YAKEEN NEET 2.0

2026

Motion in a Straight Line

Physics | Lecture - 7

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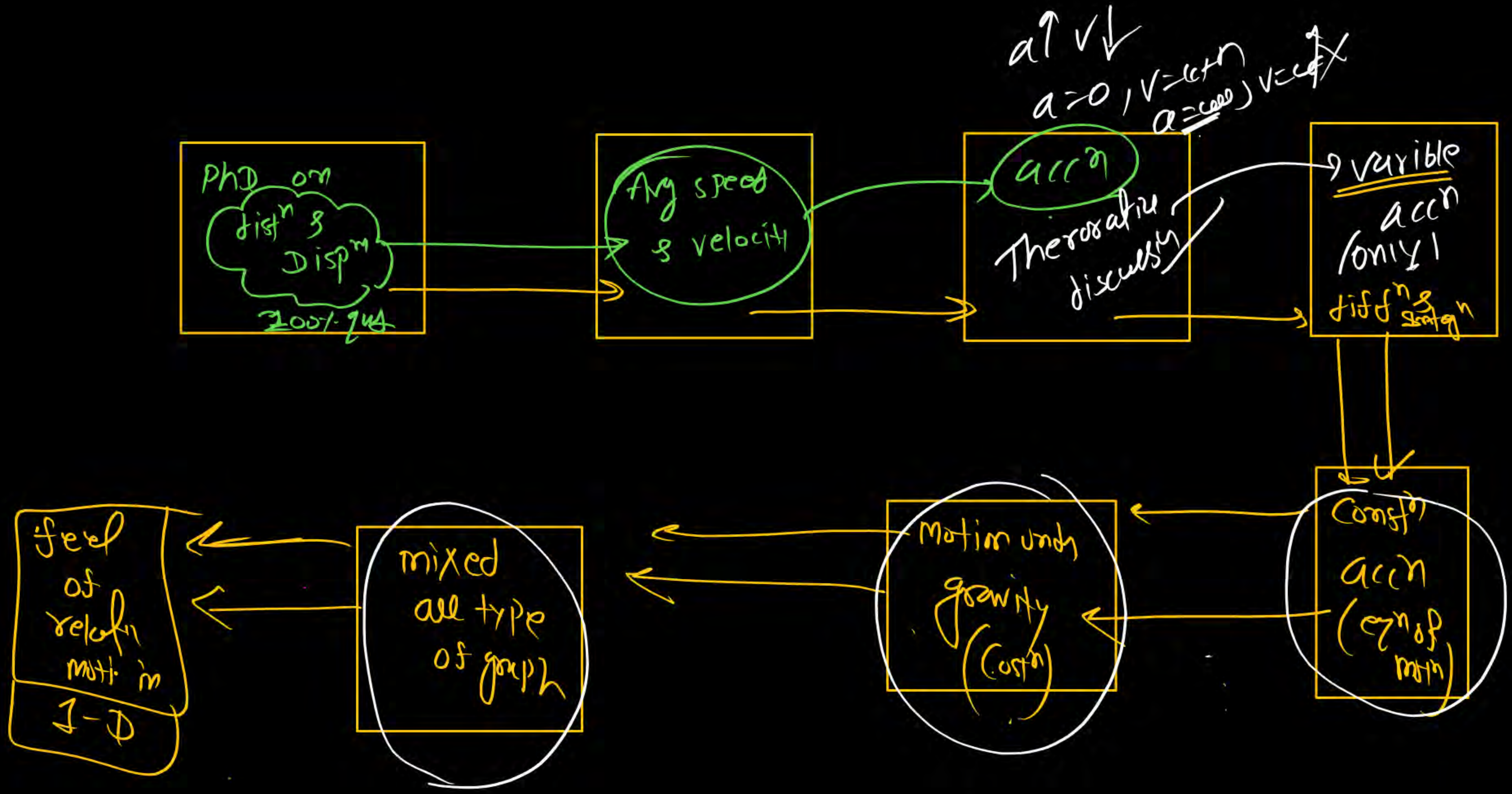
Todays Goal

→ Question on Integⁿ & diffrention.

→ H/W



a↑ v↓
a=0, v=const^n
a=const, v=const
PhD on
dist^n & Disp^n
100% Qus
Avg speed & velocity
acc^n
Theoratical discussion
varible acc^n
(only 1
diff^n & integ^n
const^n acc^n
(eq^n of motion)
Motion under gravity
(const^n)
mixed all type of graph
feel of relation motion in
1-D

Question

likna hai

Velocity at $t = 2$ sec is 20 m/s its $t = 5$ sec it becomes 32 m/s then velocity at 7 sec will be:

H/W

at $t = 2$ sec
$V = 20$ m/s

$t = 5$ sec
$V = 32$ m/s

$t = 7$ sec
$V = ??$

$$a = \frac{V_f - V_i}{\Delta t}$$

$$= \frac{32 - 20}{5 - 2}$$

$$= \frac{12}{3} = 4 \text{ m/s}^2 \quad (\text{const})$$

$$\cancel{V = u + at}$$

$$\cancel{V = 20 + 4 \times 7}$$

$$\cancel{V = 20 + 28 = 48 \text{ m/s}}$$

Ram Scam.

Ans

$$V_f = u_i + at$$

$$= 20 + 4 \times 5$$

$$= 20 + 20$$

$$V = 40 \text{ m/s} \checkmark \text{ Ans}$$

Que ⇒ velocity at t = 2 sec is 20 m/s its t = 5 sec it becomes 32 m/s then velocity at 7 sec will be —

Soln ⇒ t = 2 sec, v = 20 m/s
t = 5 sec, v = 32 m/s
t = 7 sec, v = ?

$a = \frac{v_f - v_i}{\text{total time}}$

$= \frac{32-20}{5-2}$

$= \frac{12}{3} = 4\ m/s^2$

$a = 4\ m/s^2$

$v = u + at$

$v = 20 + 4 \times 7$

$v = 20 + 28$

$v = 48\ m/s^2$

check ⇒ ?

MR* Think ⇒

1 sec में 4 m/s²

Sir 2 sec में 8 m/s²

इतना

v (t=7) ⇒ 32+8 = 40

@MRSIR_MRSTAR

* Ramlal scam.

Q) Position $x = t^2 + 4t + 6$. Find avg. speed & avg. velocity in 2s.

$v = \frac{dx}{dt} = 2t + 4$

v is always +ve

$\therefore \boxed{\text{dist} = \text{disp.}}$

x at $t = 2$ $= 2^2 + 4 \cdot 2 + 6 = 18\,m$

$|\text{avg velocity}| = \text{avg speed} = \frac{\text{Total distance}}{\text{Total time}}$

$= \frac{18}{2} = 9\,ms^{-1}$

$6\,ms^{-1}$

$\text{disp}^m = \vec{x}_f - \vec{x}_i$

$\boxed{x(\text{Posit}^n) = t^2 + 4t + 6}$

Method 2

$v = \frac{dx}{dt} = 2t + 4$

Ram lal

Scam

$\langle v \rangle_{avg} = \frac{\int v\,dt}{\int dt} = \frac{\int_0^2 (2t+4)\,dt}{\int_0^2 dt}$

$\langle v \rangle_{avg} = \frac{[t^2 + 4t]_0^2}{[t]_0^2}$

$\langle v \rangle_{avg} = \frac{(4+8) - (0+0)}{2 - 0}$

$= \frac{12}{2} = 6\,m\,s^{-1}$

Please

Q which of the following is correct :- Pair

(a) $\boxed{acc = const^n}$, velocity Incresing

(b) $\underbrace{acc = const^n}$, velocity = $const^n$

(c) $a = 0$, velocity = $const^n$

(d) $a = 0$, velocity Incrsing.

$\boxed{v = const^n \text{ then } a = 0}$

लिखना नहीं है

Nali

$\int x\, dt$ = Area of (x-t)

नाली

change in velocity

$\Delta v = \int a\, dt$ = Area of a/t graph

Δx = $\int v\, dt$ = Area of v-t graph

Disp^n

x (Position)

velocity ($\vec{v}$)

acceleration ($\vec{a}$)

differentiation

$\vec{v} = \left(\frac{d\vec{x}}{dt}\right)$

* Velocity = slope of x/t graph

$\vec{a} = \frac{d\vec{v}}{dt} = \frac{d^2x}{dt^2}$

$a = v\frac{dv}{dx}$

acc^n = slope of a/t graph

$\left(\frac{da}{dt}\right)$ = नाली

slope of a/t graph is $\frac{da}{dt}$ नाली

$\int q\,dt$ = Area of q/t graph is नाली

$\Delta Q = \int I\,dt$ = Area of I-t is ΔQ

नाली

q

I

$I = \left(\frac{dq}{dt}\right)$

$\frac{dI}{dt}$ = नाली

Slope of q/t graph $\frac{dq}{dt} = I$

Slope of of current - time graph = नाली

नाली $= \int p\,dt$

नाली

P(momentum)

$\Delta p = \int F\,dt$ = Area of F-t graph

Force $\frac{dF}{dt}$ = नाली

Force $= \frac{dp}{dt}$ = slope of p-t graph is force

(Q) Area of accelration - time graph is velocity

(a) True

(b) false

$$\Delta v = \int_{t_1}^{t_2} a\,dt = \text{change in velocity}$$

Area of a/t graph

$x \rightarrow v \rightarrow a$

Likhna hai

$\frac{d\vec{v}}{dt}$ = Rate Rate of Change in velocity w.r.t. time = acc^n

$\frac{d|\vec{v}|}{dt}$ = Rate of change in $\boxed{\text{(magnitude of velocity)}}$ = The rate of change in speed = Tangential acc^n

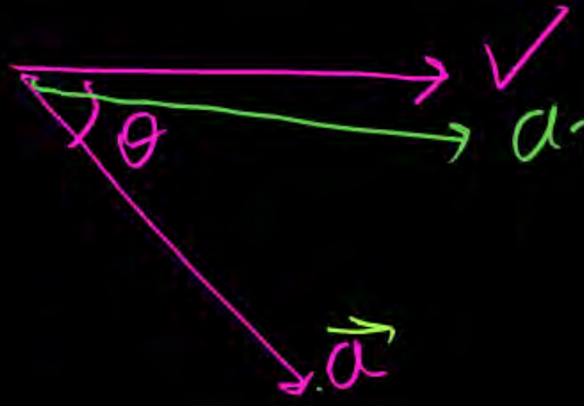
↳ speed

a_T = Tangential acc^n ✓

$\left|\frac{d\vec{v}}{dt}\right|$ = Magnitude of the rate of change in velocity = magnitude of acc^n

$\left|\frac{d\vec{v}}{dt}\right| = |\vec{a}|$ = magnitude of acc^n

~~The rate of change in speed = magnitude of acc^n~~



a_T = component of acc^n along velocity (Tangential acc^n)

for 1-D motion

$\vec{a} = a_T$ ✓

$\vec{a}_c = 0$ ✓

Velocity = speed × dir^n

$\dfrac{d\vec{v}}{dt} = acc^n$

$\left|\dfrac{d\vec{v}}{dt}\right| = |\vec{a}| = acc^n$ ka magnitude

$\dfrac{d|\vec{v}|}{dt} = a_T$

$\boxed{\text{NEET - 2025}}$ likha hai

(Q) Time is given as $t = x^2 + x$ then acceleration of the particle.

Sol^n

$$t = x^2 + x$$

diff^n w.r.t 'x' both side

$$\frac{dt}{dx} = \frac{dx^2}{dx} + \frac{dx}{dx}$$

$$\frac{1}{V} = 2x + 1$$

$$V = \frac{1}{(2x+1)}$$

use:-

$$V = \frac{dx}{dt}$$

$$V = \frac{1}{(2x+1)}$$ [diving rule]

diff^n w.r.t x

$$\left(\frac{dv}{dx}\right) = \frac{\frac{d1}{dx}(2x+1) - 1\frac{d(2x+1)}{dx}}{(2x+1)^2}$$

$$= \frac{-1(+2+0)}{(2x+1)^2} = \frac{-2}{(2x+1)^2}$$

$$a = v\left(\frac{dv}{dx}\right) = \frac{1}{(2x+1)} \times \left(\frac{-2}{(2x+1)^2}\right)$$

$$\boxed{a = \frac{-2}{(2x+1)^3}}$$

2nd method

$$V = \frac{1}{(2x+1)} = (2x+1)^{-1}$$

$$\frac{dv}{dx} = -1(2x+1)^{-2} \times 2$$

$$\frac{dv}{dx} = -2(2x+1)^{-2}$$

$$\boxed{\frac{dv}{dx} = \frac{-2}{(2x+1)^2}}$$

fin, $a = v\frac{dv}{dx}$

$\boxed{\text{NEET - 2024}}$ likho

Q) $x(\text{Position}) = at^4 + \beta t^2 + \gamma t + \delta$ find ratio of intial velocity to intial acceleration

$$\boxed{V_{t=0} = \gamma}$$

Sol^n $\dfrac{V_{(t=0)}}{a_{(t=0)}} = ??$

given Positon $\boxed{x = at^4 + \beta t^2 + \gamma t + \delta}$

$$\frac{dx}{dt} = V = a\,4t^3 + \beta(2t) + \gamma$$

$$V = 4at^3 + 2\beta t + \gamma$$

$$\boxed{a = \frac{dv}{dt} = 4a(3t^2) + 2\beta + 0}$$

$$a_{t=0} = 2\beta$$

$$\left(\frac{V}{a}\right)_{t=0} = \frac{\gamma}{2\beta} \text{ Ans}$$

(Q) NEET - 2006 * (likha hai)

(Q) distance of particle from origin given by $x = 40 + 12t - t^3$. How long particle moves before coming to rest.

Sol^n

$(0,0)$ —— x —— $x = 40 + 12t - t^3$

We have to find time when object comes to at rest $\longrightarrow$

$$\frac{dx}{dt} = v = 0 + 12 - 3t^2$$

$$\cancel{3}t^2 = \cancel{12}\,4$$

$$t = \sqrt{4} = 2\text{sec}$$

dis^n from org

$$(x)_{t=2} = 40 + 12 \times 2 - (2)^3$$
$$= 40 + 24 - 8$$
$$= 56\text{ m}$$

$$(x)_{t=0} = 40 + 0 - 0$$
$$= 40\text{m}$$

dis^n moved $= 56 - 40$
$= 16\text{m}$

Ans

NEET - 2012

ikbal.

(Q) Position $x = 8 + 12t - t^3$ find retardation of Particle when velocity becomes zero.

Soln given is Position $x = 8 + 12t - t^3$

→ we have to find accn when (velocity is zero)

diffn

$$\boxed{V = 0 + 12 \times 1 - 3t^2}$$

→ Put $v = 0$ & find time:

$0 = 12 - 3t^2$

$\cancel{3}t^2 = \cancel{12}\,4$

$$\boxed{t = 2\text{ sec}}$$

diffn

$\vec{a} = \frac{d\vec{v}}{dt} = -3(2t)$

$$\boxed{a = -6t}$$

$a_{t=2s} = -6 \times 2 = -12\,m/s^2$

Answer.

→ $u = 0$ mR feel

→ $a \neq 0$

This is Possible in this questn.

NEET - 2016

Q velocity $V = At + Bt^2$ where A and B are constant then distance travelled between 1s to 2sec.

Sol^n

given $\boxed{V = At + Bt^2}$

find dist^n

Integ^n ✓

x u a

$$\frac{dx}{dt} = At + Bt^2$$

$$\int dx = \int At\,dt + \int Bt^2\,dt$$

$$= A\left(\frac{t^2}{2}\right)_1^2 + B\left[\frac{t^3}{3}\right]_1^2 = \frac{A}{2}[4-1] + \frac{B}{3}\left[2^3 - 1^3\right]$$

$$= \left\{\frac{3A}{2} + \frac{7B}{3}\right\} \text{Ans}$$

NEET - 2015 (IIKno)

(Q) velocity $V = \beta x^{-2n}$ then find accleration as a function of 'x'. where β is cost^n.

$$\frac{dx^n}{dx} = n x^{n-1}$$

Sol^n (given) $V = \beta x^{-2n}$

find acc^n

$$\frac{dv}{dx} = \beta \frac{d x^{-2n}}{dx}$$

$$= \beta\left(-2n x^{-2n-1}\right)$$

$$\boxed{\frac{dv}{dx} = -2n\beta x^{-2n-1}}$$

$$a = v\frac{dv}{dx}$$

$$= \beta x^{-2n}\left(-2n\beta x^{-2n-1}\right)$$

$$= -2n\beta^2 x^{-2n-2n-1} = \underbrace{-2n\beta^2 x^{-4n-1}}_{\text{Ans}}$$

$\boxed{\text{NEET - 2005}}$

(Q). The displacement of particle varies with time $x = a e^{-\alpha t} + b e^{\beta t}$ then find velocity.

Sol^n

given → $x = a e^{-\alpha t} + b e^{\beta t}$

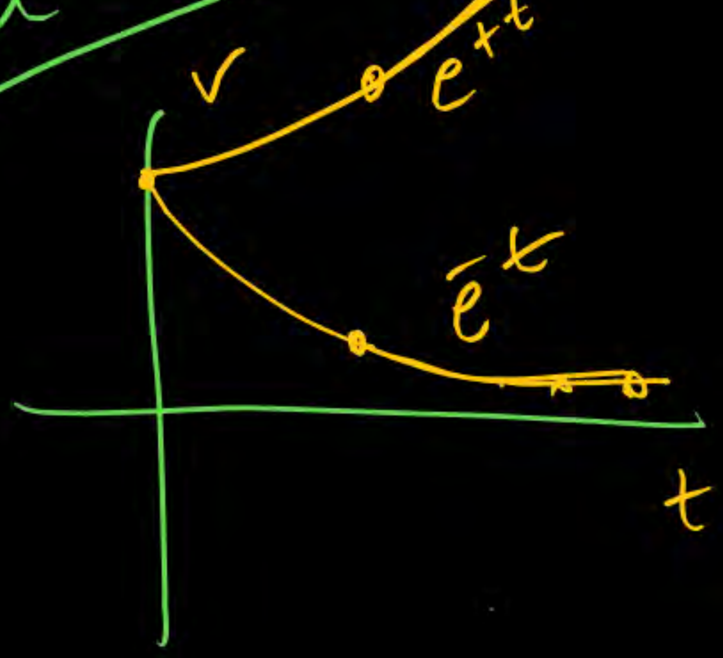
Sol^n

→ diff^n w.r.t t

$$v = a e^{-\alpha t}(-\alpha) + b e^{\beta t}(\beta)$$

$$\boxed{V = -\underbrace{a\alpha e^{-\alpha t}}_{0} + b\beta e^{\beta t}}$$

$\boxed{v \rightarrow \text{Incr with time}}$



Question

Likha नहीं है।

Cals-Test

The distance travelled by a particle is related to time t as $x = 4t^2$. The velocity of the particle at $t = 5s$ is: [25 Jan, 2023]

1. $40\ ms^{-1}$ 90%
2. $25\ ms^{-1}$
3. $20\ ms^{-1}$
4. $8\ ms^{-1}$

$x = 4t^2$

$v = 4(2t) = 8t$

$t = 5$

$= 8 \times 5 = 40$

Question

likna hai

The position of a particle related to time is given by $x = (5t^2 - 4t + 5)$m. The magnitude of velocity of the particle at $t = 2s$ will be: [15 April, 2023]

1. $10\ ms^{-1}$
2. $14\ ms^{-1}$
3. $16\ ms^{-1}$
4. $06\ ms^{-1}$

$$x = 5t^2 - 4t + 5$$

$$\frac{dx}{dt} = v = 10t - 4$$

$$v = 10 \times 2 - 4$$

$$= 16$$

Question

The distance travelled by an object in time t is given by $s = (2.5)t^2$. The instantaneous speed of the object at $t = 5$s will be: [13 April, 2023]

1. $12.5\ \text{ms}^{-1}$
2. $62.5\ \text{ms}^{-1}$
3. $5\ \text{ms}^{-1}$
4. $25\ \text{ms}^{-1}$

$s = (2.5)t^2$

नही निकलना

Question

$\int x\,dt$ = नाली लिखना नहीं है।
$\int dx = \Delta x$
NEET-2016

The velocity of a particle is $v = v_0 + gt + Ft^2$. Its position is $x = 0$ at $t = 0$; then its displacement after time ($t = 1$) is: [17 March, 2021]

(1) $v_0 + g + f$

(2) $v_0 + \frac{g}{2} + \frac{F}{3}$ (82%)

(3) $v_0 + 2g + 3F$

(4) $v_0 + \frac{g}{2} + F$

$V = V_0 + gt + Ft^2$

$$\int_{x=0}^{s} dx = \int_{t=0}^{1\,sec} (V_0 + gt + Ft^2)\,dt$$

$$= (V_0 t)_0^1 + \left(g\frac{t^2}{2}\right)_0^1 + \left(F\frac{t^3}{3}\right)_0^1$$

$$= V_0 + \frac{g}{2} + \frac{F}{3}$$

Question

लिखना है।

The position of a particle as a function of time ts, is given by $x(t) = at + bt^2 - ct^3$ where a, b and c are constants. When the particle attains zero acceleration, then its velocity will be:

[09 April, 2019]

(1) $a + \dfrac{b^2}{4c}$

(2) $a + \dfrac{b^2}{c}$

(3) $a + \dfrac{b^2}{2c}$

(4) $a + \dfrac{b^2}{3c}$ Ans

$$\boxed{x = at + bt^2 - ct^3}$$

$$v = \frac{dx}{dt} = a + b(2t) - c\,3t^2$$

Put a=0

$$a = 2b \times 1 - 3c(2t)$$

$$0 = 2b - 6ct$$

find time when acc^n is zero

$$t = \frac{\cancel{2}b}{\cancel{6}_3 c}$$

$$\boxed{t = \frac{b}{3c}}$$

$$v = a + b(2t) - 3ct^2$$

$$v = a + \frac{2b \times b}{3c} - 3\cancel{c}\frac{b^2}{9c\cancel{c}}$$

$$v = a + \frac{2b^2}{3c} - \frac{b^2}{3c}$$

$$\boxed{v = a + \frac{b^2}{3c}}$$

Question

This is not Positin, this is $\underline{\text{disp}^m}$

नहीं लिखना

The displacement 'x' (in meter) of a particle of mass 'm' (in kg) moving in one dimension under the action of a force, is related to time 't' (in sec) by $t = \sqrt{x} + 3$. The displacement of the particle when its velocity is zero, will be [NEET 2013]

1. 4 m
2. 0 m (zero)
3. 6 m
4. 2 m

$t = \sqrt{x} + 3$

$\sqrt{x} = t - 3$

$\boxed{x = (t-3)^2}$

$x = t^2 + 9 - 6t$

$V = 2t - 6$

$0 = 2t - 6$

$t = 3\,\text{sec}$

$V = 0$

Put $t = 3$ in 'x'

$x = (t-3)^2$

$= (3-3)^2 = 0$

JEE - 2023 Likhna है

(Q) Acceleration of object $a = 3t + 4$ where initial velocity is zero then velocity at $t = 2$ sec.

Sol^n given $a = 3t + 4$

at $t = 0, V = 0$

find V at $(t = 2)$

$$\frac{dv}{dt} = 3t + 4$$

$$\int_{v=0}^{v} dv = \int_{t=0}^{2} (3t + 4)\,dt$$

$$(V)_0^V = 3\left(\frac{t^2}{2}\right)_0^2 + 4(t)_0^2 = \frac{3}{2}[4] + 4 \times 2$$

$$\boxed{V = 6 + 8 = 14}$$

MR*Q

(Q) velocity of object $V = a\sin(\omega t)\, i + a\cos(\omega t)\, \hat{j}$ then find distance travelled by object in 2sec.

Soln

given is velocity

have to find distance

$$\vec{v} = a\sin(\omega t)\,\hat{i} + a\cos(\omega t)\,\hat{j}$$

$$\text{speed } |\vec{v}| = \sqrt{(a\sin(\omega t))^2 + (a\cos(\omega t))^2}$$

$$= \sqrt{a^2[\underbrace{\sin^2\omega t + \cos^2(\omega t)}_{1}]} = \sqrt{a^2} = a$$

$$\boxed{\text{speed} = a}$$ const^n speed

$$\boxed{\text{dist}^n = \text{speed} \times \text{time} = a \times 2\ m}$$ Answer

Question

Ramlal is moving with velocity $3\hat{\imath} + 4\hat{\jmath}$ at t = 0 after 5 sec its velocity becomes $4\hat{\imath} + 3\hat{\jmath}$ then find average acceleration.

H/O

$$a_{Avg} = \frac{(4\hat{i}+3\hat{j}) - (3\hat{i}+4\hat{j})}{5} = \frac{\hat{i}-\hat{j}}{5} \text{ m/s}^2$$

Question

Kallu is moving with speed 40 m/s in north after 10 sec he is moving with 40 m/s in east then find

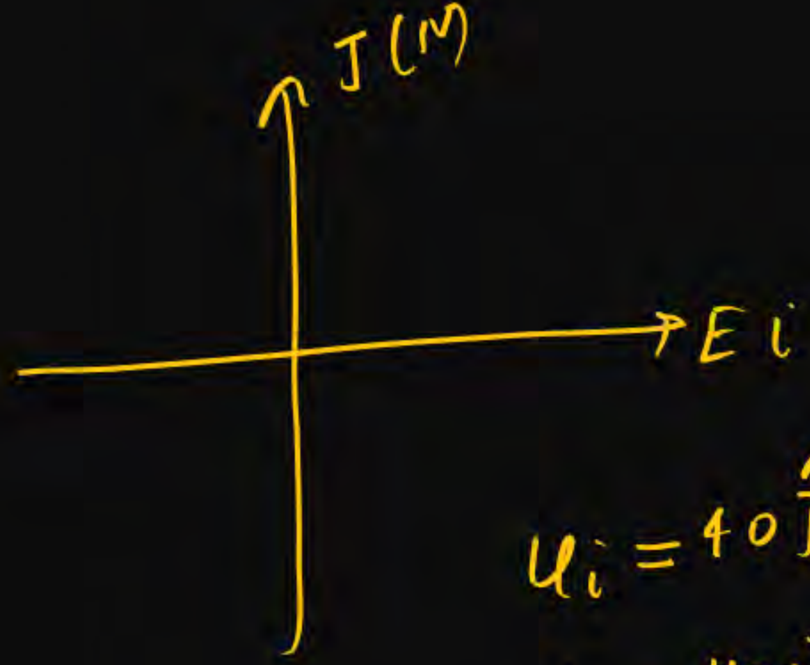
acc^n

(i) Magnitude of rate of change in velocity.

(ii) Rate of change in magnitude of velocity.

speed

zero



$u_i = 40\hat{j}$

$v_f = 40\hat{i}$

$$a = \frac{40\hat{i} - 40\hat{j}}{10}$$

$$\vec{a} = \frac{4\cancel{0}}{1\cancel{0}}(\hat{i} - \hat{j})$$

$$|\vec{a}| = 4\sqrt{2}\ \text{m/s}^2$$

Question

If position $\boxed{x = t^2 + 5t^3 + 6}$ then find

(i) Initial acceleration. (t=0)

(ii) Initial velocity.

(iii) Acceleration at $t = 2$ sec.

done ✓

Question

If position $\boxed{x = at^2 - bt^3}$ find ~~the~~ time when acceleration is zero.

diff v

diff $\rightarrow a$

No Power

Put acc^n = 0 & find time.

$$V = a(2t) - b3t^2$$

$$a = 2a \times 1 - 3b(2t)$$

$$a = 2a - 6bt = 0$$

$$a = 2a - 6bt$$

$$\cancel{2}a = \cancel{6}^{3}bt$$

$$\boxed{t = \frac{a}{3b}}$$ Ans

Question

लिख लेना

The position x of particle moving along x-axis varies with time t as $x = A \sin(\omega t)$ where A and w are [redacted] positive constants. The acceleration a of particle varies with its position (x) as

(1) $a = Ax$

(2) $a = -\omega^2 x$

(3) $a = A\omega x$

(4) $a = \omega^2 x A$

$$x = A\sin(\omega t)$$

$$v = \frac{dx}{dt} = A\cos(\omega t) \times \omega$$

$$a = \frac{dv}{dt} = A\omega\left[-\sin(\omega t)\times\omega\right]$$

$$a = -A\omega^2 \sin(\omega t)$$

$$\boxed{a = -\omega^2 x}$$

As S.H.M यही काम करता

Question

लिखना है।

The initial velocity of a particle is u (at $t = 0$) and the acceleration a is given by $\alpha t^{3/2}$. Which of the following relations is valid?

1. $v = u + \alpha t^{3/2}$
2. $v = u + \frac{3\alpha t^3}{2}$
3. $v = u + \frac{2}{5}\alpha t^{5/2}$
4. $v = u + \alpha t^{5/2}$

$$\boxed{a = \alpha t^{3/2}}$$

given है at $t=0$ $v=u$ — (1)

$a = \alpha t^{3/2}$ → varible accn.

$\cancel{\boxed{V = u + at}}$ → only for constant accn.

$V = u + \alpha t^{3/2} \times t = u + \alpha t^{5/2}$

MR scam

$a = \alpha t^{3/2}$

$\frac{dv}{dt} = \alpha t^{3/2}$

$\int_u^v dv = \alpha \int_0^t t^{3/2} dt$

$[v]_u^v = \alpha \frac{t^{3/2+1}}{3/2+1}$

$v = u + \frac{2\alpha}{5} t^{5/2}$

Question

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

1. $3\ m/s$
2. $42\ m/s$
3. $-9\ m/s$
4. $-15\ m/s$

done

লিখেন টাই

Question

A particle moving along x-axis has $\boxed{\text{acceleration } f,}$ at time t, given $f = f_0\left(1 - \frac{t}{T}\right)$, Where f_0 and T are constants. The particle at $t = 0$ has zero velocity. At the instant when $f = 0$, the particle's velocity is

[AIPMT (Prelims)-2007]

1. $\frac{1}{2} f_0 T$
2. $f_0 T$
3. $\frac{1}{2} f_0 T^2$
4. $f_0 T^2$

(acc^n) $f = f_0\left(1 - \frac{t}{T}\right)$

$$\frac{dv}{dt} = f_0 - \frac{f_0 t}{T}$$

$$\int_0^V dv = \int_0^T f_0\, dt - \int_0^T \frac{f_0}{T} t\, dt$$

Solve it

Question

A body is moving with variable acceleration (a) along a straight line. The average acceleration of body in time interval t_1 to t_2 is

1. $\dfrac{a[t_2 + t_1]}{2}$

2. $\dfrac{a[t_2 - t_1]}{2}$

3. $\dfrac{\int_{t_1}^{t_2} a\,dt}{t_2 + t_1}$

4. $\dfrac{\int_{t_1}^{t_2} a\,dt}{t_2 - t_1}$

Question MRQ

A particle moves in a straight line and its position x at time t is given by $x^2 = 2 + t$. Its acceleration is given by

(1) $\frac{-2}{x^3}$

(2) $-\frac{1}{4x^3}$

(3) $-\frac{1}{4x^2}$

(4) $\frac{1}{x^2}$

$x^2 = 2 + t$

$x = (2+t)^{1/2}$

diff' w.r.t. x

v

dif

a

H/W Remark

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]**

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

H/w

$x = (t+5)^{-1}$

$\frac{dx}{dt} = v$

$\frac{dv}{dt} = a$

Question

If acceleration of object $a = 2x^{3/2}$ then find velocity at x where initial at $x = 0$ is 4.

Question

The relation between time t and distance x is $t = \alpha x^2 + \beta x$ where α and β are constants. The retardation is:

1. $2\alpha v^3$
2. $2\beta v^2$
3. $2\alpha\beta v^2$
4. $2\beta^3 v^3$

$t = \alpha x^2 + \beta x$

JEE.

Question

If $a = 3t^2 + 2t$, initial velocity is 5 m/s. Find the velocity at $t = 4$s. The motion is in straight line, a is acceleration in m/s^2 and t is time in seconds.

Question

A particle in moving in a straight line such that its velocity is given by $v = 12t - 3t^2$, where v is in m/s and t is in seconds. If at $t = 0$, the particle is at the origin, find the velocity at $t = 3$s.

$$V = 12t - 3t^2$$

Question

The deceleration experienced by a moving motorboat after its engine is shut-off is given by $dv/dt = -kv^3$, where k is a constant. If v_0 is the magnitude of the velocity at shut-off, find the velocity as a function of t.

$$a = -kv^3$$

Just Try

नहीं हो तो भी कोई चिन्ता

Level UP

Soln

Question

The motion of a body is given by $\boxed{dv/dt = 6 - 3v,}$ where v is in m/s. Find

(a) the velocity in terms of t and

(b) terminal velocity. The motion starts from rest.

H/W

Try it only no need to Solve comptly

Solutn सुनो

THANK YOU