P #48 Ch. 2 - pg 52

a) $t = 2.00$ sec so at $t = 1.00$ sec, $v = 0$ m/s
$a = -9.8\ m/s^2$

$$v_f = v_i + a \cdot t$$

$$0\ m/s = v_i + (-9.8\ m/s^2)(1.00\ sec)$$

$$v_i = 0\ m/s + 9.8\ m/s$$

$$\boxed{v_i = 9.8\ m/s}$$

b) x_{max} occurs at $t = 1.00$ sec
$v_i = 9.8$ m/s (from a)
$a = -9.8\ m/s^2$

$$x = x_0 + v_i \cdot t + \tfrac{1}{2} \cdot a \cdot t^2$$

$$= (0\ m) + (9.8\ m/s)(1.00\ sec) + \tfrac{1}{2}(-9.8\ m/s^2)(1.00\ sec)^2$$

$$\boxed{x = 4.9\ m}$$