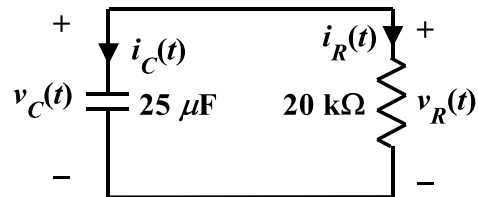


EE/EET 2240
Homework Problem #052

The capacitor is initially charged so that $v_C(0) = 8 \text{ V}$.



- a. Determine the time constant, τ , for this circuit.
- b. Determine $v_C(t)$ for $t \geq 0$.
- c. Determine $i_C(t)$ for $t \geq 0$.
- d. Determine $v_R(t)$ for $t \geq 0$.
- e. Determine $i_R(t)$ for $t \geq 0$.
- f. Determine the power absorbed by the resistor, $p_R(t)$, for $t \geq 0$.
- g. Determine the charge, $q(t)$, stored in the capacitor for $t \geq 0$.
- h. What is the final value, [i.e., $\lim_{t \rightarrow \infty} q(t)$], of the charge stored in the capacitor?
- i. Approximately how long will it take for the capacitor charge to fall 99% of the way from its initial value to its final value?
- j. What is the value of $q(t)$ at that point in time?