EEL 3003 (INTRODUCTION TO ELECTRICAL ENGINEERING), SUMMER 2013

Practice exercises from Lecture #2

Here are some additional pretty-easy practice exercises based on what we covered in Lecture #2. You may want to try these before tackling the homework problems (which are generally more difficult).

1. If a wire has a time-varying voltage $v(t)$ and current $i(t)$ given by the following equations:

$$v(t) = \frac{2\ \text{V}}{\text{s}} \cdot t, \qquad i(t) = \frac{2\ \text{A}}{\text{s}} \cdot t;$$

how much total charge and total energy is transferred along that wire between times $t = 0$ and $t = +2$ s?

2. Figure 1 below illustrates a circuit with branch currents labeled. Suppose that $I_s = 2$ A, $I_0 = -4$ A, $I_3 = -3$ A, and $I_4 = 2$ A. Find the rest of the branch currents in the circuit.

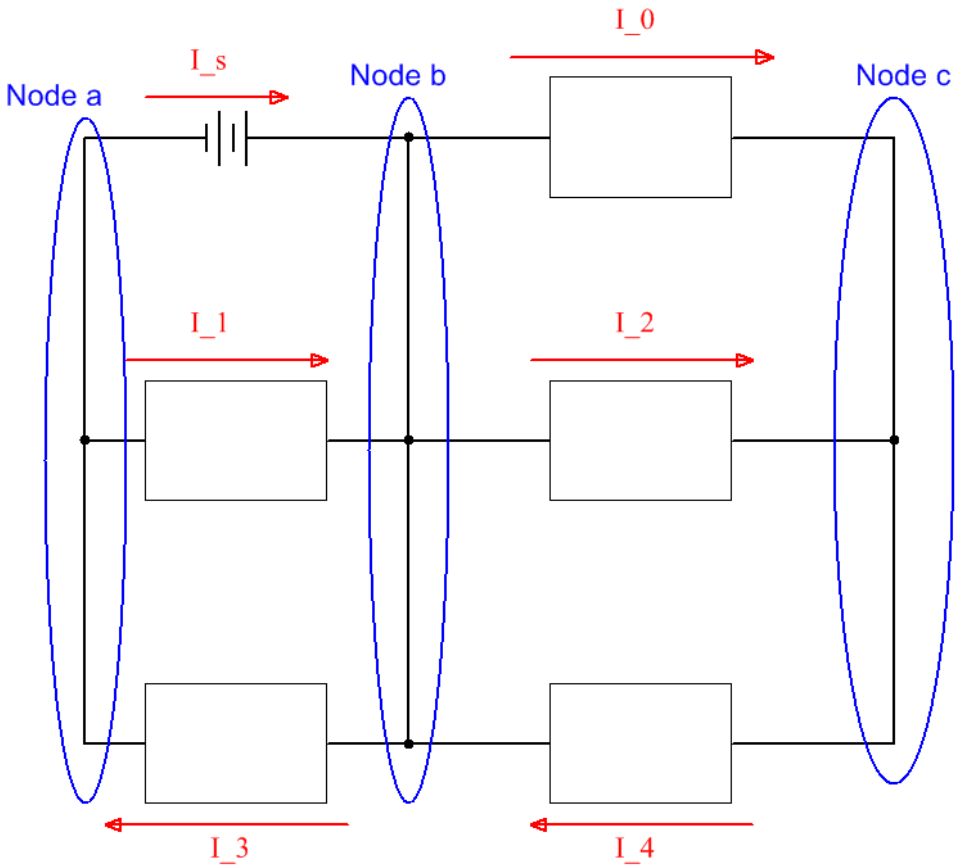

Figure 1. Circuit Diagram for Exercise #2

3. Figure 2 below illustrates a circuit with branch voltages labeled. Suppose that $V_s = 5$ V, $V_1 = 2$ V, $V_3 = -1$ V, $V_4 = 5$ V, and $V_5 = -4$ V. Find the values of the remaining labeled branch voltages in the circuit.

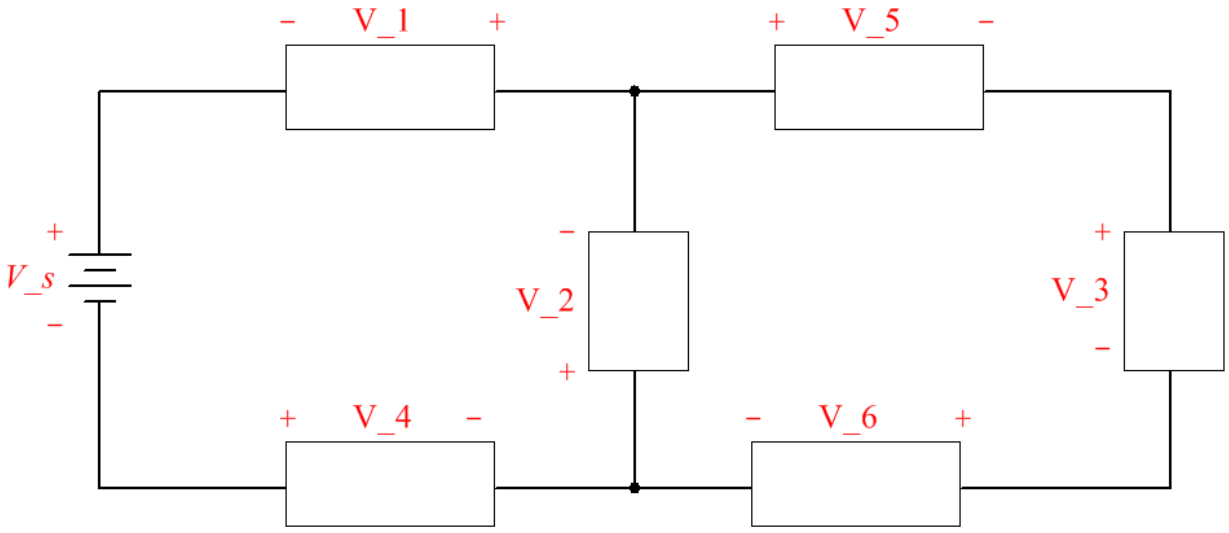

Figure 2. Circuit diagram for exercise #3.