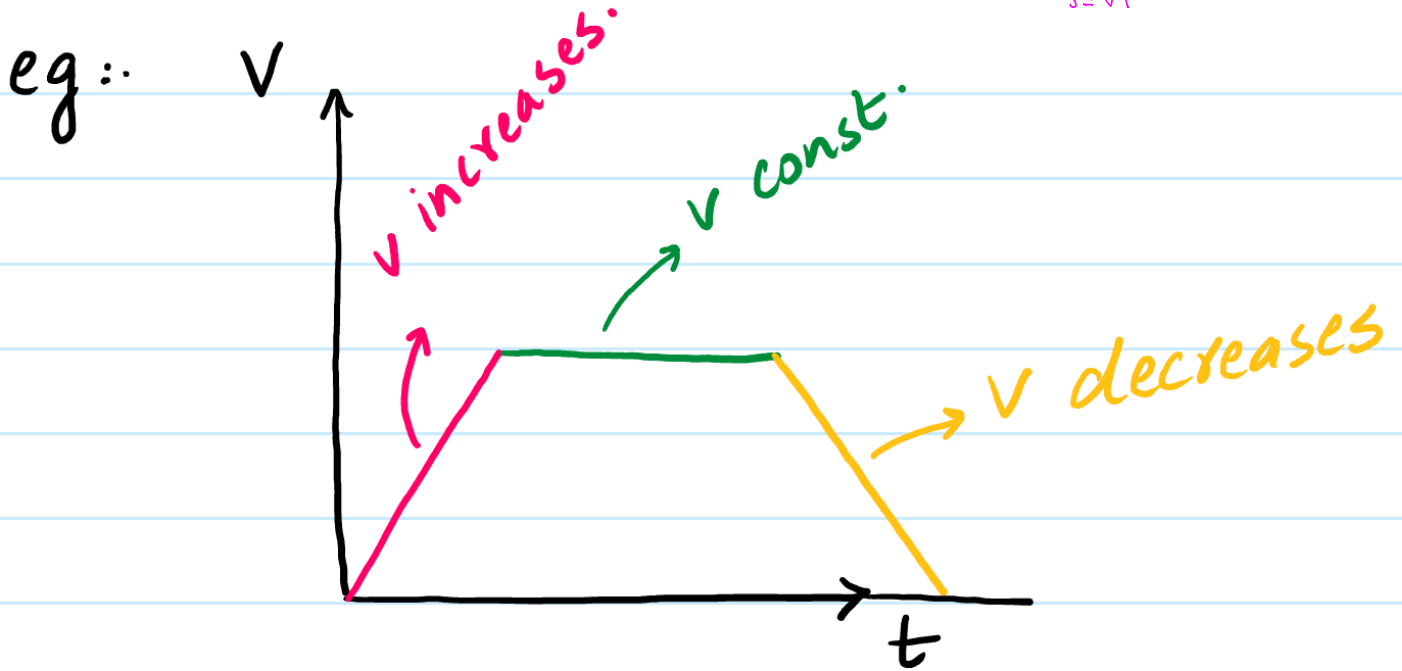


$$s = ut + \frac{1}{2}at^2$$

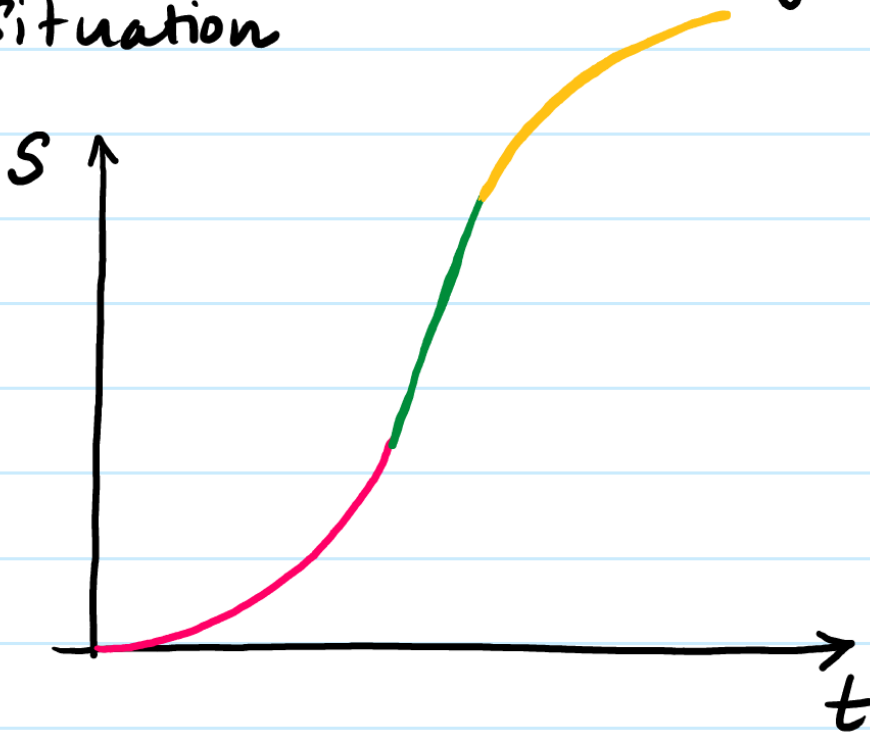
$$v = u + at$$

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

$$s = vt$$

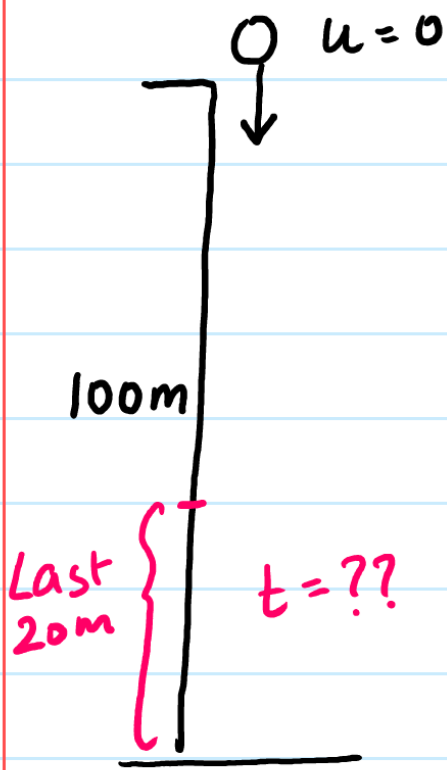


Sketch displ - time graph for above situation



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

$$s = 100\text{m}$$

$$u = 0$$

$$a = 9.81\text{m/s}^2$$

$$t = ??$$

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

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

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

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

$$t = 4.51\text{s}$$

$$s = 80$$

$$u = 0$$

$$a = 9.81$$

$$t = ??$$

Last 20m

$$= 4.51 - 4.04$$

$$= 0.47\text{s}$$

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

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

$$t = 4.04\text{s}$$