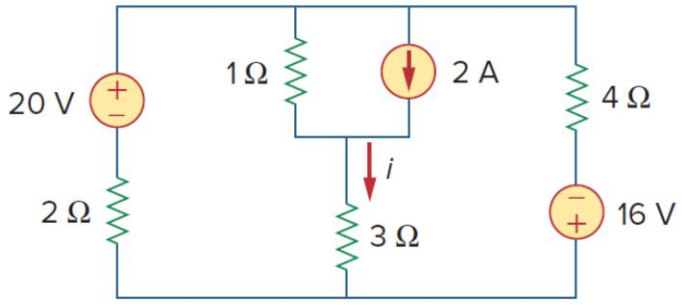
Homework 3

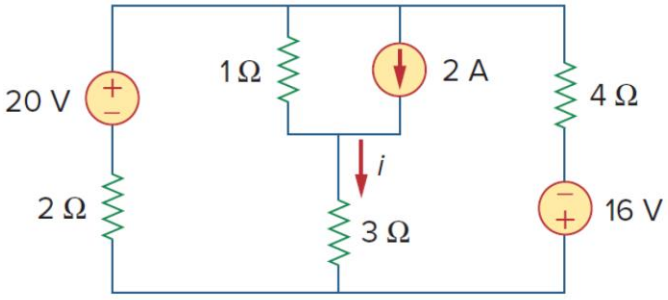
Answer all the required problems for each assignment and round your final solutions to two decimal places, if needed. The optional problems will not be graded but may show up on an exam.

Assignment 1

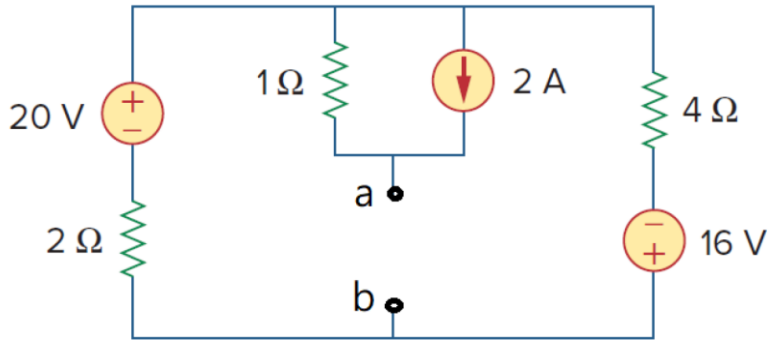
1. Use the source transformation to find the current i in 3 Ω resistor and the power associated with the current source 2 A. 25 points



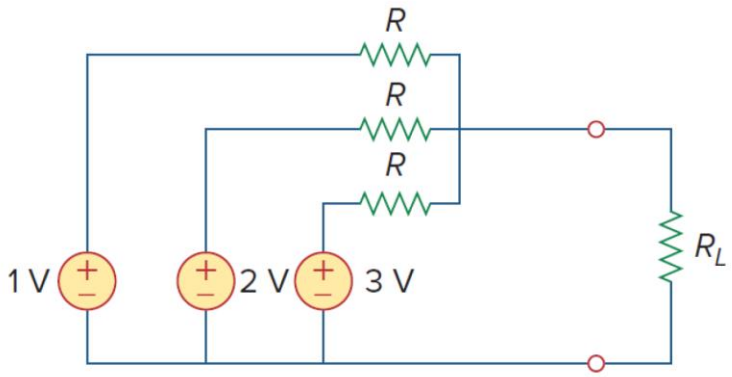
2. Use the superposition principle to find the current i in 3 Ω resistor and the power associated with the current source 2 A. 25 points



3. For the following circuit, find the Thevenin equivalent circuit seen by the terminals **a** and **b**. If a 3 Ω resistor is connected to the terminals **a** and **b**, find the current in the resistor (assume the reference direction of the current in 3 Ω resistor is flowing from the top to the bottom). Compare the three methods used for solving the same circuit, which method would you recommend? 25 points



4. For the circuit below, determine the value of R so that the maximum power delivered to the load R_L is 12 mW. 25 points



Required Problems from your book (25pts each)

4.59.

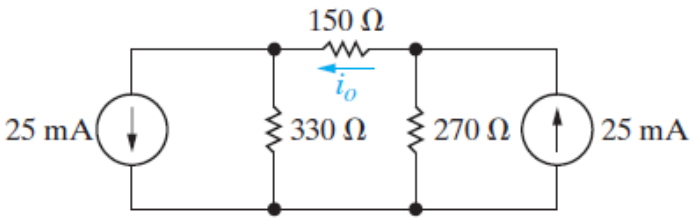


Fig. P4.59

(a) Use source transformations to find the current i_0 in the circuit in Fig. P4.59

(b) Verify your solution by using the node-voltage method to find i_0.

4.64.

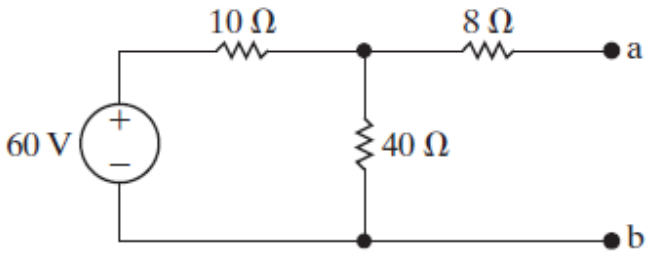


Fig. P4.64

Find the Thévenin equivalent with respect to the terminals a, b for the circuit in Fig. P4.64.

4.74.

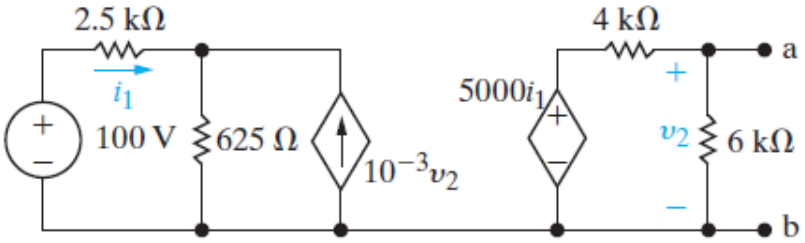


Fig. P4.74.

Determine the Thévenin equivalent with respect to the terminals a, b for the circuit shown in Fig. P4.74.