- **Accelaration**

    The rate of change of velocity with respect to time is called Accelaration. It is a vector quantity having unit m/s^2.

- **Average Accelaration.**

    The ratio of total change in velocity to the total time taken is called Average velocity.

$$a_{av} = \frac{\Delta v}{\Delta t}$$
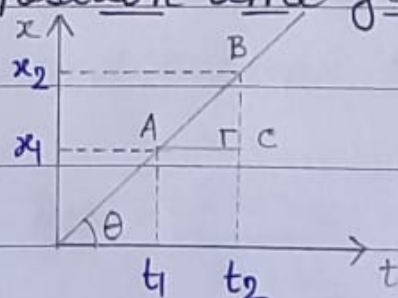
$$= \frac{v_2 - v_1}{\Delta t}$$

The direction of average acceration vector is the direction of the change in velocity.

- **Instantenous Accelaration.**

    It is the limiting value of average accelaration when the time interval is infitesimally small.

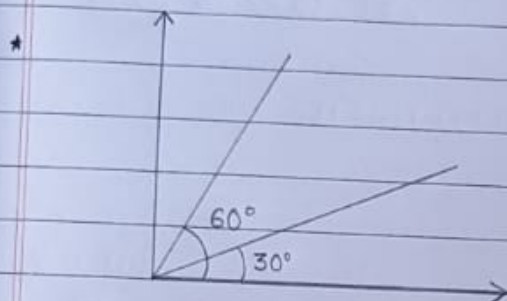$$\vec{a} = \frac{\Delta \vec{v}}{\Delta \vec{t}} = \frac{dv}{dt}.$$

Speed from Position time graph.

$$\text{speed} = \frac{x_2 - x_1}{t_2 - t_1}$$

$$= \frac{BC}{AC}$$

$$= \tan\theta.$$

from the position time graph,
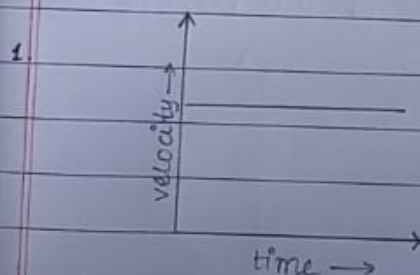find the ratio of V_a & V_b

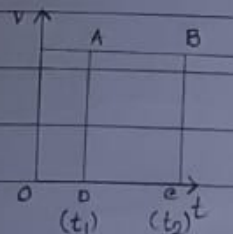$$\frac{V_a}{V_b} = \frac{\tan 30°}{\tan 60°}$$

$$= \frac{1/\sqrt{3}}{\sqrt{3}}$$

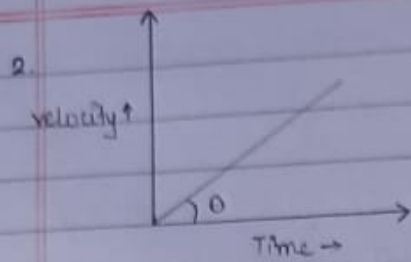$$= \frac{1}{3}$$

$$= 1:3.$$

Velocity - Time graph (6)

1.

for constant velocity.
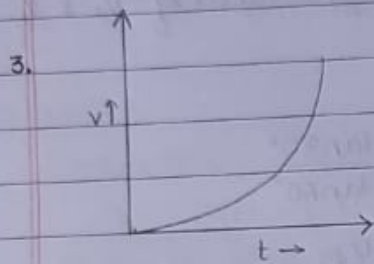

$$S = v \times (t_2 - t_1)$$

$$= AB \times CD$$

$$= ar(ABCD)$$

2.

velocity ↑

Time →

acc. = slope of v-t graph

uniform velocity.

3.

v↑

t →

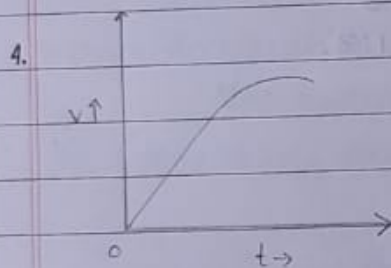accelaration is increasing.

4.

v↑

o   t →

accelaration is decreasing

5.

v↑

t
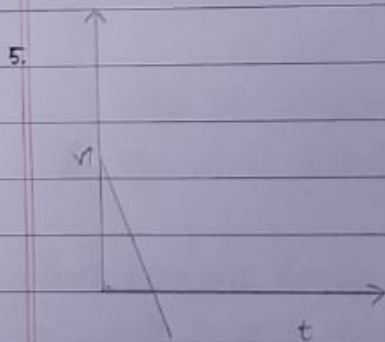
uniform negative accelaration
or
retardation.