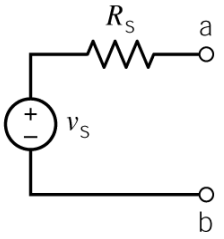
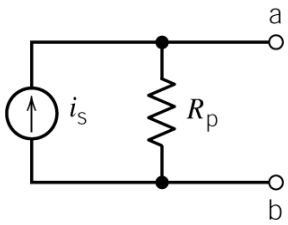
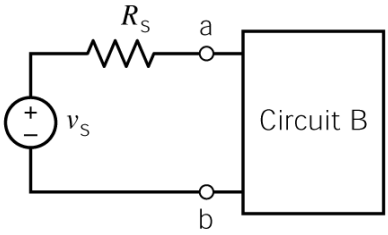
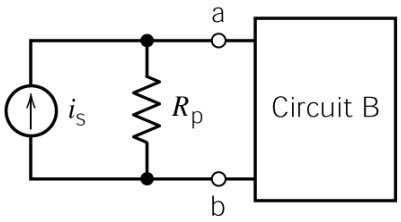


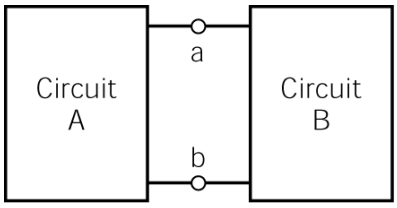


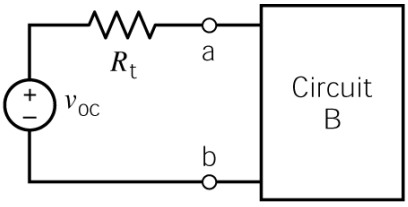
A voltage source v_s connected in series with a resistor R_s and a current source i_s connected in parallel with a resistor R_p are equivalent circuits provided that

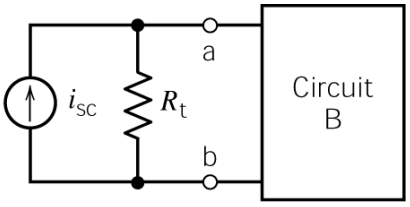
$$R_p = R_s \quad \text{and} \quad v_s = R_s i_s$$



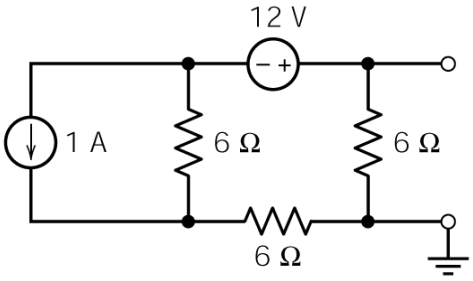


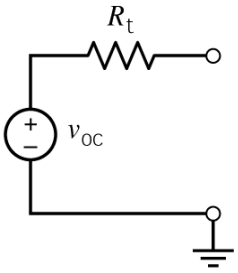






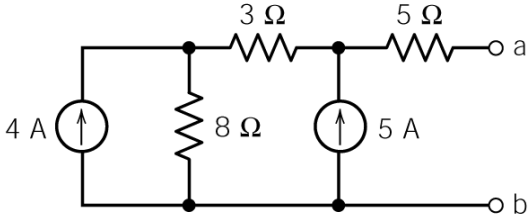
Problem 5.4-3
Find the Thevenin equivalent circuit for this circuit:





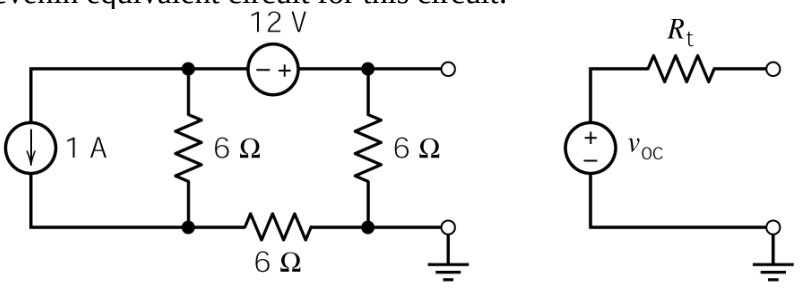
There are no dependent sources in this circuit. We can try to reduce this circuit to its Thevenin equivalent using source transformations and equivalent resistance.

Problem 5.5-3
Find the Norton equivalent circuit for this circuit:



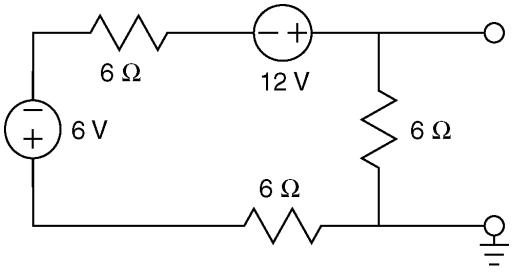
Solution to Problem 5.4-3

We want to find the Thevenin equivalent circuit for this circuit:

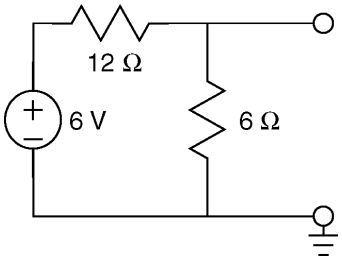


There are no dependent sources in this circuit. We can try to reduce this circuit to its Thevenin equivalent using source transformations and equivalent resistance.

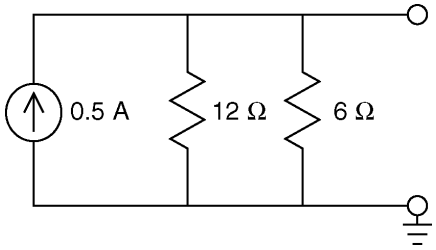
The circuit from can be reduced to its Thevenin equivalent circuit in five steps:



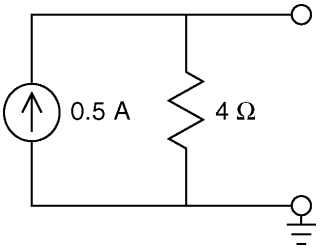
(*a*)



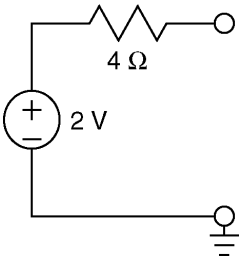
(*b*)



(*c*)



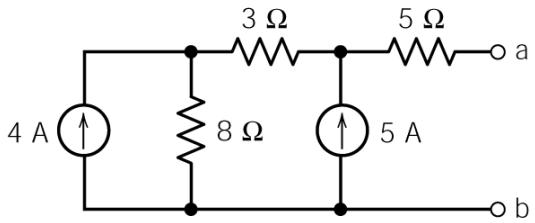
(*d*)



(*e*)

Recognizing (*e*) as a Thevenein equivalent circuit shows that the Thevenin resistance is $R_t = 4\ \Omega$ and the open circuit voltage, $v_{oc} = 2$ V.

Solution to Problem 5.5-3
We want to find the Norton equivalent circuit for this circuit:



There are no dependent sources in this circuit. We can try to reduce this circuit to its Norton equivalent using source transformations and equivalent resistance.