Question 68763 – Physics/Mechanics – Relativity

A stone is allowed to fall from the top of a tower 100 m high and at the same time another stone is thrown vertically upwards with a velocity of 25 m/s. When and where will the two stones cross each other?

Answer:

Lets write the equations for moving of each stone:

$$y_1 = 25t + 4.9t^2 and\ y_2 = 100 - 4.9t^2$$

The simultaneous solvation of both equations give:

$9.8t^2 + 25t - 100 = 0\ or\ t = 2.16\ sec$

Thus, the stones will be cross after 2.16 sec and:

$$y = 100 - \frac{9.8 \cdot 2.16^2}{2} = 77(m)$$