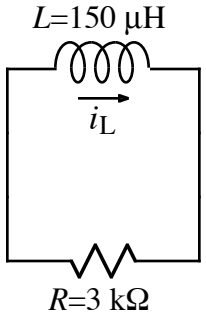
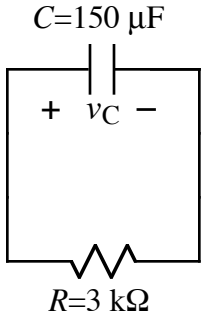
HOMEWORK #10

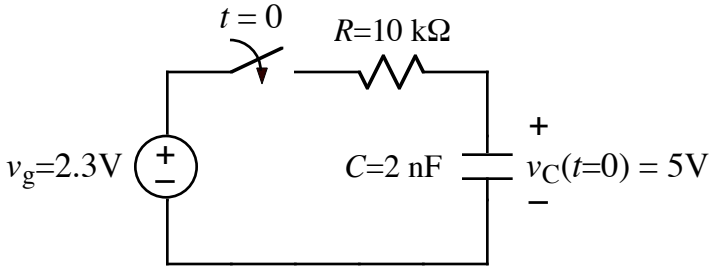
1. Find the current, i_L, through the inductor in the circuit below for $t > 0$ if $i_L(t = 0) = 100\ \mu A$.



2. Find the voltage, v_C, across the capacitor in the circuit below for $t > 0$ if $v_C(t = 0) = 100\ \mu V$.



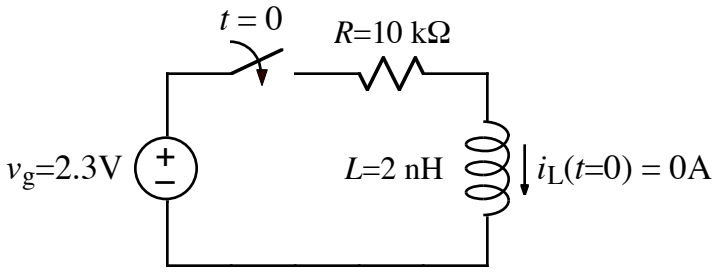
3. After being open for a long time, the switch closes at $t = 0$.



a) Find an expression for $v_C(t)$ for $t \geq 0$.

b) Find the energy stored in the capacitor at time $t = 30\ \mu s$.

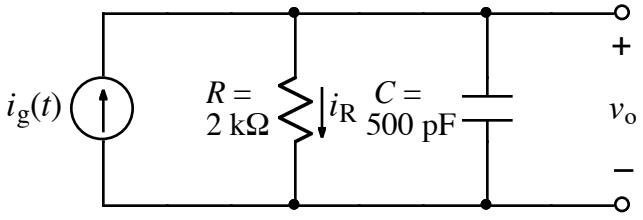
4.



a) Find an expression for $i_L(t)$ for $t \geq 0$.

b) Find the energy stored in the inductor at time $t = 30$ μs.

5. After being zero for a long time, the value of $i_g(t)$ changes to 15 mA at $t = 0$ (and remains at 15 mA as time increases to infinity).



a) Find an expression for $v_o(t)$ for $t > 0$.

b) Find the current, i_R, in R as a function of time.