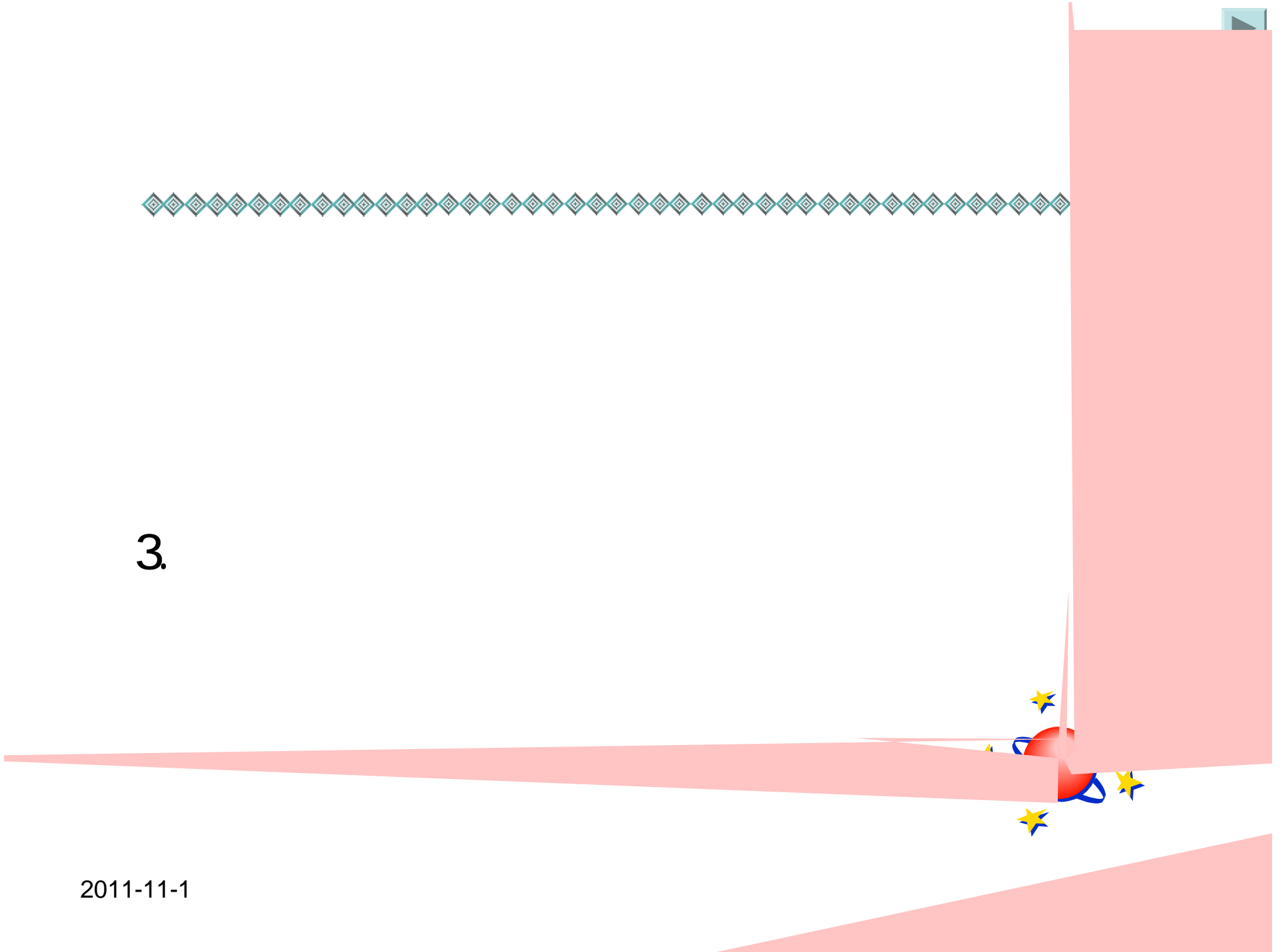




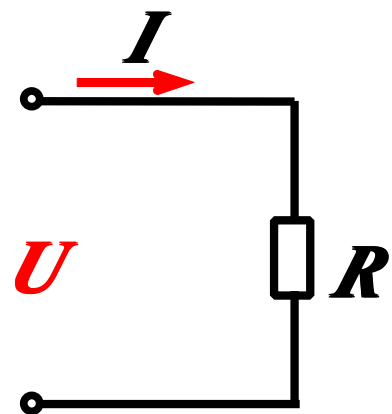
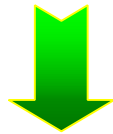
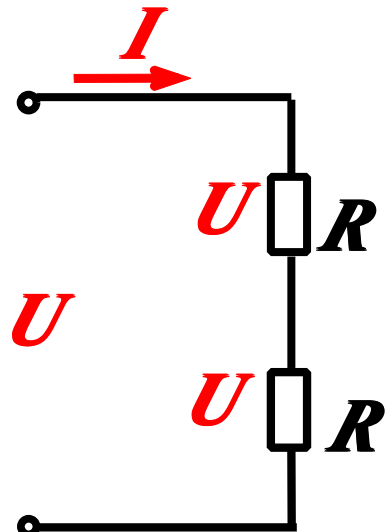


3.

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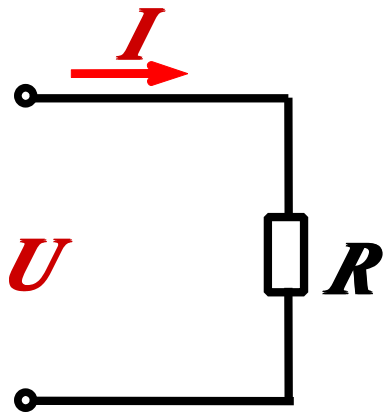
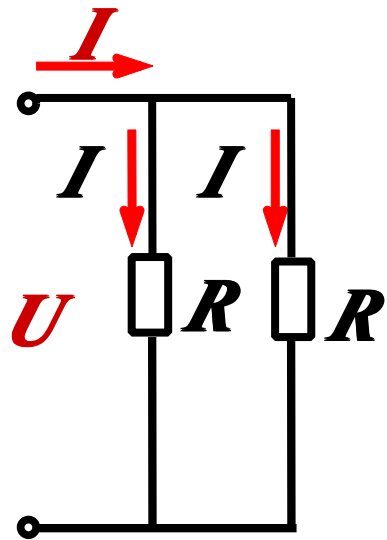






$R \ R \ R$

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



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

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



U

$$R'' =$$

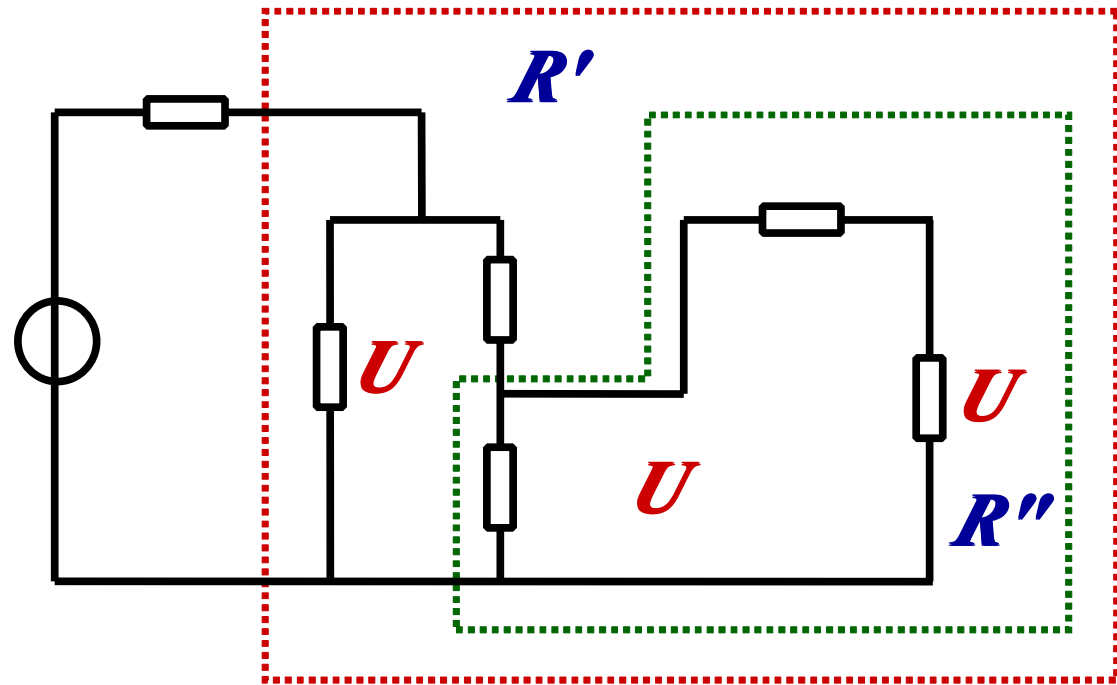
$$R' =$$

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

=

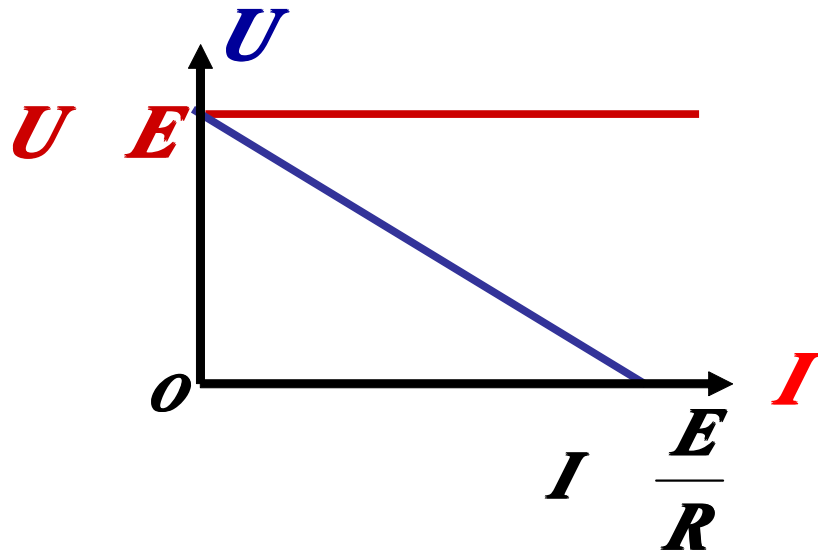
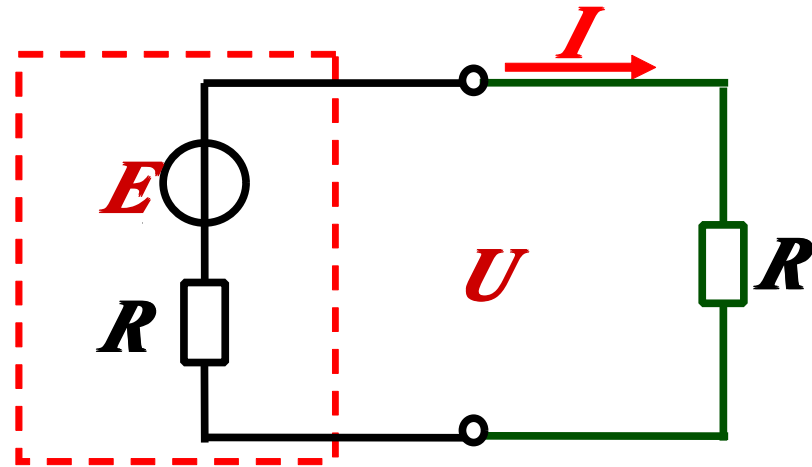
$$U = \frac{R''}{R''} \times U =$$

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





R



$$U = E - IR$$

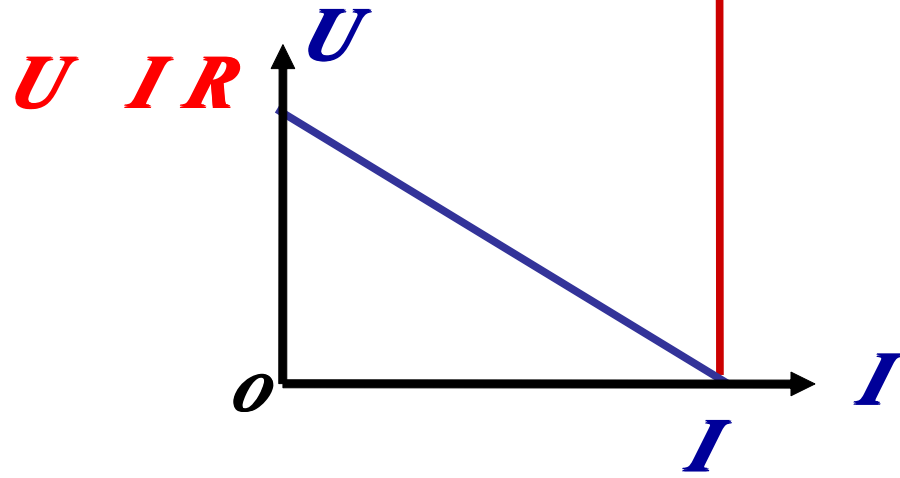
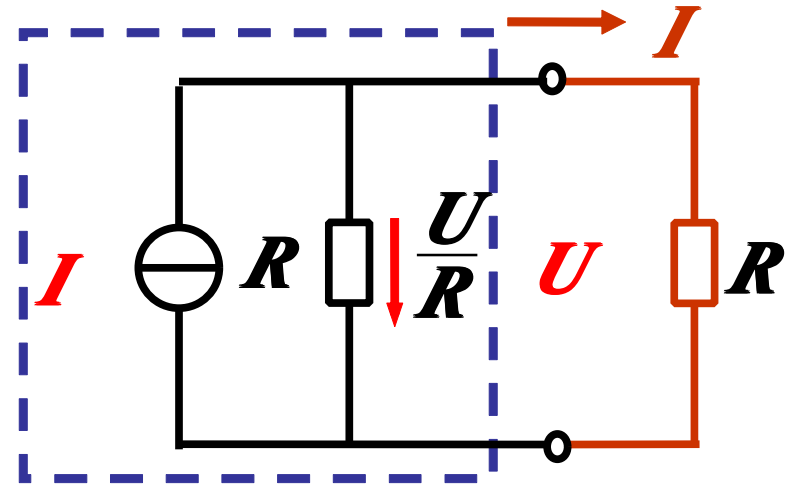
R

$U = E$

$R = R$



R

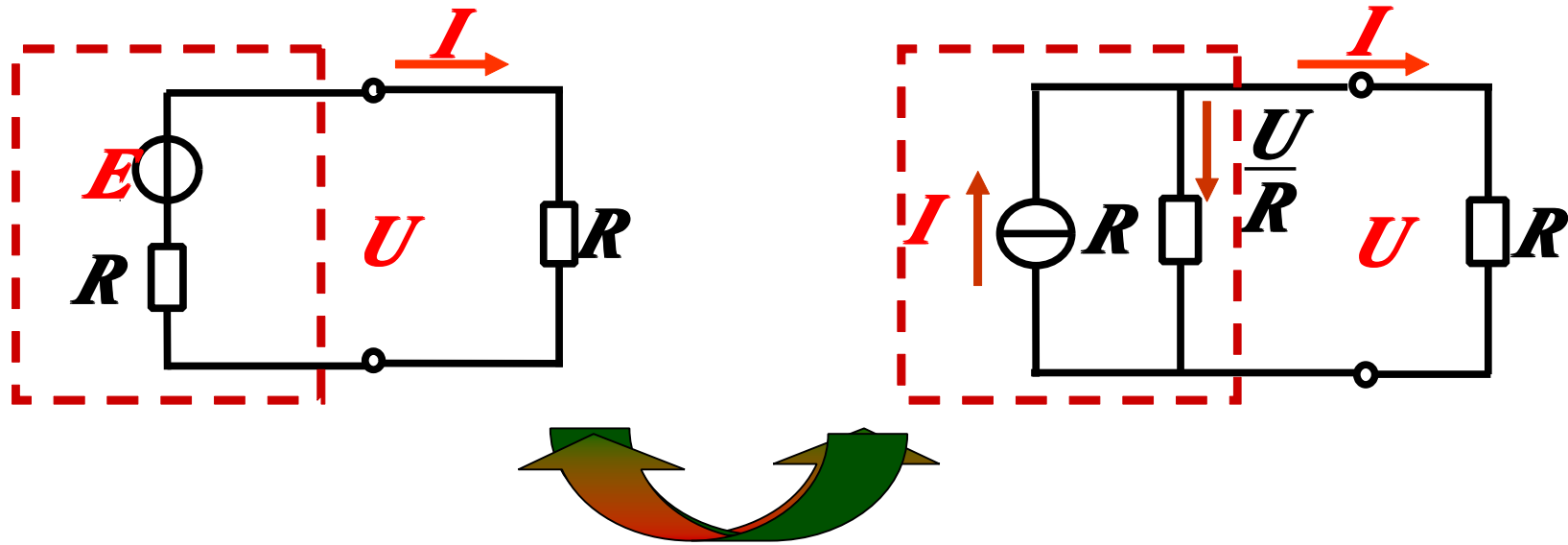


$$I = I - \frac{U}{R}$$

R

$I \quad I$

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



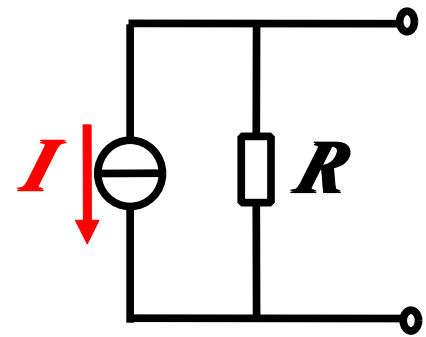
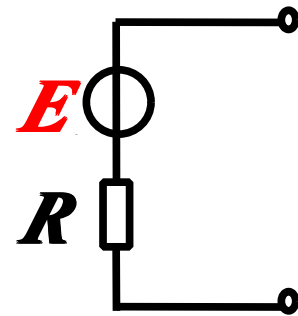
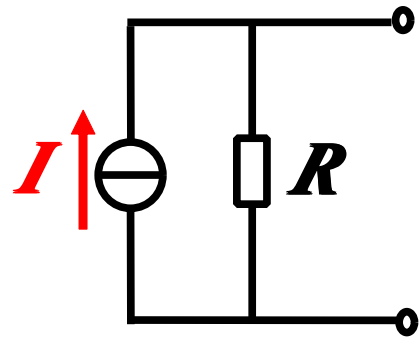
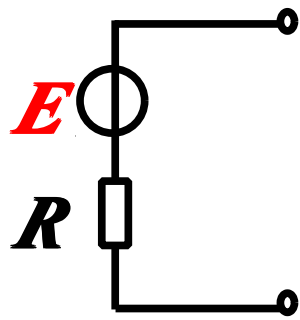
$$U = E - IR$$

$$= \dots$$

$$= \dots$$

$$= \dots$$

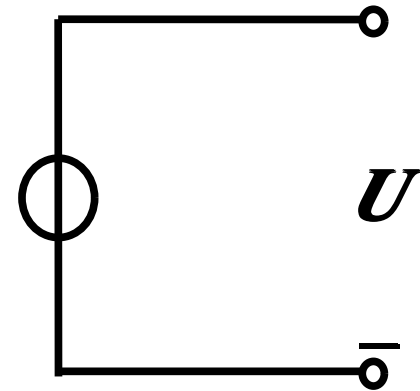
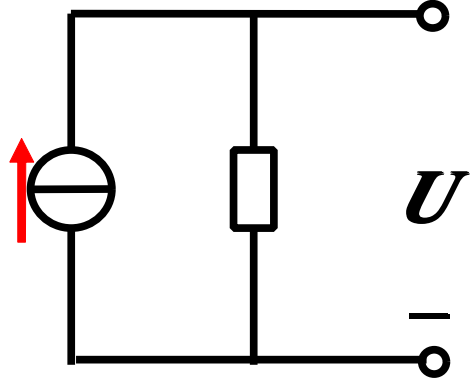
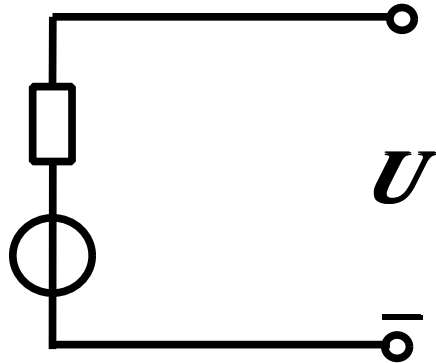
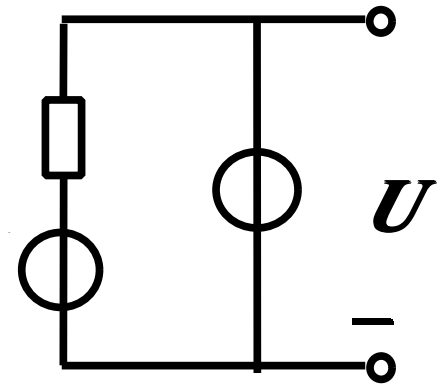
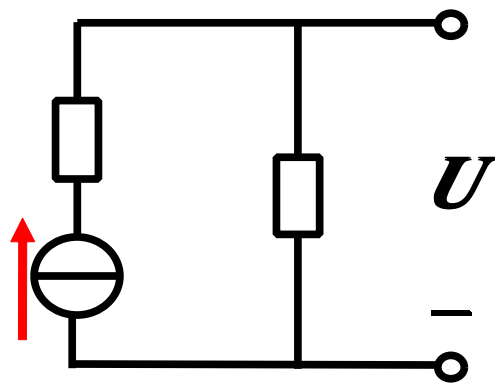
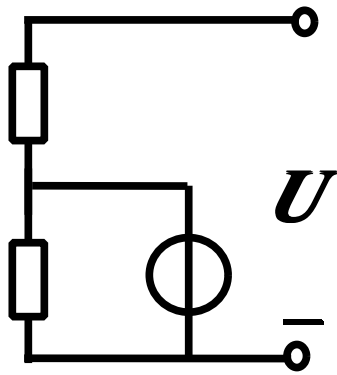
$$\begin{cases} E - IR \\ I = \frac{E}{R} \end{cases}$$

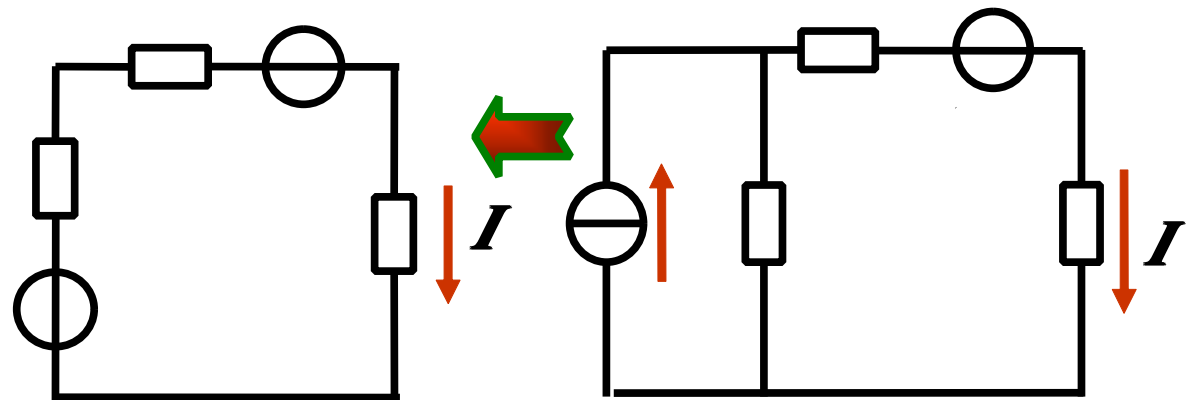
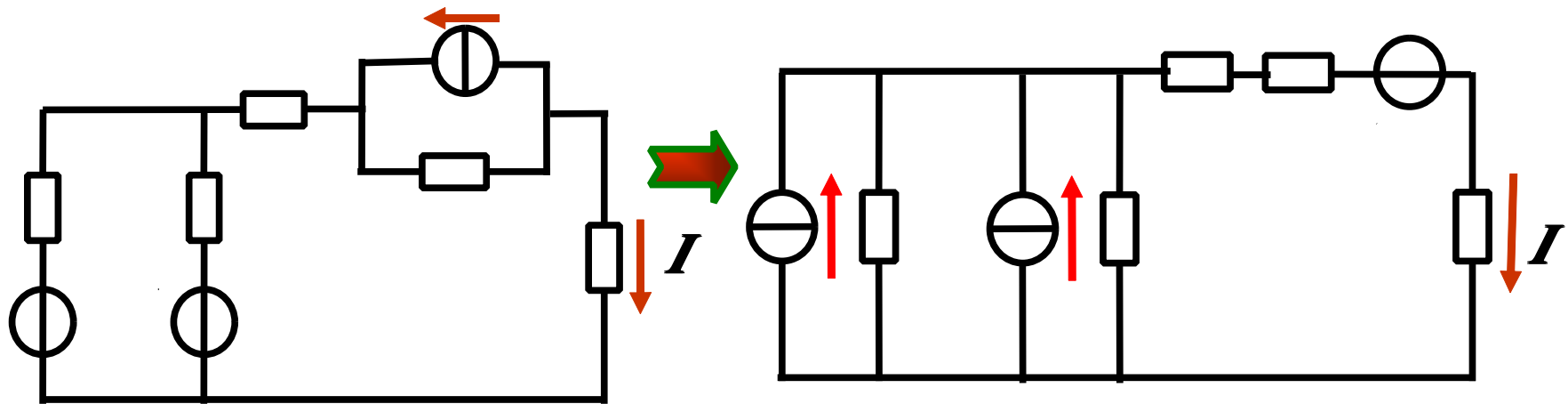


E

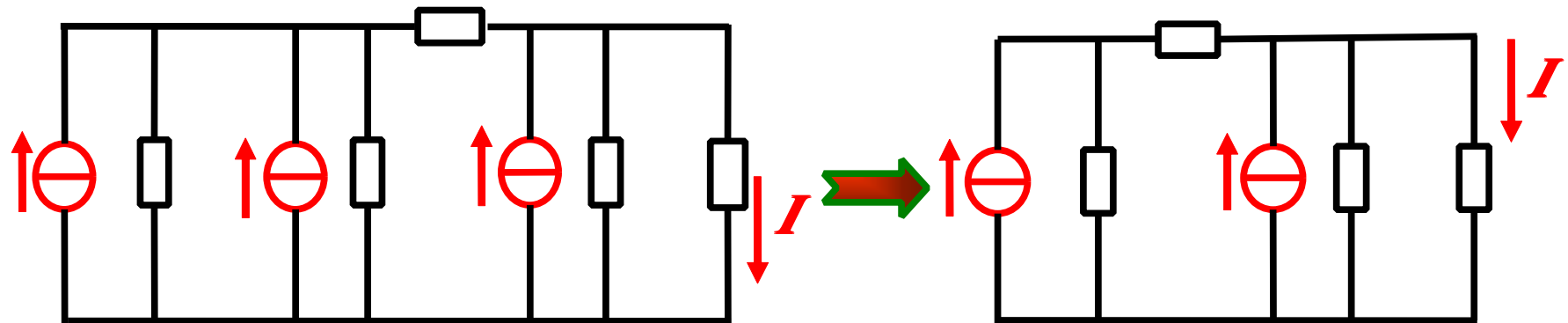
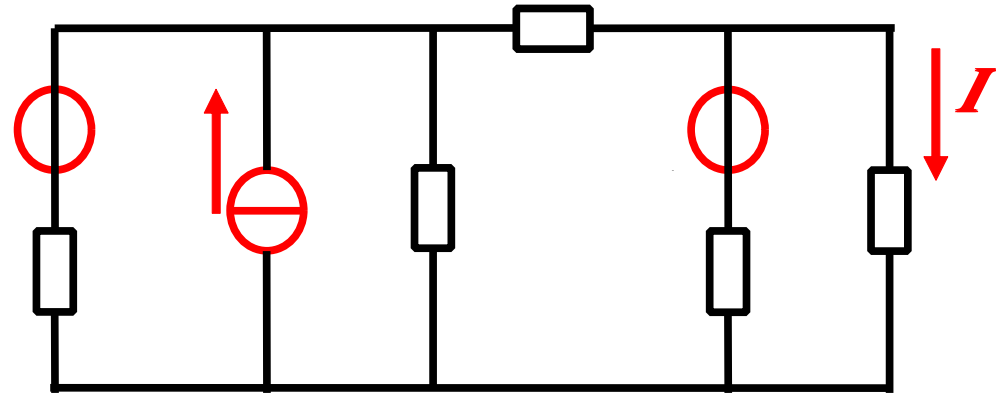
I

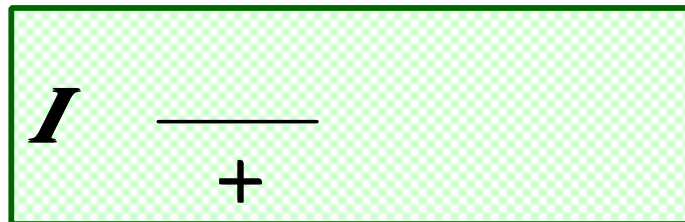
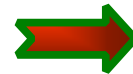
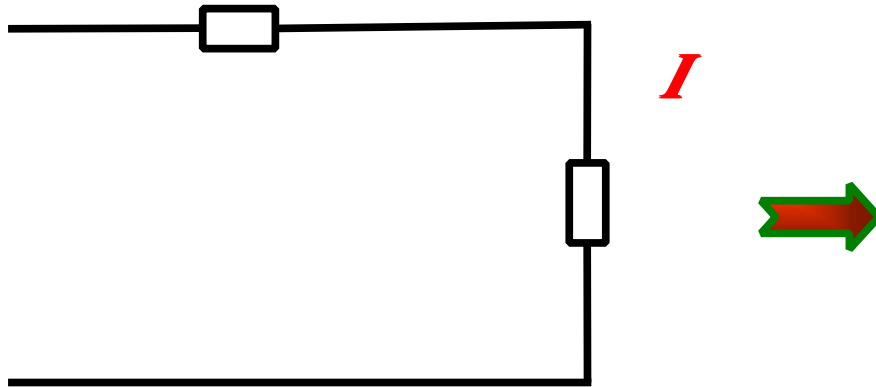
R

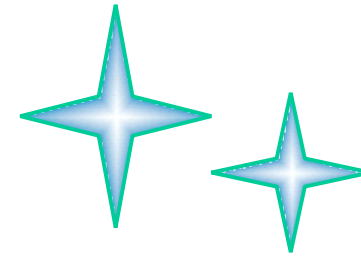




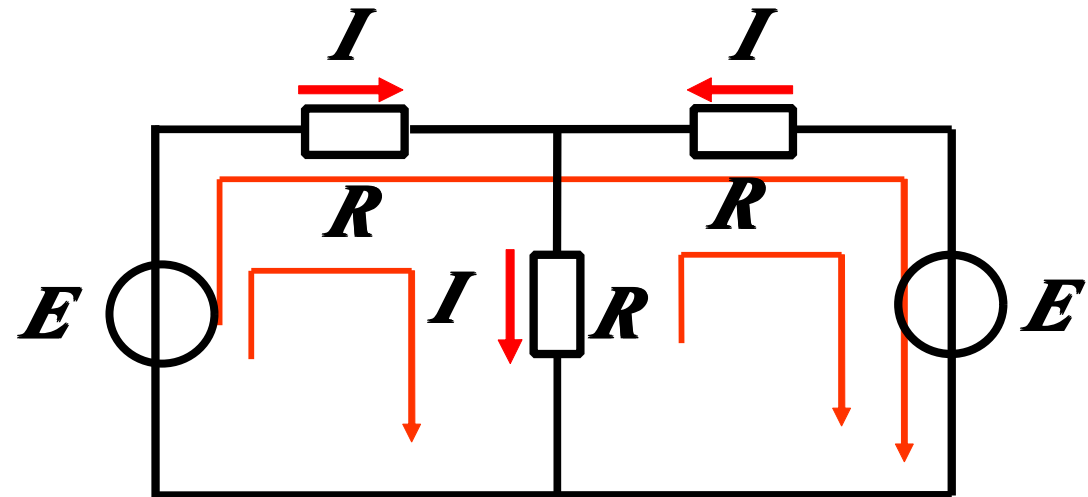
$$I \quad \frac{-}{+ \quad +}$$





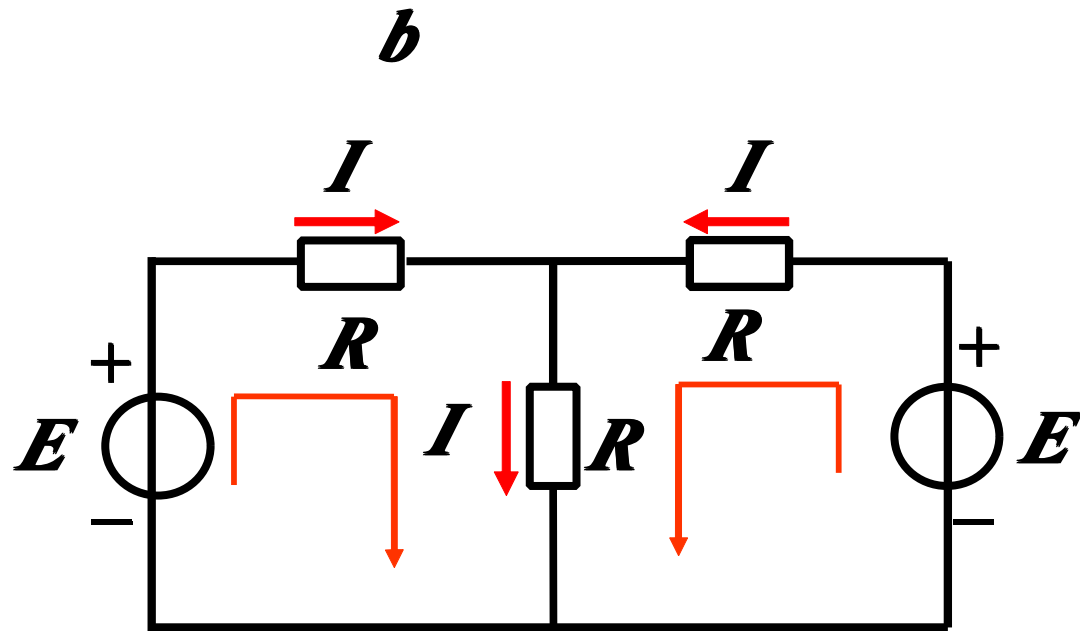


b
n

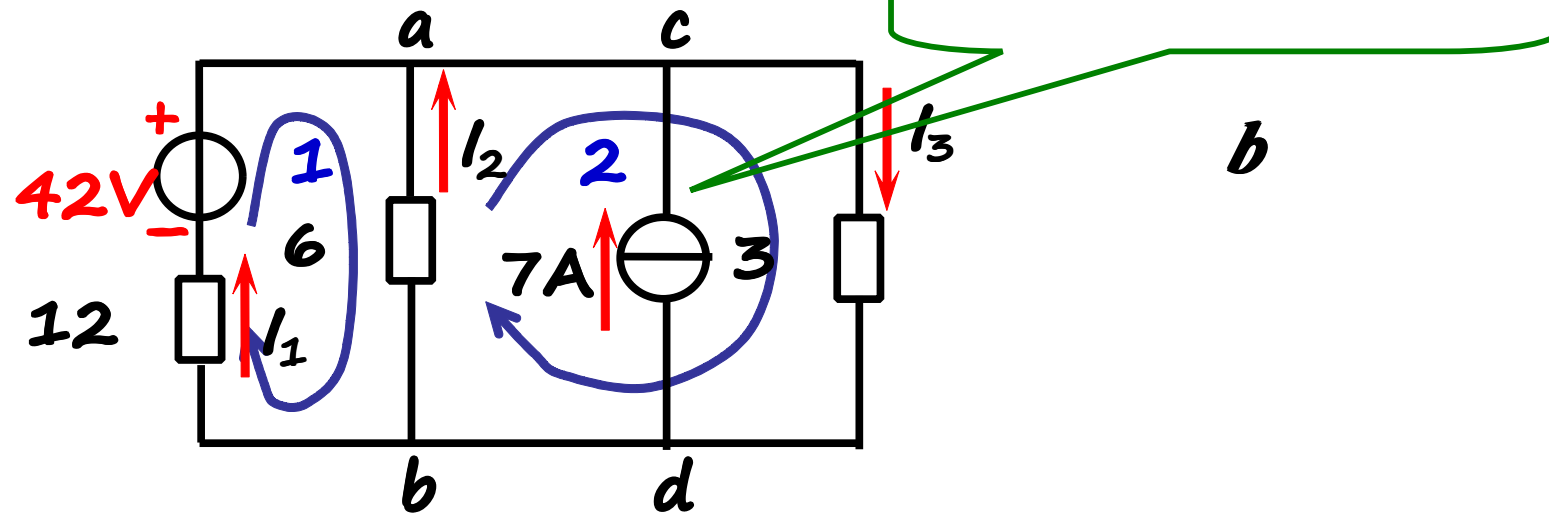




n
 $b \ n$

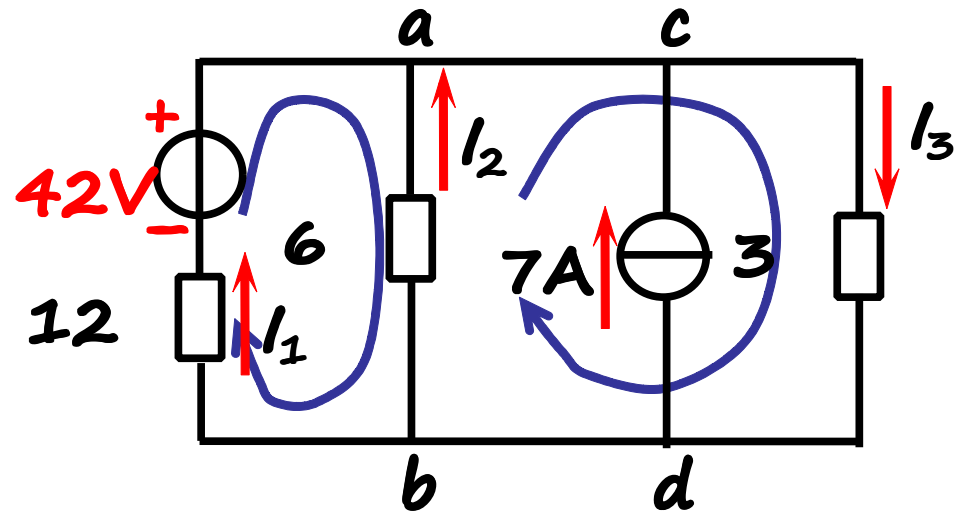


$I \ I \ I$
 $I R \ I R \ E$
 $I R \ I R \ E$





b



I I I

I I

I I

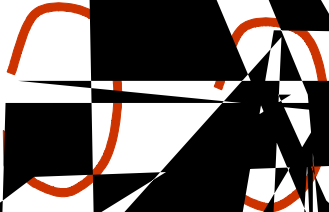
I I I I I

b



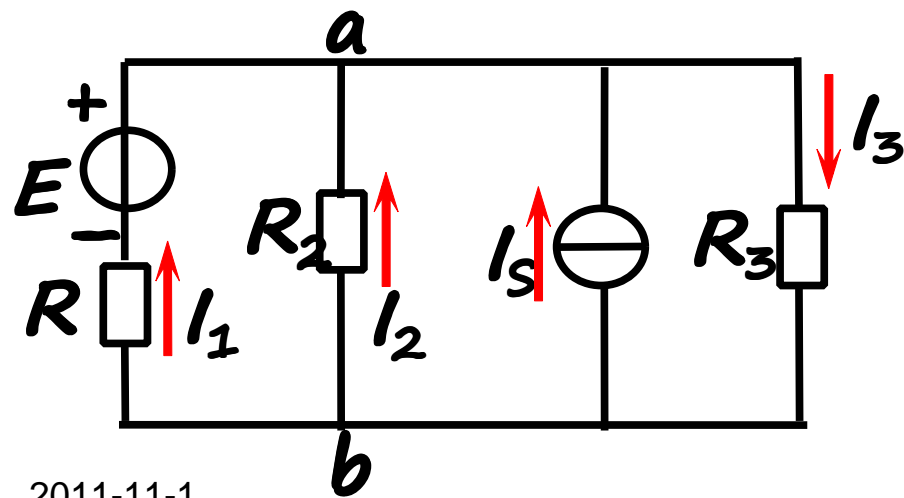


n



b

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2011-11-1



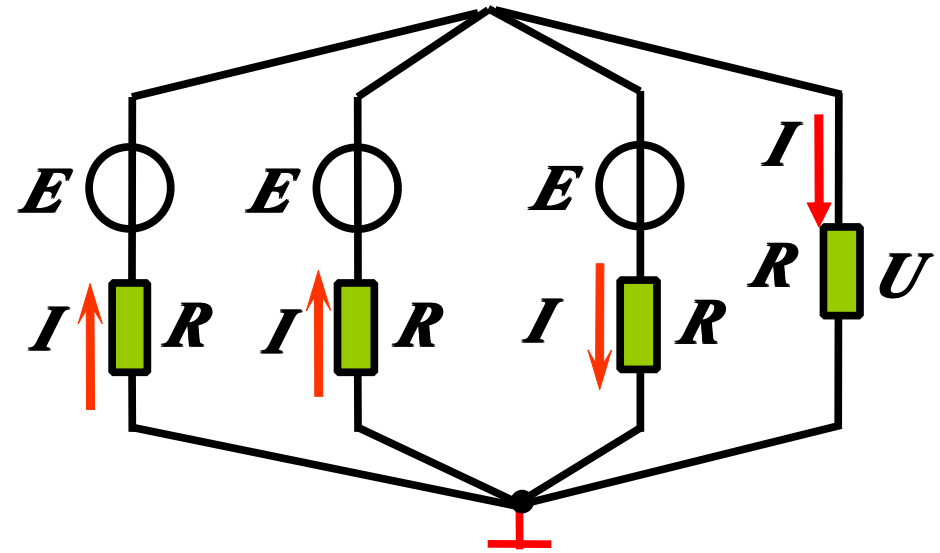
V

U

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

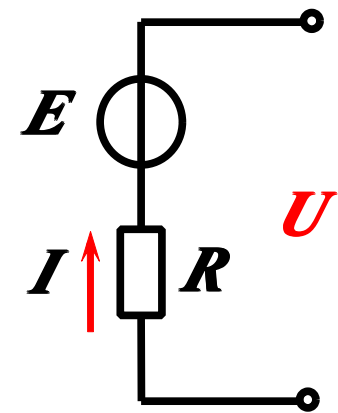
$$I = \frac{E - U}{R}$$

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



$$U = E - IR$$

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





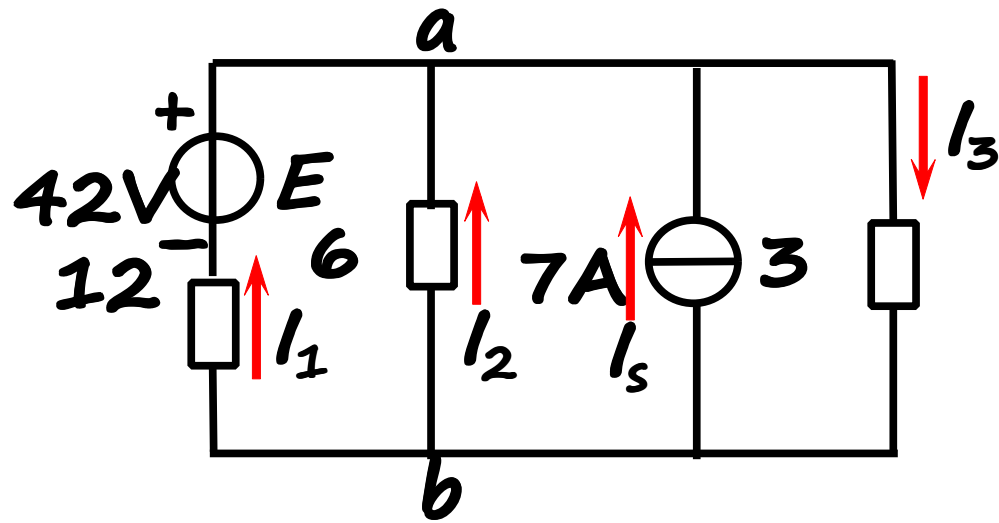
$$\frac{-}{-} + \frac{-}{-} - \frac{-}{-} + \frac{+}{-} - - - =$$

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

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

E

U



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

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

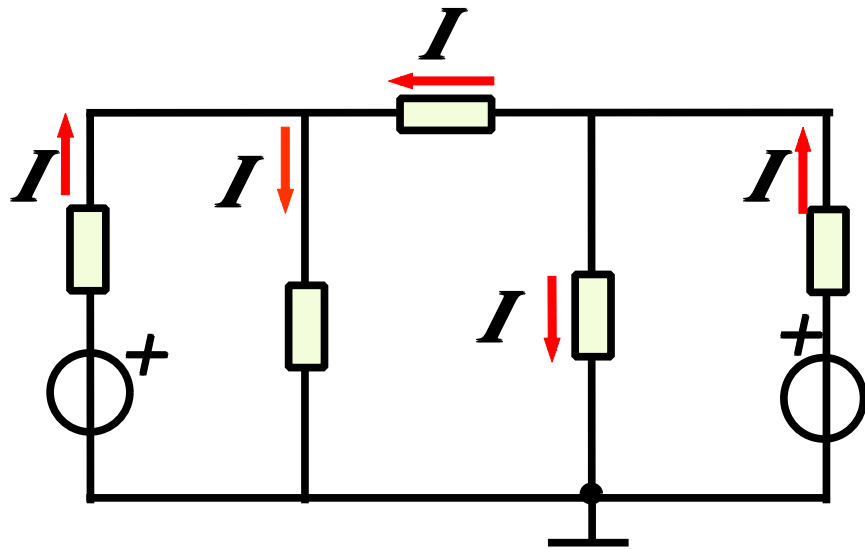
$I \quad U$

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

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

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

$$- + - + -$$



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

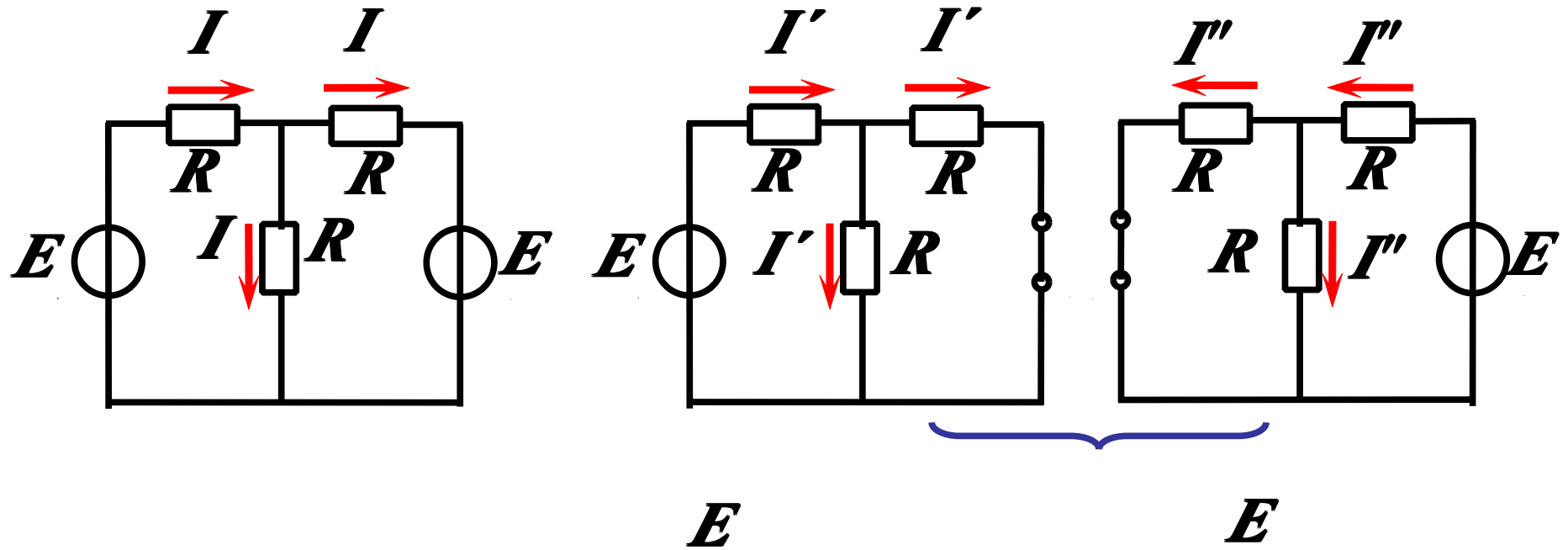
$$\begin{cases} V & V & V \\ V & & V \end{cases}$$

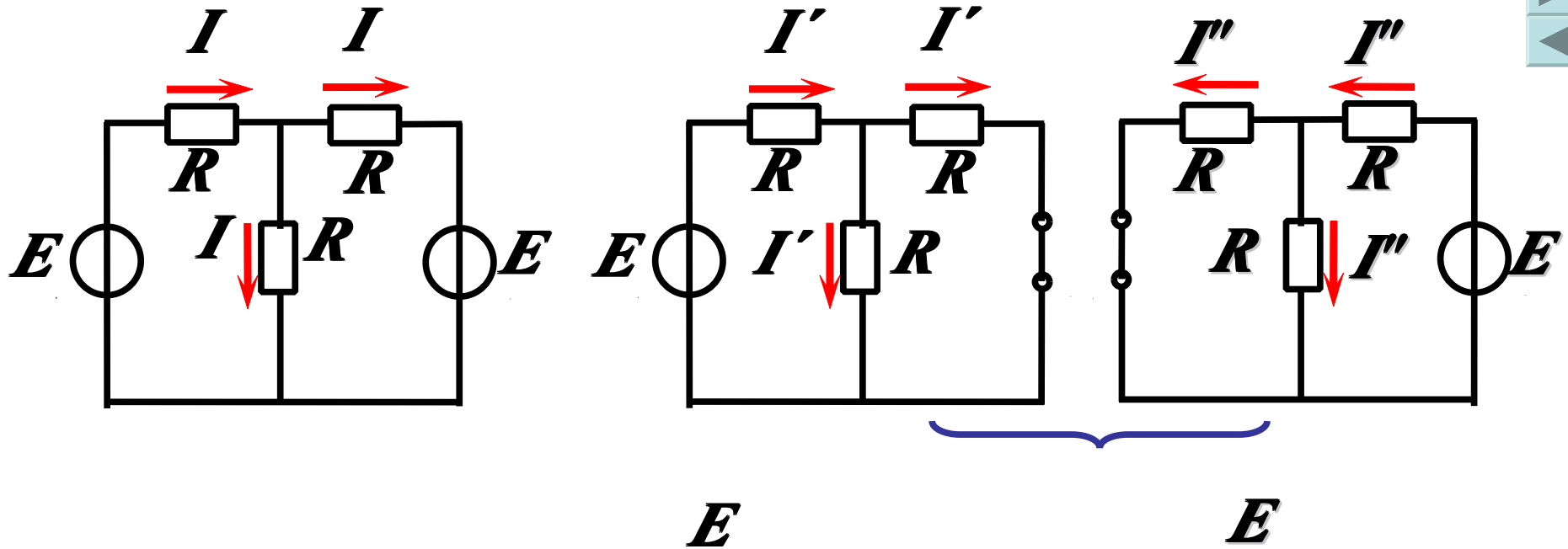
$$I \frac{-V}{\quad} \quad I \frac{V}{\quad}$$

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

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

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



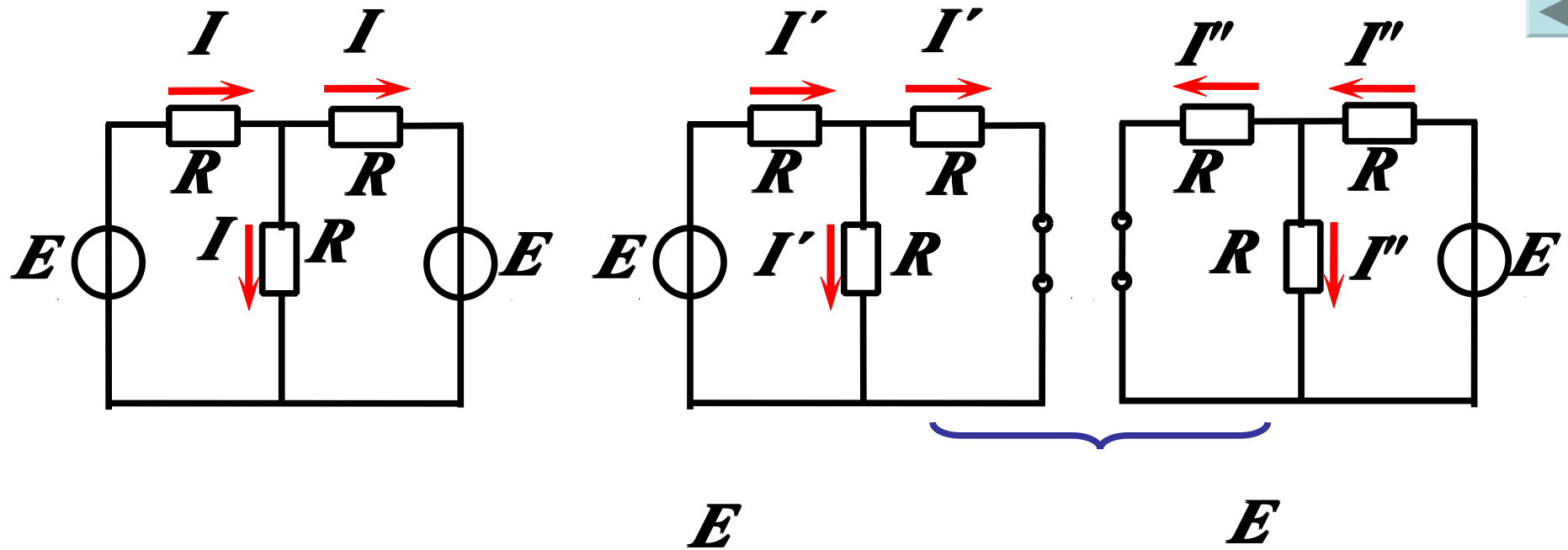


E

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

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

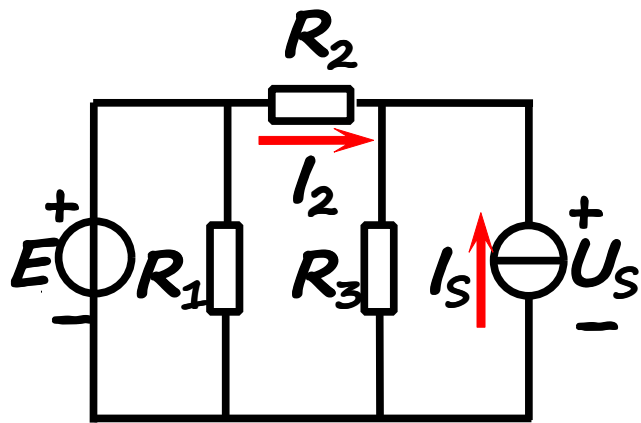
E

I

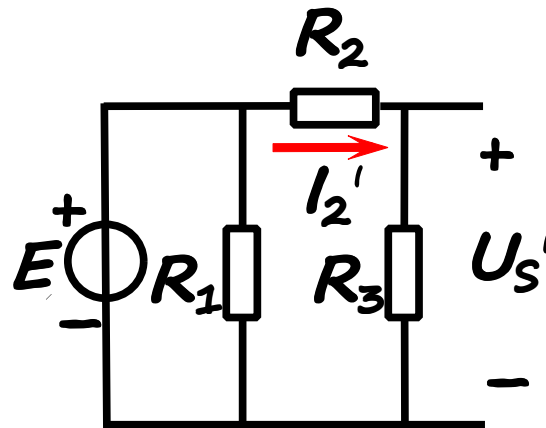


$$R = R = \frac{U}{I}$$

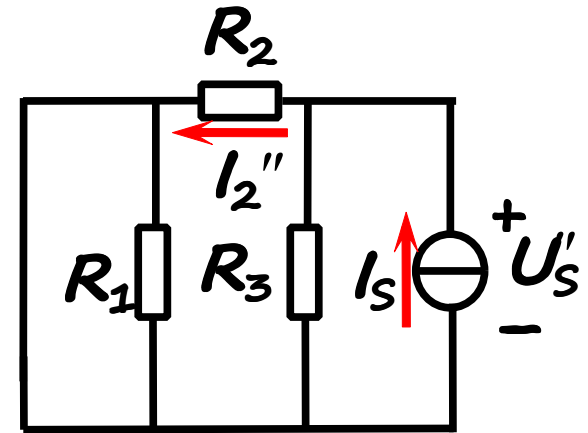
$$E = \frac{I}{R} \quad R = \frac{U}{I}$$



(a)



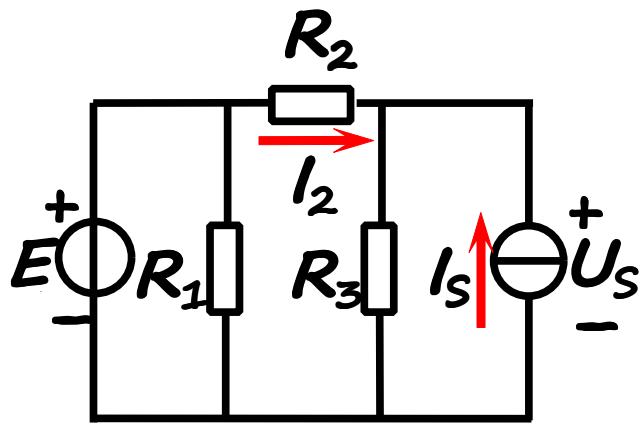
E



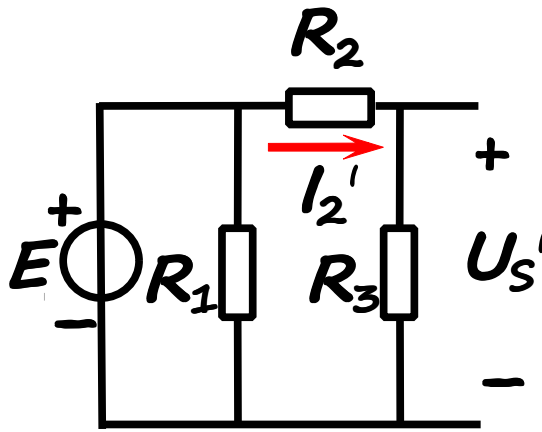
I

E

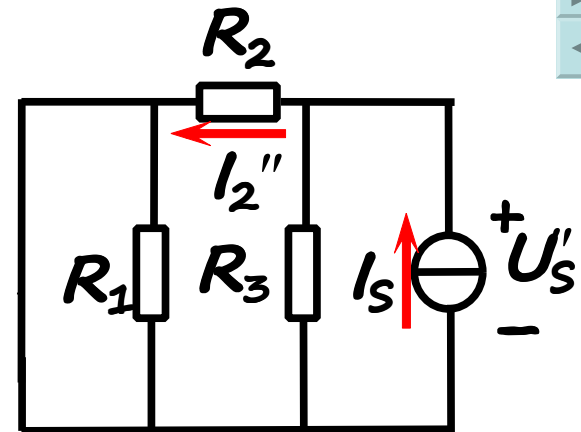
$$I = \frac{E}{R + R} \quad U = I R$$



(a)



(b) E



(c) I_s

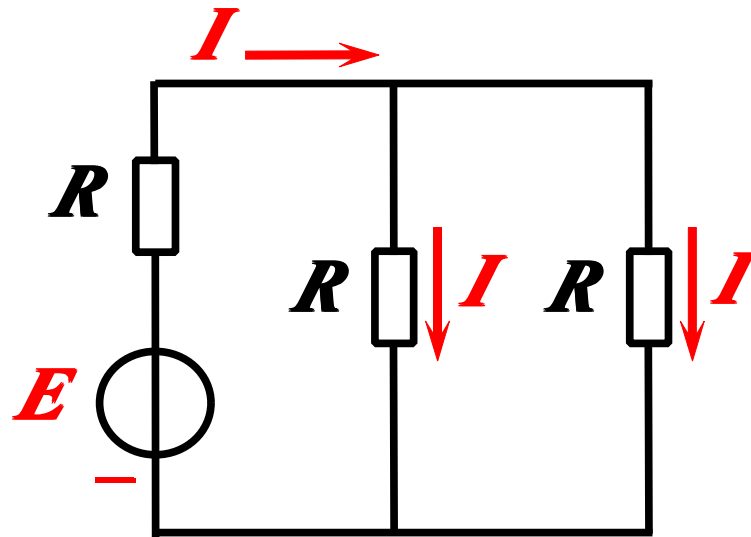
$$\begin{array}{r}
 I \\
 \frac{R}{R+R} I \\
 \text{"} = \text{"} = \times = \\
 I \quad I - I \\
 U \quad U + U
 \end{array}
 \begin{array}{r}
 \text{---} \\
 + \\
 \\
 - \\
 +
 \end{array}$$





k

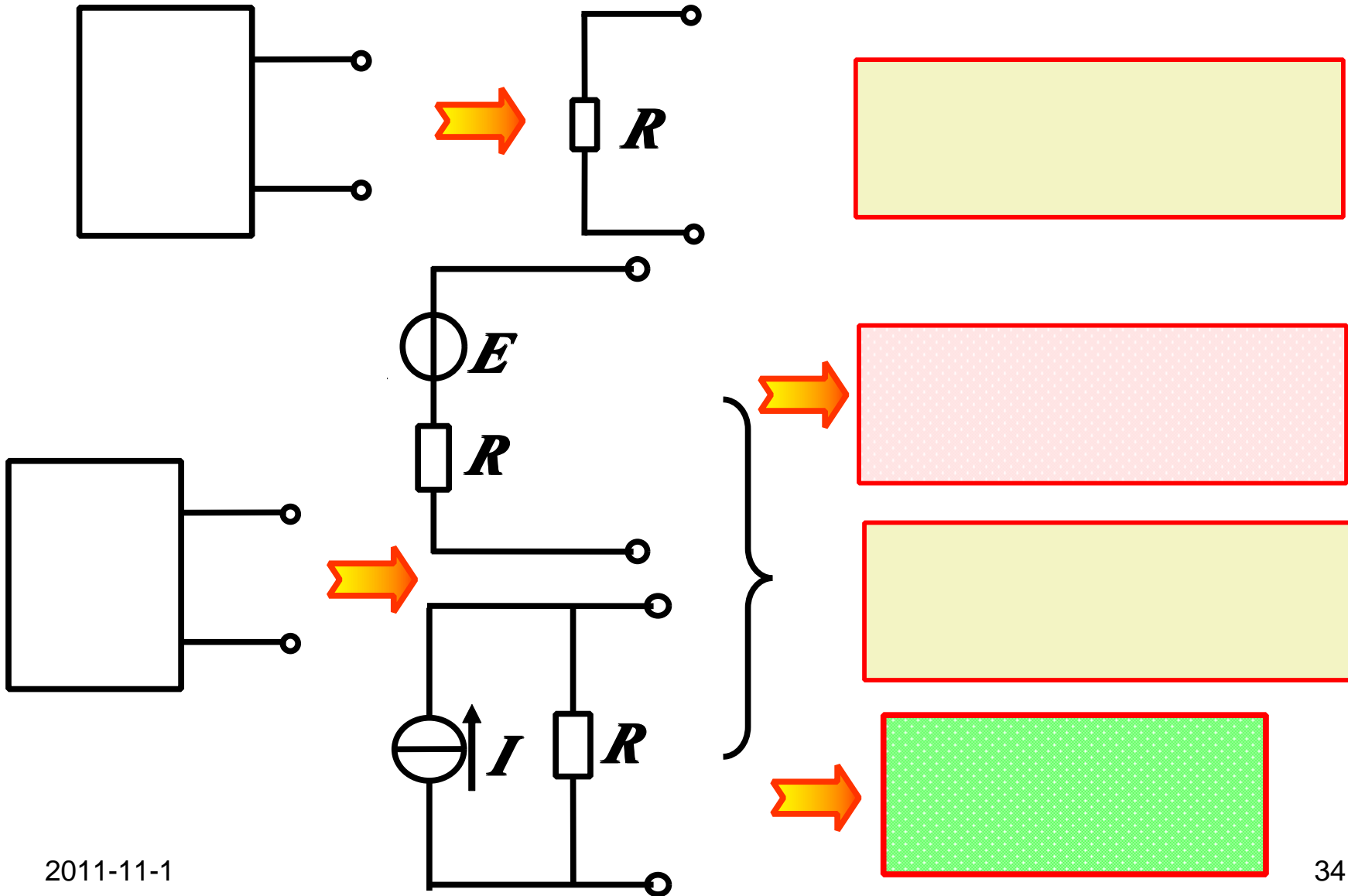
k



E

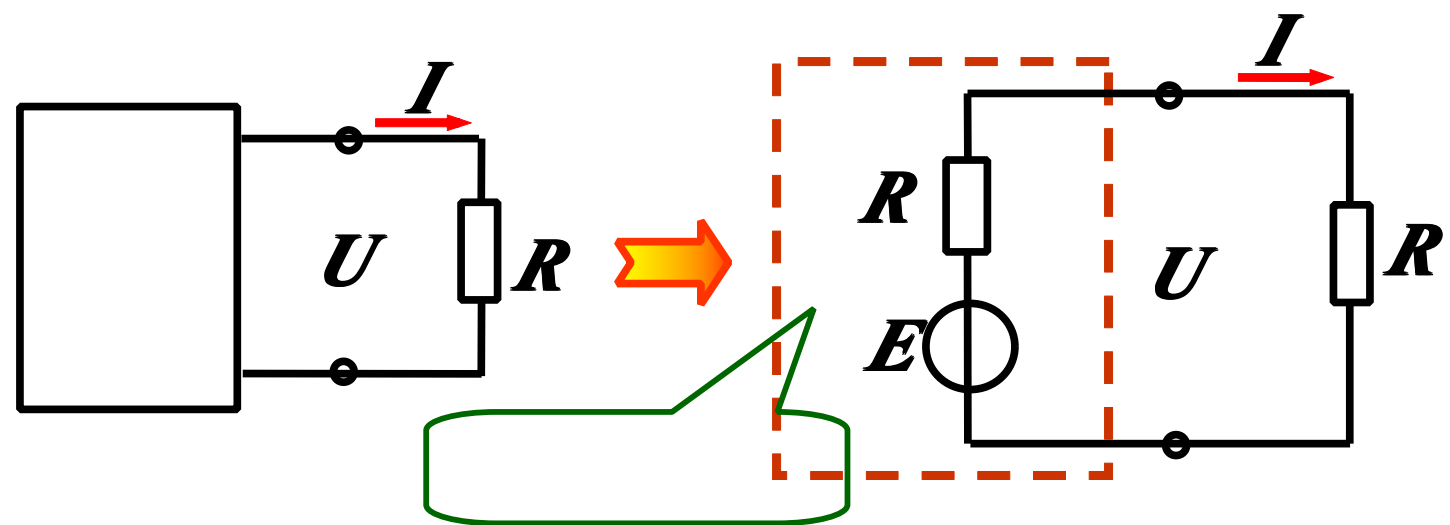
n

n



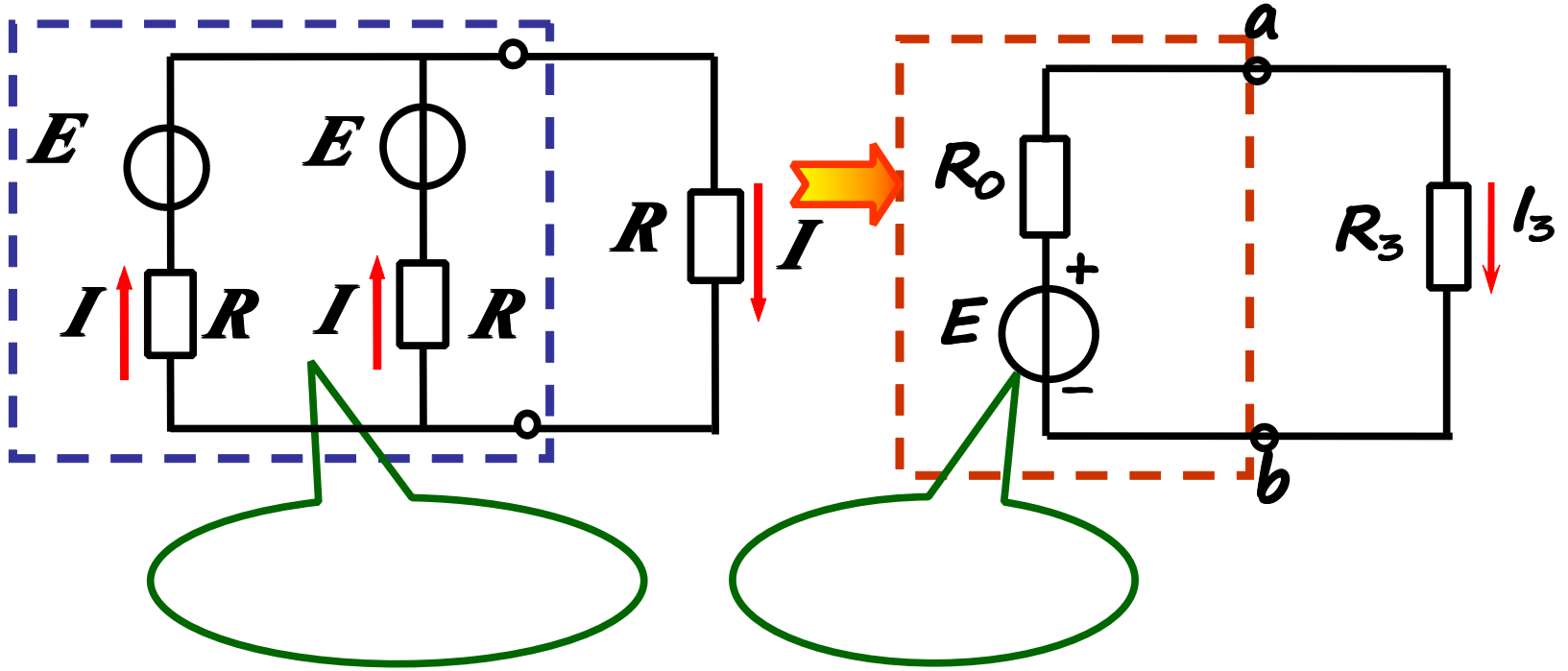


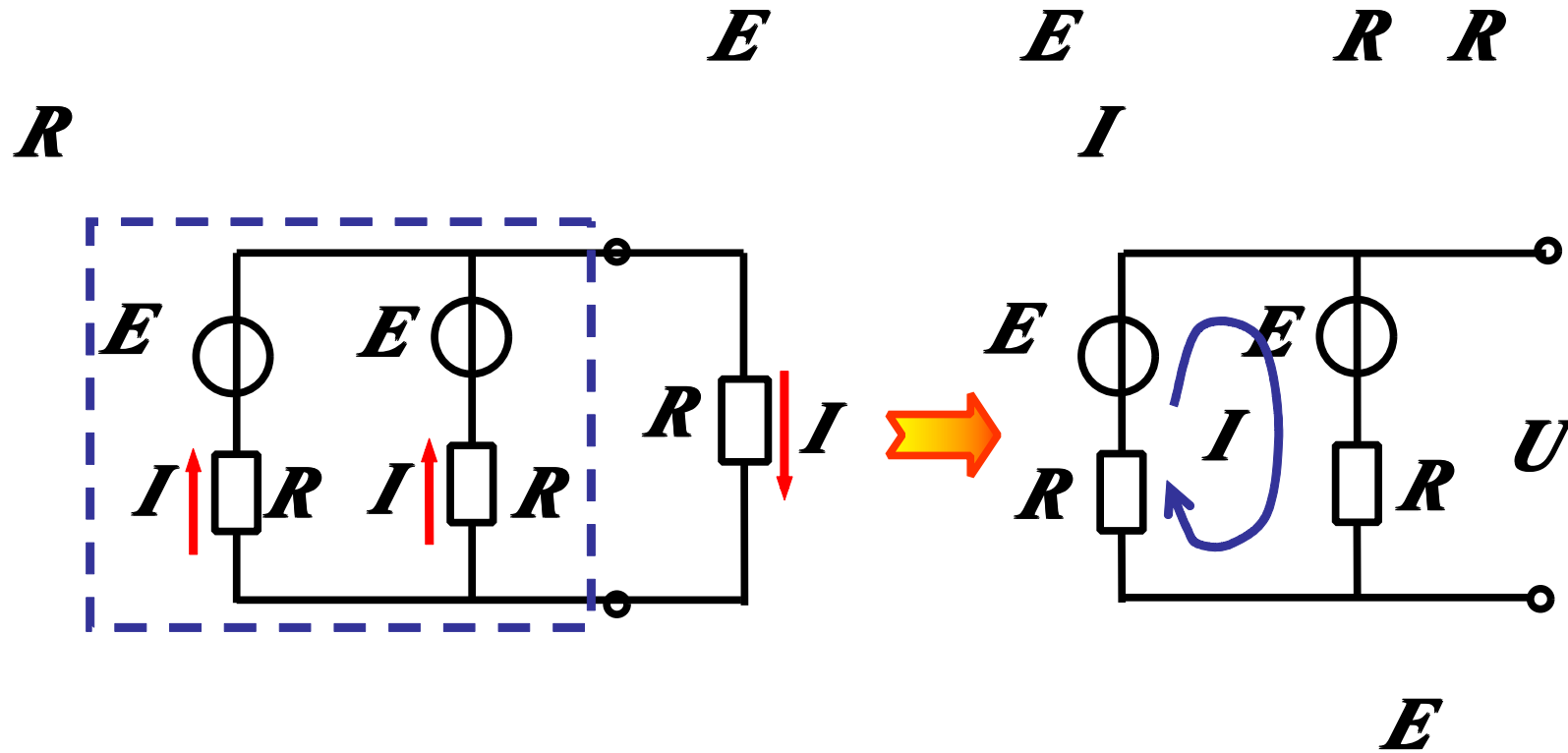
E R
 U E
 R





R E E R R
 I





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

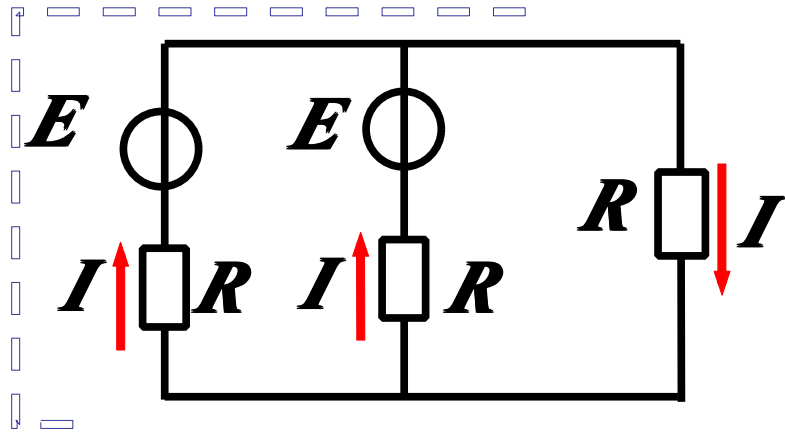
$$E \quad U \quad E + IR$$

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

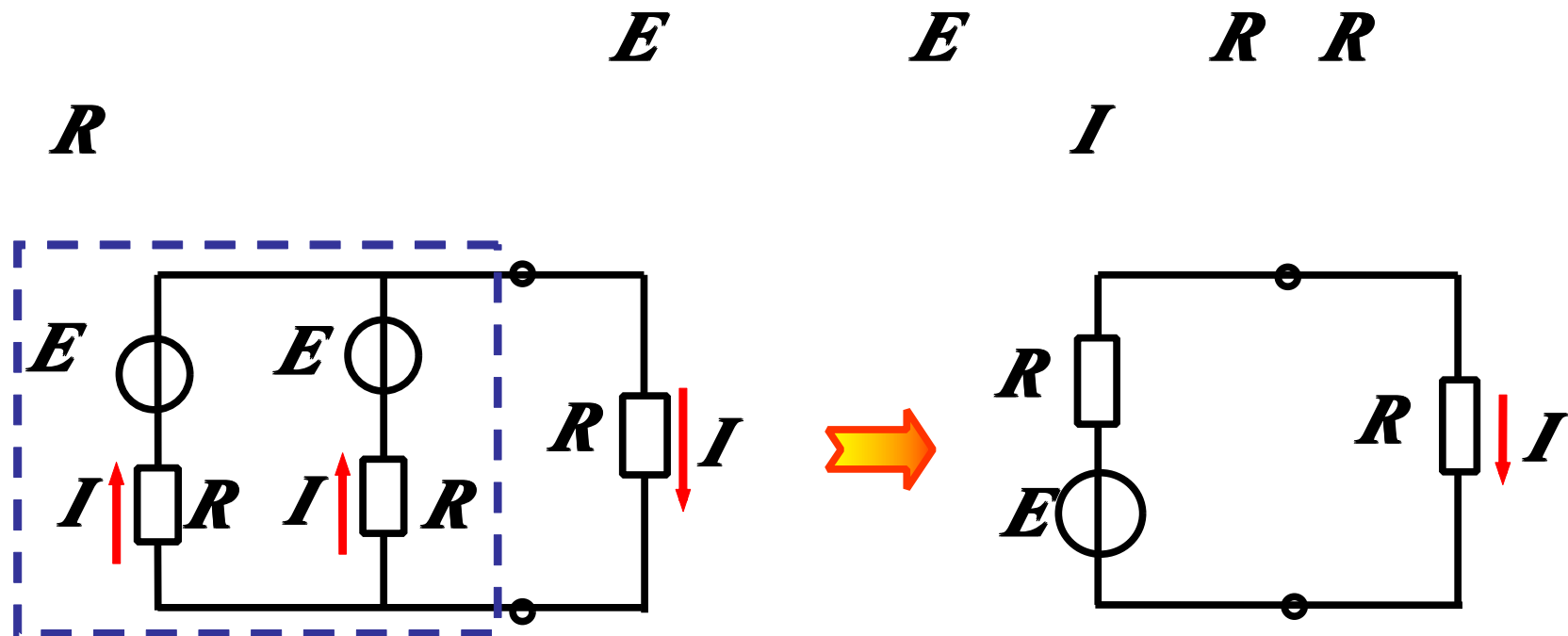
E



R E E R R
 I



R



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

Э Э Э

R

R

E

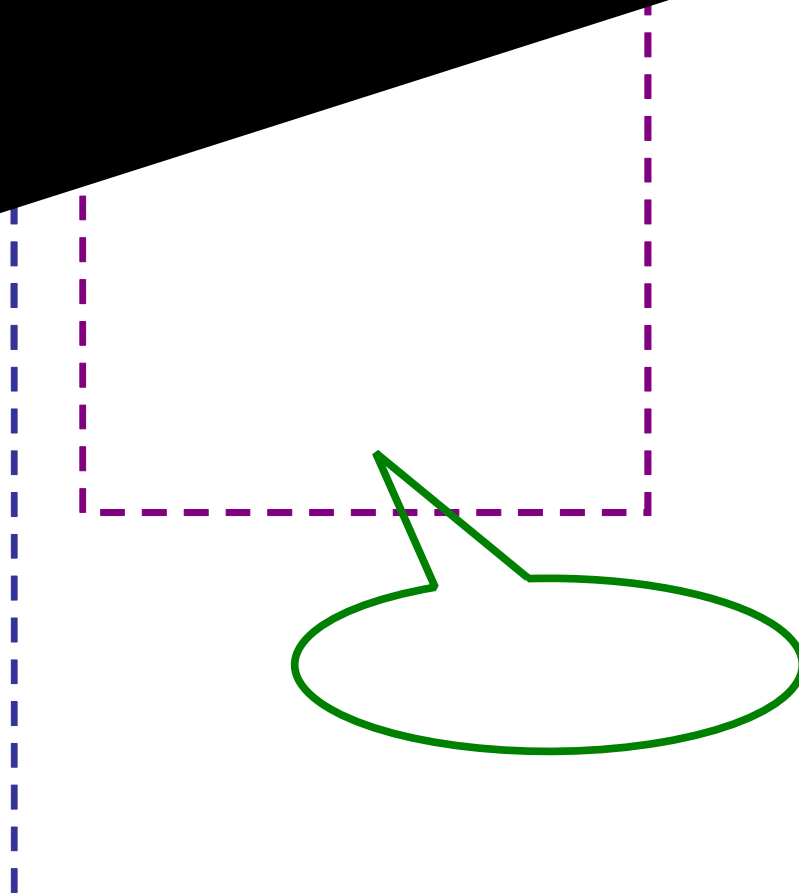
R

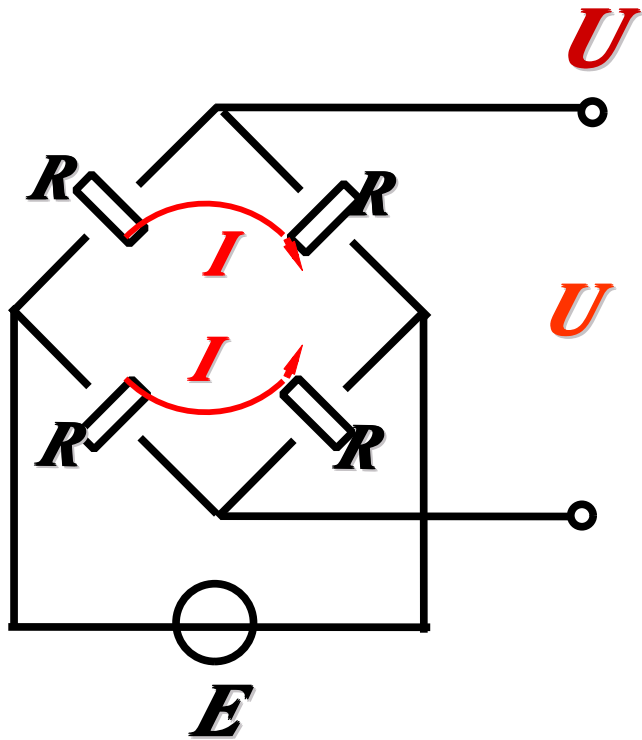
R

R

I

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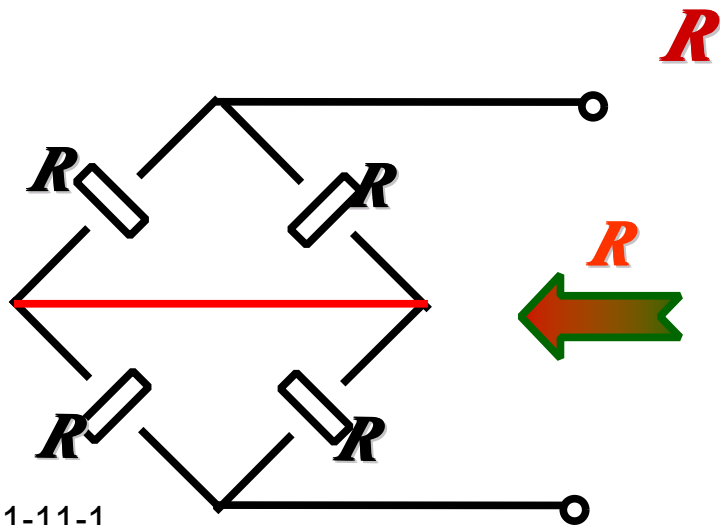


$$I = \frac{E}{R+R}$$

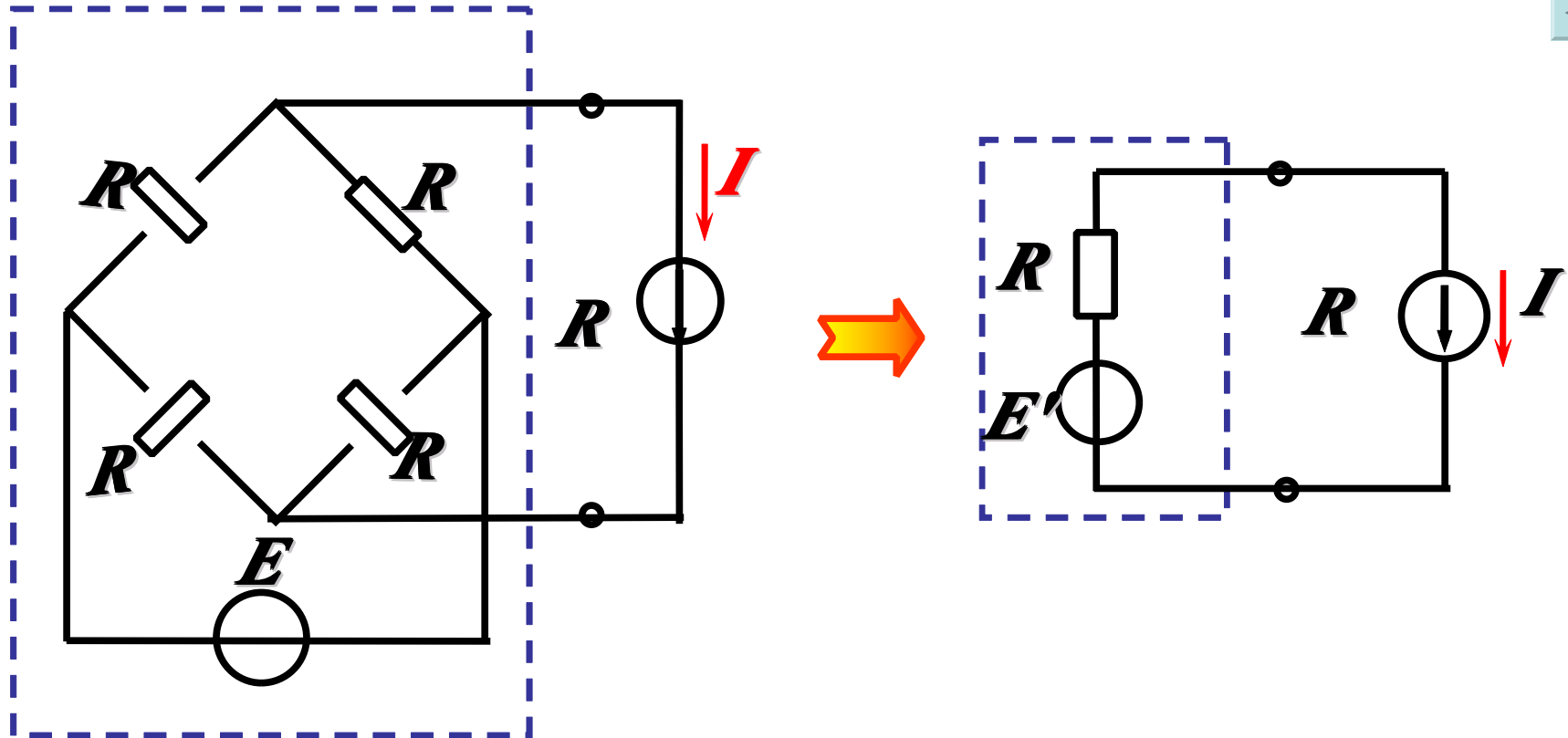
$$I = \frac{E}{R+R}$$

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

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



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



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

I

R R R
 E R E
 I

U

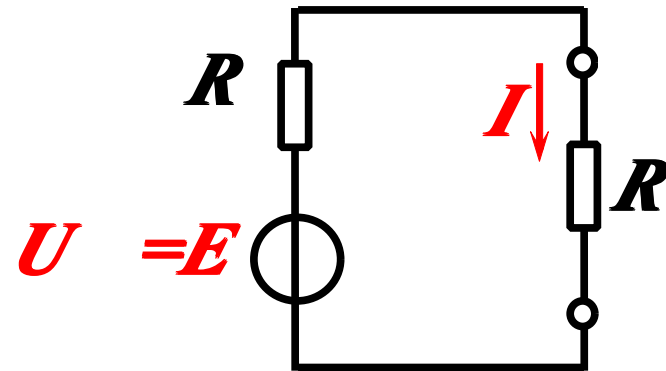
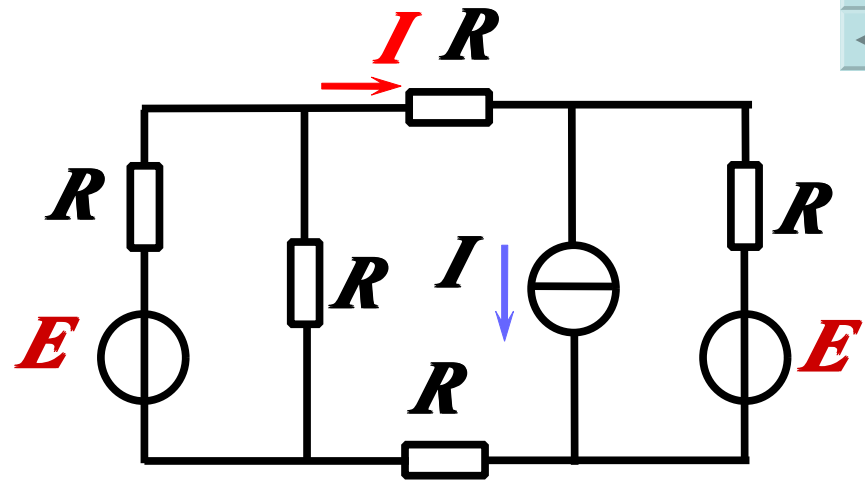
I $\frac{E}{R}$
 U IR E IR

R

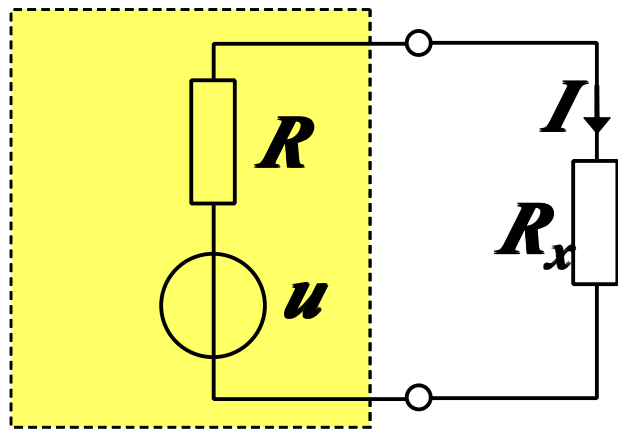
$R = R$ R R R

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

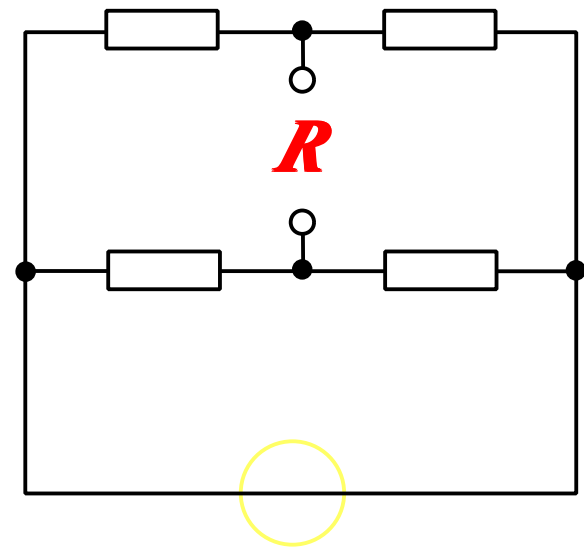
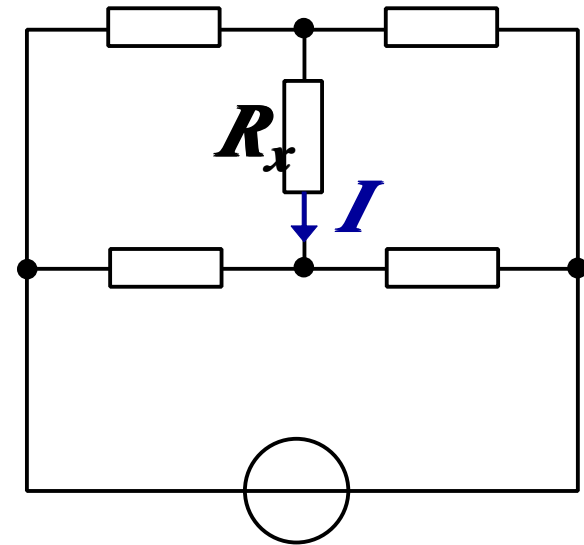
I



R_x
 I
 R_x
 U
 U U U
 R



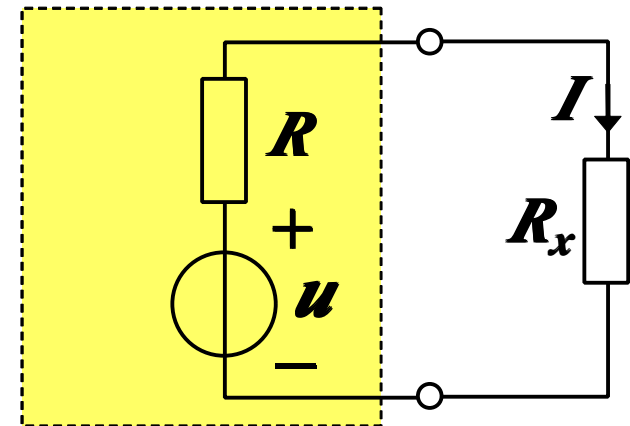
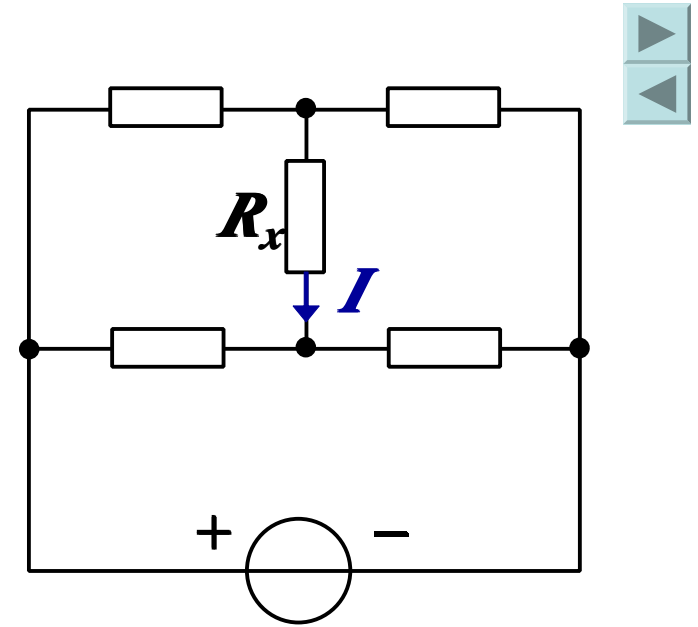
2011-11-1

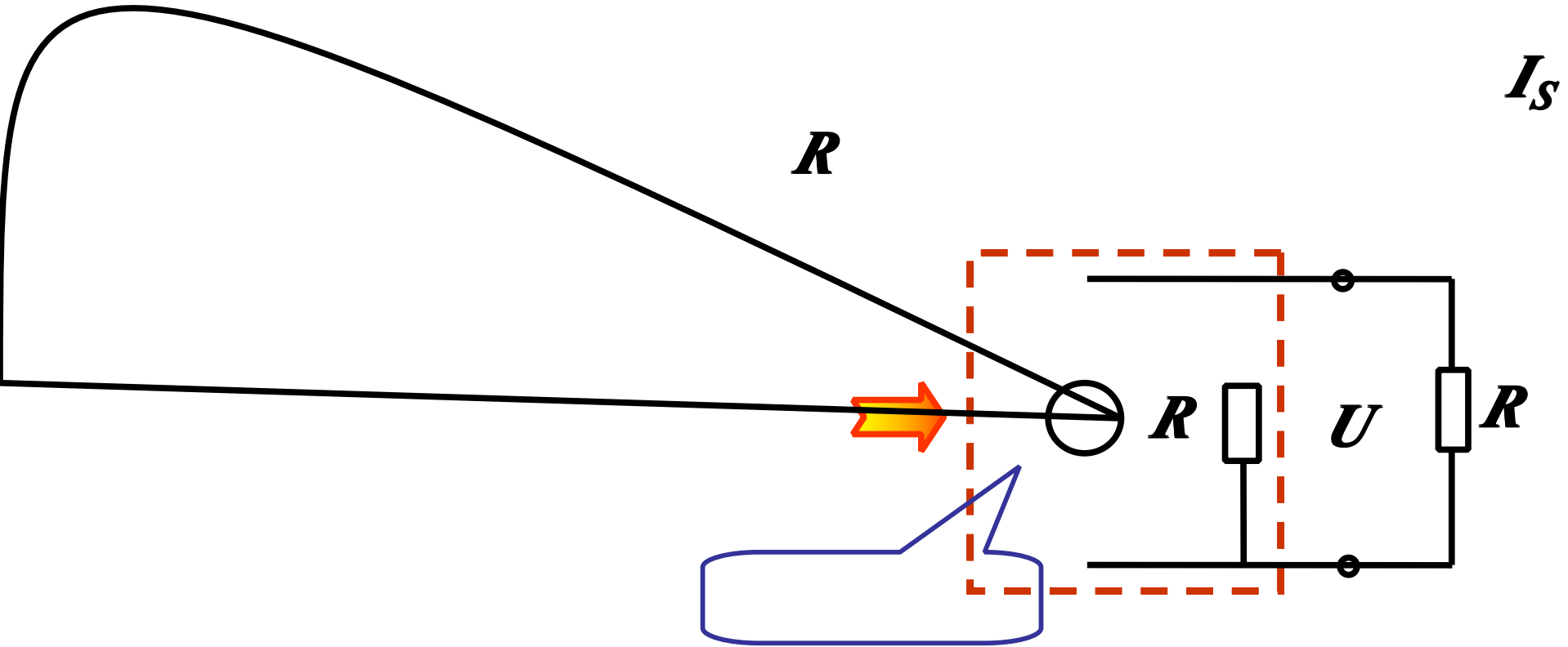


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$$I = \frac{U}{R + R_x} \quad \text{---}$$

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



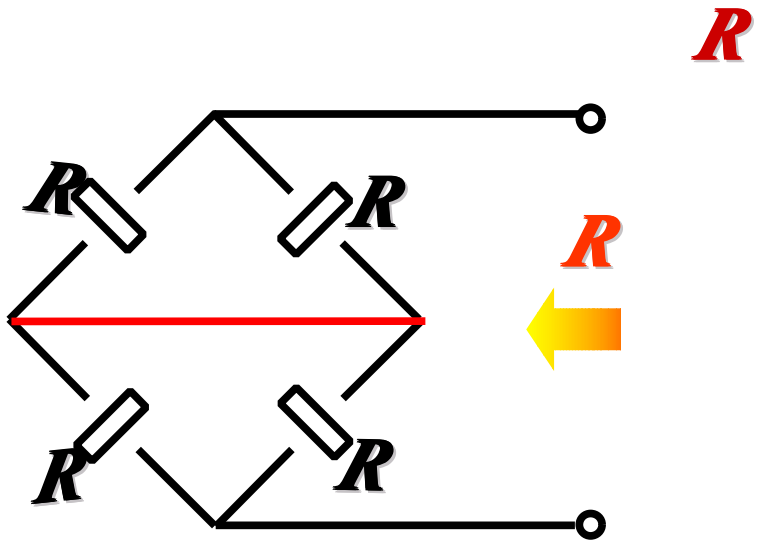


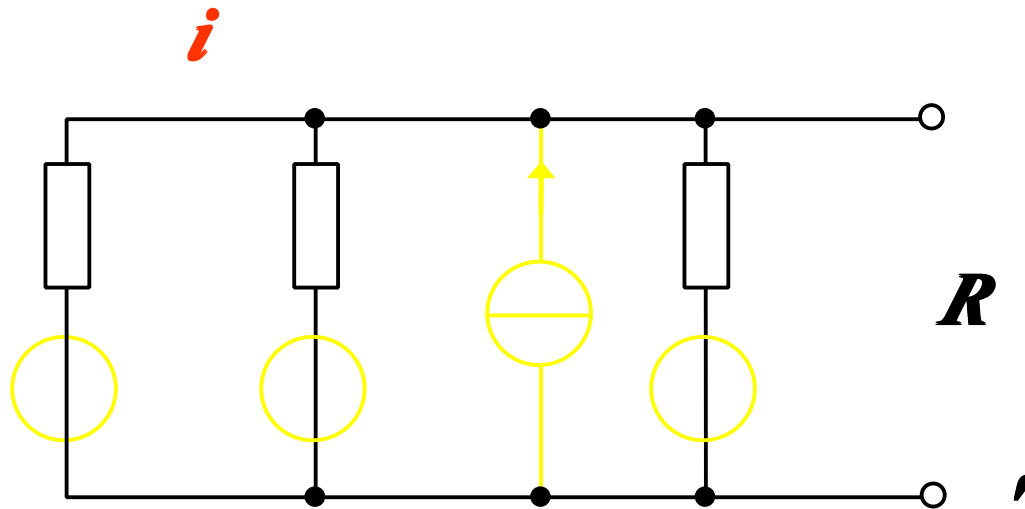
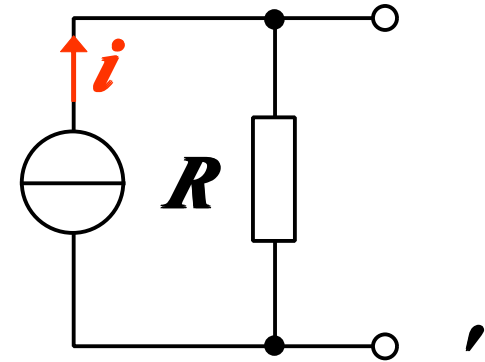
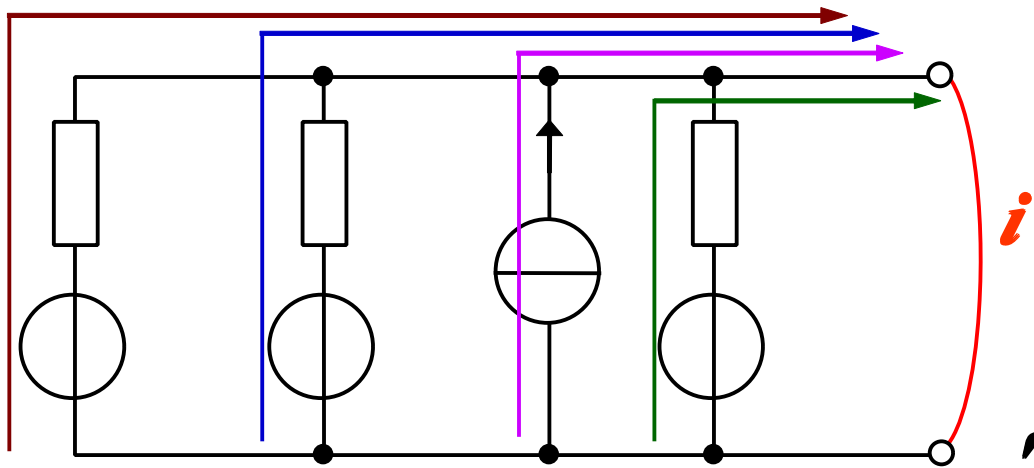
I_s
 R



R *R*
R *R*
E *R*

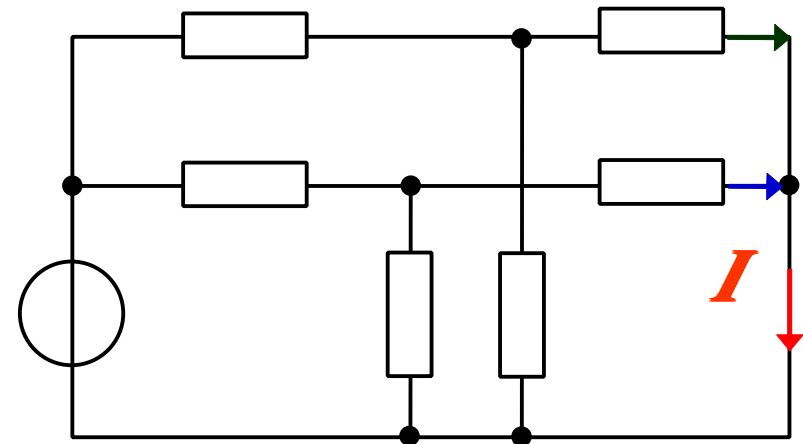
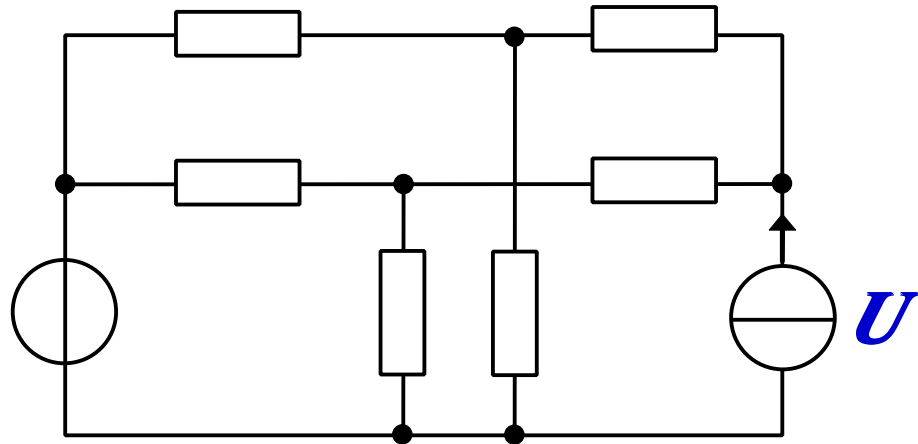
I







U



a b

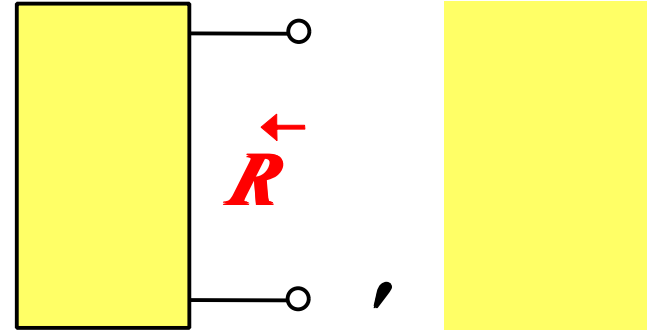
I







R



R

