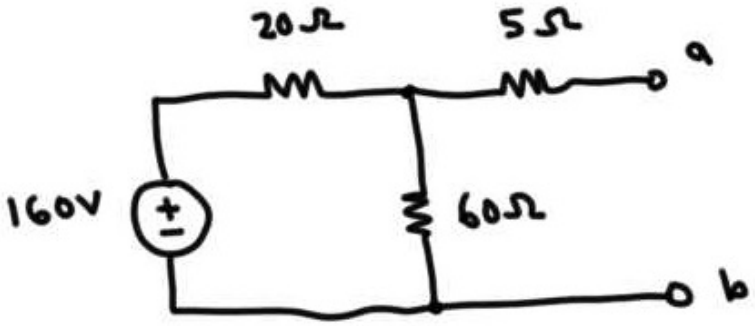
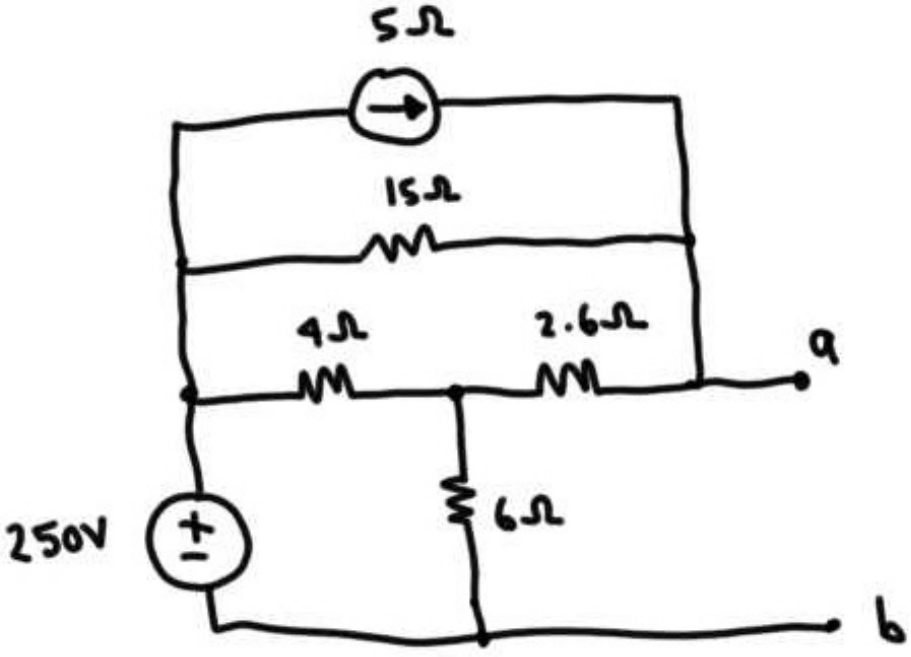
Thevenin Equivalent Circuits: Given a linear network, it is always possible to replace the network with a voltage source in series with a resistor.

1) Find the Thevenin equivalent with respect to terminals a,b in the circuit shown below by finding the following:
   a) Find the open circuit voltage, V_{oc}, with respect to the terminals a, b.
   b) Find the short circuit current, i_{sc}, with respect to the terminals a, b.
   c) Calculate the Thevenin resistance, R_{Th}, and sketch the Thevenin equivalent circuit with respect to the terminals a, b.

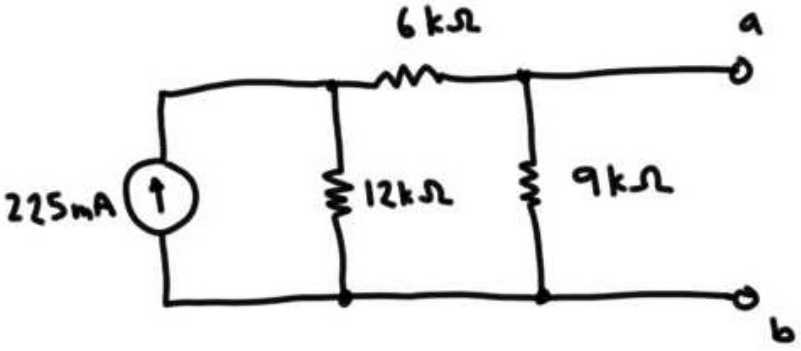


2) Find the Thevenin equivalent with respect to terminals a,b in the circuit shown below. Sketch the Thevenin equivalent circuit showing all the relevant calculated values.

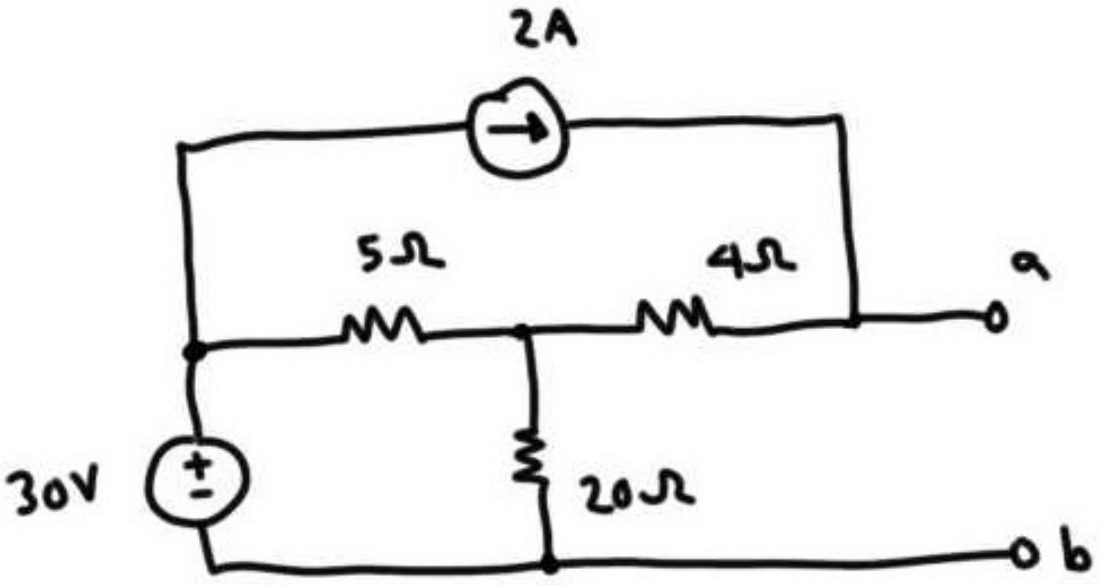


Norton Equivalent Circuits: Given a linear network, it is always possible to replace the network with a current source in parallel with a resistor.

1) Find the Norton equivalent with respect to terminals a,b in the circuit shown below by finding the following:
   a) Find the open circuit voltage, V_{oc}, with respect to the terminals a, b.
   b) Find the short circuit current, i_{sc}, with respect to the terminals a, b.
   c) Calculate the Thevenin resistance, R_{Th}, and sketch the Norton equivalent circuit with respect to the terminals a, b.

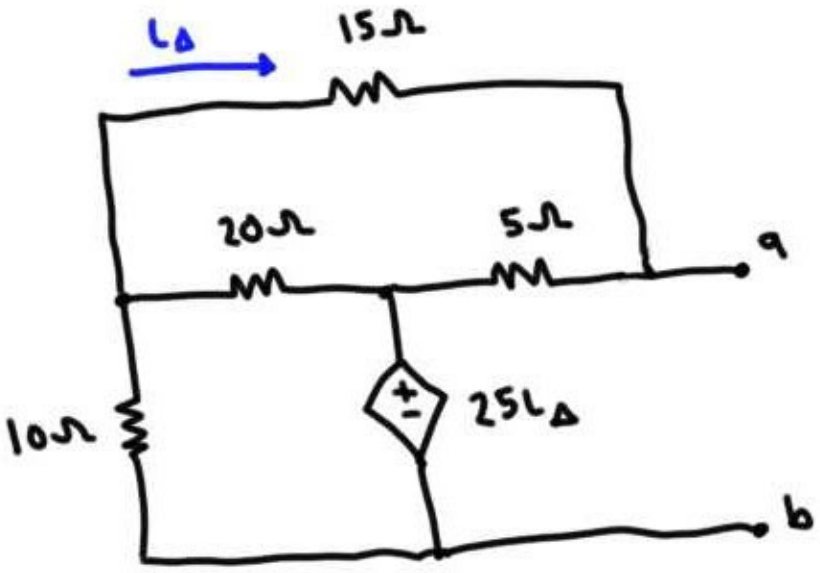


2) Find the Norton equivalent with respect to terminals a,b in the circuit shown below. Sketch the Norton equivalent circuit showing all the relevant calculated values.



Special Cases: Sometimes finding the Thevenin or Norton equivalent circuits is not as straight forward. Here are some interesting and challenging cases where finding the equivalents is possible yet requires a bit more insight and thought.

1) Find the Thevenin equivalent with respect to terminals a, b.



2) Find the Norton equivalent with respect to terminals a, b.