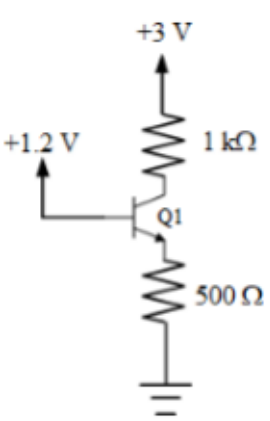
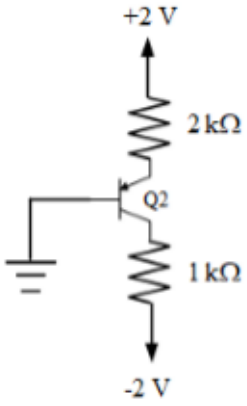
EE 315

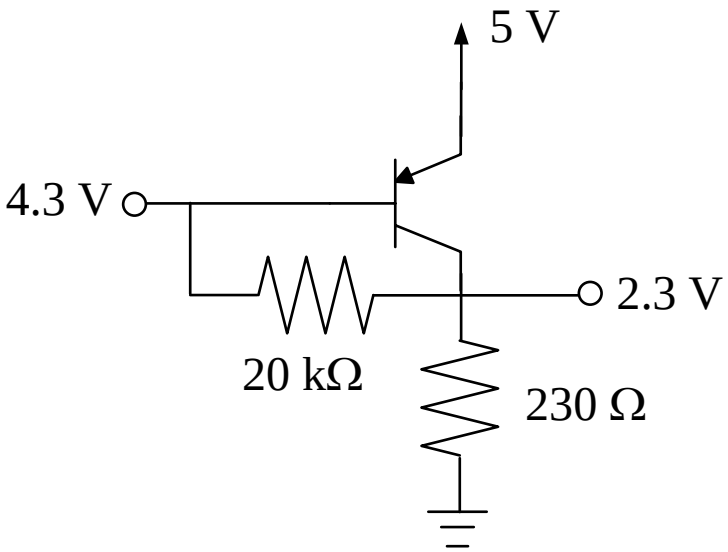
Practice Problems Module 5

1. For an npn BJT, the voltage v_{BE}=0.74 V for i_C=9.5mA. What i_C for v_{BE}=0.714 V?
2. For a given BJT, i_B=0.010mA and i_C=0.6mA. What are I_S, β, α, and i_E?
3. A BJT has $I_S=5x10^{-15}$ A and β fall in the range of 50 to 500. If the BJT operates in the active mode with v_{BE} = 0.64V, find the expected range of the collector, base, and emitter currents.
4. For Q_1 and Q_2 below, find the collector, base, and emitter currents for β=50 and $|V_{BE}|$=0.8V. What is the mode of operation for each circuit?





5. For the pnp transistor circuit below, find I_C and β.



6. For the following transistor, find the collector, base, and emitter currents and the collector and emitter voltages for the case where $\beta=100$ and β being very large. Assume $V_{BE}=0.7$ V. Do this for each of the following base voltages: $V_B=0$ V, $V_B=1$ V, and $V_B=2$ V.