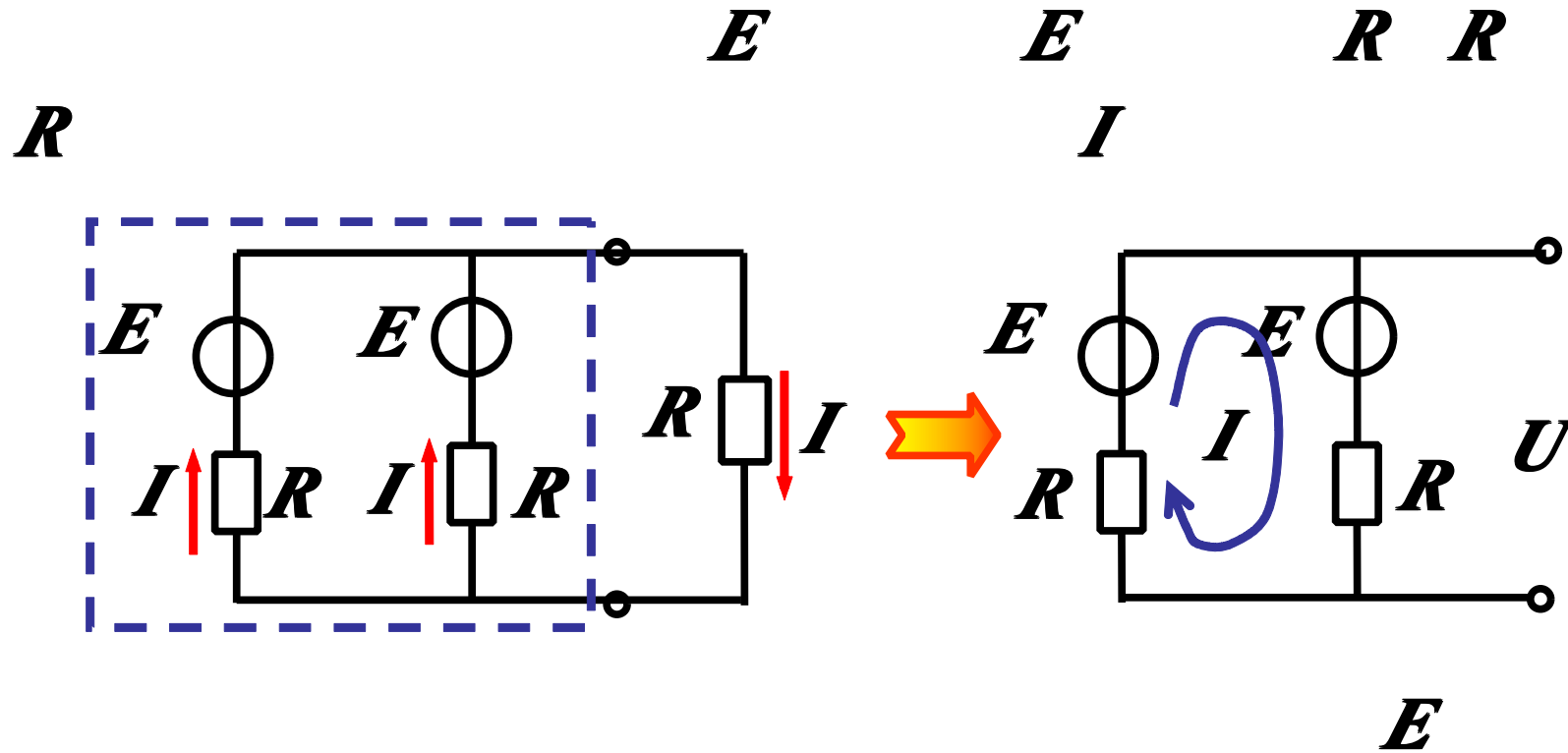
$E$   $R$   
 $U$   $E$   
 $R$





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





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

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

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

***E***



$R$

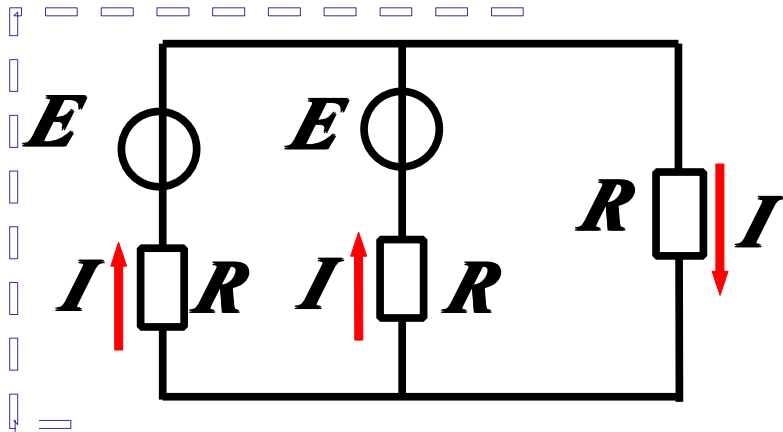
$E$

$E$

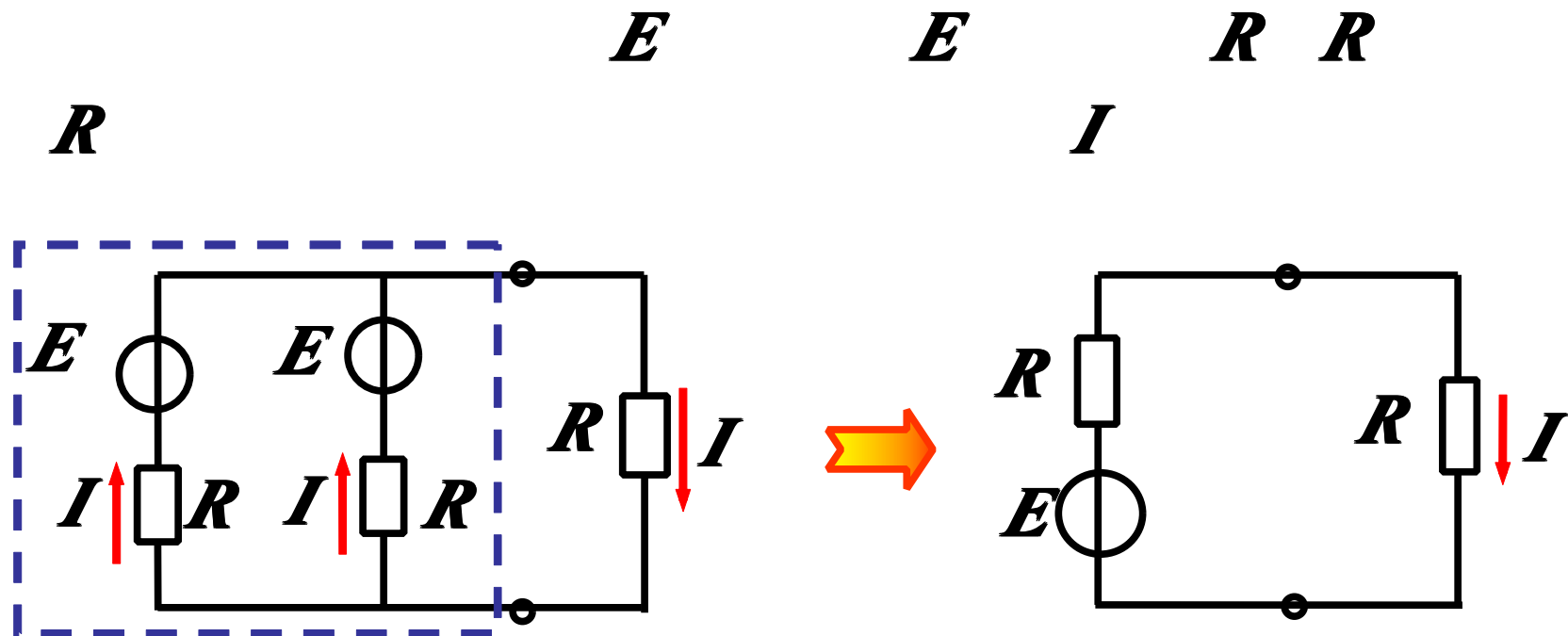
$R$

$R$

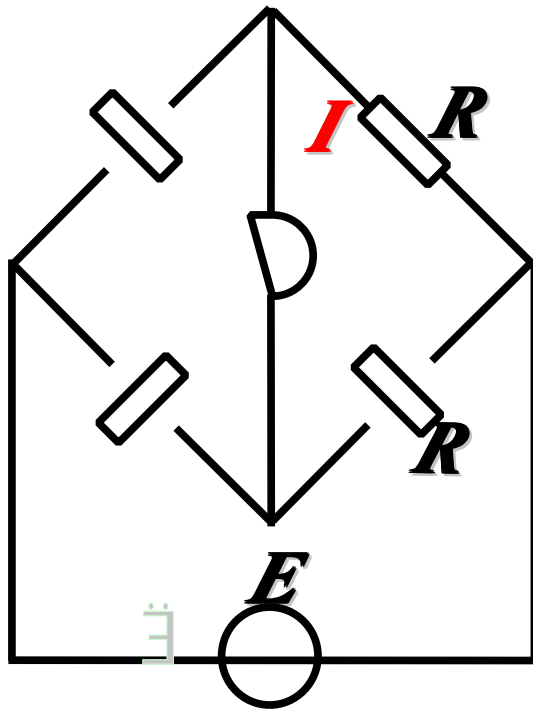
$I$



$R$

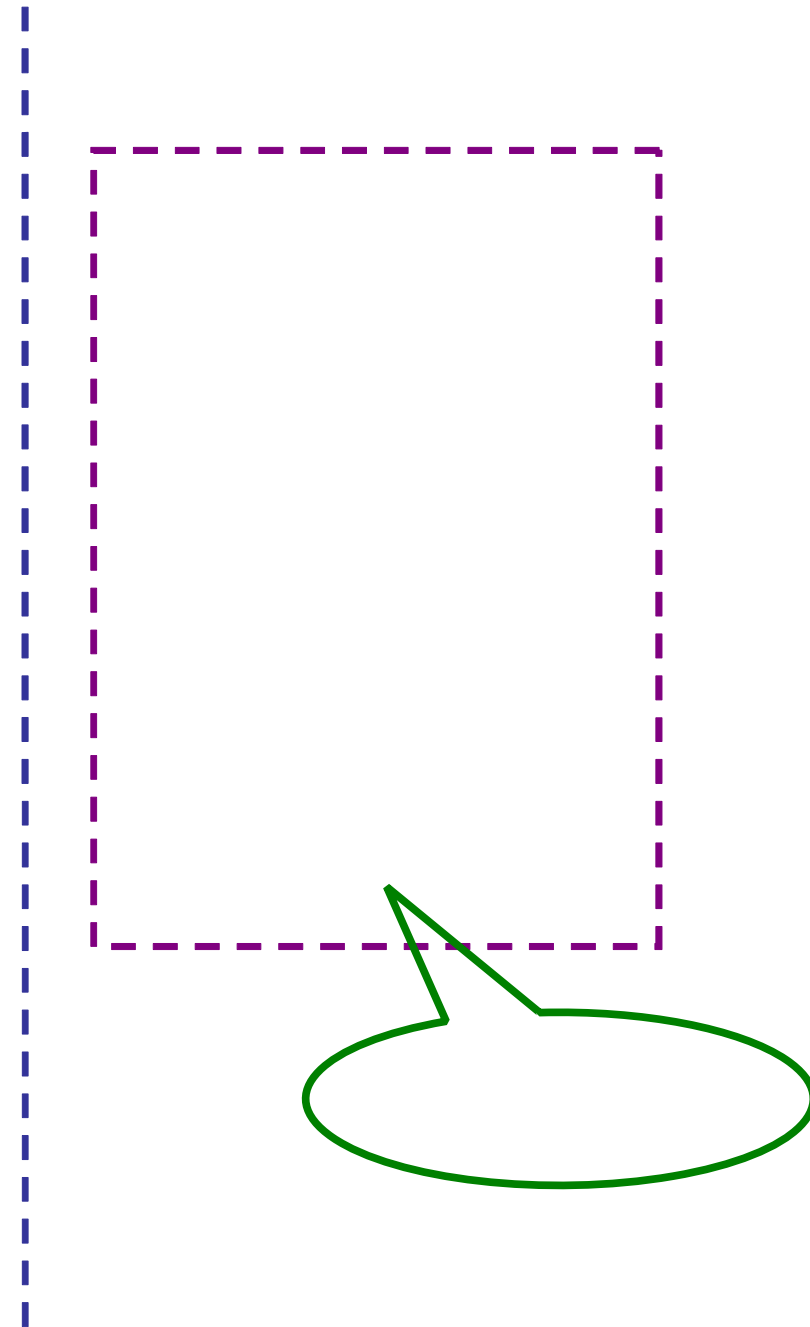


$$I = \frac{E}{R + R} = \frac{E}{2R}$$

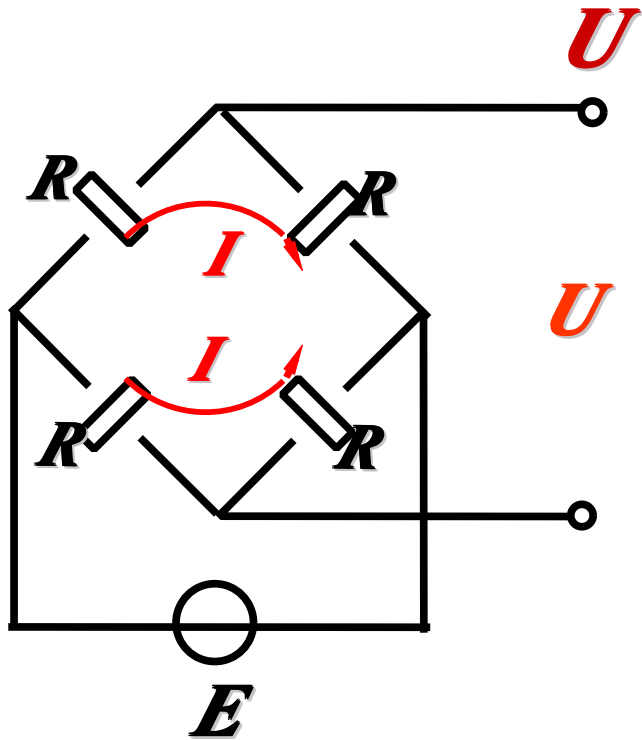


$R$                        $R$   
 $R$                        $R$   
 $E$                        $R$

$I$





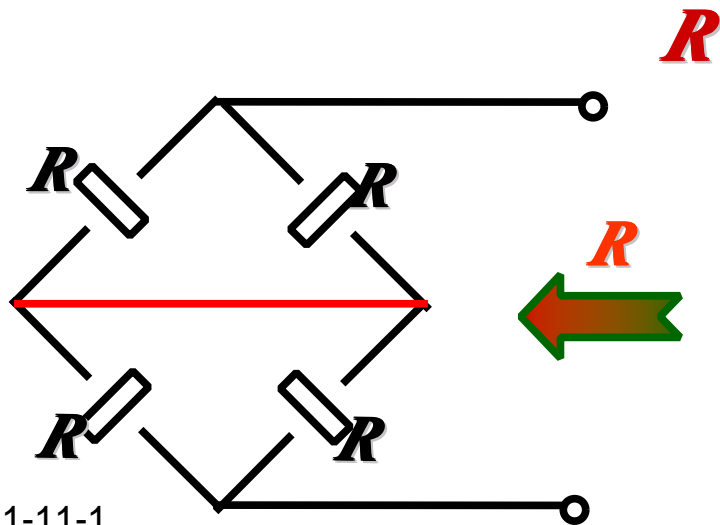


$$I = \frac{E}{R+R}$$

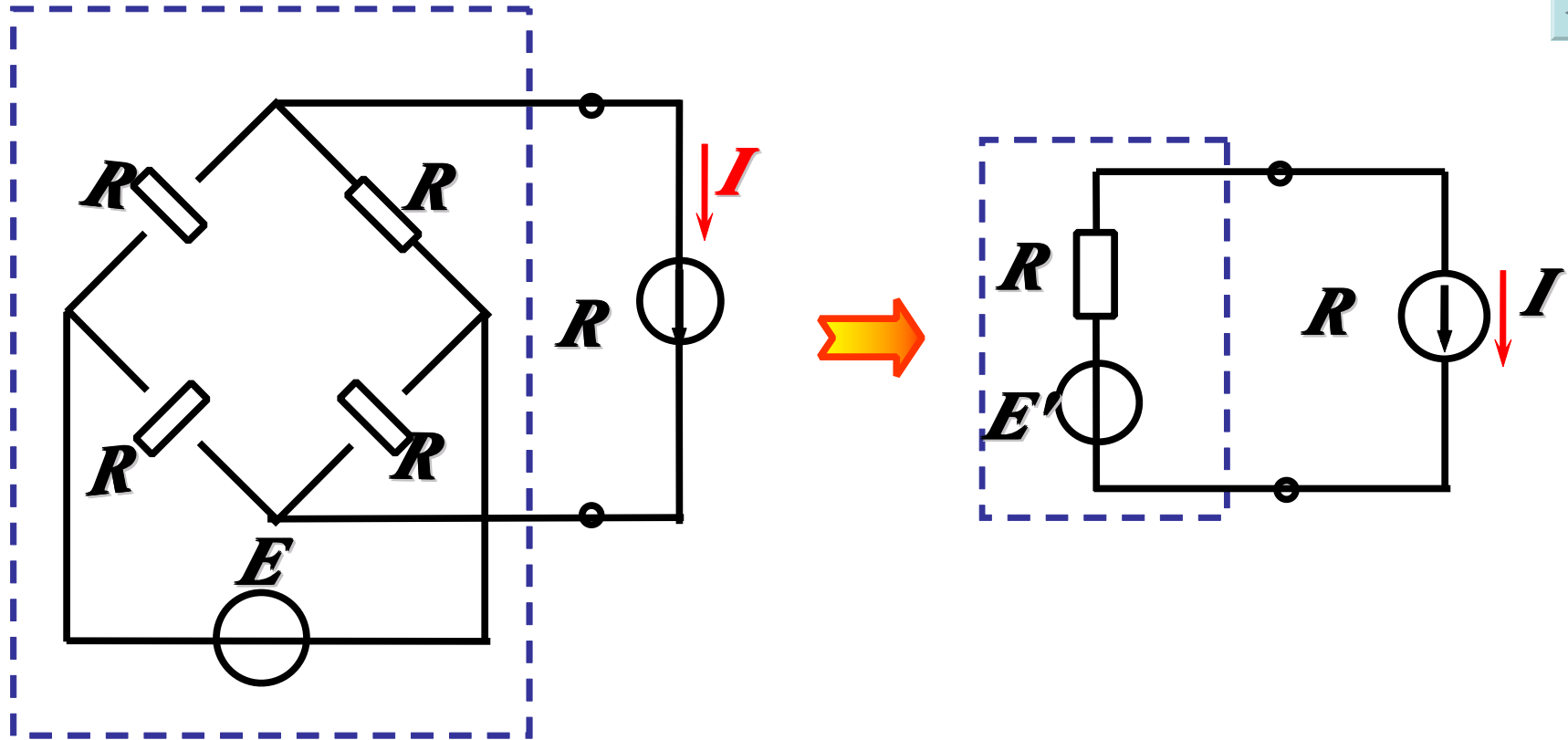
$$I = \frac{E}{R+R}$$

$$E' = U - IR - IR$$

$$E' = U - IR - IR$$



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



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

$I$



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

$U$

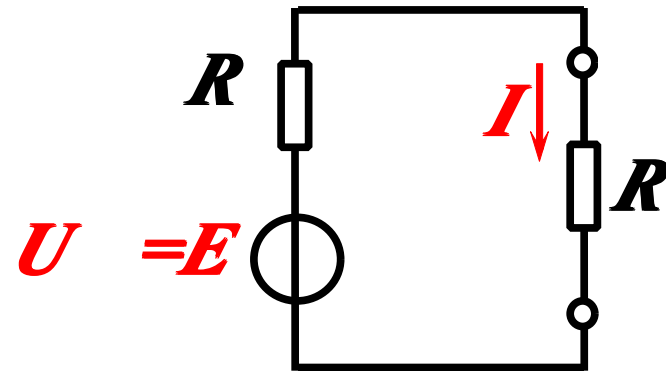
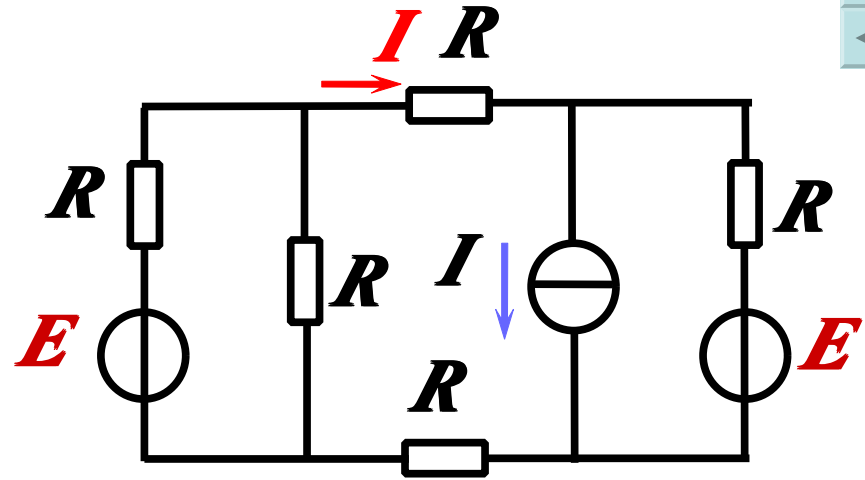
$I$   $\frac{E}{R}$   
 $U$   $IR$   $E$   $IR$

$R$

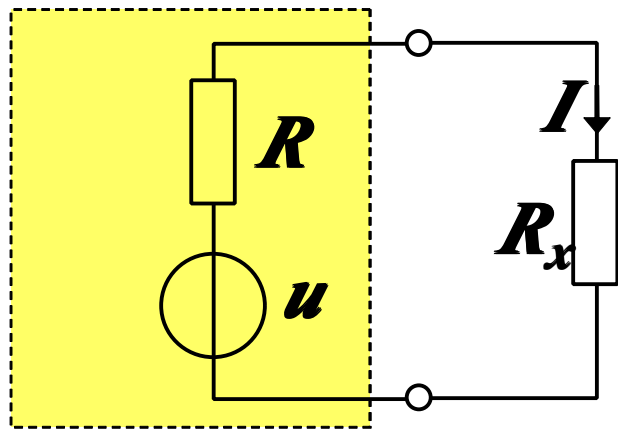
$R = R$   $R$   $R$   $R$

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

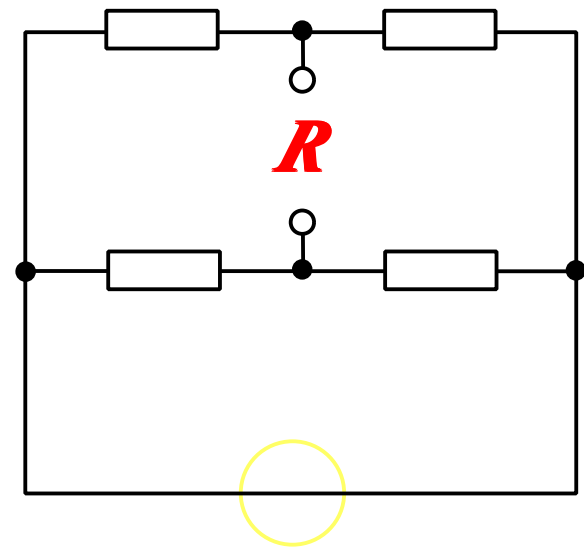
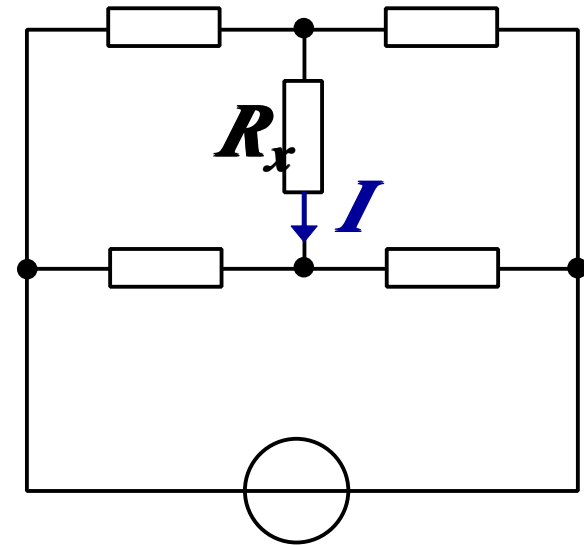
$I$



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

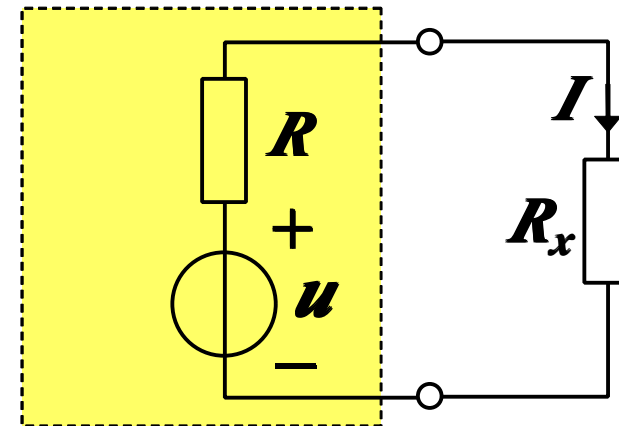
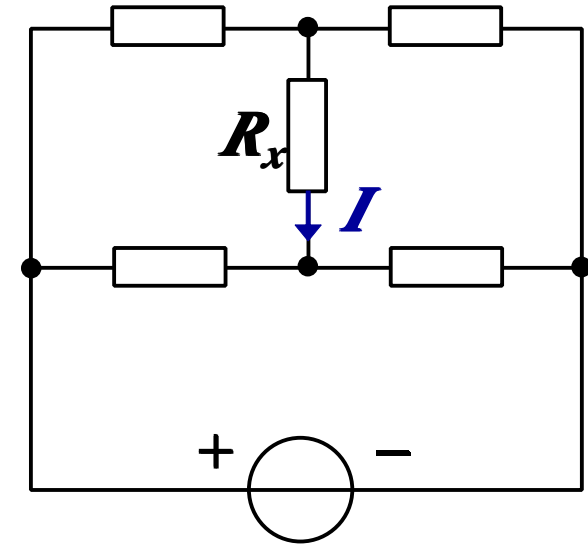


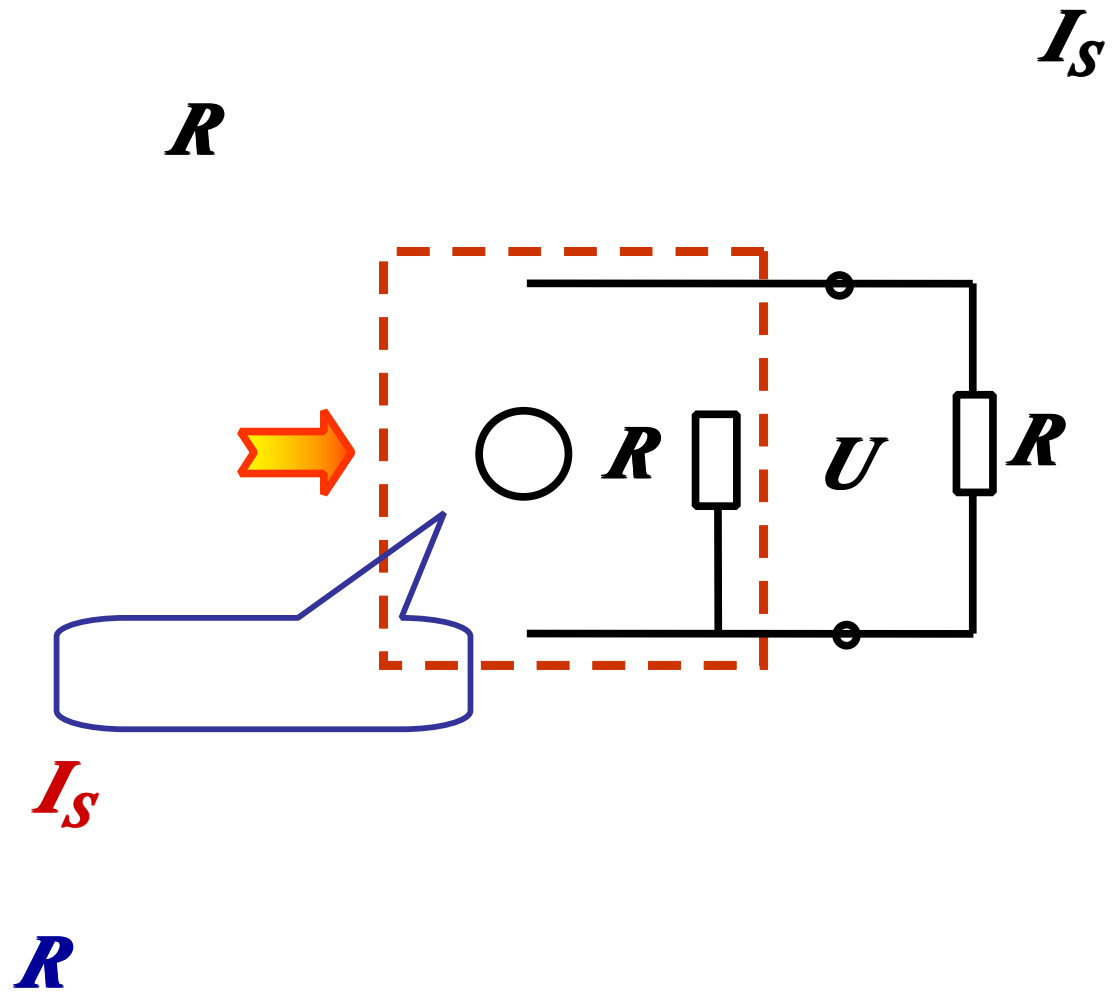
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$$I = \frac{U}{R + R_x} \quad \text{---}$$

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



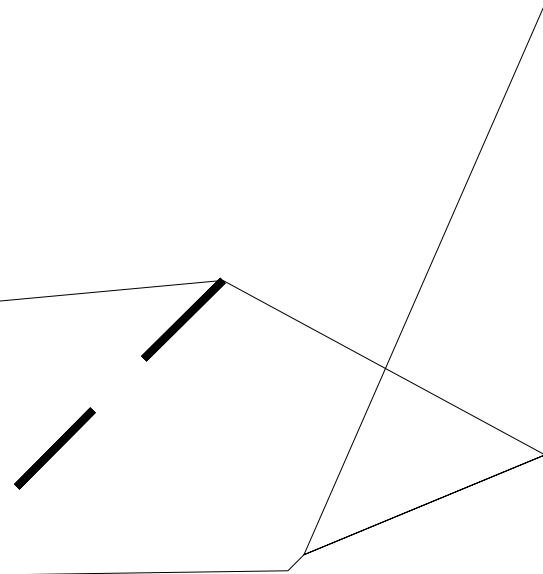
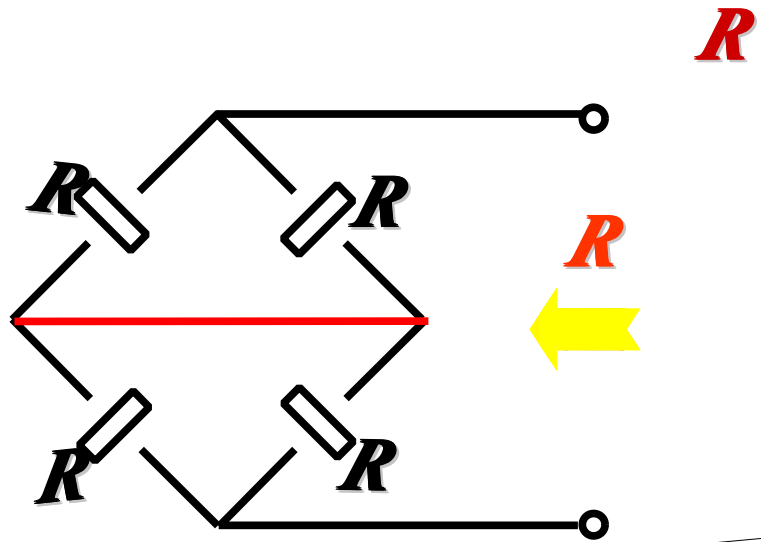


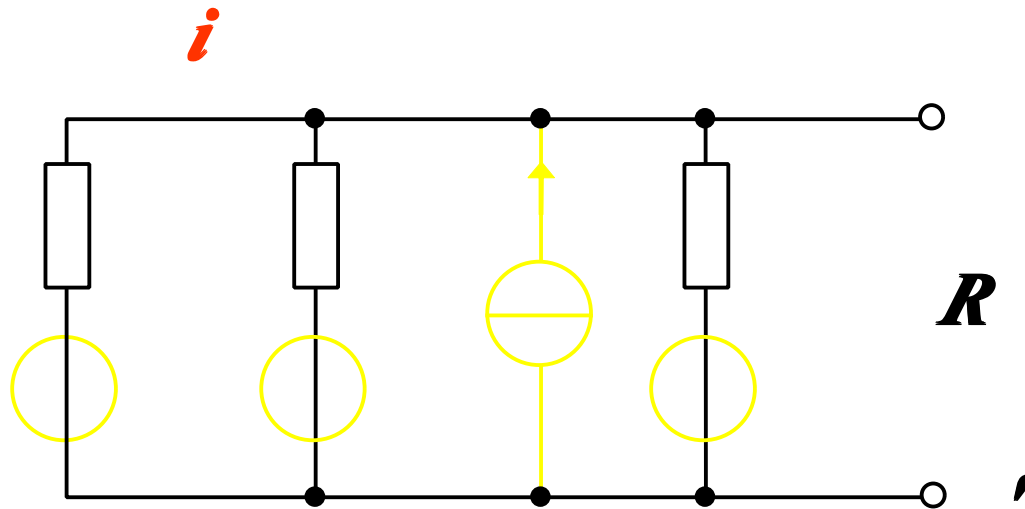
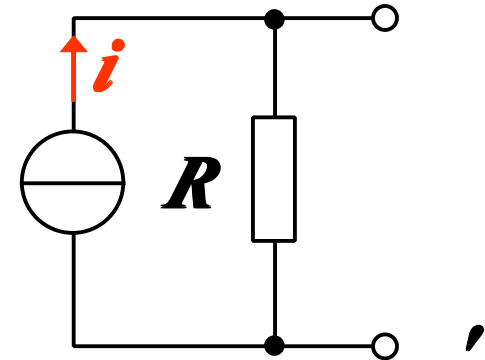
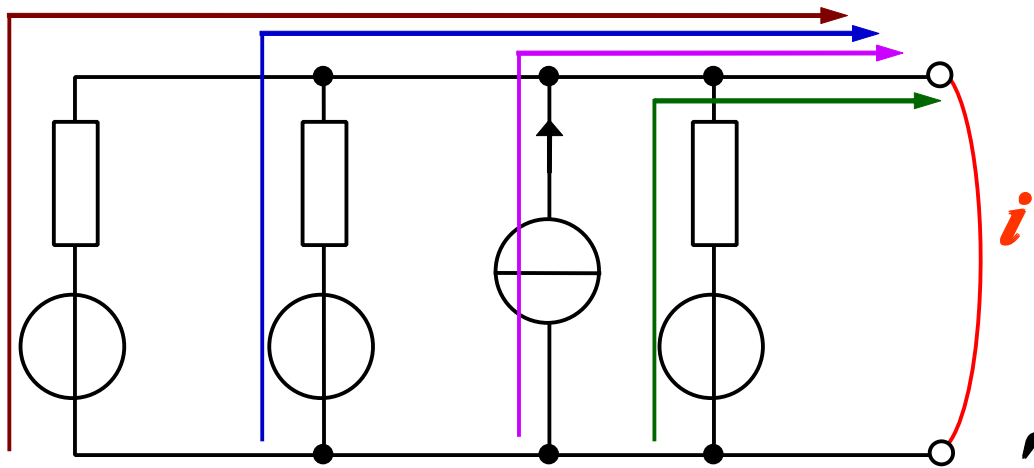


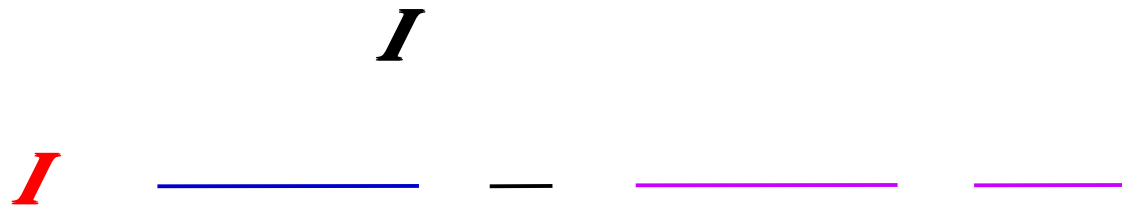
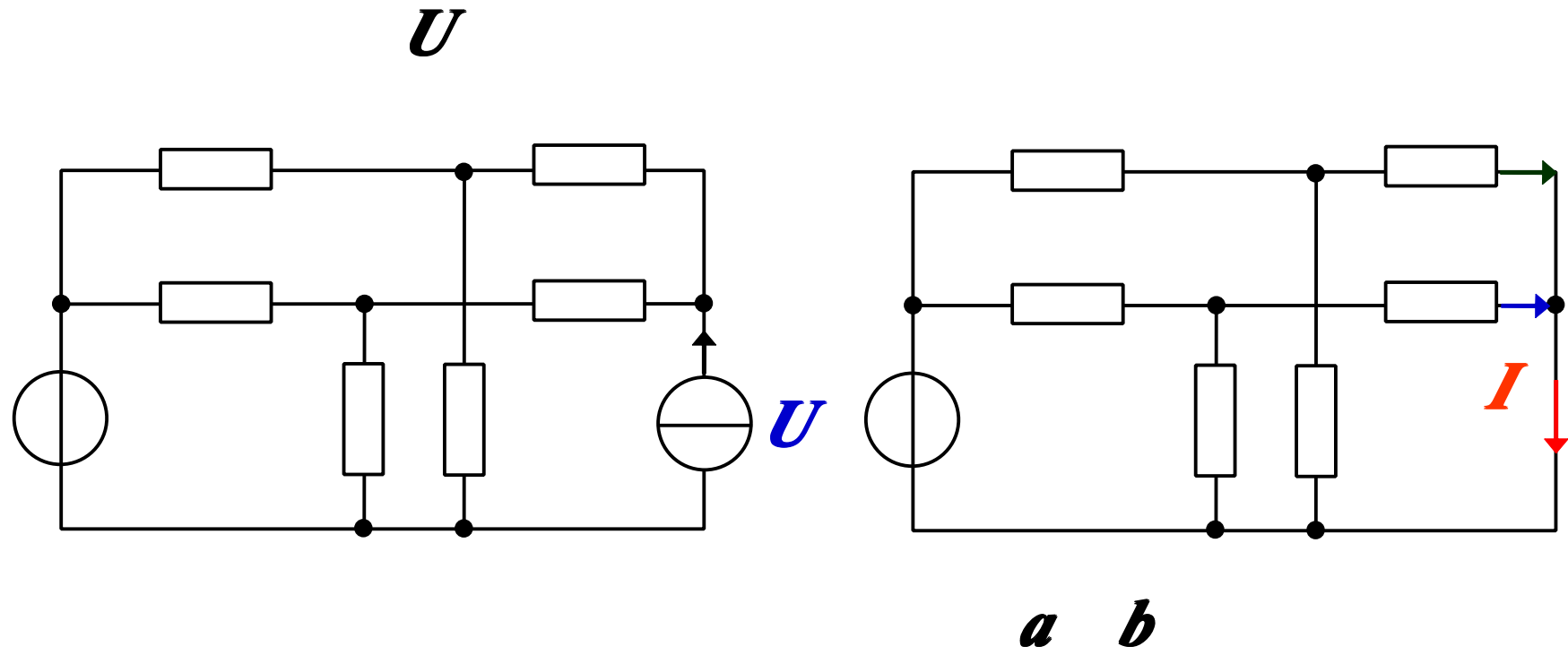
*R*            *R*  
*R*            *R*  
*E*            *R*  
  
*I*







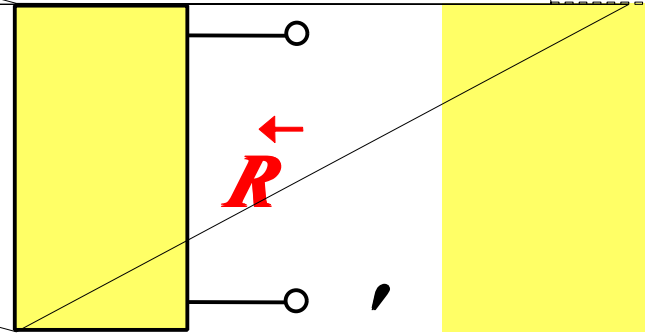








$R$



$R$

