

✓ 2.52. $\Delta y = 200 \text{ m}$ max speed 5.0 m/s
 $|a| = 1 \text{ m/s}^2$

(a) $s_f = s_i + v_i \Delta t + \frac{1}{2} a \Delta t^2 = 0 + 0 + \frac{1}{2} (1)(5)^2 = 12.5 \text{ m}$

(b) Accel $v_f = a \cdot t$
 $5.0 \text{ m/s} = 1.0 \text{ m/s}^2 \cdot t$
 $t = 5.0 \text{ s}$

~~Constant~~ Decel

$$v_f = v_i + a(\Delta t) = 0 = 5 + (-1)(t_f - t_i)$$

$t = 5 \text{ s}$

$$200 - 12.5 - 12.5 = 175 \text{ m left} = y_f$$

$$y_f = v_i(t_f - t_i) + \frac{1}{2} a(\Delta t)$$

$5 \frac{\text{s}}{\text{m}} \cdot 175 \text{ m} = 5 \frac{\text{m}}{\text{s}} \cdot (\Delta t) \Rightarrow \Delta t = 35 \text{ s}$

$5 + 35 + 5 = 45 \text{ sec.}$ to travel to top (200 m)