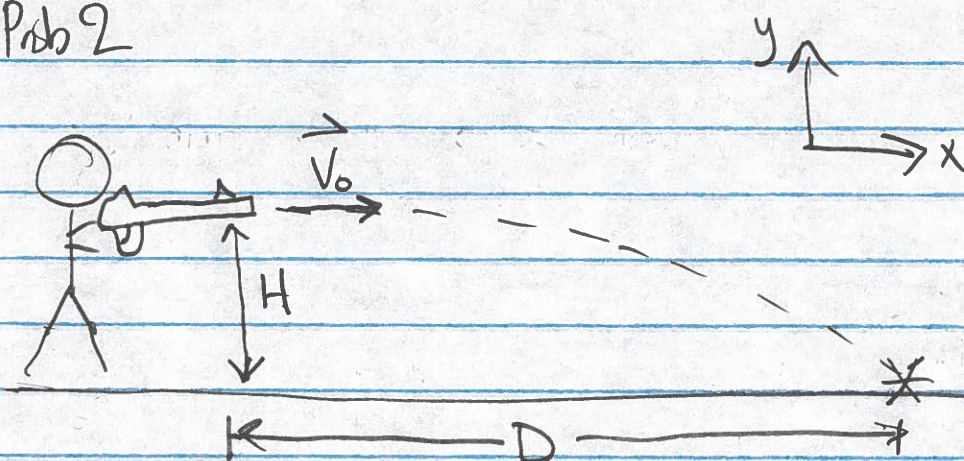


HW #4, Prob 2



A hunter shoots a bullet with muzzle velocity $\vec{V}_0 = 1180 \text{ m/s}$ horizontally from height $H = 1.53 \text{ m}$ above the ground.

How far, D , will the bullet travel before it strikes the ground? Ignore air resistance.

Step 1: time in air:

$$y_f - y_i = -H = v_{y_i} t + \frac{1}{2} a_y t^2$$

$$-H = \frac{1}{2} (-g) t^2$$

$$\rightarrow t = \sqrt{\frac{2H}{g}} = \sqrt{\frac{2(1.53 \text{ m})}{9.8 \frac{\text{m}}{\text{s}^2}}} = 0.56 \text{ s}$$

Step 2: motion in x-dir

$$x_f - x_i = D = v_x t + \frac{1}{2} a_x t^2$$

$$D = (1180 \frac{\text{m}}{\text{s}})(0.56 \text{ s}) = \boxed{659 \text{ m}}$$