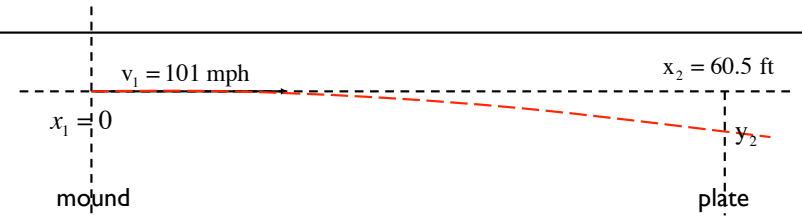


Problem 3.22

One of the fastest clocked pitches in baseball was thrown at 101 mph. By how much did the pitch drop on its 60.5 ft path over home plate?

1.)



In the "x" direction over the time interval Δt

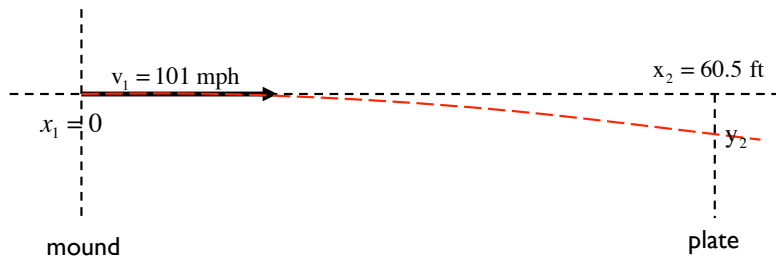
$$x_2 = x_1 + v_{1,x}t + (1/2)a_x t^2$$
$$(60.5 \text{ ft}) = 0 + ([101 \text{ mi/hr}][5280 \text{ ft/mi}][1 \text{ hr}/3600 \text{ sec}])t + 0$$
$$\Rightarrow t = .408 \text{ seconds}$$

In the "y" direction over the same time interval Δt

$$y_2 = y_1 + v_{1,y}t + (1/2)a_y t^2$$
$$= 0 + 0 + (1/2)(-32.2 \text{ ft/s}^2)(.408 \text{ sec})^2$$
$$= -.268 \text{ ft}$$

3.)

One of the fastest clocked pitches in baseball was thrown at 101 mph. By how much did the pitch drop on its 60.5 ft path over home plate?



Determine y_2 :

2.)