EECS 16A   Designing Information Devices and Systems I
Summer 2020
Homework 3A

This homework is due Wednesday, July 15, 2020, at 23:59.

Self-grades are due Sunday, July 19, 2020, at 23:59.

Submission Format

Your homework submission should consist of a single PDF file that contains all of your answers (any hand-written answers should be scanned).

Homework Learning Goals: *The objective of this homework is to introduce Node Voltage Analysis in the context of voltage divider circuits and circuits with more than one independent sources.*
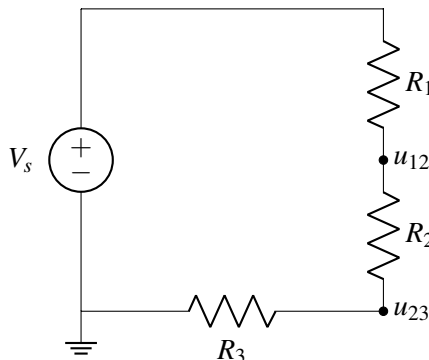
1. **Voltage divider**

   In the following parts, $V_s = 12\,\text{V}$. Choose resistance values such that the current through each element is $\leq 0.8\text{A}$.

   (a) Select values for R_1 and R_2 in the circuit below such that $u_{12} = 6\,\text{V}$.
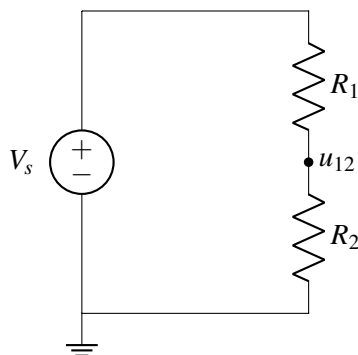
   (b) Select values for R_1, R_2, R_3 in the circuit below such that $u_{12} = 6V$ and $u_{23} = 2V$.
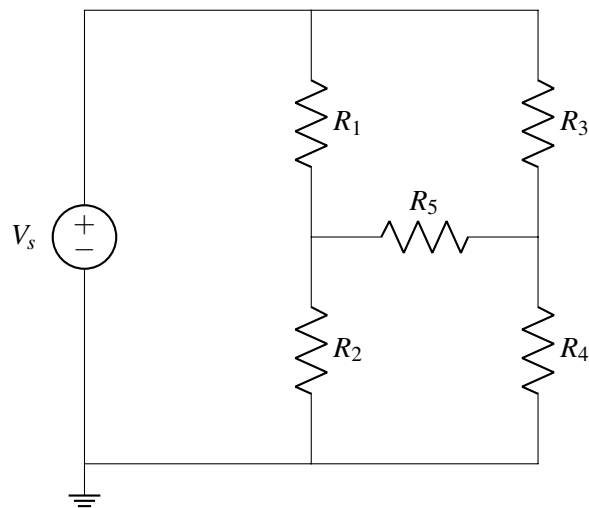

2. **Circuit Analysis**

   Using the steps outlined in lecture, analyze the following circuits to calculate the currents through each branch and the voltages at each node. Use the ground node labelled for you. You may use a numerical tool, such as IPython.

(a) $V_s = 5\,\text{V}, I_s = 2\,\text{A}, R_1 = R_2 = 2\,\Omega, R_3 = 4\,\Omega$
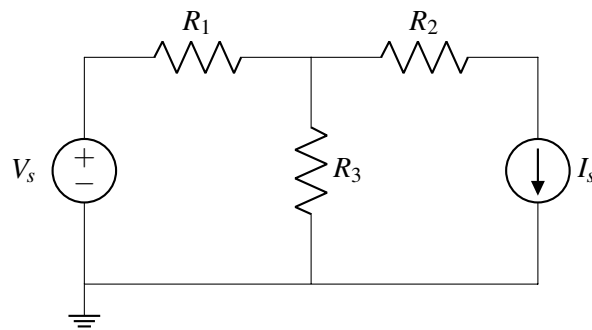
(b) $V_s = 5\,\text{V}, R_1 = 1\,\Omega, R_2 = 2\,\Omega, R_3 = 3\,\Omega, R_4 = 4\,\Omega, R_5 = 5\,\Omega$

3. Homework Process and Study Group

Who else did you work with on this homework? List names and student ID's. (In case of homework party, you can also just describe the group.) How did you work on this homework?