

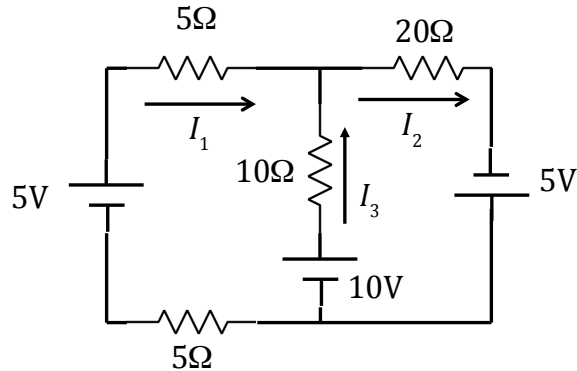
P116A Homework 1

Due 10/4/19 by 5PM

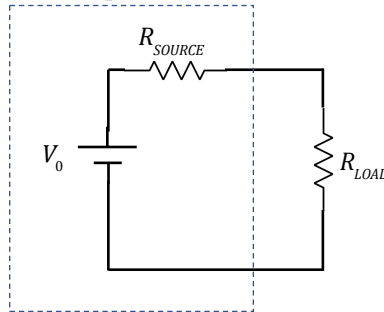
1. Show that N resistors in parallel have a resistance

$$R = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \dots + \frac{1}{R_N}}$$

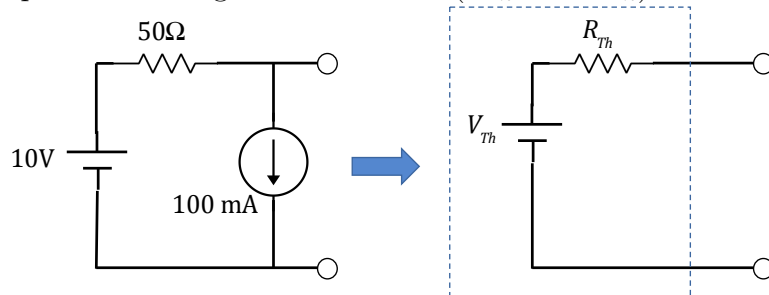
2. Solve for I_1 and I_2 (including sign!) in the following circuit.



3. In the following circuit, show that for a fixed voltage V_0 , the power dissipated in the load is maximum when the load resistance equals the source resistance ($R_{LOAD} = R_{SOURCE}$)



4. Find then Thévenin equivalent voltage and resistance (V_{Th} and R_{Th}) for the following circuit.



5. At what frequency f does an RC lowpass filter attenuate by 6 dB (output voltage equal to half the input voltage), in terms of R and C ? Write an expression for the phase shift at that frequency.