

Answer on Question#54225, Physics / Other

The motion with uniform acceleration is $a = \frac{dv}{dt} = \text{const}$. Using the last equation, $dv = a dt$, and integrating from both sides, obtain $v = at + v_0$, where v_0 is the velocity at $t = 0$.

Since $v = \frac{dx}{dt}$, using expression for velocity derived above, obtain $dx = (at + v_0)dt$. Integrating from both sides, obtain $x(t) = x_0 + v_0t + \frac{at^2}{2}$, where x_0 is the position at moment $t = 0$. Thus, the displacement covered at n th second $t = n$ of motion is $v_0n + \frac{an^2}{2}$.

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