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. For the circuit in problem 1, write a numerical expression for $i(t)$ for $t > 0$.

3. After being open for a long time, the switch closes at $t = 0$, and $v_C(t = 0^-) = 4 \text{ V}$. Write an expression for $v_C(t > 0)$ in terms of $R_1$, $R_2$, $R_3$, $v_s$, $v_C(t = 0^-)$, and $C$. 
4. 

\[ R_L \]

\[ 18 \text{ mA} \]

\[ 10 \text{ k}\Omega \]

\[ 3 \text{ k}\Omega \]

\[ 50 \text{ V} \]

\[ 15 \text{ k}\Omega \]

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

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

5. 

\[ R_1 \]

\[ v_x \]

\[ i_s \]

\[ R_2 \]

\[ R_3 \]

\[ v_s \]

\[ \alpha v_x \]

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