

### HW3-1 Soln)

Let the origin be at the top of the building and let up be positive for y and out be positive for x.

$$x_i = 0 \text{ m}$$

$$y_i = 0 \text{ m}$$

$$x_f = 12 \text{ m}$$

$$y_f = -26 \text{ m}$$

$$v_{xi} = ? \leftarrow$$

$$v_{yi} = 0 \text{ m/s}$$

$$v_{xf} =$$

$$v_{yf} = ?$$

$$a_x = 0 \text{ m/s}^2$$

$$a_y = -10 \text{ m/s}^2$$

$$t = ?$$

Follow the 80% rule:

(3)

$$y = y_i + v_{yi}t + \frac{1}{2}a_yt^2$$

Possibly quadratic; insert values:

$$-26 = 0 + 0 + \frac{1}{2}(-10)t^2$$

Eh.

$$t = \sqrt{\frac{(26)(2)}{10}} = \pm 2.28 \text{ sec}$$

(3)

$$x = x_i + v_{xi}t + \frac{1}{2}a_xt^2$$

$$x = 0 + v_{xi}t + 0$$

$$v_{xi} = \frac{x}{t} = \frac{12}{2.28} = 5.26 \text{ m/s}$$