YAKEEN NEET 2.0

2026

Kinematics - - -

Motion in a straight line

PHYSICS | Lecture - 03

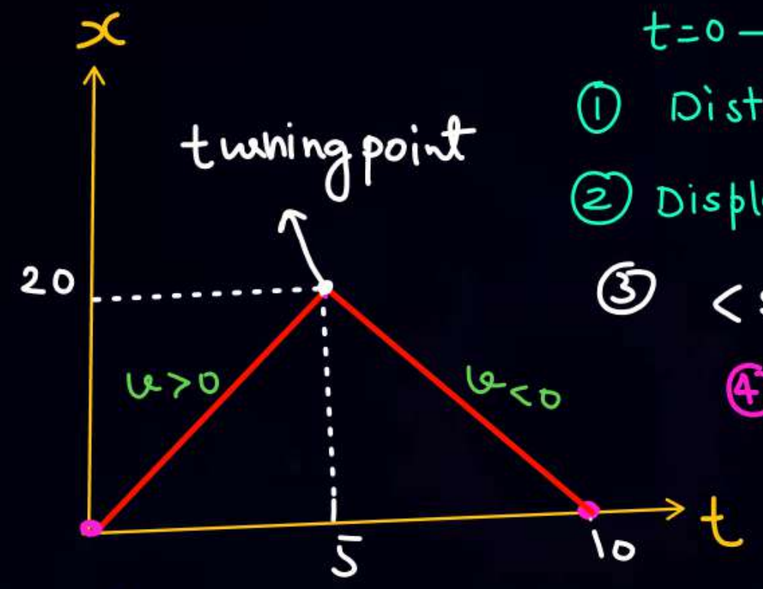
By - Saleem Ahmed Sir

Topics to be covered

- Graphs

Graph Ki feel

Q A particle is moving on x-Axis such that its position Vs time (x-t) graph is given as. Analyse the situation.



$t=0 \longrightarrow t=10$

① Distance = $20+20=40$

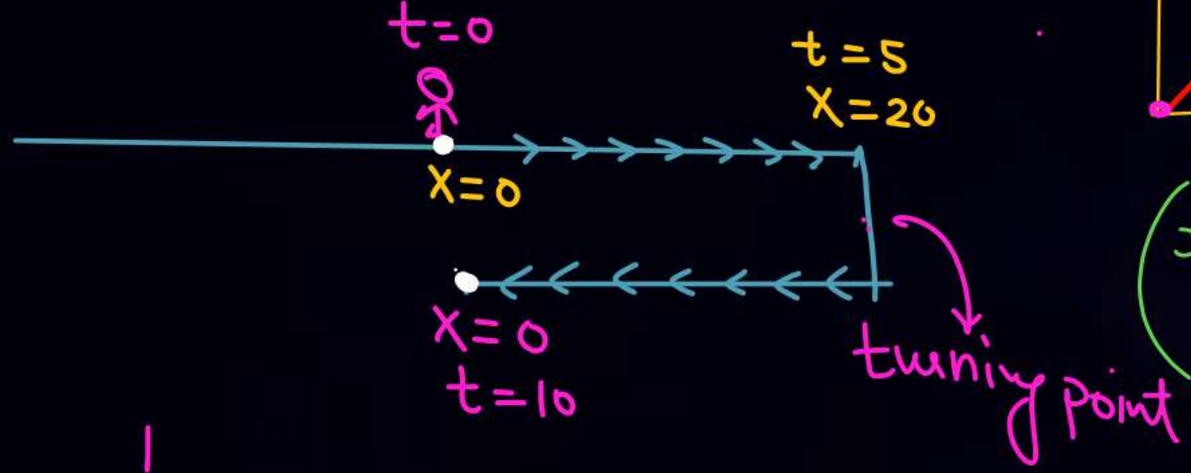
② Displacement = 0

③ $\langle \text{speed} \rangle = \frac{40}{10} = 4$

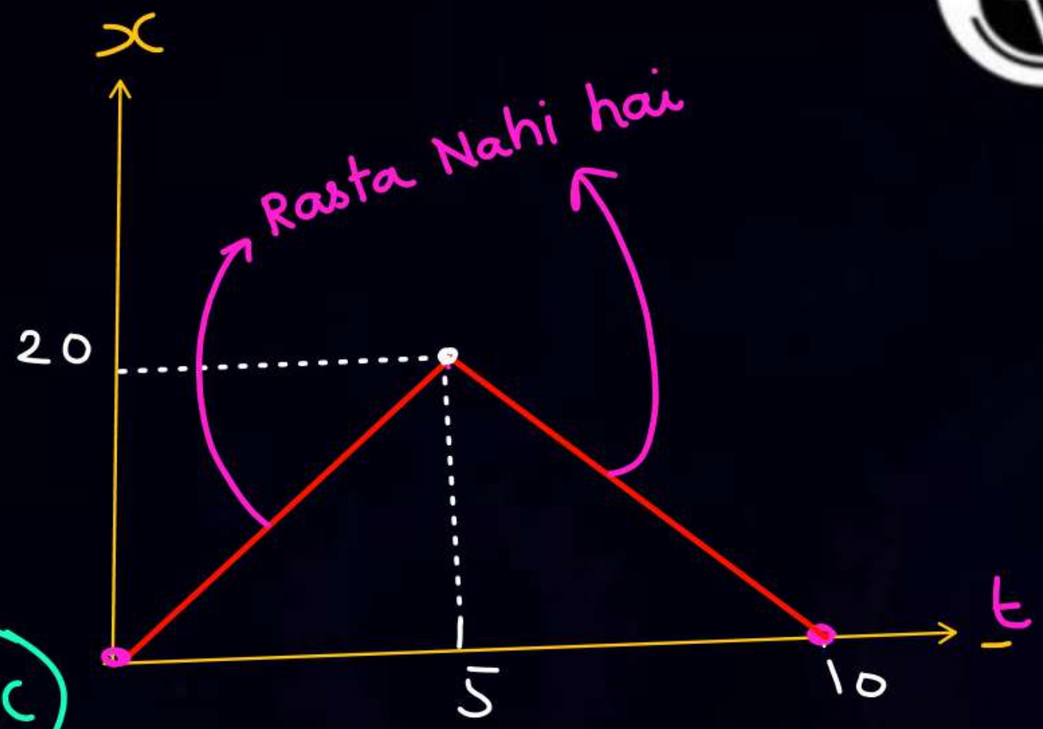
④ $\langle \vec{v} \rangle = 0$

Soln $t=0$ par attack karo.

Rasta Banana Seekhna . . .



(x-t graph ka slope Velocity Deta hai)

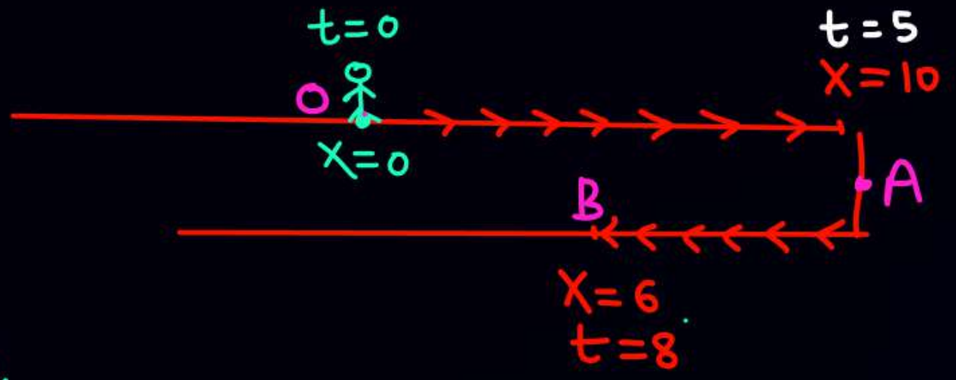


SKC

ye graph hai jo hame ye bata raha hai ki kis time par particle ka x-co-ordinate kya hai

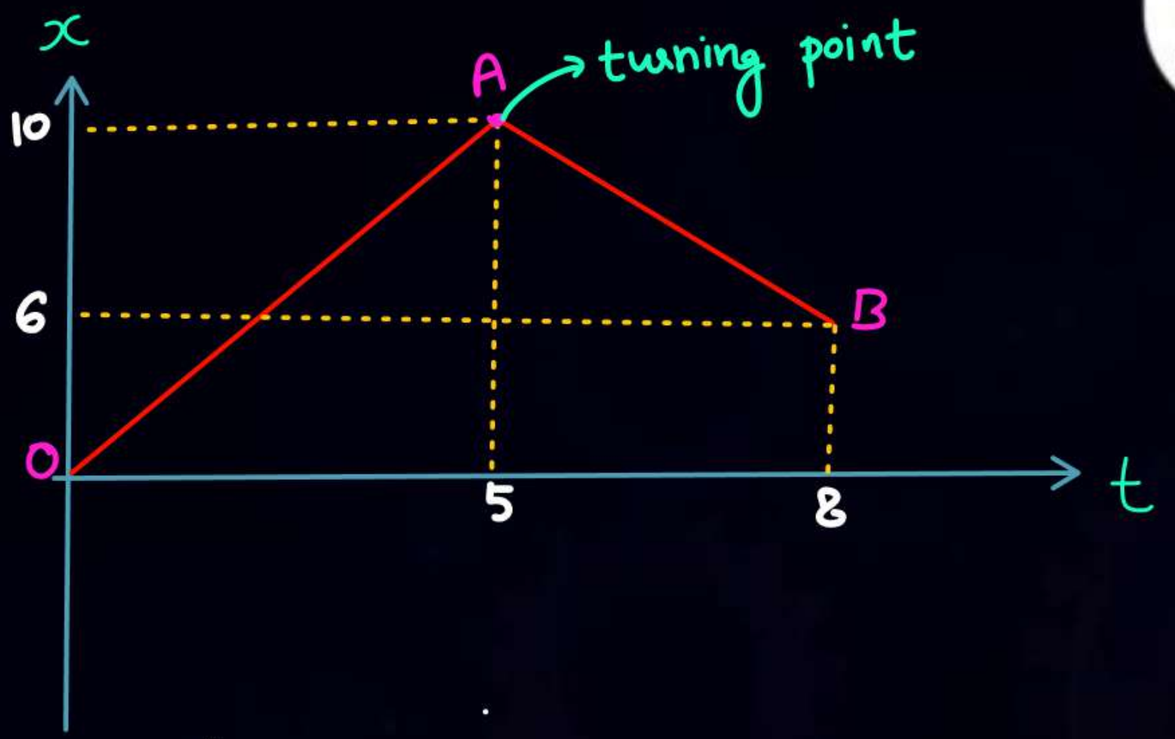
Q Pankaj is moving on X-Axis S.t.

① Rasta banao



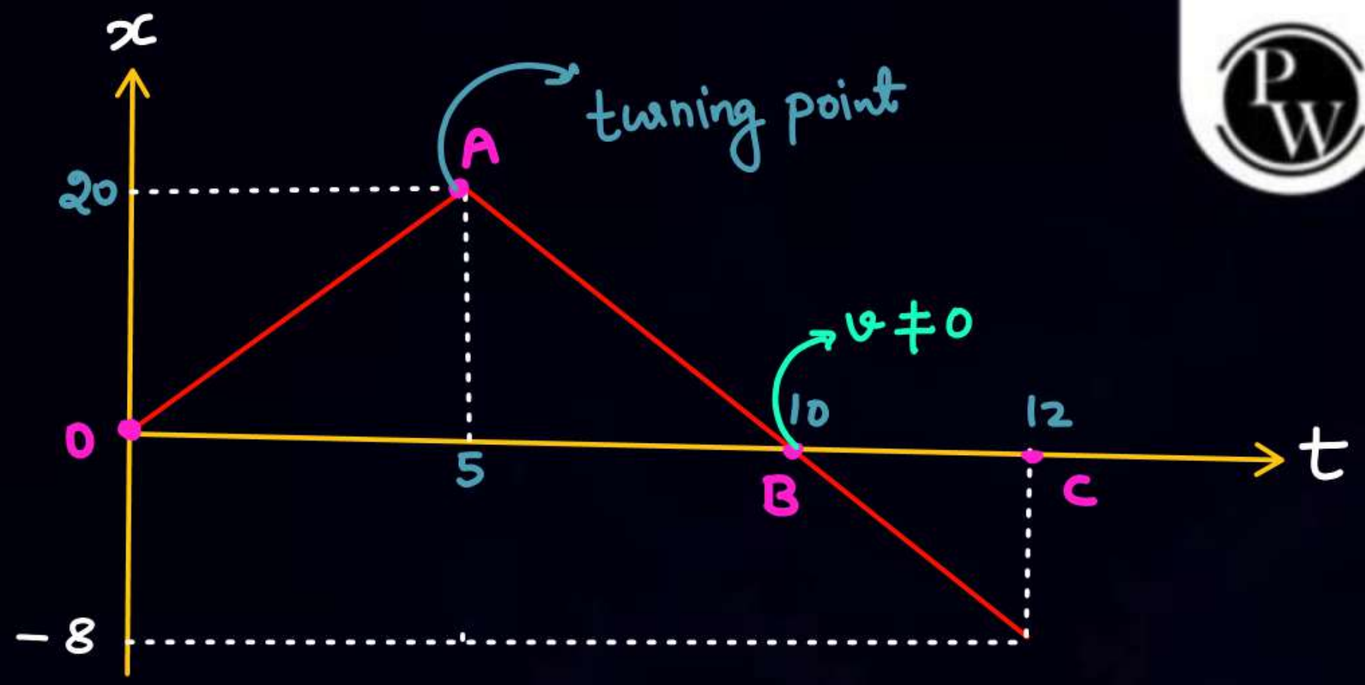
$(t=0 \longrightarrow t=8)$, distance $= 10+4 = 14$

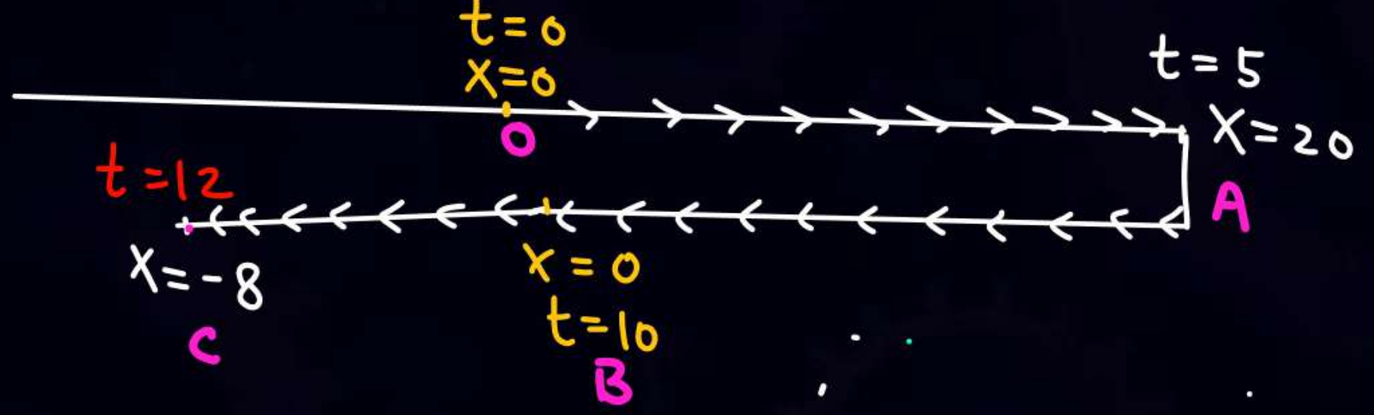
Displacement $= 6\hat{i}$

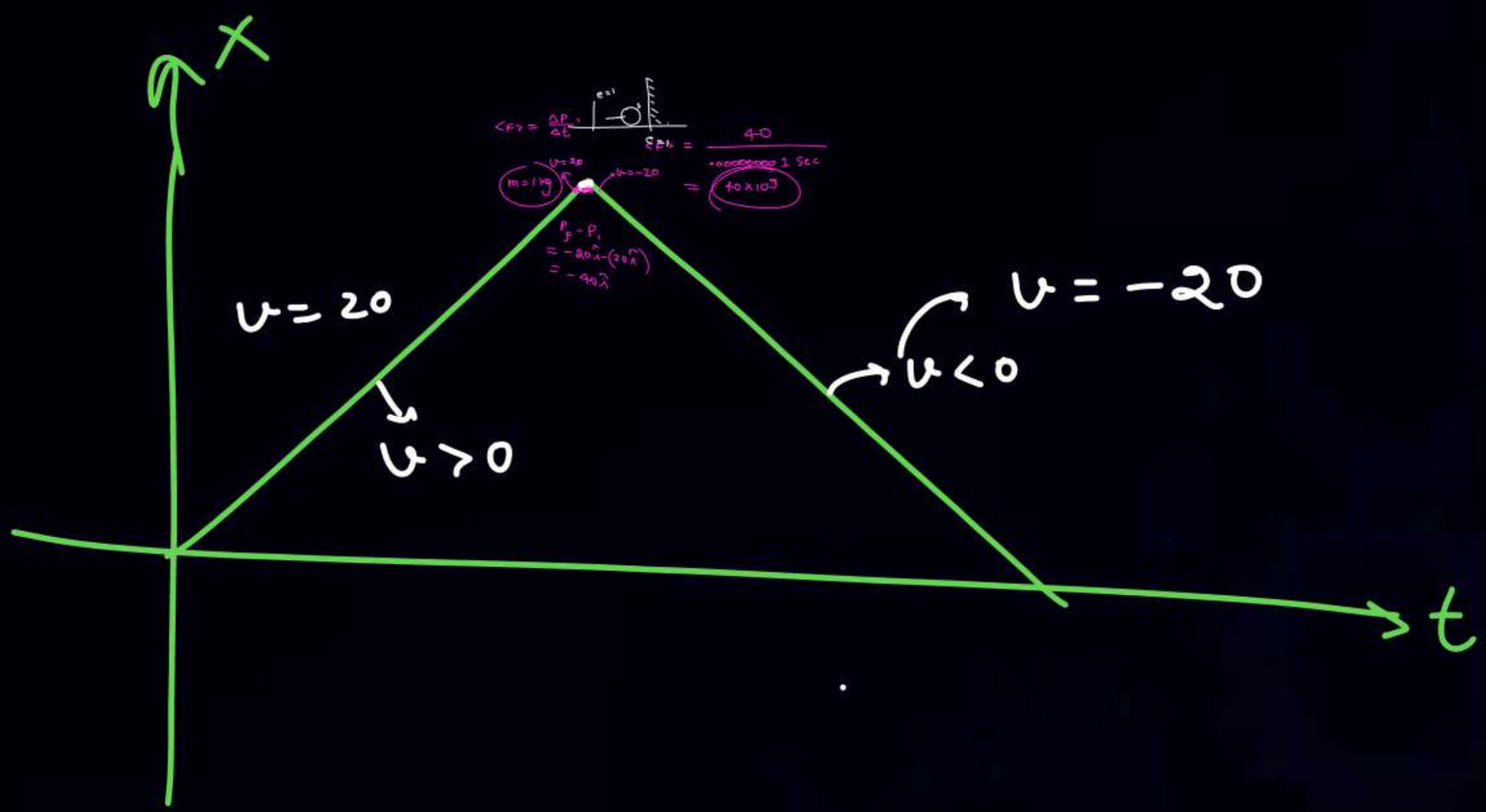


Q

	Distance	Displacement
$t=0 \longrightarrow t=12$	$20+20+8 = 48$	$-8\hat{i}$
$t=0 \longrightarrow t=10$	$20+20 = 40$	0
$t=0 \longrightarrow t=5$	20	$20\hat{i}$
** $t=5 \longrightarrow t=12$	$20+8 = 28$	$-8\hat{i}-20\hat{i} = -28\hat{i}$



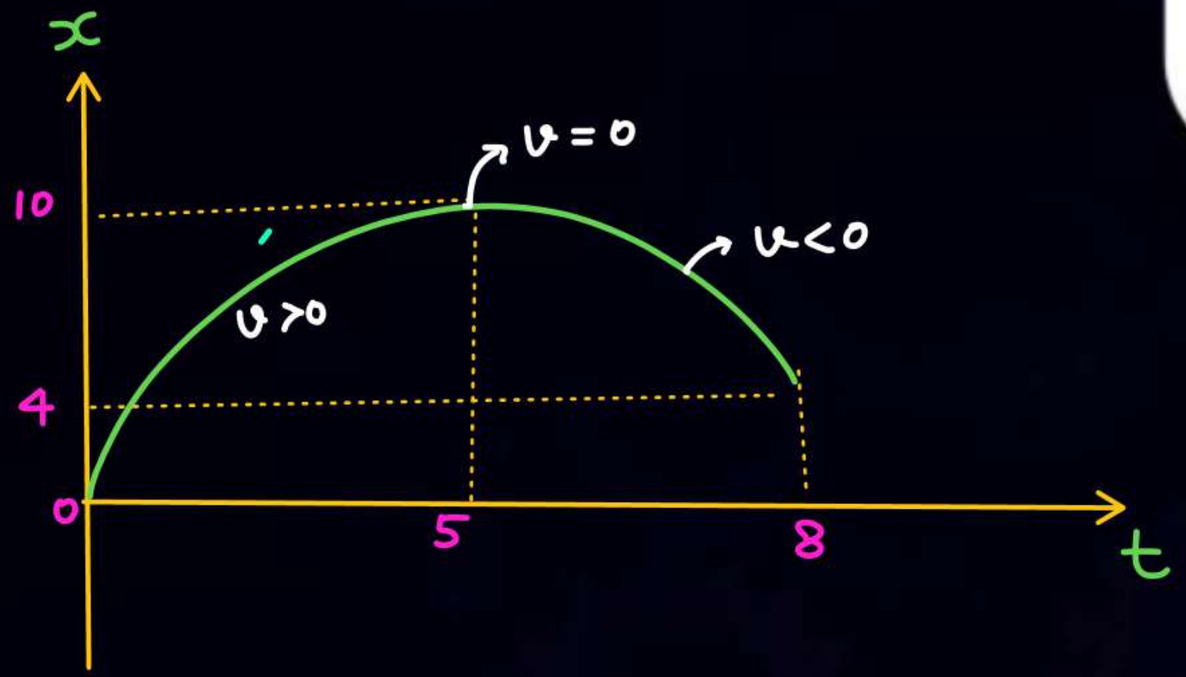


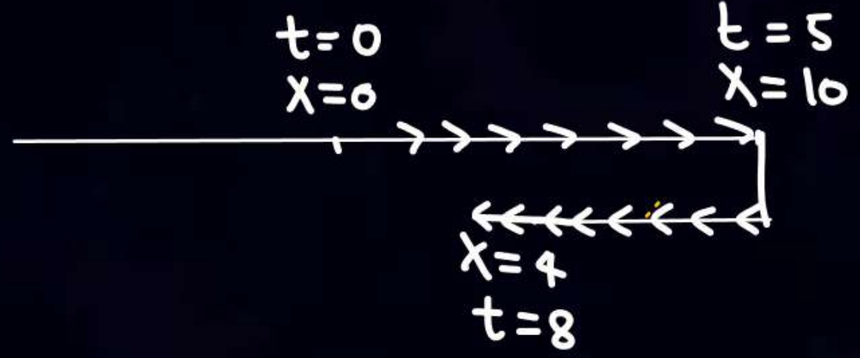

x
t
v = 20
v > 0
v < 0
v = −20

Q $t=0 \longrightarrow t=8$

Distance $= 10+6 = 16$

Displacement $= 4\hat{i}$





Q

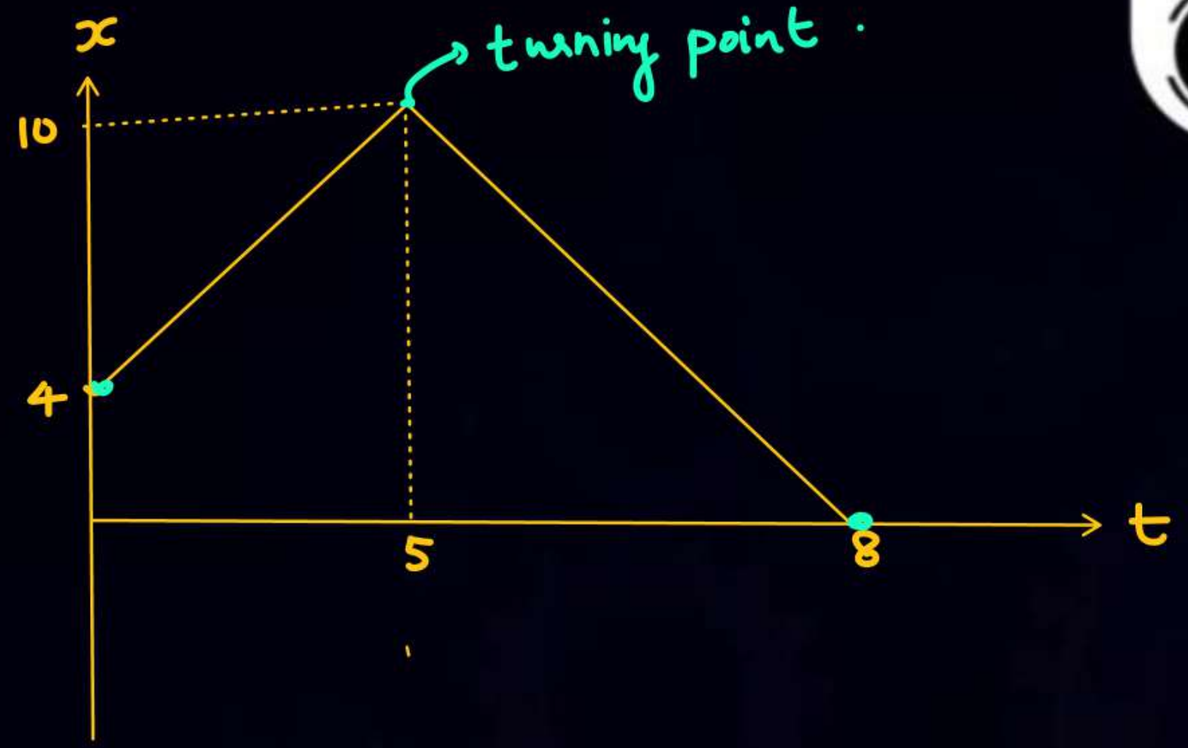
$t=0 \longrightarrow t=8$

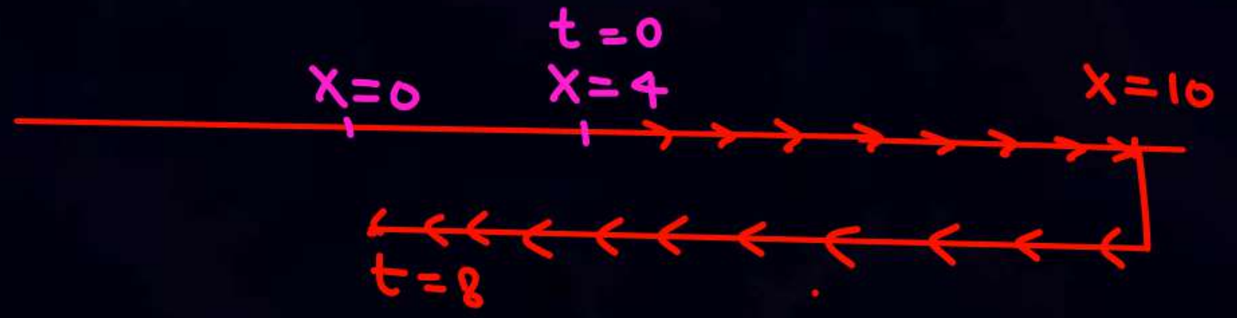
distance $= 6+10 = 16$

Displacement $= 0-4\hat{i}$

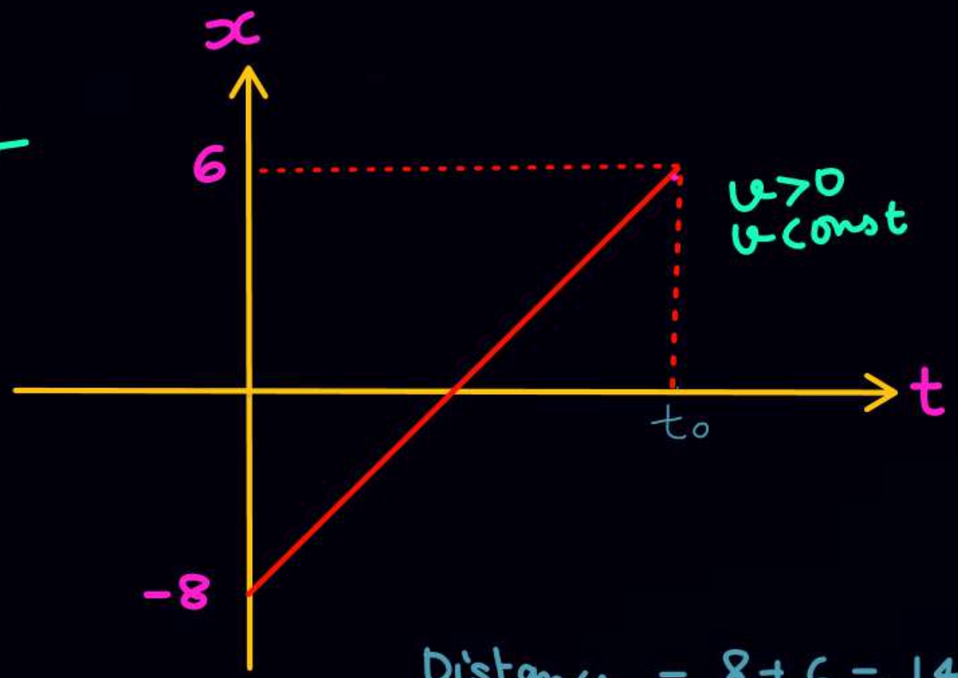
$\langle \text{speed} \rangle = \frac{16}{8}$

$\langle \text{velocity} \rangle = \frac{-4\hat{i}}{8}$



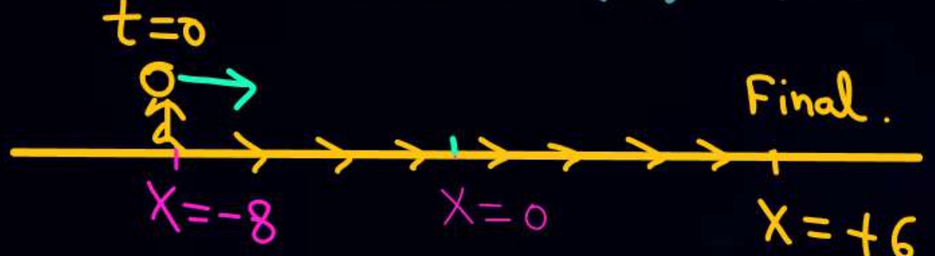


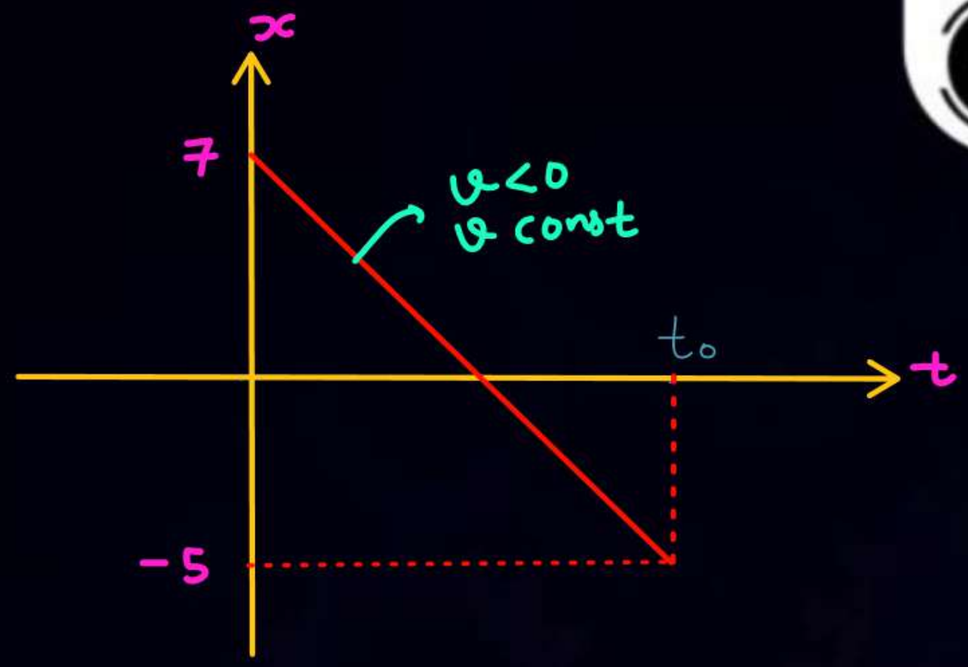
Q



Distance = 8 + 6 = 14

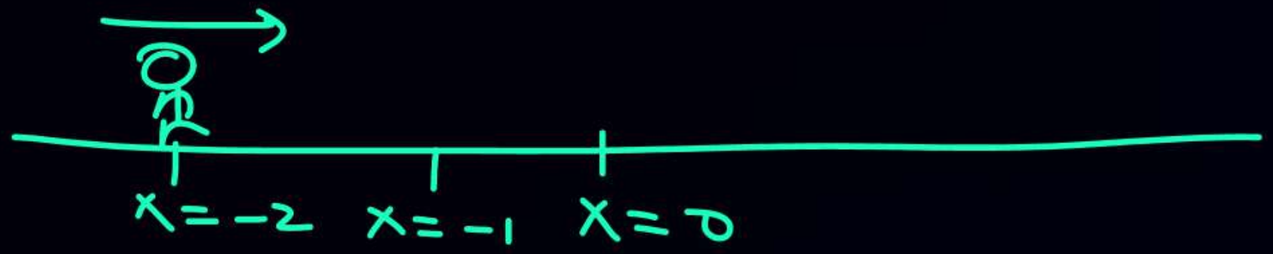
$\vec{d} = 6 - (-8) = 14\hat{i}$



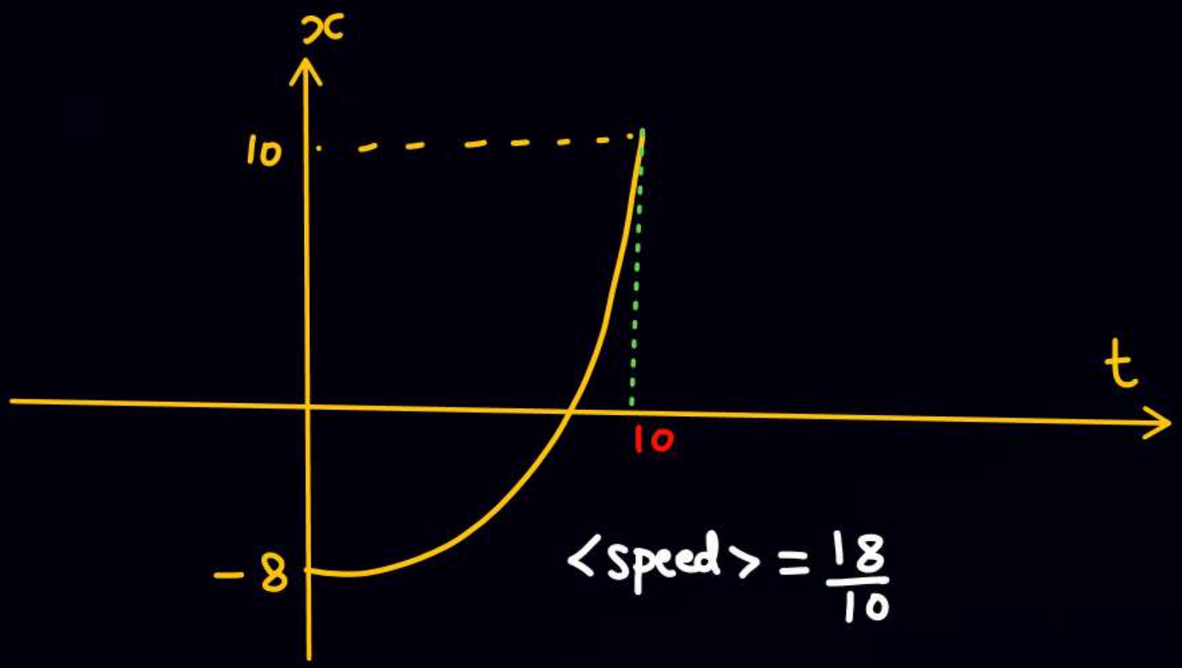


Distance = 12

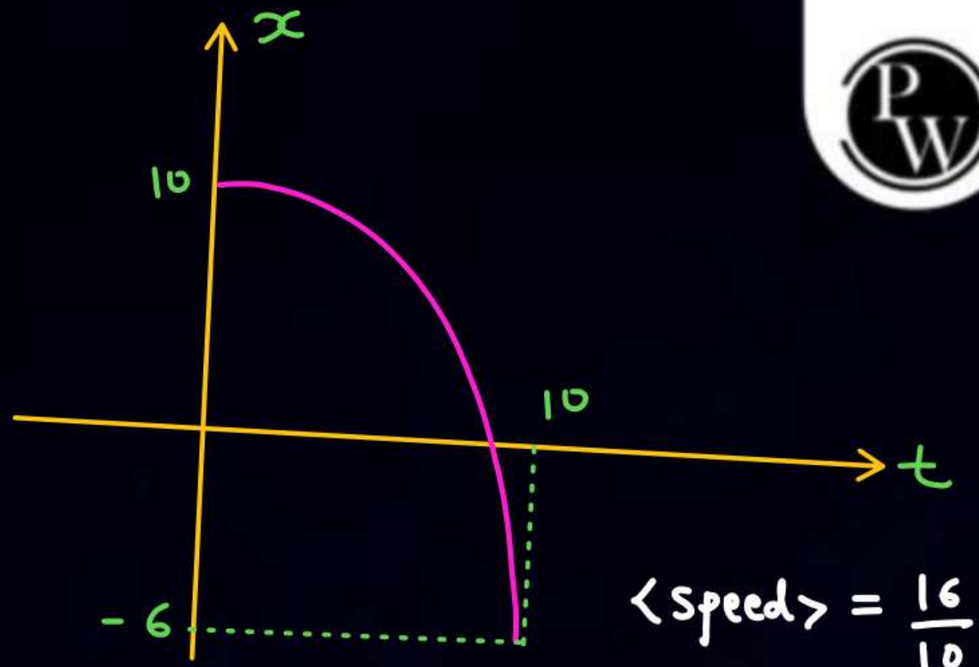
$\vec{d} = -12\hat{i}$


x = -2
x = -1
x = 0

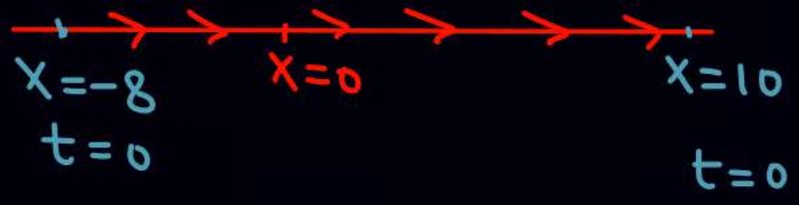
Q



$\langle \text{speed} \rangle = \frac{18}{10}$



$\langle \text{speed} \rangle = \frac{16}{10}$

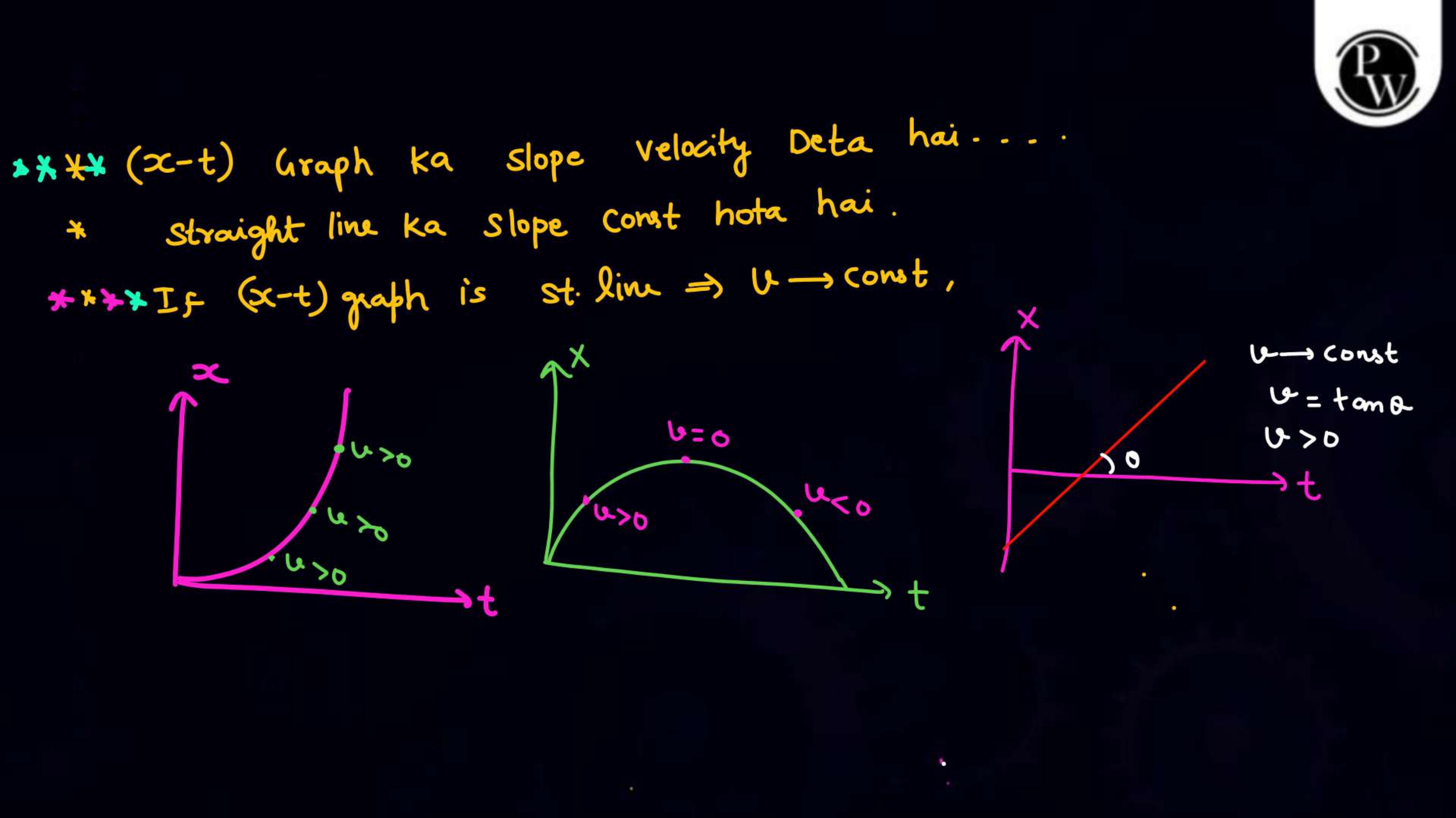


Distance = 18

$\vec{d} = 18\hat{i}$

distance = 10+6 = 16

$\vec{d} = -16\hat{i}$

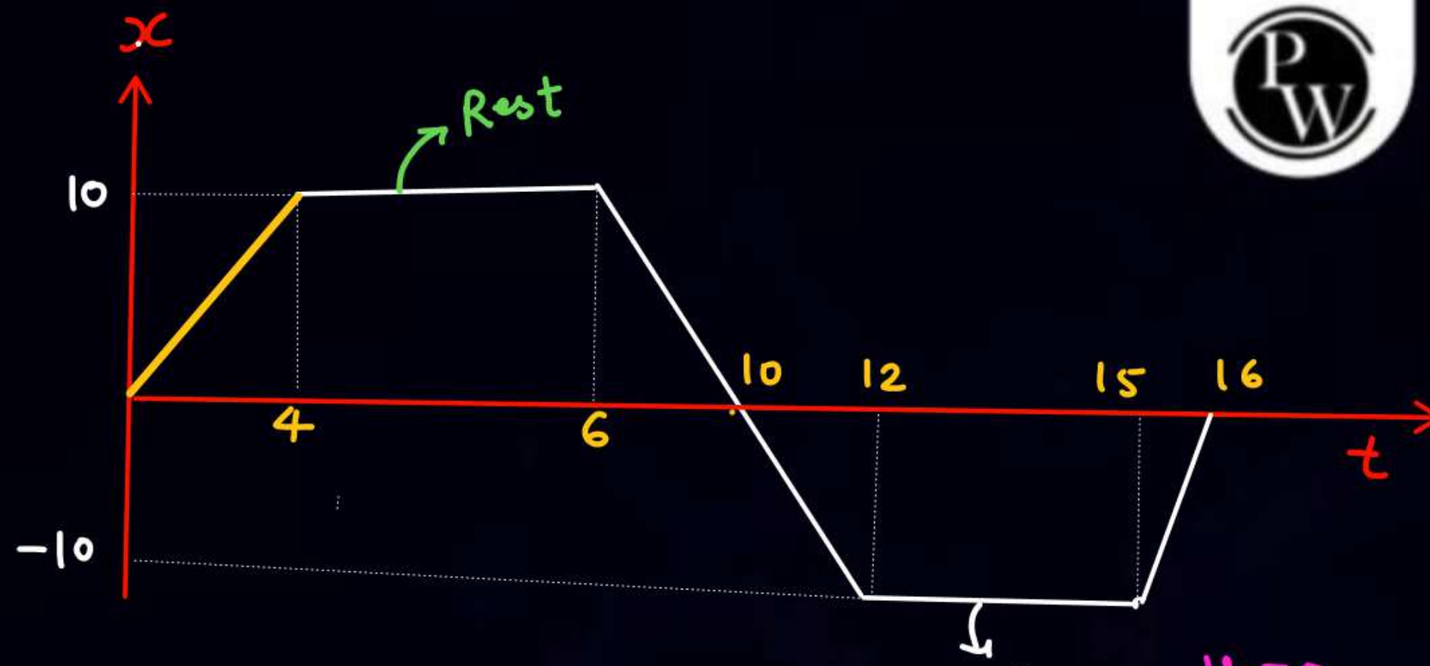

*** (x-t) Graph ka Slope Velocity Deta hai....
* Straight line ka Slope Const hota hai.
*** If (x-t) graph is St. line ⇒ v → const,
x
t
v>0
v>0
v>0
X
t
v=0
v>0
v<0
X
t
θ
v → const
v = tanθ
v > 0

Q

$t = 0 \longrightarrow t = 16$

<speed> =

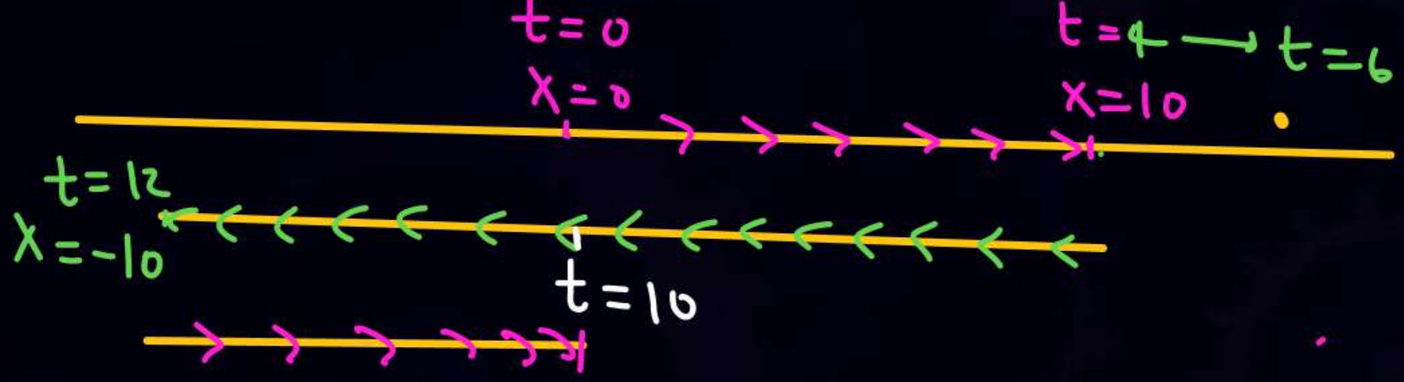
<velocity> =



Distance = 10 + 0 + 10 + 10 + 0 + 10

= 40

Displacement = 0

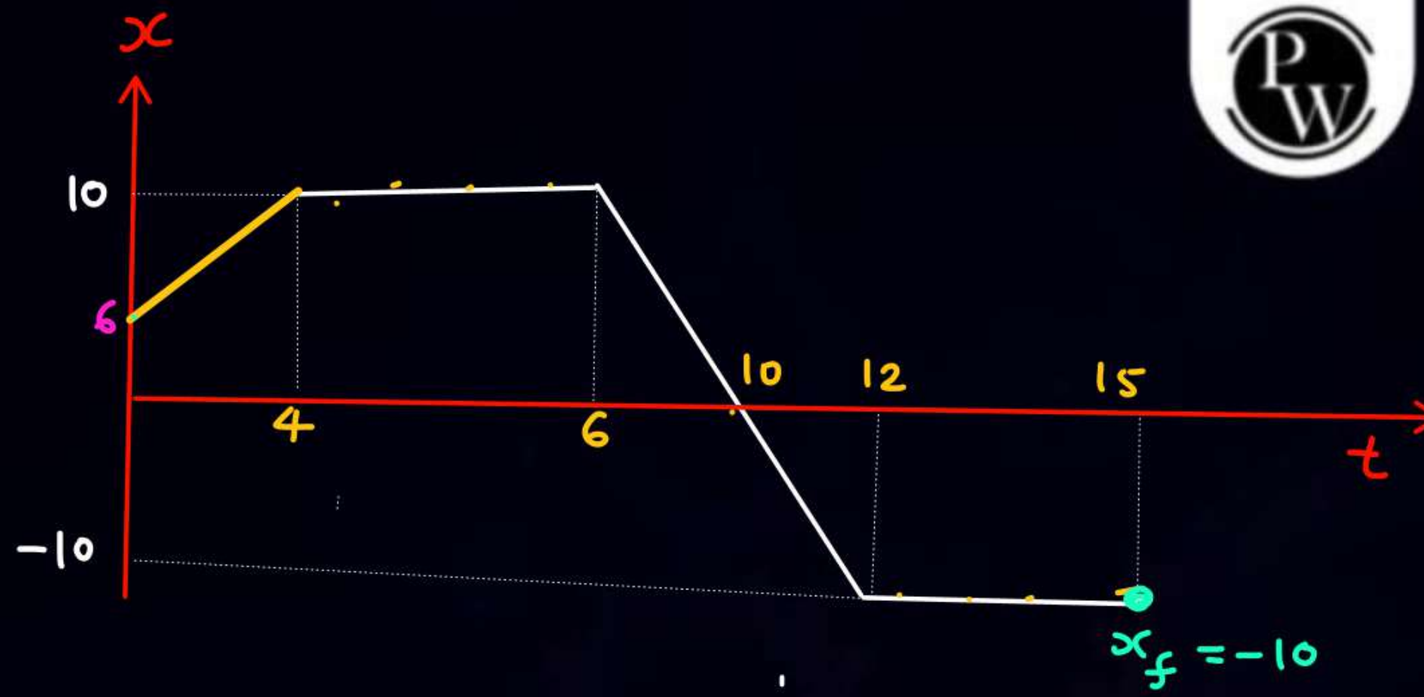


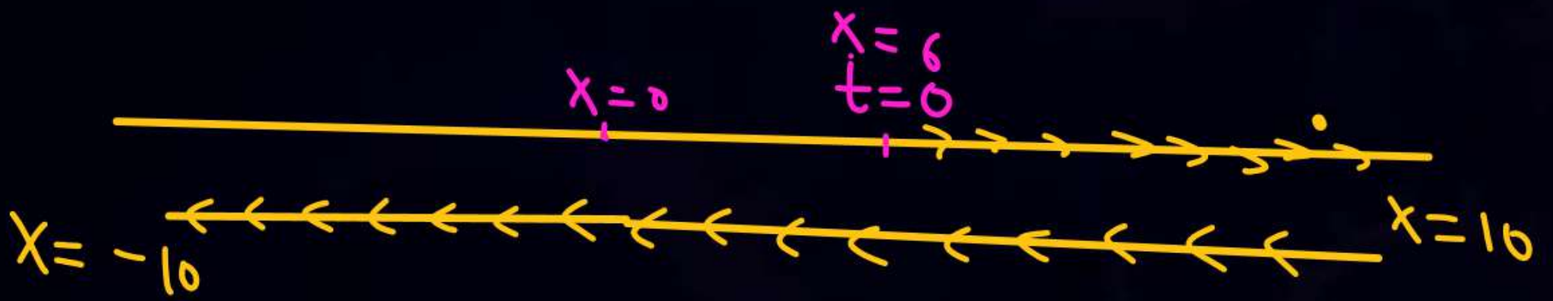
Q

$t=0 \longrightarrow t=15$

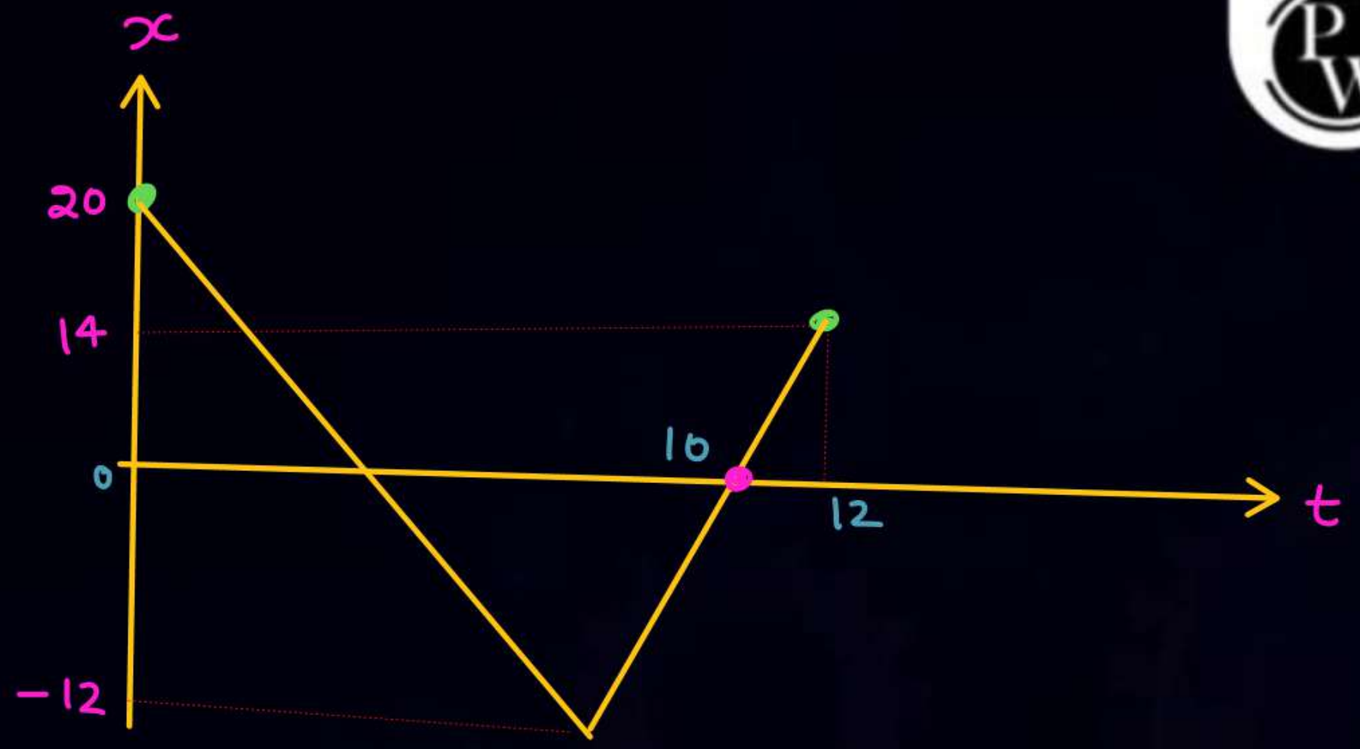
Avrg speed $= \dfrac{4+0+10+10+0}{15}$

Avrg Velocity $= \dfrac{-10-6}{15} = \dfrac{-16}{15}\hat{i}$





Q



$t=0 \longrightarrow t=12$

$$\langle \text{speed} \rangle = \frac{20+12+12+14}{12} = \frac{58}{12}$$

$$\langle \text{velocity} \rangle = \frac{14-20}{12} = -\frac{1}{2}$$

Silly.

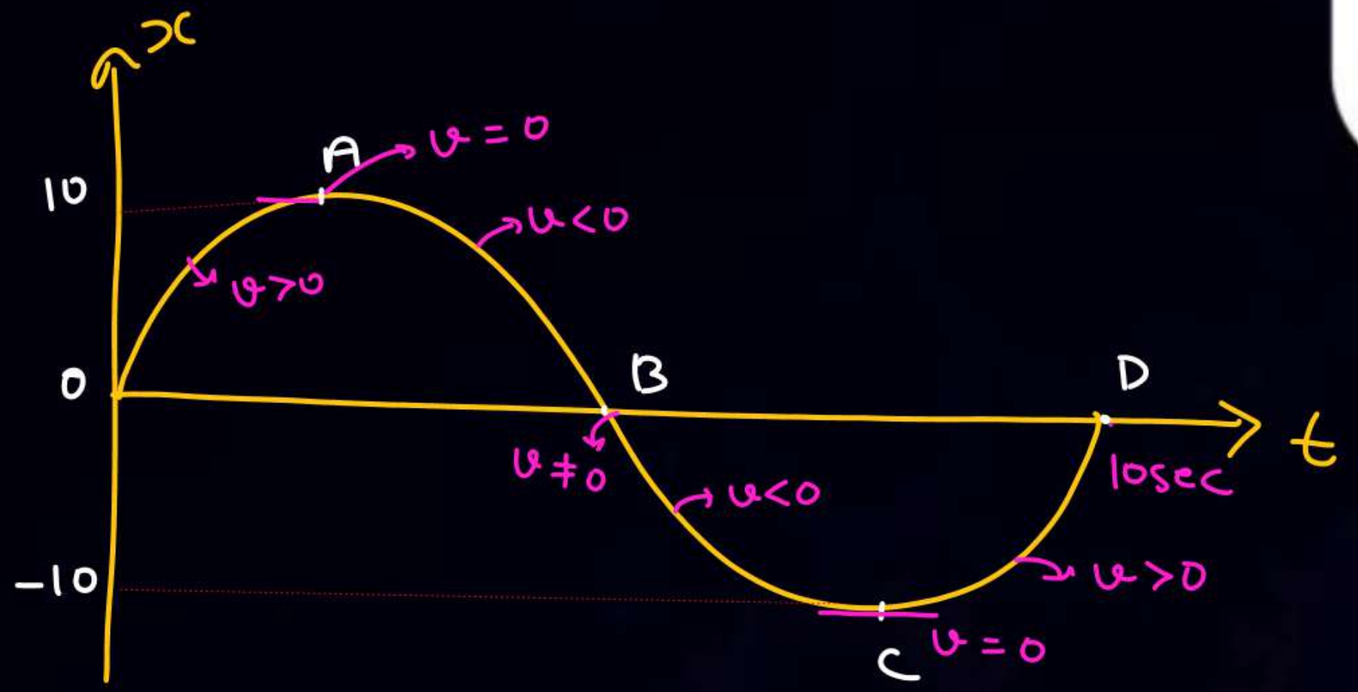
$t=0 \longrightarrow t=10$

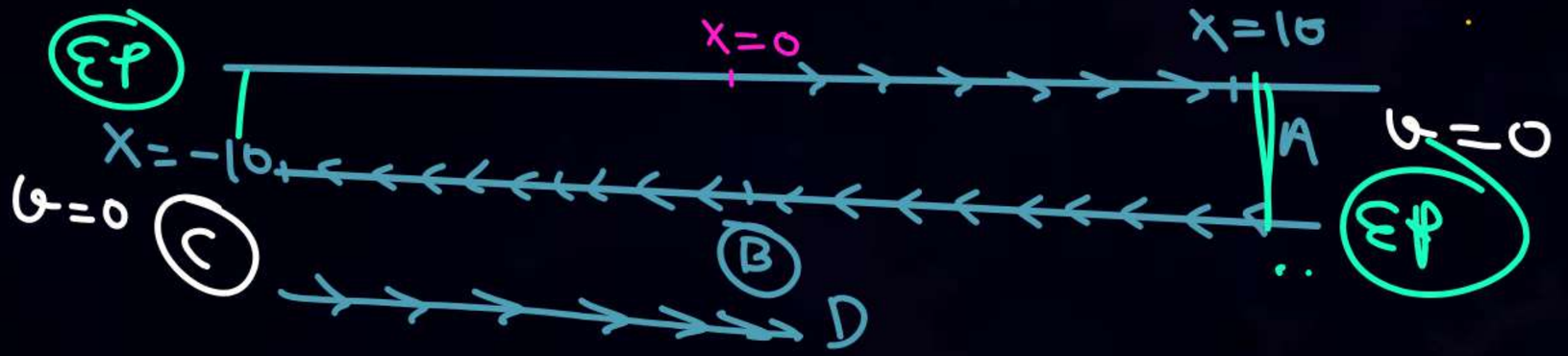
$$\langle \text{speed} \rangle = \frac{20+12+12}{10} = \frac{44}{10}$$

$$\langle \text{velocity} \rangle = \frac{0-20}{10} = -2$$

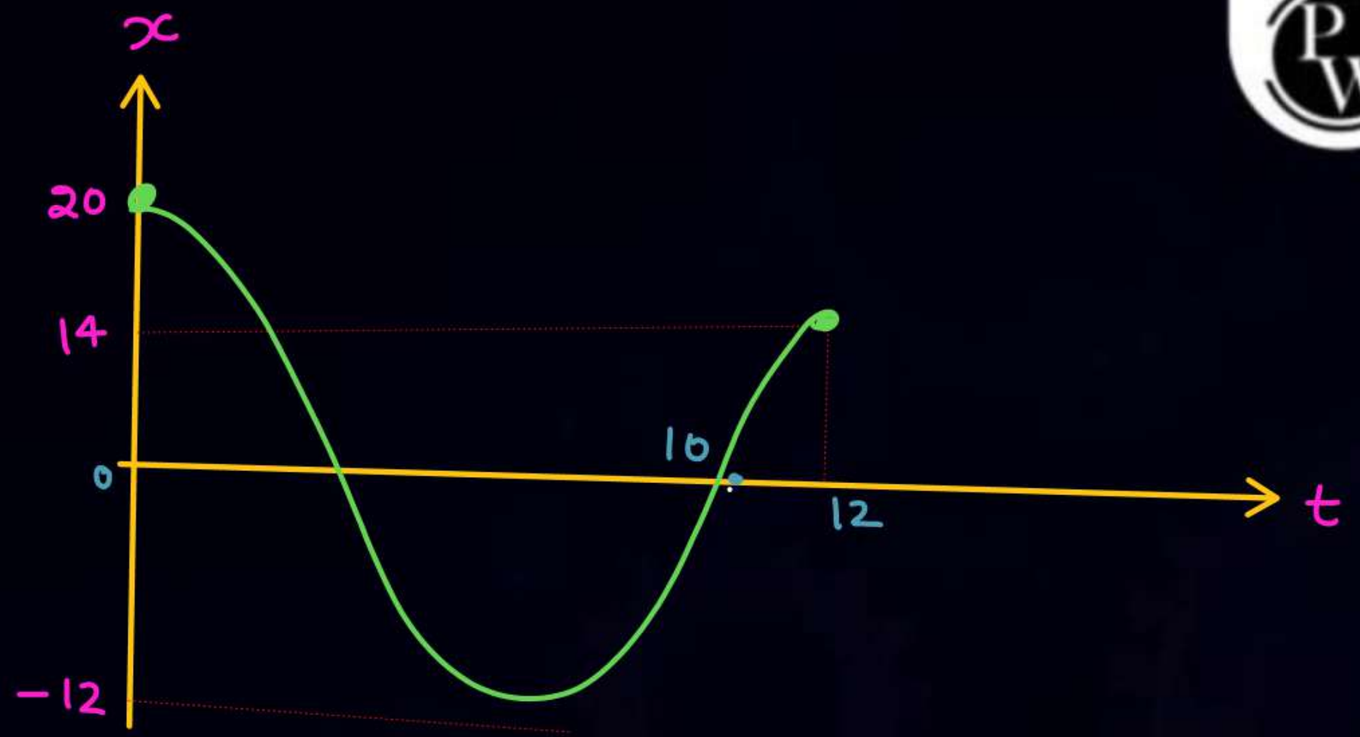
$O \longrightarrow D$

$$\langle \text{speed} \rangle = \frac{10+10+10+10}{10} = 4$$





Q



$t = 0 \longrightarrow t = 12$

$$\langle \text{speed} \rangle = \frac{20 + 12 + 12 + 14}{12} = \frac{58}{12}$$

$$\langle \text{velocity} \rangle = \frac{14 - 20}{12} = -\frac{1}{2}$$

$t = 0 \longrightarrow t = 10$

$\langle \text{speed} \rangle =$

$\langle \text{velocity} \rangle =$

Last $\hat{n}$

Q If displacement = 0 then

✗ ① Distance must be zero

② Distance may be zero

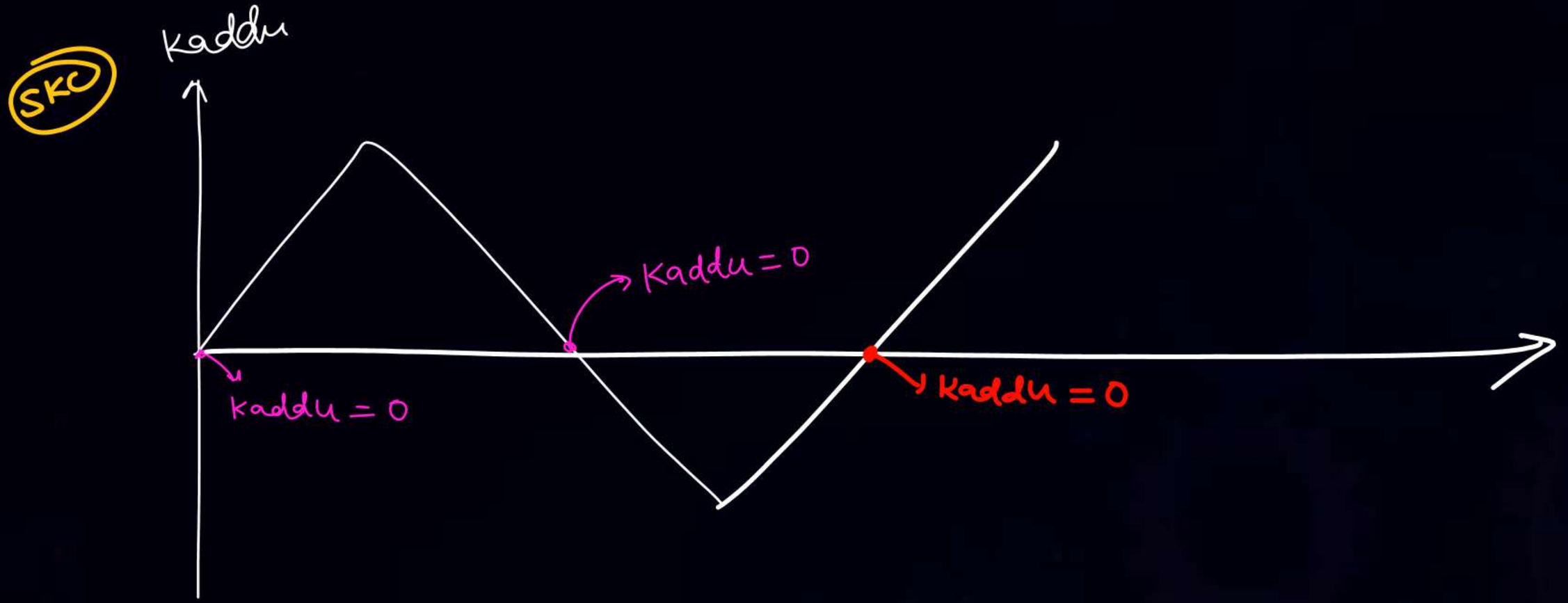
③ Avg velocity must be zero.

④ ✗ " Speed " " "

⑤ " " may be "

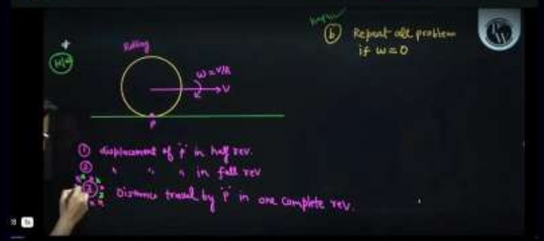
2, 3, 5 true

$\langle \vec{v} \rangle = \frac{\text{displ.}}{\text{time}}$ (displ. → 0, so $\langle \vec{v} \rangle \to 0$)


SKC
kaddu
kaddu = 0
kaddu = 0
kaddu = 0

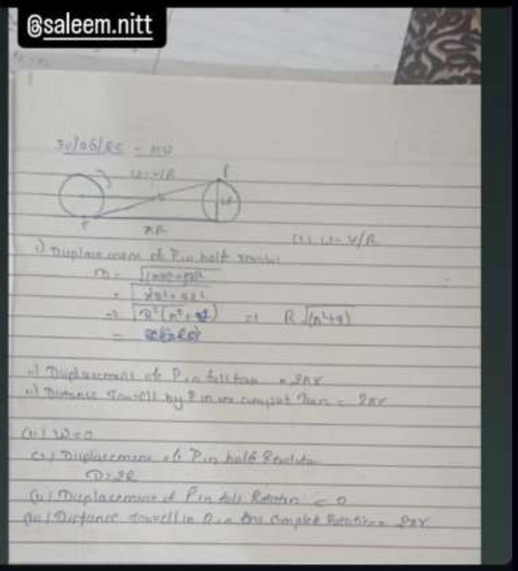
3:26

Mentions · ajeet.1655 58m



Sir Please Check the solution

@saleem.nitt

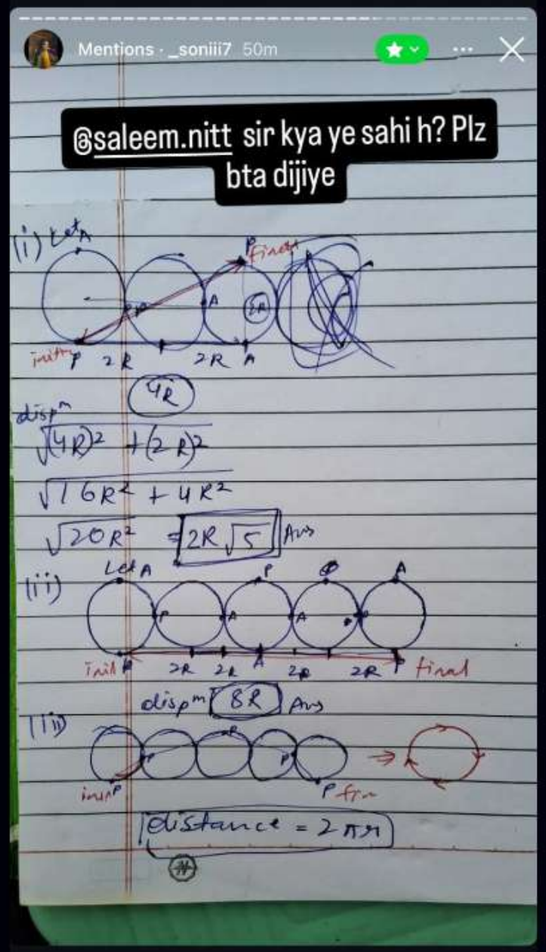


Send message...

3:26

Mentions · _soniii7 50m

@saleem.nitt sir kya ye sahi h? Plz bta dijiye



Send message...

3:29

Mentions · abhishek_rathod690 18m

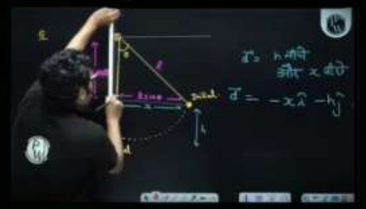
Watch Full Reel ›

nevergetslove 0:06

Kinematics ke pehle lecture me hi rotation ki feel krwa diya

(ab poore bachchon me dar ka mahaul hai)

@saleem.nitt



Add to your story

Send message...

7:39

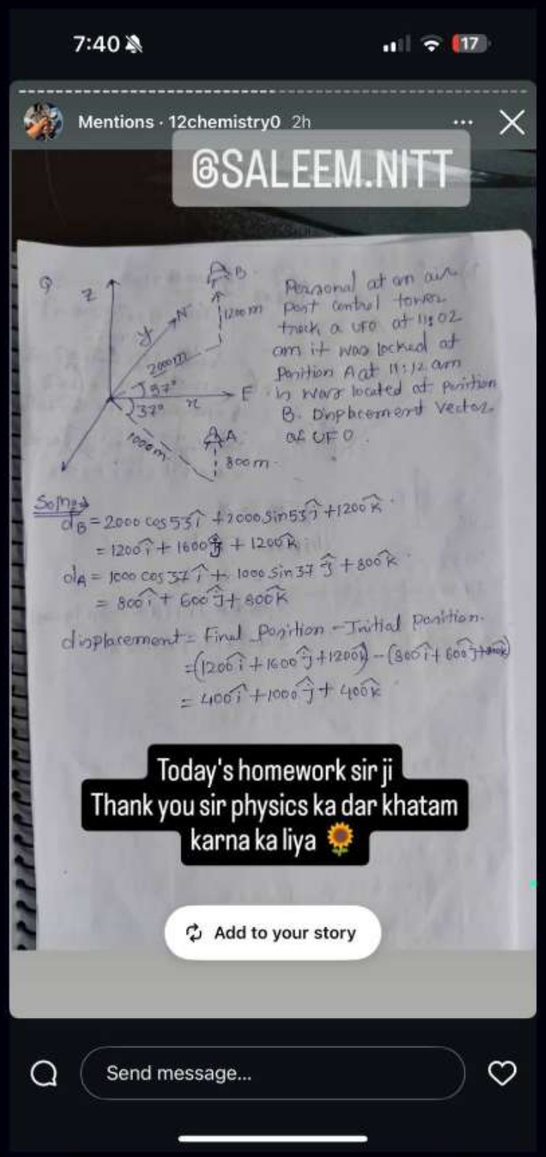
Mentions · _medico_rakesh 2h

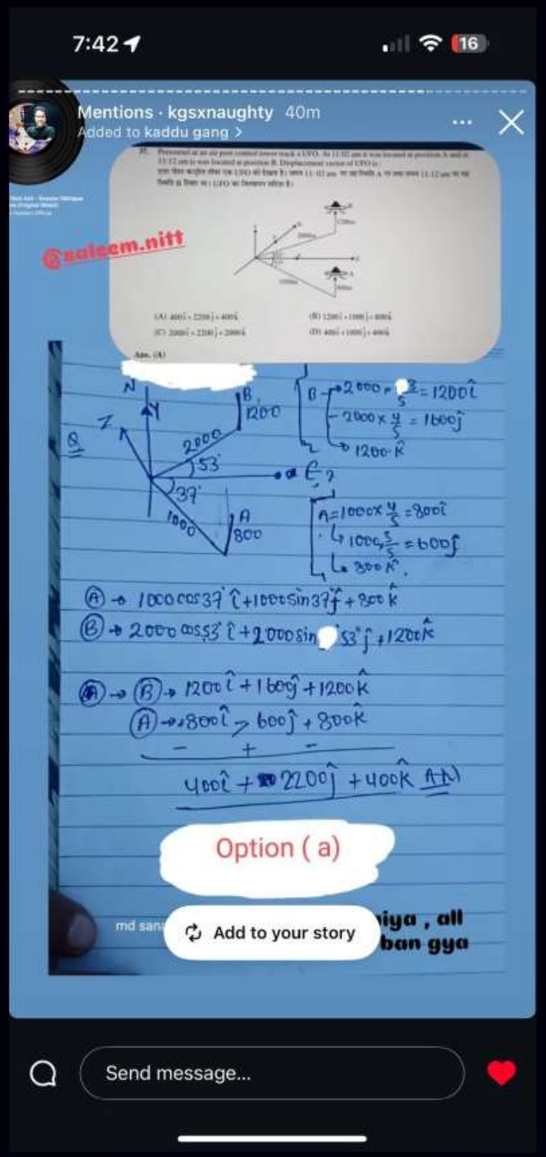
See translation ›

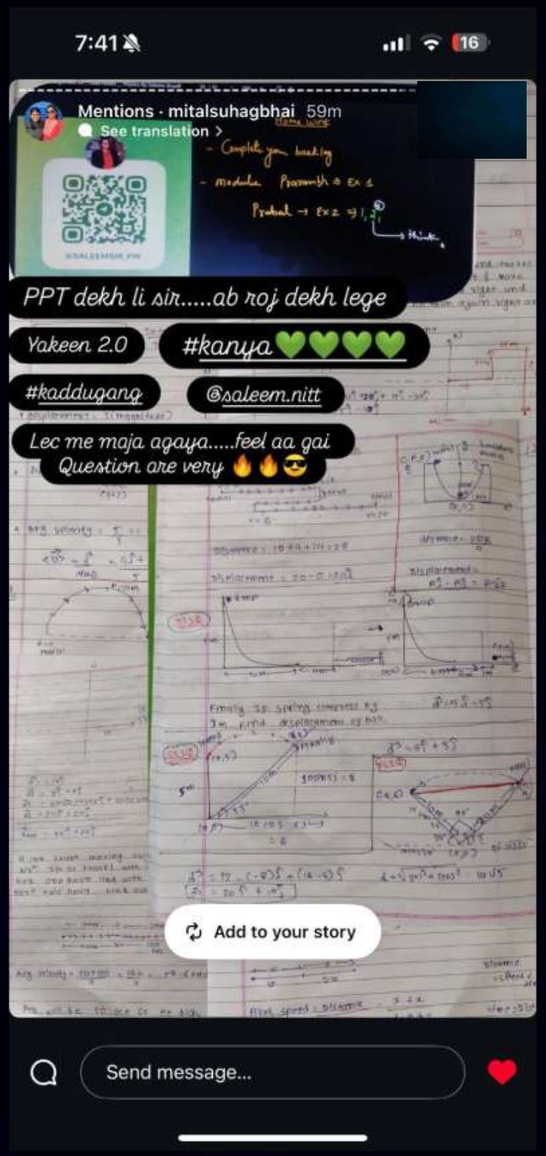
Mahila mitr ke sahali bahut kaam aati hai 😊 sir na kaha hai ab to karna padega dosti 😁😄💯

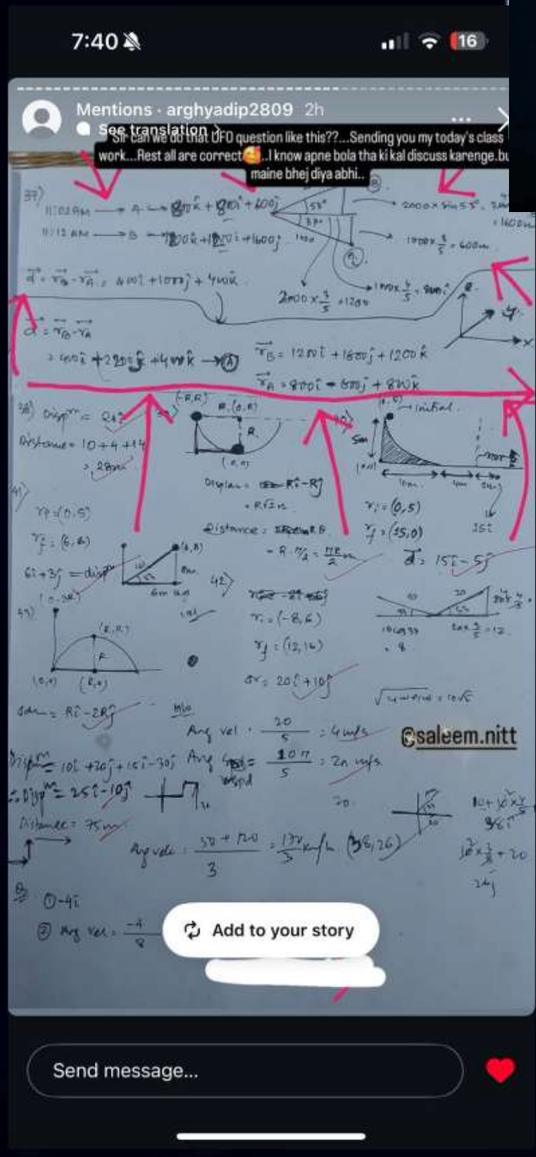
Add to your story

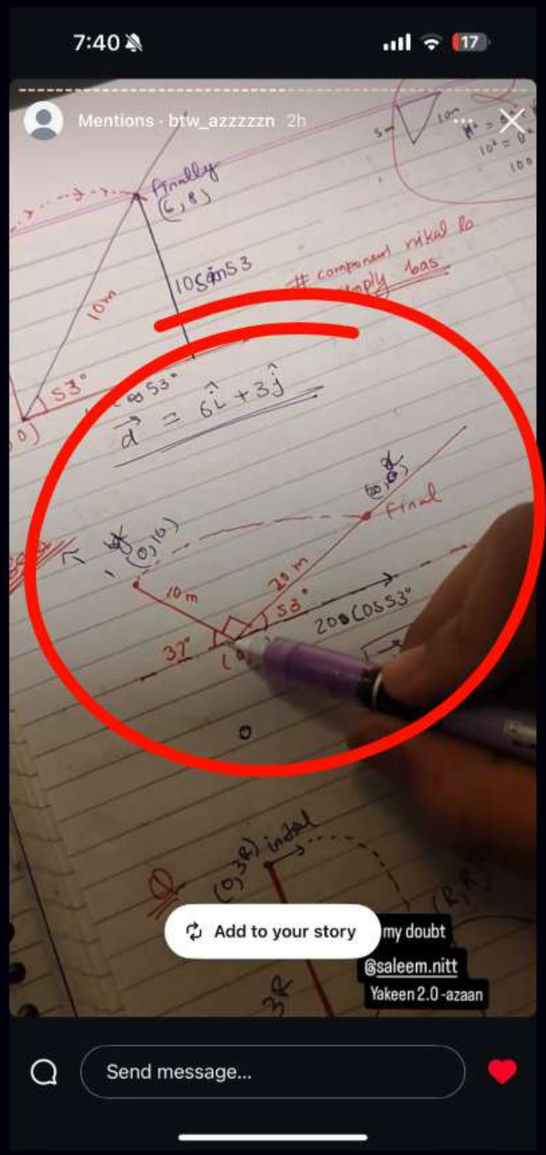
Send message...

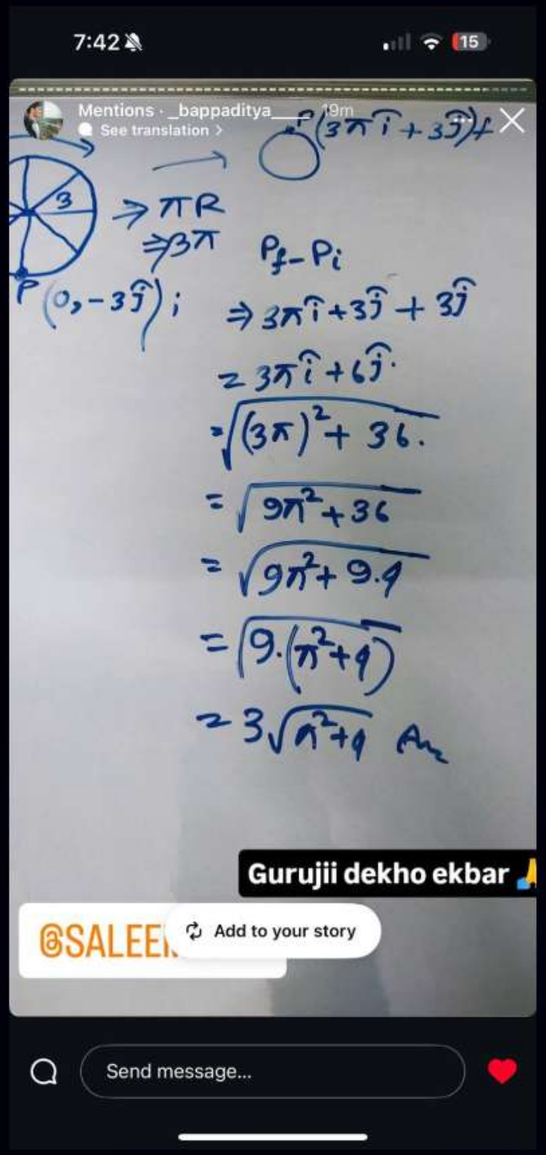

7:40
Mentions · 12chemistry0 2h
@SALEEM.NITT
Today's homework sir ji
Thank you sir physics ka dar khatam karna ka liya
Add to your story
Send message...

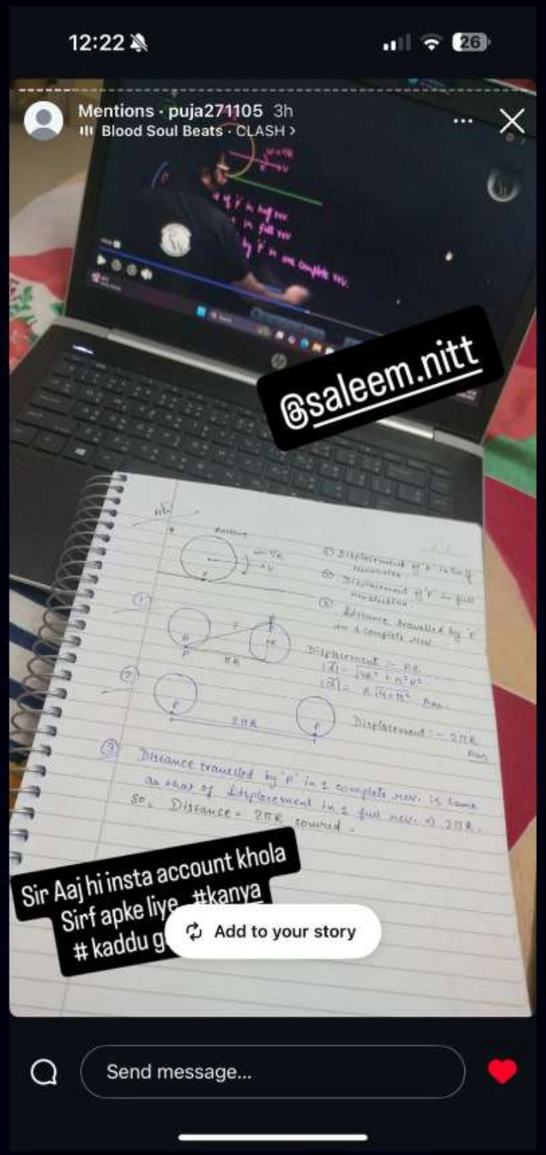

7:42
Mentions · kgsxnaughty 40m
Added to kaddu gang
@saleem.nitt
Option (a)
Add to your story
Send message...

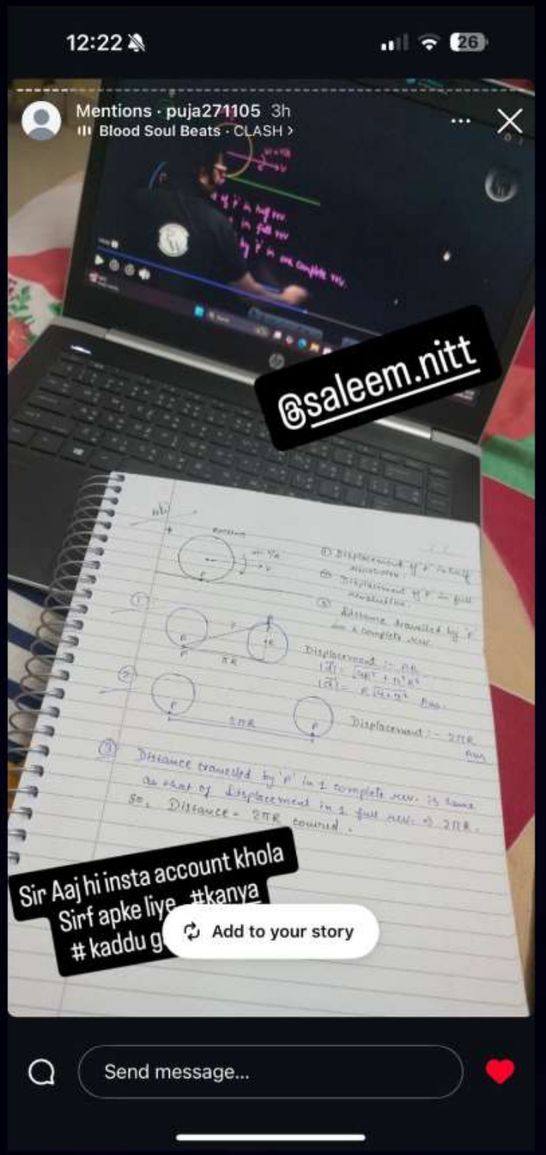

7:41
Mentions · mitalsuhagbhai 59m
See translation
PPT dekh li sir.....ab roj dekh lege
Yakeen 2.0
#kanya
#kaddugang
@saleem.nitt
Lec me maja agaya.....feel aa gai
Question are very
Add to your story
Send message...


7:40
Mentions · arghyadip2809 2h
See translation
maine bhej diya abhi..
@saleem.nitt
Add to your story
Send message...


7:40
Mentions · btw_azzzzzn 2h
Add to your story
my doubt
@saleem.nitt
Yakeen 2.0 -azaan
Send message...

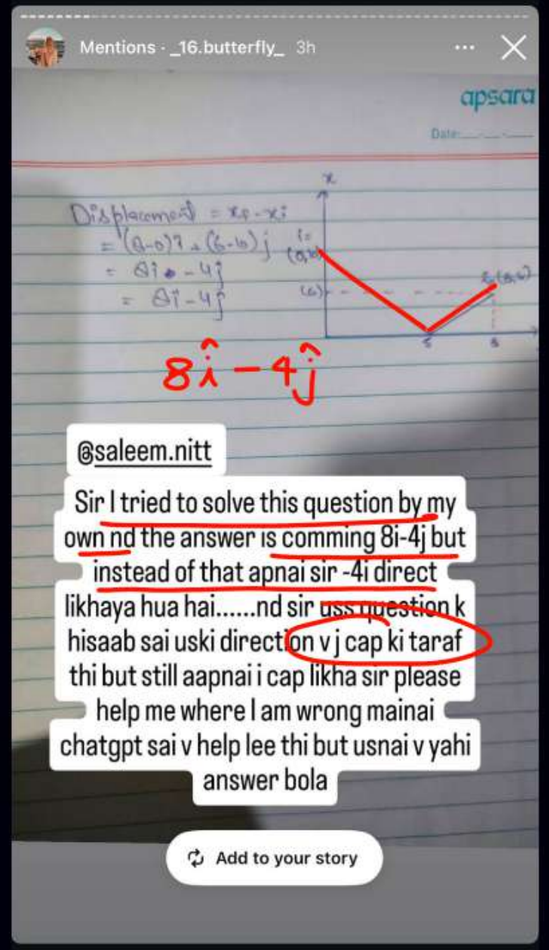

7:42
Mentions · _bappaditya____ 19m
See translation
Gurujii dekho ekbar
Add to your story
Send message...


12:22
Mentions · puja271105 3h
Blood Soul Beats · CLASH
@saleem.nitt
Sir Aaj hi insta account khola
Sirf apke liye #kanya
kaddu g
Add to your story
Send message...


12:22
Mentions · puja271105 3h
Blood Soul Beats · CLASH
@saleem.nitt
Sir Aaj hi insta account khola
Sirf apke liye #kanya
kaddu g
Add to your story
Send message...

12:23

Mentions · _16.butterfly_ 3h



@saleem.nitt

Sir I tried to solve this question by my own nd the answer is comming 8i-4j but instead of that apnai sir -4i direct likhaya hua hai.....nd sir uss question k hisaab sai uski direction v j cap ki taraf thi but still aapnai i cap likha sir please help me where I am wrong mainai chatgpt sai v help lee thi but usnai v yahi answer bola

Add to your story

Send message...

12:23

Mentions · itachi495692 3h

@saleem.nitt

Sir mere is baar neet me 426 marks aaye the sir mera physics hamesha weak rha hai... Par aapse padhkar mujhe physics me bht achcha perform karne ka motivation mil rha hai....

Mujhe bhi sir appki tarah physics pe mastery karni hai...

Sir maine ye account sirf appse communicate karne ke liye banaya hai...

Thank u sir 😀

Add to your story

Sir ek rank top 1000 me meri hogi

Send message...

3:27

Mentions · official_raks_07 49m

See translation

Hii Saleem sir , sir meri physics kaafi weak thi par jab se mene yakeen 2.0 ke aapke lecture dekhe sir maza aa gya or ab kinematics me or jyada maza aa raha hai or jo level up ho rahi hai physics kya batau sir maza aa gya

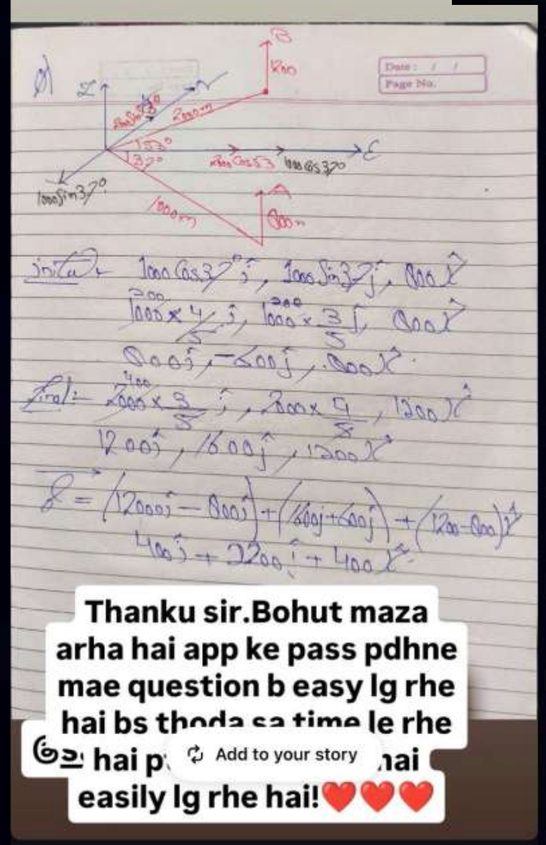
@saleem.nitt

Send message...

12:23

Mentions · tasaduq_bin_nisar 3h

CURSEDEVIL, Xantesha, yash1oka · DESTI...

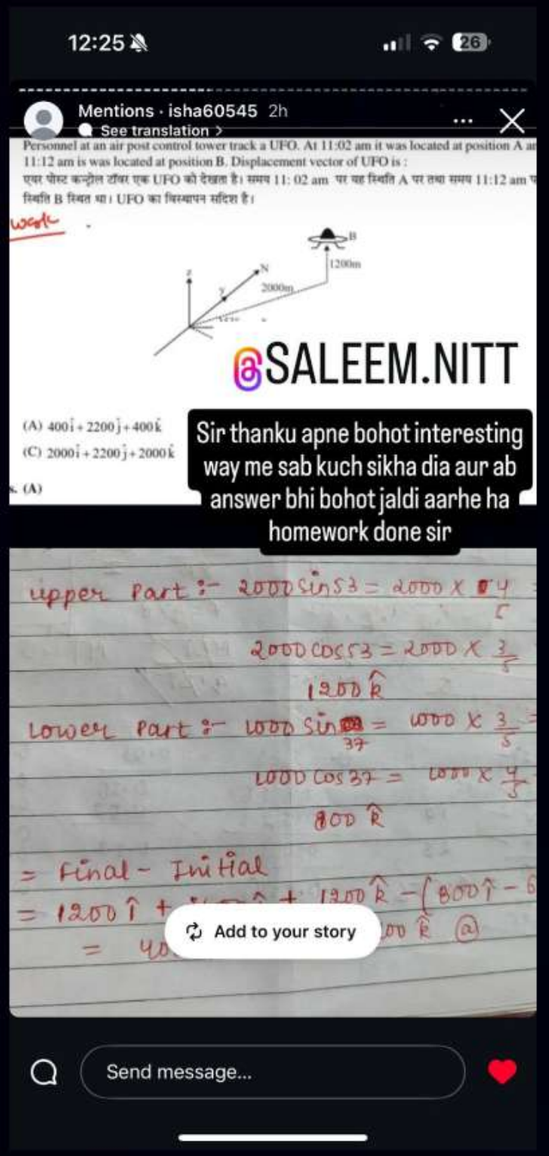


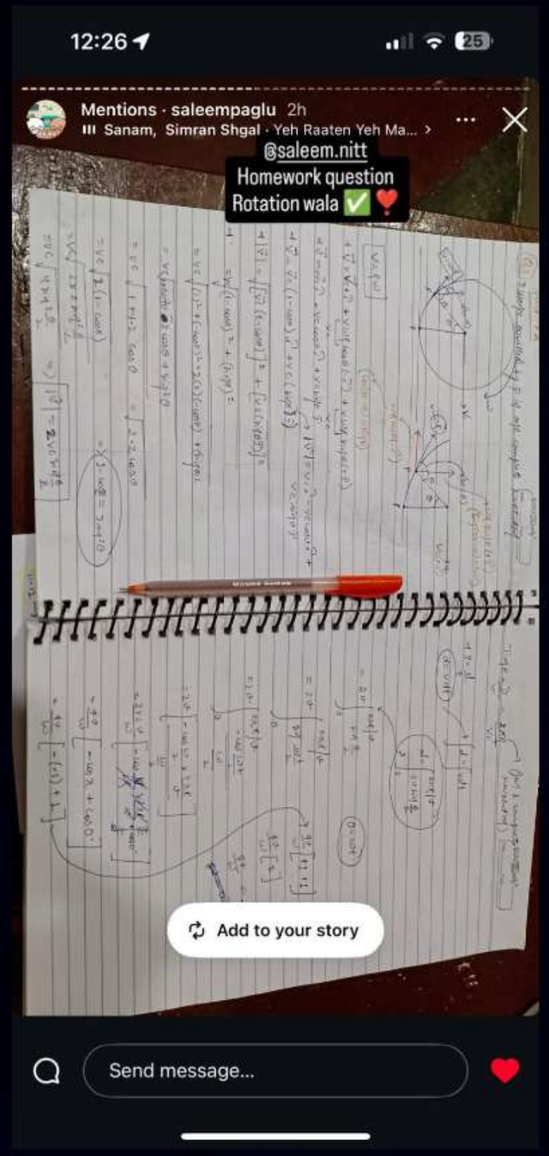
Thanku sir.Bohut maza arha hai app ke pass pdhne mae question b easy lg rhe hai bs thoda sa time le rhe hai p[illegible]hai easily lg rhe hai!❤️❤️❤️

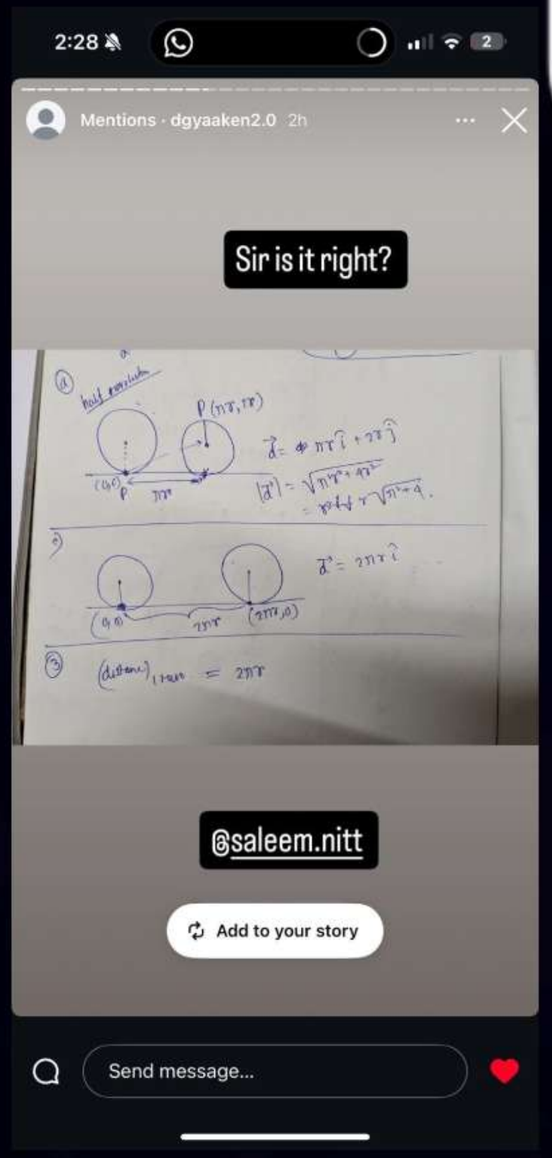
Add to your story

Send message...


12:24
Mentions · amber_monga 2h
See translation
Yah Bhi Kinamatics Aagya
Add to your story
Send message...

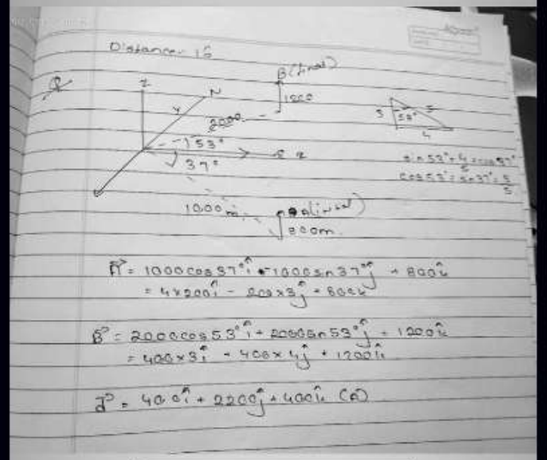

12:25
Mentions · isha60545 2h
See translation
@SALEEM.NITT
Sir thanku apne bohot interesting way me sab kuch sikha dia aur ab answer bhi bohot jaldi aarhe ha homework done sir
Upper Part :-
Lower Part :-
Add to your story
Send message...


12:26
Mentions · saleempaglu 2h
@saleem.nitt
Homework question
Rotation wala
Add to your story
Send message...


2:28
Mentions · dgyaaken2.0 2h
Sir is it right?
@saleem.nitt
Add to your story
Send message...

12:39

Mentions · instauser12472024 10m



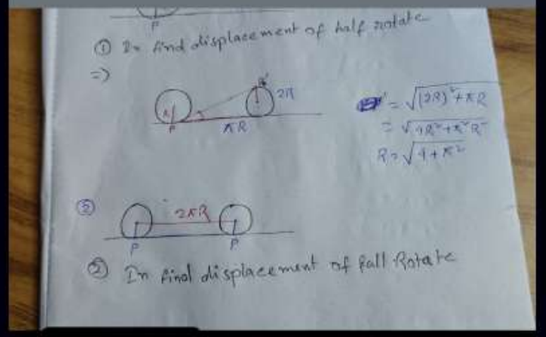
Hw question. Pls check

Add to your story

Send message...

12:29

Mentions · shahriyar_khan_98 1h

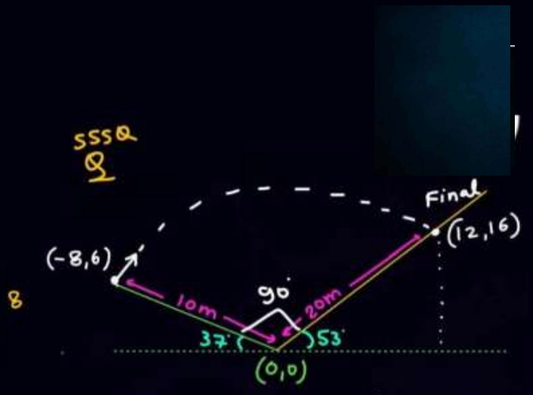


@saleem.nitt

Add to your story

Send message...

2:29



$\vec{d} = 12-(-8)\hat{i} + (16-6)\hat{j}$

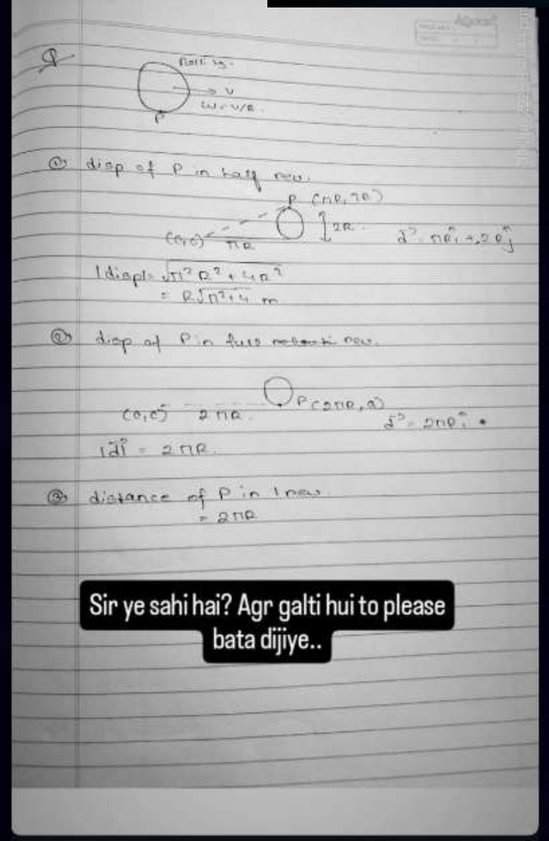
$\vec{d} = 20\hat{i} + 10\hat{j}$

$20\cos 53 = 20\times\frac{3}{5} = 12$

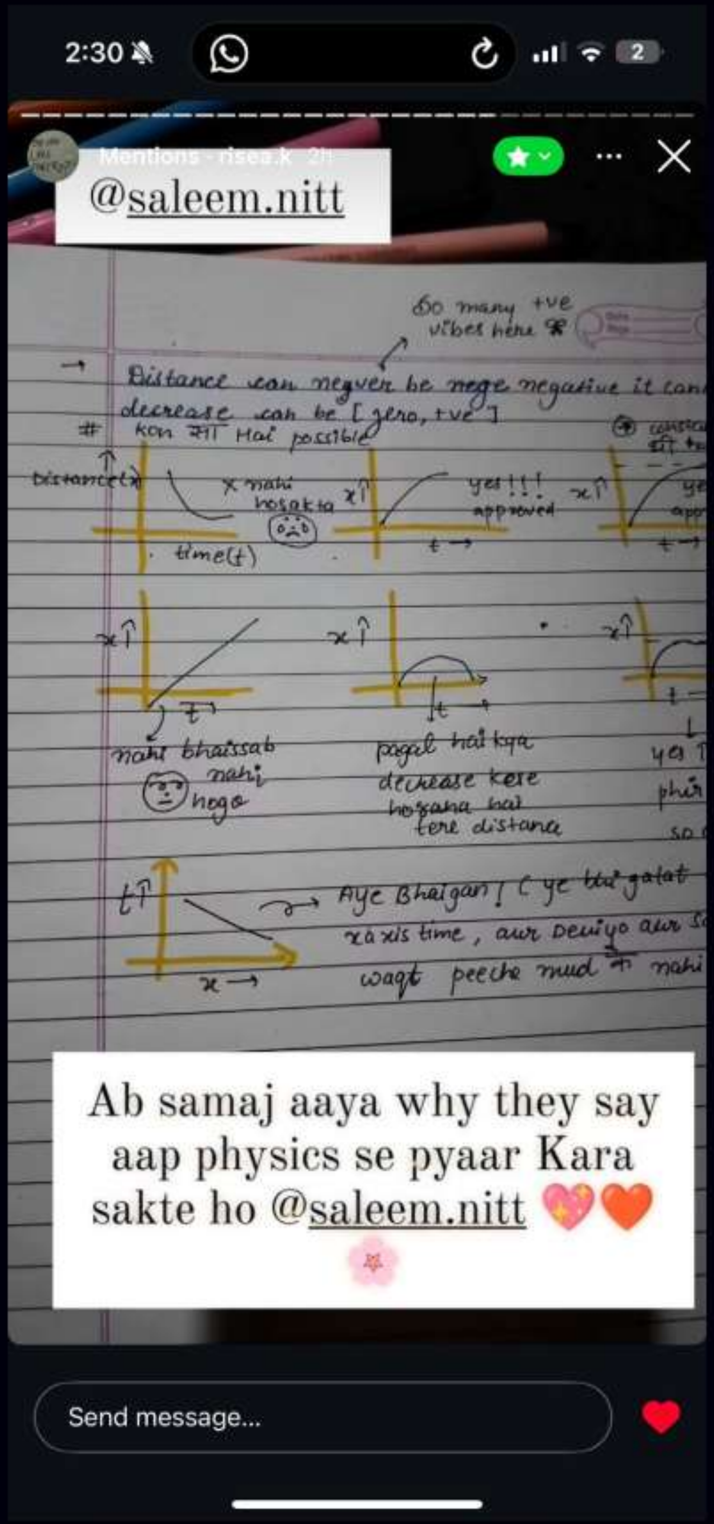
$d = \sqrt{(10)^2+(20)^2} = 10\sqrt{5}$

@saleem.nitt sir iss qs me 53° x-axis k dir me rotate krne se ye toh X-Y line me aajayega tb ye method se kya solve kr skte he?

2:30



Sir ye sahi hai? Agr galti hui to please bata dijiye..


2:30
@saleem.nitt
So many +ve vibes here
Ab samaj aaya why they say aap physics se pyaar Kara sakte ho @saleem.nitt
Send message...


3:13
@saleem.nitt
Sir isme jab spn ne y axis ko dekha toh uska coordinate system kyu nhi likha displacement found kane ke liye sir mene jab iska solution coordinate geometry se kiya toh different araha hai

Prabal Exercise-2

ye discuss hone se Rah gya hai... Kal Discuss karenge

HW

1. The numerical ratio of distance to displacement is:

(1) Always equal to one (2) Always less than one

(3) Always greater than one (4) Equal to or more than one

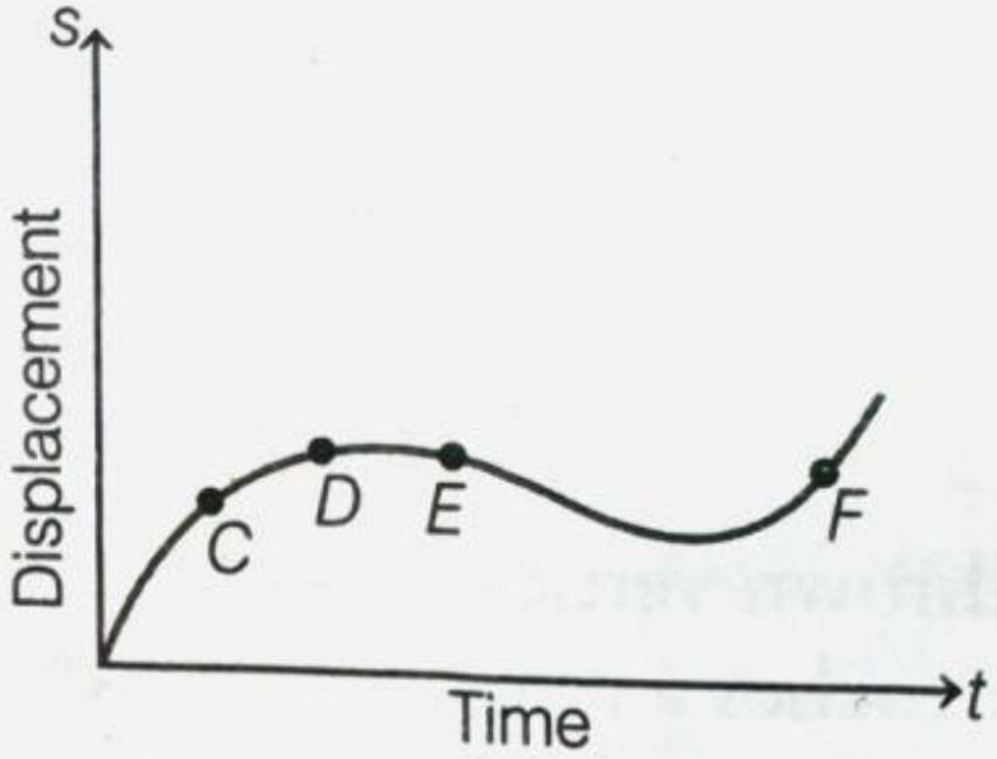
2. A wheel of radius 3 m rolls forward half a revolution on a horizontal ground. The magnitude of the displacement of the point of the wheel initially in contact with the ground is:

(1) 2π m (2) $\sqrt{2\pi}$ m

(3) $\sqrt{\pi^2+4}$ m (4) $3\sqrt{\pi^2+4}$ m

03 The displacement-time graph of moving particle is shown below.

H/W



The instantaneous velocity of the particle is negative at the point

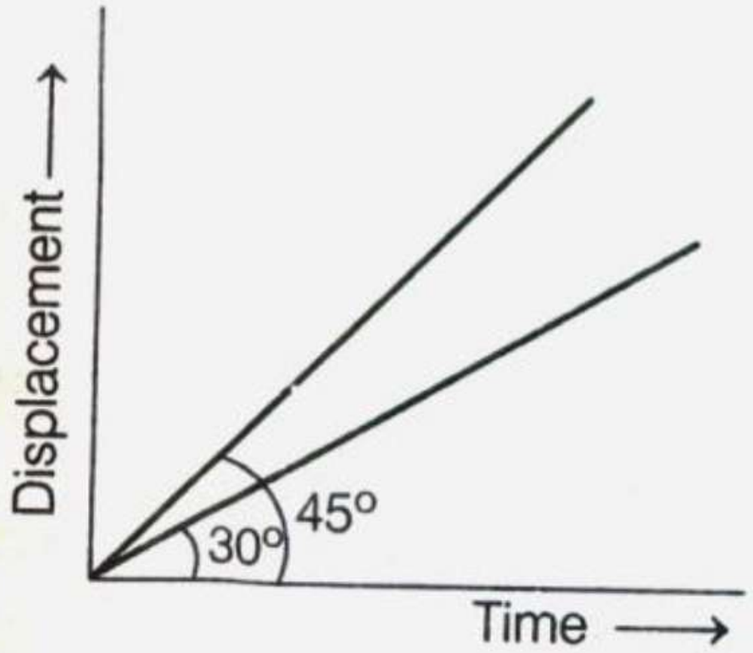
[NCERT (New) Pg. 14, AIPMT 1994]

(a) D
(b) F
(c) C
(d) E

05 The displacement-time graph of two moving particles make angles of 30° and 45° with the X-axis as shown in the figure. The ratio of their respective velocity is

[NCERT (New) Pg. 14, NEET 2022]

HW



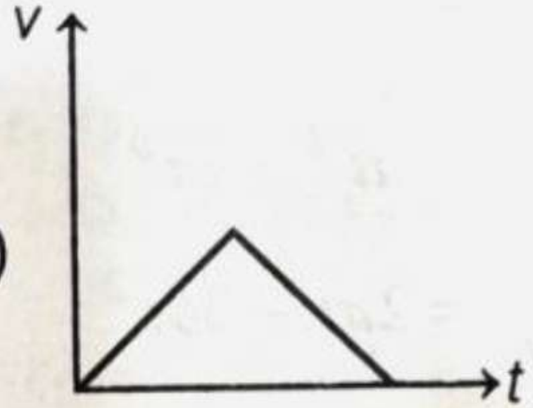
(a) 1 : 1
(b) 1 : 2
(c) 1: $\sqrt{3}$
(d) $\sqrt{3}$:1

06 Which of the following curves does not represent motion in one dimension ?

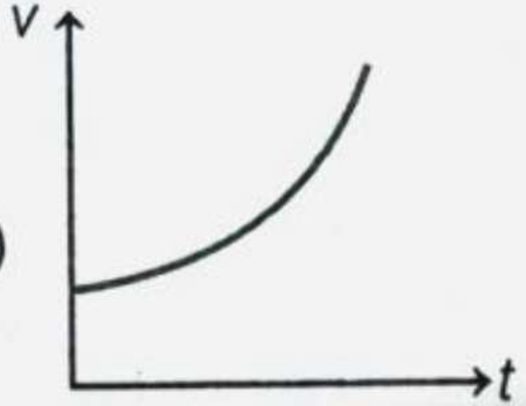
H/W

[NCERT (New) Pg. 4, AIPMT

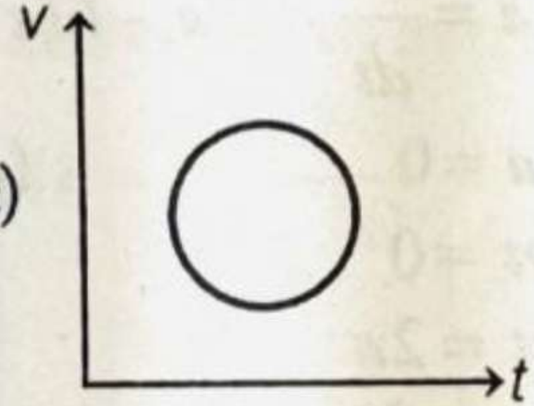
(a)



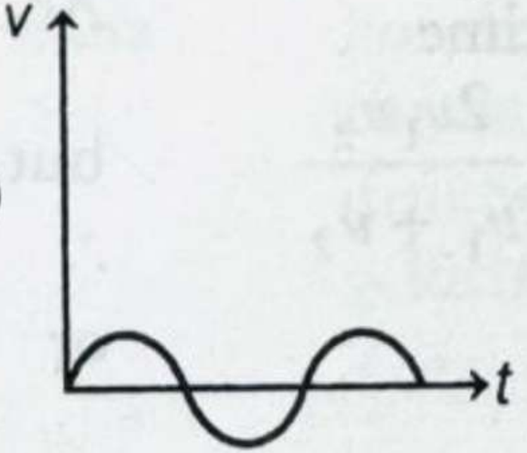
(b)



(c)



(d)



05 Which of the following is not a vector quantity ?

[[NCERT (New) Pg. 28, AIPMT

(a) Speed
(b) Velocity
(c) Torque
(d) Displacement

13 A particle has initial velocity $(3\hat{i} + 4\hat{j})$ and has acceleration $(0.4\,\hat{i} + 0.3\,\hat{j})$. Its speed after 10 s is

[AIPMT 2010]

(a) 7 unit
(b) $7\sqrt{2}$ unit
(c) 8.5 unit
(d) 10 unit

$\vec{v} = \vec{u} + \vec{a}t$

$\vec{v} =$

05 A particle is moving such that its position co-ordinates (x, y) are (2m, 3m) at time $t = 0$, (6m, 7m) at time $t = 2$ s and (13m, 14m) at time $t = 5$ s. Average velocity vector ($\mathbf{v}_{av}$) from $t = 0$ to $t = 5$ s is *[NCERT (New) Pg. 35, AIPMT 2014]*

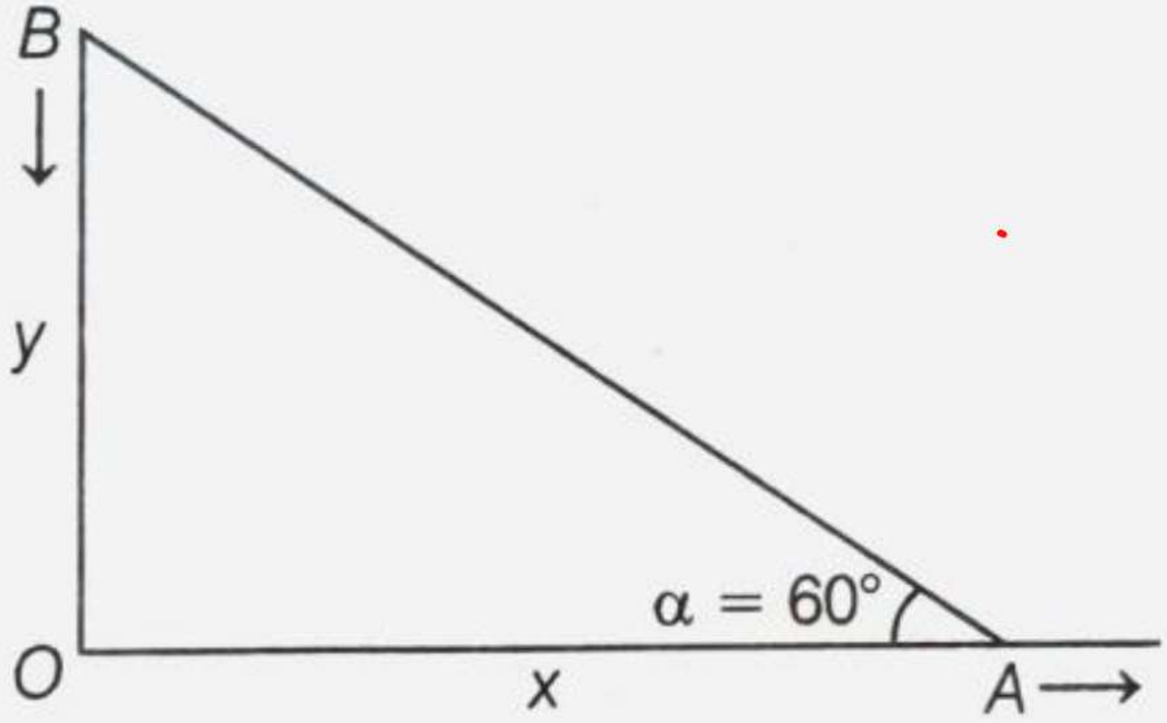
(a) $\frac{1}{5}(13\hat{i} + 14\hat{j})$

(b) $\frac{7}{3}(\hat{i} + \hat{j})$

(c) $2(\hat{i} + \hat{j})$

(d) $\frac{11}{5}(\hat{i} + \hat{j})$

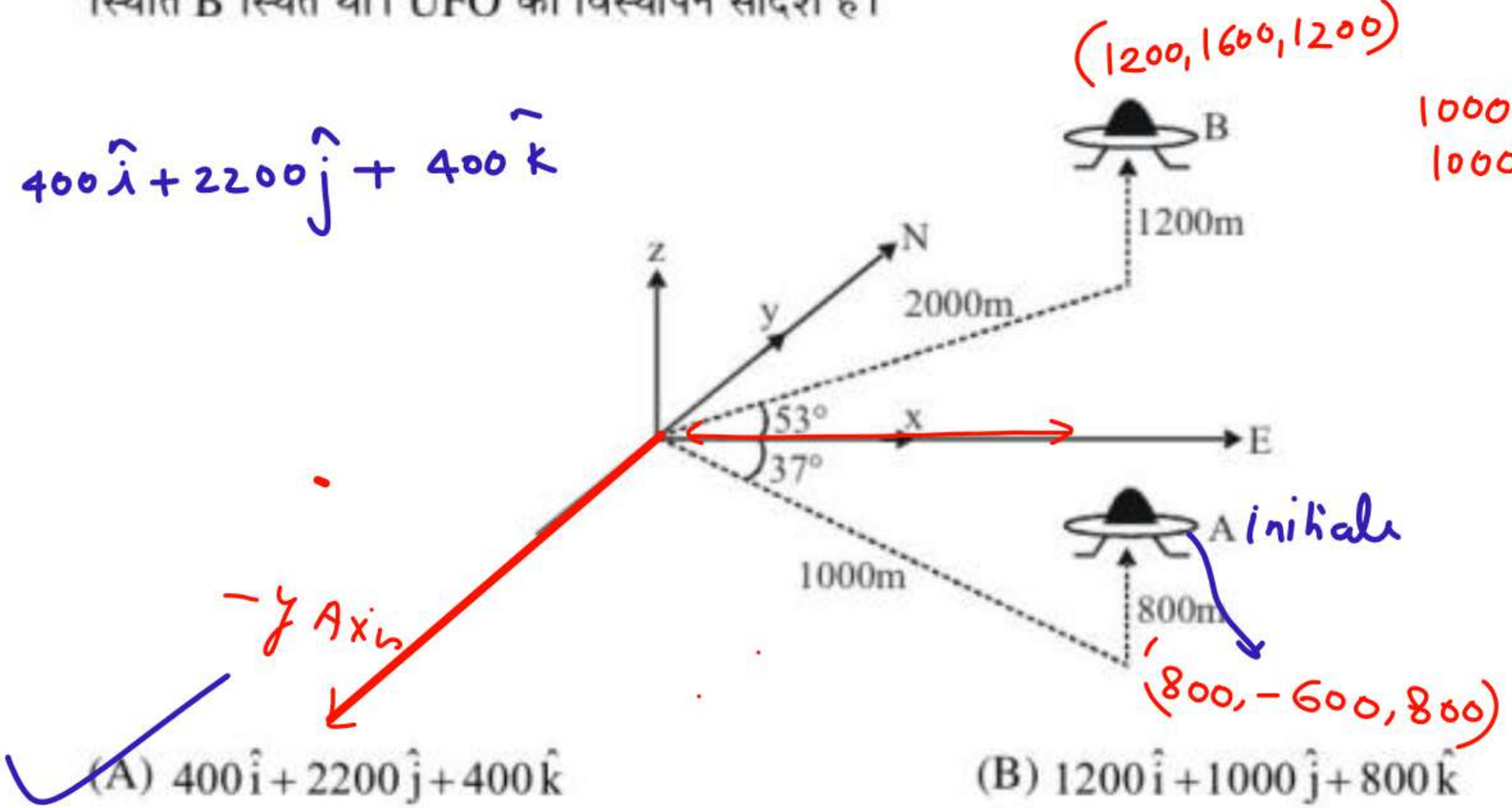
27 Two particles A and B are connected by a rigid rod AB. The rod slides along perpendicular rails as shown here. The velocity of A to the right is 10m/s. What is the velocity of B when angle $\alpha = 60°$? ***[AIPMT 1998]***



(a) 9.8 m/s (b) 10 m/s (c) 5.8 m/s (d) 17.3 m/s

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 is was located at position B. Displacement vector of UFO is :

एयर पोस्ट कन्ट्रोल 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।



$400\hat{i}+2200\hat{j}+400\hat{k}$

$1000\cos 37 = 800$

$1000\sin 37 = 600$

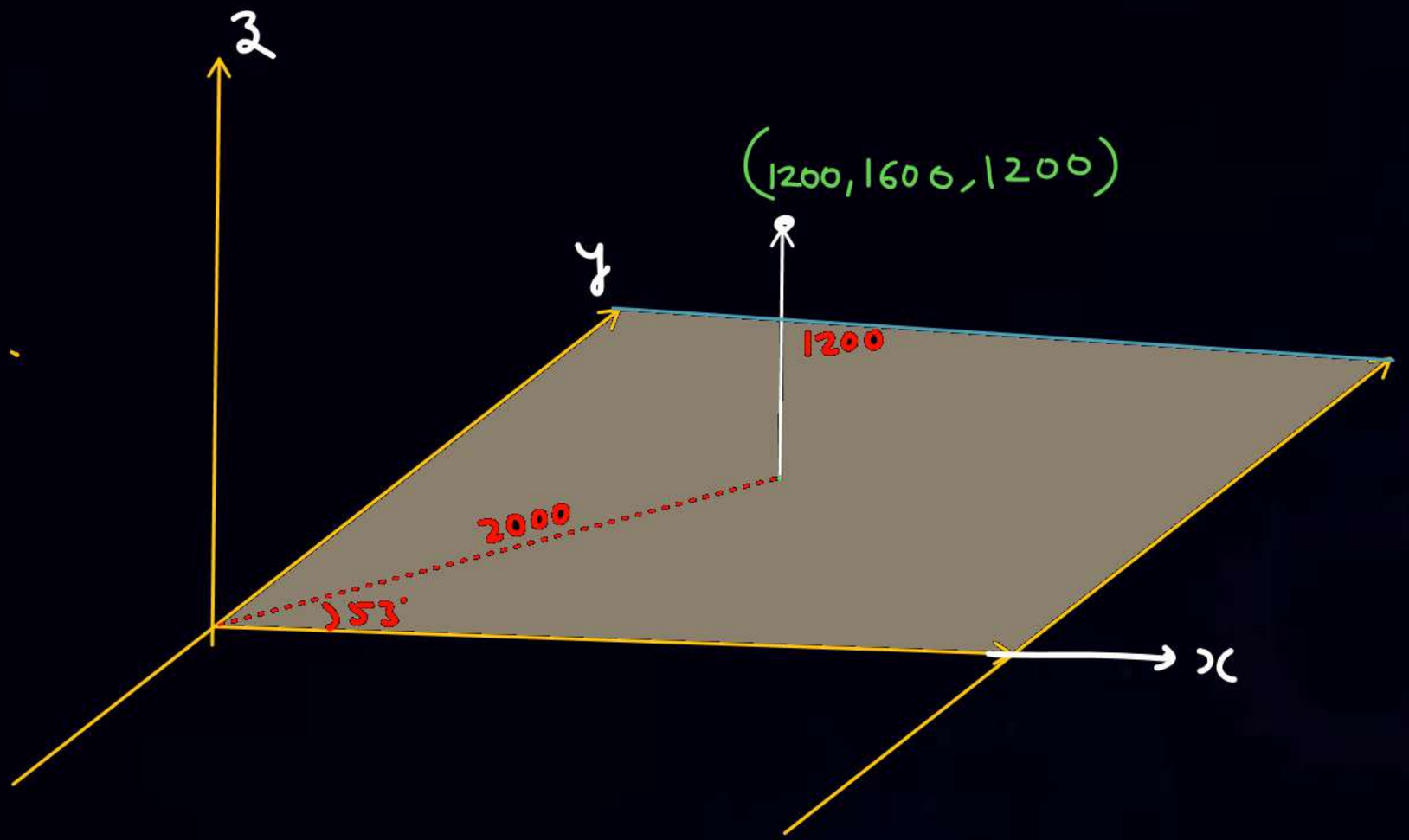
(A) $400\hat{i}+2200\hat{j}+400\hat{k}$

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

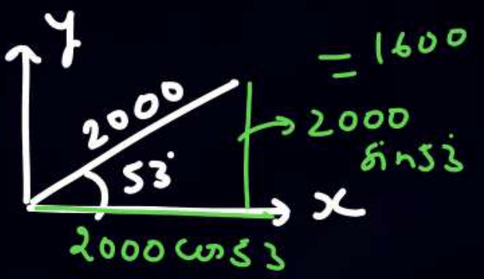
(C) $2000\hat{i}+2200\hat{j}+2000\hat{k}$

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

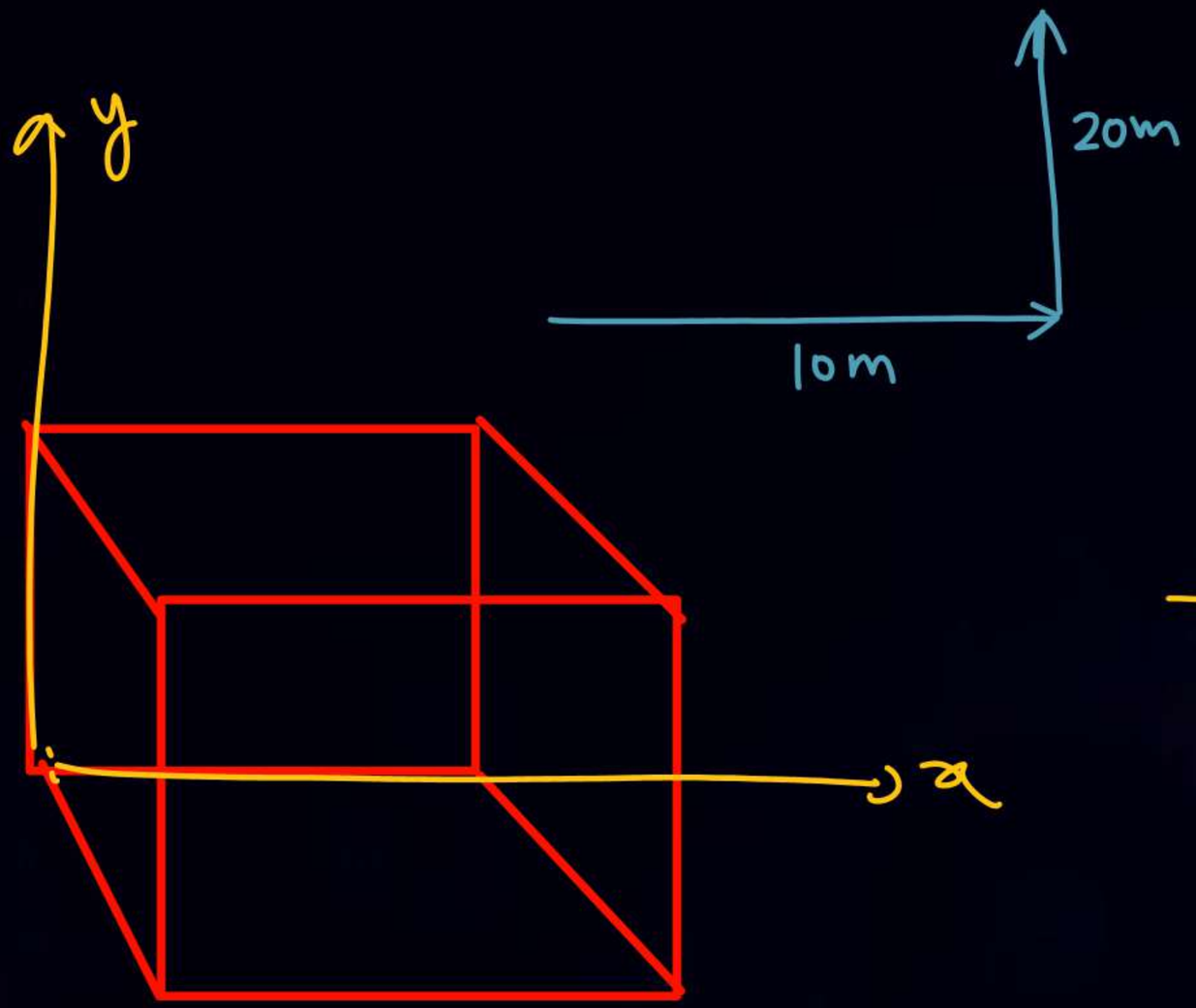
Ans. (A)



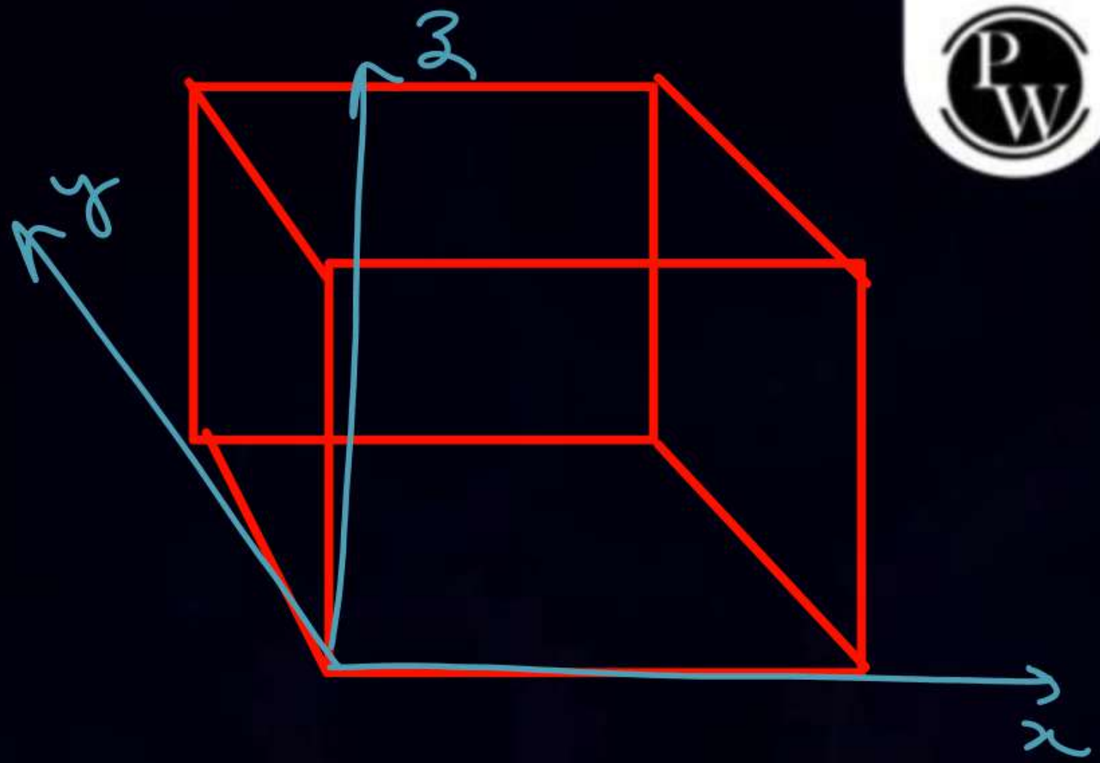
top



$= 2000 \times \frac{3}{5} = 1200$


y
x

20m
10m


z
y
x


y

Todays Goal

- KPP 13 Abhi only & only yahi ques karne hai...

  1, 2, 3, 5, 6, 15, 16, 17, 18, 19, 20, 21, 22
  32, 33, 36, (KPP 14))

  Baki ques Next 3 din me karenge jese jese Syallbus aage badtha jayega.

- Module → (Praramb) ⇒ (1-5), 35

  Parikshit ⇒ 2, 3

THANK YOU