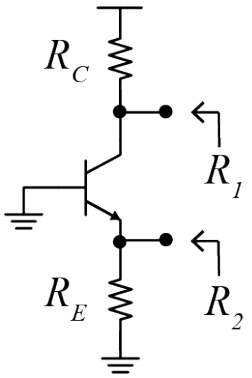
PROBLEM SET #8

Issued: Friday, October 25, 2019

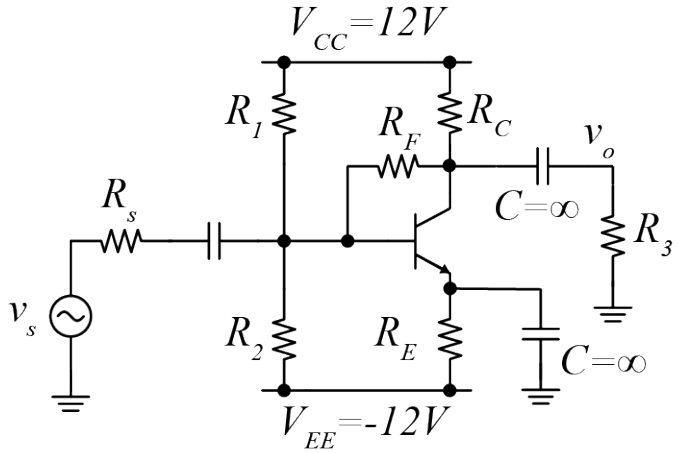
Due: Friday, November 1, 2019, 12:00 noon via **Gradescope**.

1. Sedra & Smith, Problem 7.43
2. Sedra & Smith, Problem 7.58
3. Sedra & Smith, Problem 10.21
4. Sedra & Smith, Problem 10.22
5. Sedra & Smith, Problem 10.25
6. In the following circuit (biasing circuit not shown), derive an expression for the small signal resistances R_1 and R_2 for: (a) $V_A=\infty$, (b) $V_A\neq\infty$.



7. The following circuit is a CE amplifier with a feedback resistor R_F. Determine the gain v_o/v_s.

   $V_A = 100V$, $\beta_F = 100$, $V_{CC} = 12V$, $V_{EE} = -12V$, $R_s = 1k\Omega$, $R_1 = 10k\Omega$, $R_2 = 5k\Omega$, $R_3 = 24k\Omega$, $R_E = 4k\Omega$, $R_C = 6k\Omega$, $R_F = 20k\Omega$.



8. A BJT with $C_{\mu 0} = 2pF$ is biased at an operating point of (2mA, 5V). What is the forward-transit time τ_F if $f_T = 500MHz$, $\phi_{jc} = 0.9V$, and $C_{je} = 7pF$?