Answer on Question #40551, Physics, Mechanics | Kinametics | Dynamics

Question:

Drops are falling regularly from a water tap at a height of 9m from the ground. The fourth drop is about to fall from the tap when the first hits the ground. Find the distance between second and third drop.

Answer:

t – the period of drop's falling;

3t – the time of falling between first and fourth drops.

h – height of the tap;

From the condition of the problem:

$$\frac{g(3t)^2}{2} = h$$

$$t = \sqrt{\frac{2h}{9g}}$$

The distance between 2nd and 3rd drop equals:

$$d = \frac{g(2t)^2}{2} - \frac{gt^2}{2} = \frac{3gt^2}{2} = \frac{3g\frac{2h}{9g}}{2} = \frac{h}{3}$$

Answer: $\frac{h}{3}$