

Homework 1: The Basics

Introduction

The problems for this assignment focus on charge, current, voltage, and power.

Problems

Connect

For these problems, you are not required to upload documentation of your work but you will definitely want to keep track of how you did the problem.

- (1) **A&S 1.2.**
- (2) **A&S 1.3.** For (d), you may want to look at Appendix C.5 for indefinite integrals.
- (3) **A&S 1.9.**
- (4) **A&S 1.14.**
- (5) **A&S 1.19.** Assume the values are given using the passive sign convention.
- (6) **A&S 1.26.**
- (7) **A&S 1.30.**
- (8) **A&S 1.34.**
- (9) **A&S 2.3.** Also, assuming the same length and resistance, determine the cross sectional area required if the bar were made of gold or teflon. You will not need to turn in those calculations.
- (10) **A&S 2.11.**
- (11) **A&S 2.13.**
- (12) **A&S 2.14.**

Sakai

For any Sakai problems, use the values and equations **given in the book**. Sometimes the values will be different from what Connect has, sometimes the setup will be different from what Connect has, and sometimes (as in the case below) you will not actually be assigned the Connect version of a problem.

- Based on **A&S 2.36** (and really, just Fig. 2.100): Instead of doing what is asked in the problem, first redraw the circuit symbolically (for instance, the $80\ \Omega$ resistor might be called R_1). Next, label each node and mesh. Count and report the number of nodes, essential nodes, branches, essential branches, meshes, and loops. State which nodes are essential nodes. State what elements are in each essential branch. State what all loops are using the loop/superloop notation from class (e.g. l_1 or sl_{1234}).