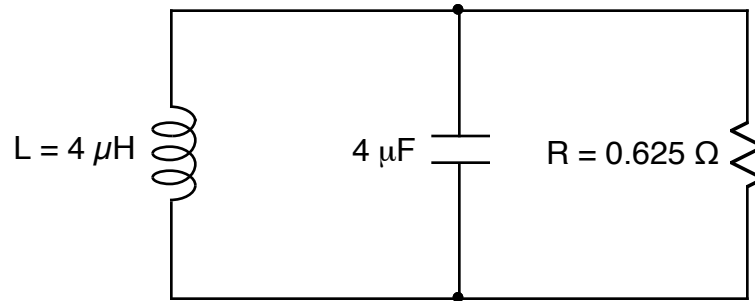
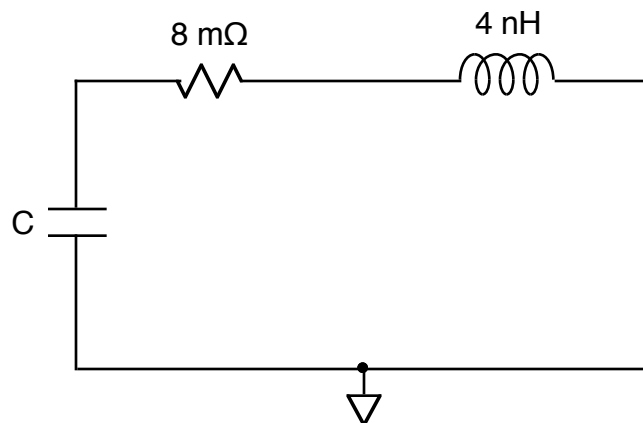


1.



- a) Find the characteristic roots, s_1 and s_2 , for the above circuit.
- b) If C is reduced to 1 nF, which will the circuit be: over-damped or under-damped?
- c) Using the L and C values in the circuit, what value of R yields a critically-damped circuit?

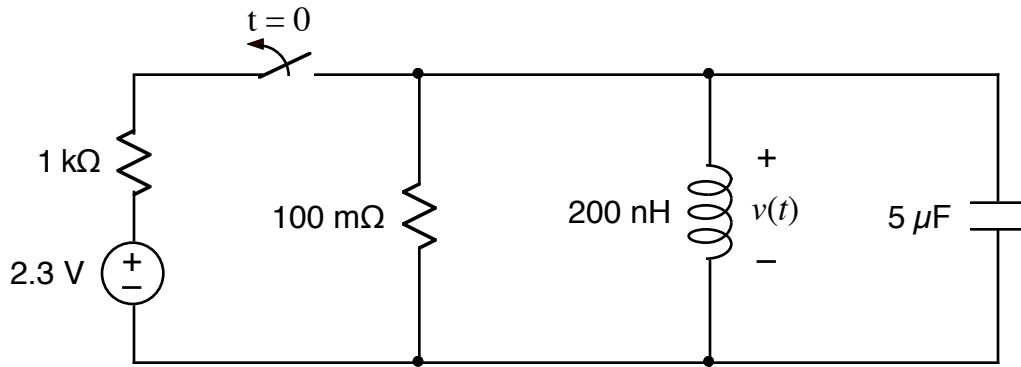
2.



When driven by a square-wave generator feeding a diode and resistor in series and connected to the top of the capacitor, the above acts as an analog TV jamming circuit.

- a) Find the value of C that will make the circuit oscillate at 26 MHz, (old channel 2). Remember to convert Hz to rad/s.
- b) Find the value of the damping factor, α .

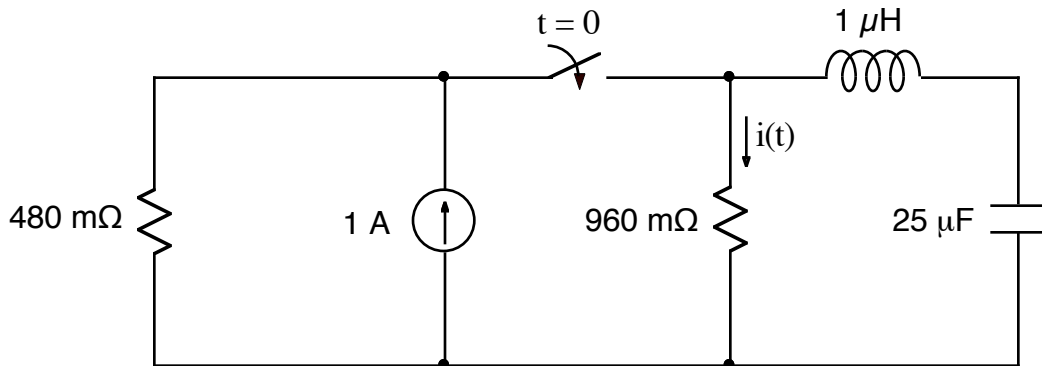
3.



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

Find $v(t)$ for $t > 0$.

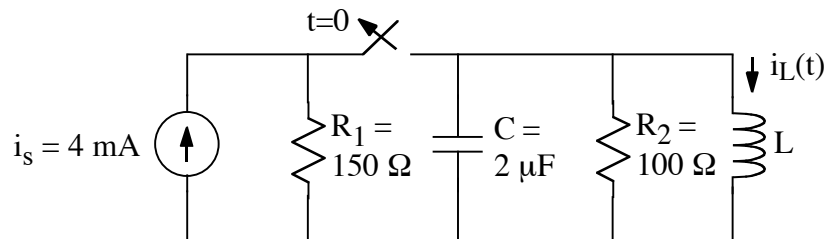
4.



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

Find $i(t)$ for $t > 0$.

5.



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

- If $L = 125$ mH, find the characteristic roots, s_1 and s_2 , for the above circuit.
- If $L = 11.834$ mH, find the damping frequency, ω_d .
- Find the value of L that makes the circuit critically-damped.