Chapter 7, Solution 49.

For $0 < t < 1$, $v(0) = 0$, $v(\infty) = (2)(4) = 8$

$R_{eq} = 4 + 6 = 10$, $\tau = R_{eq}C = (10)(0.5) = 5$

$$v(t) = v(\infty) + \left[v(0) - v(\infty) \right] e^{-t/\tau}$$

$$v(t) = 8\left(1 - e^{-t/5}\right) \text{ V}$$

For $t > 1$, $v(1) = 8\left(1 - e^{-0.2}\right) = 1.45$, $v(\infty) = 0$

$$v(t) = v(\infty) + \left[v(1) - v(\infty) \right] e^{-(t-1)/\tau}$$

$$v(t) = 1.45\, e^{-(t-1)/5} \text{ V}$$

Thus,

$$v(t) = \begin{cases} \mathbf{8\left(1 - e^{-t/5}\right) V}, & \mathbf{0 < t < 1} \\ \mathbf{1.45\, e^{-(t-1)/5}\ V}, & \mathbf{t > 1} \end{cases}$$