

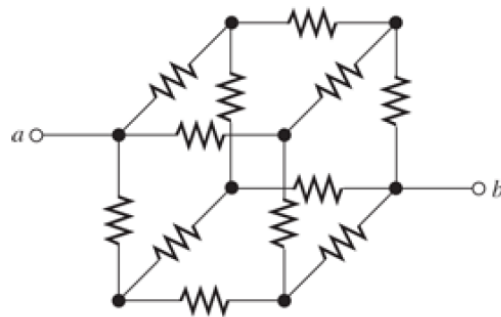
ECE100
Homework-2

Total Points: 100

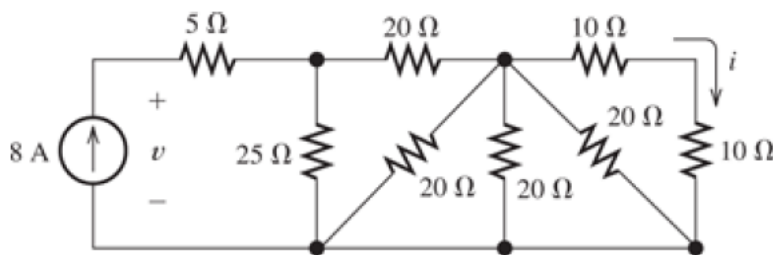
Required Readings: Chapter 1, 2 and class notes

Submit your work in a pdf file electronically in the CCLE website before April 11th 11:59 pm. Late homework will not get credit!

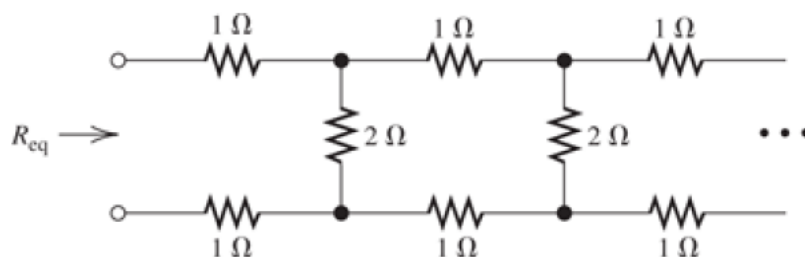
1. Twelve $1\ \Omega$ resistors are arranged on the edges of a cube, and terminals a and b are connected to diagonally opposite corners of the cube. The problem is to find the resistance between the terminals. Approach the problem this way: Assume that 1 A of current enters terminal a and exits through terminal b. Then, the voltage between terminals a and b is equal to the unknown resistance. By symmetry considerations, we can find the current in each resistor. Then, using KVL, we can find the voltage between a and b. (15 points)



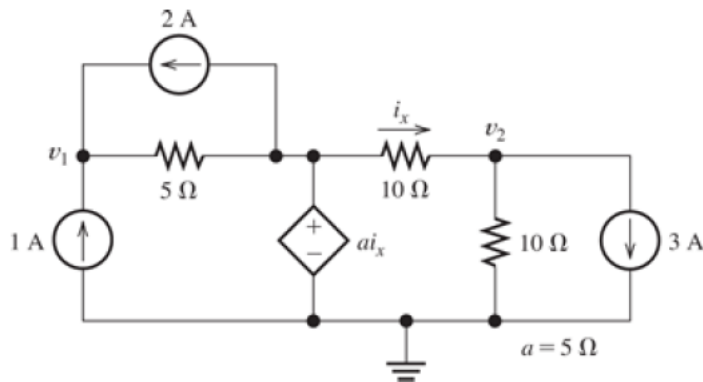
2. Find the values of v and i for the circuit below. (15 points)



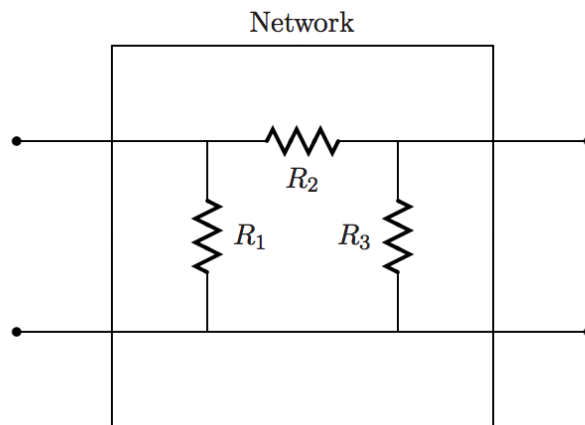
3. Find the equivalent resistance for the infinite network shown in figure below (10 points)



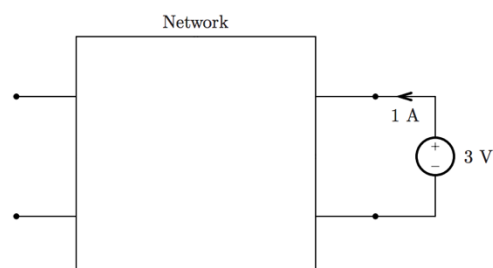
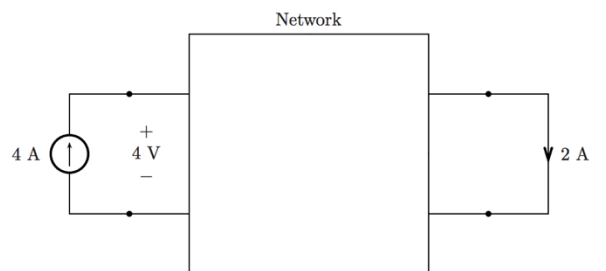
4. Solve for the node voltages v_1 and v_2 shown in Figure below (20 points)



5. The following network has two ports and three resistors. The resistor values R_1 , R_2 and R_3 are unknown. (20 points)



Using the results of the following two experiments performed on the network, find the unknown values of the three resistors.



6. The voltage across a 2-H inductance is shown in Figure below. The initial current in the inductance is $i_L(0)=0$. Sketch the current, power, and stored energy to scale versus time. (20 points)

