

ECE 321 - Homework #1

Push-Pull Amplifiers, Op-Amp Amplifiers. Due Monday, November 5th, 2018

ECE 321 Project:

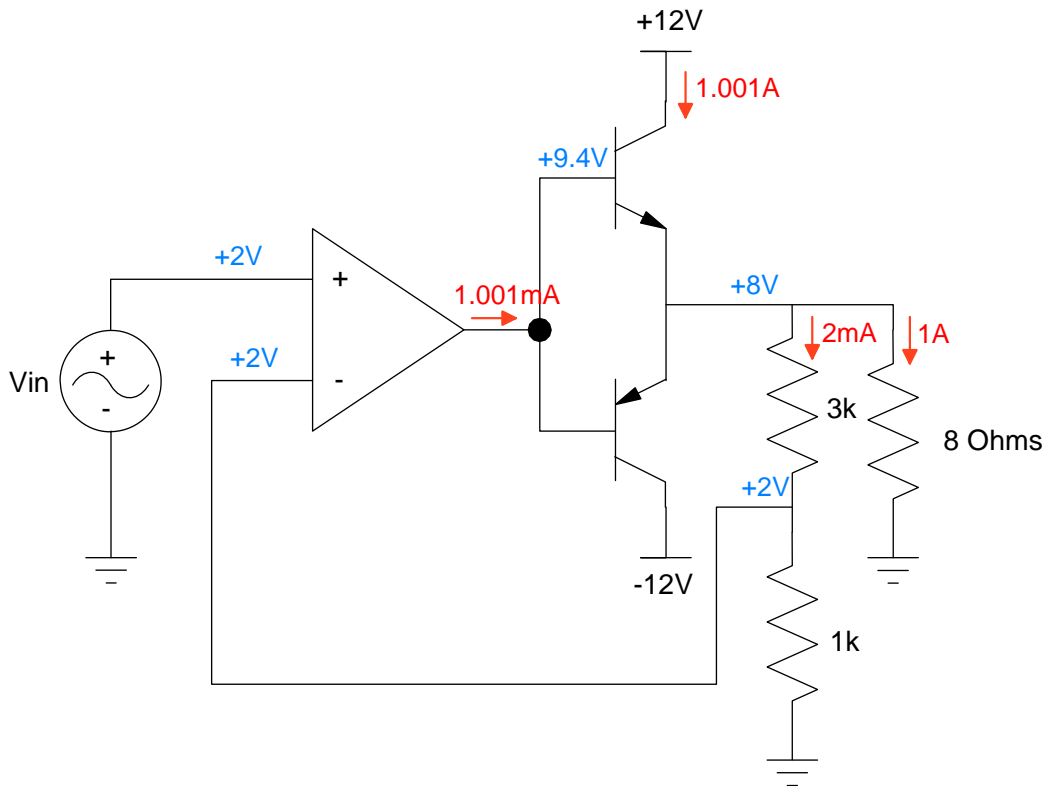
- 1) Pick a project for ECE 321 (see page 2 for suggestions)
 - Give the name of the people in your group
 - Specify the requirements for the overall project

For the following sections, assume TIP112 (NPN) and TIP117 (PNP) transistors:

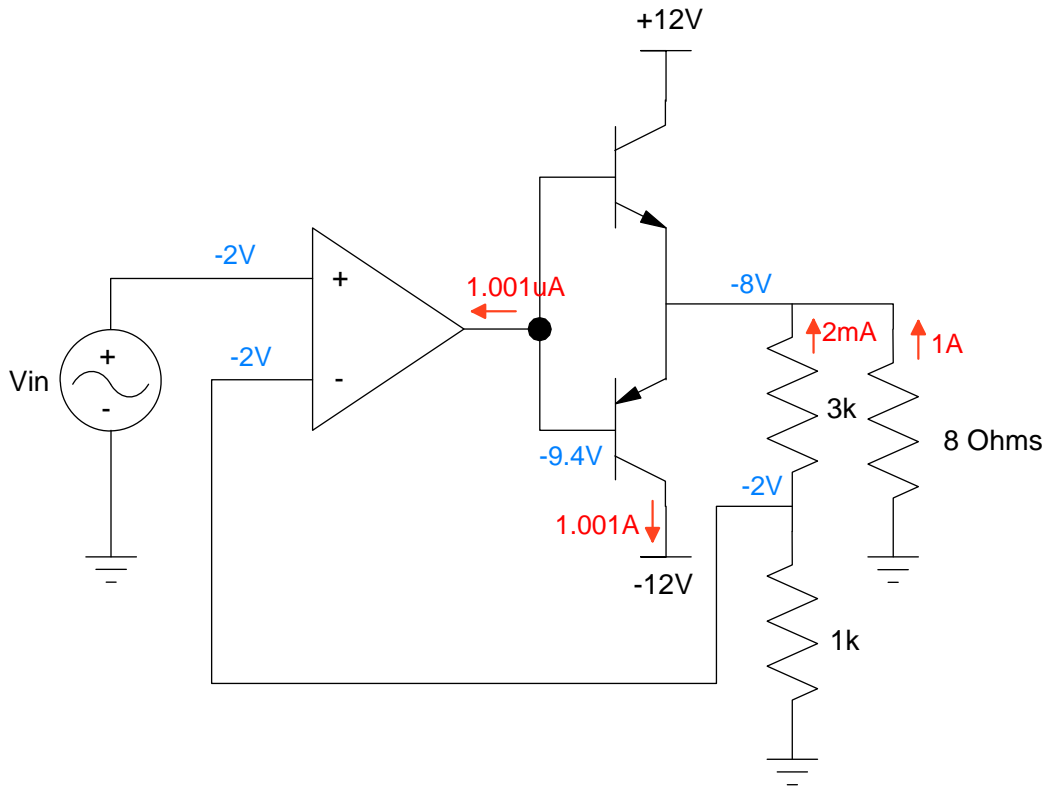
- $\beta = 1000$
- $|V_{be}| = 1.4V$
- $\min(|V_{ce}|) = 0.9V$
- $\max(|I_c|) = 3A$

Push-Pull Amplifiers

- 2) Specify the voltages and currents for the following voltage amplifier for
 - $V_{in} = +2V$

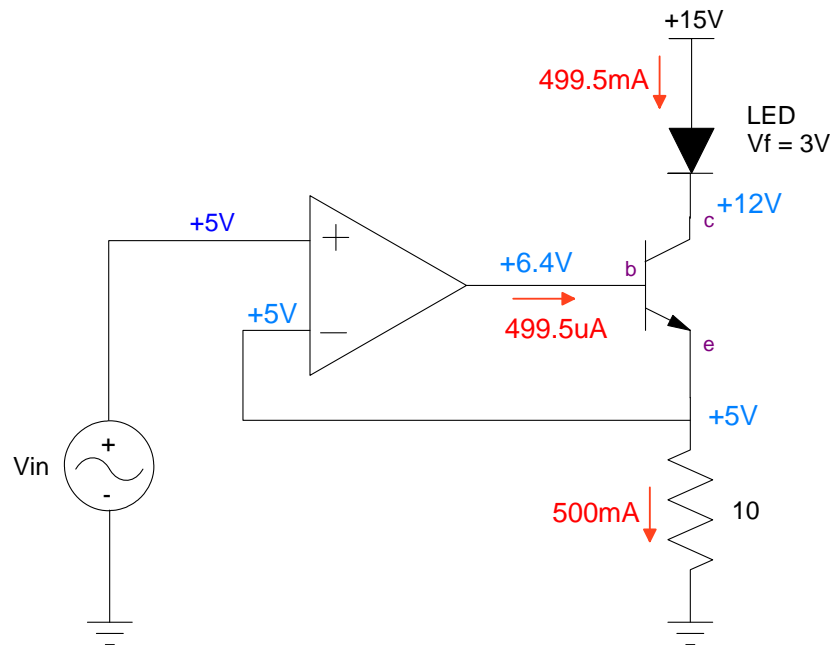


$V_{in} = -2V$



3) Specify the voltages and currents for the following current amplifier for

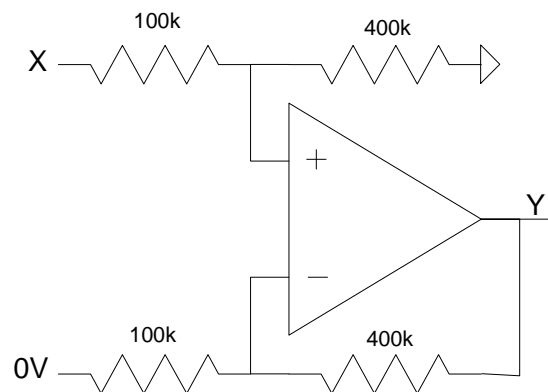
- $V_{in} = +5V$



Op-Amp Amplifiers

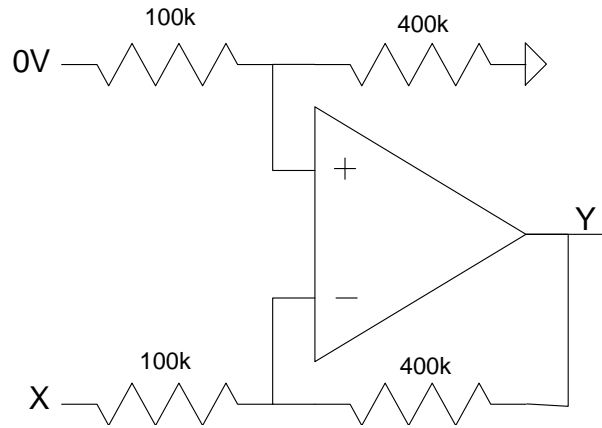
4) Design a circuit which implements the function

$$Y = 4X$$



5) Design a circuit which implements the function

$$Y = -4X$$



6) Design a circuit which implements the function

$$Y = 4X + 6$$

Rewrite as

$$Y = 4(X - (-1.5))$$

