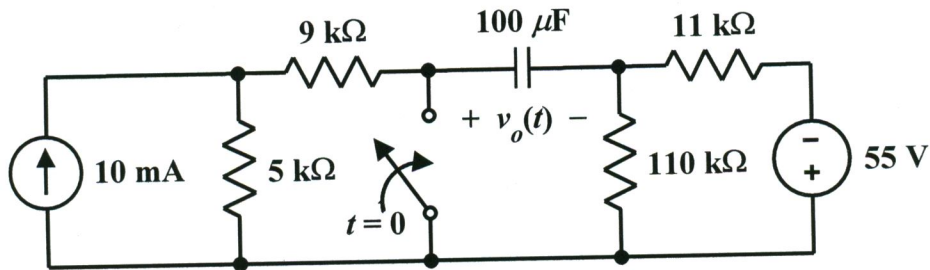
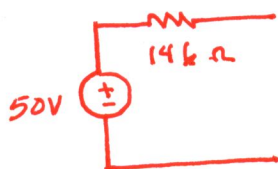


EE 2240
Problem #06

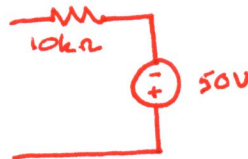
The circuit has reached the DC steady state prior to $t = 0$. Find $v_o(t)$ for $t \geq 0$.



Thévenin Eq.

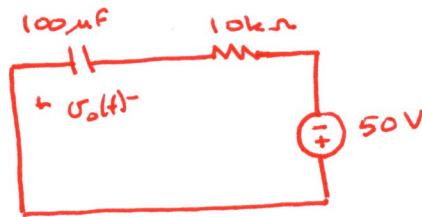


Thévenin Eq.



$$v_o(\omega) = 50 + 50 = 100 \text{ V}$$

For $t \geq 0$:



$$v_o(\infty) = 50 \text{ V}$$

$$\tau = (100 \mu\text{F})(10 \text{ k}\Omega) = 1 \text{ s}$$

$$\begin{aligned} v_o(t) &= [v_o(\omega) - v_o(\infty)] e^{-t/\tau} + v_o(\infty) \\ &= 50 e^{-t} + 50 \quad \text{V, } t \geq 0 \end{aligned}$$