

Answer on Question #45762 – Math – Algebra

A ball is thrown downward from a window in a tall building. Its position at time t in seconds is $s = 16t^2 + 32t$, where s is in feet. How long (to the nearest tenth) will it take the ball to fall 70 feet?

Solution

Just put the $s(t = t_x) = 70$ f.

$$70 = 16t_x^2 + 32t_x$$

It is the quadratic equation :

It can be solved in the next way :

$$16t_x^2 + 32t_x - 70 = 0$$

$$D = 32^2 - 4 * (16 * (-70)) = 5504$$

$$t_x = \frac{-32 \pm \sqrt{5504}}{2 * 16} = \begin{cases} -3.32 \\ 1.32 \end{cases}$$

physical meaning has only the second solution :

$$t_x = 1.32 \text{ s}$$

Answer: 1.32 s