(1) You are given the circuit of Figure 1.
   (a) Determine $v(0^-)$. Ans $4 \text{ V}$
   (b) Determine $v(t)$, $t \geq 0$. Ans $20 - 16e^{-t/8} \text{ V}$

For $t \leq 0$
Capacitor is fully charged.

\[
V(0^-) = \frac{20 \times 1}{1 + 4} = 4 \text{ V}
\]

(b) For $t > 0$

\[
V(t) = v(\infty) + \left[ V(0^+) - V(\infty) \right] e^{-\frac{t}{4\text{C}}}
\]
\[
V(t) = 20 + \left[ 20 - 4 \right] e^{-\frac{t}{8}}
\]

\[
V(t) = \left[ 20 + 16e^{-\frac{t}{8}} \right] \text{ V } u(t)
\]
(2) The switch in the circuit of Figure 21 has been open for a very long time. It is closed at \( t = 0 \).
(a) Determine \( i(0^-) \). Ans: \( \frac{5}{3} \AA \) 4.8 A
(b) Determine \( i(t) \geq 0 \). Ans: \( 5e^{-0.5t} \AA \)

![Circuit Diagram]

(a) For \( t < 0 \), circuit appears as

\[
i(0^-) = \frac{24}{5} = 4.8 \text{ A}
\]

\( i(0^+) = i(0^-) = 4.8 \text{ A} \)

(b) For \( t > 0 \), circuit appears as:

\[
\gamma = \frac{1}{R} = \frac{1}{2} = 2
\]

\[
i(t) = i(\infty) + \left[ i(0^+) - i(\infty) \right] e^{-\frac{t}{\gamma}}
\]

\[
i(t) = 4.8e^{-\frac{t}{2}} \AA
\]