YAKEEN NEET 2.0

2026

Motion in a Straight Line

Physics

Lecture - 11

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Todays Goal

→ H/w , PhD on Graph :—

→ v/x , a/t , a/x , x/t & Graph Conversion

v^2/x graph.

Likhna hai → important hai

(6) Object starts from rest & constant acc^n a and moves S - distance in time T, then find ratio of time in 1st half dist^n & next half distance.

Comp^t Journey:- $S = 0 \times T + \frac{1}{2} a T^2$

$$S = \frac{1}{2} a T^2 \quad - (1)$$

1st half $\frac{S}{2} = \frac{1}{2} a t_1^2 \quad - (11)$

2nd half ~~$\frac{S}{2} = \frac{1}{2} a t_2^2$~~ - (111)

MRScam. $t_1 : t_2 = 1 : 2$ wrong.

Dividing eqn (1)/(11)

$$\frac{S}{S/2} = \frac{\frac{1}{2} a T^2}{\frac{1}{2} a t_1^2}$$

$$2 = \frac{T^2}{t_1^2}$$

$$t_1^2 = \frac{T^2}{2}$$

$$* \quad t_1 = \frac{T}{\sqrt{2}} \quad *$$

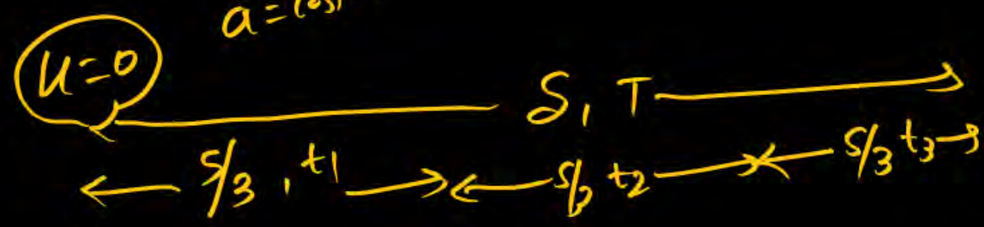
$$\# \quad t_1 + t_2 = T \qquad t_2 = T - t_1 = T - \frac{T}{\sqrt{2}}$$

$$t_1 = \frac{T}{\sqrt{2}}$$

$$t_2 = T\left(1 - \frac{1}{\sqrt{2}}\right) = T\left(\frac{\sqrt{2}-1}{\sqrt{2}}\right)$$

(#)
$$\frac{t_1}{t_2} = \frac{T/\sqrt{2}}{T\left(\frac{\sqrt{2}-1}{\sqrt{2}}\right)} = \frac{1}{\sqrt{2}-1}$$

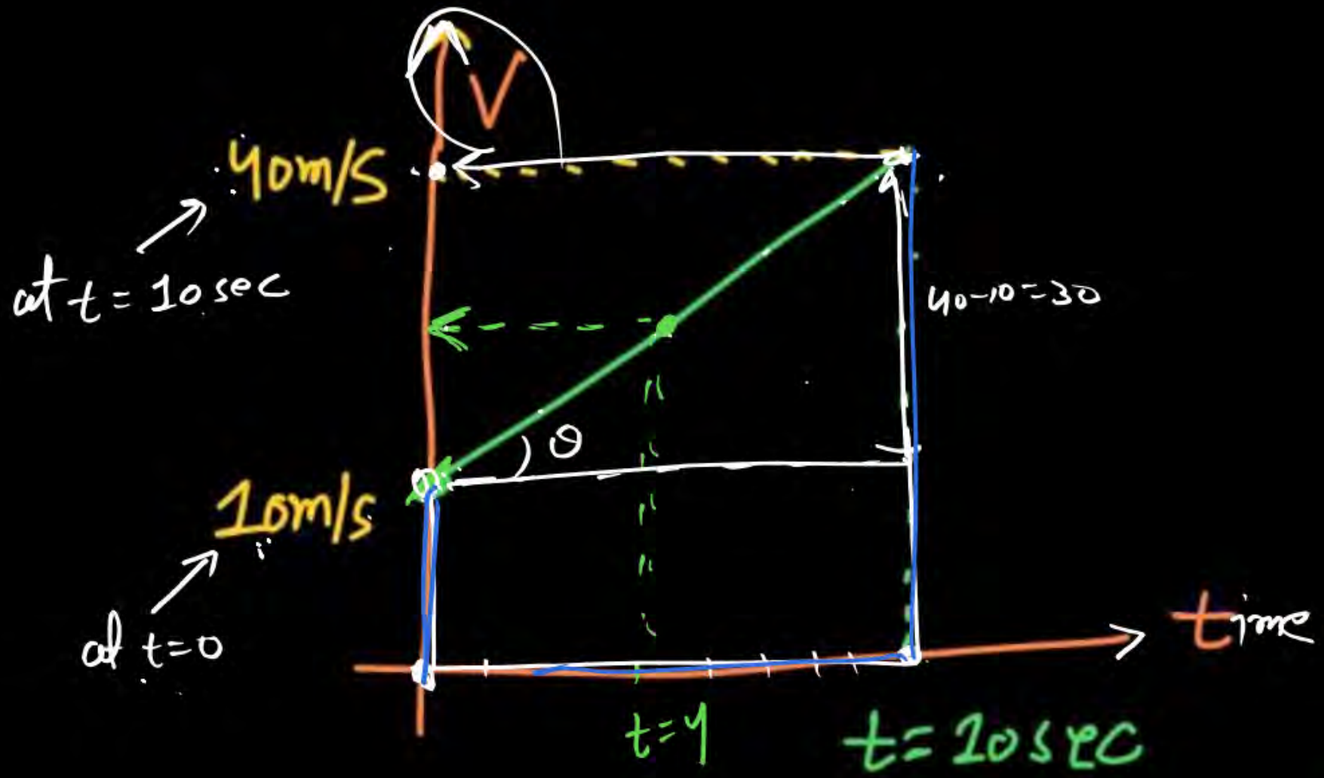
$$t_1 : t_2 = 1 : (\sqrt{2}-1)$$



(*)
$$t_1 : t_2 : t_2 = 1 : \sqrt{2}-1 : \sqrt{3}-\sqrt{2}$$

ratio of time in equal distance interval.

H/W देखते हैं :-



$$\text{acc}^n = \tan\theta = \frac{30}{10} = 3\,m/s^2$$

Start Point

find acc^n & velocity at t=4sec & displacement in 10sec.

slope

Area = $\frac{1}{2}\times(40+10)\times 10 = 250\,m$

1st method

$y = mx + c$

$v = 3x + 10$

$v_{t=4} = 3\times 4 + 10$

$= 12 + 10$

$= 22\,m/s$

(2nd method)

velocity at t=0 is 10m/s

acc^n = 3m/s^2

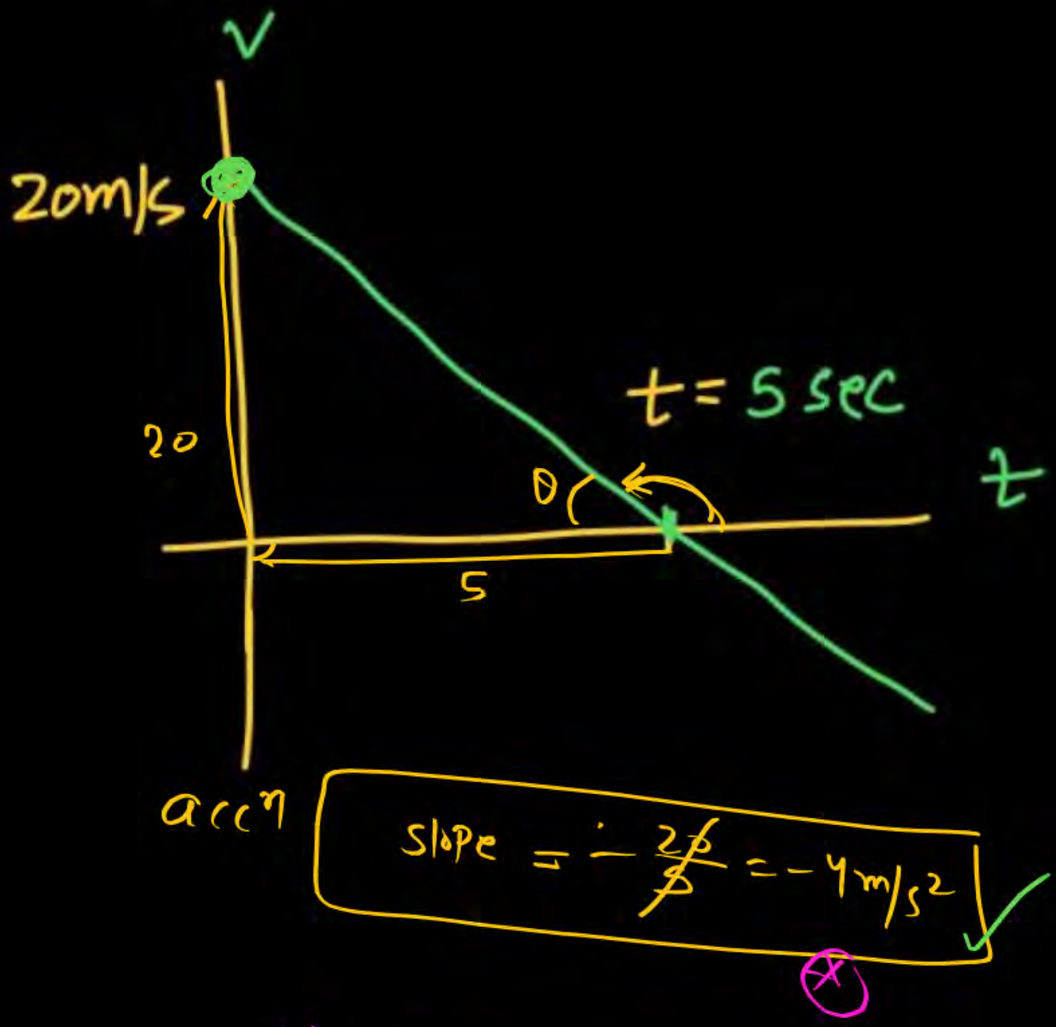
t=1 → 13

t=2 → 16

t=3 → 19

t=4 → 22

find velocity at $t = 4$ sec



$\text{slope} = -\frac{20}{5} = -4\ m/s^2$

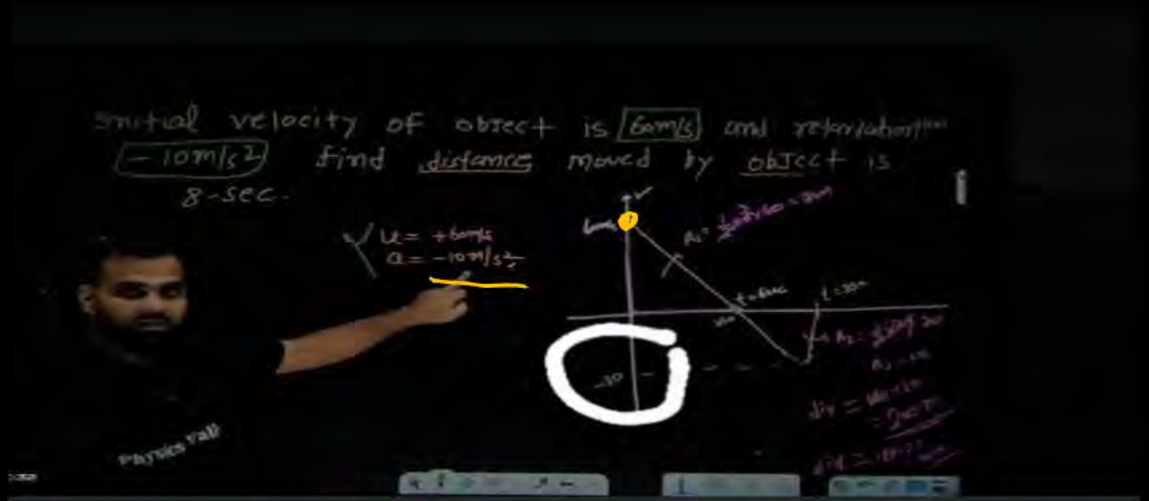
$V_f = 20 - 16 = 4\ m/sec$

Ans

$V = u + at$

$V = 20 - 4 \times 4$

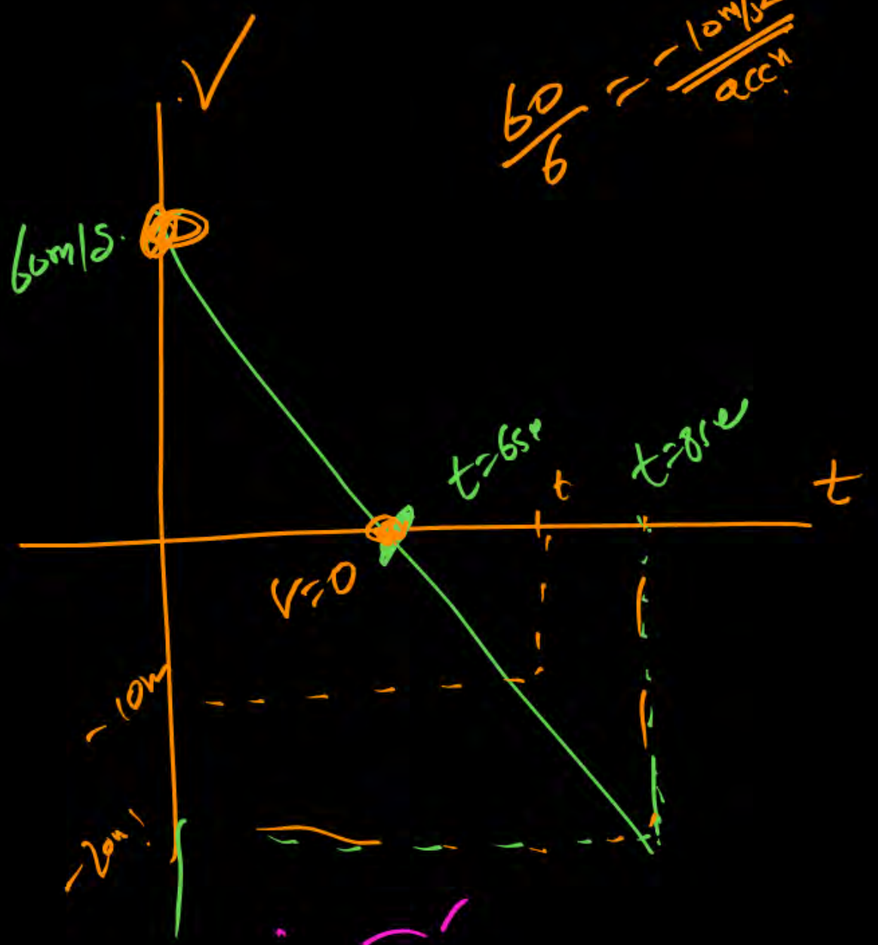
$V = 20 - 16 = 4\ m/sec$

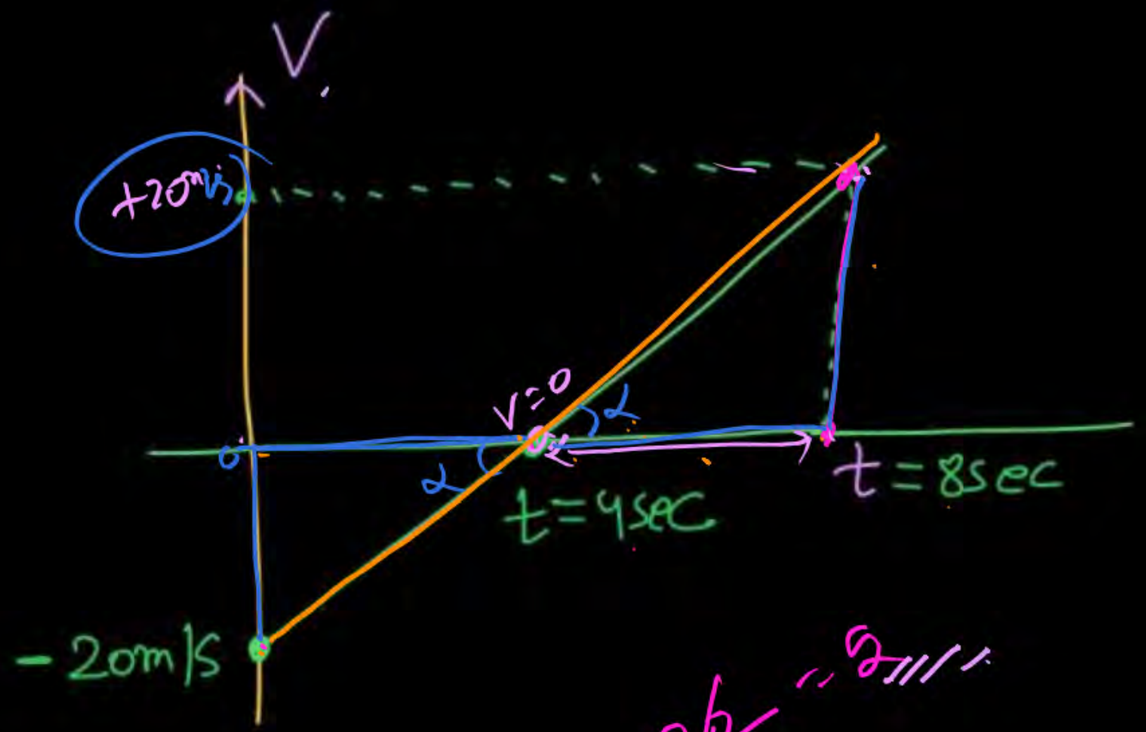


Ram lal Sam

@mrsir_mrstar

Sir isme velocity zero hone ke baad 1st sec. me object 10m chalega sir fir next second me 20m chalega kyuki acceleration -10 hai to total 30m hua par aapne 20m likha hai





find acceleration & velocity at $t = 8\,sec$.

$a = \frac{20}{4} = 5\,m/s^2$

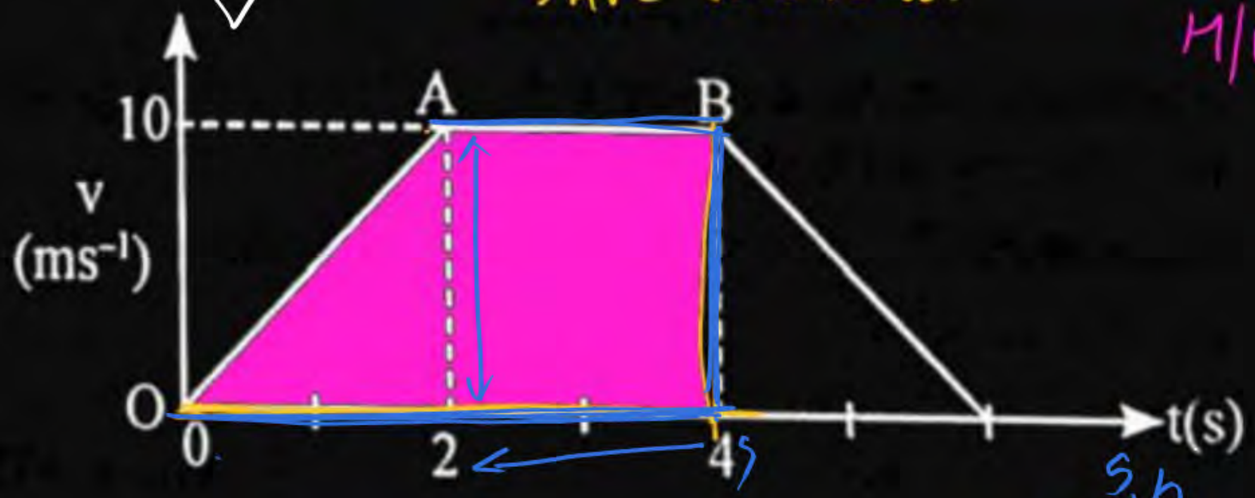
Question

The velocity-time graph of an object moving along a straight line is shown in figure. What is the distance covered by the object between $t = 0$ to $t = 4s$? [JEE Main 2025]

Are from 0 to 4s.

M/W

1. 10 m
2. 30 m
3. 13 m
4. 11 m



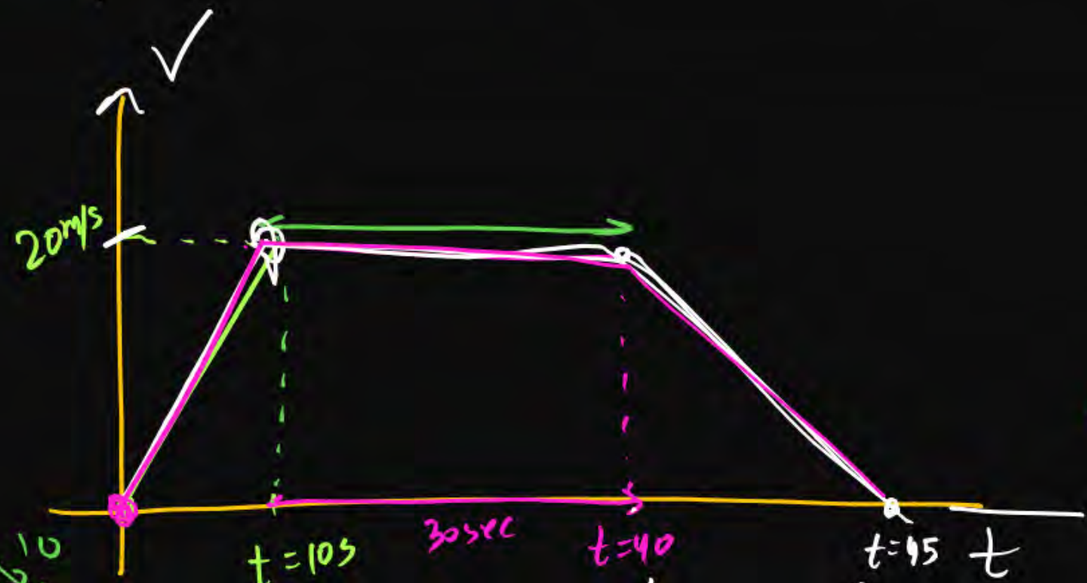
Area $= \frac{1}{2}(2+4) \times 5$

$= 6 \times 5 = 30$

Question

A particle starts from rest, accelerates at 2 m/s² for 10s and then goes with constant speed for 30s and then decelerates at 4 m/s² till it stops. What is the distance travelled by it

1. 750 m
2. 800 m
3. 700 m
4. 850 m



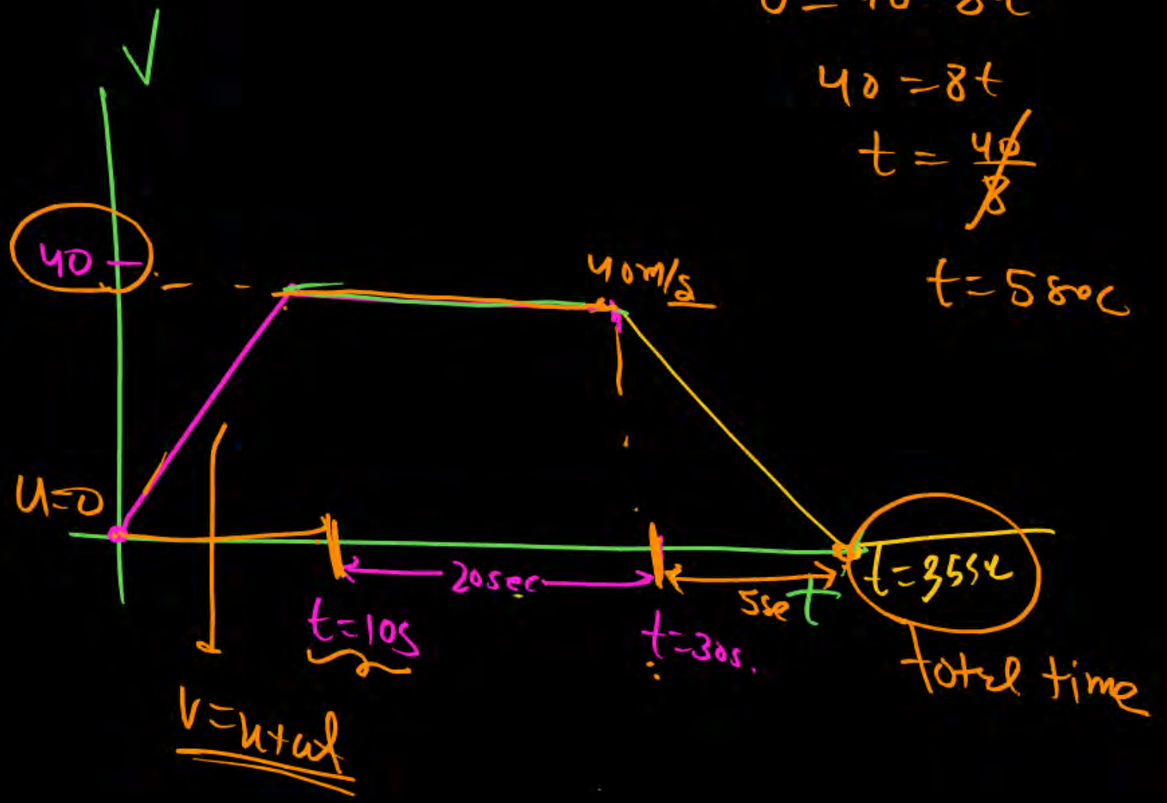
$$\text{Area} = \frac{1}{2}[45+30]\times 20$$

$$= 75 \times 10$$

$$= 750\text{m}$$

A Particle starts from rest and moves with constant acceleration 4m/s² for 10sec after that it moves with constant velocity for 20 more sec then it retards with 8m/s² and stop. find total distance moved by object.

Soln



$V = u + at$

$0 = 40 - 8t$

$40 = 8t$

$t = \frac{40}{8}$

$t = 5sec$

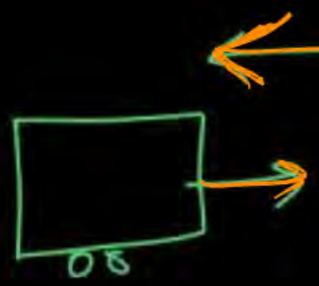
$= \frac{1}{2} \times 40 (35 + 20)$

$= 20 (55)$

$= 1100\ m$

H/W

Likho



find distance and displacement in 7 sec

$u = 10 m/s$

$a = -2 m/s^2$

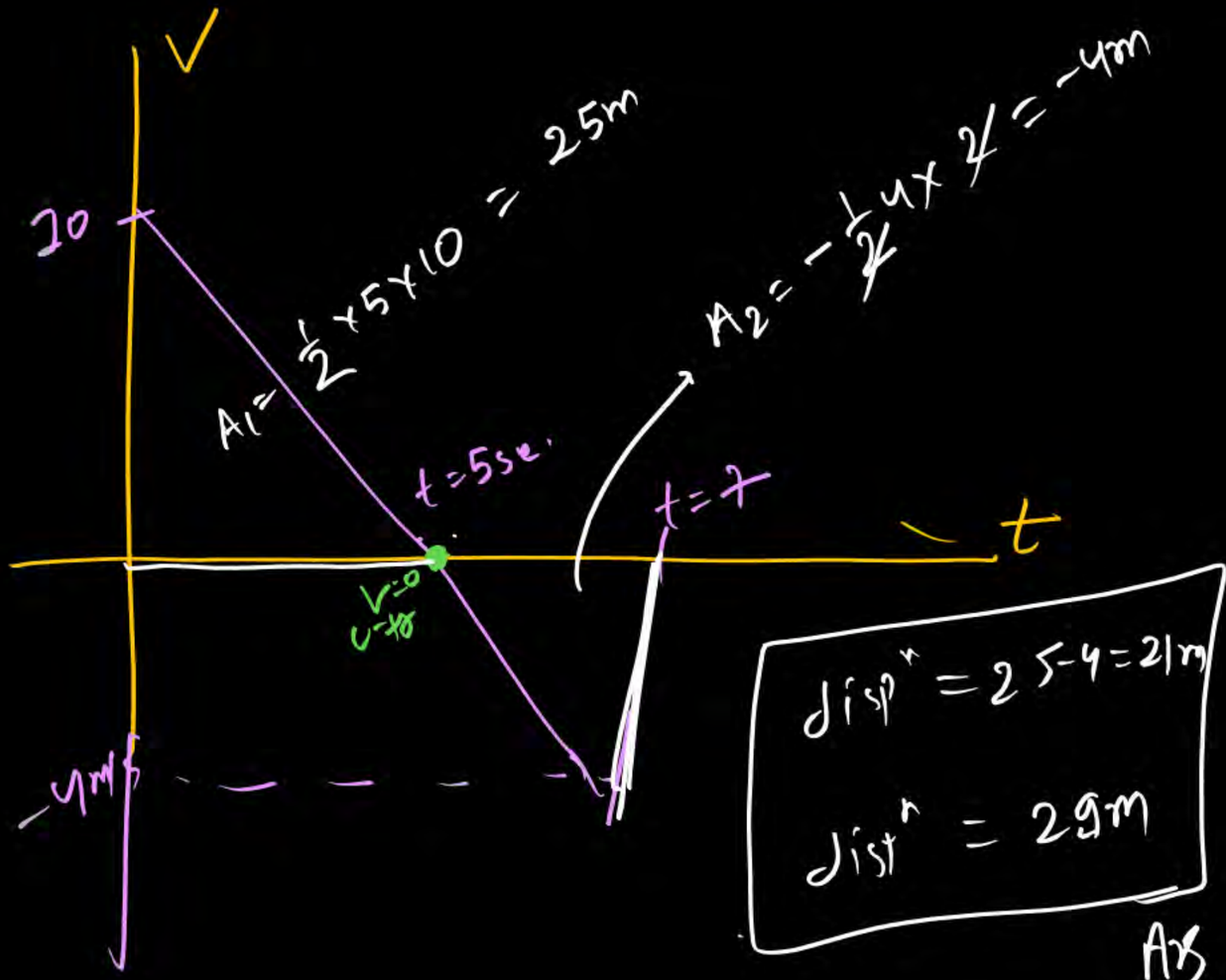
U-turn Kab lega

$V = u + at$

$0 = 10 - 2t$

$10 = 2t$

$t = 5 sec$



disp^n = 25 - 4 = 21m

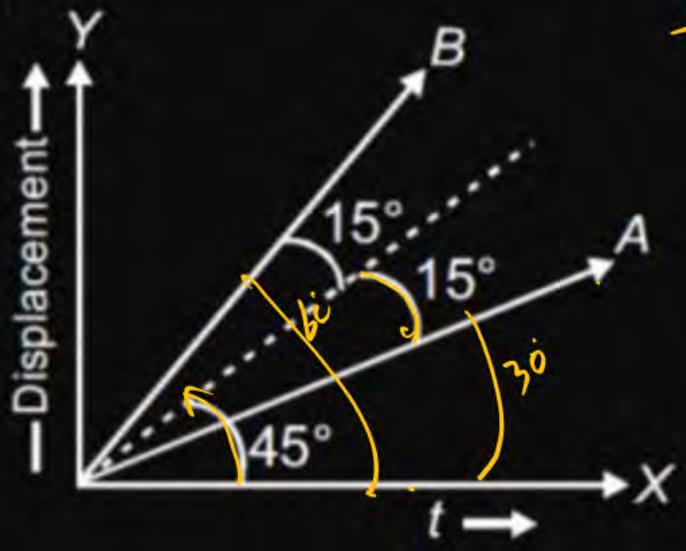
dist^n = 29m

Ans

Question

The displacement-time graph for two particles A and B is follows. The ratio v_A/v_B is

1. 1 : 2
2. 1 : $\sqrt{3}$
3. 13 : 1
4. 1 : 3



$\frac{v_A}{v_B} = \frac{\tan 30^\circ}{\tan 60^\circ}$

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

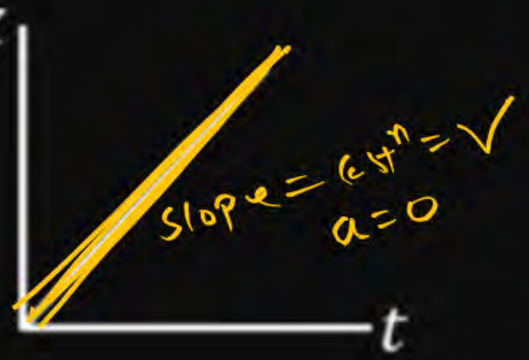
$= \frac{1}{3}$ Ans

H/W

Question

In which graph acceleration is non-zero constant?

1



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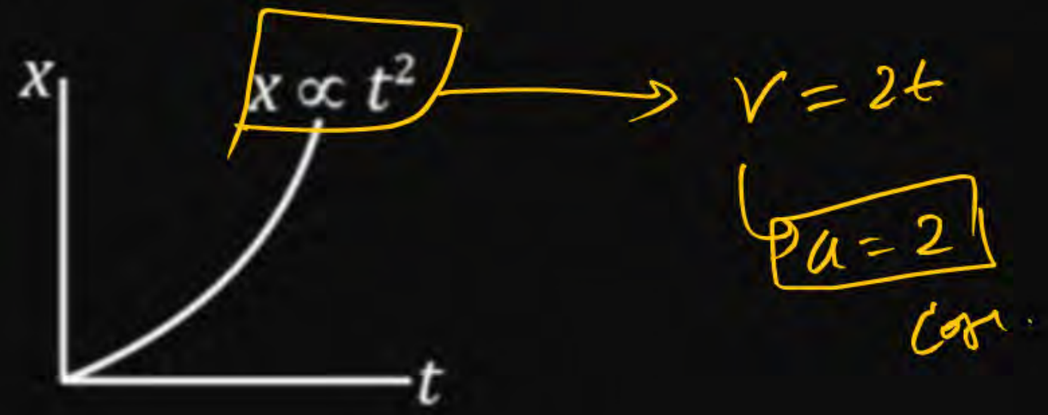

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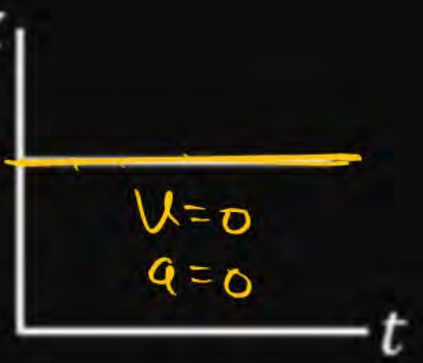


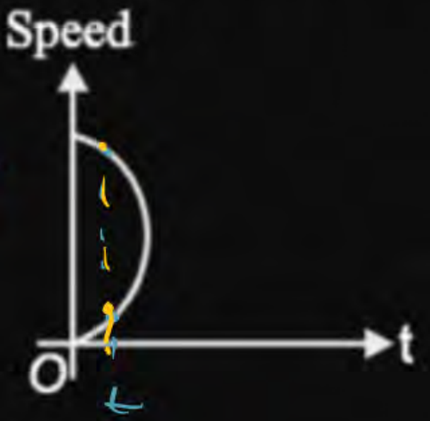
4 None of these

H/W

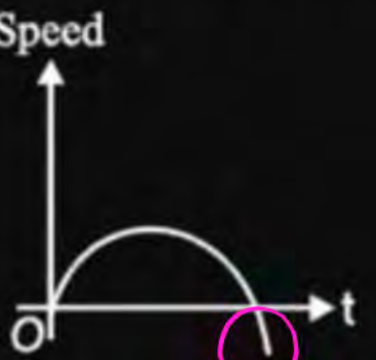
Question

Which one of the following graph for a body moving along a straight line is possible?

1

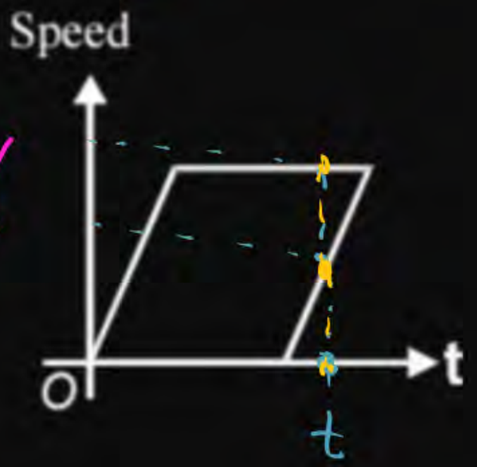


2

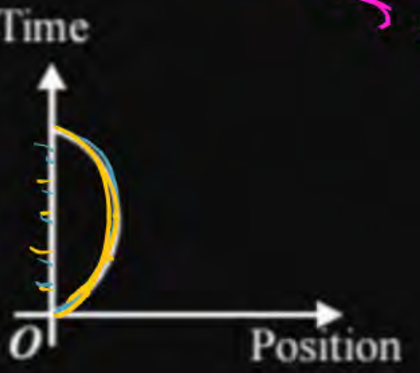


speed can't negative

3



4

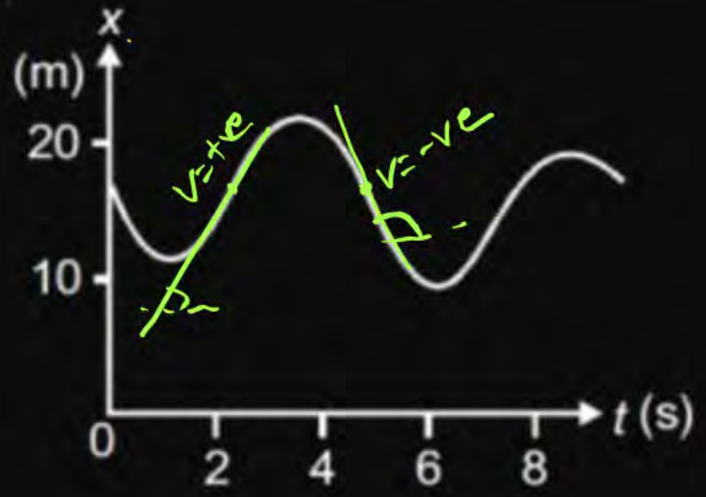


H/W

Question

Figure shows the position of a particle moving on the x-axis as a function of time

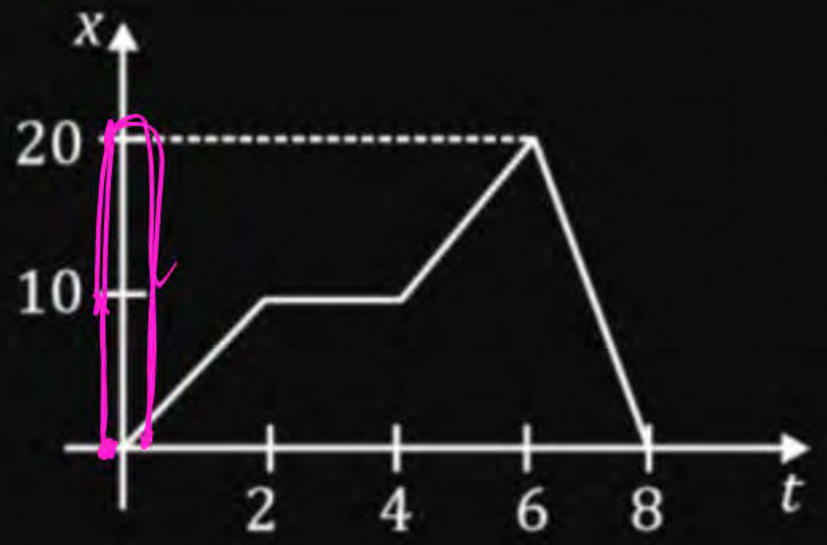
1. The particle has come to rest 4 times
2. The velocity at $t = 8$ s is negative
3. The velocity remains positive for $t = 2$ s to $t = 6$ s
4. The particle moves with a constant velocity



H/W

Question

Find avg speed and velocity in 8 sec.



Avg speed = $\frac{\text{total dist}}{t} = \frac{40}{8}$

Av = $\frac{\text{disp}}{t} = \frac{10}{8}$

H/W

Question

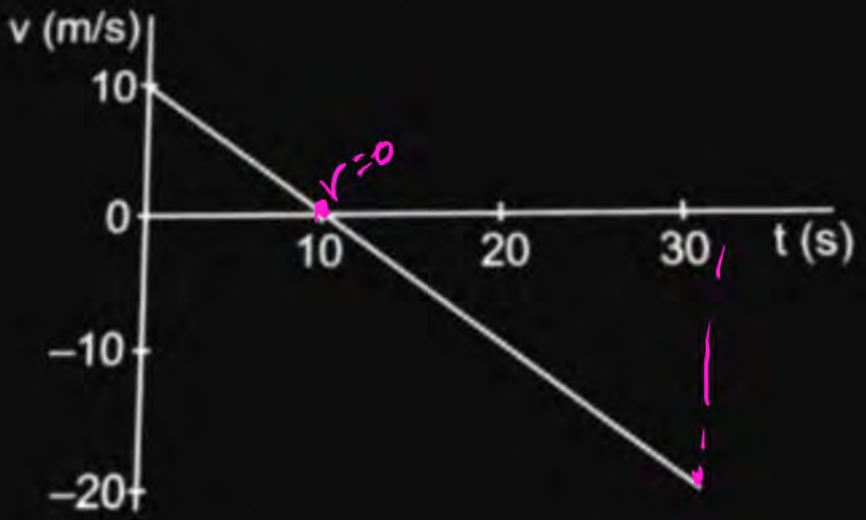
The velocity-time plot for a particle moving on a straight line shown in the figure

1. The particle has a constant acceleration

2. The particle has never turned around

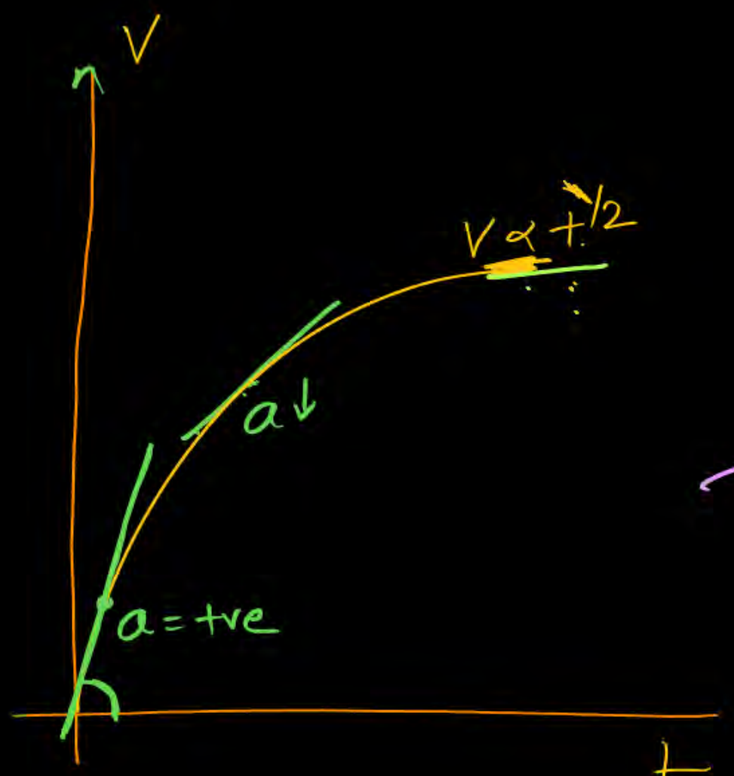
3. The particle has a zero displacement

4. The average speed in the interval 0 to 10s is the same as the average speed in the interval 10s to 30s

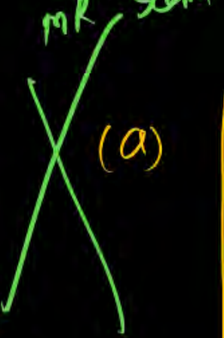


H/W

Likhahad

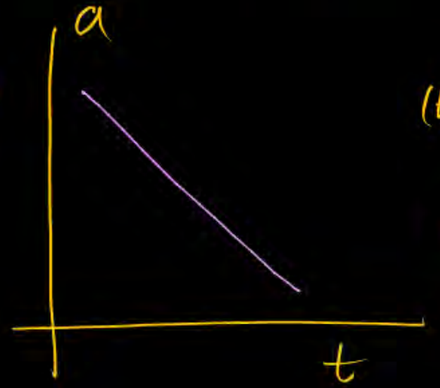


Which of the following graph b/w acc^n & time is correct :-
for given velocity - time graph :-

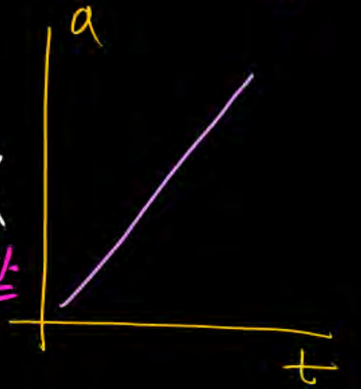


Convert a/t

(a)

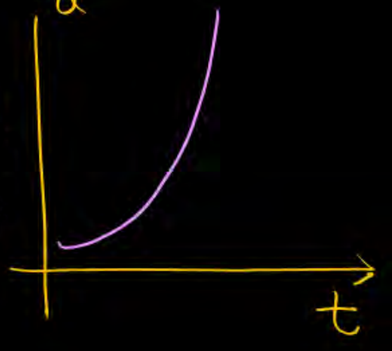


(b) ✗



(c) ✓

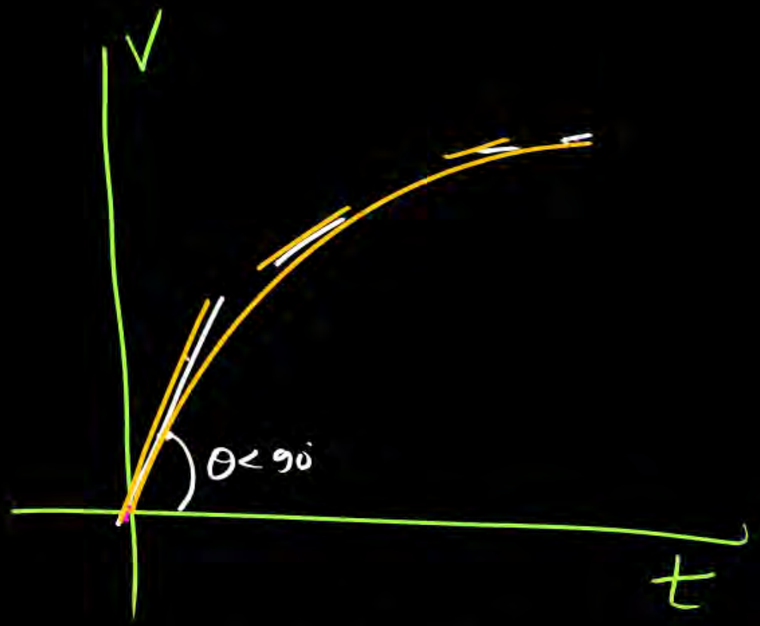
(d) ✗

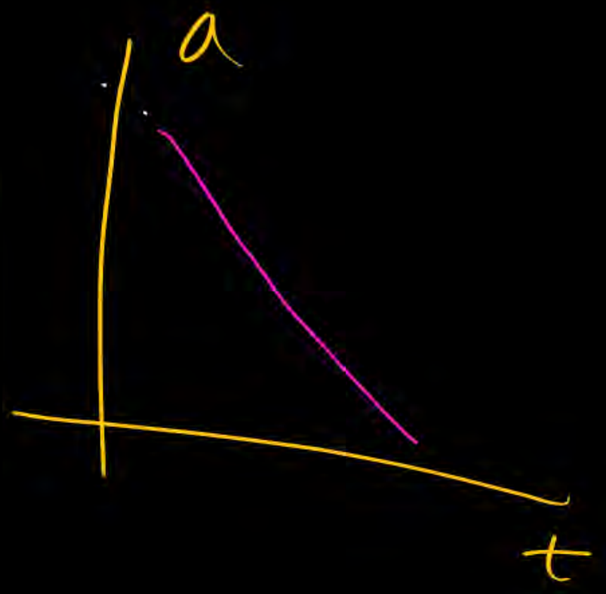


Slope of v/t graph is acc^n

$V \propto t^{1/2}$

$a = \frac{dv}{dt} = \frac{dt^{1/2}}{dt} = \frac{1}{2} t^{\frac{1}{2}-1} = \frac{1}{2} t^{-1/2} = \frac{1}{2\sqrt{t}}$





acc^{n} = +ve

Correct

Imp^{t} Box

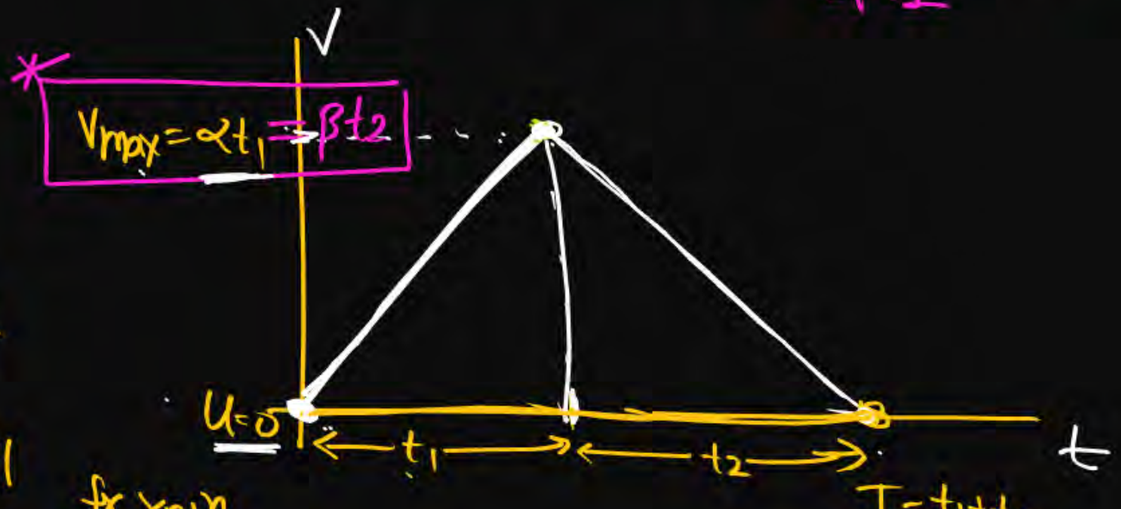
(*) gf eqn is not given then find nature of slope ⇒ Increasing decreasing. ✓

Question Ekta hai

Rest to Rest

Object starts his motion from rest and constant acceleration α for some time t_1; it retards with β and comes to at rest in time t_2 then find total distance travelled and V_{max}.

[IMPORTANT]



acc^n

$V = u + at$

$V = 0 + \alpha t_1$

$V = \alpha t_1$ (max)

for ret^n

$V = u + at$

$0 = V_{max} - \beta t_2$

$\beta t_2 = V_{max}$

"$t_1 + t_2 = T$"

$\frac{V_{max}}{\alpha} + \frac{V_{max}}{\beta} = T$

$V_{max}\left(\frac{1}{\alpha} + \frac{1}{\beta}\right) = T$

$V_{max}\left(\frac{\alpha+\beta}{\alpha\beta}\right) = T$

$V_{max} = \frac{\alpha\beta}{\alpha+\beta} T$

Total distn = Area of V/t

$= \frac{1}{2} T V_{max}$

$S = \frac{1}{2}\left(\frac{\alpha\beta}{\alpha+\beta}\right) T^2$ *

Q A car start from rest & moves with acc^n $= 10 m/s^2$ for time 5 sec and then it retards with $-5 m/s^2$ & comes to at rest then find total dist^n.

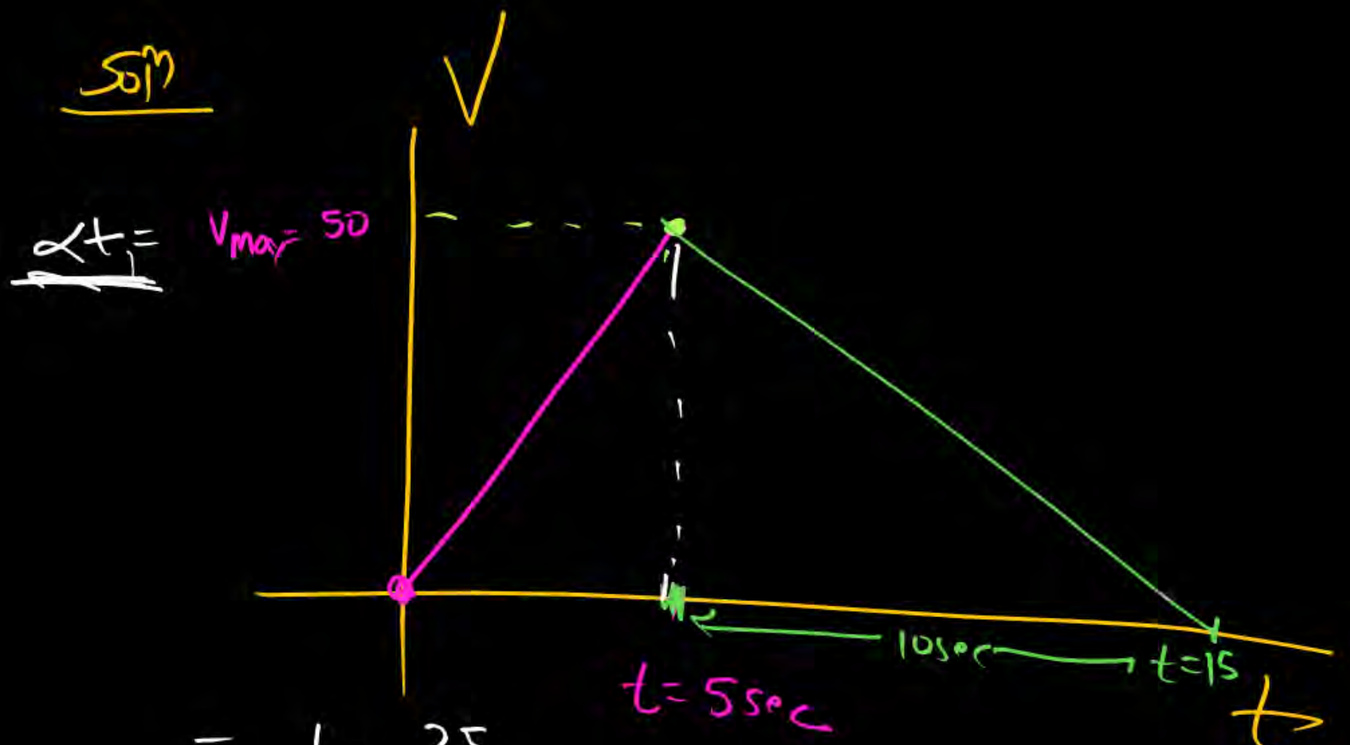
$V_{max} = 50 m/s$ for 1st^n.

$V = u + at$

$0 = 50 - 5t$

$t = \frac{50}{5} = 10 sec$

Sol^n



$= \frac{1}{2} \times 50 \times 15$

$S = 375 m$

Method-2

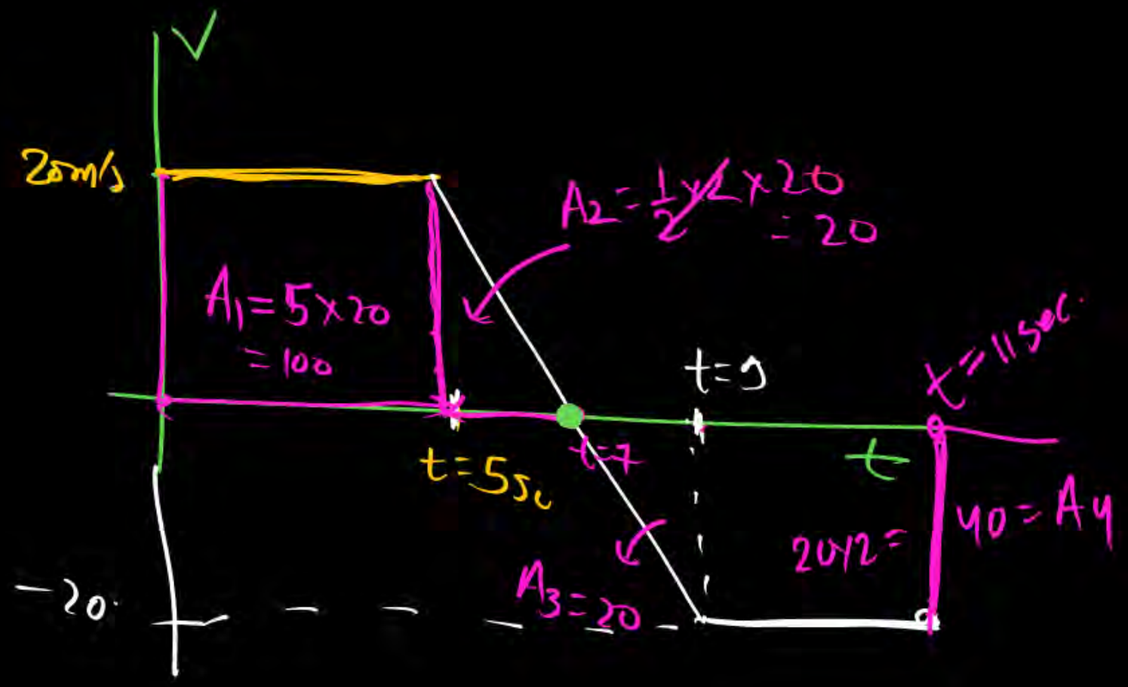
$S = \frac{1}{2} \frac{\alpha\beta}{\alpha+\beta} T^2$

$= \frac{1}{2} \times \frac{10 \times 5}{10+5} \times (15)^2$

$= 25 \times \frac{15 \times 15}{15} = 375$

Q) Object moving with uniform velocity 20m/s for 5sec after that it retards with $-10m/s^2$ for 4sec then find moves with cost^n for 2 more sec then find Total dist^n & disp^m.

Sol^n



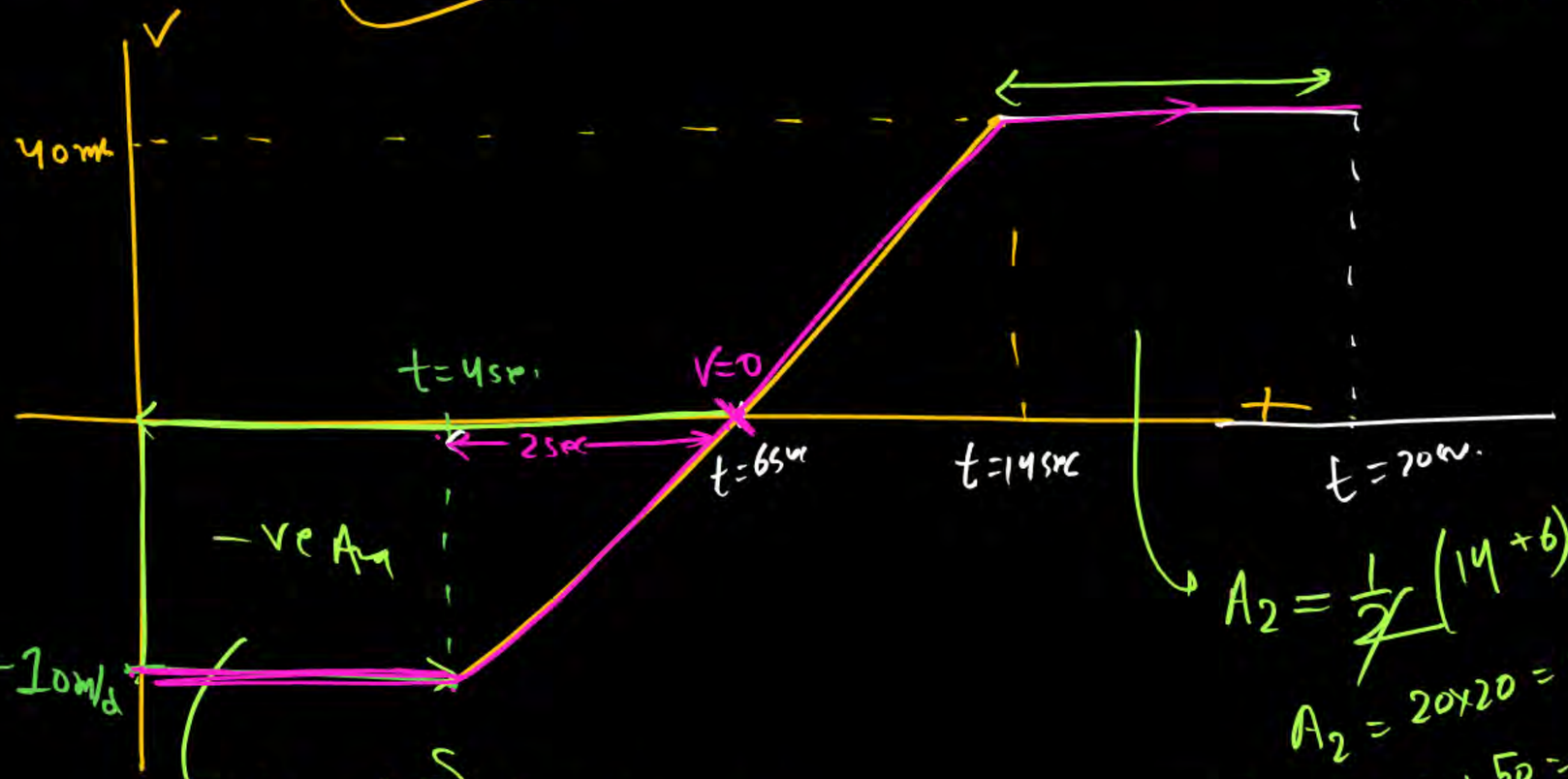
Total d = 100 + 20 + 20 + 40

= 180m

disp^m = 120 - 60 = 60m

Q) Object is moving with $-10 m/s$ for 4 sec after that it accelerate $a = +5 m/s^2$ for 10 sec and then move for const velocity for next 6 sec then find distance & displ^m.

Soln



(#) Rest me kab aayega

$v = u + at$

$0 = -10 + 5t$

$10 = 5t$

$t = 2 sec$

$A_1 = \frac{1}{2} \times 10 \times (6+4) = -50m$

$A_2 = \frac{1}{2}(14+6) \times 40$

$A_2 = 20 \times 20 = 400m$

$disp^n = 400 + 50 = 450m$

$disp^n = 400 - 50 = 350$

Question ** JEE

A car starts from rest and moves with uniform acceleration a on a straight road from time $t = 0$ to $t = T$. After that, a constant deceleration brings it to rest. In this process the average speed of the car is

(1) aT

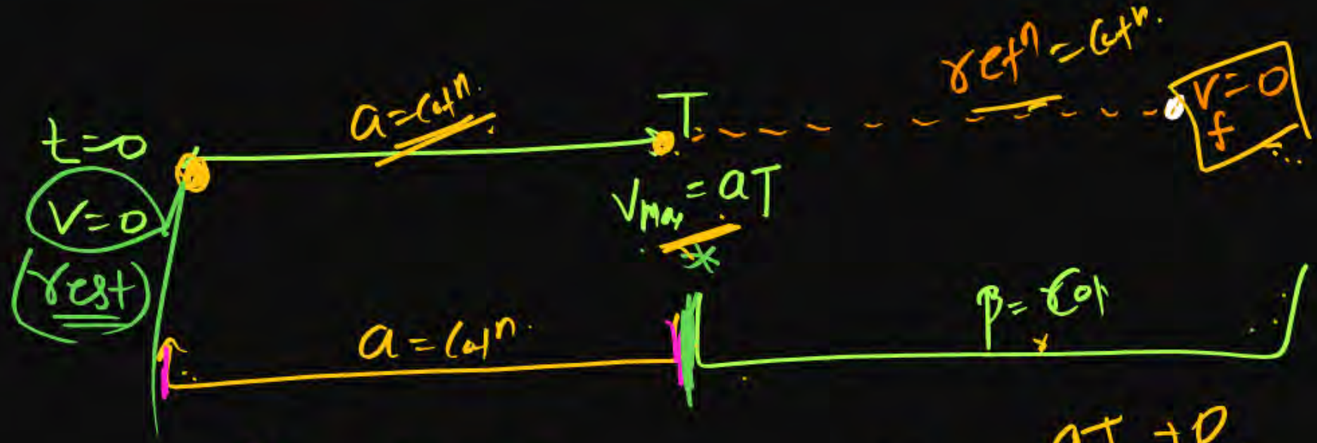
(2) $\frac{aT}{4}$

(3) $\frac{3aT}{2}$

(4) $\frac{aT}{2}$ ✓✓

(5) $v_{Av} = \frac{u+v}{2} = 0$ ✗ MR scam.

Avg velocity equal hoga (U-turn)



$v_{Avg} = \frac{0+aT}{2}$

$v_{Avg} = \frac{aT}{2}$ ✓

$v_{Av} = \frac{aT+0}{2}$

$v_{Av} = \frac{aT}{2}$ ✓

Solution

The correct option is **C** $\frac{aT}{2}$

For First part,

$u = 0$, $t = T$ and acceleration $= a$

$\therefore\ v = 0 + aT$ and $S_1 = 0 + \frac{1}{2}aT^2 = \frac{1}{2}aT^2$

For second part,

$u = aT$, retardation $= a_1$, $v = 0$ and time taken $= T_1$(let)

$\therefore\ 0 = u - a_1T_1 \Rightarrow aT = a_1T_1$

and from $v^2 = u^2 - 2aS_2 \Rightarrow S_2 = \frac{u^2}{2a_1} = \frac{1}{2}\frac{a^2T^2}{a_1}$

$S_2 = \frac{1}{2}aT \times T_1$ (As $a_1 = \frac{aT}{T_1}$)

$\therefore\ V_{av} = \frac{S_1+S_2}{T+T_1} = \frac{\frac{1}{2}aT^2+\frac{1}{2}aT\times T_1}{T+T_1}$

$= \frac{\frac{1}{2}aT(T+T_1)}{T+T_1} = \frac{1}{2}aT$

One is half calculate
5-times eqn of motion

3rd eqn of motion

Question

H/W Ghar pr

The engine of a motor cycle can produce maximum acceleration 5 m/s^2. It can produce maximum retardation 10 m/s^2 what is then minimum time in which he will cover a distance of 1.5 km.

1. 5 sec
2. 15 sec
3. 10 sec
4. 30 sec

Question HW

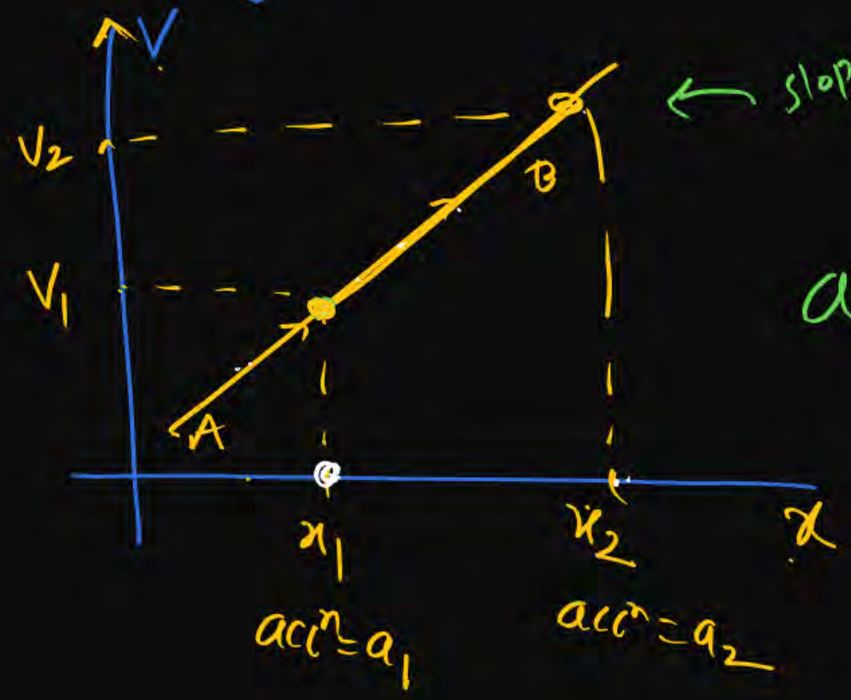
Reaction time

A car is moving with 20 m/s suddenly driver of car observes a stationary truck ahead of 100 m distance after some reaction time drive apply a break of conrt. retardation 4 m/s^2. find out maximum reaction time to prevent the collision?

Velocity-Position Graph

Likho

V-x graph



← slope is const^n straight line

acc^n = slope × v ↑
const^n

acc^n Increasing

$a_1 < a_2$

$Slope = \frac{dv}{dx}$ not acc^n

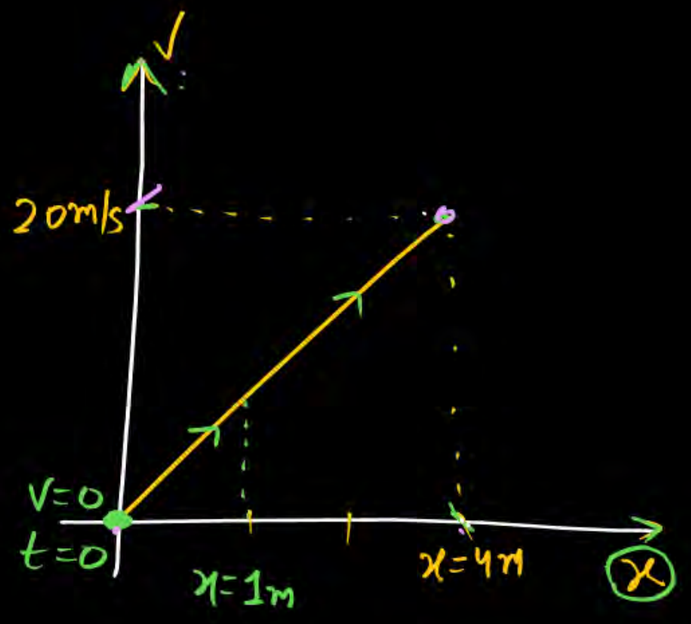
multiply by v both side

$v\,slope = v\frac{dv}{dx}$

$\boxed{acc^n = v \times slope}$

$acc^n = V \times (\text{Slope of } v/x \text{ graph})$

find acc^n at $x = 1m$



$y = mx + c$

$V = 5x + 0$

$V = 5 \times 1$

$V = 5$

$V \propto x$

$\downarrow$

$\frac{dv}{dx} = 1$

$acc^n = v\frac{dv}{dx} = x \times 1$

$acc \propto x$

Slope $= \frac{20-0}{4-0} = \frac{20}{4} = 5$

acc^n = V x slope

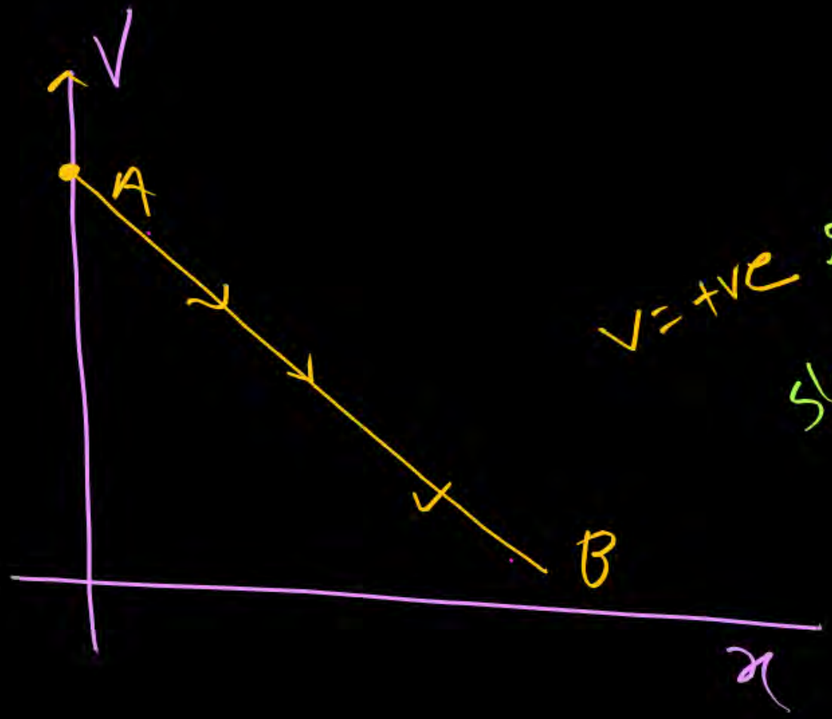
acc^n = 5 x [V at x=1]

= 5 x 5

= 25 m/s^2

acc^n at x=4m = u x slope = 20 x 5

= 100 m/s^2



V = +ve & decr

slope = -ve cotⁿ

Nature of accⁿ in this graph :—

Solⁿ

accⁿ = V × slope

= (+ve मैं value) × (-ve cotⁿ)

= −(↓)

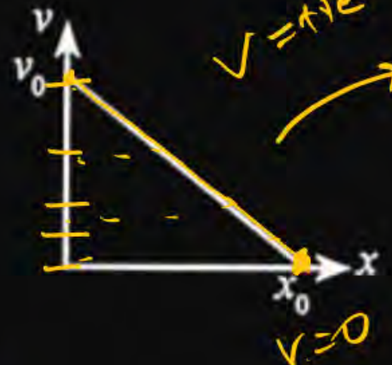
= -ve में value कम होगी

−20, −10, −5

Question

The given graph shows the variation of velocity with displacement. Which one of the graph given below correctly represents the variation of acceleration with displacement?

[JEE Adv. 2015]



V = +ve → V = +ve ↓ slope = -ve (constant)

V = 0

V = +ve ↓ (decreasing)

a = V × slope

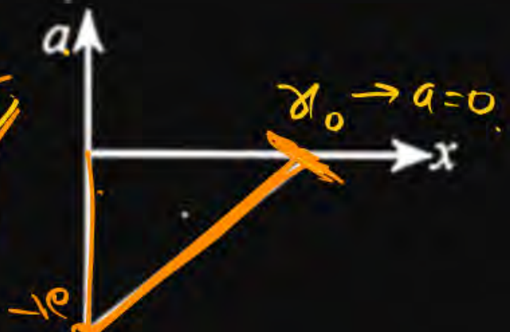
= (+ve ↓) (-ve constant)

= − [↓ × (-ve)]

= -ve decreasing

at $x = x_0$ V = 0, a = 0

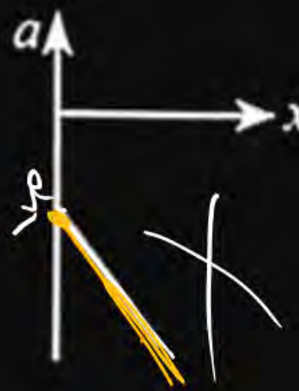
1

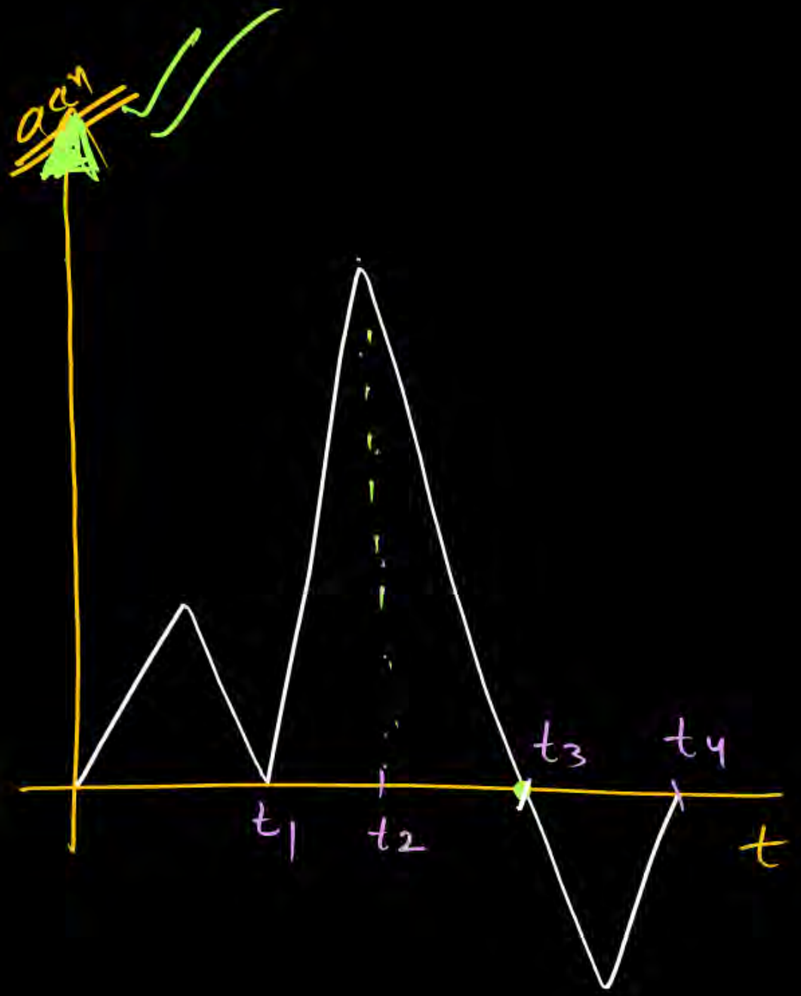


2

3

4





acc^n is max^m at :??

(a) t_1

(b) t_2 ✓

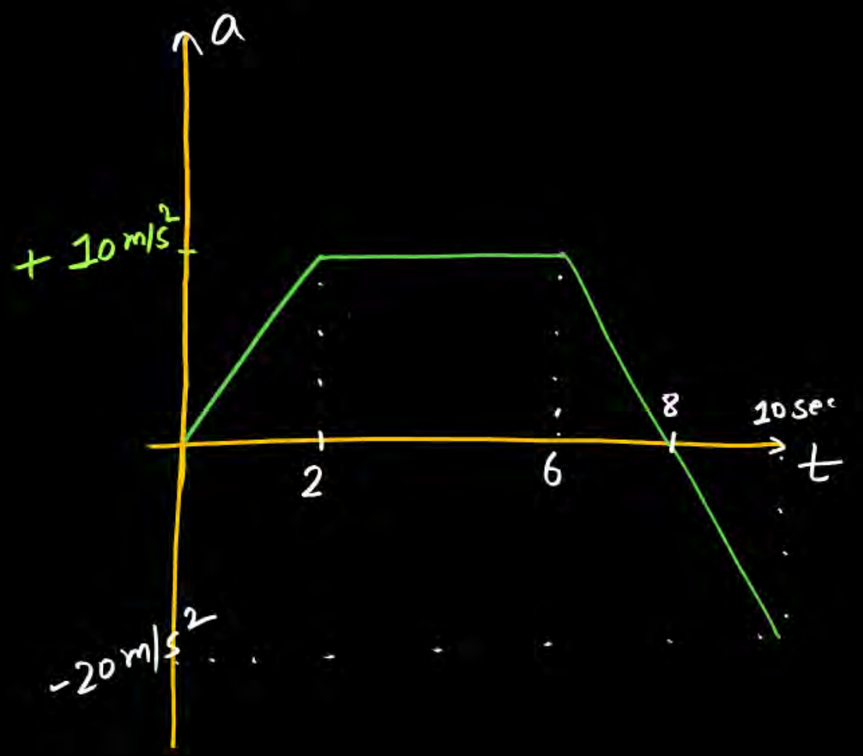
~~(c) t_3~~

(d) t_4

Velocity max^m at t_3
but accn max^m at t_2

Area of a/t graph is change in velocity

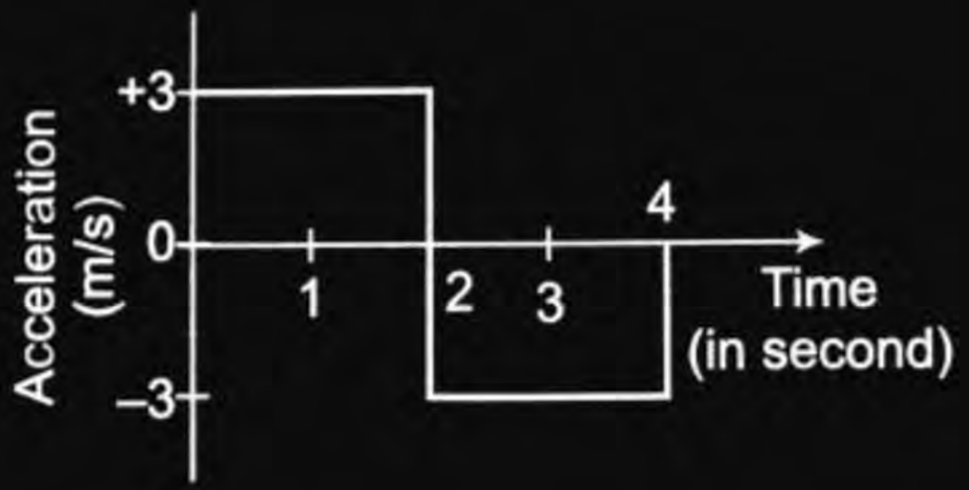
If intial velocity of object is $-10\,m/s$, Then find velocity at $t = 8\,sec$



H/W

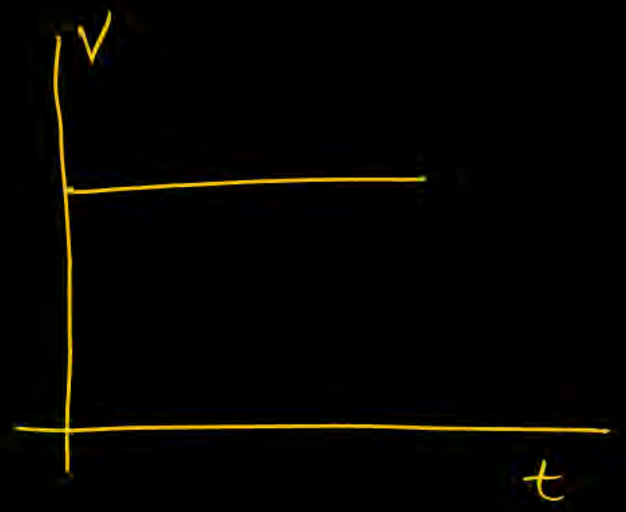
Question

A particle starts from rest at $t = 0$ and moves in a straight line with an acceleration as shown below. The velocity of the particle at $t = 3s$ is

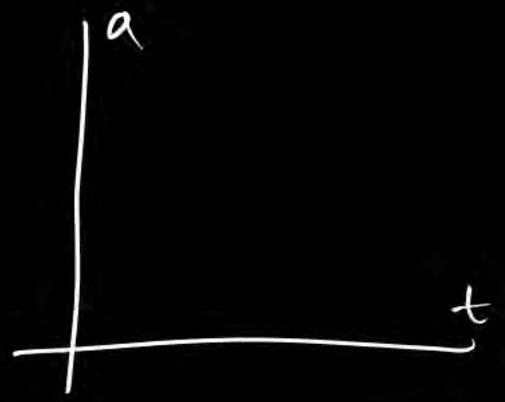


1. 2 m/s
2. 3 m/s
3. 4 m/s
4. 6 m/s

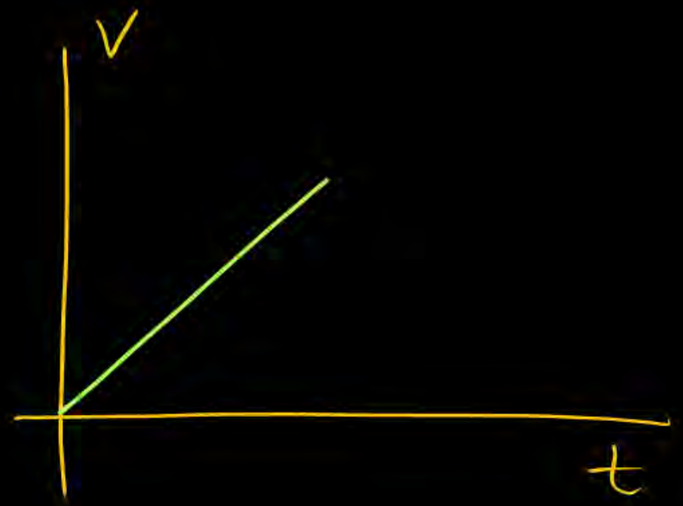
H/W



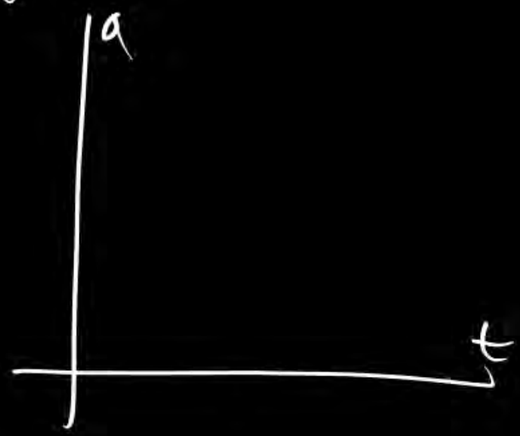
convert into a/t



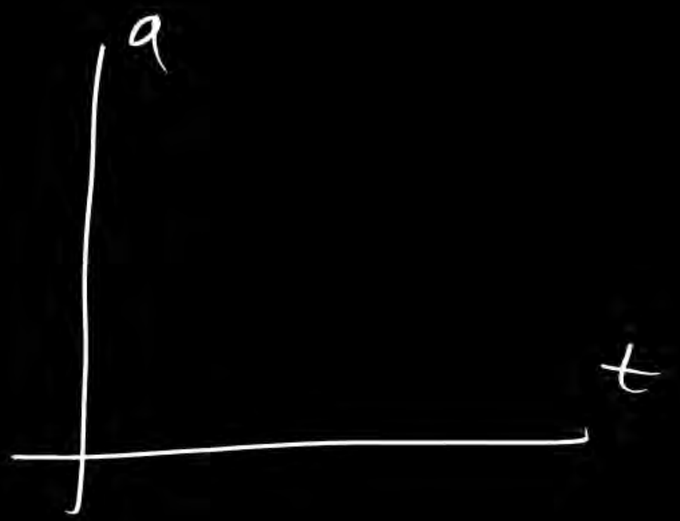
H/W



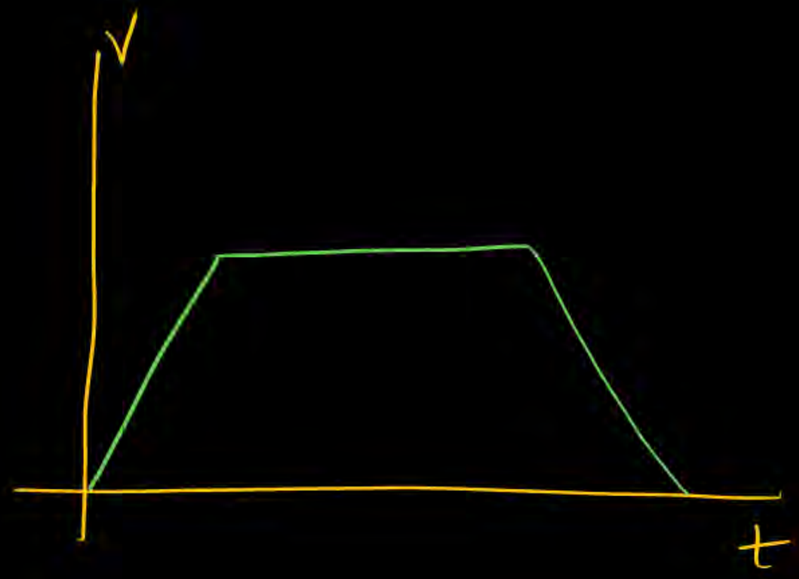
Convert a/t



Convert (a/t)



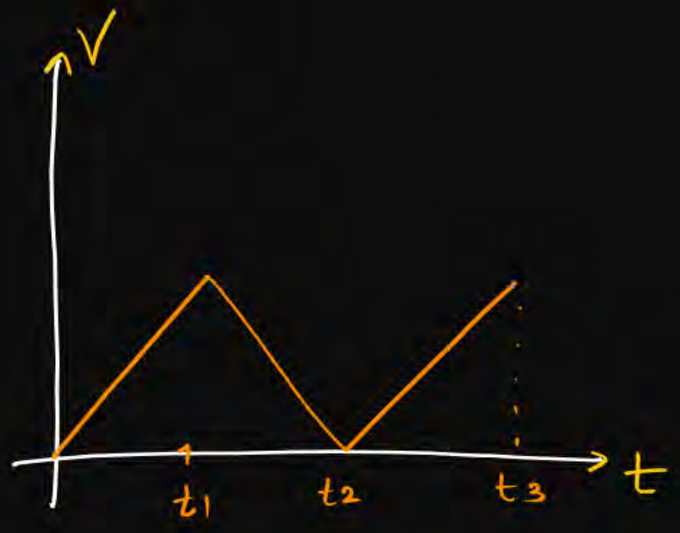
11/10



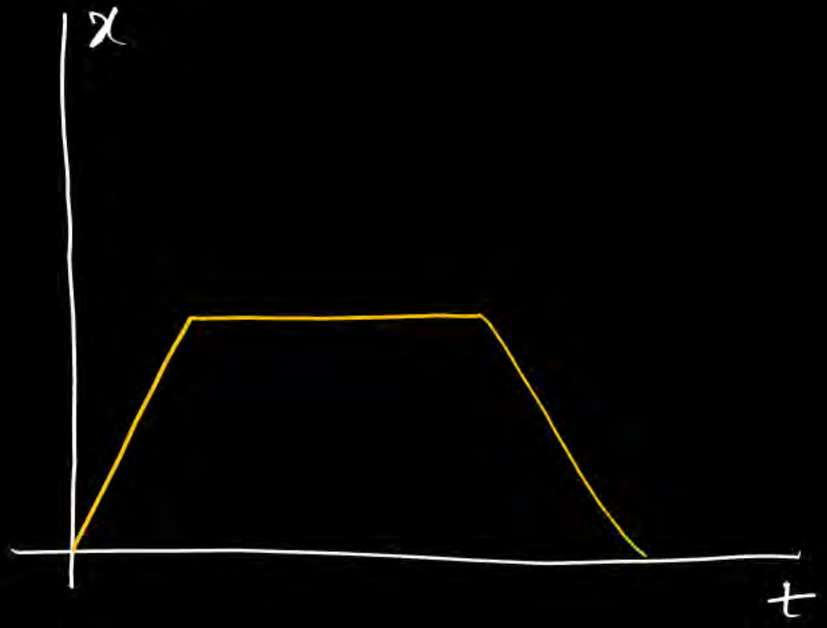
Convert alt

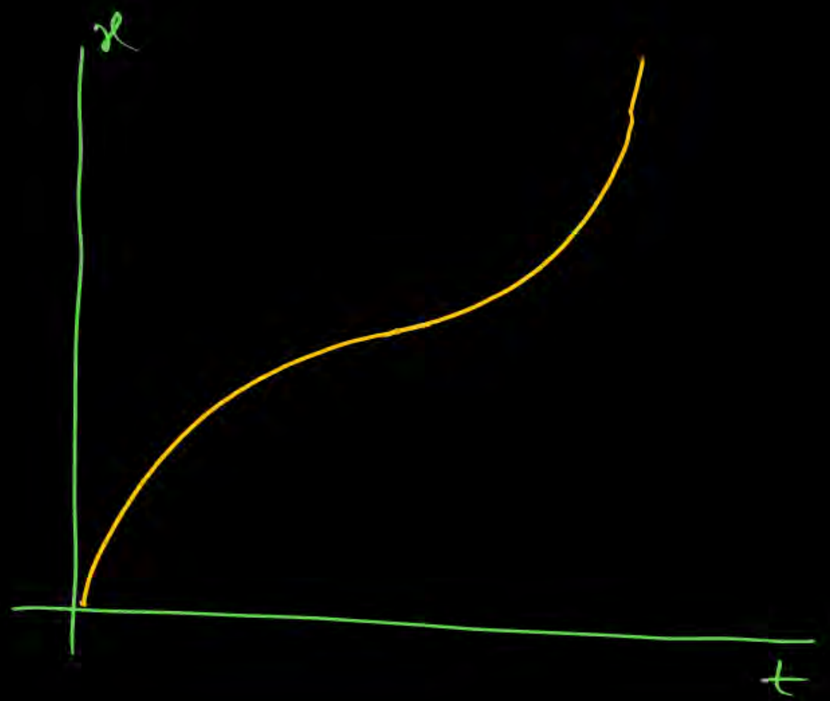
Graph Conversion

Convert v/t graph into a/t and x/t



Convert x/t into v/t and a/t





Convert into V/t

Py Q

Kar ke dekho

1 - line ~~#~~

Sare honge....

Question

The position x of a particle varies with time, (t) as $x = at^2 - bt^3$. The acceleration will be zero at time t is equal to: [1997]

1. $\frac{a}{3b}$
2. Zero
3. $\frac{2a}{3b}$
4. $\frac{a}{b}$

Question

The velocity of train increases uniformly from 20 km/h to 60 km/h in 4 hours. The distance travelled by the train during this period, is [1994]

1. 160 km
2. 180 km
3. 100 km
4. 120 km

Question

A car accelerates from rest at a constant rate α for some time after which it decelerates at a constant rate β and comes to rest. If total time elapsed is t, then maximum velocity acquired by car will be: [1994]

1. $\frac{(\alpha^2 - \beta^2)t}{\alpha\beta}$
2. $\frac{(\alpha^2 + \beta^2)t}{\alpha\beta}$
3. $\frac{(\alpha + \beta)t}{\alpha\beta}$
4. $\frac{\alpha\beta t}{\alpha + \beta}$

Question

A particle moves along a straight line such that its displacement at any time t is given by $s = (t^3 - 6t^2 + 3t + 4)$ metres. The velocity when the acceleration is zero is: **[1994]**

1. 3 m/s
2. 42 m/s
3. –9 m/s
4. –15 m/s

Question

A body starts from rest, what is the ratio of the distance travelled by the body during the 4^{th} and 3^{rd} second? [1993]

1. 7/5
2. 5/7
3. 7/3
4. 3/7

Question

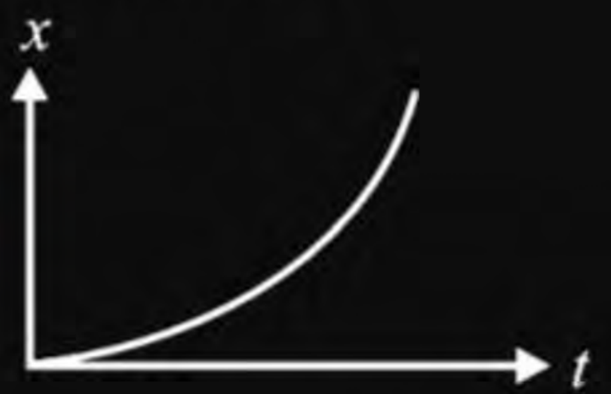
A car is moving along a straight road with a uniform acceleration. It passes through two points P and Q separated by a distance with velocity 30 km/h and 40 km/h respectively. The velocity of the car midway between P and Q is: **[MR* 1988]**

1. 33.3 km/h
2. $20\sqrt{2}$ km/h
3. $25\sqrt{2}$ km/h
4. 35 km/h

Question

The position-time (x-t) graph for positive acceleration is: [2022 Re]

1. 

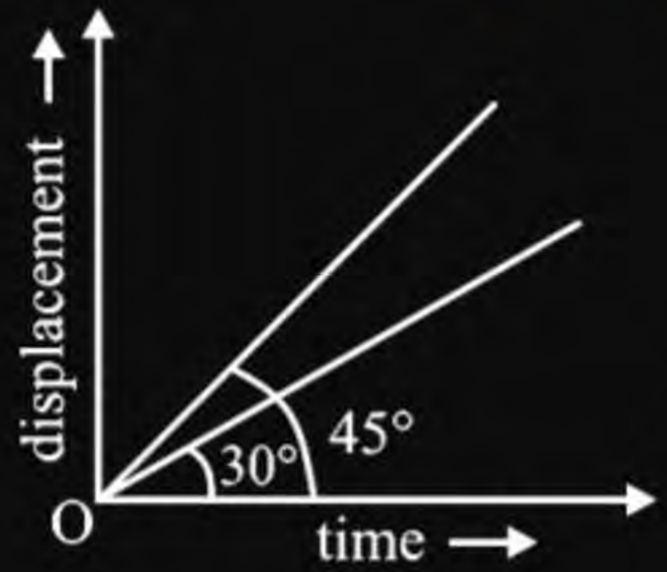
2. 

3. 

4. 

Question

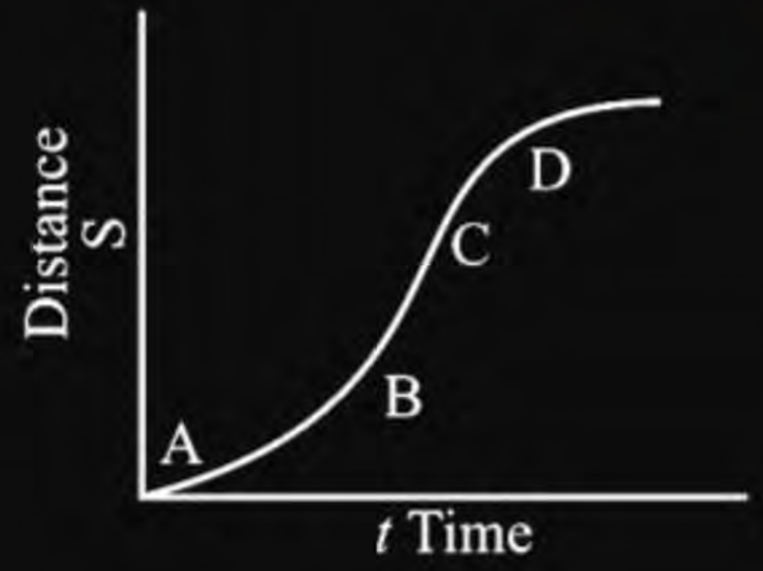
The displacement time graphs of two moving particle make angles of 30° and 45° with the x-axis as shown in the figure. The ratio of their respective velocity is: [2022]



1. $1:\sqrt{3}$
2. $\sqrt{3}:1$
3. $1:1$
4. $1:2$

Question

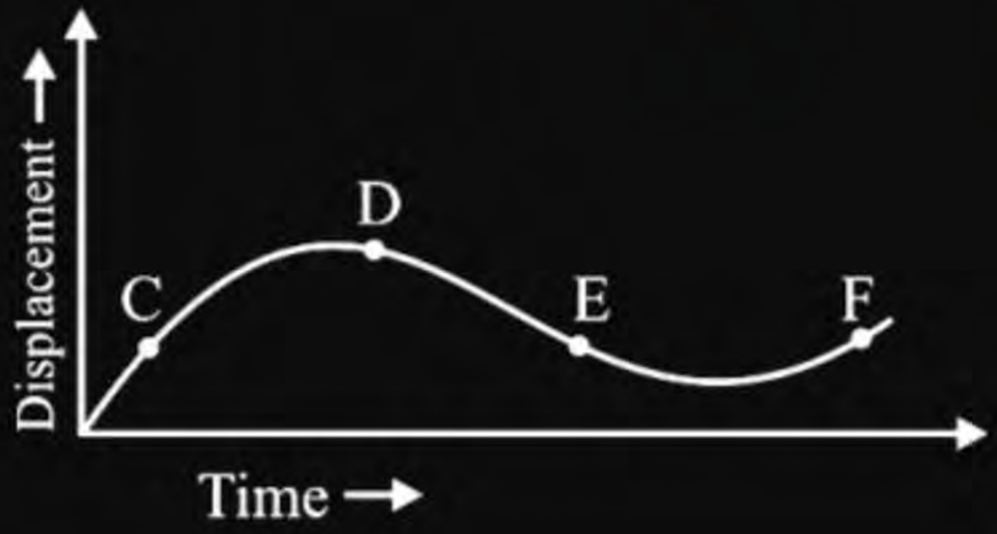
A particle shows distance-time curve as given in this figure. The maximum instantaneous velocity of the particle is around the point [2008]



1. D
2. A
3. B
4. C

Question

The displacement-time graph of a moving particle is shown below. The instantaneous of the particle is negative at the point: [MR* 1994]



1. E
2. F
3. C
4. D

Question

Which of the following curve does not represent motion in one dimension? **[MR* 1992]**

1

2

3

4

Question

The displacement x of a particle varies with time t as $x = ae^{-\alpha t} + be^{\beta t}$, where a, b, α and β are positive constants. The velocity of the particle will [2005]

1. be independent of β
2. drop to zero when $\alpha = \beta$
3. go on decreasing with time
4. go on increasing with time

Question

For a particle displacement time relation is $t = \sqrt{x} + 3$. Its displacement when its velocity is zero: [1999]

1. 2 m
2. 4 m
3. 0
4. None of these

Question

The acceleration of a particle is increasing linearly with time t as bt. The particle starts from origin with an initial velocity v_0. The distance travelled by the particle in time t will be: [1995]

1. $v_0 t + \frac{1}{3} bt^2$
2. $v_0 t + \frac{1}{2} bt^2$
3. $v_0 t + \frac{1}{6} bt^3$
4. $v_0 t + \frac{1}{3} bt^3$

Question

A bus travelling the first one-third distance at a speed of 10 km/h, the next one-third at 20 km/h and at last one-third at 60 km/h. The average speed of the bus is: **[MR* 1997]**

1. 9 km/h
2. 16 km/h
3. 18 km/h
4. 48 km/h

Question

A car moves a distance of 200 m. It covers the first half of the distance at speed 40 km/h and the second half of distance at speed v. The average speed is 48 km/h. The value of v is: [1991]

1. 56 km/h
2. 60 km/h
3. 50 km/h
4. 48 km/h

Question

A car covers the first half of the distance between two places at 40 km/h and another half at 60 km/h. The average speed of the car is: [1990]

1. 40 km/h
2. 48 km/h
3. 50 km/h
4. 60 km/h

Question

A particle of unit mass undergoes one dimensional motion such that its velocity varies according to $v(x) = \beta x^{-2n}$ where β and n are constants and x is the position of the particle. The acceleration of the particle as a function of x, is given by: **[2015]**

1. $-2n\,\beta^2 x^{-4n-1}$
2. $-2n\,\beta^2 x^{+2n+1}$
3. $-2n\,\beta^2 x^{-4n+1}$
4. $-2n\,\beta^2 x^{-2n-1}$

Question

The motion of a particle along a straight line is described by equation: $x = 8 + 12t - t^3$ where x is in metre and t in second. The retardation of the particle when its velocity becomes zero, is **[2012 Pre]**

1. $24\ ms^{-2}$
2. Zero
3. $6\ ms^{-2}$
4. $12\ ms^{-2}$

Question

A particle moves a distance x in time t according to equation $x = (t + 5)^{-1}$. The acceleration of particle is proportional to **[2010 pre]**

1. $(\text{velocity})^{2/3}$
2. $(\text{velocity})^{3/2}$
3. $(\text{distance})^{2}$
4. $(\text{distance})^{-2}$

Question

A particle starts its motion from rest under the action of a constant force. If the distance covered in first 10 seconds is S_1 and that covered in the first 20 seconds is S_2, then: [2009]

1. $S_2 = 3S_1$
2. $S_2 = 4S_1$
3. $S_2 = S_1$
4. $S_2 = 2S_1$

Question

The distance travelled by a particle starting from rest and moving with an acceleration $\frac{4}{3}\,ms^{-2}$, in the third second is [2008]

1. $\frac{10}{3}$ m
2. $\frac{19}{3}$ m
3. 6 m
4. 4 m

Question

A particle moves in a straight line with a constant acceleration. It changes its velocity form 10 ms^{-1} to 20 ms^{-1} while passing through a distance 135 m in to second. The value of t is [2008]

1. 12
2. 9
3. 10
4. 1.8

Question

The position x of a particle with respect to time t along x-axis is given by $x = 9t^2 - t^3$ where x in metres and t in second. What will be the position of this particle when it achieves maximum speed along the +ve x direction? [2007]

1. 54 m
2. 81 m
3. 24 m
4. 32 m

Question

Motion of a particle is given by equation $S = (3t^3 + 7t^2 + 14t + 8)$m. The value of acceleration of the particle at $t = 1$ sec is: **[MR* 2000]**

1. $10\ m/s^2$
2. $32\ m/s^2$
3. $23\ m/s^2$
4. $16\ m/s^2$

Question

A particle starts from rest with constant acceleration. The ratio of average velocity to the time average velocity is: [2000]

1. 1/2
2. 3/4
3. 4/3
4. 3/2

Question

If a car at rest accelerates uniformly to a speed of 144 km/h in 20 sec, it covers a distance of [1997]

1. 1440 cm
2. 2980 cm
3. 20 m
4. 400 m

Question

A vehicle travels half the distance with speed v and the remaining distance with speed $2v$. Its average speed is: [2023]

1. $\frac{3v}{4}$
2. $\frac{v}{3}$
3. $\frac{2v}{3}$
4. $\frac{4v}{3}$

Question

Two cars P and Q start from a point at the same time in a straight line and their positions are represented by $X_P(t) = at + bt^2$ and $X_Q(t) = ft - t^2$. At what time do the cars have the same velocity? **[2016-II]**

1. $\frac{a+f}{2(1+b)}$
2. $\frac{f-a}{2(1+b)}$
3. $\frac{a-f}{1+b}$
4. $\frac{a+f}{2(b-1)}$

Question

If the velocity of a particle is $v = At + Bt^2$, where A and B are constants, then the distance travelled by it between 1s and 2s is: [2016-I]

1. $\frac{3}{2}A + 4B$
2. $3A + 7B$
3. $\frac{3}{2}A + \frac{7}{3}B$
4. $\frac{A}{2} + \frac{B}{3}$

Question

A particles covers half of its total distance with speed v_1 and the rest half distance with speed v_2. Its average speed during the complete journey is: **[2011 Mains]**

1. $\frac{v_1 v_2}{v_1 + v_2}$
2. $\frac{2v_1 v_2}{v_1 + v_2}$
3. $\frac{v_1^2 v_2^2}{v_1^2 + v_2^2}$
4. $\frac{v_1 + v_2}{2}$

Question

A car runs at a constant speed on a circular track of radius 100 m, taking 62.8 s for every circular lap. The average velocity and average speed for each circular lap respectively is: [2006]

1. 0, 0
2. 0, 10 m/s
3. 10 m/s, 20 m/s
4. 20 m/s, 0

Question

A particle moves along a straight line OX. At a time t (in seconds) the distance x (in meters) of the particle from O is given by $x = 40 + 12t - t^3$. How long would the particle travel before coming to rest? **[MR* 2006]**

1. 14 m
2. 16 m
3. 56 m
4. 40 m

THANK YOU