YAKEEN NEET 2.0

2026

Basic Maths and Calculus (Mathematical Tools)

PHYSICS | Lecture - 07

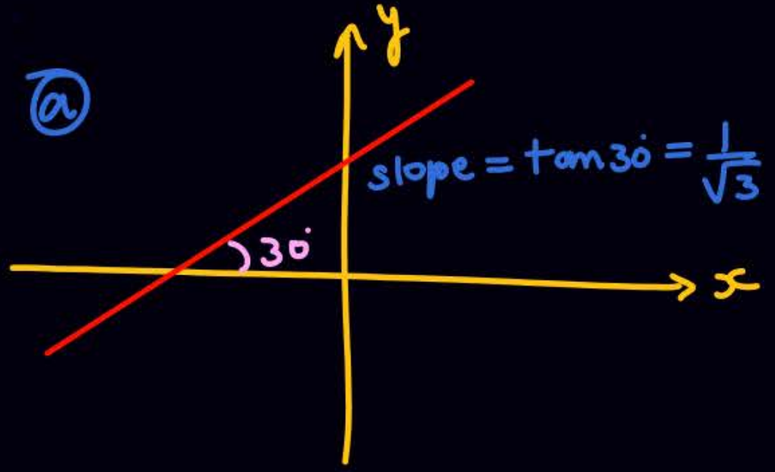
By- Saleem Ahmed Sir

Topics to be covered

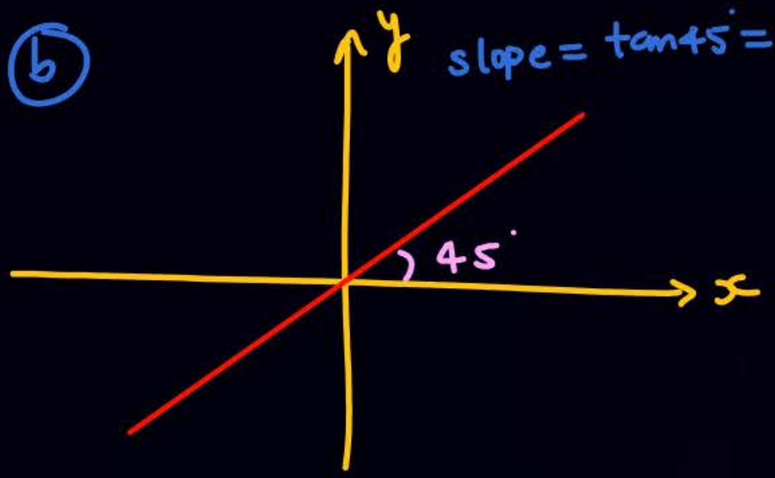
Equation of a straight line

Slope $= m = \tan\theta$

(a)



(b)



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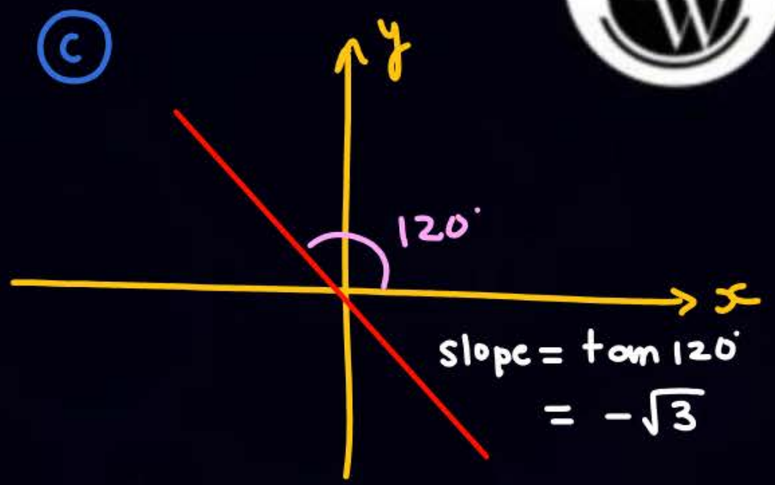

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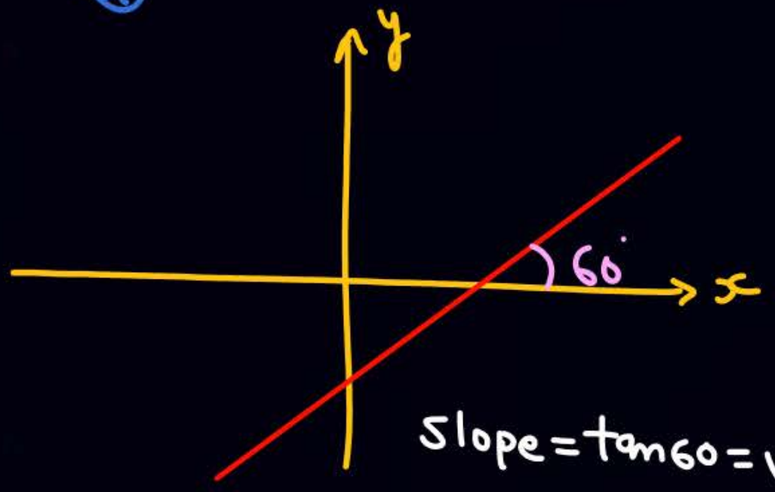

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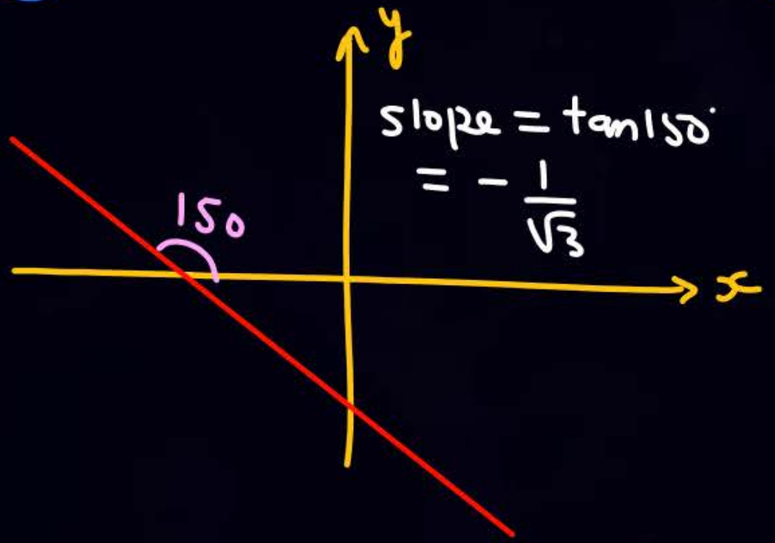

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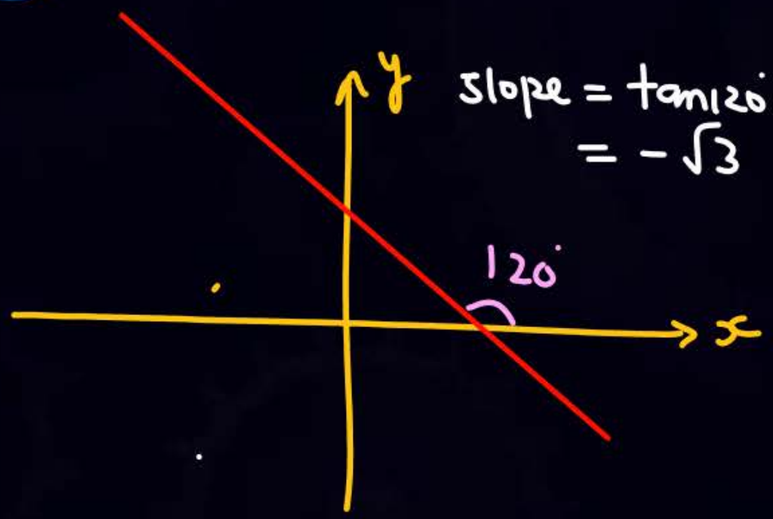
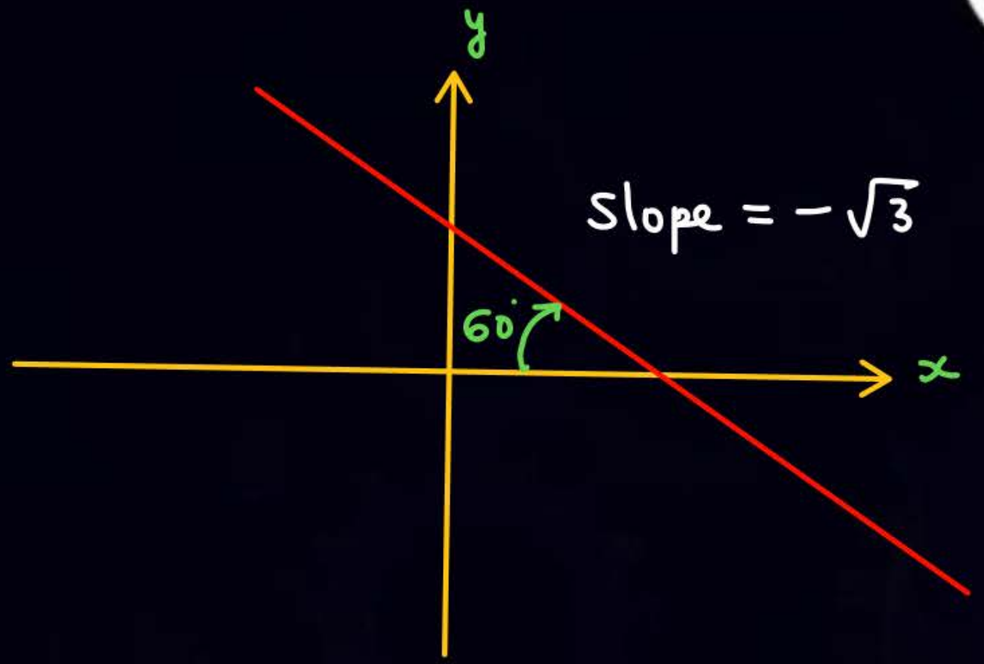
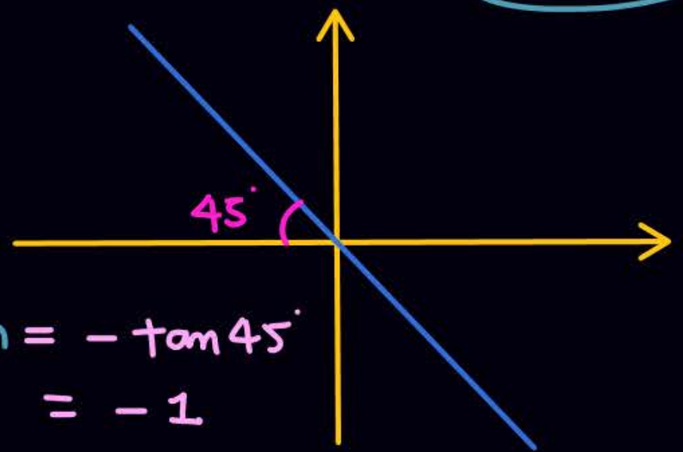


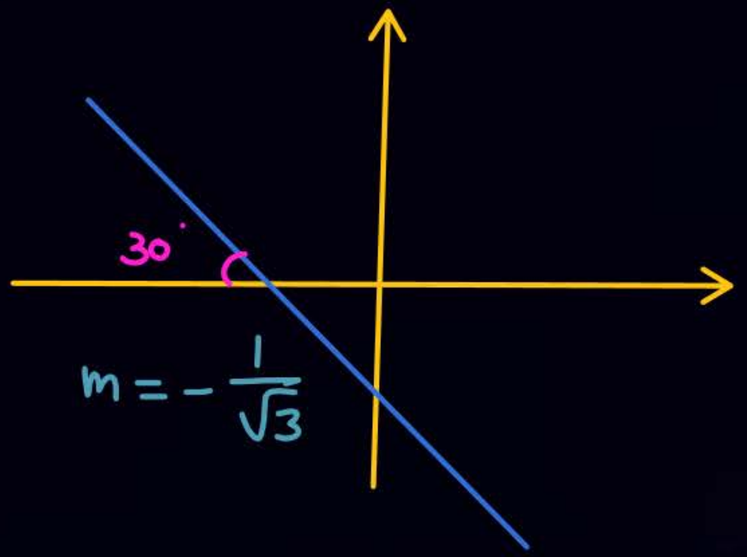

y
x
60°
Slope = $-\sqrt{3}$

Slope = m

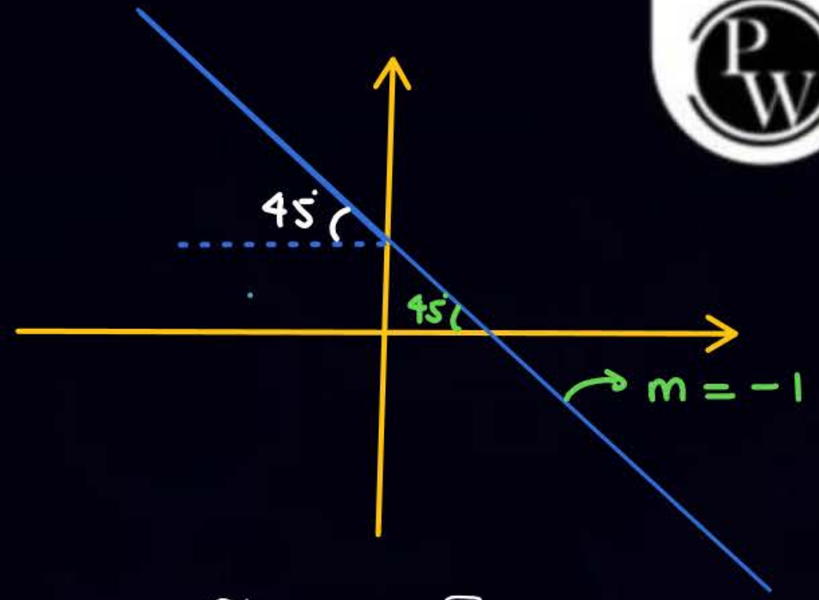


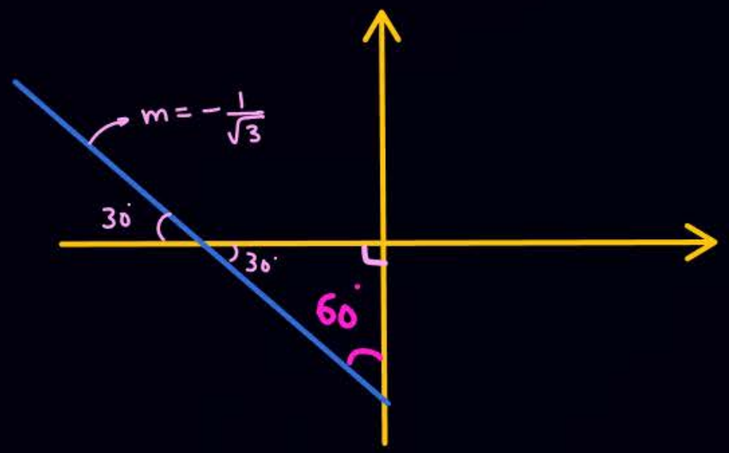
$m = -\tan 45^\circ$

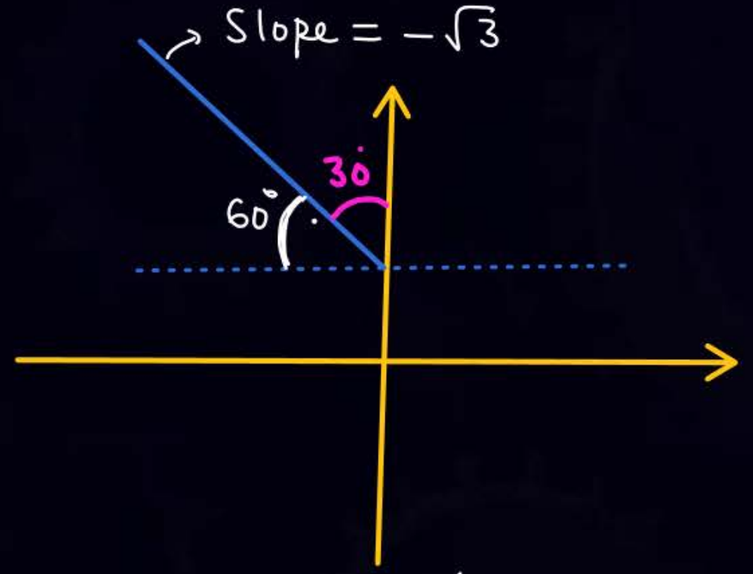
$= -1$

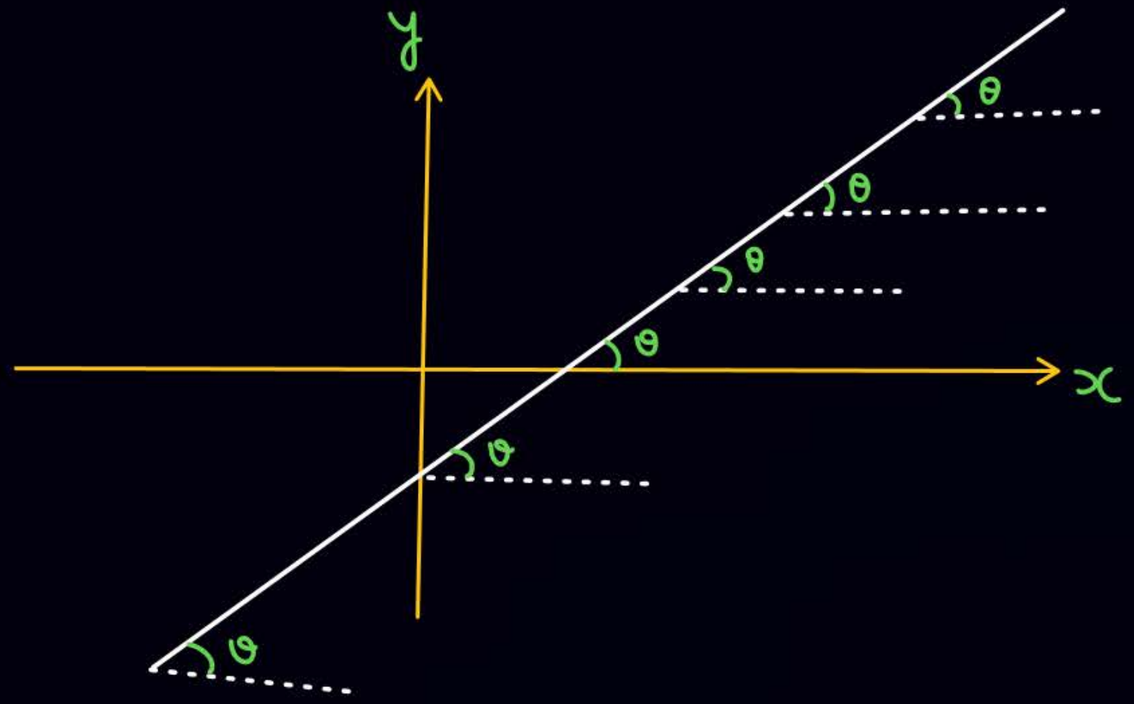


$m = -\frac{1}{\sqrt{3}}$







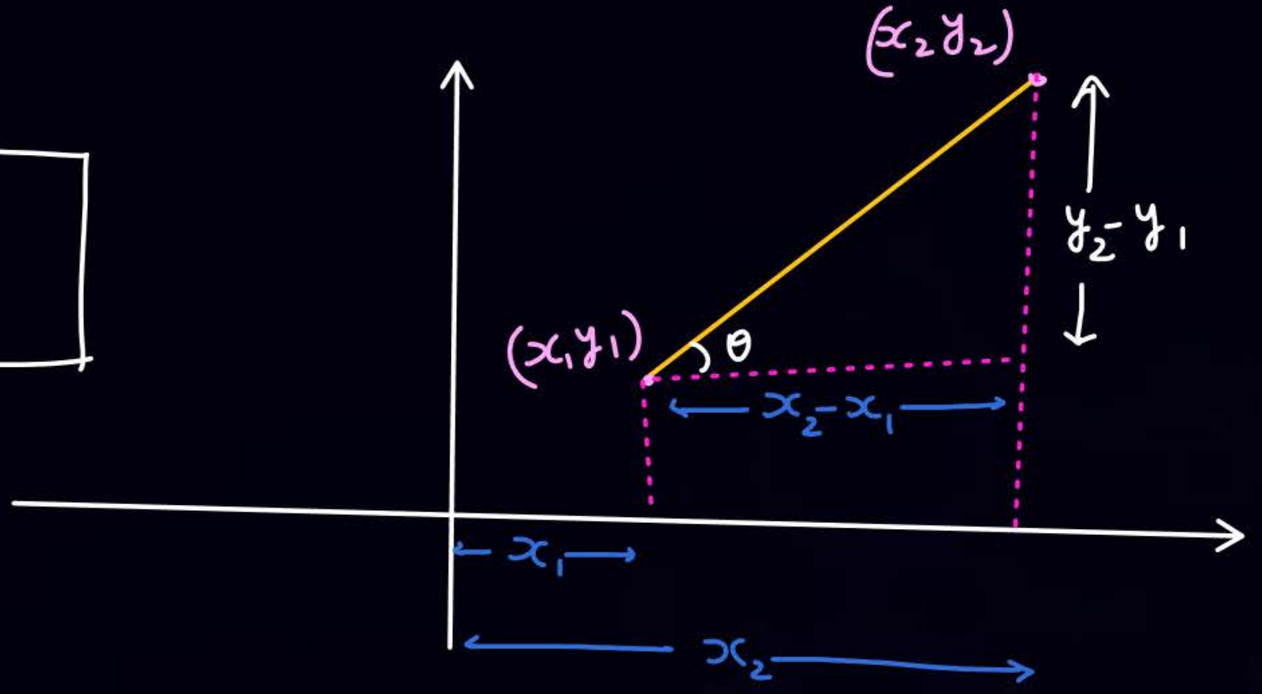


SKC

* (हर जगह slope const है)
* Straight line का slope हर जगह const होता है

→ will use in kinematics

$$\text{slope} = \tan\theta = \frac{y_2 - y_1}{x_2 - x_1}$$



Q

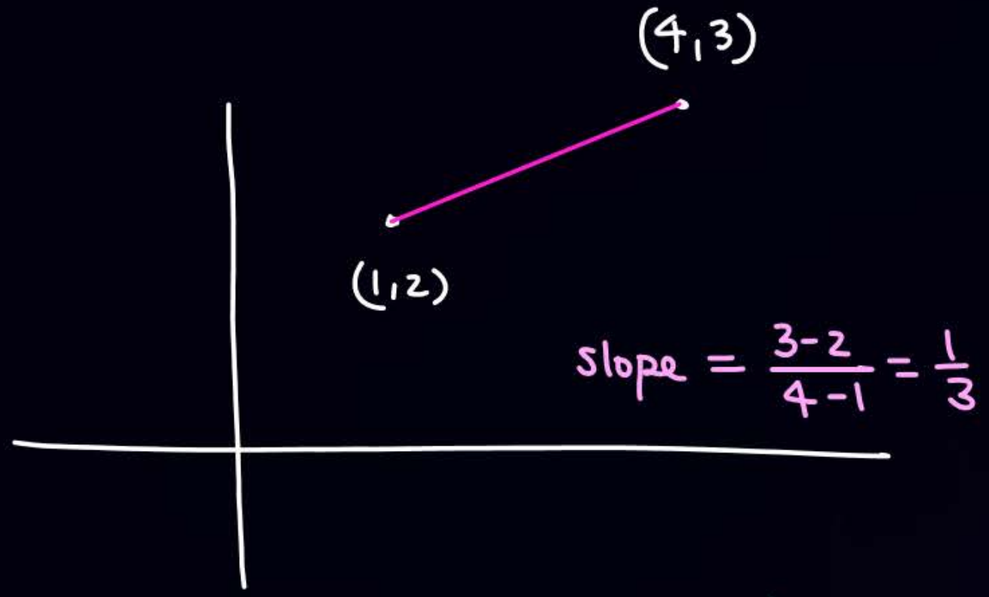
Slope of line joining A to B $= \frac{y_2 - y_1}{x_2 - x_1} = \frac{9-5}{7-4} = \frac{4}{3} = \tan\theta$

$\theta = 53^\circ$

$$\text{slope} = \frac{3-5}{7-2} = \frac{-2}{5}$$

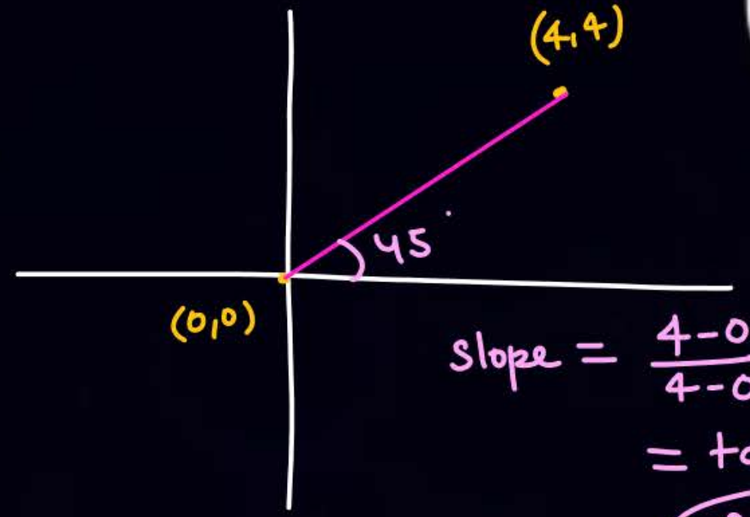
Q

Q



$$\text{slope} = \frac{3-2}{4-1} = \frac{1}{3}$$

Q

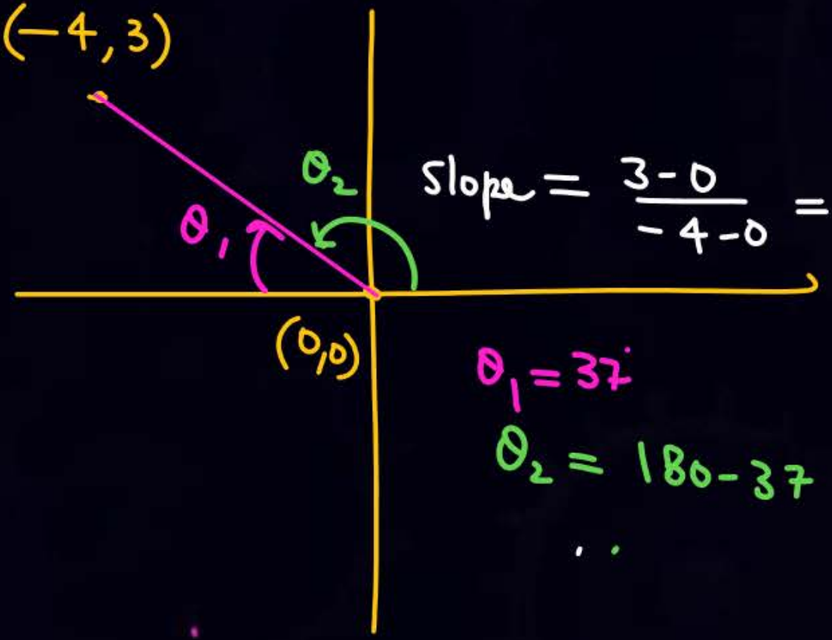


$$\text{slope} = \frac{4-0}{4-0} = 1$$

$$= \tan\theta = 1$$

$$\theta = 45^\circ$$

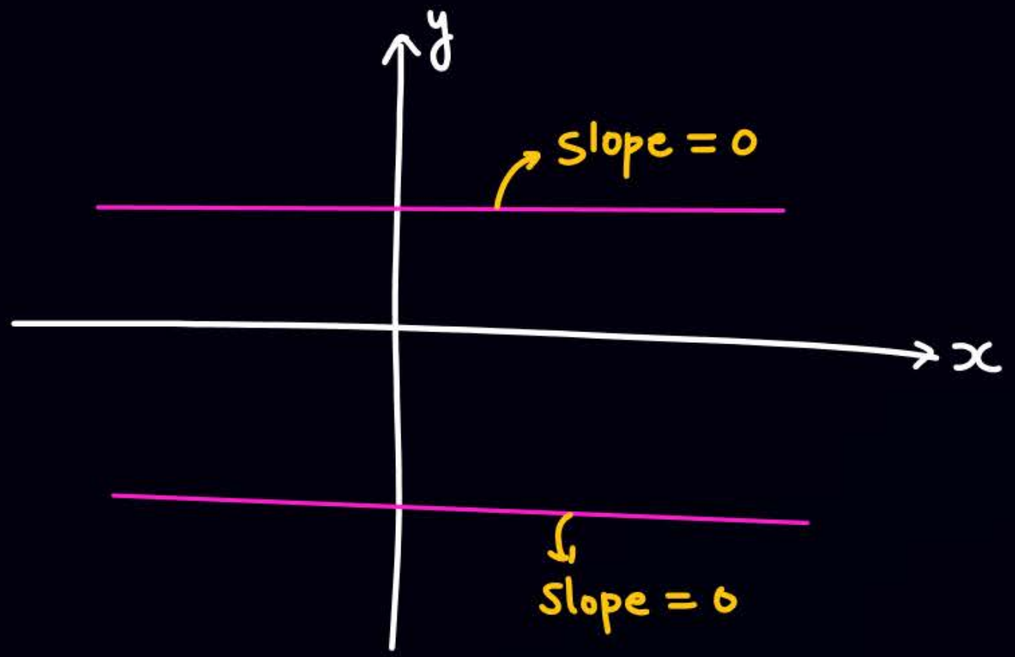
Q

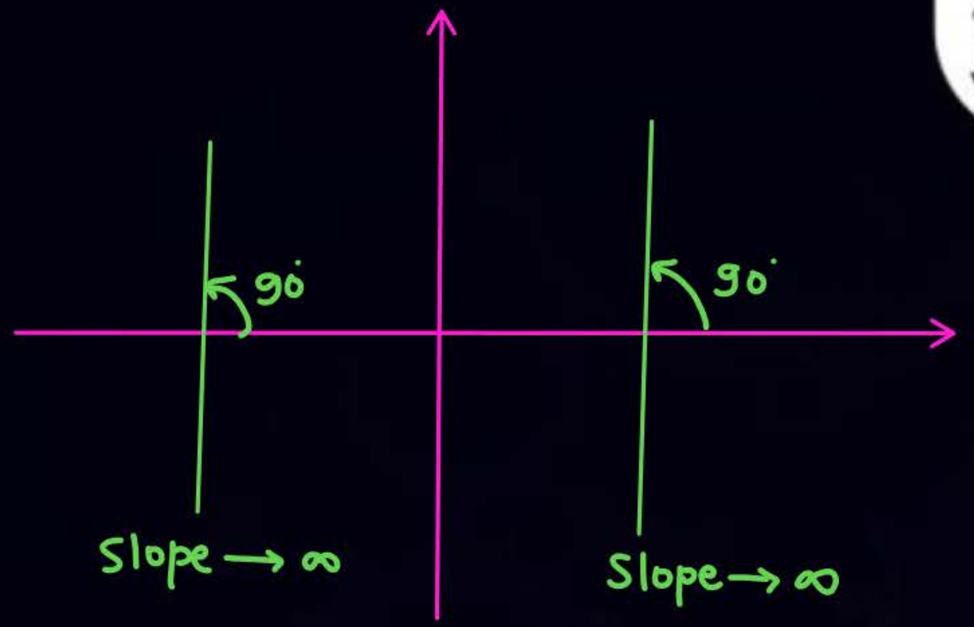


$$\text{slope} = \frac{3-0}{-4-0} = -\frac{3}{4}$$

$$\theta_1 = 37^\circ$$

$$\theta_2 = 180 - 37 = 143^\circ$$


y
x
Slope = 0
Slope = 0


90°
90°
Slope → ∞
Slope → ∞

Equation of straight line

- $y = mx + c$

$m \longrightarrow$ slope $= \tan\theta = \dfrac{y_2 - y_1}{x_2 - x_1}$

At $x = 0$, $y = 0 + c = c \equiv y$ intercept

$c \longrightarrow$ $x = 0$ पर 'y' की Value.

Q $y = \sqrt{3}x + 10$

$y = mx + c$

$m = \sqrt{3} =$ slope $= \tan\theta$

$\theta = 60^\circ$

$c = 10$, at $x = 0$, $y = 0 + 10$

$y = mx + c$

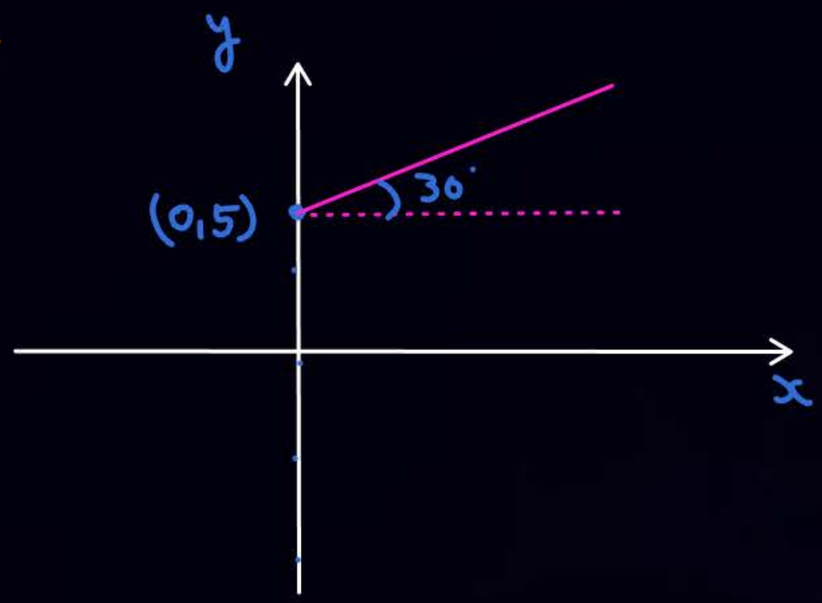
Q $y = \frac{x}{\sqrt{3}} + 5$

$m = \frac{1}{\sqrt{3}} = \tan\theta$ $\theta = 30^\circ$

At $x = 0$, $y = 5$

or

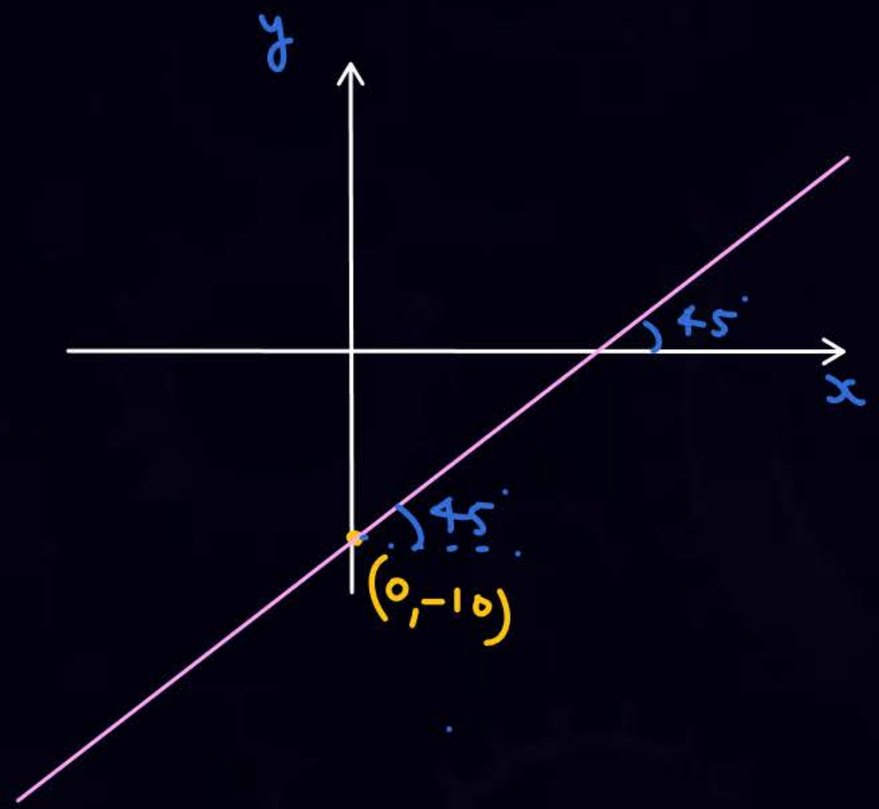
$c = 5$



Q $y = x - 10$

$m = 1 = \tan\theta$

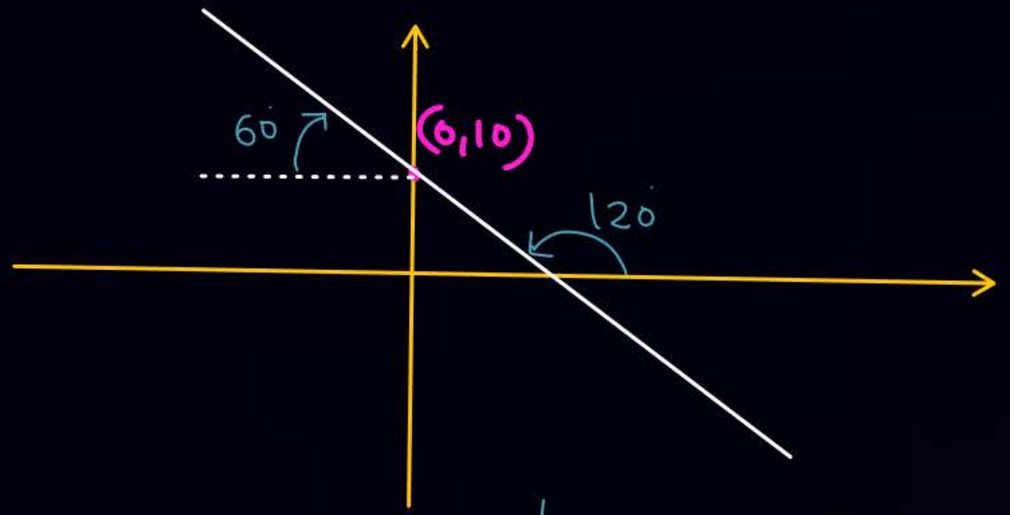
$\theta = 45^\circ$



Q $y = -\sqrt{3}x + 10$

$m = -\sqrt{3}$

$c = 10$ (at $x=0, y=10$)



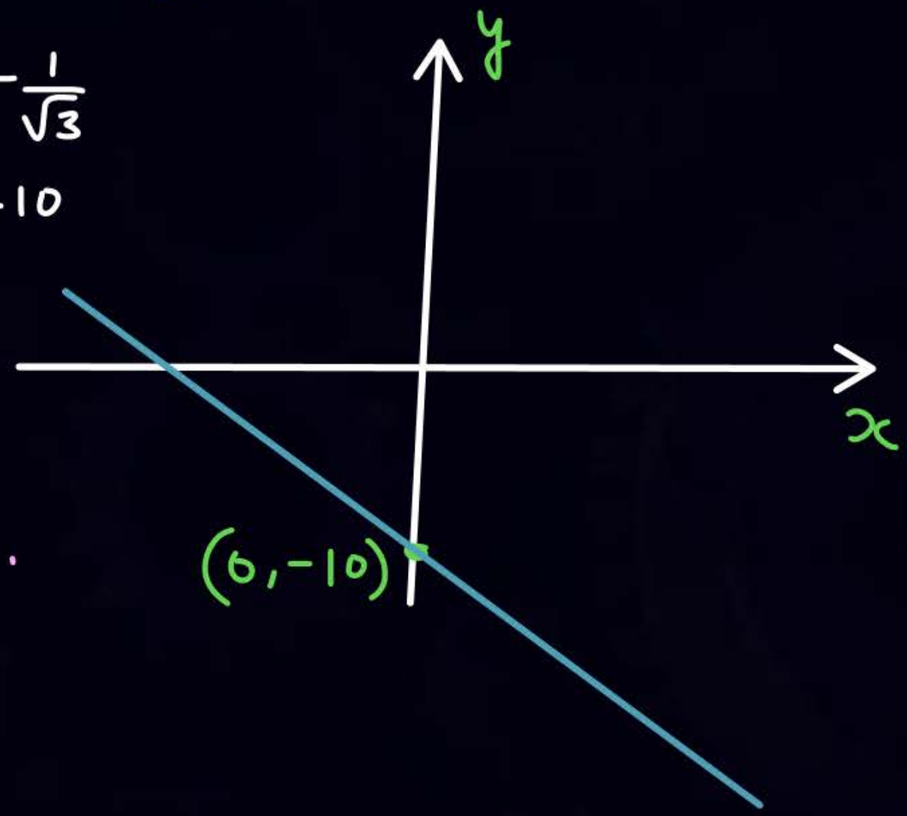
$\tan\theta = -\sqrt{3}$

$\theta = 120°$

Q $y = -\frac{x}{\sqrt{3}} - 10$

$m = -\frac{1}{\sqrt{3}}$

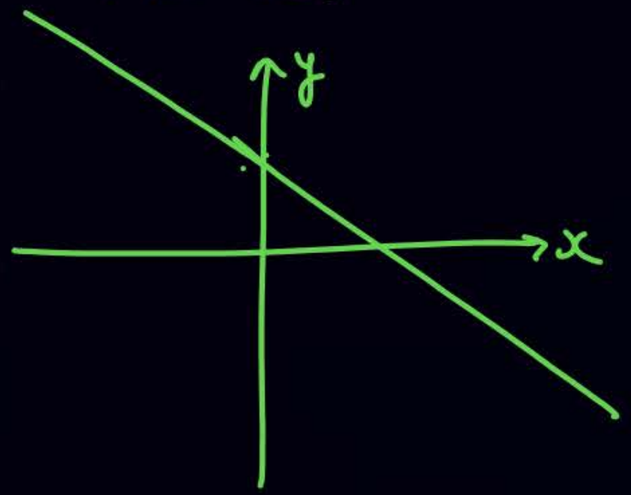
$c = -10$



Q $y + x\sqrt{3} - 10 = 0$

$y = -x\sqrt{3} + 10$

$m = -\sqrt{3}, \; c = 10$



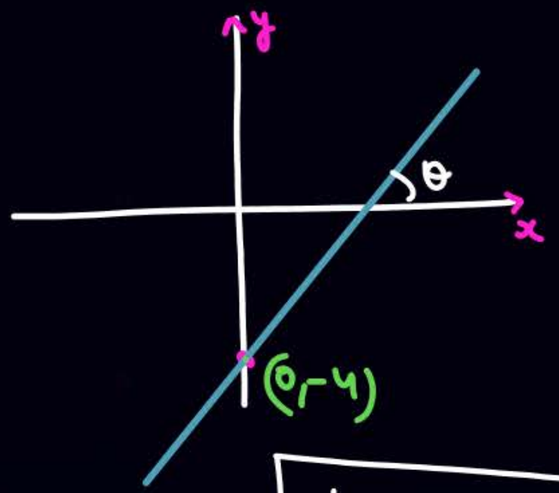
Q $y + \frac{x}{\sqrt{3}} + 10 = 0$

$y = -\frac{x}{\sqrt{3}} - 10$ (Same ques)

$$y = mx + c$$

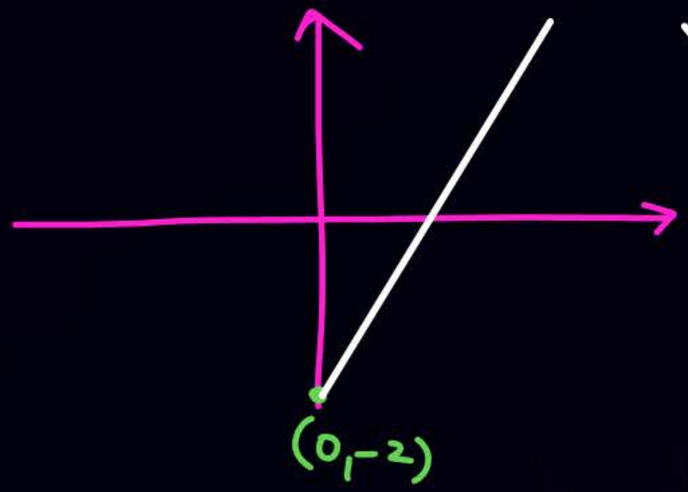
Draw st. line

① $y = 2x - 4$

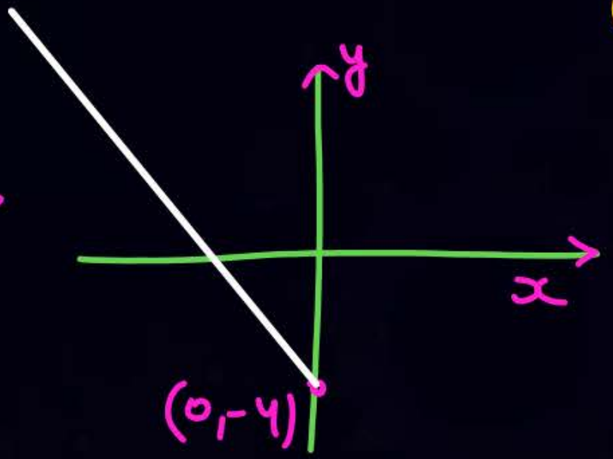


$\tan\theta = 2$

② $y = 4x - 2$



③ $y = -4x - 10$



④ $2y = 4x - 10$

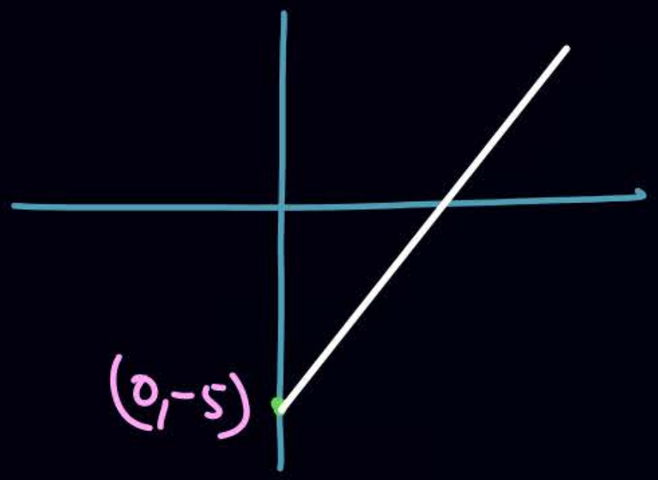
Slope = 4

Q $2y = 4x - 10$

$y = 2x - 5$

slope = 2

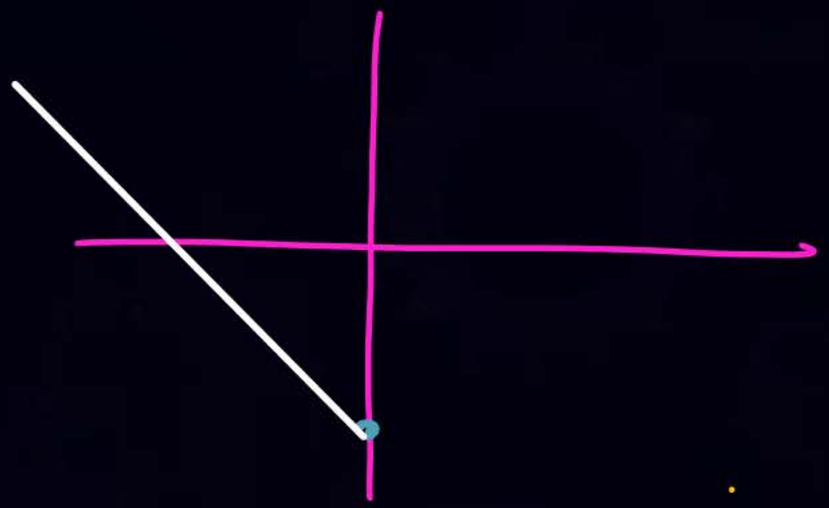
$c = -5$



Q $6x + 3y + 10 = 0$

$3y = -6x - 10$

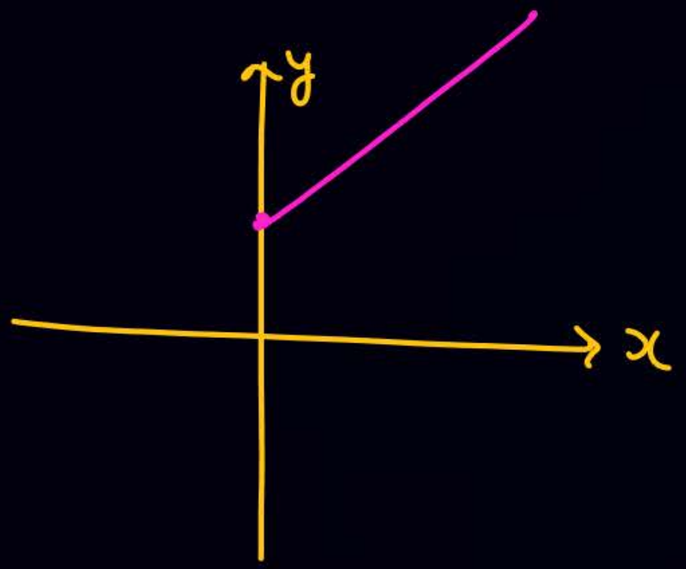
$y = -2x - \frac{10}{3}$



Q $-4x+2y-20=0$

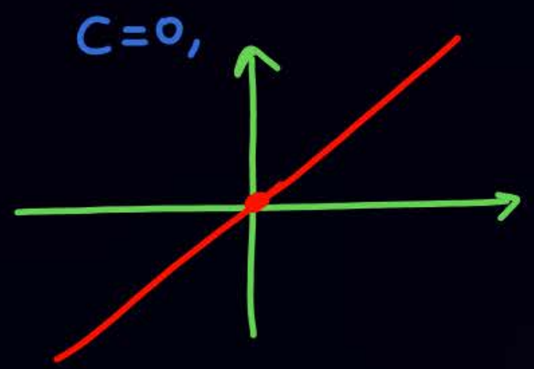
$2y = 4x + 20$

$y = 2x + 10$



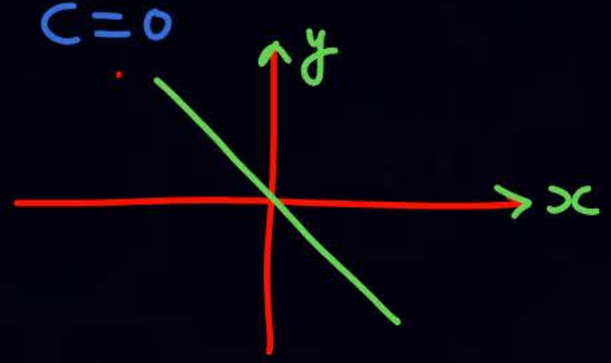
Q $y = 4x$

C=0,



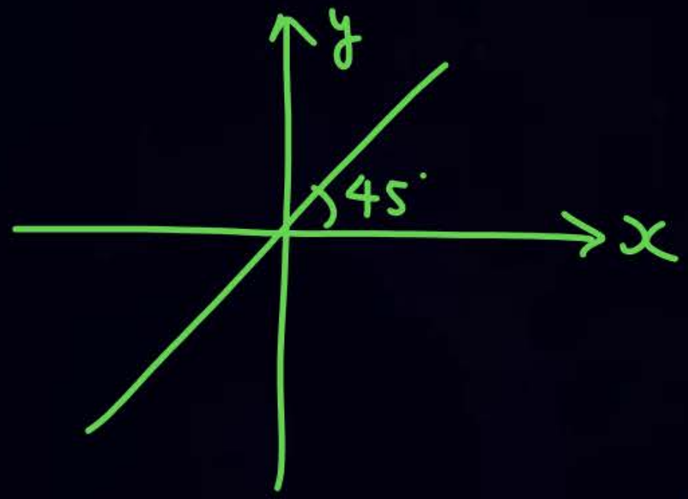
Q $y = -4x$

C=0



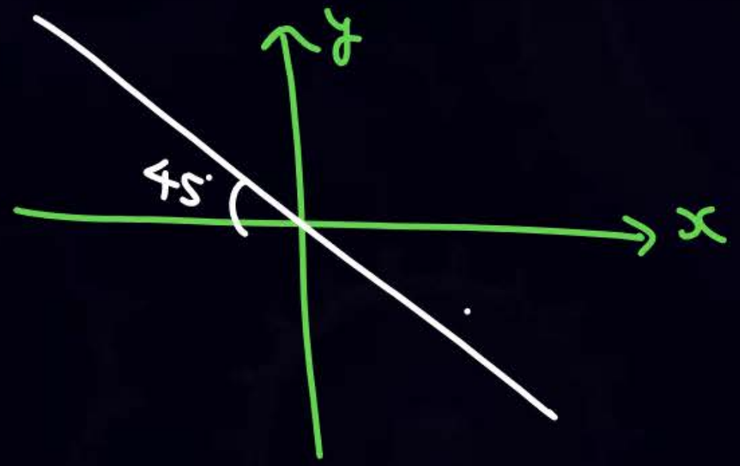
Q $y = x$

C=0

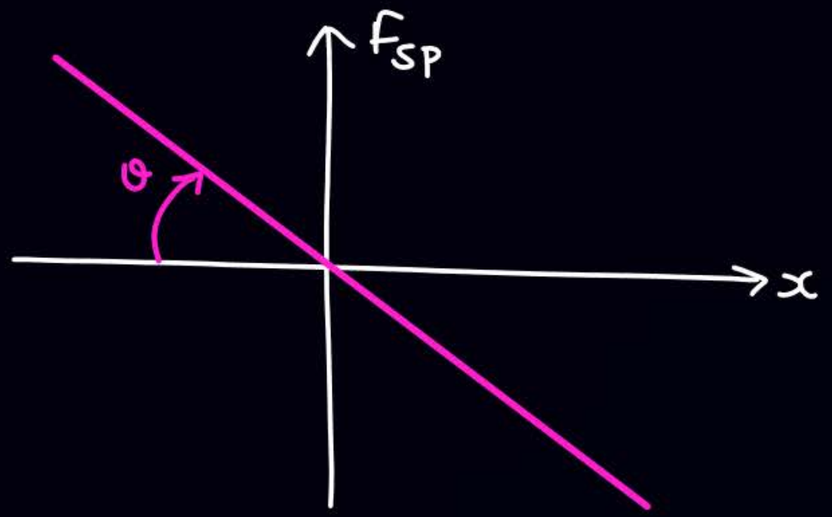


Q $y = -x$

C=0

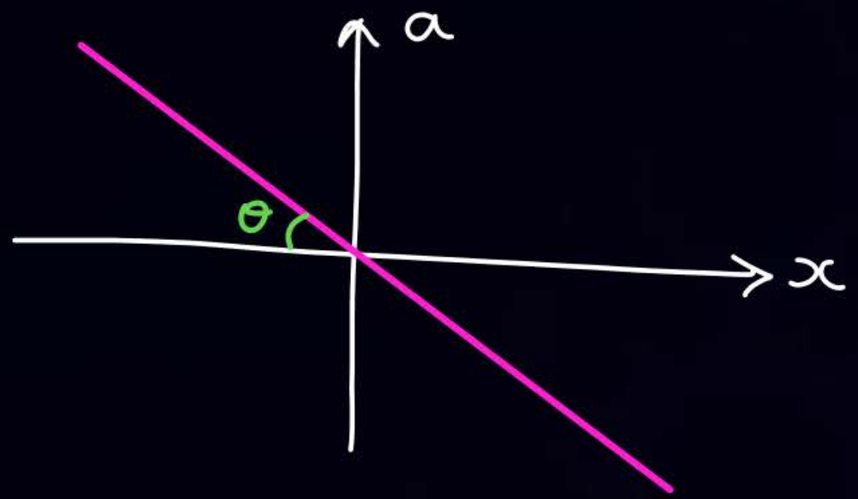


Q $\vec{F}_{sp} = -k\vec{x}$



$\tan\theta = k$

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

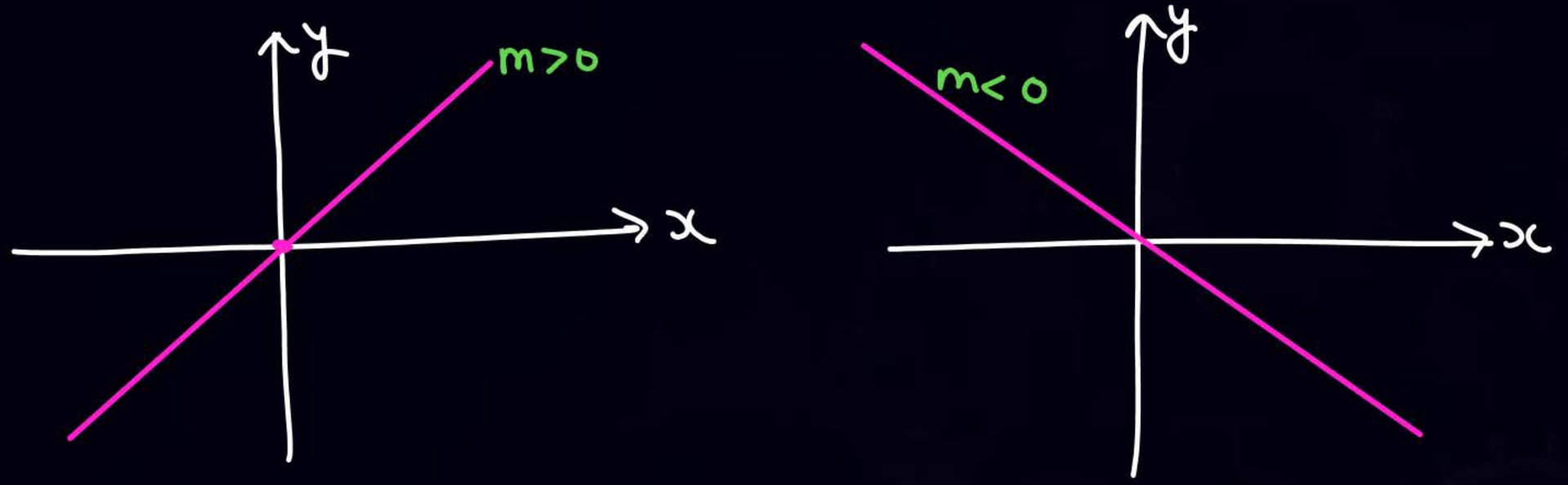


$\tan\theta = \omega^2$

$a = -4x$

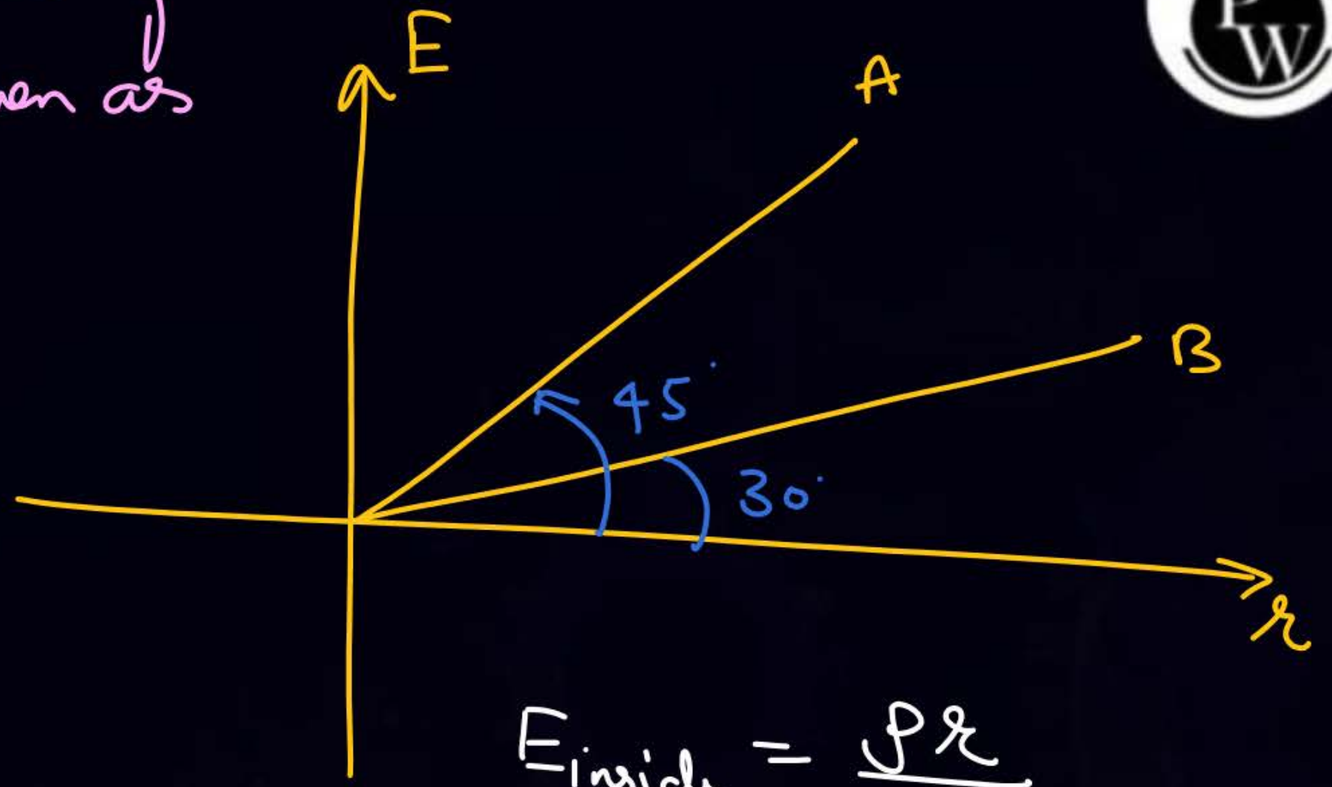
$y = mx + c$

अगर $c = 0$, $y = mx$



Q Electric field inside non-conducting sphere graph V_r r is given as

SSSQ



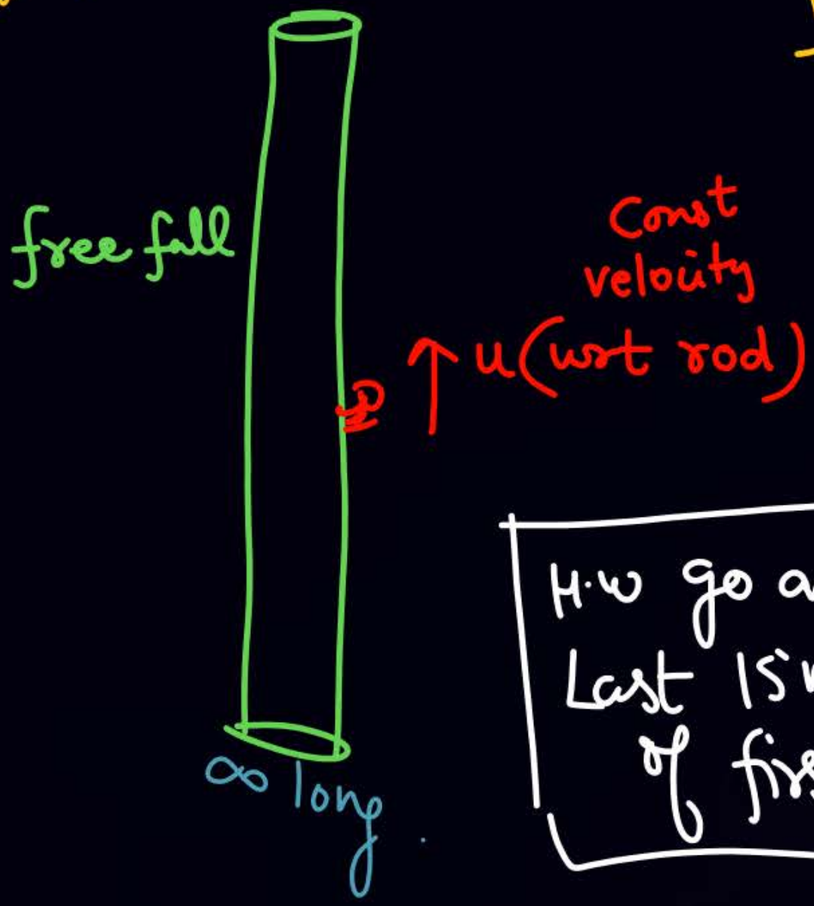
If $\frac{r_A}{r_B} = 3$

find $\frac{Q_A}{Q_B} = ?$

$$E_{inside} = \frac{\rho r}{3\epsilon_0}$$

$$\rho = \frac{Charge}{\frac{4}{3}\pi R^3}$$

At $t=0$ rod is drop



Homework

~~find~~ find when it will reaches to its initial point (same height from ground)

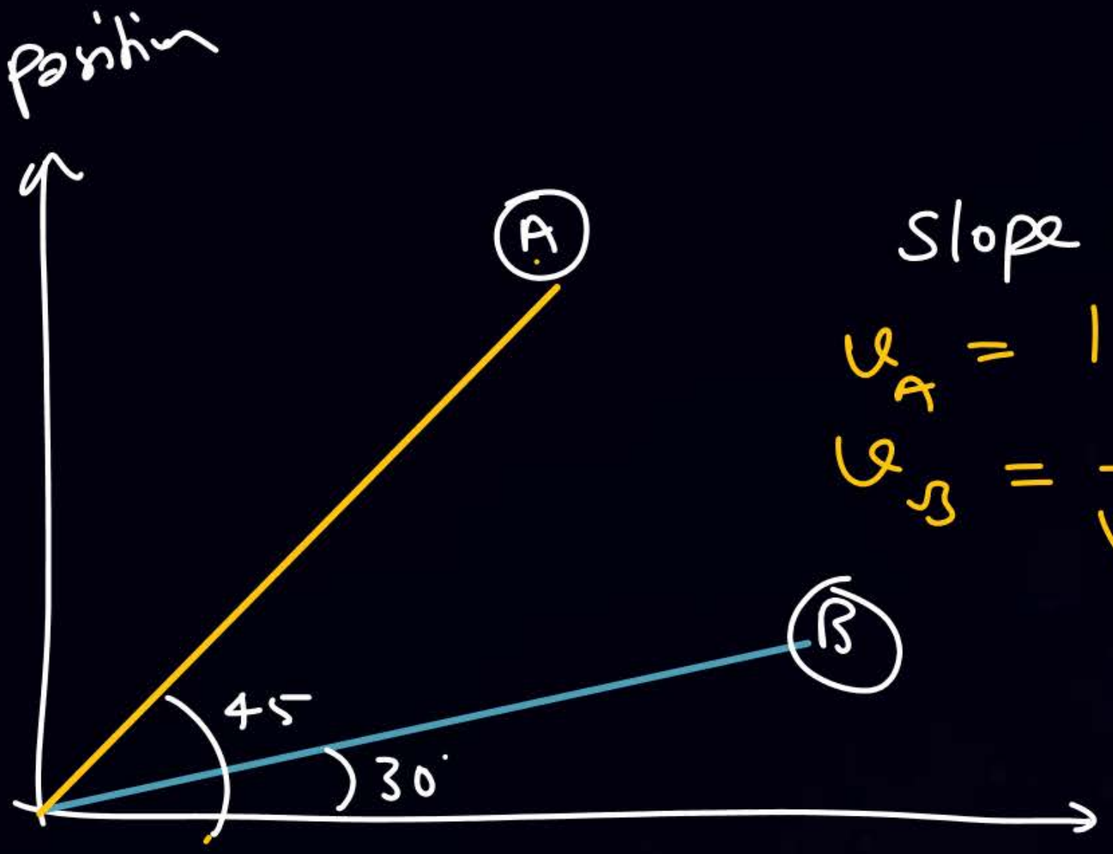
H.W go and watch Last 15 min of first class

सोचना

सोचो ⇒ Winner

डरे ⟶ Not Winner

Basic

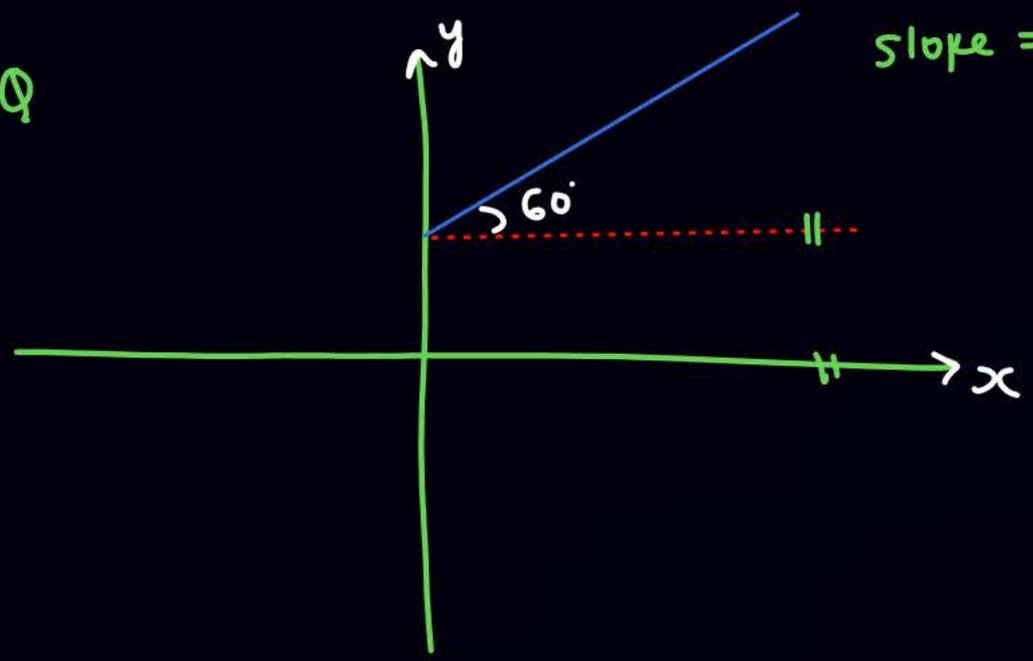


Slope = velocity

$v_A = 1$

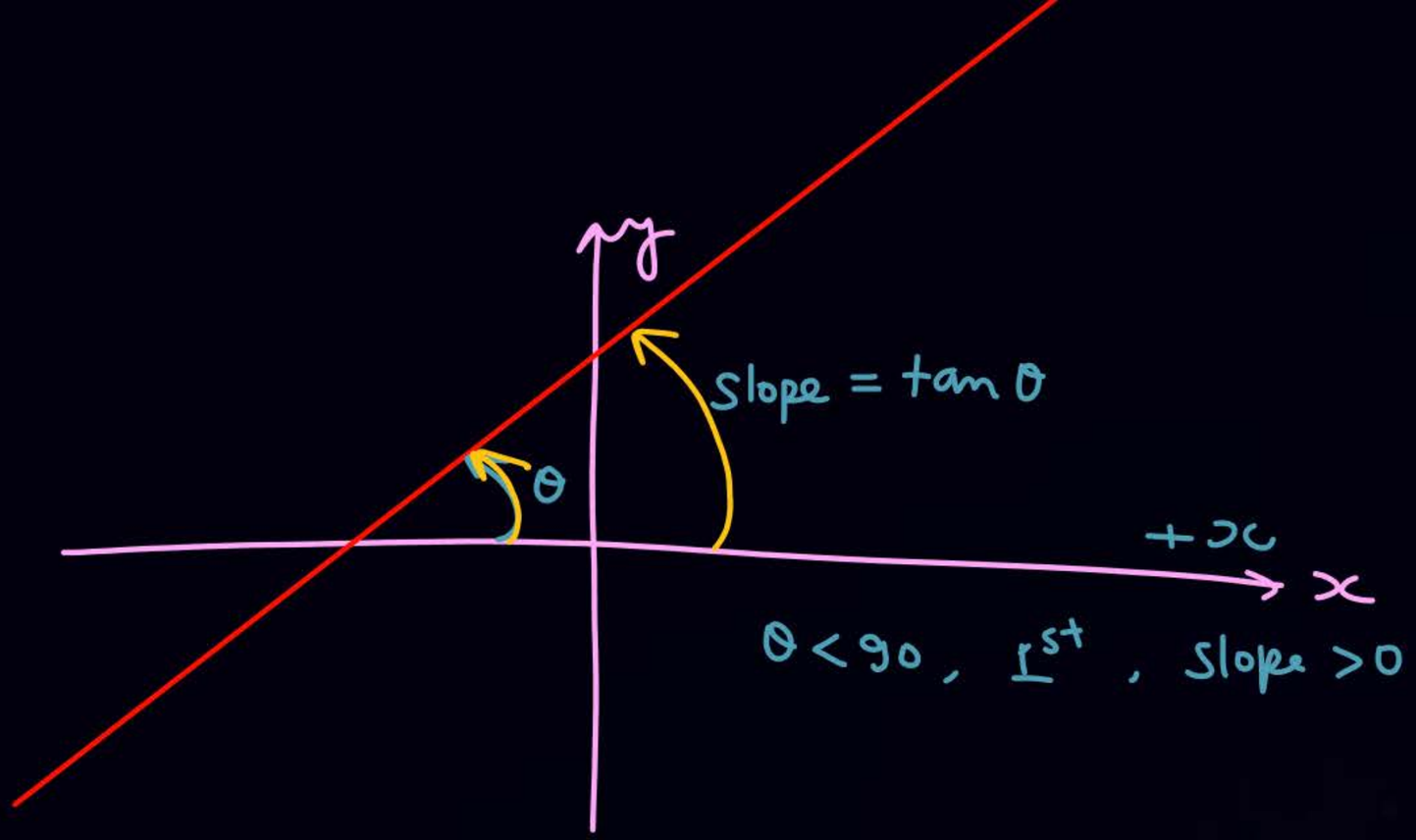
$v_B = \frac{1}{\sqrt{3}}$

Q



slope = $\tan 60 = \sqrt{3}$

$$|\tan\theta| = |\tan(180-\theta)|$$



$\theta < 90^\circ \longrightarrow$

$\theta < 90^\circ$, 1^{st}, Slope > 0

Home Work

- DPP
- KPP (mix problem of language problem + Straight line)

THANK YOU