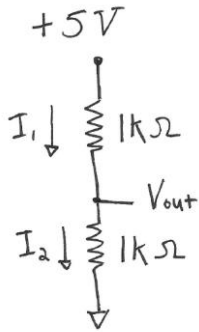


## Problem set: Resistors in series and parallel

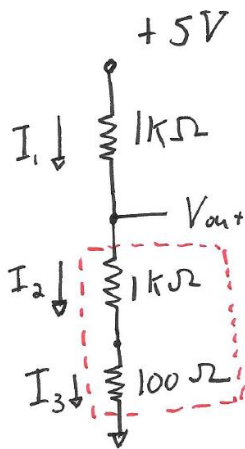
1) For the following circuit,



Please list the following (with units).  $V_{out}$  should be measured relative to ground.

- $V_{out}$  (theory) =
- $V_{out}$ (measured) =
- $I_1$  =
- $I_2$  =

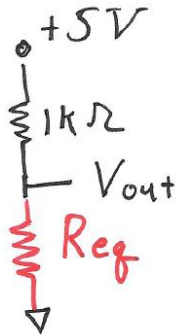
2) For the following circuit,



Please list the following (with units).

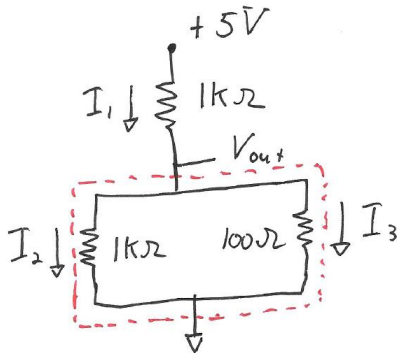
- $V_{out}$  (theory) =
- $V_{out}$ (measured) =
- $I_1$  =
- $I_2$  =
- $I_3$  =

3) For the previous circuit, we redraw with an equivalent circuit as follows:



What is the value of Req?

4) For the following circuit,



- $V_{out} \text{ (theory)} =$
- $V_{out} \text{ (measured)} =$
- $I_1 =$
- $I_2 =$
- $I_3 =$

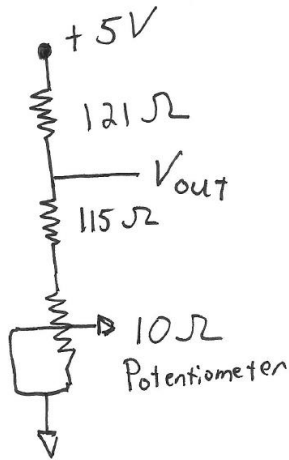
5) For the previous circuit, we redraw with an equivalent circuit as in problem 3. What is the value of Req?

6) Redo problem 4 replacing the 100 ohm resistor with 100 K.

- $V_{out} \text{ (theory)} =$
- $V_{out} \text{ (measured)} =$

- $I_1 =$
- $I_2 =$
- $I_3 =$

7) Build the following circuit using a 10 ohm potentiometer (variable resistor). Note that the potentiometer has three terminals and we are only using one.



In this arrangement the potentiometer is a resistor whose value we can vary between 0 and 10 Ohms. What is the maximum and minimum value of  $V_{out}$ ?

- $V_{out}$  (theory) maximum = \_\_\_\_\_ minimum = \_\_\_\_\_
- $V_{out}$  (exp) maximum = \_\_\_\_\_ minimum = \_\_\_\_\_

**Deliverables:**

Just fill in your results on this work sheet (or rewrite) and scan your handwritten work in. Again, these types of assignments are simply checked for completeness.