1. For the amplifier circuit answer the following questions. Assume $r_o = \infty$, $\beta = 100$, $V_{th} = 25\text{mV}$, and $V_{BE} = 0.7\text{V}$ for an ON transistor. Note that: $g_m = I_C/V_{th}$ and $r_\pi = \beta/g_m$.

   a) Calculate the DC collector current and the DC collector and base voltages.

      $I_C = ______$  $V_C = ______$  $V_B = ______$

   b) Calculate the transistor small-signal quantities shown below.

      $g_m = ______$  $r_\pi = ______$

   c) Draw the small-signal equivalent circuit for the amplifier.