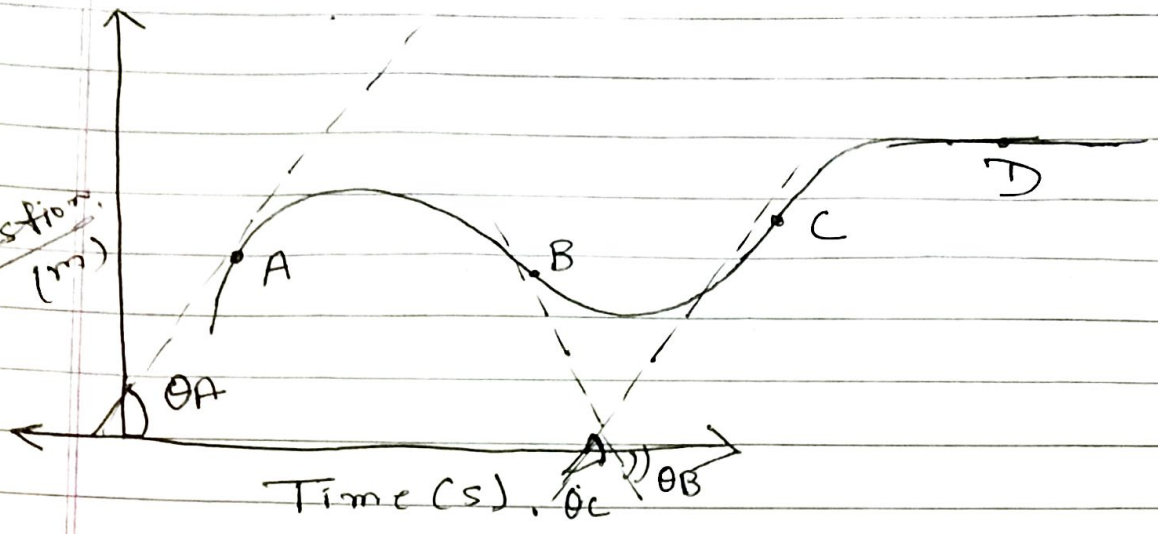


$\Rightarrow \theta_A > \theta_B$.

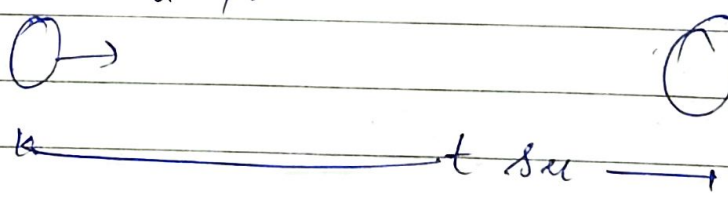
$\tan\theta_A > \tan\theta_B$

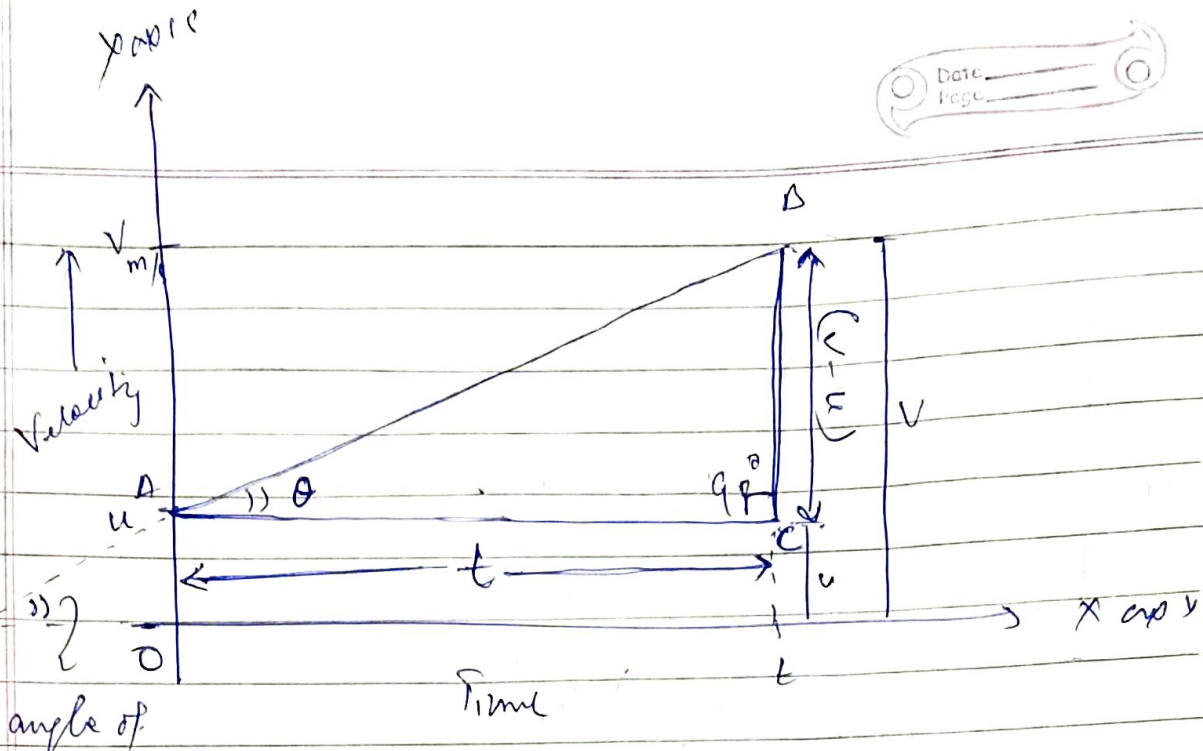
$v_A > v_B$ (accln is –ve)

θ_A to θ_B	θ_B to θ_C	θ_C to θ_D
vel. decrease.	vel. increase	vel. Decrease
accn –ve	accn +ve.	acc^n –ve.

Velocity - Time graph

If an object moves with initial velocity u m/s and after some time t sec its velocity becomes v m/s





VT-graph Rule:

The slope of a VT-graph gives accel^n of the object.

Slope of AB = Tan θ = Accel^n,

in $\triangle ABC$,

$$\text{Tan}\theta = \frac{BC}{AC} = \frac{v-u}{t}$$

$$\text{accel}^n = \frac{v-u}{t}$$

$$\# \quad a = \frac{v-u}{t}$$

Δv = change

$$a_{av} = \frac{\Delta v}{\Delta t}$$

using limit both sides.

$$\lim_{\Delta t \to 0} a = \lim_{\Delta t \to 0} \frac{\Delta v}{\Delta t}$$

Instantaneous accel^n → dv/dt

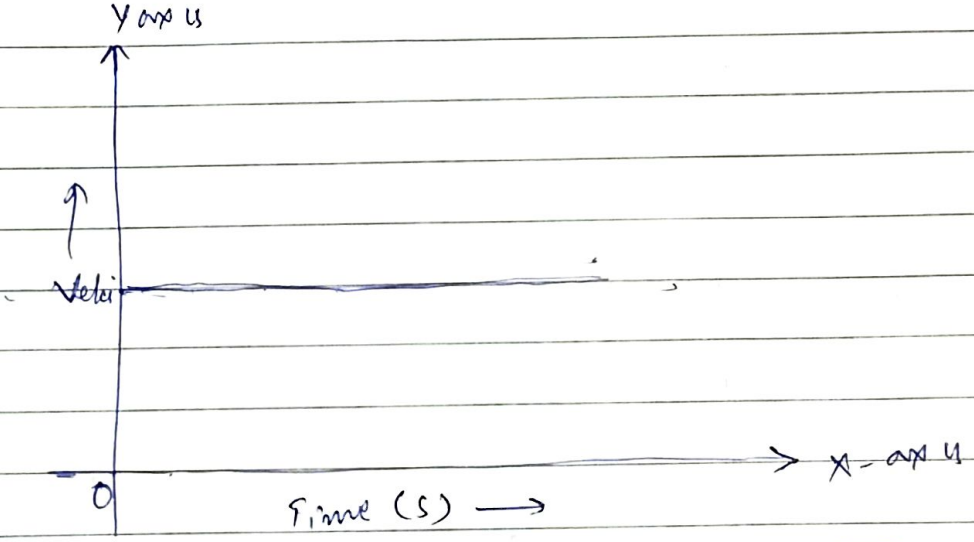
$$a_{inst} = \frac{dv}{dt}$$

$\frac{dv}{dt}$ → differentiation of velocity w.r.t time

a_{inst} → accel" are calculated for very shortest intervals of time ($\Delta t \to 0$) that accel" is called inst. accel".

$:=$

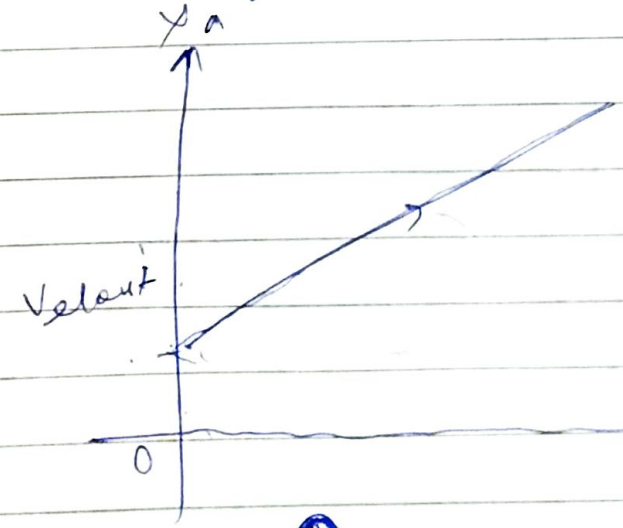
Case 1 → VT-graph // to time axis.



→ constant velocity
→ accel" = 0
→ uniform motion.

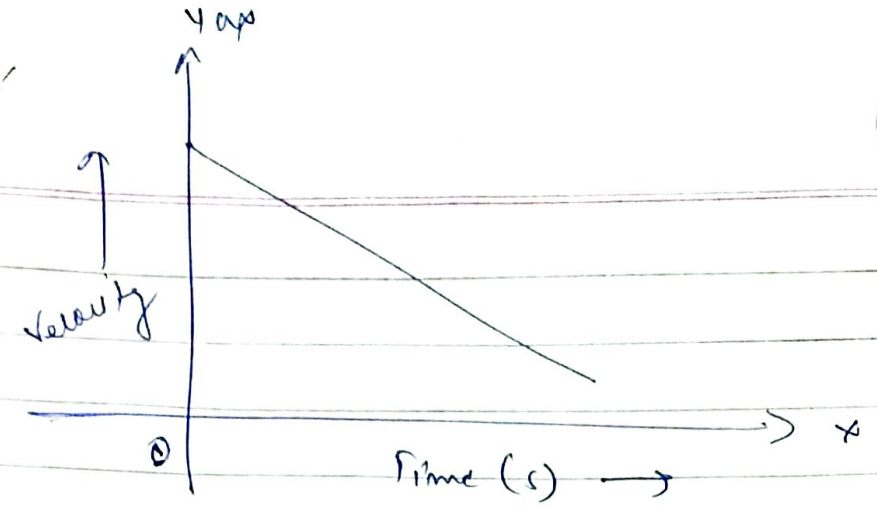
$\theta = 0$
$\therefore \tan\theta = \tan 0$
$= 0$

Case 2 → VT-graph make constant angle with X-axis



→ Velocity ↑ → accel" + ve (constant)
→ Non-uniform motion

Case 3,

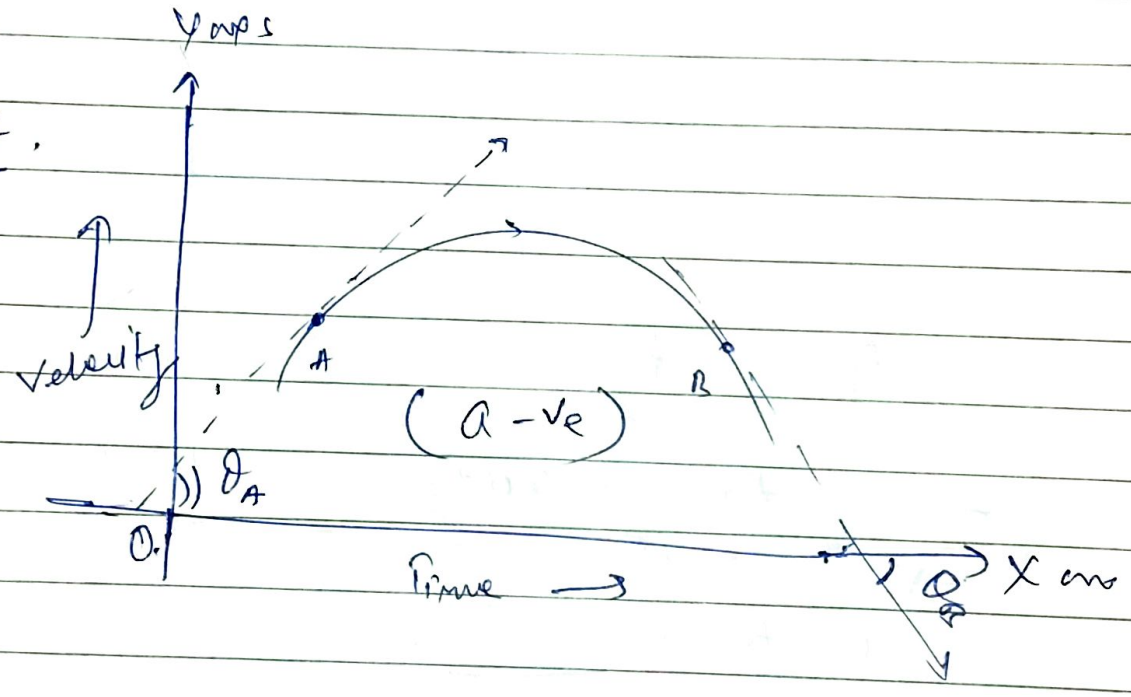


Velocity ↓

accel^n – Ve (const)

Non-uniform Motion

Case 4.



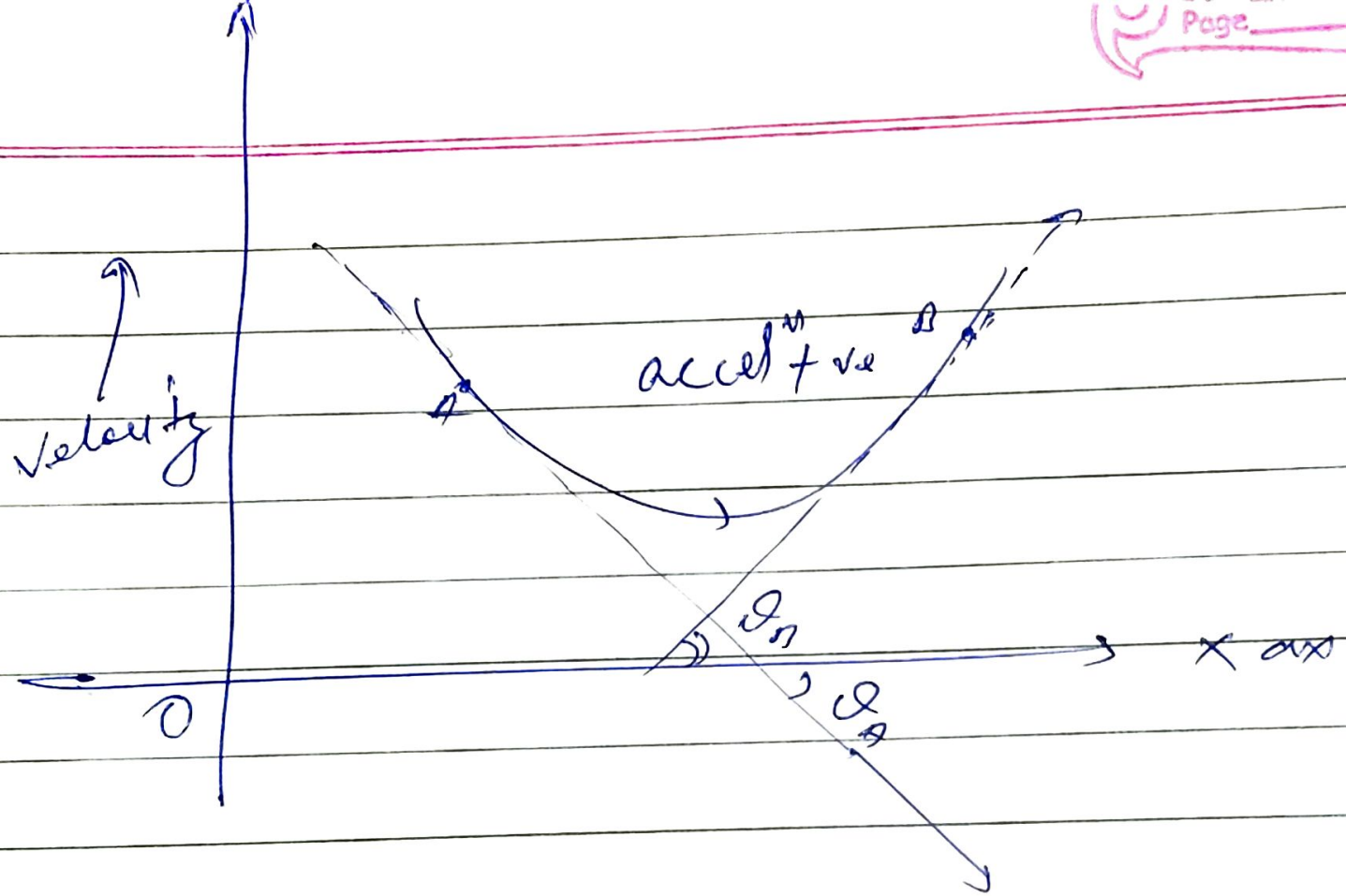
$\theta_A > \theta_B$

$\tan\theta_A > \tan\theta_B$

~~Accel^n > Accel^n~~

Velocity A > Velocity B

accel^n –Ve.



proof

$\theta_A < \theta_B$

$\tan\theta_A < \tan\theta_B$

Velocity ↑ (increased)

accel^n +ve