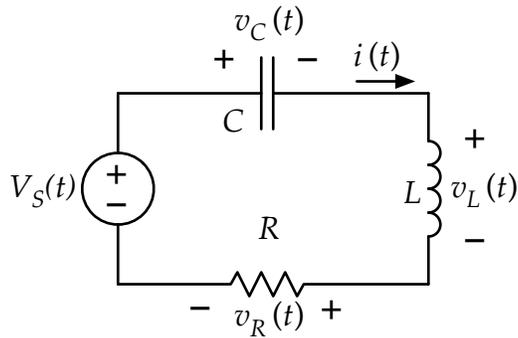


In the series  $RLC$  circuit shown below, the voltage across the capacitor is known to be

$v_c(t) = V_m \cos(\omega t)$ , where  $V_m$  is the amplitude of the sinusoid, and  $\omega$  is the angular frequency.

Determine expressions of  $v_R(t)$  and  $v_L(t)$ .



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

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

Hint: Determine the expression for the current through the capacitor – pay attention to the direction in relation to the voltage polarity. Use the current expression to help find the resistor and inductor voltages.