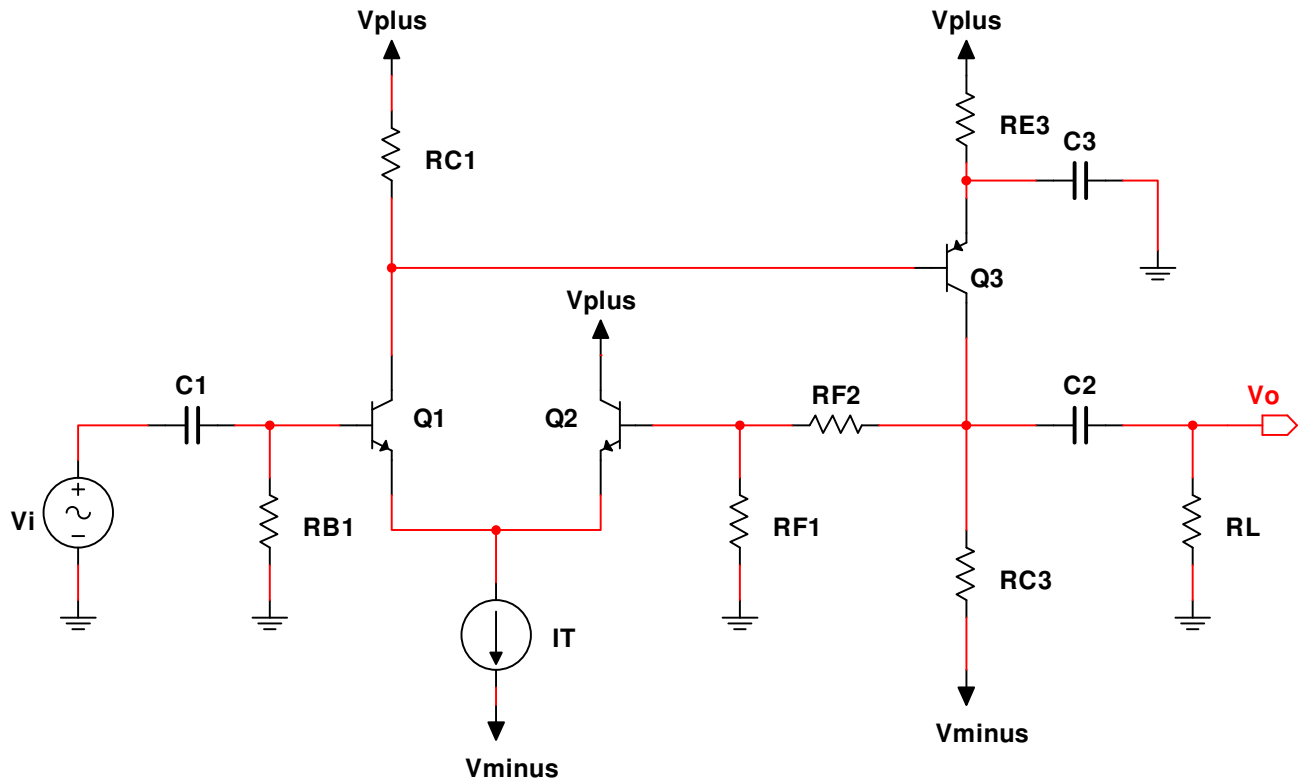# ECE 4043 Spring 2020
Homework Problem Set No 8 for Experiment No. 8

Due March 9, 2020

1. Shown above is a Series-Shunt feedback amplifier. The dc power supplies are $\pm 15\,\text{V}$ and the ideal current source $I_T = 2\,\text{mA}$ The component values are: $C_1 = C_2 = 22\,\mu\text{F}$, $R_{B1} = 51\,\text{k}\Omega$, $R_{C1} = 10\,\text{k}\Omega$, $R_{F1} = 10\,\text{k}\Omega$, $R_{F2} = 100\,\text{k}\Omega$, $R_{E3} = 3.1167\,\text{k}\Omega$, $R_{C3} = 5\,\text{k}\Omega$, and $R_L = 10\,\text{k}\Omega$. Compute the open loop gain and the feedback factor. Perform a SPICE simulation to obtain the Q point, small signal gain, and clipping behavior using National Instruments SPICE Multisim. The SPICE parameters for both the NPN and PNP BJTs are: Assume that the SPICE parameters for the NPN BJT are: saturation current, 6.734 f A; forward beta, 100; Early voltage, 170 V, zero-bias base collector capacitance, 3.638 pF; forward transit time, 301.2 ps, and base spreading resistance, 10 Ω.

An exceeding useful reference for this problem can be found at (Series-Shunt Example 4).

https://leachlegacy.ece.gatech.edu/ece3050/notes/feedback/FBExamples.pdf