

MIT OpenCourseWare  
<http://ocw.mit.edu>

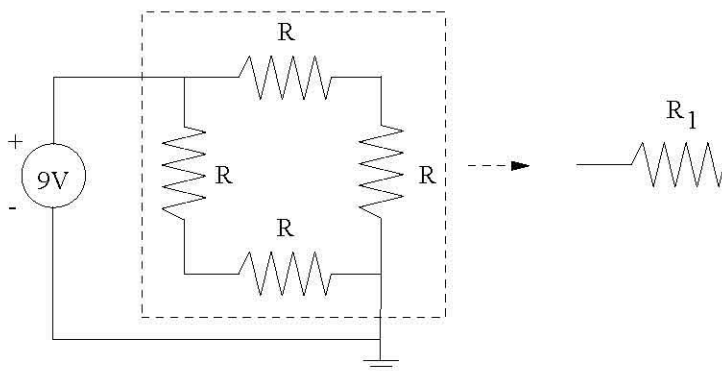
18.085 Computational Science and Engineering I  
Fall 2008

For information about citing these materials or our Terms of Use, visit: <http://ocw.mit.edu/terms>.

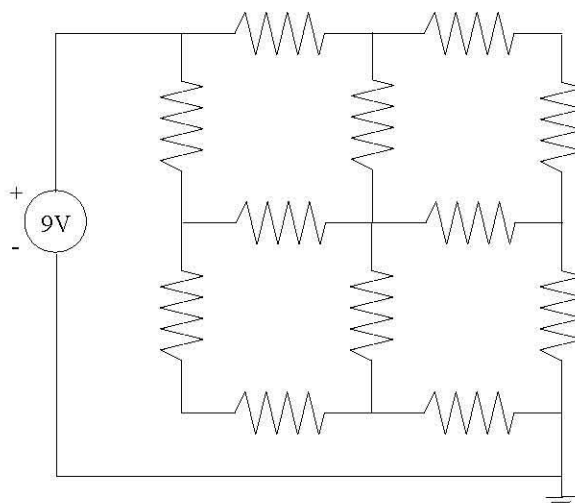
## 18.085: Matlab Homework #2

**Calculate the effective resistance of a network of resistors.** Using matlab, calculate the effective resistance of a square network of resistors as shown below. (“Effective resistance” meaning if you replaced the entire network with one resistor,  $R_1$ , how big is  $R_1$ ?).  $R$  for each resistor in the network is 1 and there are  $N$  resistors on each edge of the network. (see figures).

(a) Calculate  $R_1$  for  $N = 1$ :



(b) Calculate  $R_1$  for  $N = 1$ :



(c) **Bonus question:** Generalize the code for arbitrary  $N$  and plot  $N$  vs  $R_1$ .