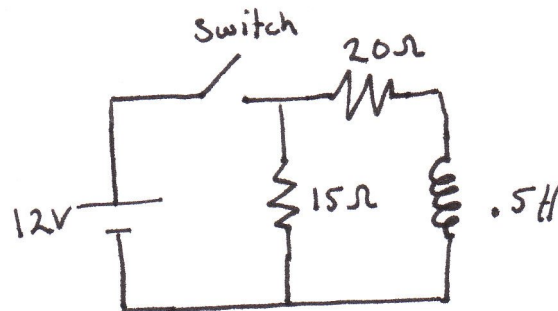
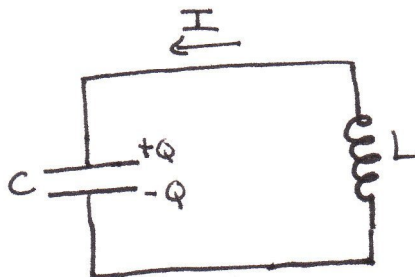


PHY 122 HW 11

1. You're in your lab, when the machine you are using breaks down! You manage to figure out that the inductor in one of the circuits fried. You don't know the inductance it had, but you know it produced a peak emf of 150 mV from a current of the form $I = I_0 \cos(\omega t)$, where $I_0 = .60\text{ A}$ and $\omega = 2.7 \cdot 10^2 \text{ rad/s}$. What is the value of the inductor you should you replace it with?
2. Consider the RL circuit below. The switch is opened at time $t = 0$ after it has been closed for a long time.



- (a) What is I_{bat} immediately after $t = 0$?
 - (b) What is I_L after a long time has passed?
3. For the ideal circuit below, the capacitor C is connected in series with an inductor L , carries a charge of $Q = Q_0 \cos(\omega t)$



- (a) What is the total energy stored in this system?
- (b) What is the voltage drop across the inductor in terms of L , ω , Q_0 and t ?