1) For the circuit below, calculate the following:

2) \[ V_{in}(t) = 10 \cos (1000t) \]

1) Magnitude and Phase of the transfer function \( 0.707 - 45 \text{ degree} \)

2) Find the break frequency \( \frac{1000}{6.28} = 159.23 \text{ c/s} \)

3) Magnitude of transfer function in Db. \(-3 = -10 \log (1 + f/f_0)\)

4) Draw approximate \textit{Bode plot bode plot of low pass filter}

5) Output voltage for dc input voltage of 10v \( 10v \)

6) Output voltage for 1000 mHz input voltage frequency…\textit{extra credit}…. \( V_{out} = V_{in} \left( f_0/f \right) = 0.00159v \)
2) For the circuit below, calculate the following:

- Equivalent Impedance = \(1000 - j300\)
- Resonance frequency = 796 c/s
- Voltage across capacitor and equivalent inductor at resonance frequency
  \(V_l = 10v, V_c = -10v\)  
  Magnitude and phase of Current supplied by the voltage supply at resonance frequency. \(I_{supply} V/R = 10 mA, 0\) angle
- Voltage across RL at resonance frequency. \(V_{rl} = 5 cos(1000t)\)
- Half power frequency range for \(|v_0/vin|\)…………………extra credit…….\(BW = f_0/Q\), \(Q=2\pi f_0Leq/Req = 1000/1000 = 1\)  
  \(BW = 796c/s\)