Chapter 7, Solution 37.

Let $v = v_h + v_p$, $v_p = 10$.

$$\dot{v}_h + \frac{1}{4}v_h = 0 \quad \longrightarrow \quad v_h = Ae^{-t/4}$$

$$v = 10 + Ae^{-0.25t}$$

$$v(0) = 2 = 10 + A \quad \longrightarrow \quad A = -8$$
$$v = 10 - 8e^{-0.25t}$$

(a) $\tau = \underline{4s}$

(b) $v(\infty) = \mathbf{10\ V}$

(c) $v = \underline{\left(10 - 8e^{-0.25t}\right)u(t)\ V}$