

# ELEN 50 Project 1 Pre-lab

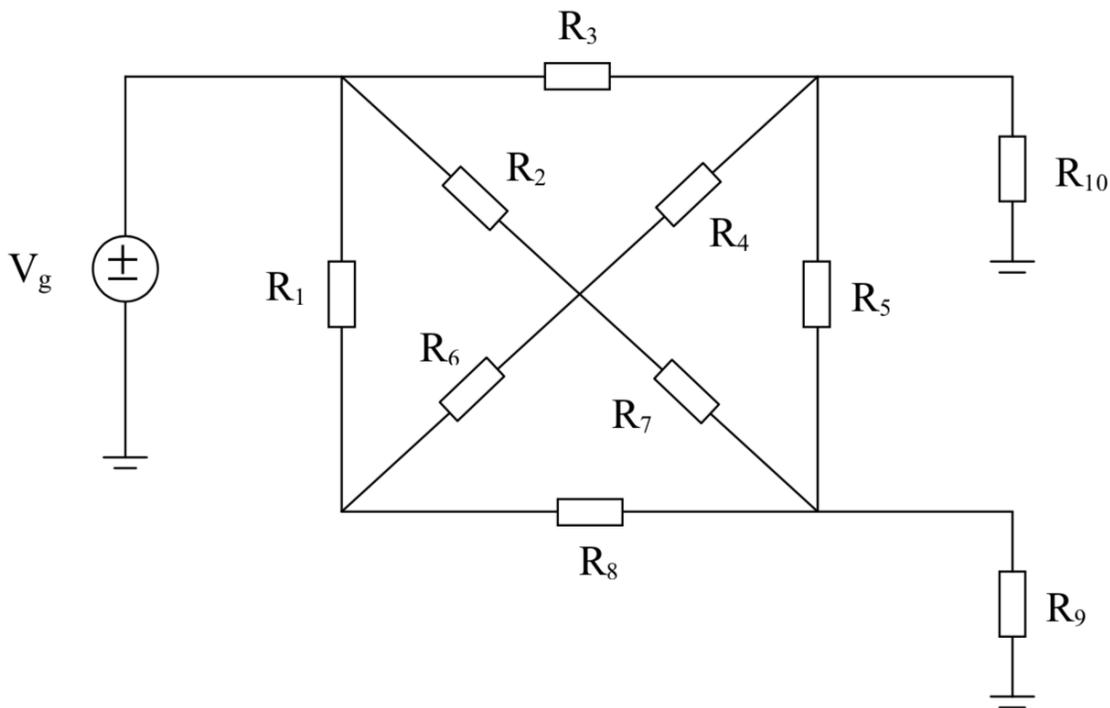


Fig. 1. A power distribution network.

For the circuit above, determine the Thevenin equivalent as seen by  $R_9$  (Problem 1 in the lab assignment) using the following methods.

- i) Set up 4 node-voltage equations (1 at each essential node except  $V_g$  which is known) for calculating open-circuit voltage, and 3 node-equations for calculating short-circuit current. You will use these equations for your MATLAB program during the lab.
- ii) Simplify the circuit by reducing to 2 essential nodes excluding the one at  $V_g$ . Using convenient resistor values, determine the open-circuit voltage and Thevenin resistance.

During the lab, verify that the solution obtained using your MATLAB program agrees with that from part ii).