

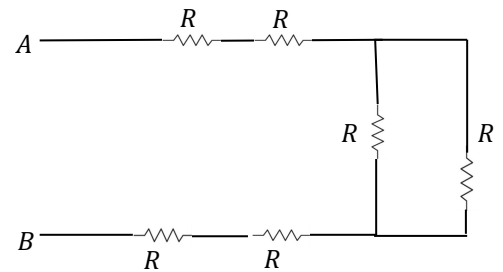
Name _____

Physics 111 Quiz #3, September 29, 2025

Please show all work, thoughts and/or reasoning to receive partial credit. The quiz is worth 10 points total, and all parts may not be of equal weight.

I affirm that I have carried out my academic endeavors with full academic honesty.

1. Suppose that you have the network of resistors shown below, where this network of resistors forms part of a larger circuit which is not shown. What is the equivalent resistance of the network of resistors?



2. Suppose at points A and B in the circuit above that we connect a $100V$ battery and a capacitor with capacitance C . If we need to ultimately store $500mJ$ worth of energy in the capacitor when the capacitor is fully charged, what is the value of the capacitance that should be used?

3. What is the time constant for the circuit in part 2?
4. Suppose that the battery is disconnected and the fully charged capacitor is connected to the network of resistors in part 1. What initial current flows in the circuit?
5. How long does it take the discharging capacitor to lose 60% of its initial stored charge?