1. After being closed a long time, the switch opens at $t = 0$. Find $i_1(t)$ for $t > 0$.

2. After being open for a long time, the switch closes at $t = 0$. Find $V_1(t)$ for $t > 0$.

3. After being open for a long time, the switch closes at $t = 0$. Find $i_1(t)$ for $t > 0$. 

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UNIVERSITY OF UTAH  
ELECTRICAL & COMPUTER ENGINEERING DEPARTMENT  
ECE 1270  
HOMEWORK #6  
Summer 2009
4. After being open for a long time, the switch closes at $t = 0$. Find $i_1(t)$ for $t > 0$.

5. Using superposition, derive an expression for $V$ that contains no circuit quantities other than $i_s, R_1, R_2, R_3, R_4, \alpha$, or $V_s$.

6. After being closed for a long time, the switch opens at $t=0$.
   a) Calculate the energy stored on the inductor as $t \to \infty$.
   b) Write a numerical expression for $v(t)$ for $t>0$. 
7. 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 \( v_c(t>0) \) in terms of \( i_s, R_1, R_2, R_3, \) and \( C \).

8. Calculate the value of \( R_L \) that would absorb maximum power.

9. Calculate that value of maximum power \( R_L \) could absorb.

10. Using superposition, derive an expression for \( i \) that contains no circuit quantities other than \( i_s, R_1, R_2, R_3, R_4, \alpha \), or \( V_s \).