Ex. 4.6 p. 210

1. $G = -100 = -\frac{R_f}{R_i}$. Choose $R_i = 10 \, k\Omega$, $R_f = 1 \, M\Omega$.
   Other choices OK.

2. Input bias current compensation:
   Set $R_3 = \frac{R_i}{11} R_f$ (see lab manual p. 141 ff.).

3. Offset trimming:

4. High Z input:
   (See p. 90, H. 8H.)
Firstly, \( V_+ = 10 \text{V}, \) by divider.

For \( V_- < V_+ \), op-amp \( \text{out} = \text{A} \left( V_+ - V_- \right) \)
so op-amp saturates at \( V_- + V_{cc} \).
This back biases diode (i.e., turns diode off).
Hence \( \text{out} = \text{Vin} \).
We ignore small voltage drop across \( 2 \text{k} \) resistor.

For \( V_- > V_+ \left( = 10 \text{V} \right) \), op-amp \( \text{out} = \text{A} \left( V_- - V_+ \right) \)
so op-amp tends to go negative.
But this forward biases diode, turning on negative feedback.

From one of the golden rules,
\[
V_- = V_{out} = V_+ \left( = 10 \text{V} \right)
\]
\[
\Rightarrow \ V_{out} = +10 \text{V}
\]

To change output to \( +8 \text{V} \), change \( V_{cc} \rightarrow +12 \text{V} \).