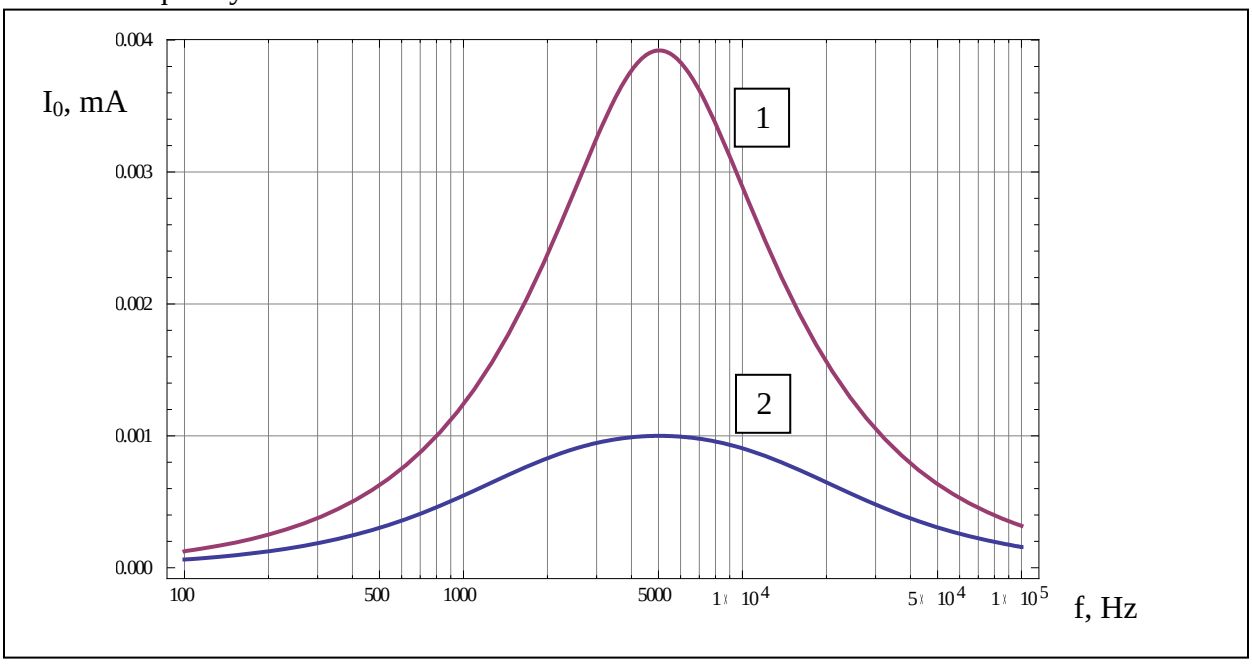
Physics 112
Exp.#10: Resonance
Preliminary Laboratory Questions

1) Consider a series RLC circuit with a sinusoidal input: $\varepsilon(t) = 2\cos(\omega t)\, Volts$. If R=1 KΩ, L= 10 mH and C=0.1 μF.

a) Find the maximum value of the current amplitude I_0 in the circuit.

b) Find ω for which, the current amplitude I_0 in circuit is maximum.

2) Consider the same circuit in q1. The plot below shows two curves of current amplitude I_0 versus the frequency f : one for R=1000Ω and the other for R=510Ω.



a) Which of the curves for R=1000Ω and which for R=510Ω?

b) Estimate the resonance frequency from the curves.

c) Estimate the bandwidth for both curves

c) Estimate the quality factors for both resonance curves.