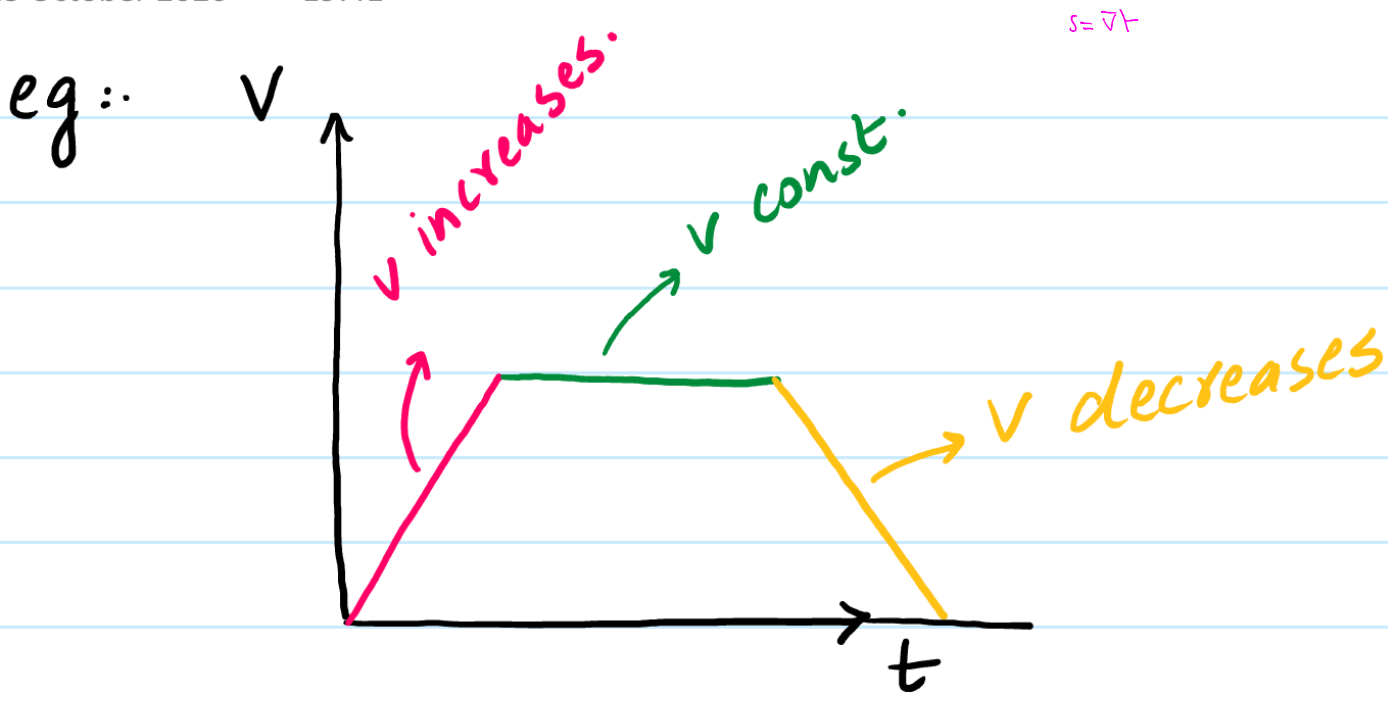
$s = ut + \frac{1}{2}at^2$

$v = u + at$

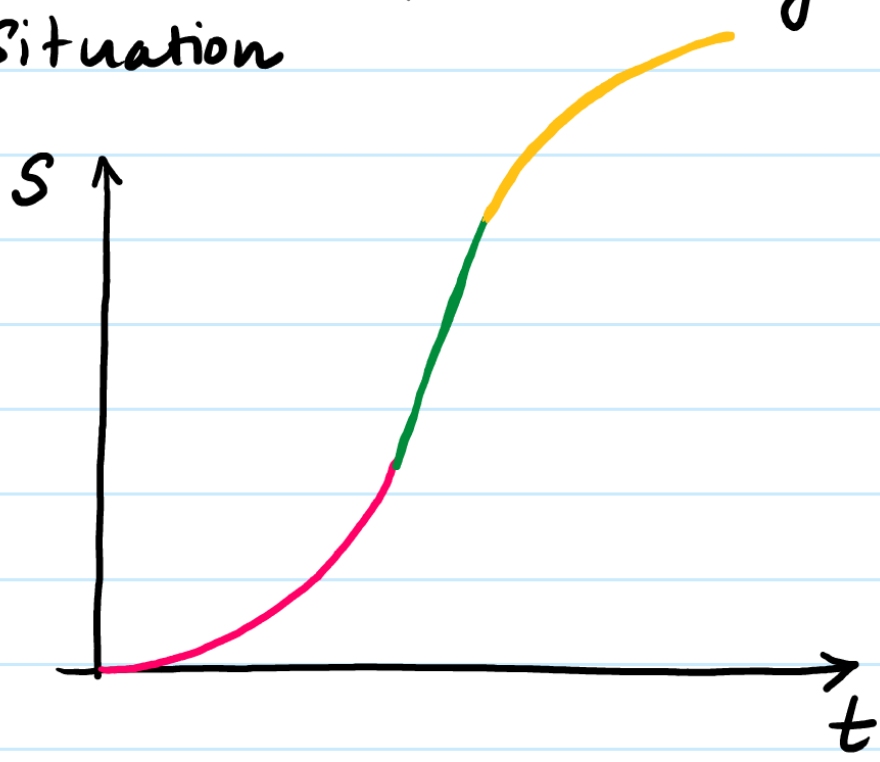
$v^2 = u^2 + 2as$

$s = \bar{v}t$

13 October 2020 19:41

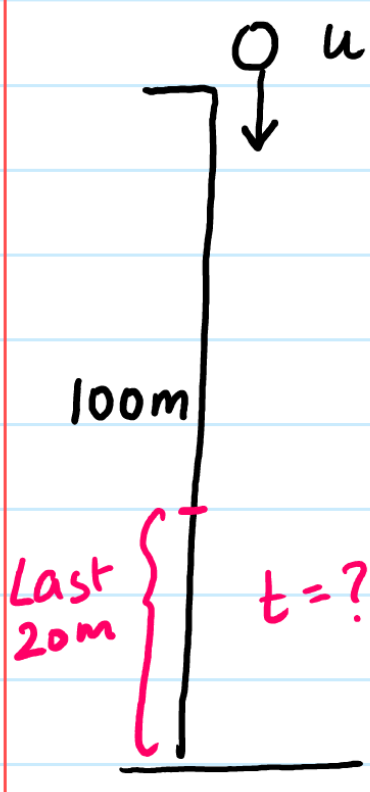
eg:. 

Sketch displ - time graph for above situation



eg:. application $s = ut + \frac{1}{2}at^2$.

A ball is released from rest through a height of 100m. Calculate the time taken for the ball to fall for the last 20m?



Let us calculate the time of total journey

$s = 100m$

$u = 0$

$a = 9.81\ m/s^2$

$t = ??$

$s = ut + \frac{1}{2}at^2$

$s = \frac{1}{2}at^2$

$100 = \frac{1}{2}(9.81)t^2$

$t = 4.51\ s$ ✓

Let us calculate the time to travel the first 80m.

$s = 80$

$u = 0$

$a = 9.81$

$t = ??$

$s = ut + \frac{1}{2}at^2$

$80 = 0 + \frac{1}{2}(9.81)t^2$

$t = 4.04\ s$ ✓

Last 20m

$= 4.51 - 4.04$

$= 0.47\ s$ ✓