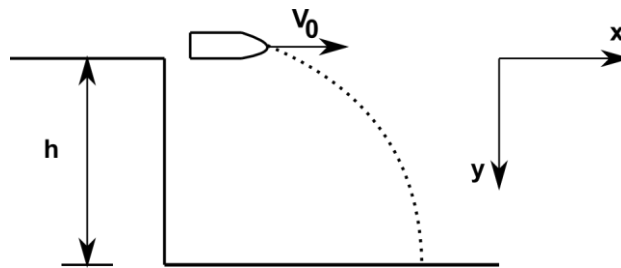**Answer on Question 49839, Physics, Mechanics**

Question:

A projectile is launched horizontally with a speed of 86.7 m/s. If the projectile is launched 1.6 m above the floor, how long will it take the projectile to hit the floor?

Solution:

Let's find how long will it take the projectile to hit the floor:

$$y = v_{iy}t + \frac{1}{2}gt^2.$$

Because the y-component of initial velocity $v_{iy} = 86.7\frac{m}{s}\cdot\sin 0° = 0$ we obtain:

$$y = h = \frac{1}{2}gt^2,$$

$$t = \sqrt{\frac{2h}{g}} = \sqrt{\frac{2\cdot 1.6m}{9.8\frac{m}{s^2}}} = 0.57s.$$

Answer:

$t = 0.57s.$