1) For the circuit below determine,
   a) $P_i(\text{dc})$, ignore the base current
      
      \[ P_i = 20V \times 10.7mA = 0.214W \]

   b) $P_o(\text{ac})$
      
      \[ P_o = \frac{(10.6 - 7.8)^2}{1k} = 0.952\text{mW} \]

The collector-emitter voltage swing is,
2) The collector voltages and currents in a Class A transformer-coupled power amplifier are given below. Determine the following,

a) $P_i(\text{dc})$
   \[ P_i = 20V \times \frac{-10.9 + -13.4}{2} = 243\text{mW} \]

b) $P_o(\text{ac})$
   \[ P_o = \frac{1}{8} \times (-10.9 - -13.4\text{mA}) \times (24 - 16\text{V}) = 2.5\text{mW} \]

The collector voltage waveform is,

The collector current waveform is,
3) An A/D converter has the following characteristics,

14-bits
max input voltage = 4.8V
min input voltage = 1.2V

a) How many levels or steps are there?
   ~16000

b) What is the resolution of the converter?
   3.6V/16000 ~ 0.22mV

4) For the ladder network below determine the output voltage.

Replace left side of horizontal resistor with 2.5 in series with R.
vo = 5 - (5 - 2.5)/2 = 3.75V