Answer on question #57915, Physics / Mechanics — Relativity

Question   how do i do this question: you throw a ball up with a velocity of 10m/s from the top of the school.the top of the school is 12m high and you release it 1m above the hight of the roof. how long would it take to hit the ground?

Solution   The equation of motion in vertical direction is

$$0 = h + v_0 t - gt^2/2$$

where $h = 12 + 1 = 13$ m, $v_0 = 10m/s$, $g = 9.8m/s^2$. So we find time t as

$$t = \frac{-v_0 - \sqrt{v_0^2 + 2hg}}{-g} \approx 2.94m/s$$