Problems to hand in (Not all problems may be graded.)

1. Thomas, Rosa and Toussant, Chapter 2 problems: 4, 8, 9, 10, 14, 16, 20, 22 and 24.

2. Consider the circuit depicted in Figure 1. Write down the connection equations (i.e., the KCL and KVL equations).

3. Consider the circuit depicted in Figure 2. Add the missing reference marks in two distinct ways. Solve for all the voltages and currents in both cases. Do the results agree? Why or why not? (Do not use equivalent circuits.)

4. Consider the rather absurd circuit depicted in Figure 3. Note that the curved lines at line intersections indicate that the circuits are not connected at those crossings. “The wires pass over one another.” (Do not use equivalent circuits in answering the questions.)

   (a) How many nodes and how many elements are there?

   (b) How many independent node (KCL) and independent loop (KVL) equations should there be?

   (c) Write down a complete set of independent node and loop equations.
Study Problems (Will not be graded.)

- Thomas, Rosa and Toussant, Chapter 2 problems: 1, 5, 7, 11, 12, 15, 21 and 26.

Figure 1: Multiple ground marks

Figure 2: Reference mark invariance
Figure 3: Rube-Goldberg circuit