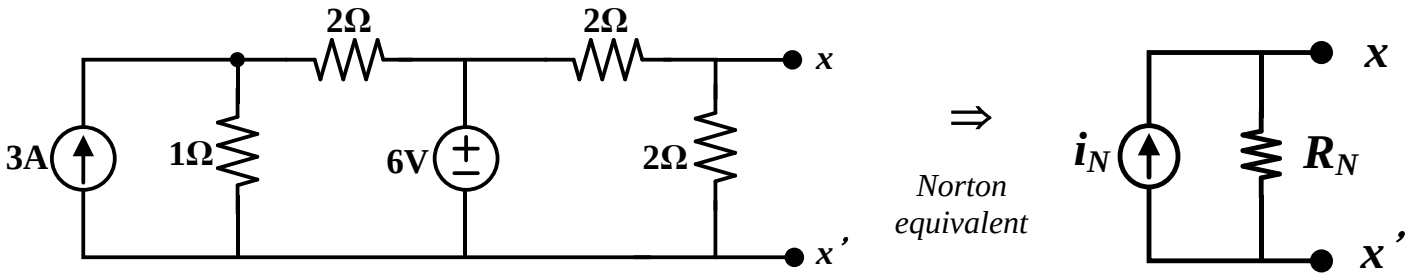
電路學(EE2210)第三次隨堂考

2016年10月12日
時間：10 分鐘
Close Book

學號：_____

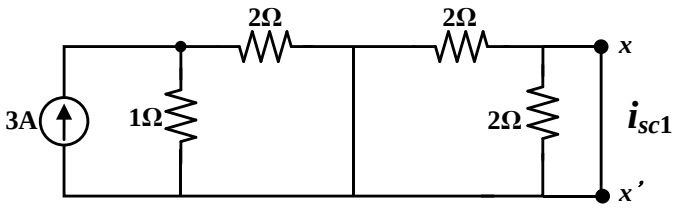
姓名：_____

Find the Norton equivalent circuit of the network as shown at the terminals marked *xx'* in the circuit. (100%)

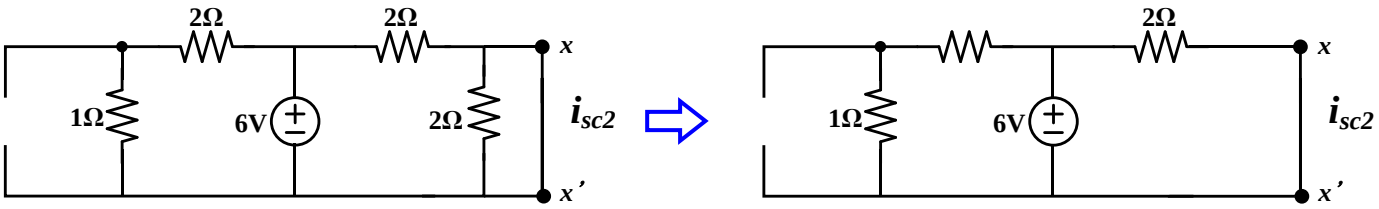


Solution:

The first step is to find the Norton equivalent current i_N, this short circuit current can be found by using superposition method.



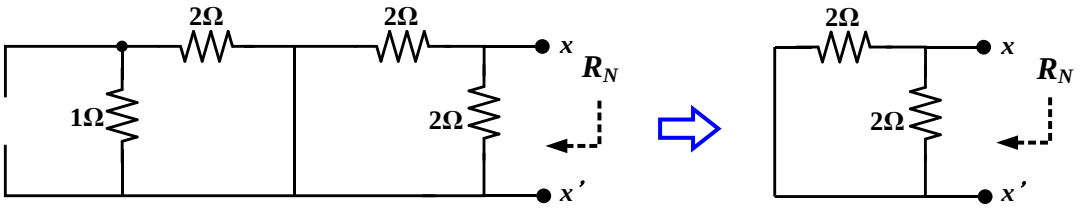
We turn off the voltage source (short) to find the short circuit current i_{sc1} contributed by the current source for ports *xx'* . We can quickly find out that the current i_{sc1} is 0.



Then, we turn off the current source (open) to find the short circuit current i_{sc2} contributed by the voltage source for ports *xx'* .

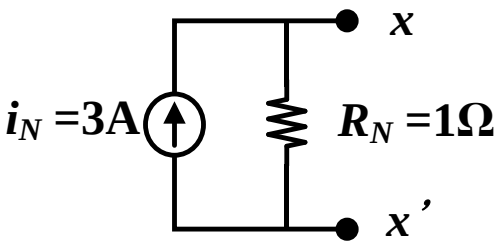
$$i_{sc2} = \frac{6}{2} = 3\text{A}$$

Second step is to find the Norton equivalent resistance R_N.



$R_N = 2 \parallel 2 = 1\Omega$

Finally, the Norton equivalent circuit of this circuit network can be drawn as follows:



i_N =_____3A_____, R_N =_____1Ω_____.