Answer on Question #45542 – Physics - Mechanics | Kinematics | Dynamics

If water is falling from a nul drop after drop. 1st drop has fallen on ground while 3rd drop is near to fall while 2nd drop is between somewhere distance between 1st and 3rd drop is 5 meter. What is distance between 2nd and 3rd drop?

We will assume that time t_d between drops is equal. Drops will pass distance:

1: $H = \frac{gt^2}{2} \rightarrow t = \sqrt{\frac{2H}{g}}$

2: $S_2 = \frac{g(t-t_d)^2}{2}$

$t = 2t_d$

Where $H = 5m$ – total height, S_2 – distance from the 3rd drop to the 2nd drop, t_d – time between drops, t – time after 1st drop start falling.

From these equations, we will get:

$$S_2 = \frac{gt^2}{8} = \frac{2Hg}{8g} = \frac{H}{4}$$

$$S_2 = \frac{5m}{4} = 1.25m$$

Answer: distance between 2nd and 3rd drop is $1.25m$