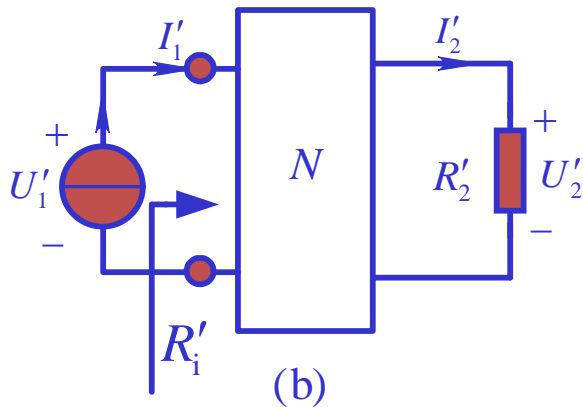
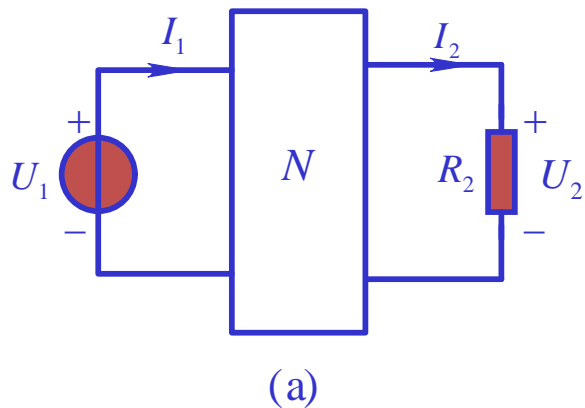


特勒根定理

例2 图示电路中 N 为纯二端电阻网络，

在图(a)中 $U_1 = 4\text{V}$, $R_2 = 2\Omega$, $I_1 = 1\text{A}$, $I_2 = 0.5\text{A}$;

在图(b)中 $I'_1 = 2\text{A}$, $R'_2 = 4\Omega$, $U'_2 = 3.2\text{V}$; 求等效电阻 R'_1 。



解：由特勒根定理得 $-U_1 I'_1 + U_2 I'_2 = -U'_1 I_1 + U'_2 I_2$

特勒根定理

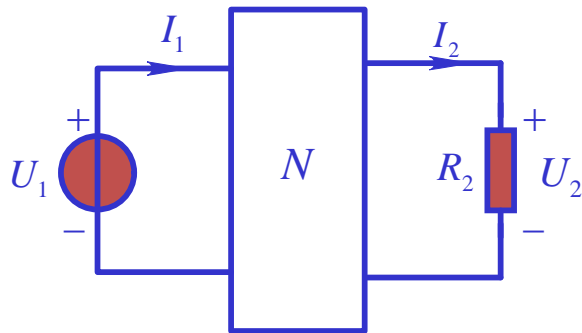
代入已知条件:

$$U_2 = R_2 I_2 = 2\Omega \times 0.5\text{A} = 1\text{V}$$

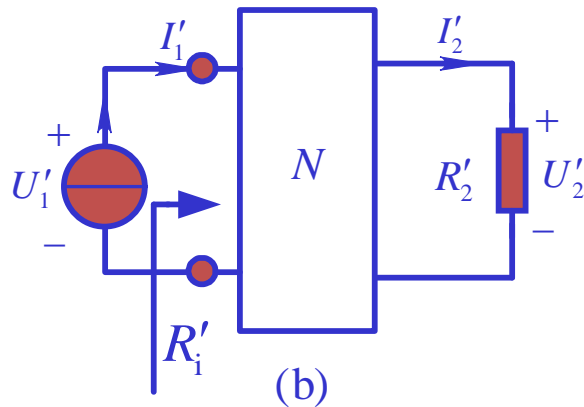
$$I'_2 = \frac{U'_2}{R'_2} = \frac{3.2\text{V}}{4\Omega} = 0.8\text{A}$$

$$-4\text{V} \times 2\text{A} + 1\text{V} \times 0.8\text{A} = -U'_1 \times 1\text{A} + 3.2\text{V} \times 0.5\text{A}$$

$$\Rightarrow U'_1 = 8.8\text{V} \Rightarrow R'_1 = \frac{U'_1}{I'_1} = \frac{8.8\text{V}}{2\text{A}} = 4.4\Omega$$



(a)



(b)