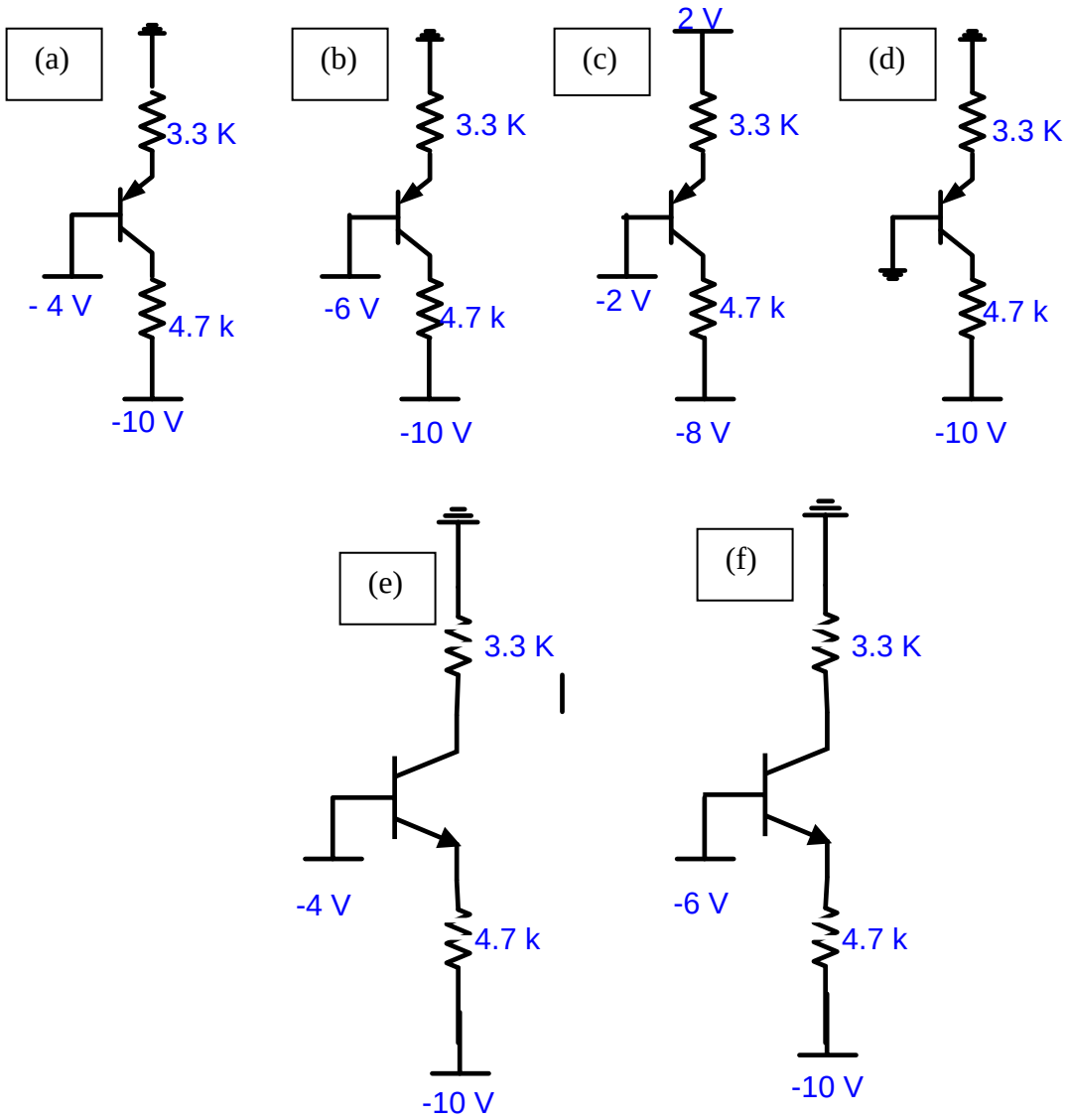
Sheet 4: BJT DC Analysis

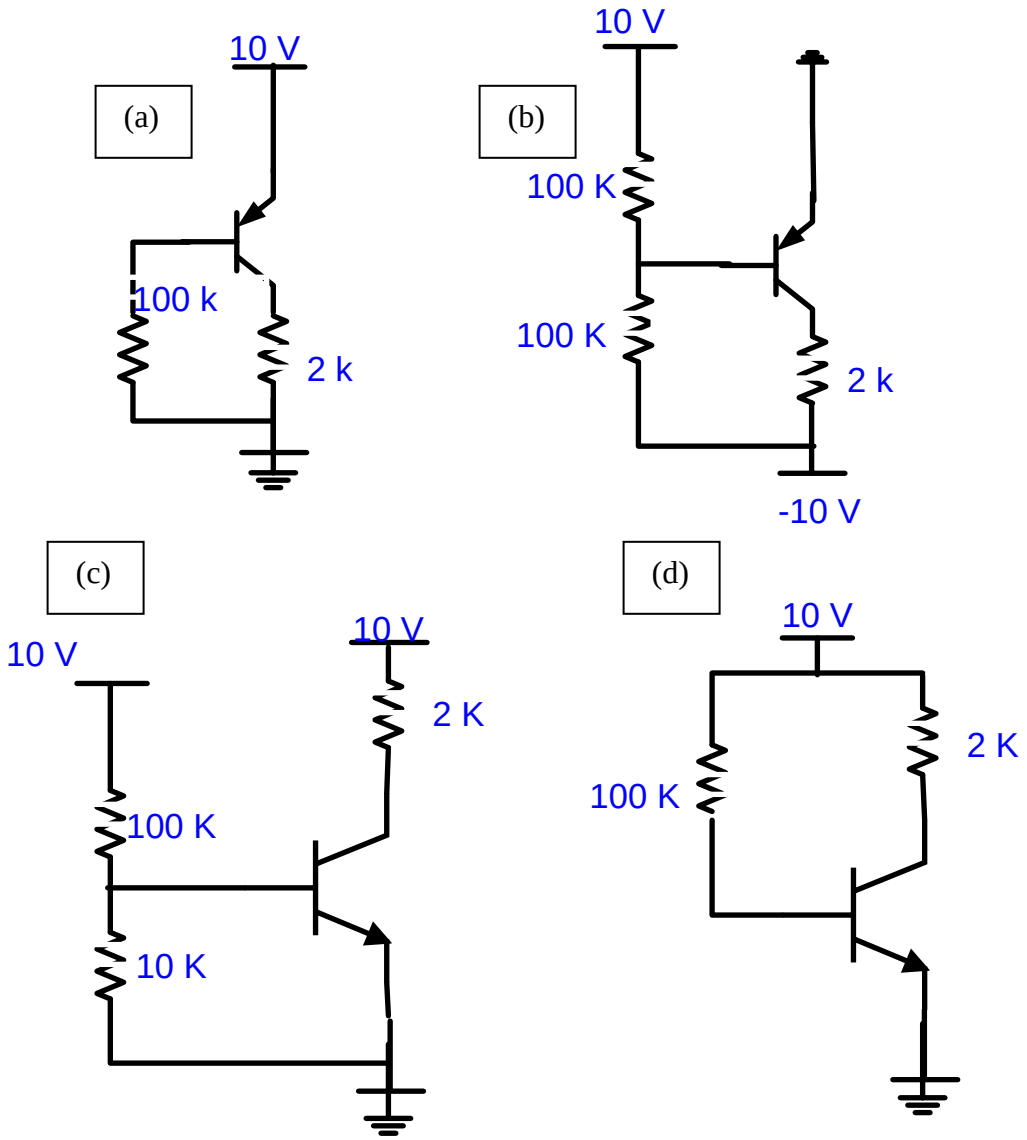
Problem 1:

For the following circuits, find node voltages, V_E, V_C, and branch currents I_E, I_C, I_B. Use V_{BE} (or V_{EB} for PNP transistor) = 0.7 V and β=50.



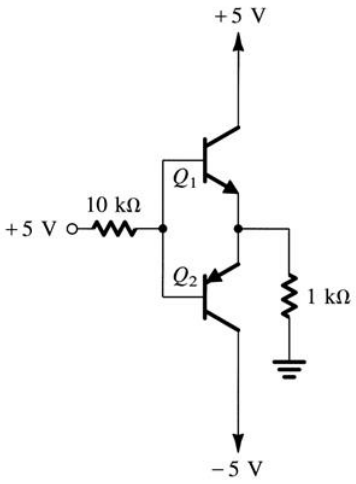
Problem 2:

For the following circuits in which V_{BE} (or V_{EB} for PNP transistor) = 0.7 V and β=10. Find the transistor's DC operating point?



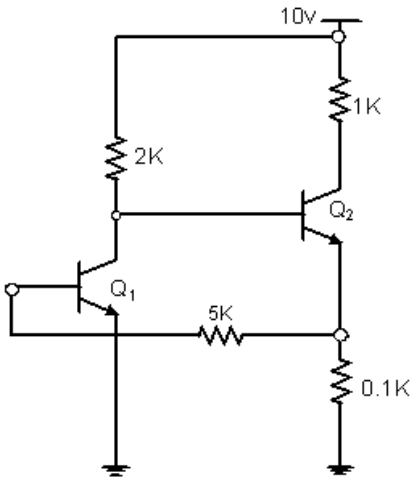
Problem 3:

Evaluate the voltages at all nodes and the currents through all branches. Assume: V_{BE} (or V_{EB} for PNP transistor) = 0.7 V, β=100.



Problem 4:

Evaluate the voltages at all nodes and the currents through all branches. State the DC mode of operation for the transistors. Assume: V_{BE} (or V_{EB} for PNP transistor) = 0.7 V β=50.



Problem 5

For the BJT circuit shown, $R_1=R_2=10k\Omega$, $V^+=10V$, $V^-=-2V$, $R_C=R_E=5k\Omega$, $R_3=100k\Omega$, $\beta=100$.

1. Find the labeled currents I_B, I_C, and I_E.
2. Calculate V_{CE}
3. What is the DC mode of the transistor?