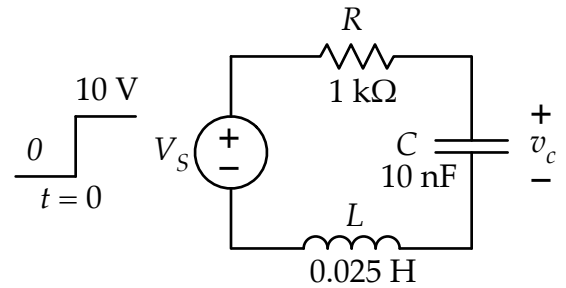


In the  $RLC$  circuit shown at right, the source voltage changes abruptly from  $V_s = 0$  V to  $V_s = 10$  V at  $t = 0$ . Determine expressions for the current, and the capacitor, inductor, and resistor voltages for  $t > 0$ .

Then change the resistor value to  $3.5$  k $\Omega$  and determine the current and voltages again. (Note: You do not need to derive everything from scratch. You will need to determine if the circuit is over-damped or underdamped, as well as the appropriate initial and final values.)



For  $R = 1$  k $\Omega$ :

$$v_c(t) = \underline{\hspace{15cm}}$$

$$i(t) = \underline{\hspace{15cm}}$$

$$v_L(t) = \underline{\hspace{15cm}}$$

$$v_R(t) = \underline{\hspace{15cm}}$$

For  $R = 3.5$  k $\Omega$ :

$$v_c(t) = \underline{\hspace{15cm}}$$

$$i(t) = \underline{\hspace{15cm}}$$

$$v_L(t) = \underline{\hspace{15cm}}$$

$$v_R(t) = \underline{\hspace{15cm}}$$