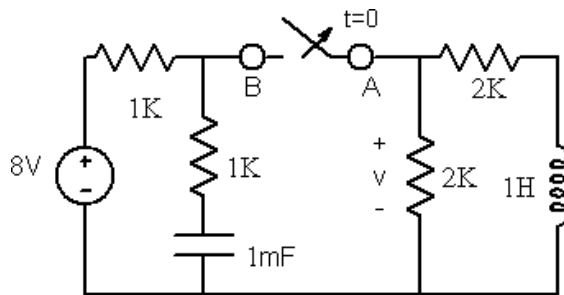
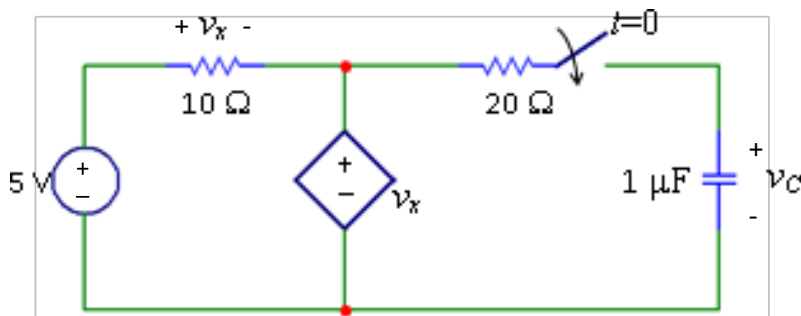


Assignment-3

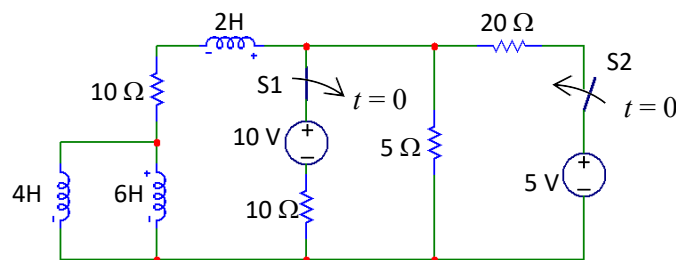
1. For the circuit shown below, determine the voltage across the 2K resistor (vertical) as a function of time after the switch is opened at $t = 0$.



2. Find $v_C(t)$ for $t > 0$ in the following circuit if the capacitor voltage is zero for $t < 0$.



3. In the following circuit the switch S1 is closed and S2 is left open for a long time. At $t=0$, S1 is opened and S2 is closed. Determine the current, i_5 , through the 5 ohm resistor for all time.



4. Express the following sinusoidal signals in the canonical form $V_m \cos(\omega t + \theta)$:

(i) $v(t) = -110 \cos(\omega t + 30^\circ) \text{ V}$

(ii) $v(t) = 220 \sin(\omega t + 220^\circ) \text{ V}$

(iii) $v(t) = 10 \sin(\omega t + 110^\circ) + 4 \cos(\omega t + 110^\circ) \text{ V}$

(iv) $v(t) = 10 \cos(\omega t + 370^\circ) * 4 \sin(\omega t + 10^\circ) \text{ V}$

Wherever needed, you may use phasors to make your task easier.

5. Determine the output voltage as a function of time using the method of phasors for an input voltage of $V_s = 5\cos(100t)$ V.

