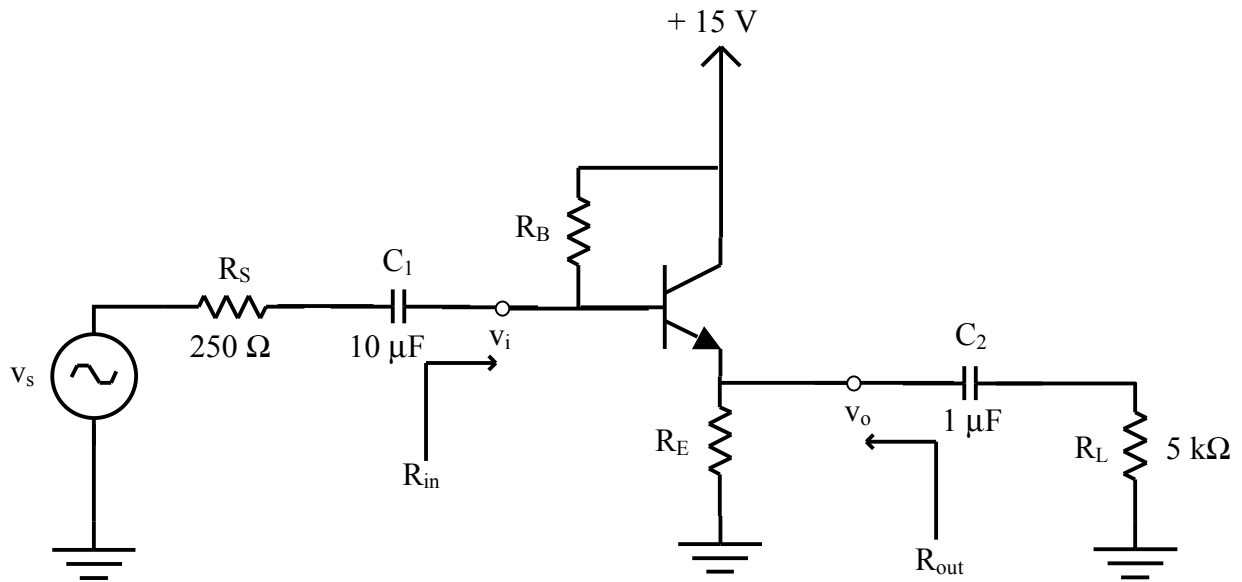


The transistor in the amplifier shown below has $\beta = 100$, $V_A = 200 \text{ V}$, $r_x (r_b) = 0$, $C_\pi = 300 \text{ pF}$, and $C_\mu = 4 \text{ pF}$. Assume $V_{BE} = 0.7 \text{ V}$ in the active region and $V_{CE} = 0.3 \text{ V}$ in saturation.



- a) For this amplifier, determine values for R_B and R_E so the dc bias point is at $I_{CQ} = 10 \text{ mA}$ and $V_{EQ} = 10 \text{ V}$. (0.5 points)

- b) Determine the input resistance R_{in} , the output resistance R_{out} , the midband amplifier voltage gain $A_V = v_o / v_i$, and the midband signal source voltage gain $G_V = v_o / v_s$. (2 points)

- c) As is typical, the frequency response of this amplifier has a bandpass characteristic.
 - i) Determine a good approximate value for the lower -3 dB frequency, f_L . (0.5 points)
 - ii) Determine a good approximate value for the upper -3 dB frequency, f_H . (1 point)