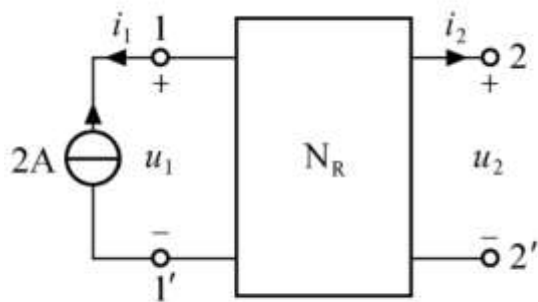




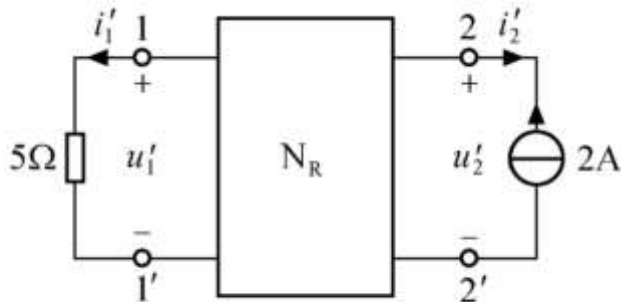
网络定理、电路暂态过程的时域分析

习题讲解

1. 如图所示电路中 N_R 仅由电阻组成，当图(a)端口11'接2A电流源时，电压 $u_1=10V$ ， $u_2=5V$ ；若如图(b)将电流源移到22'端口，端口11'接 5Ω 电阻，试求此时流过 5Ω 电阻的电流 i_1' 。



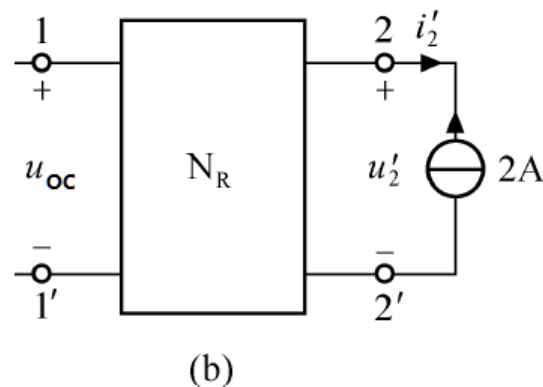
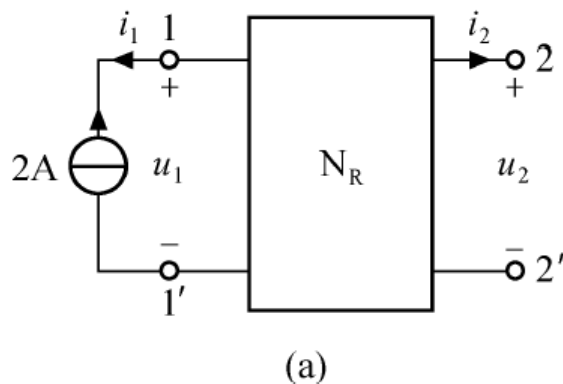
(a)



(b)

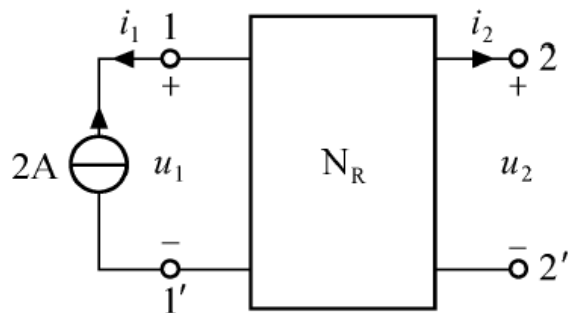
$$u_1 i_1' + u_2 i_2' = u_1' i_1 + u_2' i_2$$

解：戴维南定理+互易定理

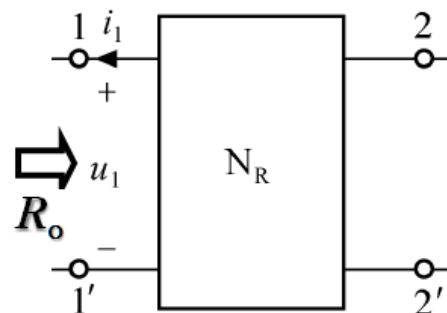


①移去 5Ω ，由互易定理的形式二：

$$i_s = i'_s \Rightarrow u_{oc} = u_2 \quad \text{得：} \quad u_{oc} = 5V$$



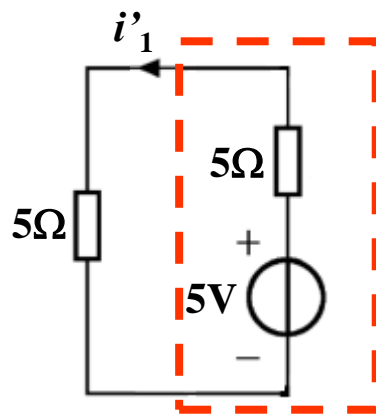
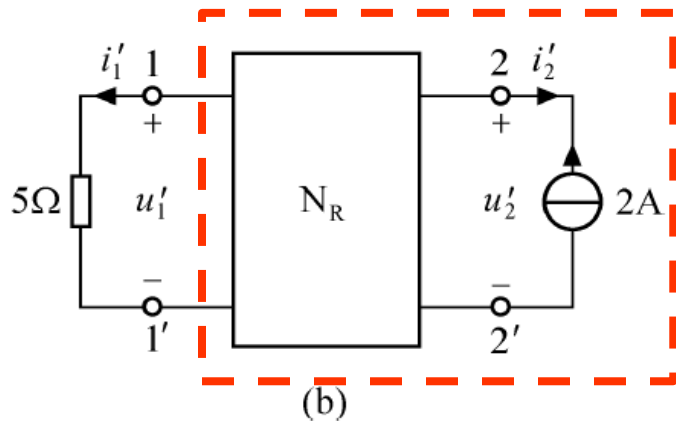
(a)



(b)

②求 R_o ：由图 (a) 得

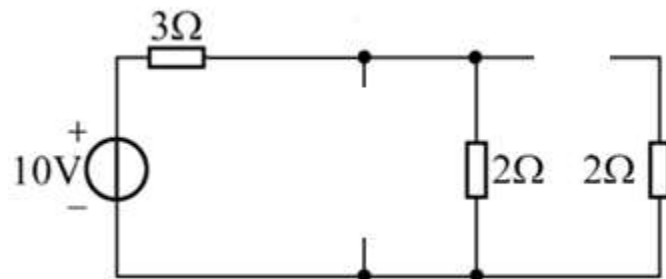
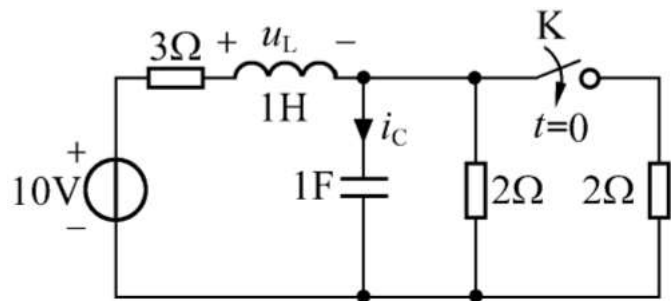
$$R_o = \frac{u_1}{-i_1} = 5\Omega$$



③由戴维南定理，(b)图等效为：

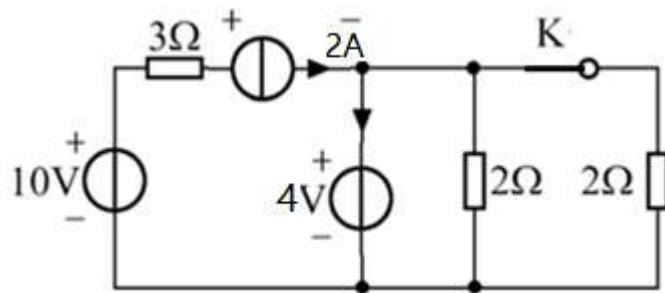
$$i'_1 = \frac{5}{5+5} = 0.5A$$

2. 题图所示电路原已稳定, $t=0$ 时开关K闭合, 试求 0^+ 时刻电容电流及电感电压。

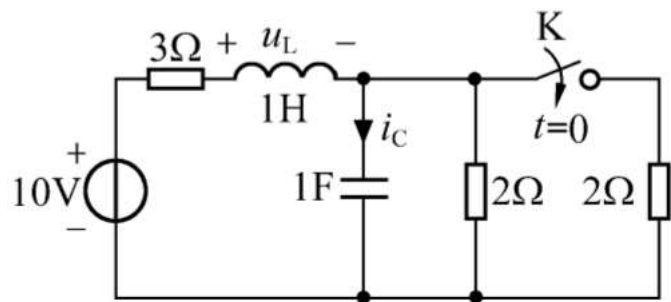


$$i_L(0^-) = \frac{10}{3+2} = 2\text{A} \quad i_L(0^+) = i_L(0^-) = 2\text{A}$$

$$u_C(0^-) = 2 \times 2 = 4\text{V} \quad u_C(0^+) = u_C(0^-) = 4\text{V}$$



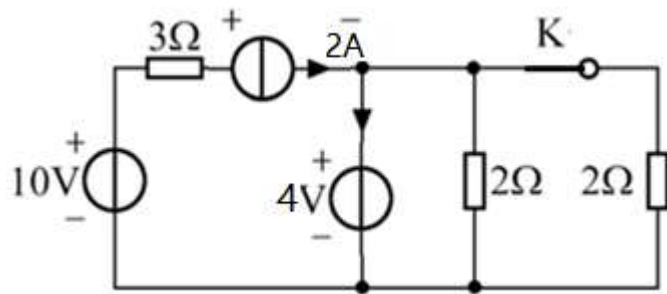
2. 题图所示电路原已稳定， $t=0$ 时开关K闭合，试求 0^+ 时刻电容电流及电感电压。



$$i_C(0^+) = 2 - \frac{4}{2 // 2} = -2A$$

$$3 \times 2 + u_L(0^+) + 4 - 10 = 0$$

$$u_L(0^+) = 0V$$



THE END