**Answer on Question #48471 – Math – Calculus**

Suppose an object with initial acceleration of 10ft/s^2 is dropped from 300 ft. above the earth. How far would it travel in the first 2 seconds of its journey? Assume initial velocity is zero.

**Solution:**

$a = 10\frac{ft}{s^2} - initial\ acceleration$
$h_1 = 300\ ft - initial\ height;$
$t = 2s - time\ of\ the\ journey;$
$v_0 = 0 - initial\ velocity;$

Equation of motion for the object:

$$\Delta h = h_2 - h_1 = v_0 t + \frac{(a+g)t^2}{2} = 0 + \frac{(a+g)t^2}{2}$$

$$\Delta h(2\ sec) = \frac{(a-g)t^2}{2} = \frac{\left(10\frac{ft}{s^2} - 32.17\frac{ft}{s^2}\right)(2s)^2}{2} = 44.3\ ft$$

**Answer:** object will travel distance $44.3\ ft$.