

YAKEEN NEET 2.0

2026

Basic Maths and Calculus (Mathematical Tools)

PHYSICS

Lecture - 10

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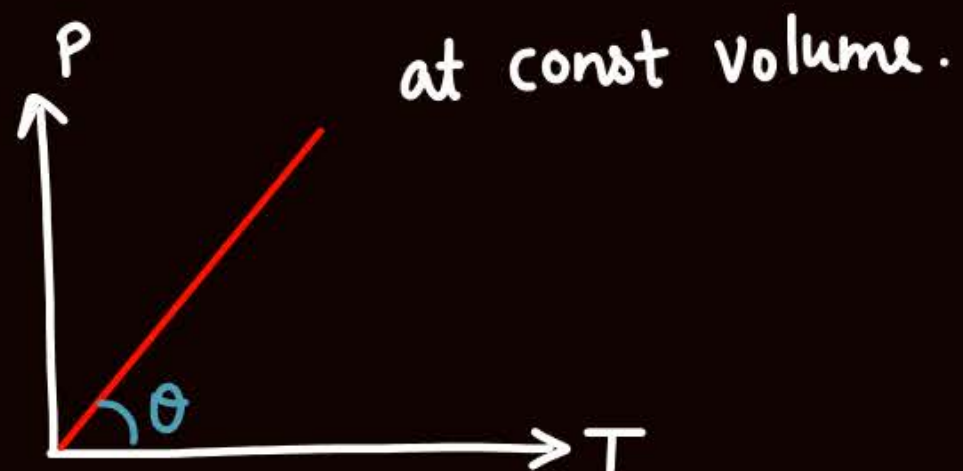


Today's Goal

- Graph Part-02
- Quadratic Eqⁿ

$$PV = nRT$$

①

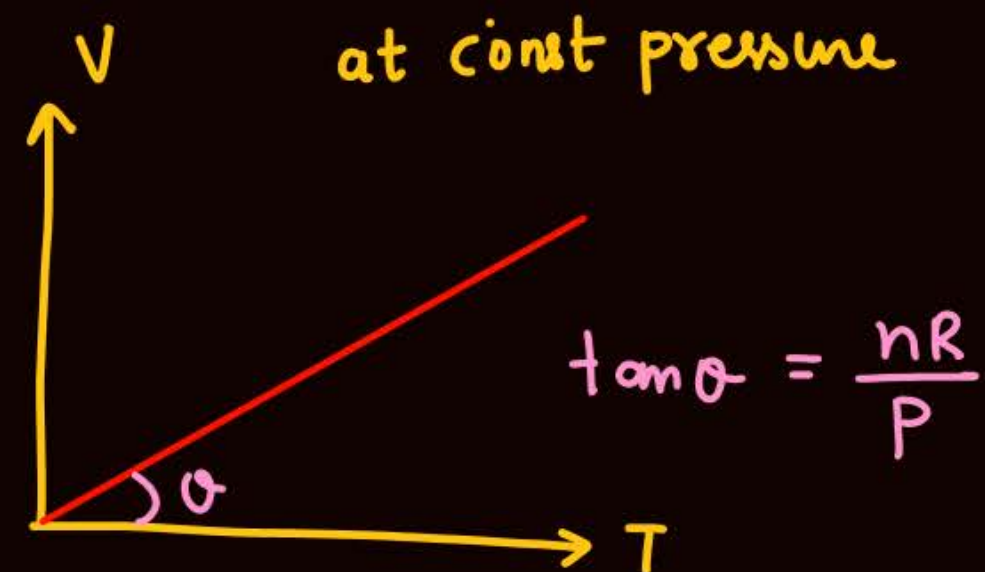


$$y = \frac{nR}{V} x$$

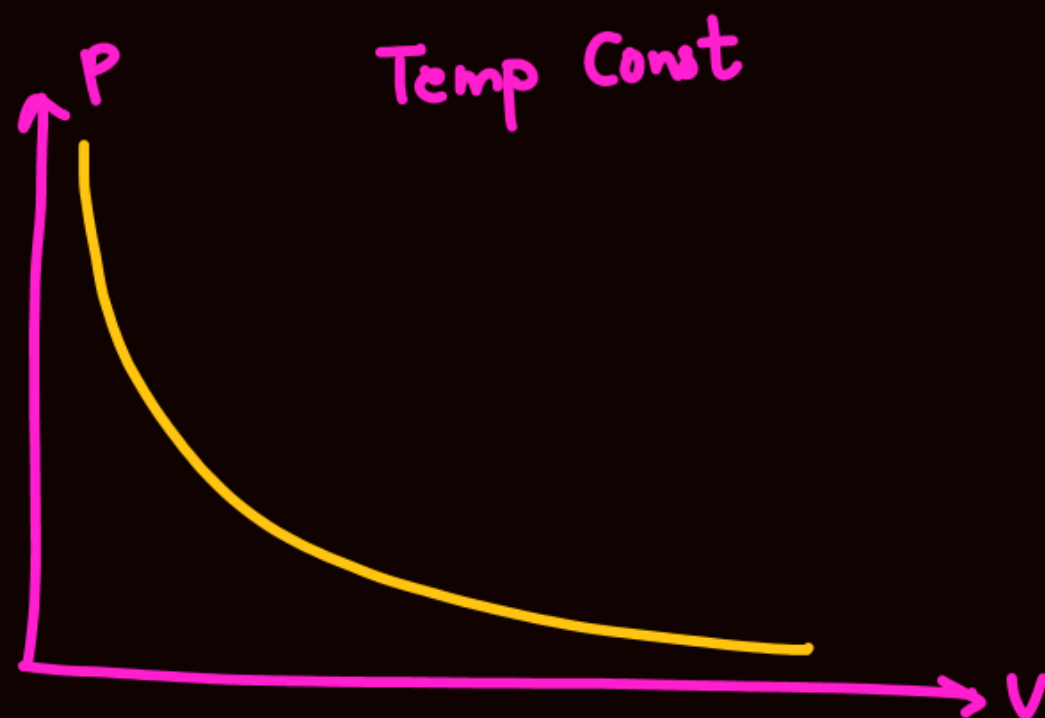
$$y = mx$$

$$\text{Slope} = \tan \theta = \frac{nR}{V}$$

②

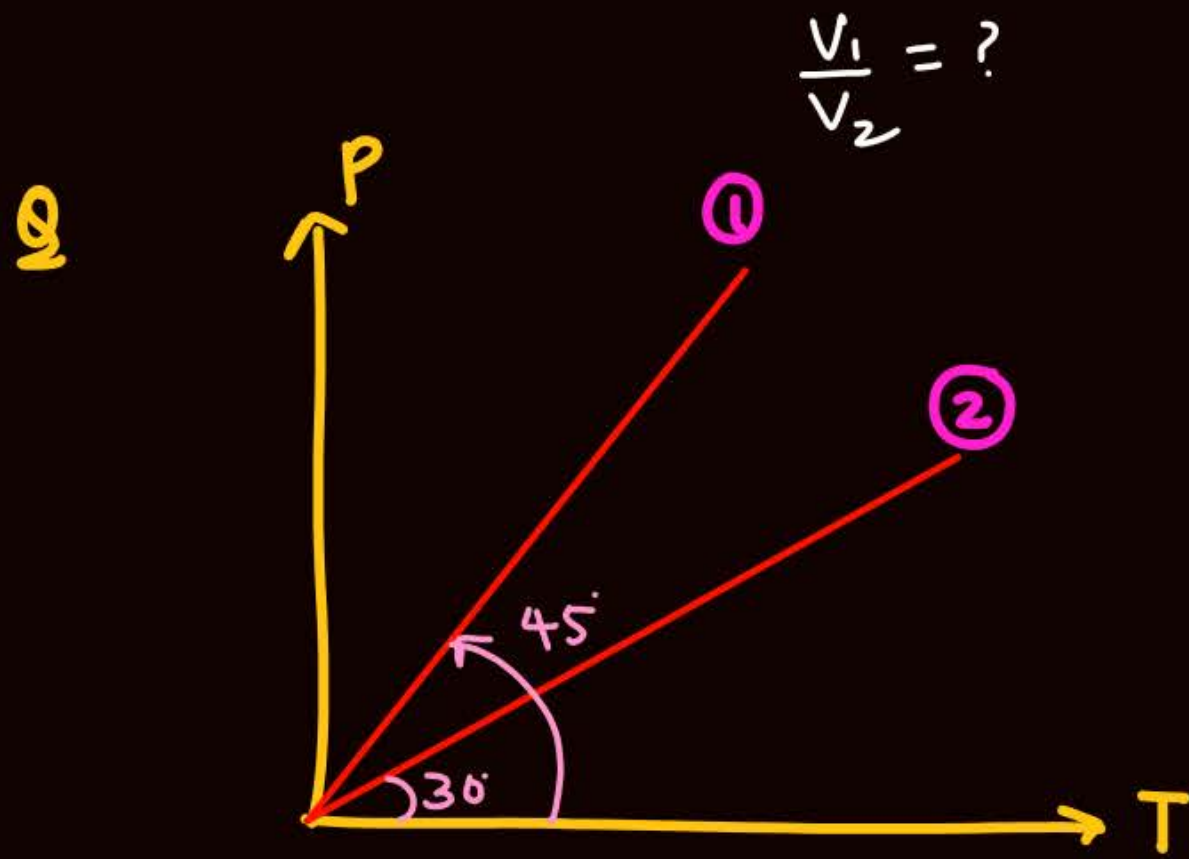


③



$$PV = nRT$$

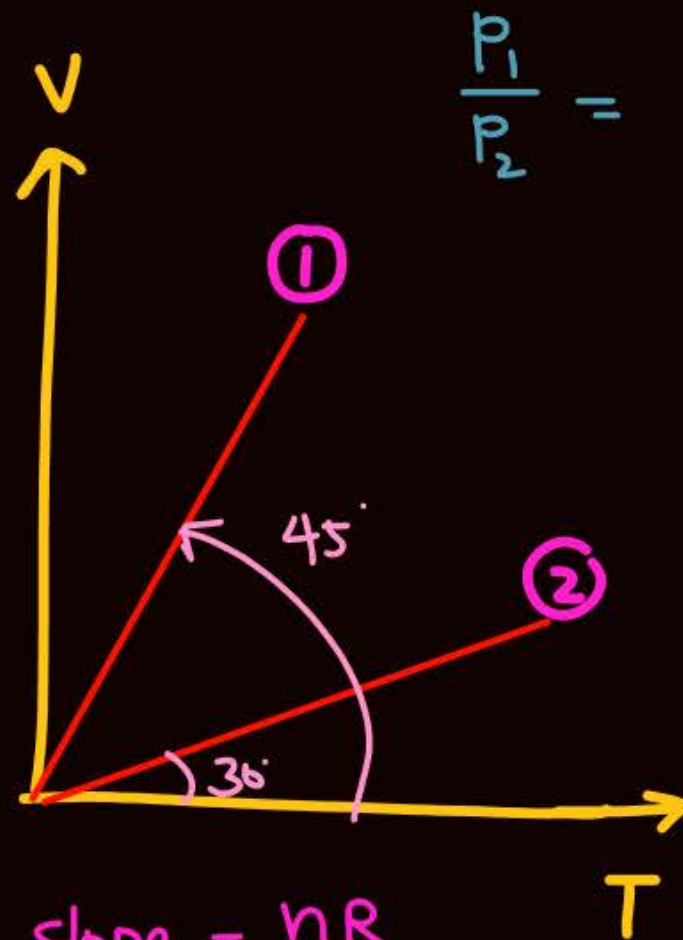
$$PV = \text{const}$$



$$\frac{(\text{slope})_1}{(\text{slope})_2} = \frac{V_2}{V_1}$$

$$\frac{\tan 45^\circ}{\tan 30^\circ} = \frac{V_2}{V_1} = \frac{1}{1/\sqrt{3}} = \sqrt{3}$$

$$\boxed{\frac{V_1}{V_2} = \frac{1}{\sqrt{3}}}$$



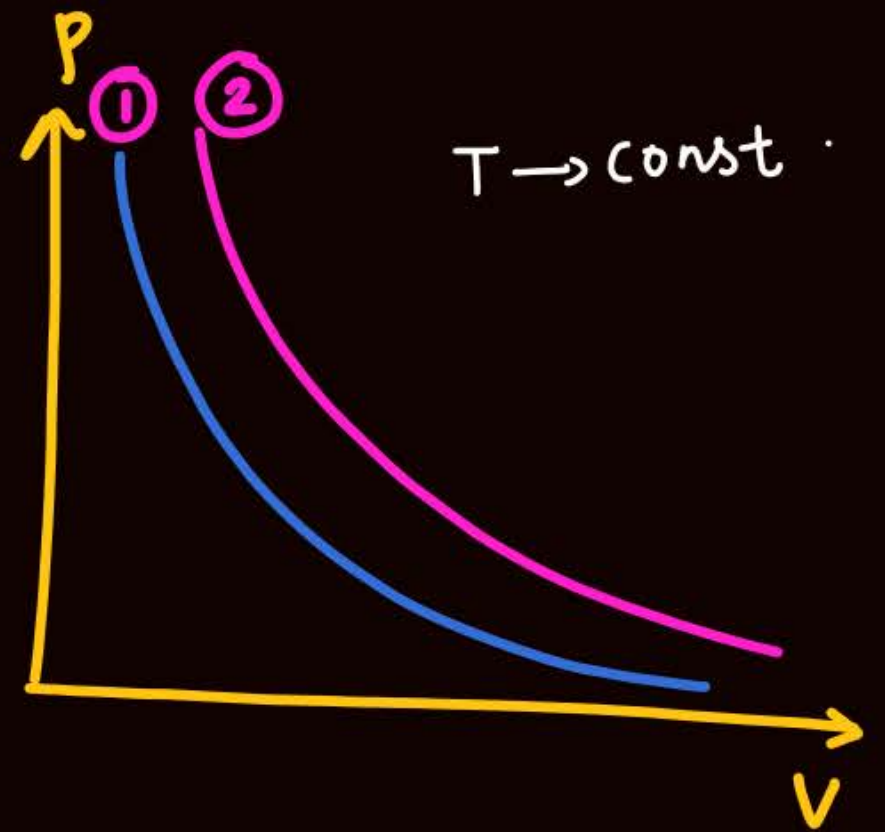
$$\text{slope} = \frac{nR}{P}$$

$$\text{slope} \propto \frac{1}{P}$$

$$\frac{(\text{slope})_1}{(\text{slope})_2} = \frac{P_2}{P_1} = \frac{\tan 45^\circ}{\tan 30^\circ}$$

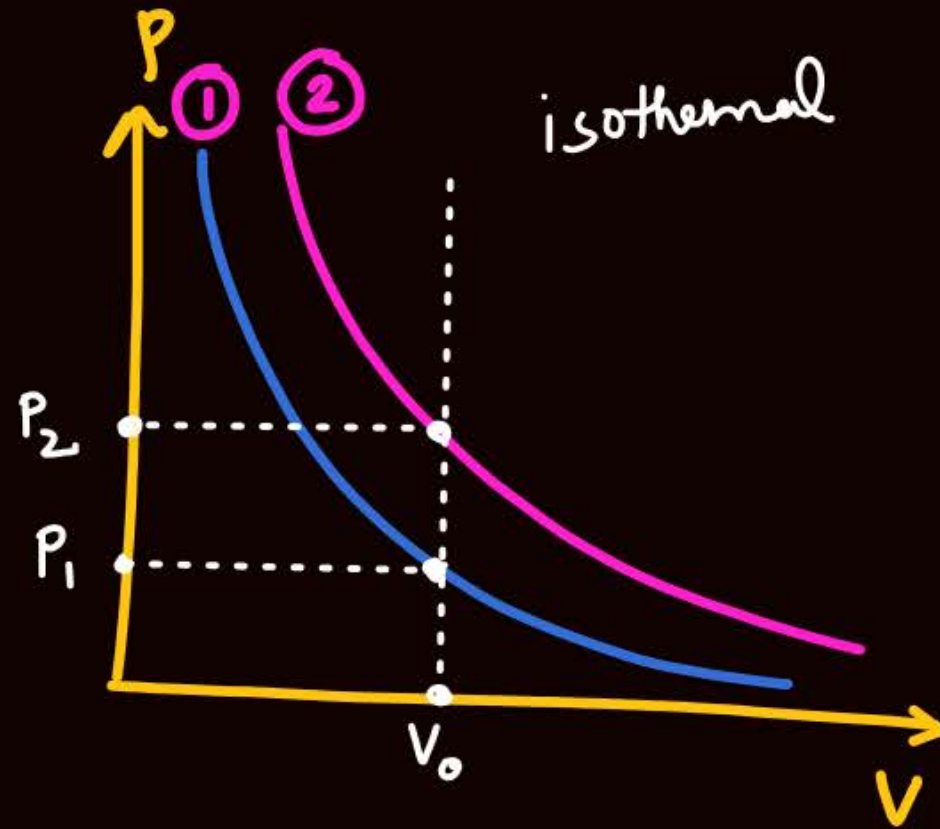
$$\frac{P_2}{P_1} = \sqrt{3}$$

$$\boxed{\frac{P_1}{P_2} = \frac{1}{\sqrt{3}}}$$



$$\begin{aligned} T_1 &> T_2 \\ T_1 &< T_2 \\ T_1 &= T_2 \end{aligned}$$

#



$$P_2 > P_1$$
$$T_2 > T_1$$

$$T_1 > T_2$$
$$T_1 < T_2$$
$$T_1 = T_2$$

$$PV = nRT$$

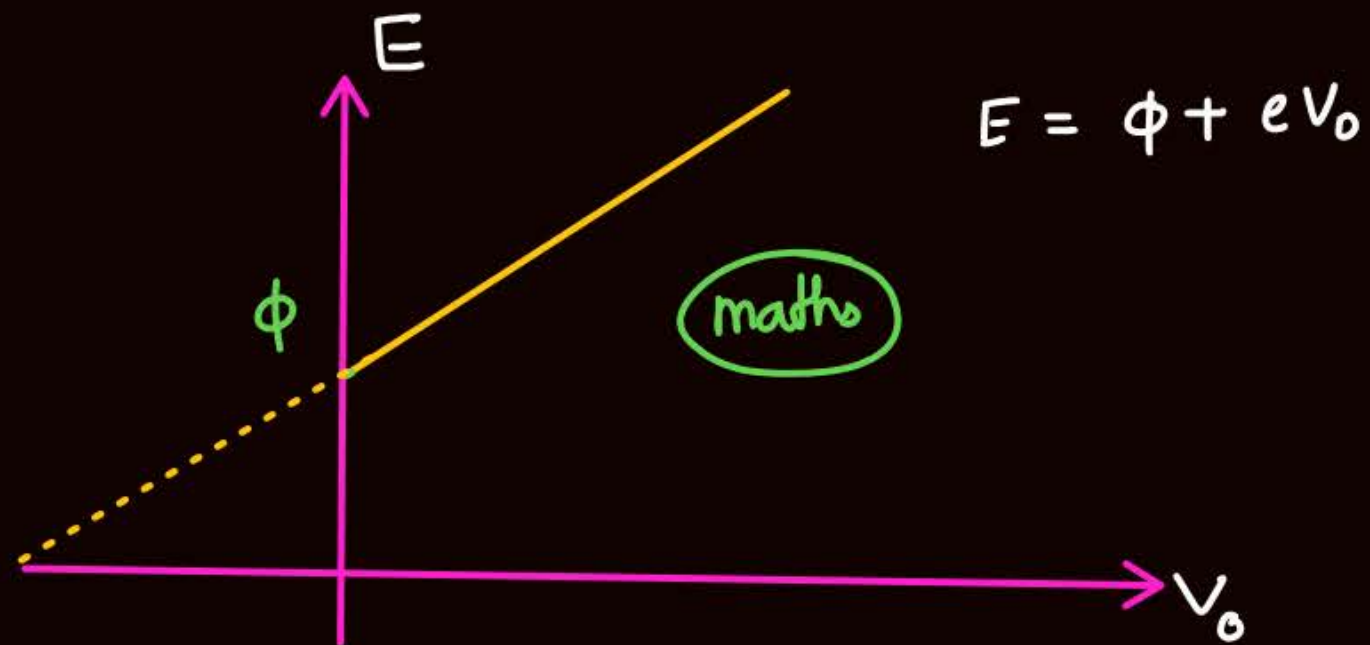
fix ←

Q $E = \phi + (K\epsilon)_{\max}$
 $(K\epsilon)_{\max} = eV_0$ \rightarrow stopping potential

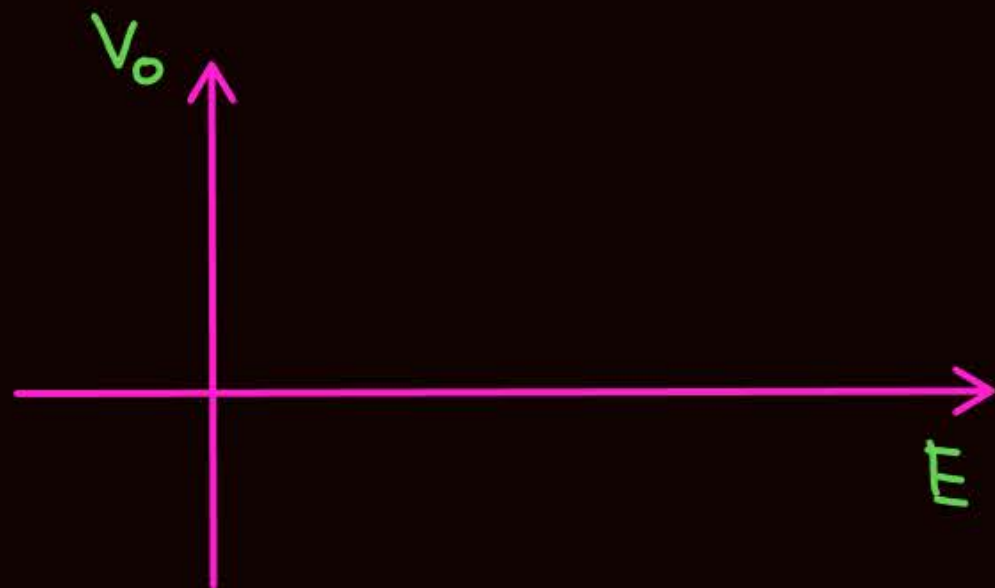
$E = \phi + eV_0$

$h\nu = \phi + eV_0$

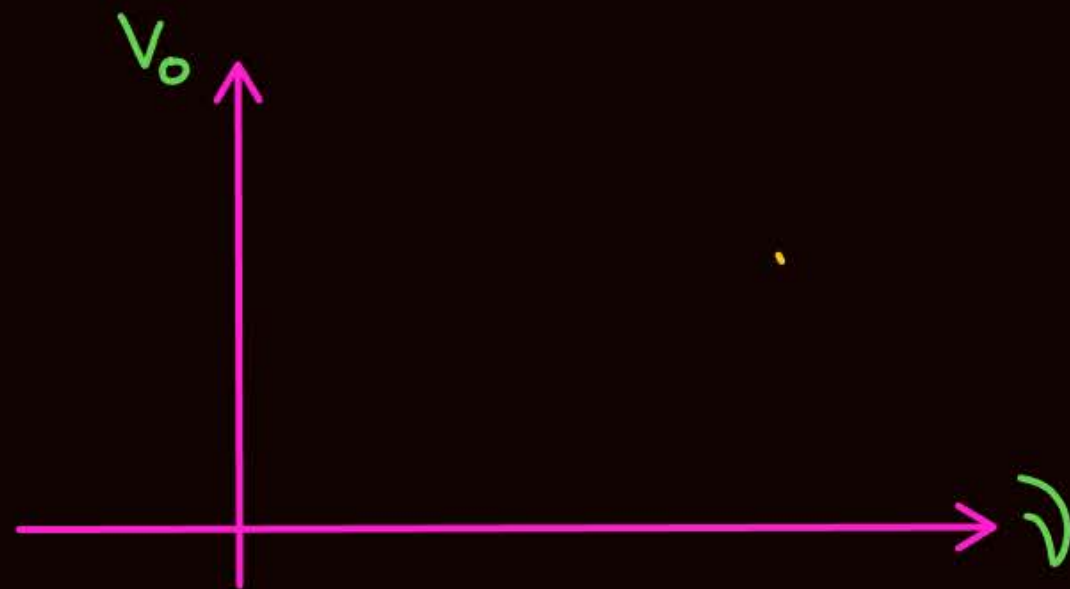
①



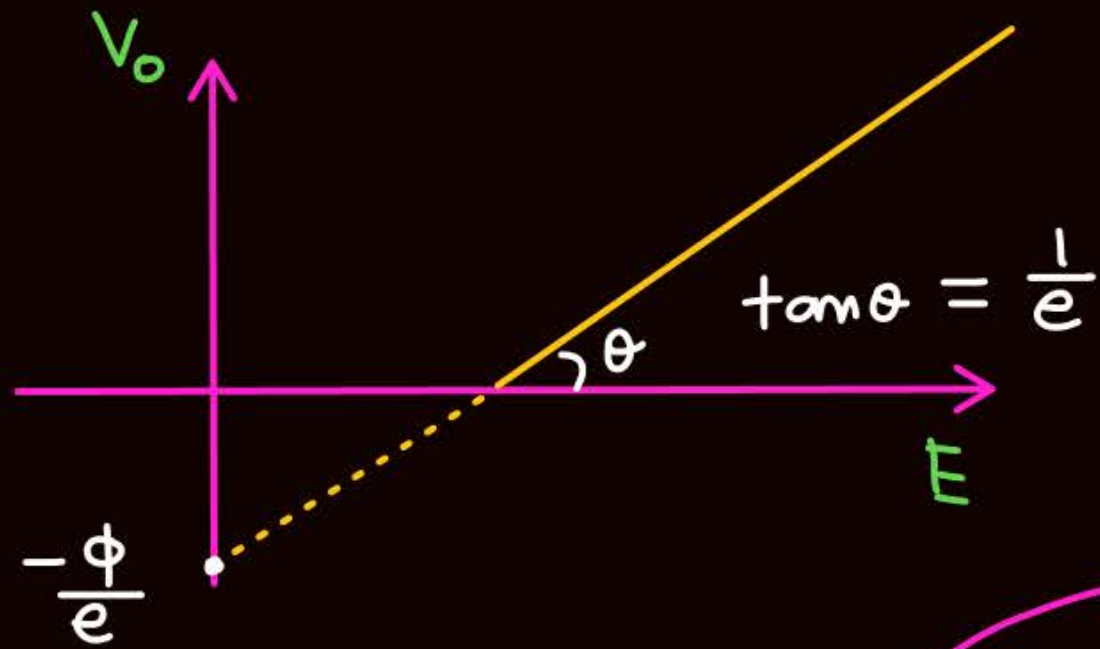
②



③



②



$$E = \phi + eV_0$$

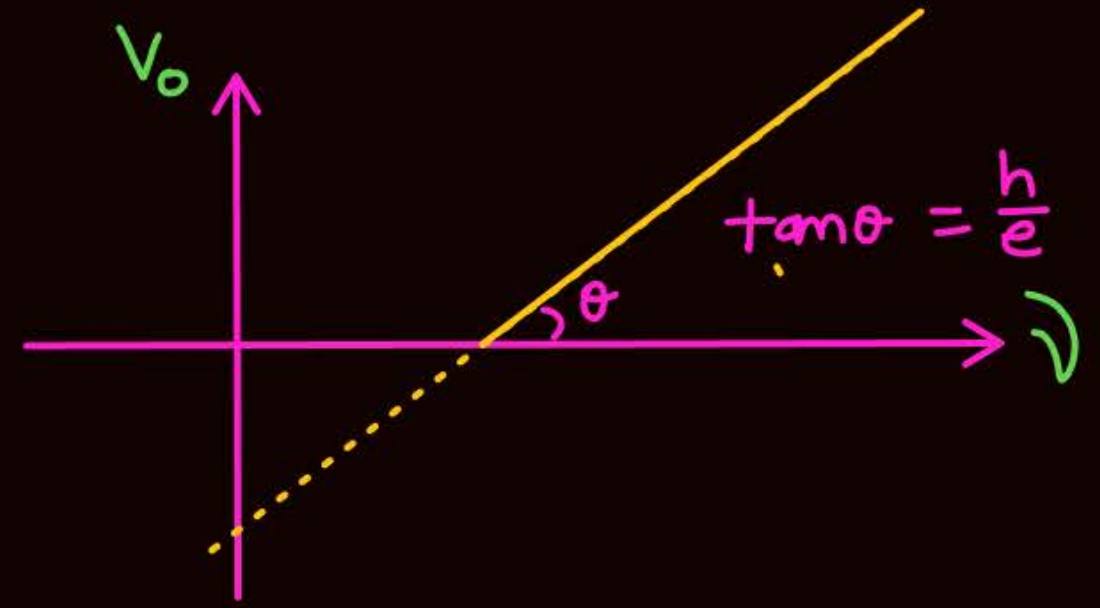
$$x = \phi + ey$$

$$ey = x - \phi$$

$$y = \frac{1}{e}x - \frac{\phi}{e}$$

$$y = mx - c$$

③



$$E = \phi + eV_0, \quad E = h\nu$$

$$h\nu = \phi + eV_0$$

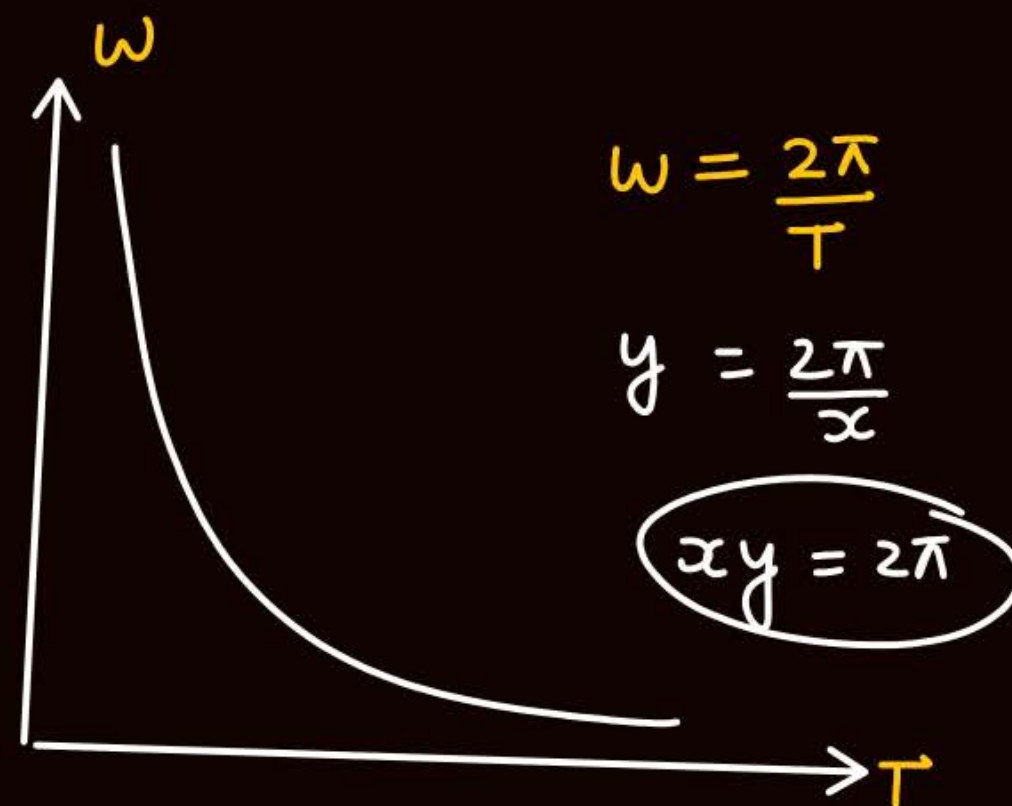
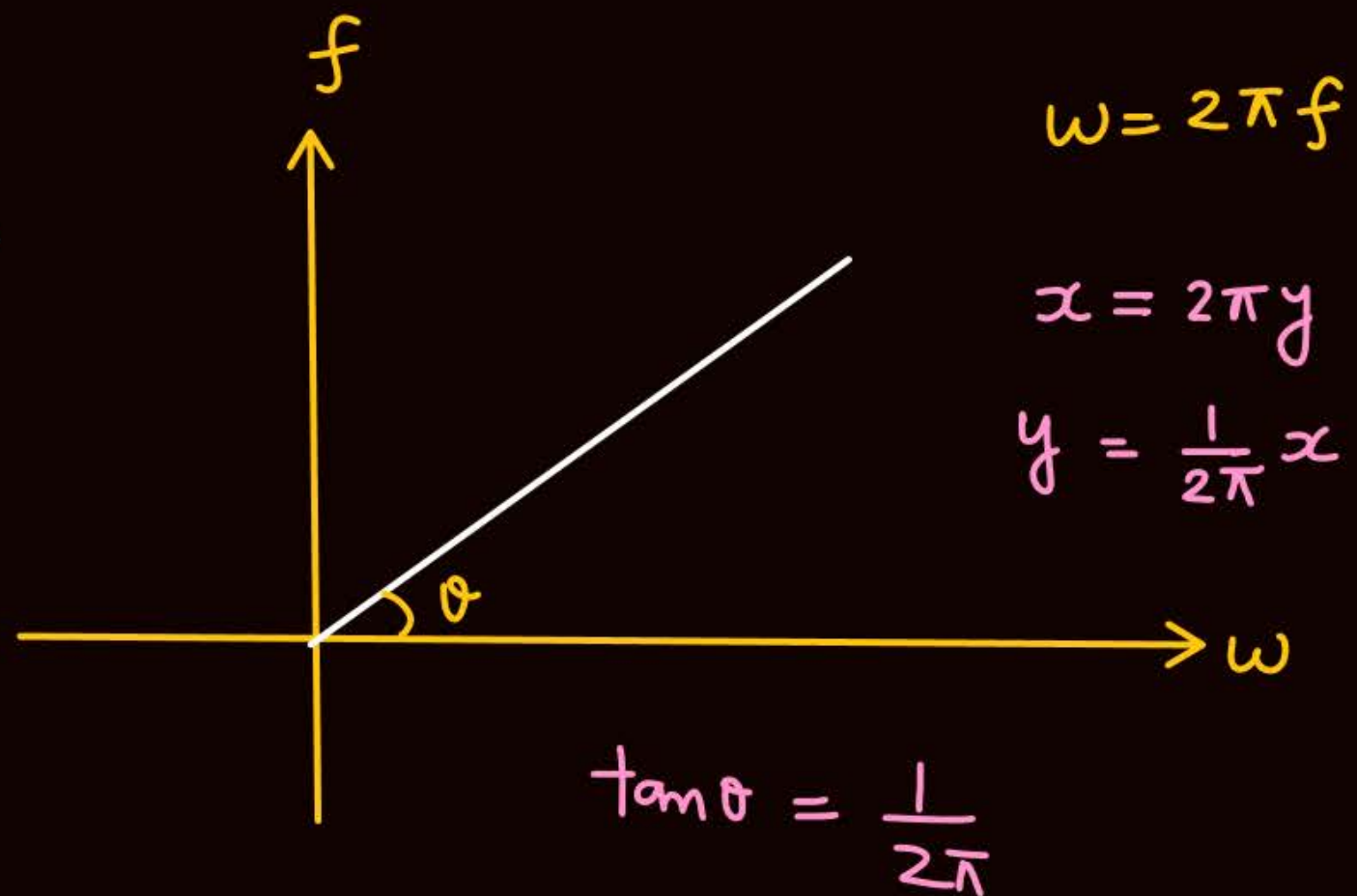
$$eV_0 = h\nu - \phi$$

$$V_0 = \frac{h}{e}\nu - \frac{\phi}{e}$$

$$y = \frac{h}{e}x - c$$

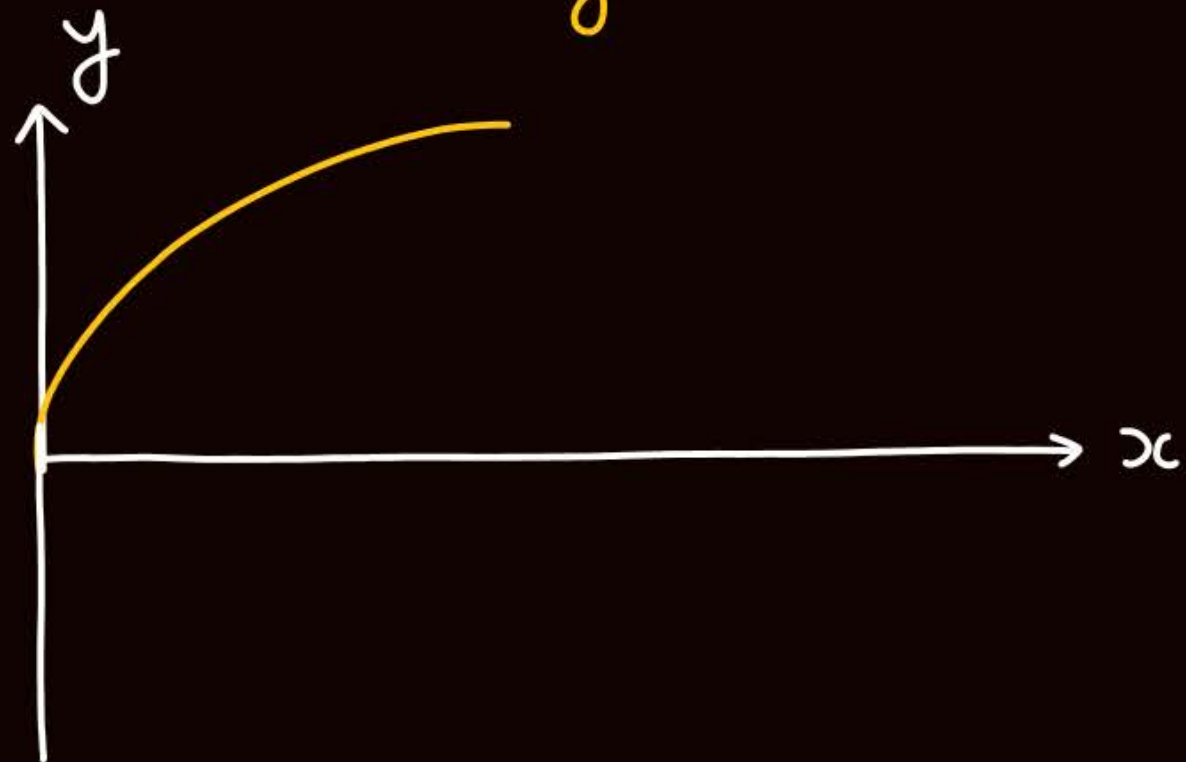
रटना नहीं है

Q



①

$$y = \sqrt{x}$$



②

$$y = \sqrt{x} \Rightarrow y \text{ is always positive.}$$



(H.W)



$$y = \sqrt{x}$$

$$y = -\sqrt{x}$$

$$y = \sqrt{-x}$$

$$y = -\sqrt{-x}$$

$$y = x^2$$

$$y = -x^2$$

$$y^2 = x$$

$$y^2 = -x$$

(H.W)

2टना नहीं है .

AP

$$y = e^x$$

$$y = e^{-x}$$

$$y = -e^x$$

$$y = -e^{-x}$$

माद में पड़ेगे

Quadratic Eqⁿ

$$y = ax^2 + bx + c, (a \neq 0)$$

x की किन value पर $y = 0$ है

$$ax^2 + bx + c = 0$$

$$x_1 = \frac{-b + \sqrt{b^2 - 4ac}}{2a}$$

$$x_2 = \frac{-b - \sqrt{b^2 - 4ac}}{2a}$$

If $b^2 > 4ac$

$$\# \text{ Sum of the root} = x_1 + x_2 = -\frac{b}{a}$$

$$\# \text{ product of the root} = x_1 \cdot x_2 = \frac{c}{a}$$

$$\underline{Q} \quad x^2 + 6x + 8 = 0$$

$$a = 1, b = 6, c = 8$$

$$x_1 = \frac{-6 + \sqrt{6^2 - 4 \times 1 \times 8}}{2 \times 1} = \frac{-6 + 2}{2} = -2$$

$$x_2 = \frac{-6 - \sqrt{6^2 - 4 \times 1 \times 8}}{2 \times 1} = \frac{-6 - 2}{2} = -4$$

$(-2, -4)$ are two real root.

Least priority

$$y = ax^2 + bx + c$$

① $b^2 < 4ac \Rightarrow$ No real root

② $b^2 = 4ac \Rightarrow x_1 = x_2 \Rightarrow$ only one root
real

③ $b^2 > 4ac \Rightarrow$ two real root

$$\begin{cases} x_1 = \frac{-b + \sqrt{b^2 - 4ac}}{2a} \\ x_2 = \frac{-b - \sqrt{b^2 - 4ac}}{2a} \end{cases}$$

$$Q \quad x^2 + 6x + 8 = 0$$

$$x^2 + 4x + 2x + 8 = 0$$

$$x(x+4) + 2(x+4) = 0$$

$$(x+4)(x+2) = 0$$

$$\boxed{\begin{array}{l} x = -4 \\ x = -2 \end{array}}$$

$$Q \quad x^2 - 6x + 5 = 0$$

$$x^2 - 5x - x + 5 = 0$$

$$x(x-5) - 1(x-5) = 0$$

$$(x-5)(x-1) = 0$$

$$\boxed{x = 1, x = 5}$$

$$a=1, b=-6, c=5$$

$$x_1 = \frac{-b + \sqrt{b^2 - 4ac}}{2a} = \frac{-(-6) + \sqrt{36 - 4 \times 1 \times 5}}{2 \times 1}$$

$$= \frac{6+4}{2} = 5$$

$$x_1 = \frac{-b + \sqrt{b^2 - 4ac}}{2a} = \frac{-(-6) - \sqrt{36 - 4 \times 1 \times 5}}{2 \times 1} = 1$$

Q $t^2 - 3t + 2 = 0$

$$t^2 - 2t - t + 2 = 0$$

$$t(t-2) - 1(t-2) = 0$$

$$(t-1)(t-2) = 0$$

$$\boxed{\begin{array}{l} t = 1 \\ t = 2 \end{array}}$$

कर कर Repeat
m-2

Q $t^2 - 15t + 50 = 0$

$$t^2 - 10t - 5t + 50 = 0$$

$$t(t-10) - 5(t-10) = 0$$

$$(t-5)(t-10) = 0 \Rightarrow \begin{array}{l} t = 5 \\ t = 10 \end{array}$$

Q $t^2 - t - 6 = 0$

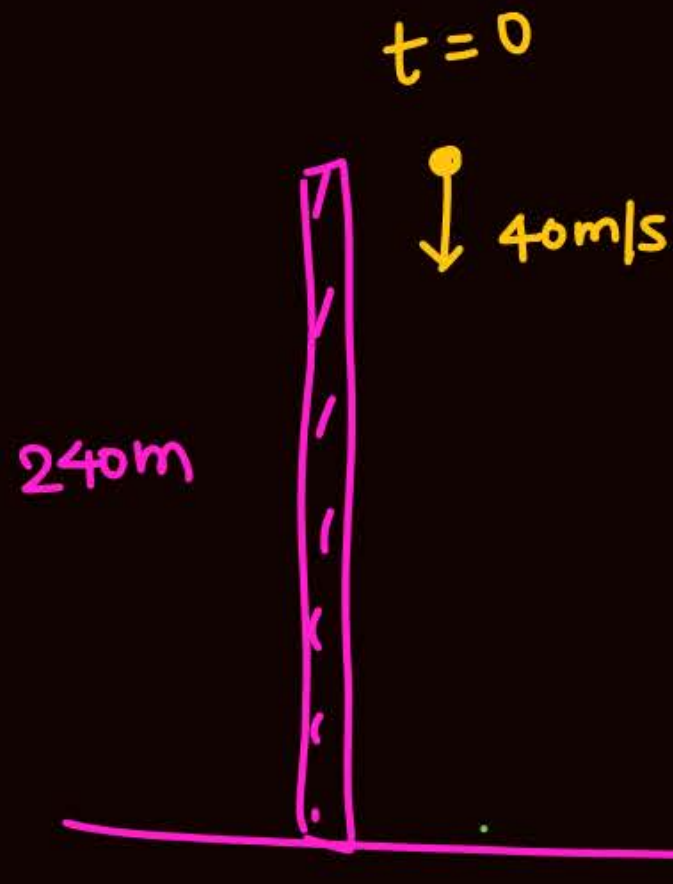
$$t^2 - 3t + 2t - 6 = 0$$

$$t(t-3) + 2(t-3) = 0$$

$$(t+2)(t-3) = 0$$

$$t = -2, 3$$

8



find the time when particle will hit the floor.

physics

solⁿ

Neeche Downward \downarrow (+ve)

Initial velocity = $u = 40$ (Neeche)

$$u = +40$$

$$a = 10 \text{ (Neeche)}$$

$$a = +10$$

$$S = \text{नीचे } 240 = +240$$

$$\begin{aligned} u &= +40 \\ a &= +10 \\ S &= +240 \end{aligned}$$

$$S = ut + \frac{1}{2}at^2$$

$$240 = 40t + \frac{1}{2} \times 10 \times t^2$$

$$48 = 8t + t^2$$

$$t^2 + 8t - 48 = 0$$

$$t^2 + 8t - 48 = 0$$

$$t^2 + 12t - 4t - 48 = 0$$

$$t(t+12) - 4(t+12) = 0$$

$$(t-4)(t+12) = 0$$

$$t = -12, t = 4$$

~~$t = -12$~~ ✓

Maths ki jo cheeze
Bad me jaurat padegi
Vo tumhe Main Fir Se

Padhaunga/Revise Karaunga
Usi wakt. 



Home work

- DPP
- KPP will be given tomorrow.



THANK YOU