Problem 1

Download National Semiconductor's Switchers made Simple Software Version 3.3 and install it.

- Design a Boost DC-DC converter with the following specs:

  \[ 8.0V \leq V_{in} \leq 9.5V \]
  \[ 0^\circ \leq T \leq 75^\circ C \]
  \[ V_0 = 15V \]
  \[ 0 \leq I_0 \leq 1Amp \]

- Turn in a Parts List and a Schematic.

- If you have trouble printing the Parts List or Schematic, save the design and e-mail it to me as an attachment.
Problem 2

For this problem, assume the opamp is ideal except for the offset voltage as shown

\[ V_{10} = 1 \text{mV} \]

Find \( V_o \) due to \( V_{10} \) for the circuits below.

**Circuit 1**

\[ V_1 \]
\[ R \]
\[ + \quad \frac{R}{+} \quad + \]
\[ R \]
\[ - \quad \frac{R}{-} \quad - \]

\[ V_2 \]

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When would \( V_{10} \) be significant for this circuit?

**Circuit 2**

\[ V_1 \]
\[ R \]
\[ + \quad \frac{R}{+} \quad + \]
\[ R \]
\[ - \quad \frac{R}{-} \quad - \]

\[ V_2 \]

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\[ V_o \]
Problem 3
Assume the opamp is ideal except for bias currents ($I_B$, on page 189 of the notes). Find $V_0$ due to bias currents for the circuit below.

\[ I_B = 10 \mu A \]

Problem 4
Find the gain, $V_0/V_s$ for the circuit below.