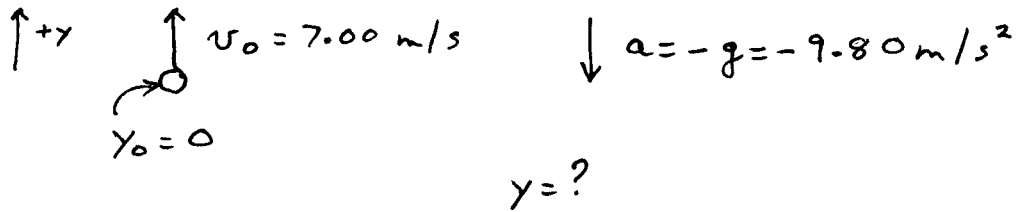


Exercise 7-9

(a)

At top, $v = 0$



$$\text{Use } v^2 = v_0^2 + 2a(y - y_0)$$

$$\therefore 0^2 = (7.00)^2 + 2(-9.80)(y - 0)$$

$$\therefore y = 2.50 \text{ m}$$

(b)

$$\text{Use } v = v_0 + at$$

$$\therefore 0 = 7.00 - 9.80t$$

$$\therefore t = 0.714 \text{ s} \quad (0.714_3 \text{ s})$$

(c)

By symmetry, $t_{\text{up}} = t_{\text{down}}$

$$\therefore \text{total } t = 2(0.714_3 \text{ s}) = 1.43 \text{ s}$$

OR: use $y = y_0 + v_0 t + \frac{1}{2} a t^2$

At hand, $y = 0$

$$\therefore 0 = 0 + 7.00t + \frac{1}{2}(-9.80)t^2$$

$$\therefore 0 = t(7.00 - 4.90t)$$

$$\therefore t = 0 \text{ (initial)}, \text{ or } t = \frac{7.00}{4.90} = 1.43 \text{ s}$$

(d)

At hand, $y = 0$

$$\text{Use } v^2 = v_0^2 + 2a(y - y_0)$$

$$\therefore v^2 = (7.00)^2 + 2(-9.80)(0 - 0)$$

$$\therefore v = \pm 7.00 \text{ m/s} \rightarrow \text{choose } v = -7.00 \text{ m/s} \quad \uparrow \text{down}$$