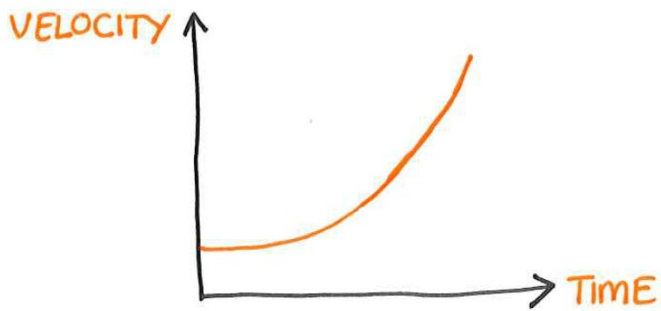
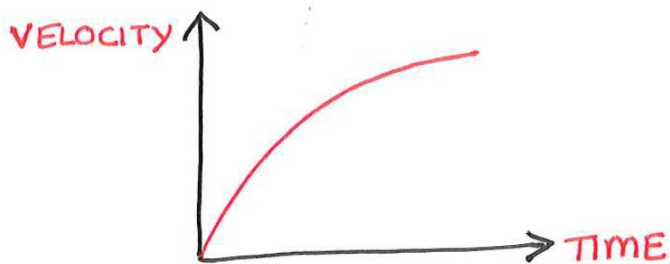


# Year 1 Applied Chapter 11 - Variable Acceleration

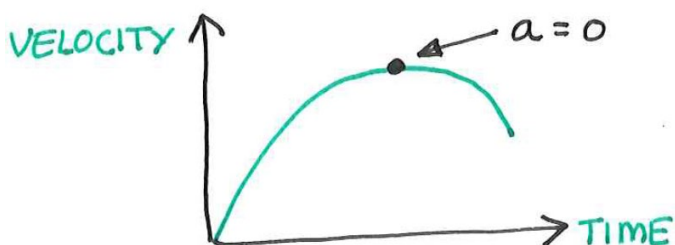
## Increasing Acceleration



## Decreasing Acceleration

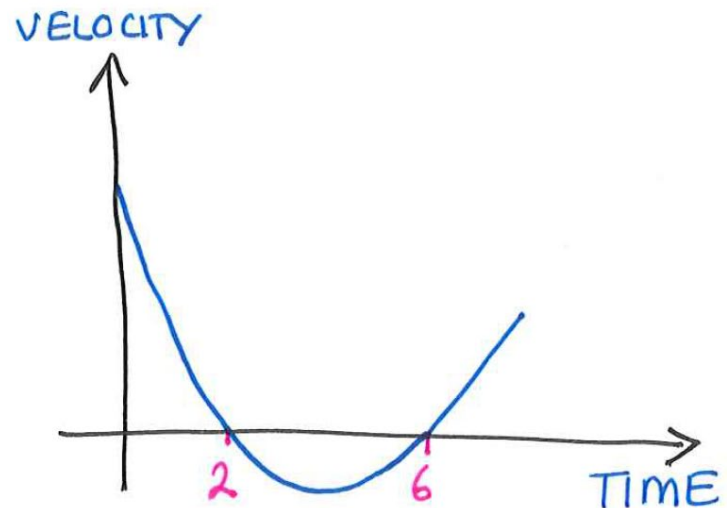


## Turning Point



## Changing Direction

When a particle reaches zero it could indicate a change of direction.



From 0 to 2

slowing down but moving  $\rightarrow$

From 2 to 6

change of direction  $\leftarrow$

From 6 and beyond

change of direction  $\rightarrow$

---

Variable

Acceleration

(Do not use SUVAT)

$S$  = displacement

↓ differentiate

$V$  = velocity

↓ differentiate

$a$  = acceleration

$S$  = displacement

↑ integration

$V$  = velocity

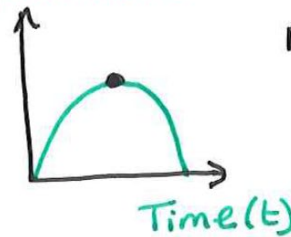
↑ integration

$a$  = acceleration

Don't forget the  
constant value +c

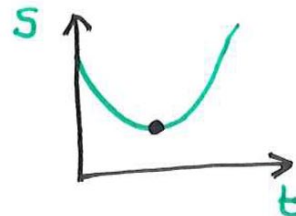
Maximum and Minimum

Displacement( $s$ )



max displacement

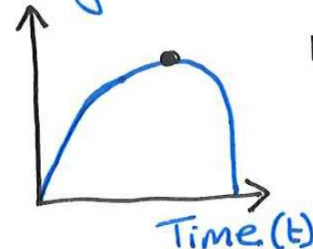
$$\frac{ds}{dt} = v = 0$$



min displacement

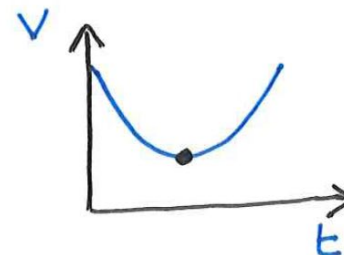
$$\frac{ds}{dt} = v = 0$$

velocity( $v$ )



max velocity

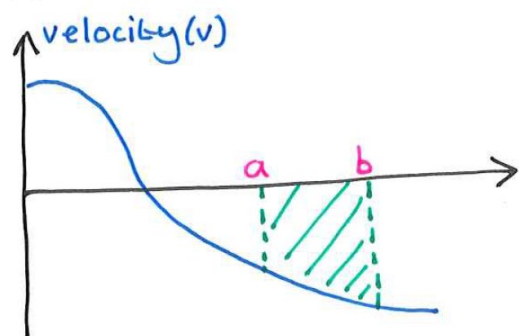
$$\frac{dv}{dt} = a = 0$$



min velocity

$$\frac{dv}{dt} = a = 0$$

Area Under a Graph



$$S = \int_a^b v \, dt$$

Area = Distance Travelled