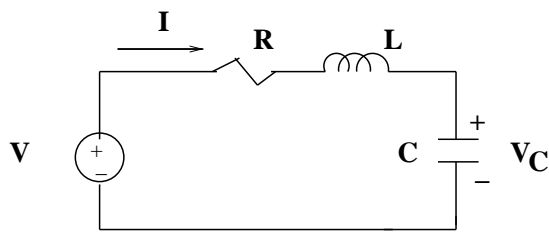**EE 341 - Homework 3**

Due Feb. 10, 2012

1. For the series RLC circuit shown in the figure below, Assuming $v(t) = V \cos w_r t$, where w_r is the resonant frequency.

   (a) Determine the expression for the energy stored in the capacitor $W_C(t)$

   (b) Determine the expression for the energy stored in the inductor $W_L(t)$

   (c) Determine the energy lost in a period $P_R T$

   (d) Show (without using duality) that the Quality factor is given by

$$Q = \frac{w_r L}{R}$$

2. Problem 10.45

3. Problem 10.50

4. Problem 10.52