

YAKEEN NEET 2.0

2026

Kinematics - - -

Motion in a straight line

PHYSICS

Lecture - 01

By - Saleem Ahmed Sir





Today's Goal

Basic to advanced on Distance and displacement

.....



welcome to the ~~Hell~~ physics



motion → A body said to be in motion if it changes its position w.r.t time.

Rest & motion are relative term.

→ they depends on observer.
(Taad Kaun Raha hai.)

Distance

- Sachhi Muchhi me particle kitna chala.

- Actual path length travel.

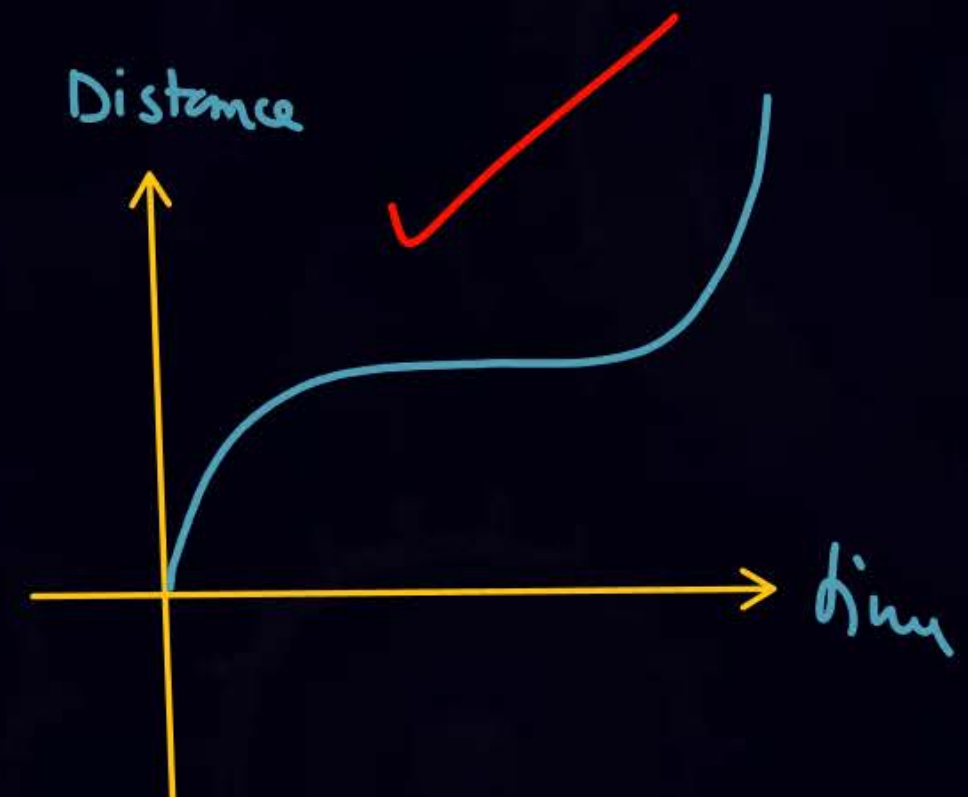
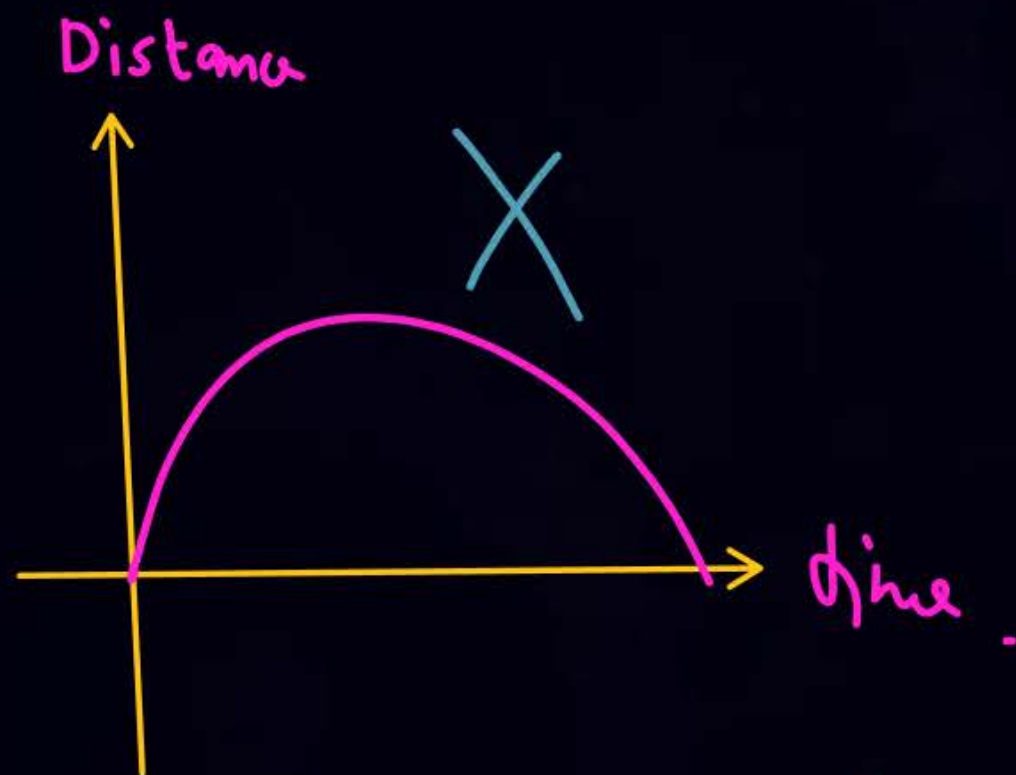
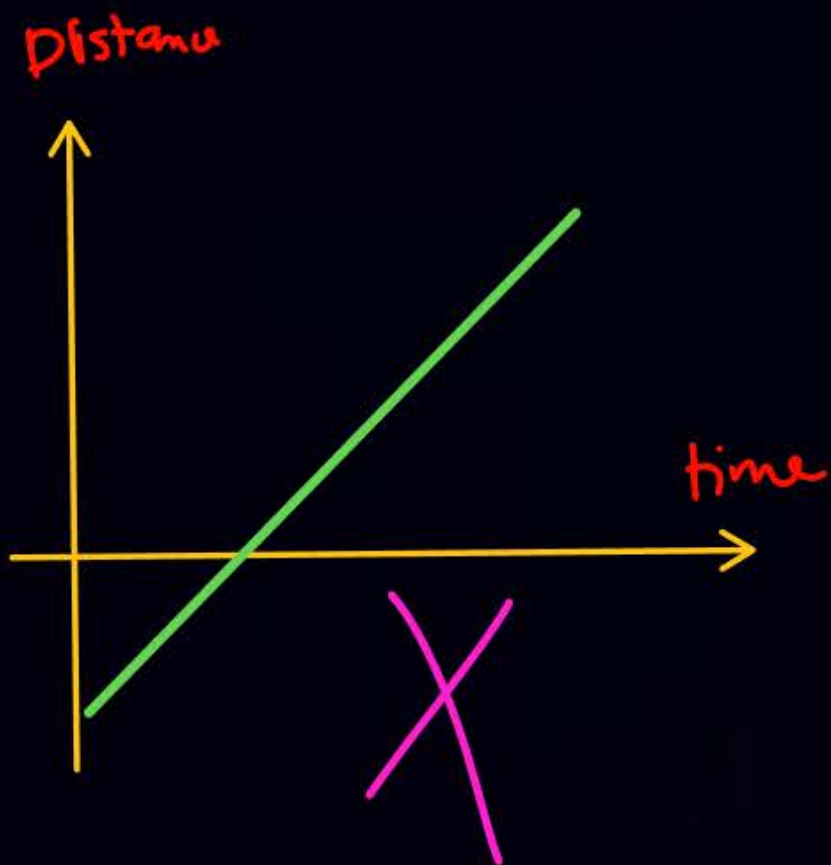
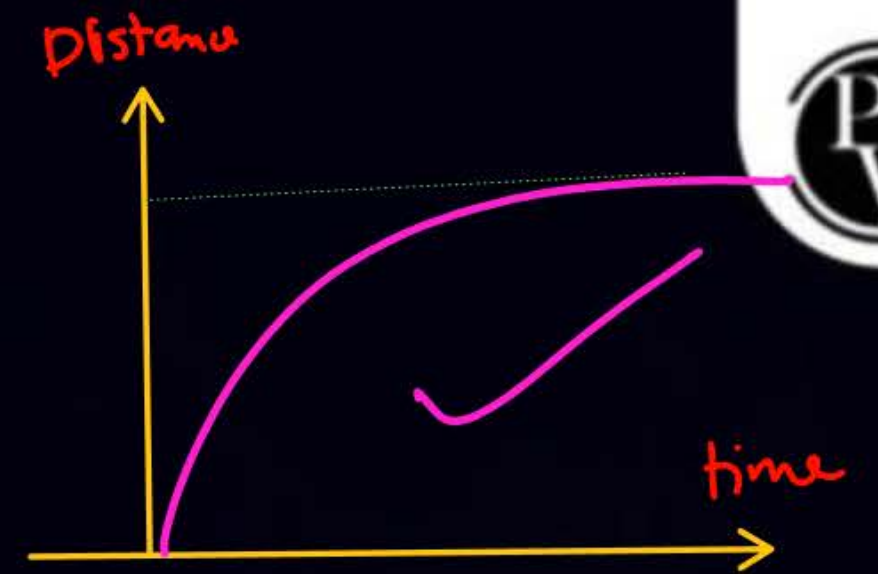
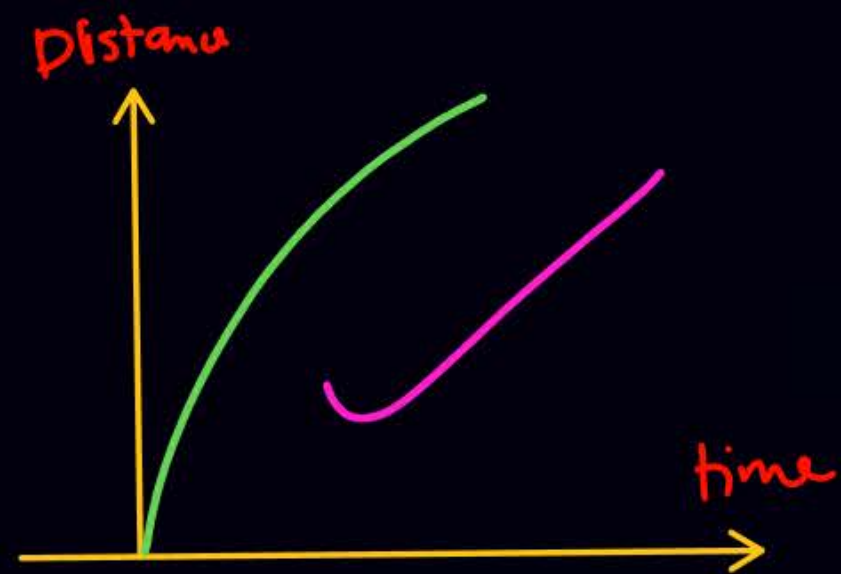
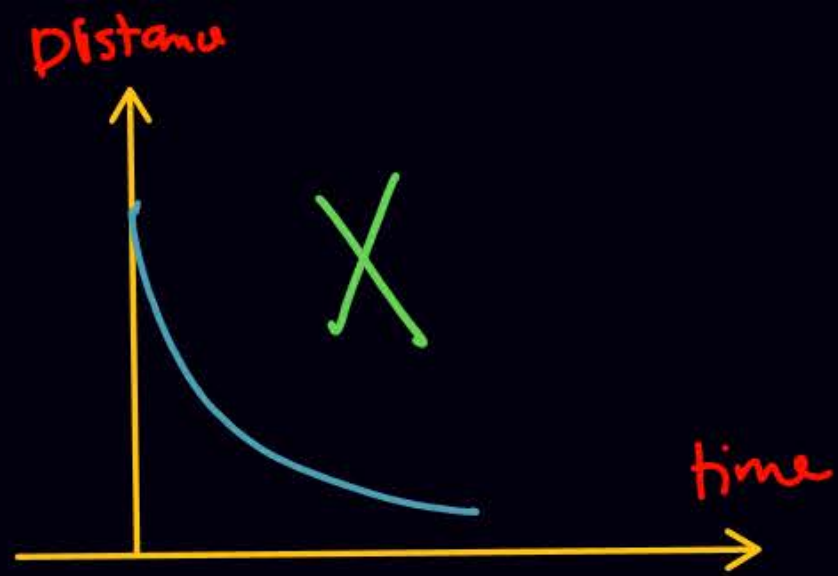
- scalar

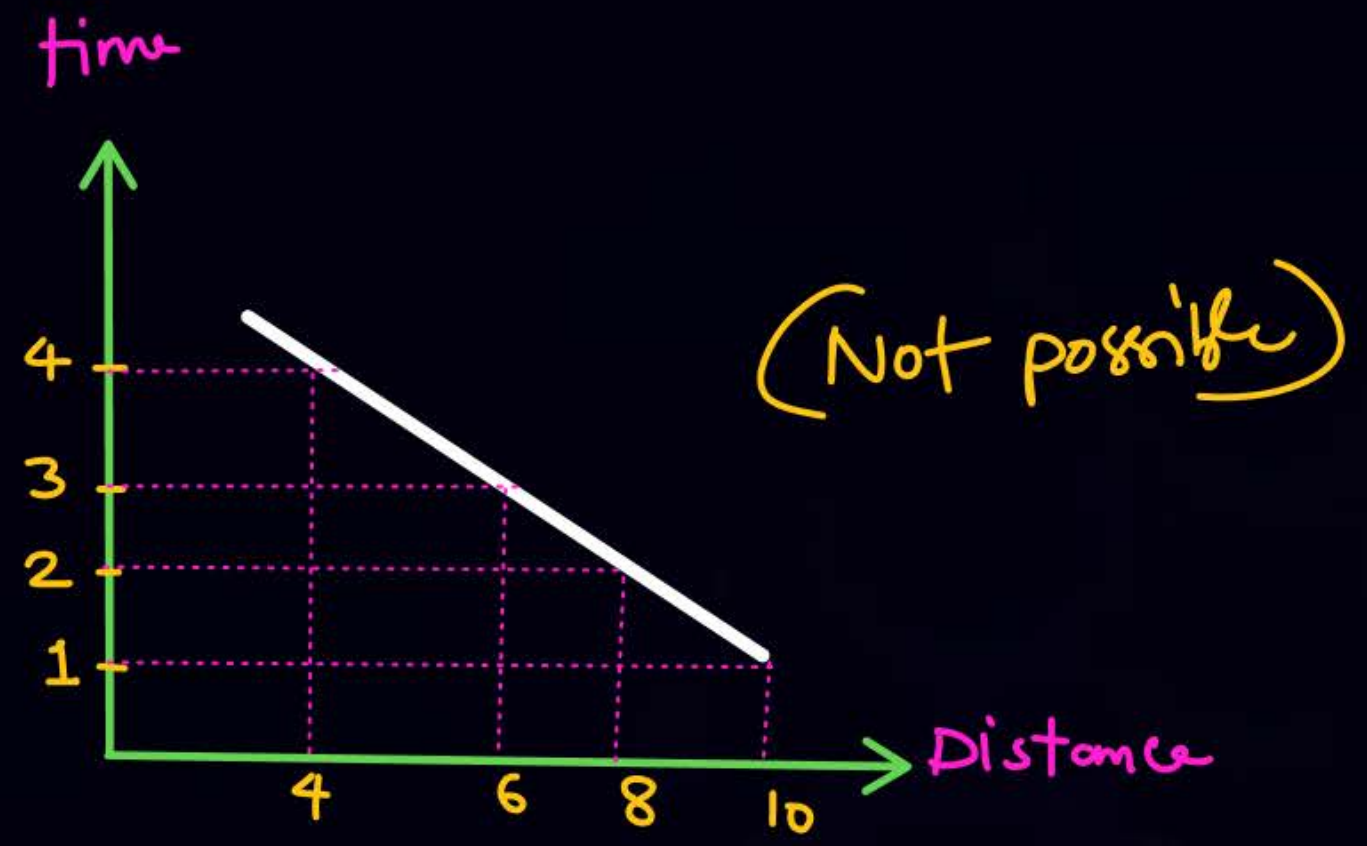
- Depends on path/Rasta

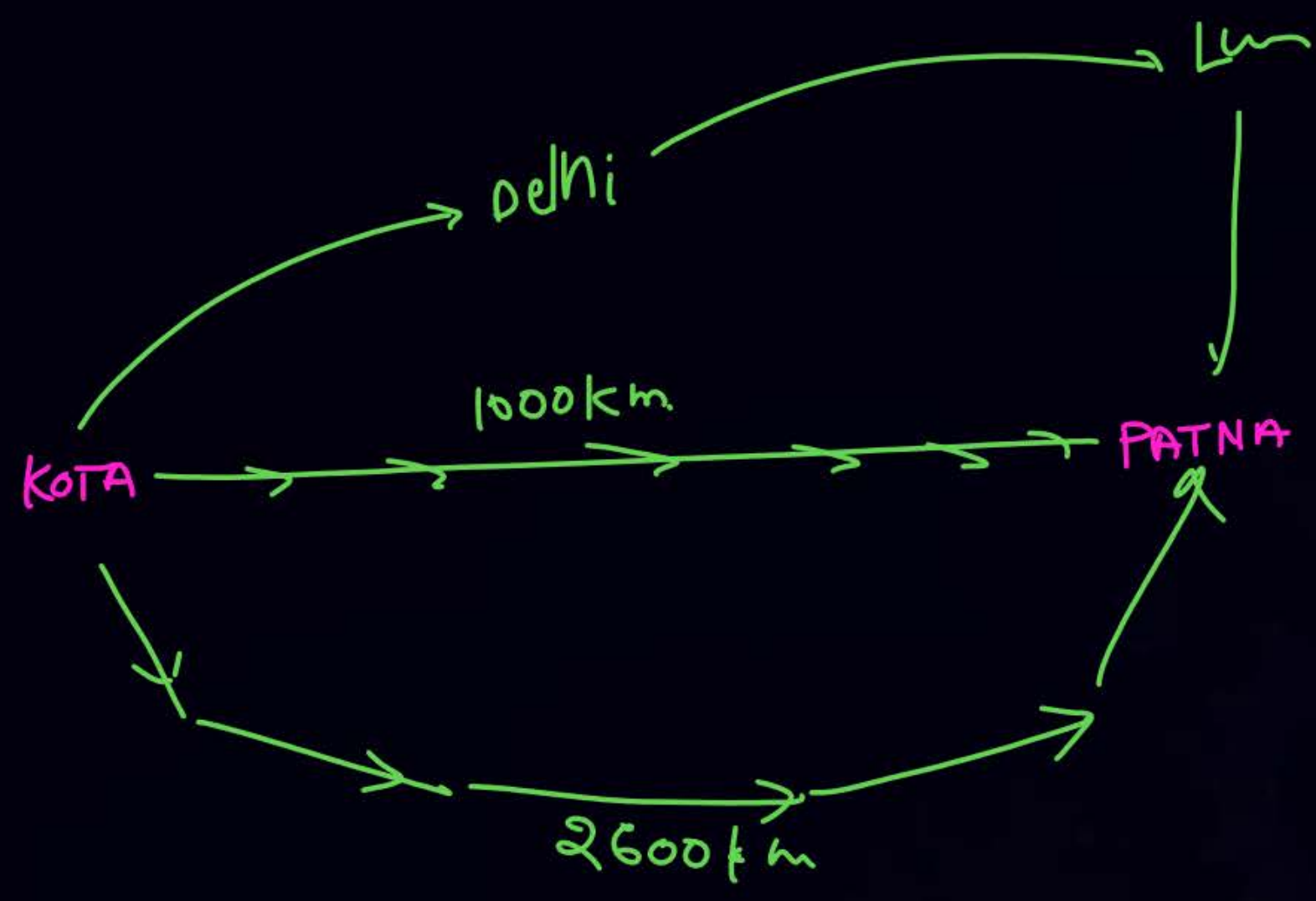
→ graph.

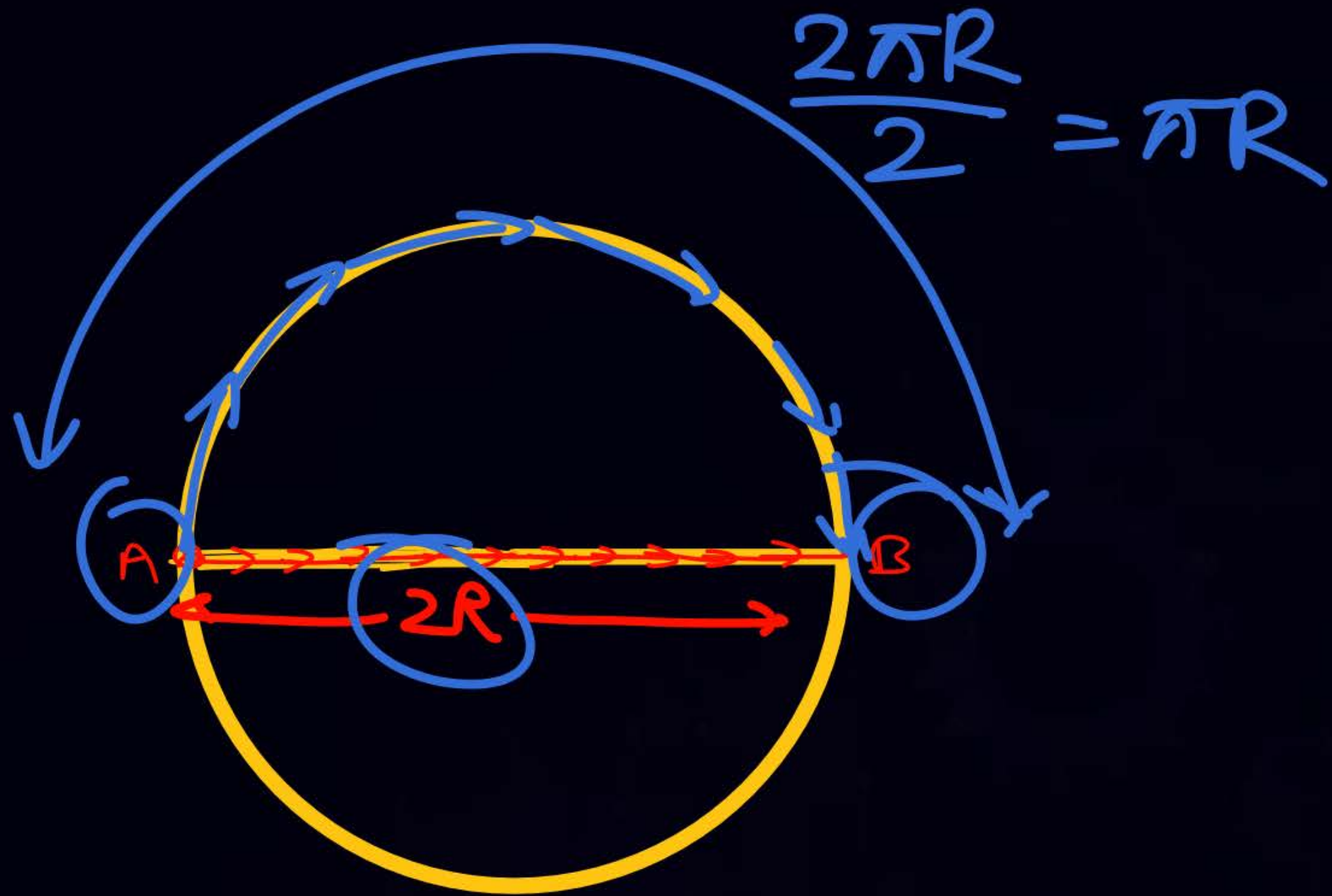
* Distance cannot be negative.
and cannot decreasing

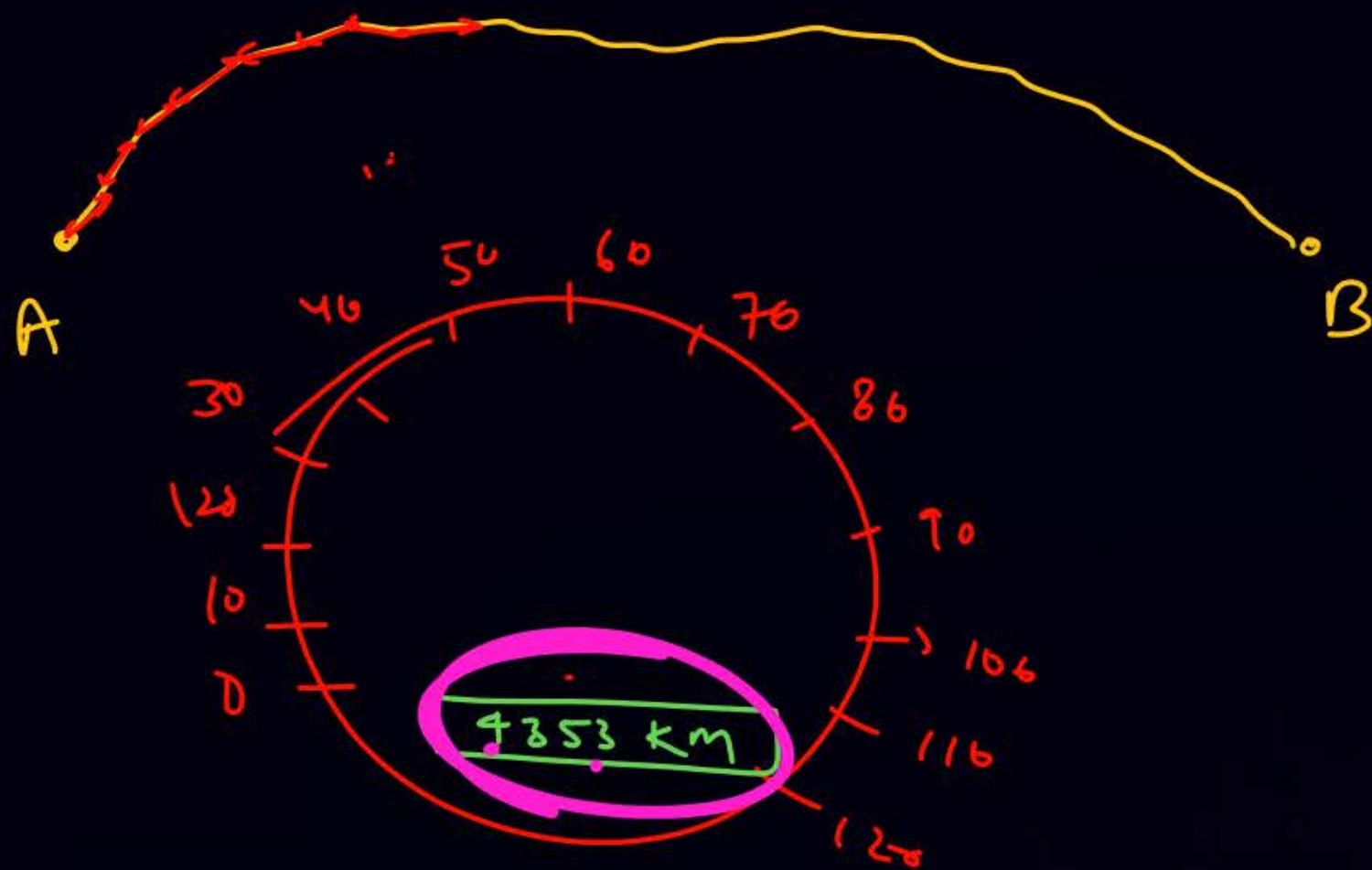
*** Distance Nikalne ke liye Rasta pata hone bahut jaruri hai.
Distance निकालने के लिए रास्ता पता होना जरूरी है.











const ✓

zero ✓

Kabhi Negati-Nahi hai



Displacement

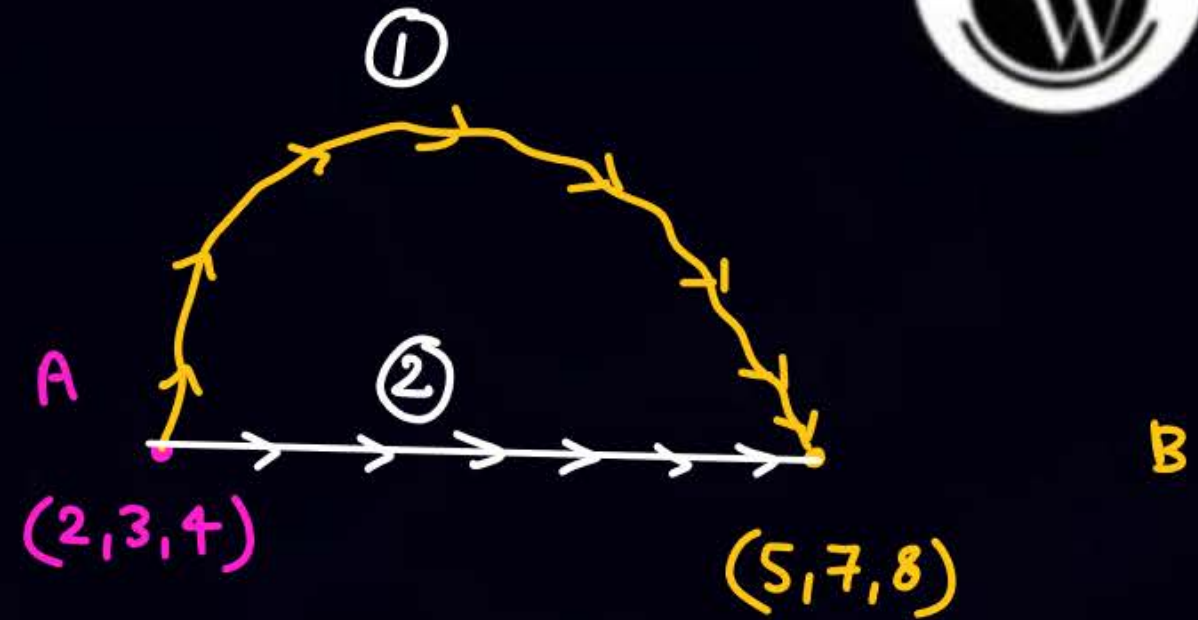
- shortest distance b/w initial to final point.

** Independent on path (रास्ता)

- Vector

** - Change in position vector.

$$\text{Displacement} = \vec{d} = \vec{r}_f - \vec{r}_i$$



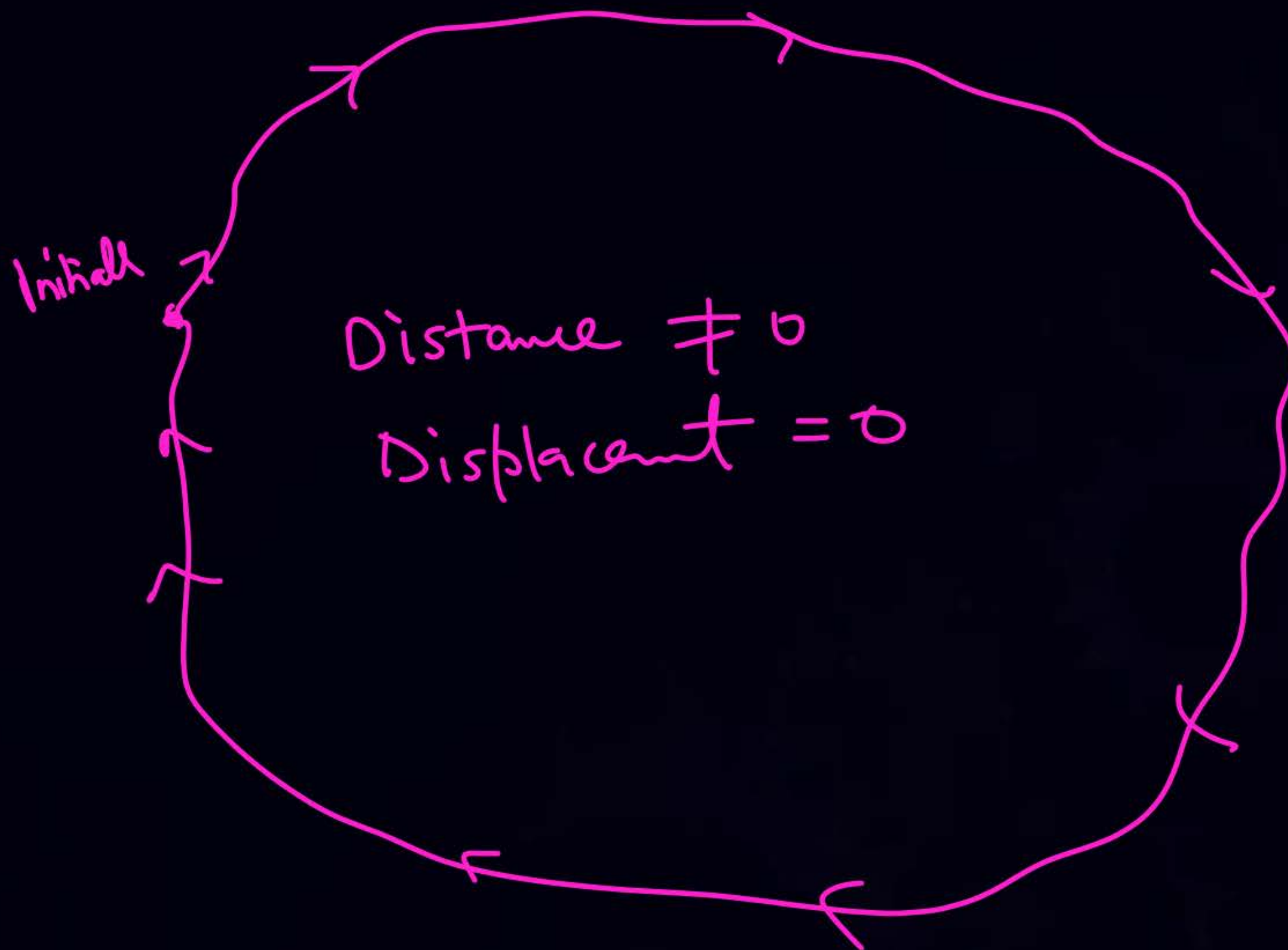
change in Position vector

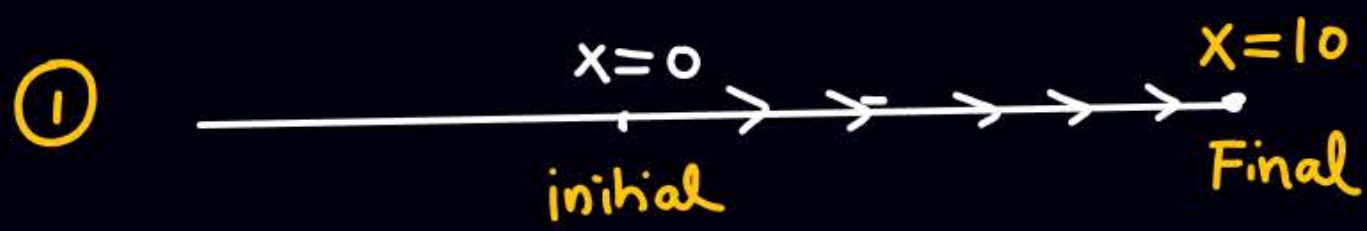
= Position vector of B wrt A

$$\text{Displacement} = 3\hat{i} + 4\hat{j} + 4\hat{k} \equiv \text{for both path}$$

$$\text{Distance} \Rightarrow 1 > 2$$



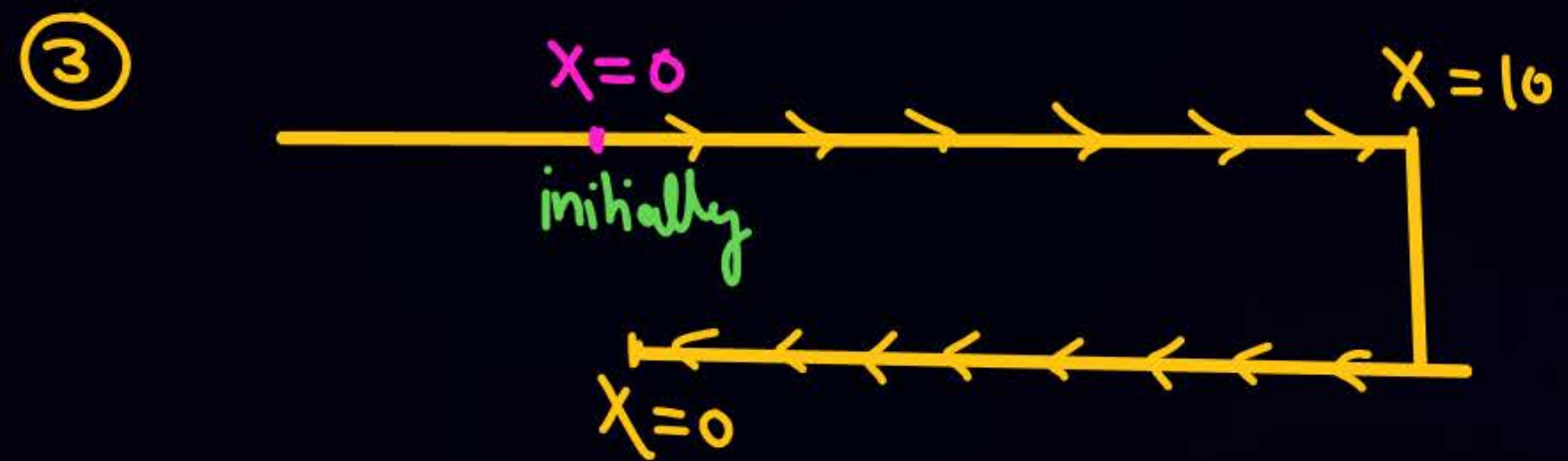




$$\text{Distance} = 10$$

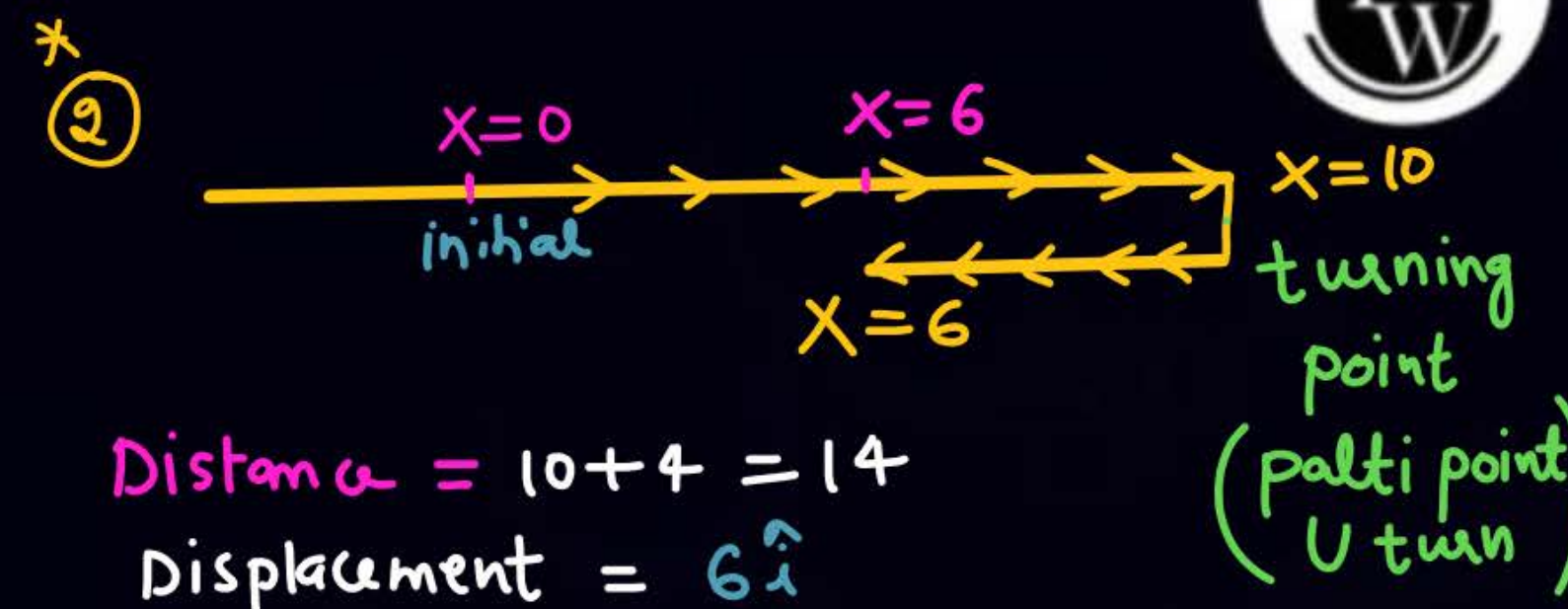
$$\text{Displacement} = 10\hat{i}$$

$$\text{Distance} = |\text{Displacement}|$$



$$\text{Distance} = 10 + 10 = 20$$

$$\text{Displacement} = 0$$



$$\text{Distance} = 10 + 4 = 14$$

$$\text{Displacement} = 6\hat{i}$$

$$\text{Distance} > |\text{Displacement}|$$

(palti point)
U turn

$$\text{Distance} \geq |\text{Displacement}|$$

$$\frac{\text{Distance}}{|\text{Displacement}|} \geq 1$$



* Kya distance Hamesha . . . displacement se Bada hoga.

* Kya distance Kabhi displacement se chota ho sakta hai

SVL

* अगर particle ने अपनी Dirⁿ नहीं बदली तो

$$\text{Distance} = |\text{Displacement}|$$

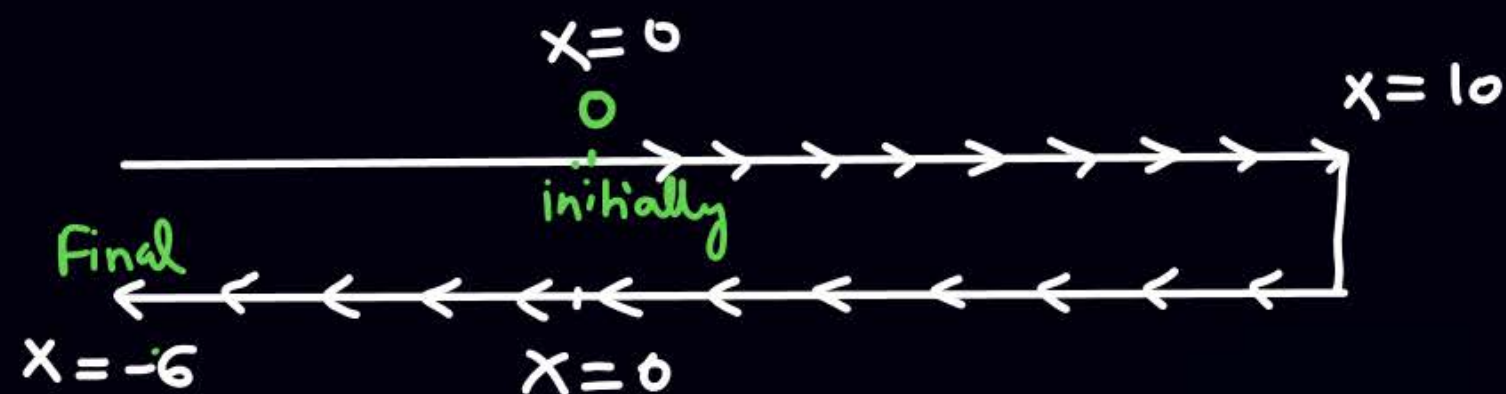
वरना $\text{Distance} > |\text{Displacement}|$

* अगर particle ने अपनी dirⁿ नहीं बदली

to

$$\text{Distance} = |\text{Displacement}|$$

④



$$\text{Distance} = 10 + 10 + 6 = 26$$

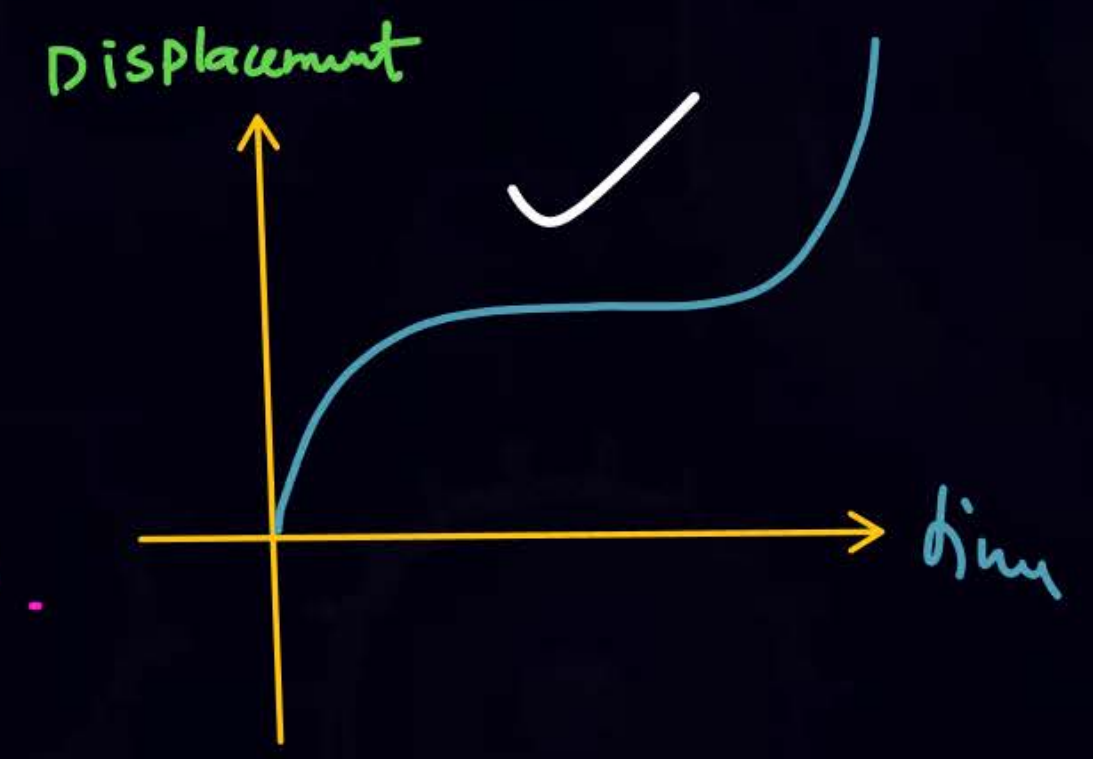
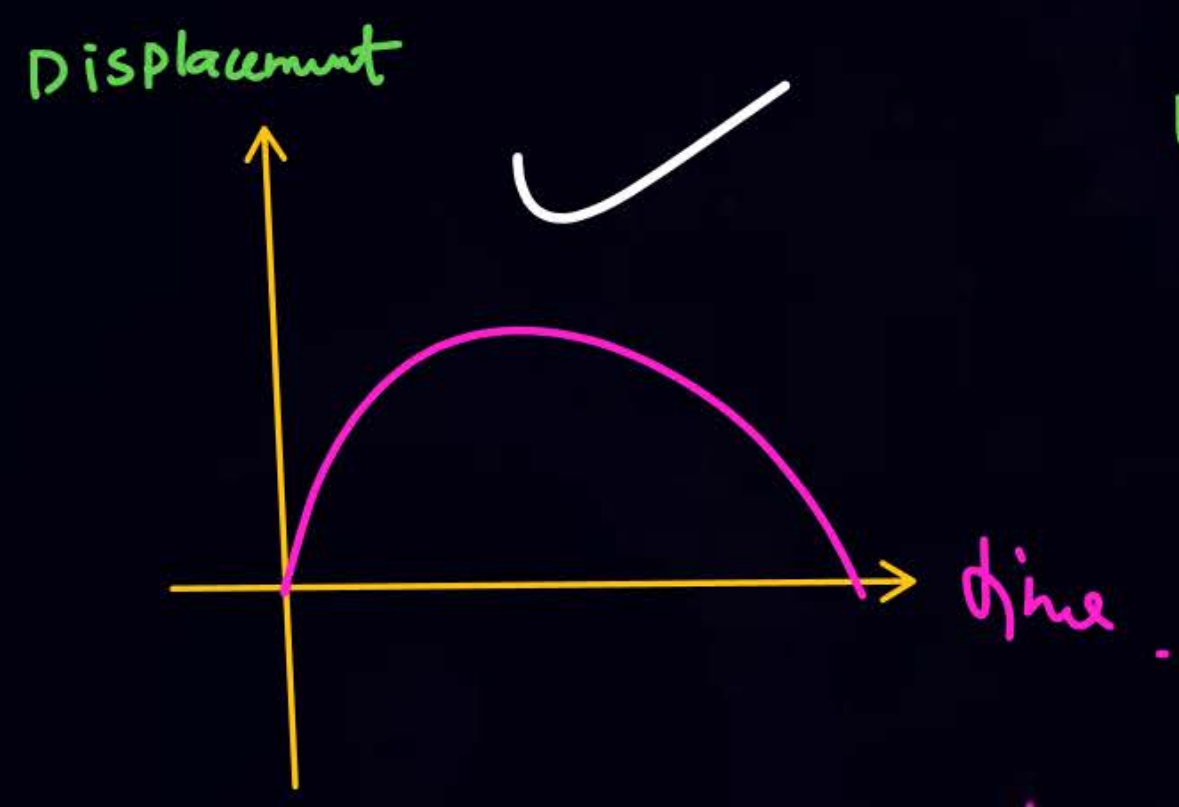
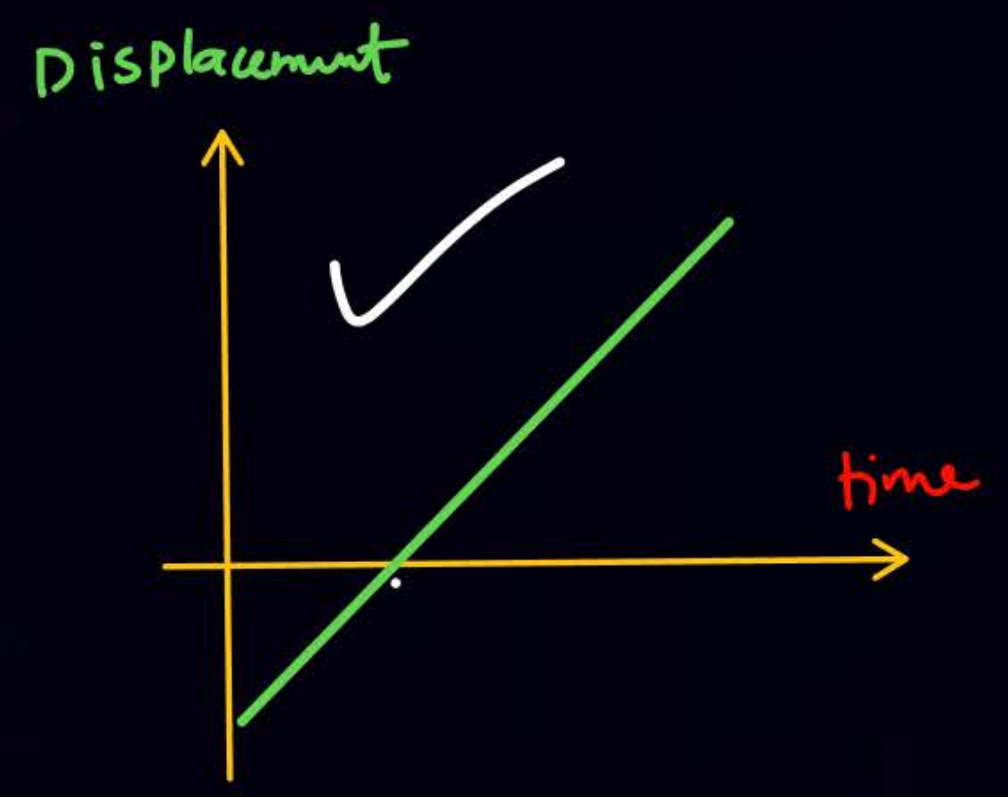
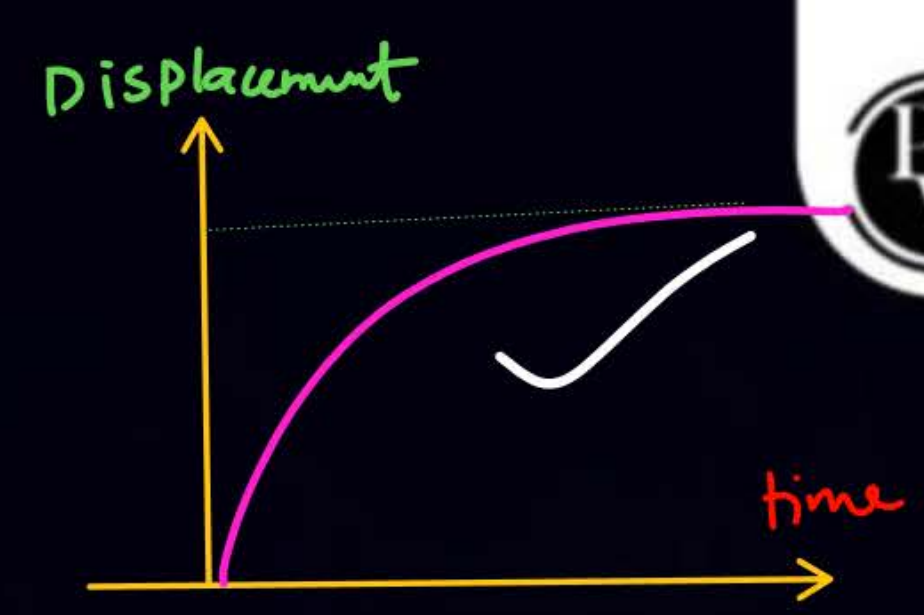
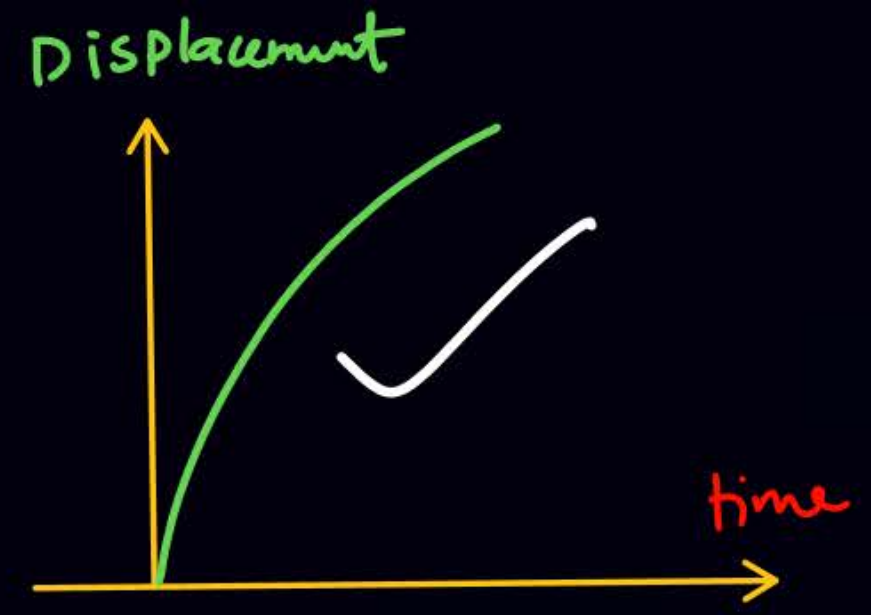
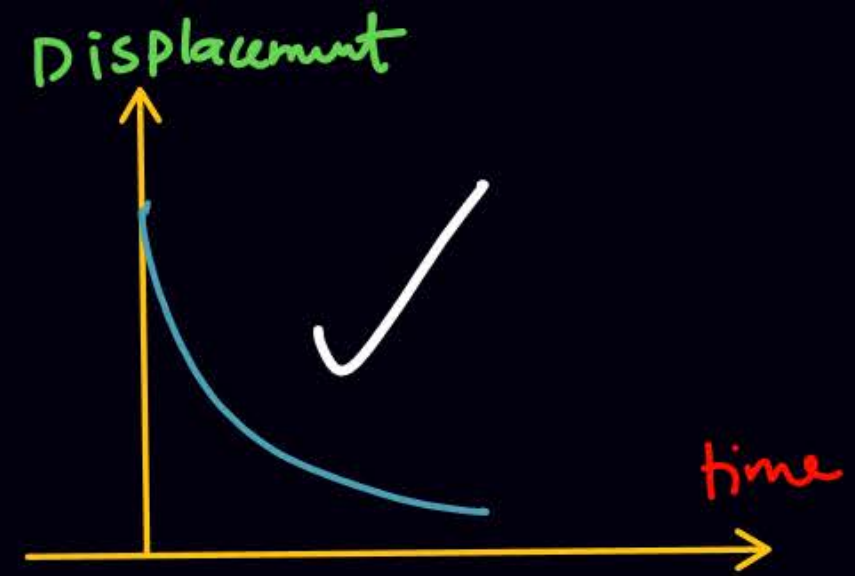
$$\text{Displacement} = -6\hat{i}$$

* Displacement \rightarrow increase, decrease, const, +, -, 0
 * position \rightarrow increase, decrease, const, +, -, 0
 (x-coordinate)

} kuch Bhi ho sakta

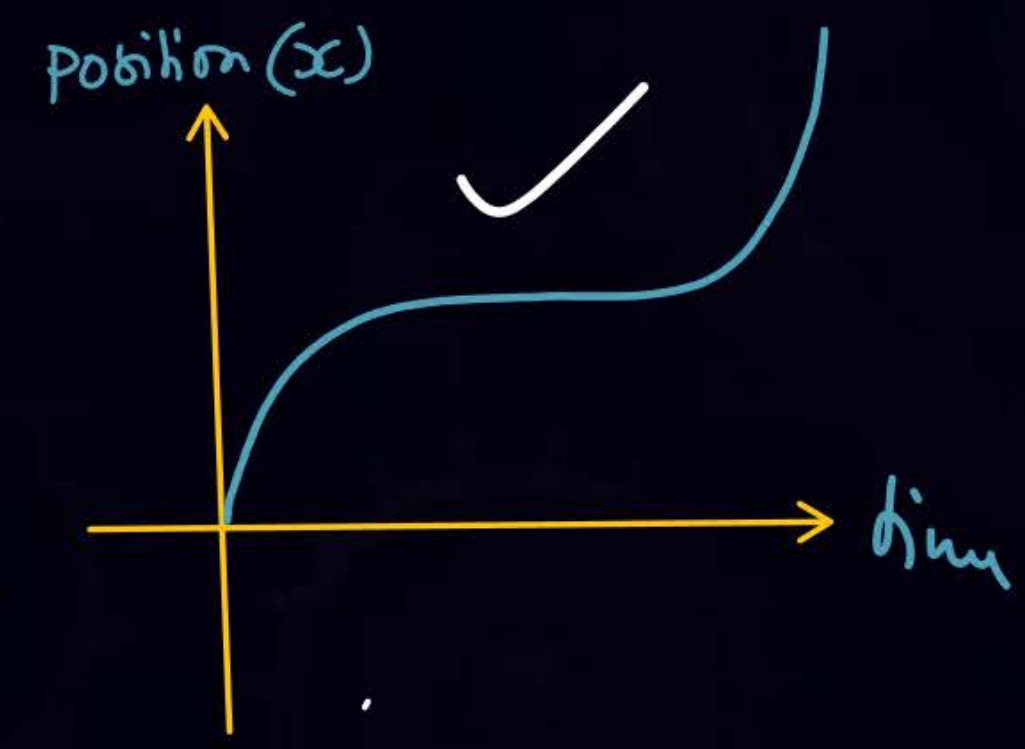
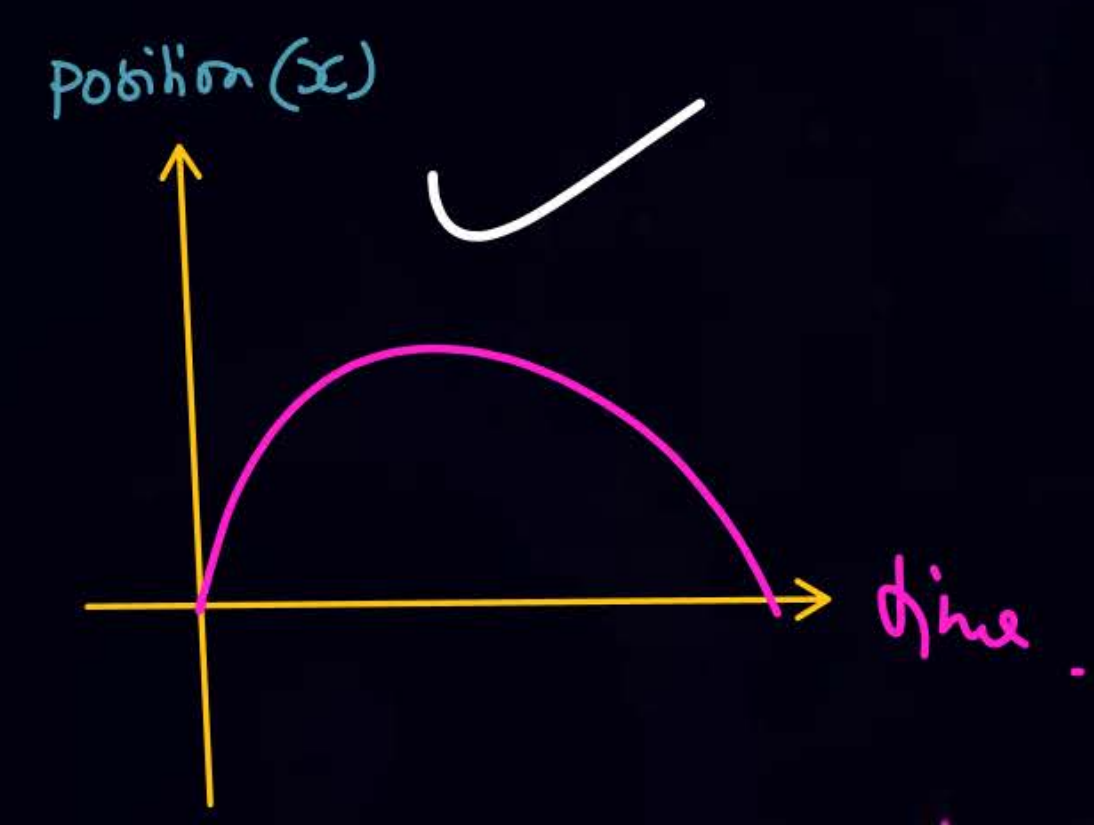
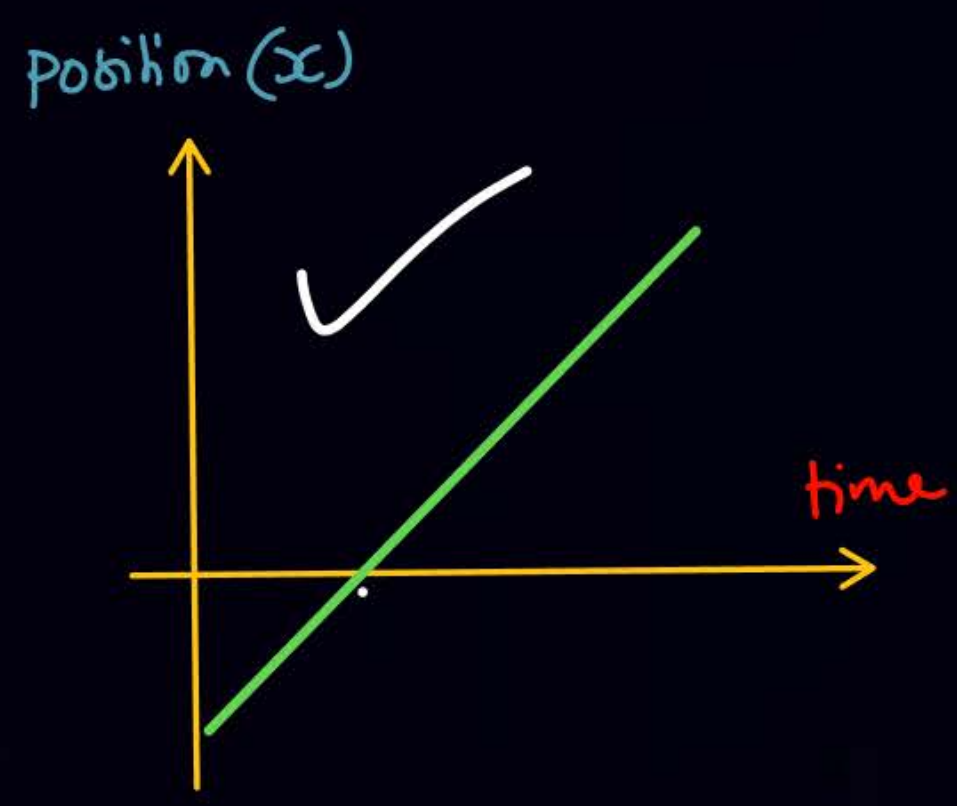
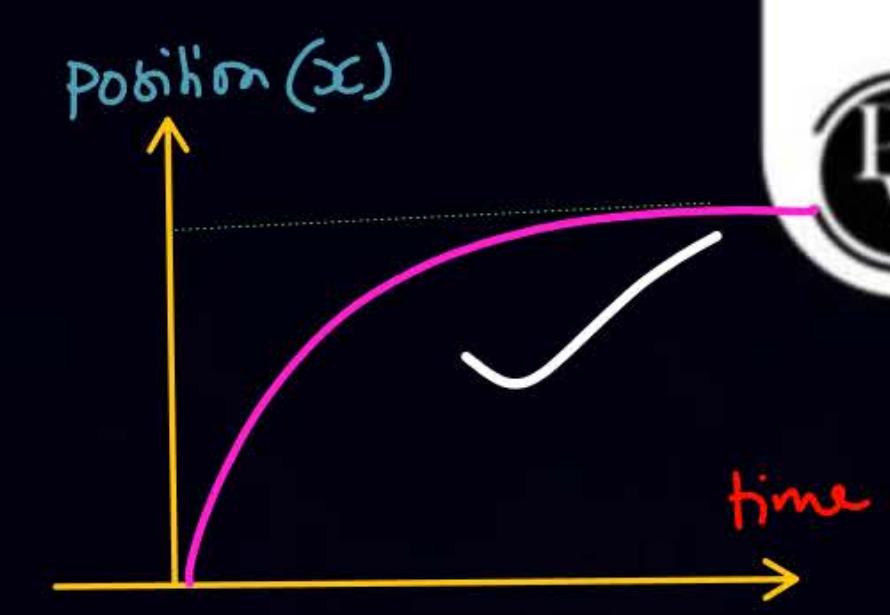
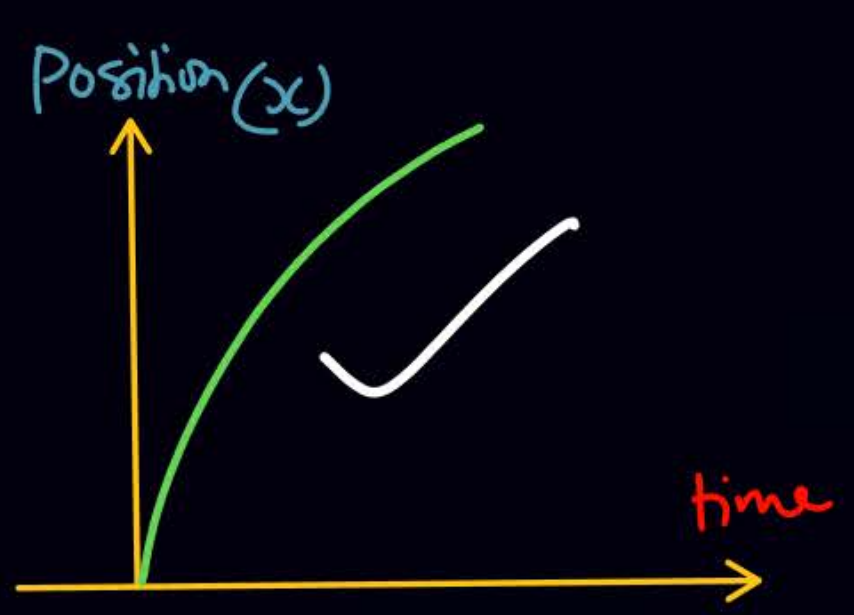
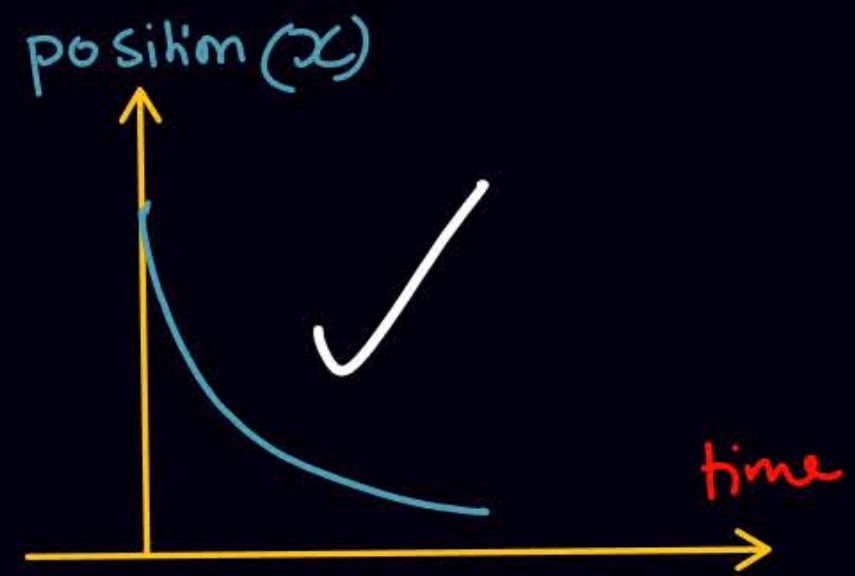


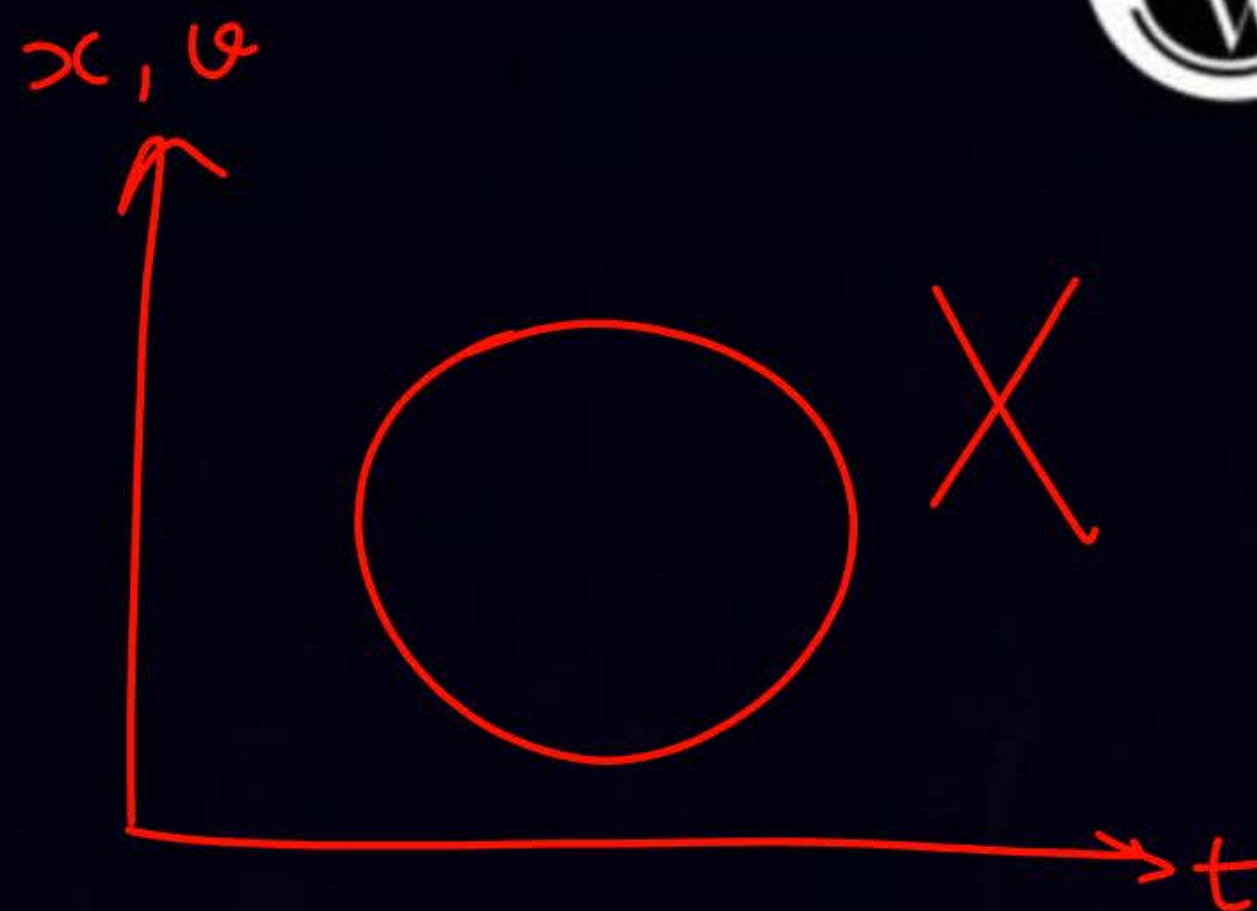
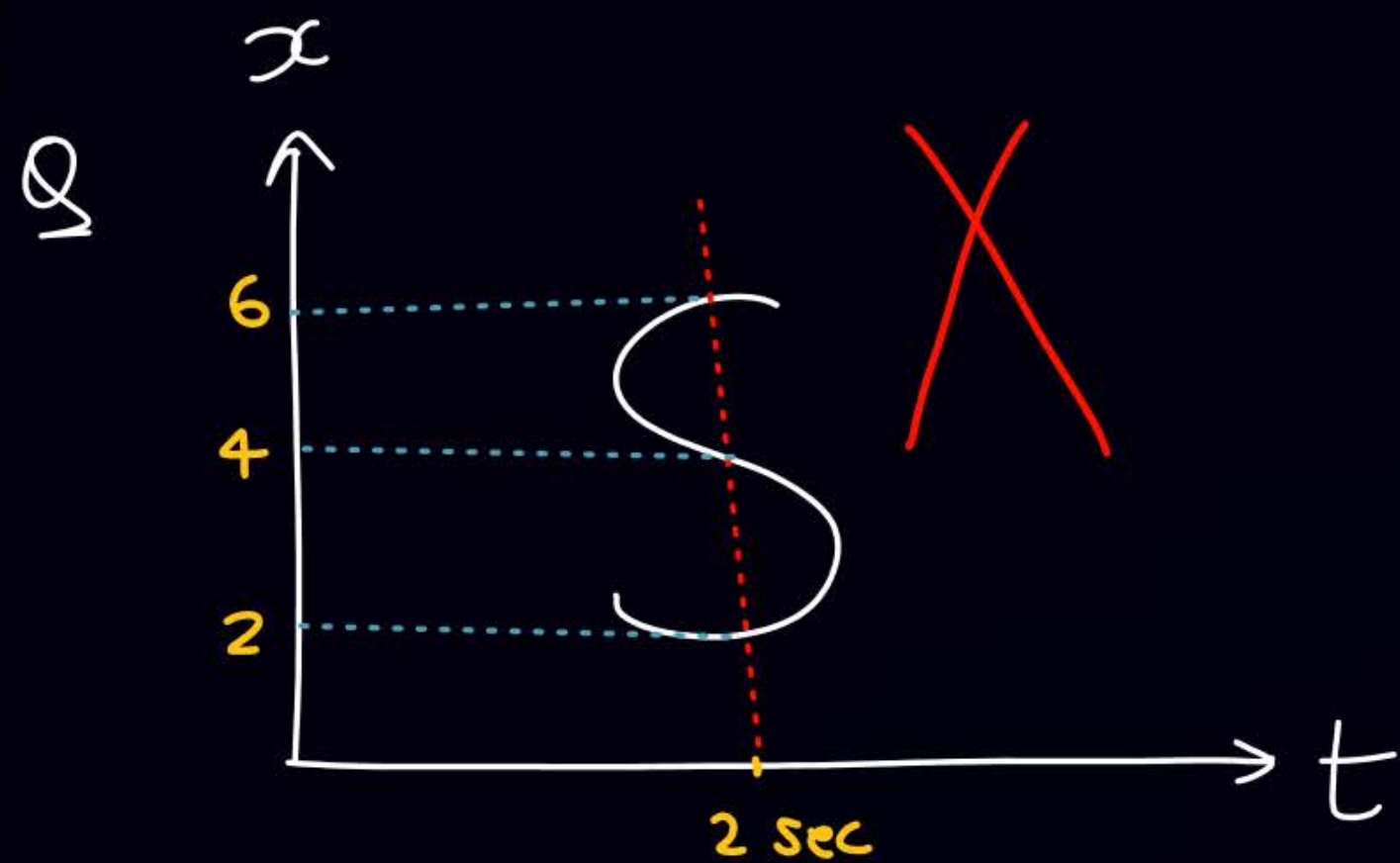
gho





gho





Displacement $\vec{d} = \vec{r}_f - \vec{r}_i$

① $A \longrightarrow B$

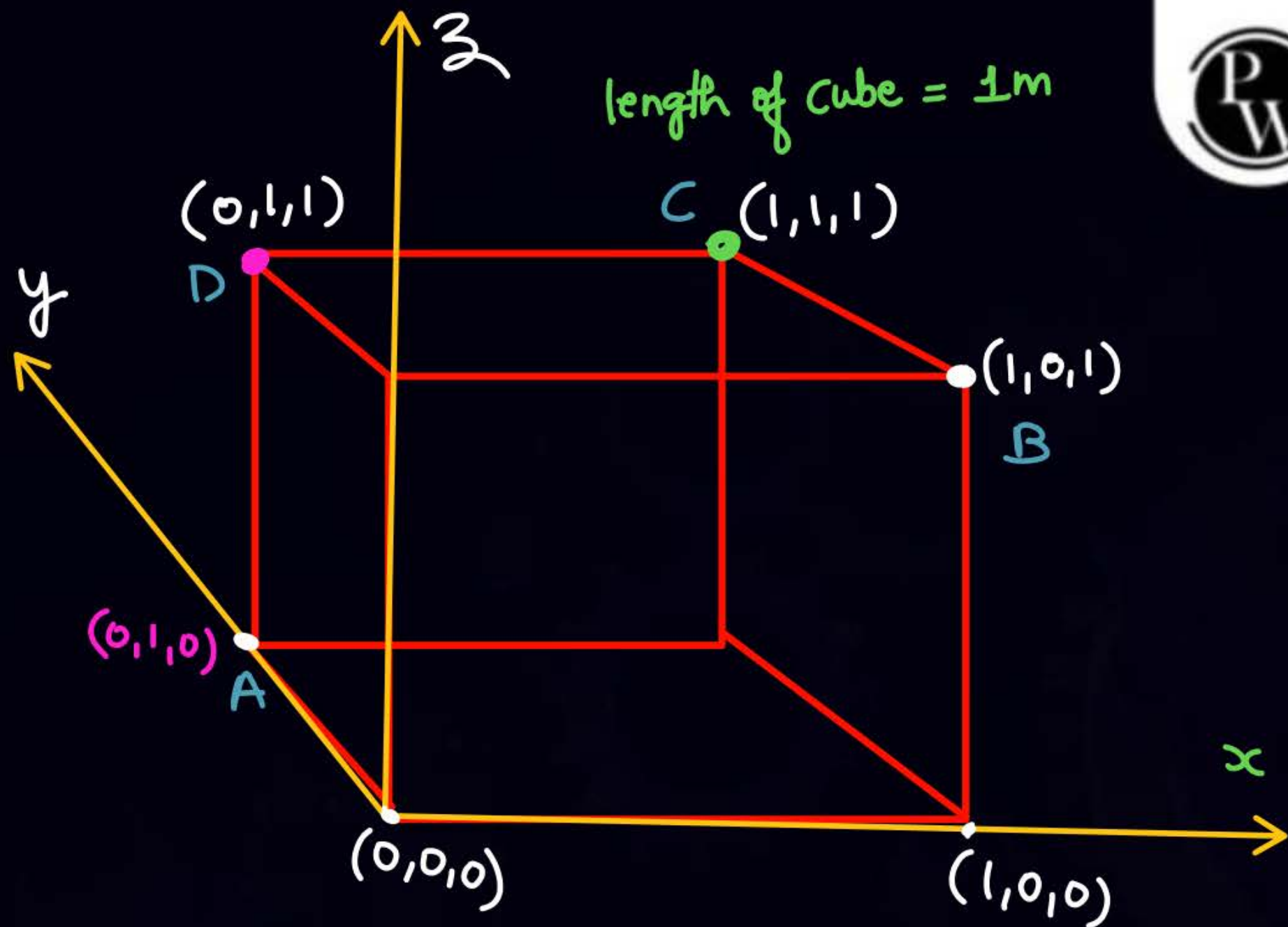
Displacement = $\hat{i} - \hat{j} + \hat{k}$

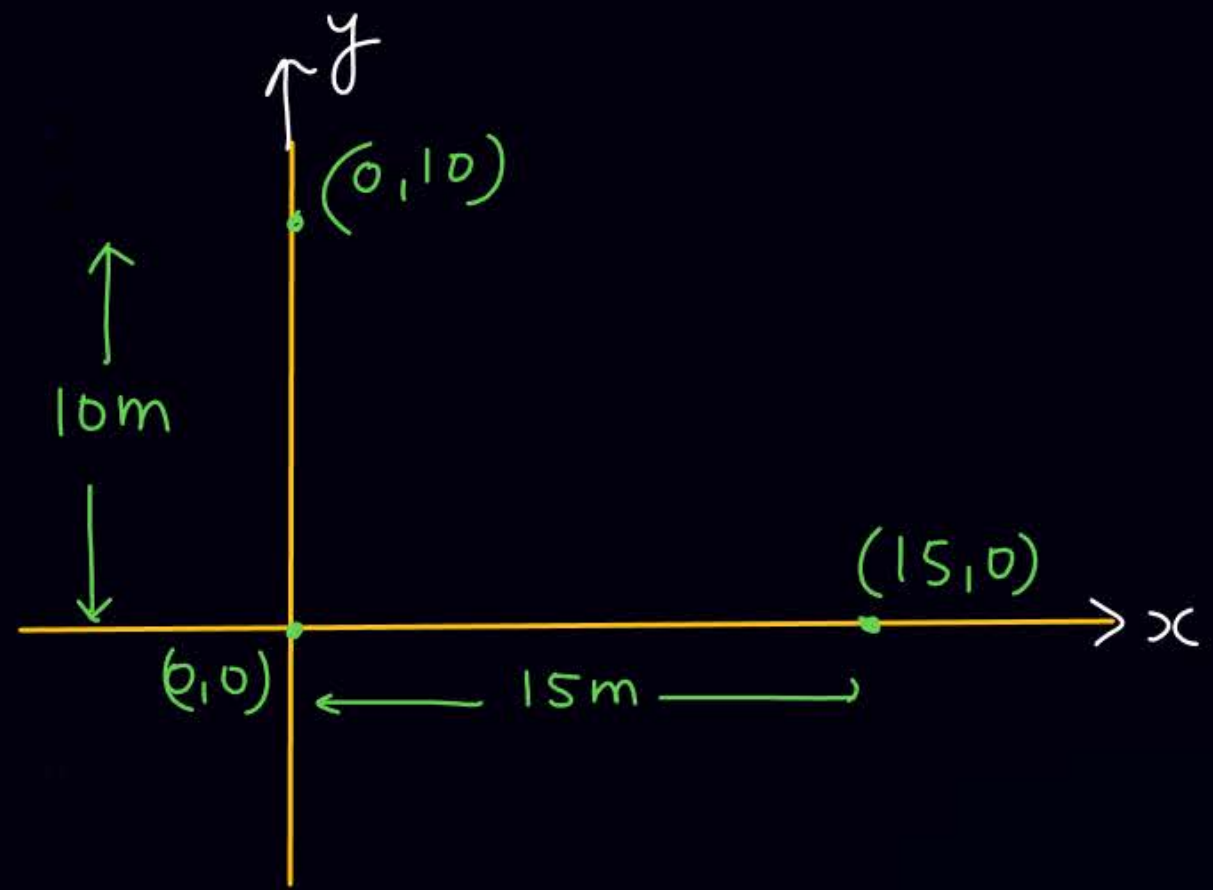
② $A \longrightarrow D$

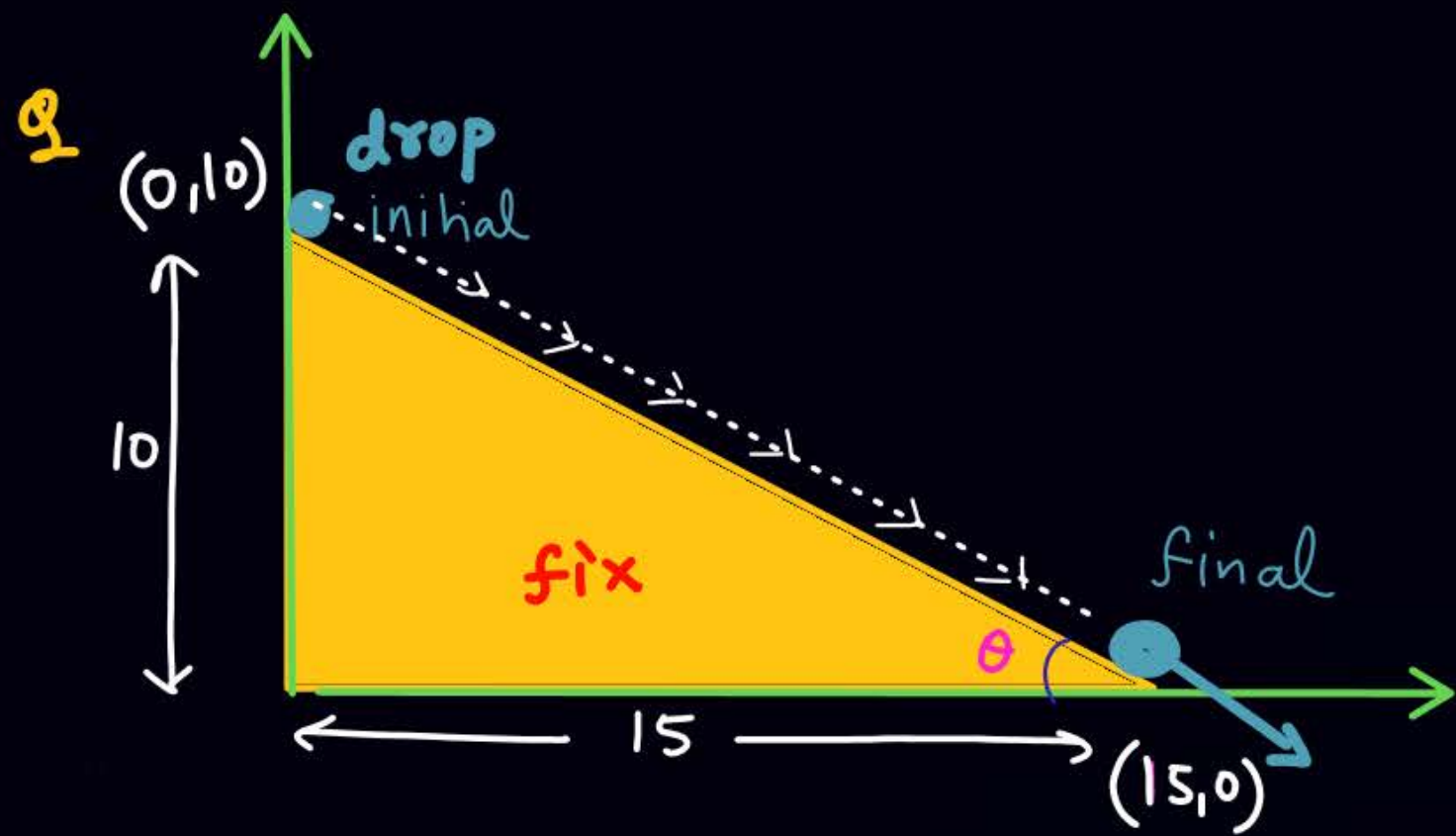
$\vec{d}_{AD} = \hat{k}$

③ $\vec{d}_{A \rightarrow C} = \hat{i} + 0\hat{j} + \hat{k}$

④ $\vec{d}_{\text{origin} \rightarrow C} = \hat{i} + \hat{j} + \hat{k}$







$$\text{displacement} = 15\hat{i} - 10\hat{j}$$

→ x में 15 चला

Q



$$\text{Displacement} = 15\hat{i} - 10\hat{j}$$

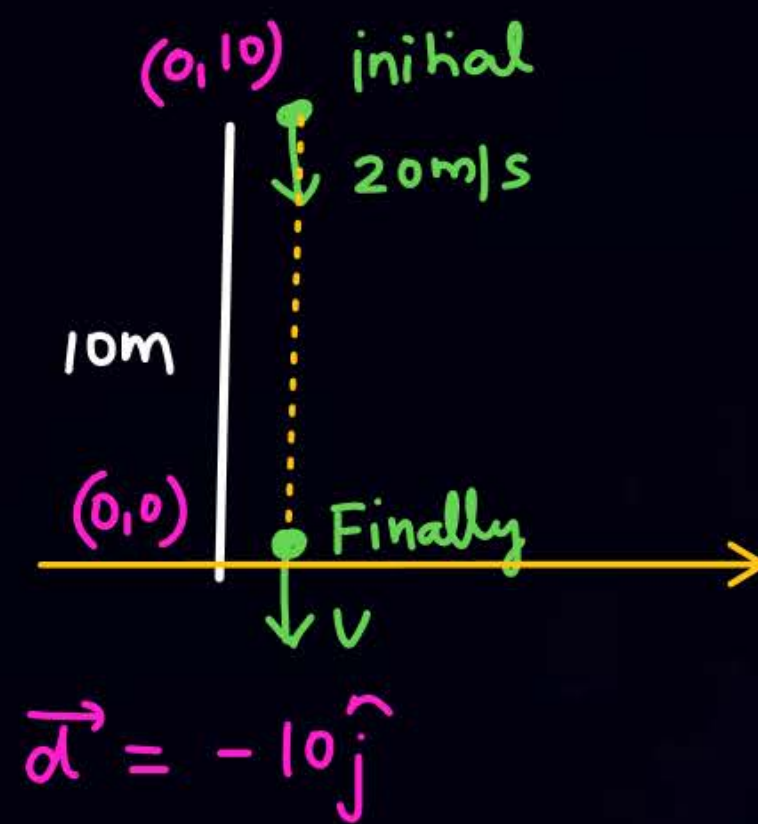


$$\vec{d} = -10\hat{j}$$

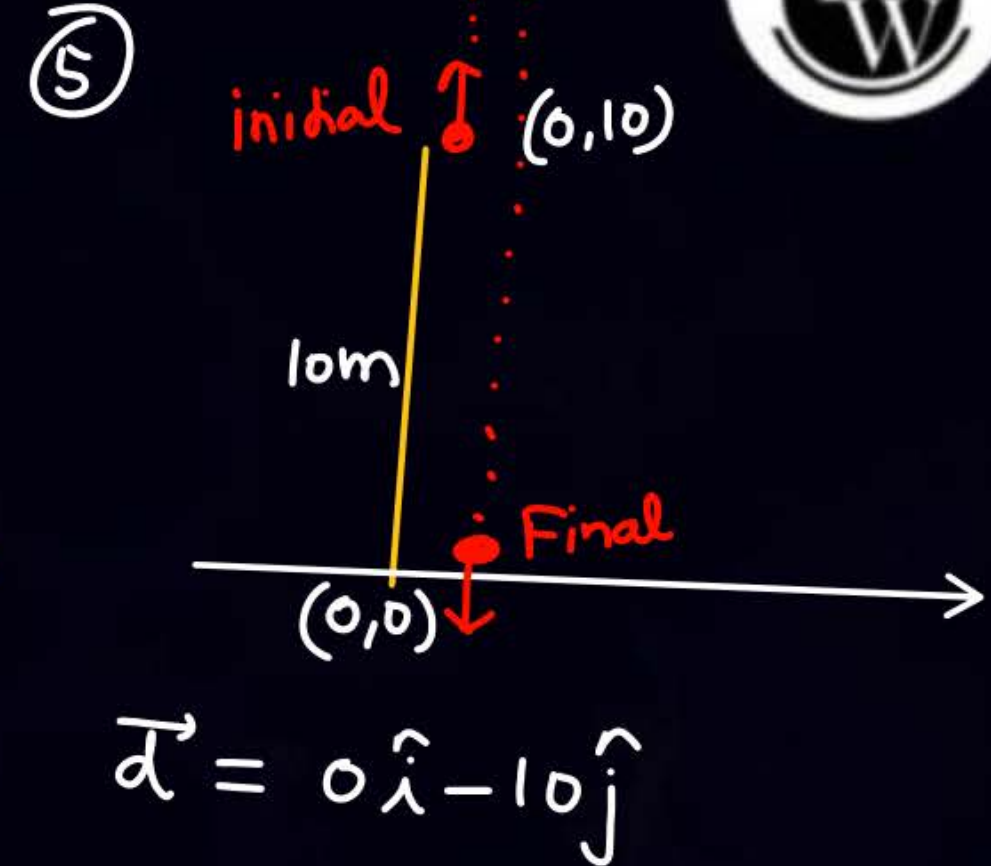
(0,10) initial

(0,0) Final

→

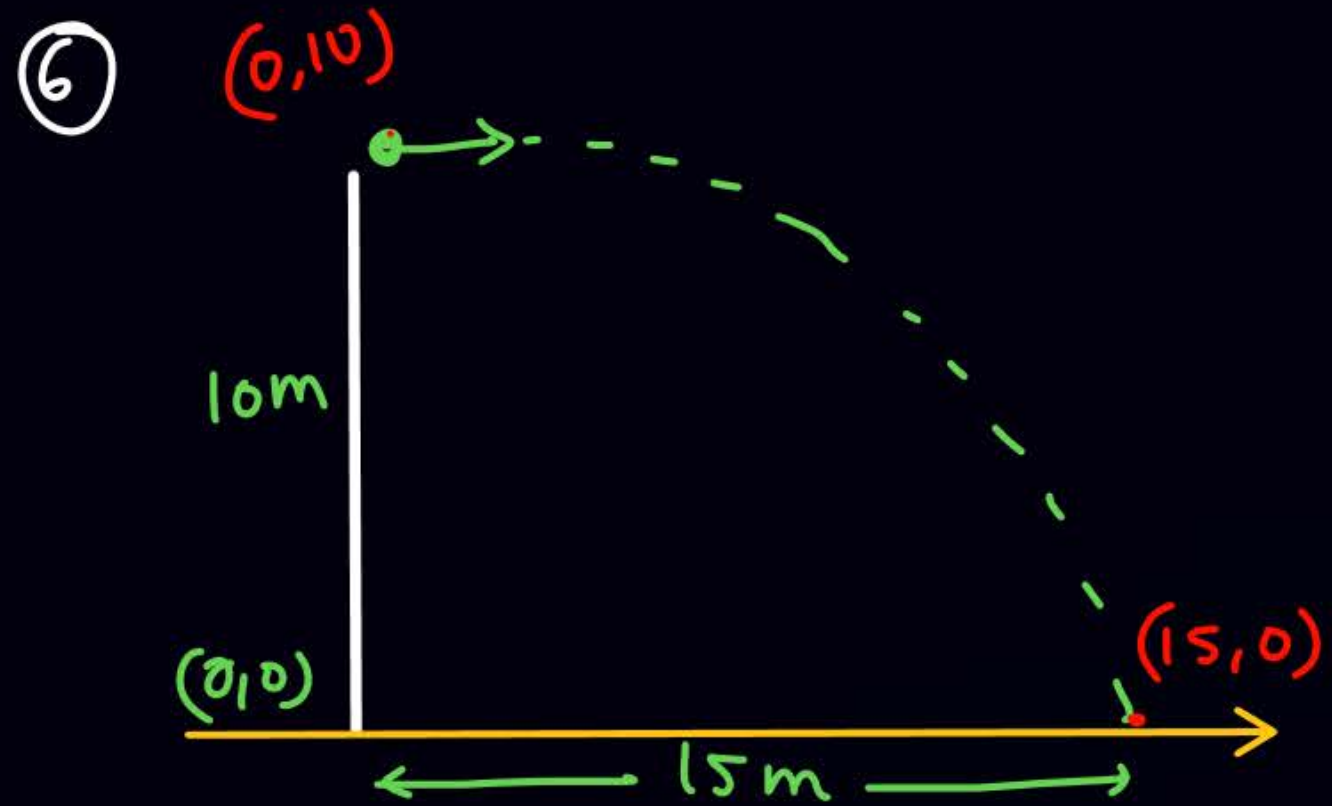


$$\vec{d} = -10\hat{j}$$

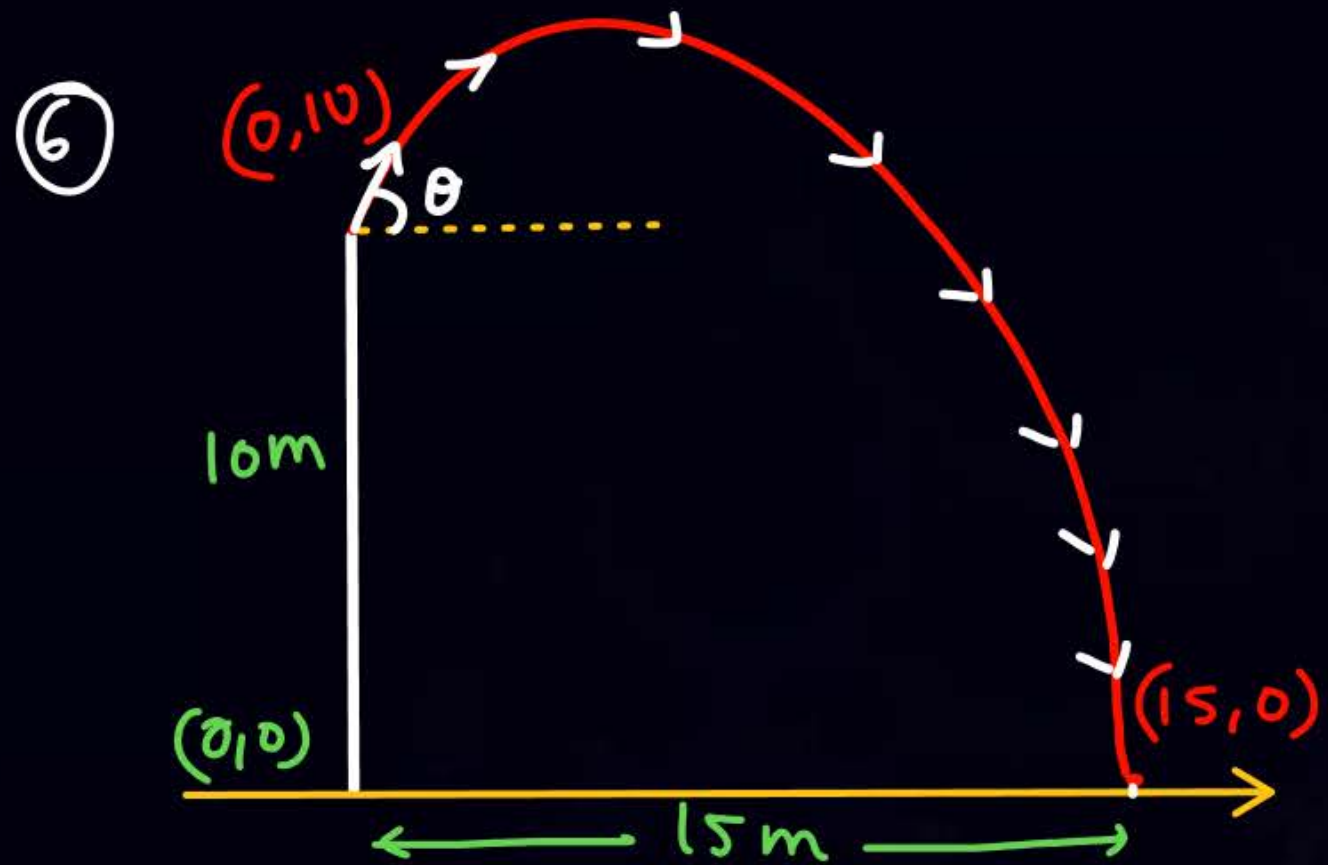


$$\vec{d} = 0\hat{i} - 10\hat{j}$$

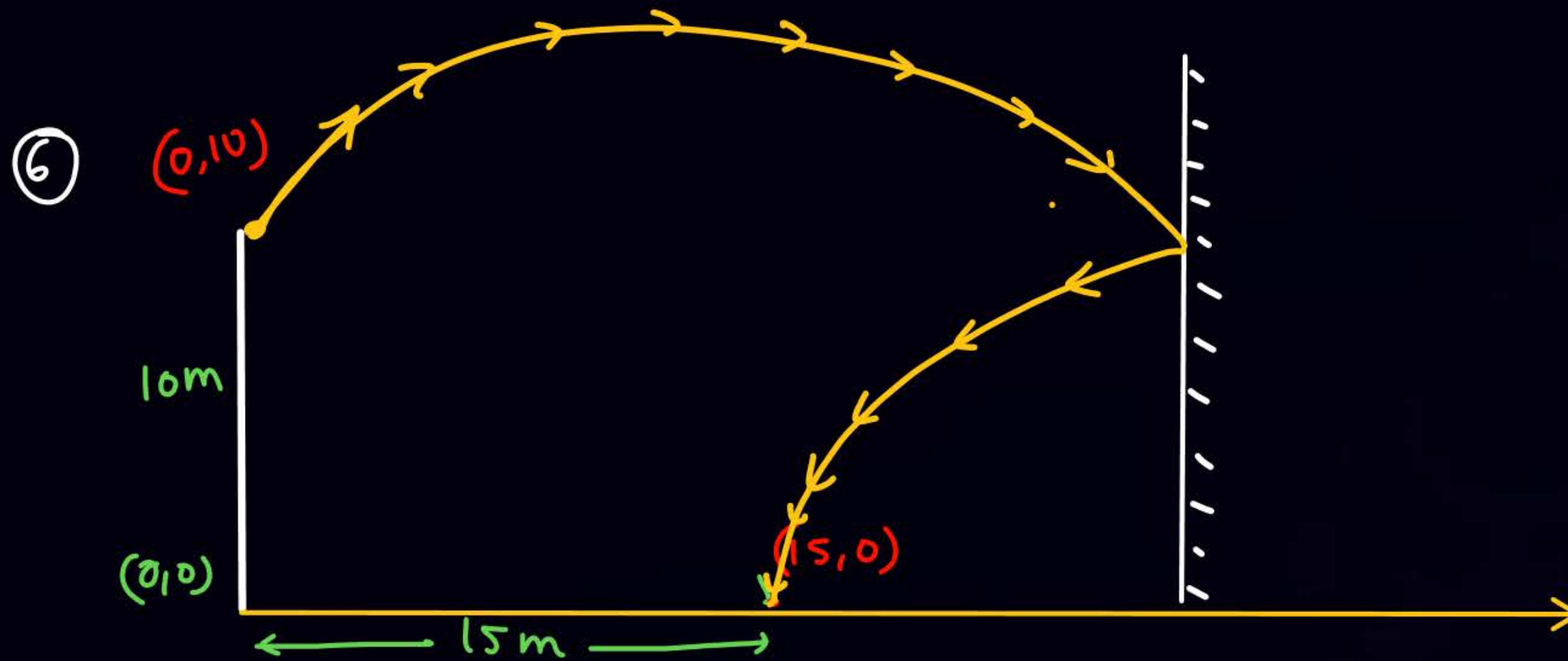




$$\vec{d} = 15\hat{i} - 10\hat{j}$$

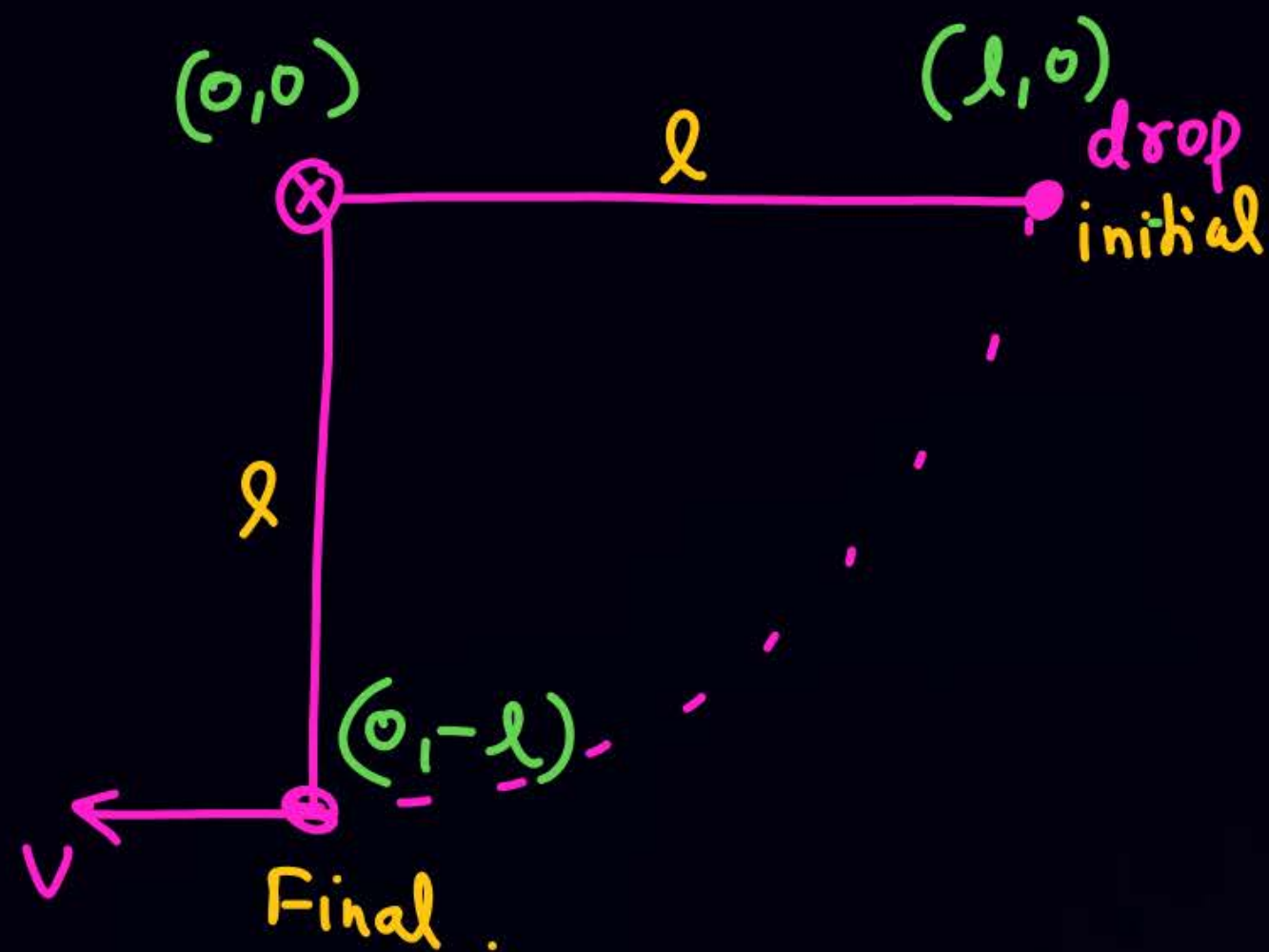


$$\vec{d} = 15\hat{i} - 10\hat{j}$$



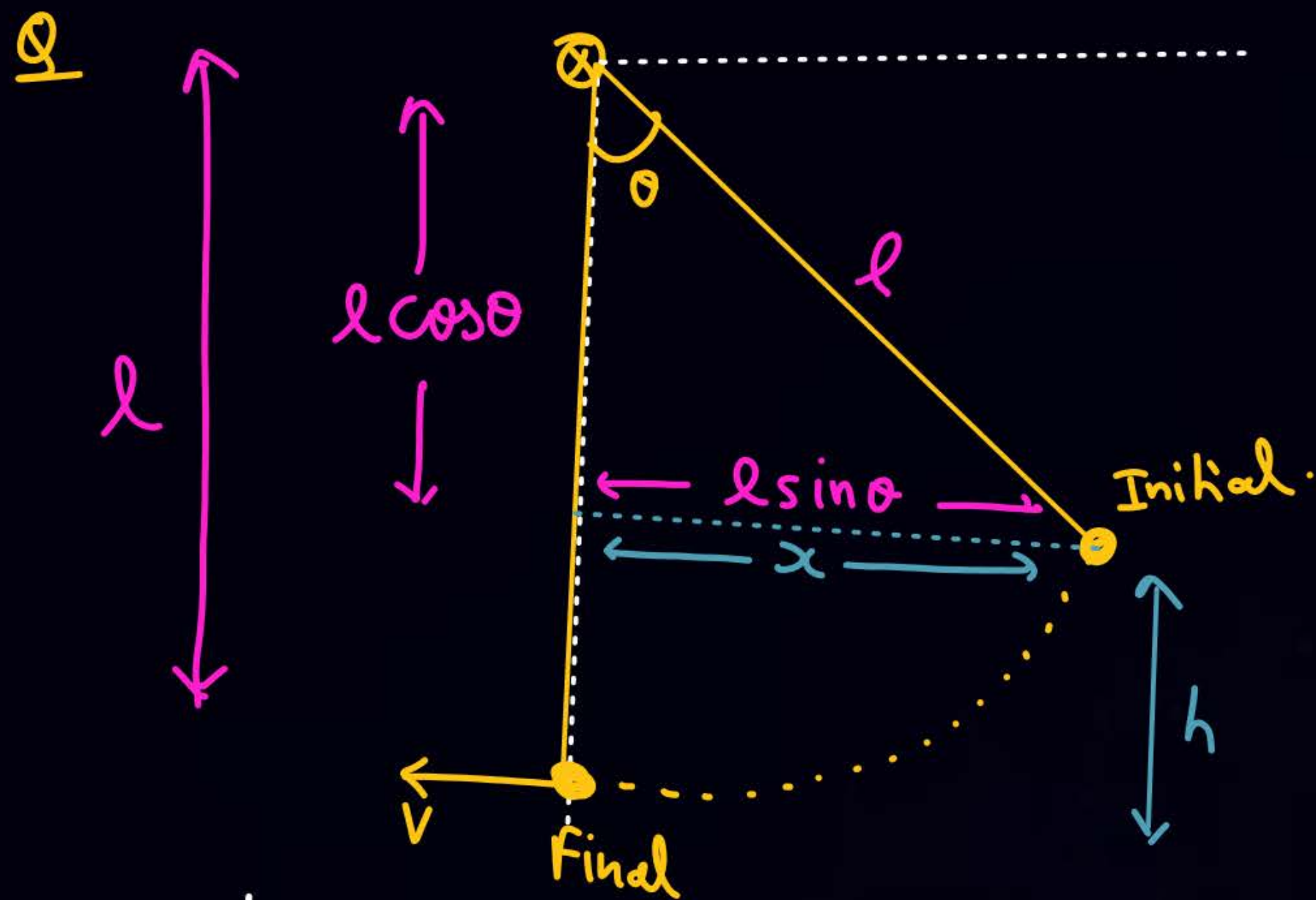
$$\vec{d} = 15\hat{i} - 10\hat{j}$$

7



$$\vec{d} = -l\hat{i} - l\hat{j}$$

$$|\vec{d}| = \sqrt{l^2 + l^2} = l\sqrt{2}$$



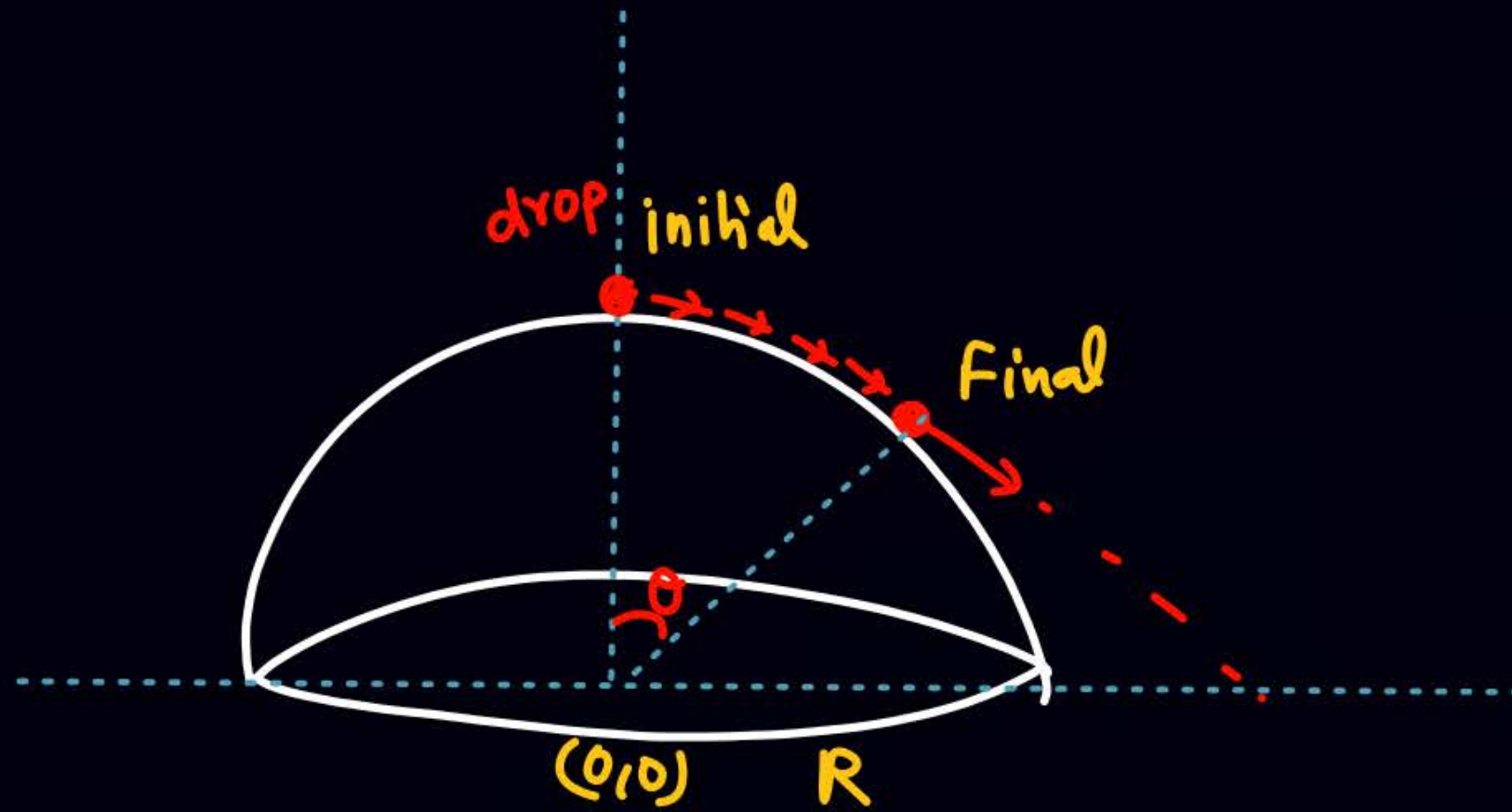
$$h = l - l \cos \theta$$

$\vec{d} =$ h नीचे
और x पीछे

$$\vec{d} = -x \hat{i} - h \hat{j}$$

$$\vec{d} = -l \sin \theta \hat{i} - (l - l \cos \theta) \hat{j}$$

H.W
Q2



$$\cos \theta = \frac{2}{3}$$

$$\vec{d} = \checkmark$$

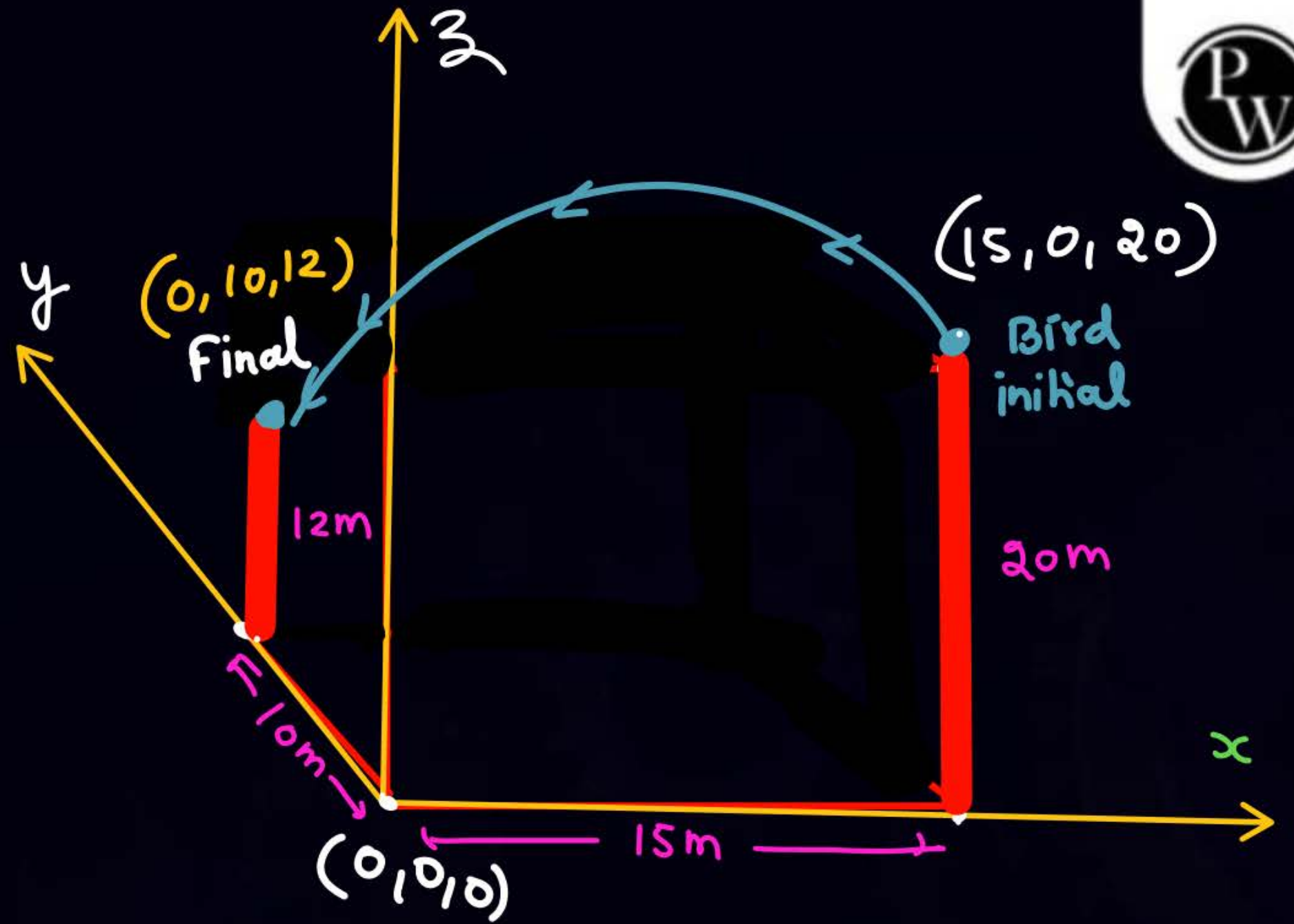
SSSO



$$\vec{d} = -15\hat{i} + 10\hat{j} - 8\hat{k}$$

-15, 10, -8

2110121





$$R_1 = 3\Omega \pm 1\%$$

$$R_2 = 6\Omega \pm 2\%$$

$$\frac{\Delta R}{R} \times 100 : \checkmark$$

Solve again.

12:24 6

Mentions · dgyaaken2.0 37m

$R_1 = 3\Omega \pm 1\%$
 $R_2 = 6\Omega \pm 2\%$
When they are connected in parallel, the percentage error in measurement in eq. resistance is -

→ Sk error gm ms

$$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2}$$
$$R_{eq} = \frac{18}{9} = 2\Omega$$

diff

$$\frac{\Delta R_{eq}}{(R_{eq})^2} = \frac{\Delta R_1}{(R_1)^2} + \frac{\Delta R_2}{(R_2)^2}$$
$$\frac{\Delta R_{eq}}{4} = \frac{1}{9} + \frac{2}{36}$$
$$\frac{\Delta R_{eq}}{4} = \frac{4+2}{36}$$
$$\Delta R_{eq} = \frac{4^2}{9} = \frac{2}{3}$$
$$R_{eq} = (2 \pm \frac{2}{3})$$
$$\frac{\Delta R_{eq}}{R_{eq}} \times 100 = \frac{2}{3 \times 2} \times 100 = 33.33\%$$

Sir answer is not matching, please check

Add to your story aleem.nitt

Send message...

9:23

11



Mentions · henry_zain_ 2h



@saleem.nitt

26. Two resistance are measured in ohm and is given as:
 $R_1 = 3\Omega \pm 1\%$
 $R_2 = 6\Omega \pm 2\%$
When they are connected in parallel, the percentage error in equivalent resistance is
(1) 3% (2) 4.5%
(3) 0.67% (4) 1.33%
Ans. (4)

@saleem.nitt

Sir mny is question mai SKC lgaya nahi huwa lkn direct kra to 4 option answer aa gya ye ksy pta chly ga ki kn sa method use krna ha...Sir please explain it tomorrow

Add to your story



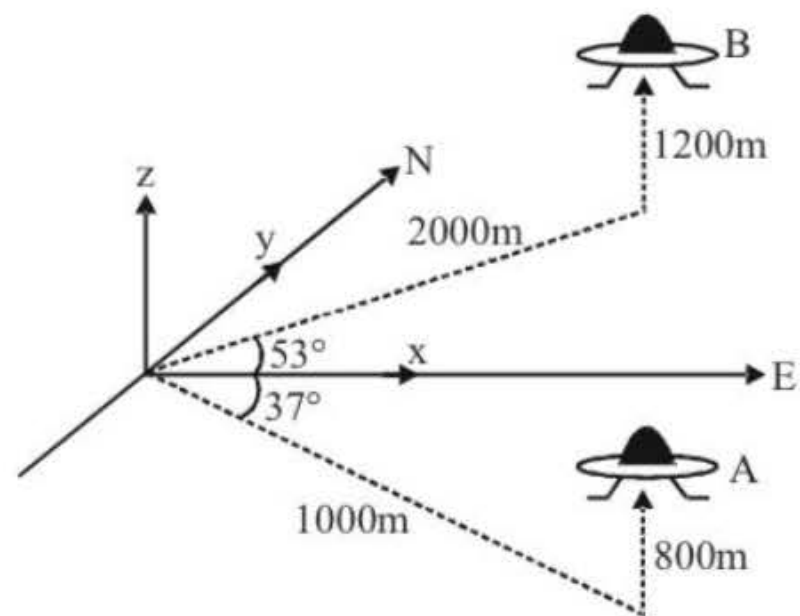
Send message...



37. Personnel at an air post control tower track a UFO. At 11:02 am it was located at position A and at 11:12 am it was located at position B. Displacement vector of UFO is :

एयर पोस्ट कंट्रोल टॉवर एक UFO को देखता है। समय 11:02 am पर यह स्थिति A पर तथा समय 11:12 am पर यह स्थिति B स्थित था। UFO का विस्थापन सदिश है।

Home work .



(A) $400\hat{i} + 2200\hat{j} + 400\hat{k}$

(B) $1200\hat{i} + 1000\hat{j} + 800\hat{k}$

(C) $2000\hat{i} + 2200\hat{j} + 2000\hat{k}$

(D) $400\hat{i} + 1000\hat{j} + 400\hat{k}$

Ans. (A)



Home work

- Revise notes of vector (you will need)
those who have backlog of vector
watch vector one shot i provided.
- Tommrow is Sunday... - Utilise it wisely
Be relax & enjoy.....
→ Bhai ye bhi jaruri hai..

THANK
YOU