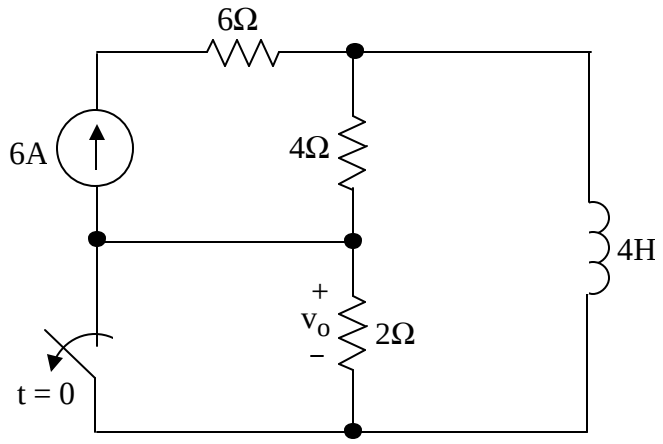
UNIVERSITY OF UTAH
ELECTRICAL AND COMPUTER ENGINEERING DEPARTMENT

ECE 1270 HOMEWORK #6 Spring 2008

1.

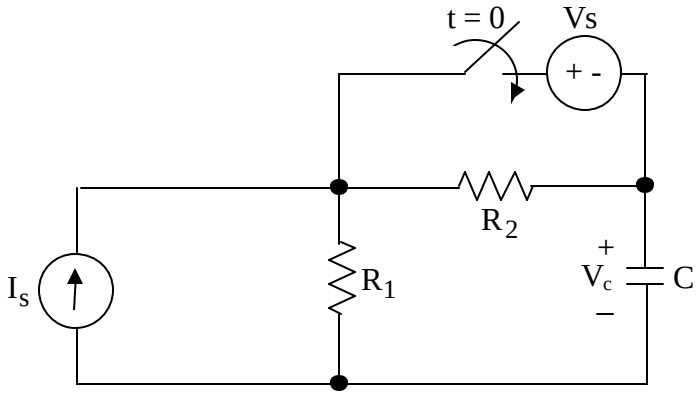


After being closed for a long time, the switch opens at t = 0.

Calculate the energy stored on the inductor as $t \to \infty$.

2. Use the circuit in 1 above to write a numerical expression for $v_o(t)$ for $t > 0$.

3.

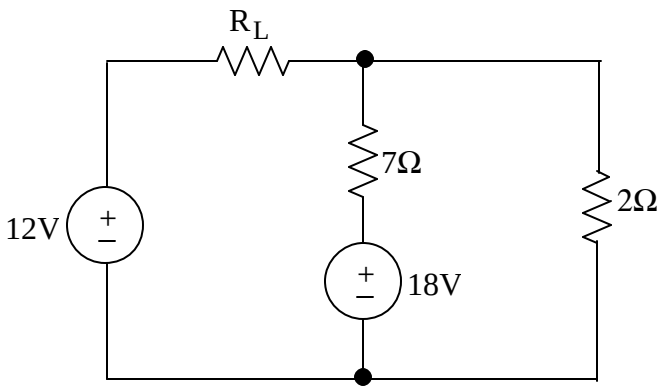


After being open for a long time, the switch closes at t = 0.

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

b) Write an expression for $V_c(t > 0)$ using not more than R_1, R_2, V_s, I_s, and C.

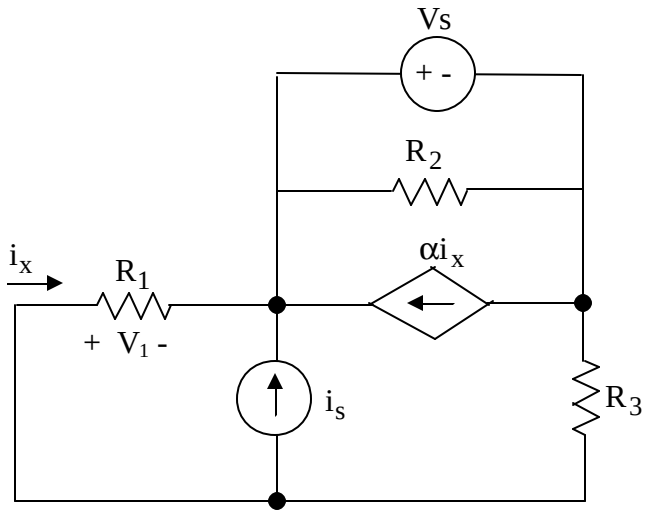
4.



a) Calculate the value of R_L that would absorb maximum power.

b) Calculate that value of maximum power R_L could absorb.

5.



Using superposition, derive an expression for V_1 that contains no circuit quantities other than i_s, V_S, R_1, R_2, R_3, and α, where $\alpha > 0$.