Answer on Question #48376, Physics, Mechanics - Kinematics - Dynamics

What will be the distance moved by a freely falling body in nth second of its motion?(initial velocity=0)

Distance covered by the falling object is equal to:

$$S = \frac{gt^2}{2}$$

Where t is a number of seconds.

Therefore, moved distance in nth second:

$$S_1 = \frac{g}{2}$$

$$S_2 = 4\frac{g}{2} - \frac{g}{2} = 3\frac{g}{2}$$

$$S_3 = 9\frac{g}{2} - 4\frac{g}{2} = 5\frac{g}{2}$$

$$S_n = (n^2 - (n-1)^2)\frac{g}{2} = (2n-1)\frac{g}{2}$$

Answer: $S_n = (2n-1)\frac{g}{2}$