

the material we have covered so far this semester is summarized (but NOT limited to) below:

Understand the basic operation of a BJT:

Cutoff, saturation, active. Analyze a circuit for all current equations and voltages (current relationships)

- Make sure to be able to take a Thevenin Equivalence and use Resistance Reflection Rules.

Understand the bias point concept for linear amplification.

Be able to separate the DC and AC analysis for a circuit containing a BJT.

Be able to analyze a circuit (with or without cap in it) containing a BJT for DC operation.

Be able to draw a small-signal model of a BJT circuit.

Analyze a small-signal circuit to find overall gain, midband gain, input resistance, and output resistance

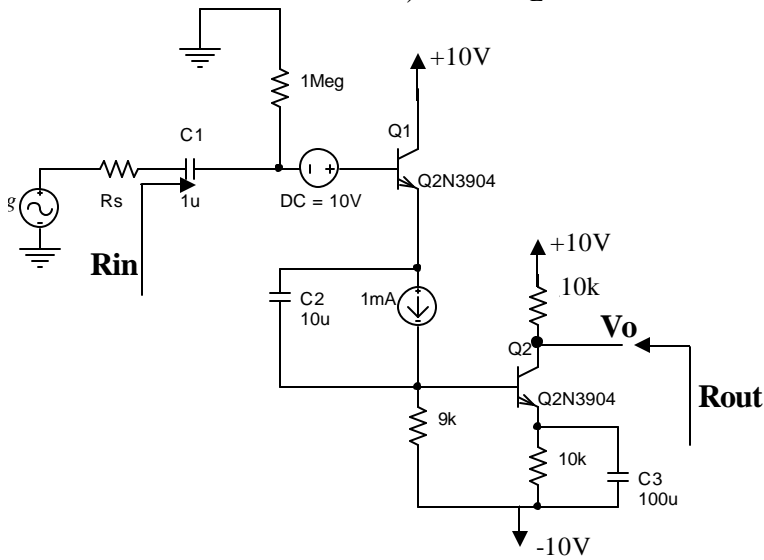
Determine ω_L or f_L .

Use $|V_{BE}|=0.7$, $\beta=100$, ignore r_o .

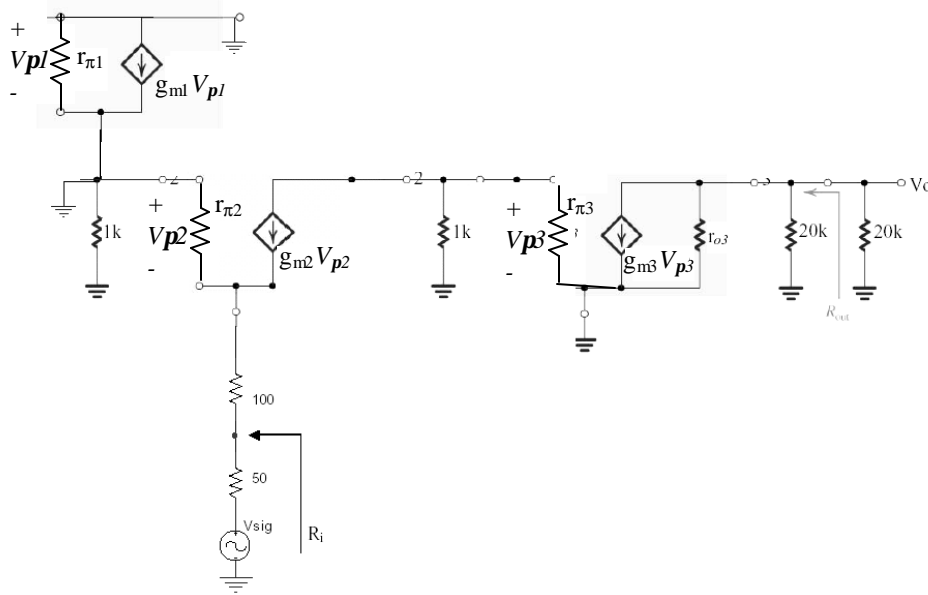
The 0.25A current source is not ideal and may have a voltage drop across it.

(a) Solve the circuit for the **DC** values. (assume capacitors act as open). Find all currents and voltages

(b) Solve the circuit for midband gain, V_o/v_{sig} , R_{in} (ignore R_s), and R_{out} (include all resistors seen at collector). Find ω_L .



Use $|V_{BE}|=0.7$, $\beta=100$. Use $g_{m1}=1\text{mA/V}$, $g_{m2}=2\text{mA/V}$, $g_{m3}=1\text{mA/V}$, $r_{o3}=100\text{k}$. Find V_o/V_{sig} , R_{out} (ignore 10k on the right), R_{in} (ignore 50 from signal source).



Draw the small-signal equivalent circuit. Find R_{in} (ignore input signal) and R_{out} (include everything at nitter node) in symbolic form.

