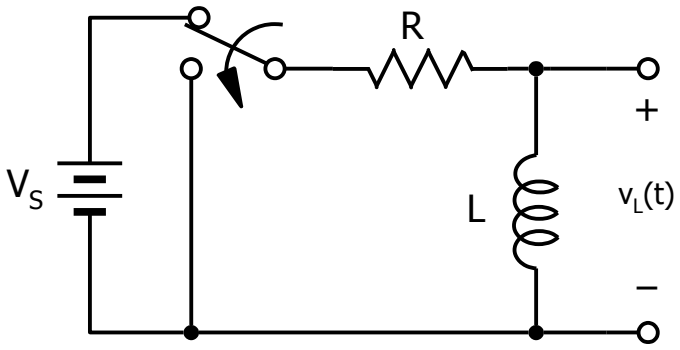
EE3 Fall 2021
Homework Problem 2

I said that this is not a course in differential equations. I am not asking you to "solve" the equation for the current i(t). I am asking you to write the differential equation governing the behavior of i(t). Then follow the steps as shown in Practice Problems 3, numbers 2 and 3.



This is a symbolic exercise.

a. Write the differential equation in i(t) via KVL as in Practice Problems #3.
b. Follow the process in #2 to derive the particular solution to the equation in i(t). The particular solution replaces the constant of integration with an expression in the known constants of the circuit V_S and R.
c. Using the KVL equation and the expression for i(t) gained in (b.) above, write an expression for $v_L(t)$.

I am aware that this problem will be very difficult for some of you. You will need to dig a bit to figure out what to do. If all your digging efforts fail, please contact me, either in Office Hour or separately. I will do my best to help you without giving away the store.