

2/74 Use x-y coordinates of the figure.

(a)  $v_0 = 45 \text{ ft/sec}$

$$x = x_0 + v_{x0}t \text{ @ left wall: } 30 = 0 + 45 \cos 60^\circ t$$
$$t = 1.333 \text{ sec}$$

$$y = y_0 + v_{y0}t - \frac{1}{2}gt^2: y = 5 + 45 \sin 60^\circ (1.333) - 16.1 (1.333)^2$$
$$= 28.3 \text{ ft (hits wall)}$$

Ans. :  $(x, y) = (30', 28.3')$

(b)  $v_0 = 60 \text{ ft/sec}$

Repeat above procedure to find  $y = 40.9'$   
when  $x = 30'$ , so water clears left wall.

$$x = x_0 + v_{x0}t \text{ @ right wall: } 50 = 0 + 60 \cos 60^\circ t$$
$$t = 1.667 \text{ sec}$$

y eq. yields  $y = 46.9 \text{ ft}$  @  $t = 1.667 \text{ sec}$ , so  
water clears building! For horizontal range:

From  $y = y_0 + v_{y0}t - \frac{1}{2}gt^2$  @  $y = 0$ ,  $y_0 = 5 \text{ ft}$ , we  
find  $t = -0.0935 \text{ s}$  &  $t = 3.32 \text{ s}$ . From

$$x = x_0 + v_{x0}t: x = 0 + 60 \cos 60^\circ (3.32) = \underline{99.6 \text{ ft}}$$