Wednesday Reading Assessment: Unit 1, Ohm's Law, Resistors in Complex Circuits

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February 14, 2024

1 Memory Bank

- $V = IR$ ... Ohm's Law, with V for voltage, I for current, and R for resistance.
- $R_{tot} = R_1 + R_2$ ... Total resistance of two resistors in series.
- $R_{tot}^{-1} = R_1^{-1} + R_2^{-1}$ ... Total resistance of two resistors in parallel.
- $P = IV$ ... The power consumed by a device that draws a current I at a voltage V.
- $I = \Delta Q / \Delta t$ ... The definition of current, a change in charge versus time.

2 Current from Resistance and Voltage

1. (a) Suppose an electrical circuit is comprised of a 5V battery, and two 1kΩ resistors *in series*. What is the current flowing from the battery? (b) Suppose an electrical circuit is comprised of a 5V battery, and two 1kΩ resistors *in parallel*. What is the current flowing from the battery?

3 Power

1. (a) Compute the power consumption for the circuits in parts (a) and (b) of the previous problem. (b) If the battery has 10 A hr of charge, how long will the battery last in each case?