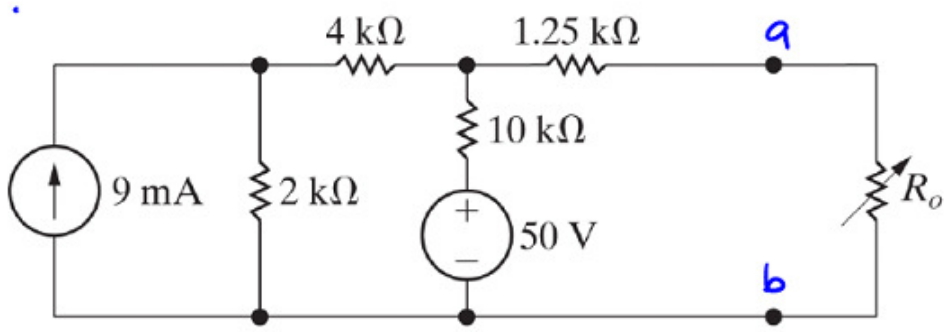
ROSE-HULMAN INSTITUTE OF TECHNOLOGY

ECE203 DC Circuits Spring 2016-2017

Homework Set #16
DUE Monday, April 24, 2017

1. Recall that maximum power transfer occurs when $R_L = R_{Th}$. The rheostat (R_0) is adjusted to give maximum power transfer.

   a) Find the value of R_0.
   b) Find the maximum power that can be delivered to R_0.



2. In order to provide a graphical verification of the Maximum Power Transfer Theorem, plot (EXCEL, MATLAB or MAPLE) the power P_L extracted from this circuit (in other words, the power absorbed by a load resistor, R_L, connected across terminals A-B) as a function of the load resistance R_L as R_L is varied between 0.25 R_{Lmax} and 4R_{Lmax}. Your plot should reveal that P_L is at a maximum when $R_L = R_{Lmax}$. *Hint: you found the Thevenin equivalent of this circuit in homework 14.*