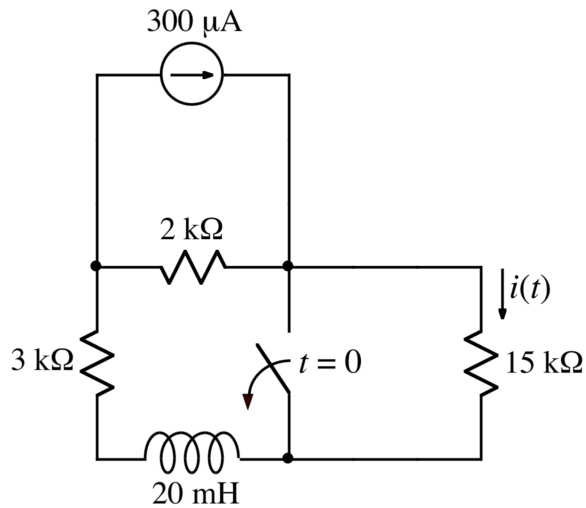
HOMEWORK #12

1.

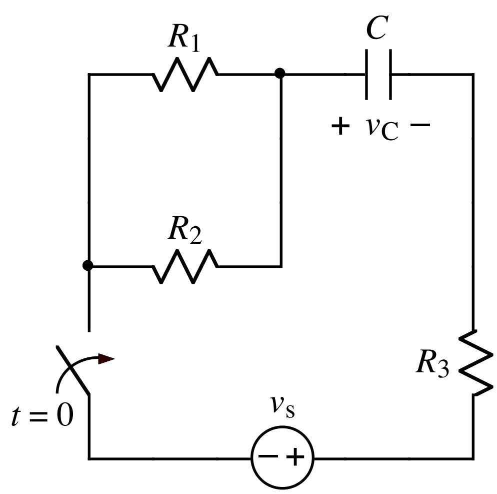


After being closed for a long time, the switch opens at $t = 0$.

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 $t > 0$.

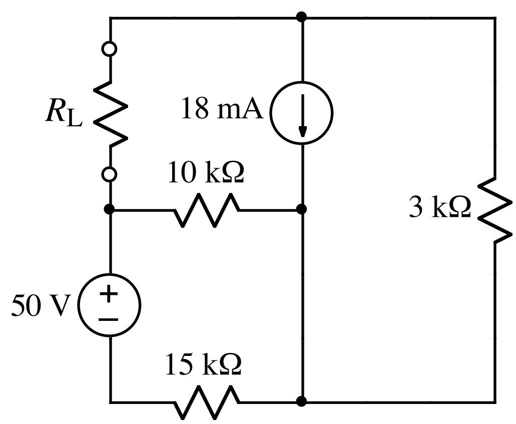
3.



After being open for a long time, the switch closes at $t = 0$, and $v_C(t = 0^-) = 4$ 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.

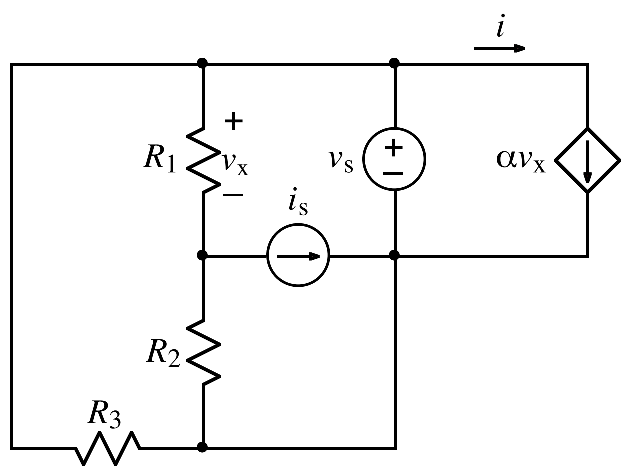
4.



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 i that contains no circuit quantities other than i_s, v_s, R_1, R_2, R_3, and α.