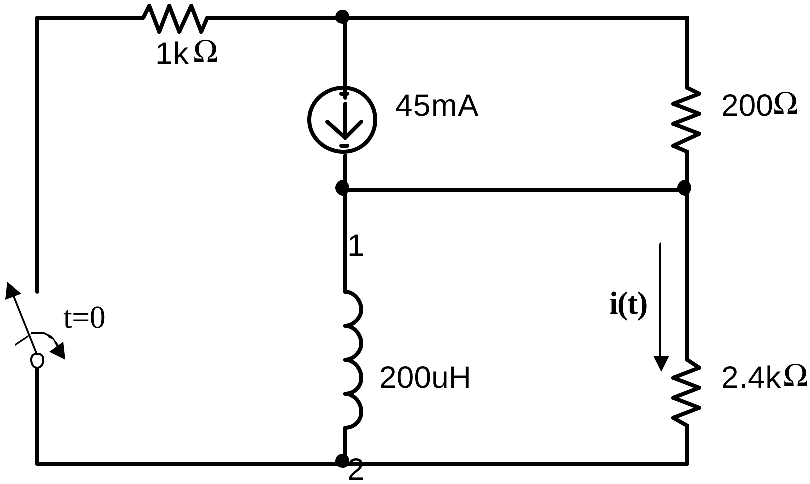
UNIVERSITY OF UTAH
ELECTRICAL AND COMPUTER ENGINEERING DEPARTMENT

ECE 1270 HOMEWORK #6 Summer 2007

1.

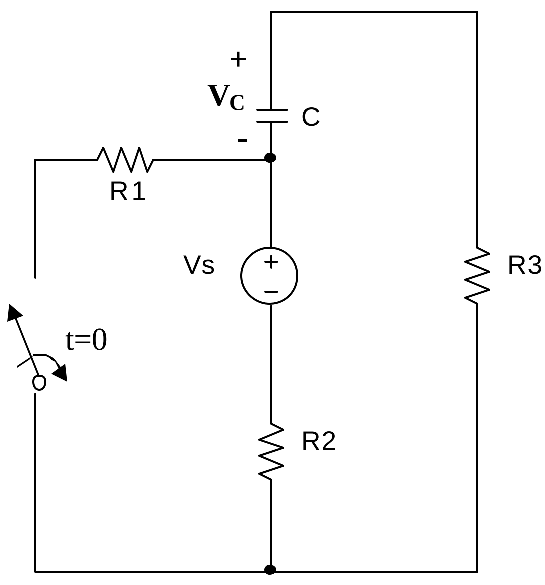


After being open for a long time, the switch closes at t=0.

a) Calculate the energy stored on the inductor as $t \rightarrow \infty$.

b) Write a numerical expression for i(t) for t>0.

2.

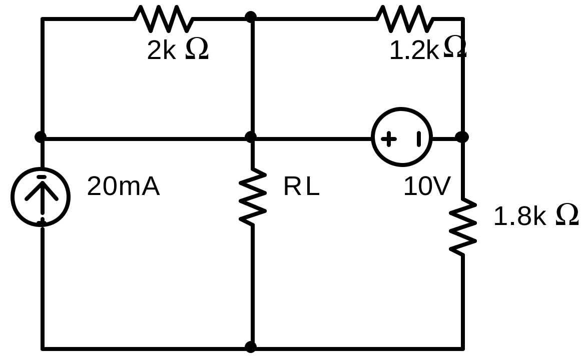


After being open for a long time, the switch becomes closed at t=0.

a) Write an expression for $V_c(t=0^+)$.

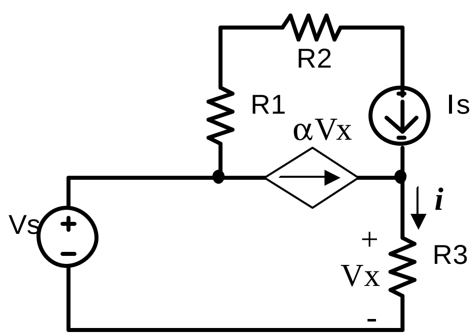
b) Write an expression for $V_c(t>0)$ in terms of R1, R2, R3, Vs, and C.

3.



a) Calculate the value of RL that would absorb maximum power.
b) Calculate that value of maximum power RL could absorb.

4.



Using superposition, derive an expression for ***i*** that contains no circuit quantities other than Is, Vs, R1, R2, R3, and α, where α>0.