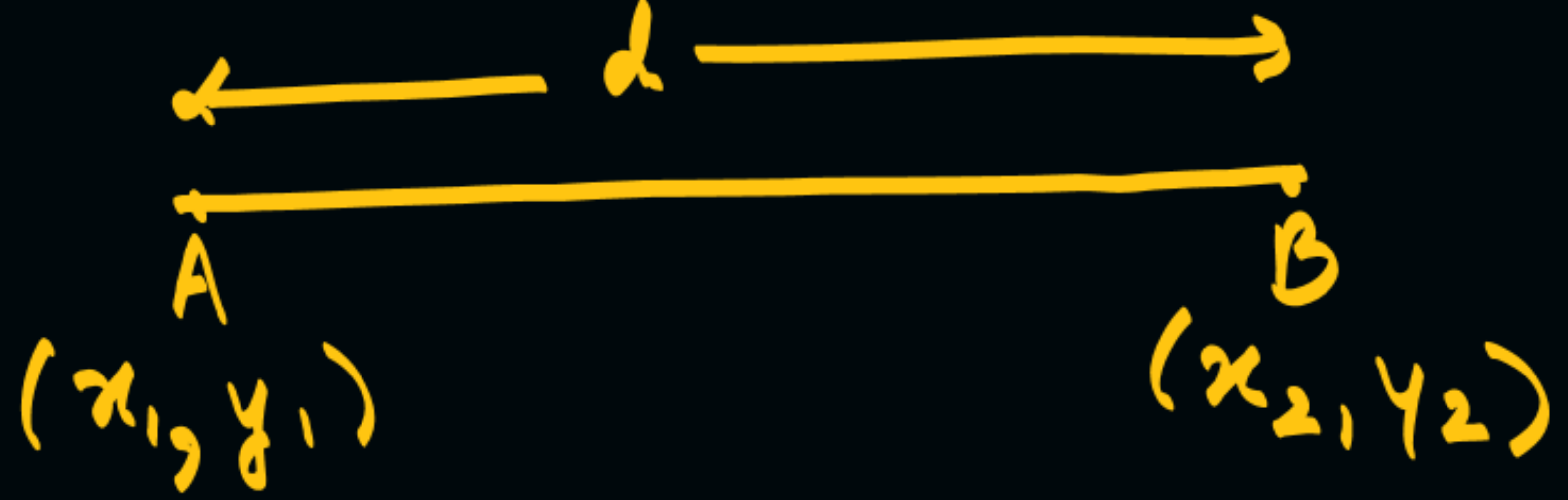
[Aim: 100/100 in Maths]

अभय CLASS 10

COORDINATE – GEOMETRY

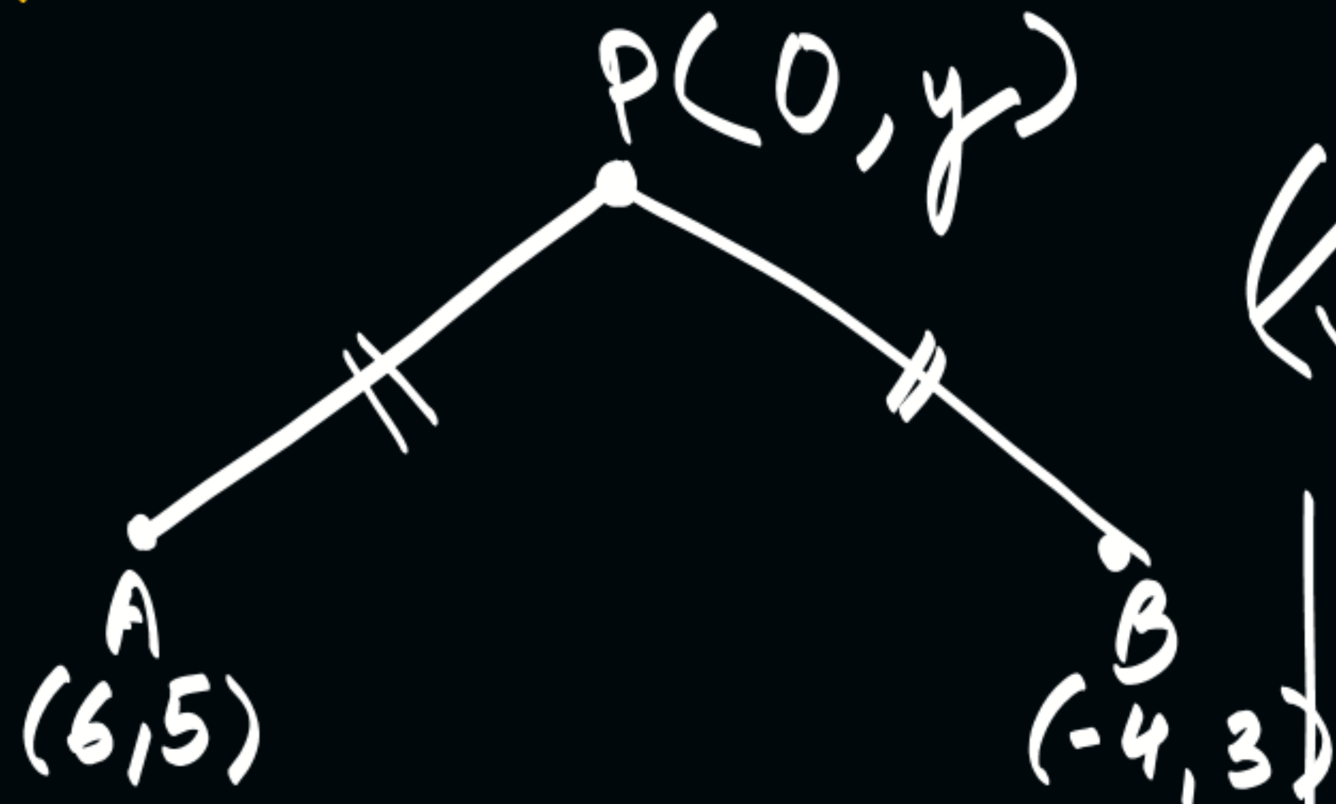
Distance Formula:-



$$\boxed{d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}}$$

#16: Find a point on y-axis which is equidistant from point A (6,5) and B(-4,3).

same distance



$$PA = PB \quad \text{(given)}$$

$$\sqrt{(6-0)^2+(5-y)^2} = \sqrt{(-4-0)^2+(3-y)^2}$$

squaring both sides.

$$\Rightarrow (6)^2+(5-y)^2 = (-4)^2+(3-y)^2$$

$$\Rightarrow 36+25+\cancel{y^2}-10y = 16+9+\cancel{y^2}-6y$$

$$36+\cancel{25} = \cancel{25}+10y-6y$$

$$\cancel{36}^{\,9} = \cancel{4}y$$

$$y = 9$$

$$P(0,9)$$

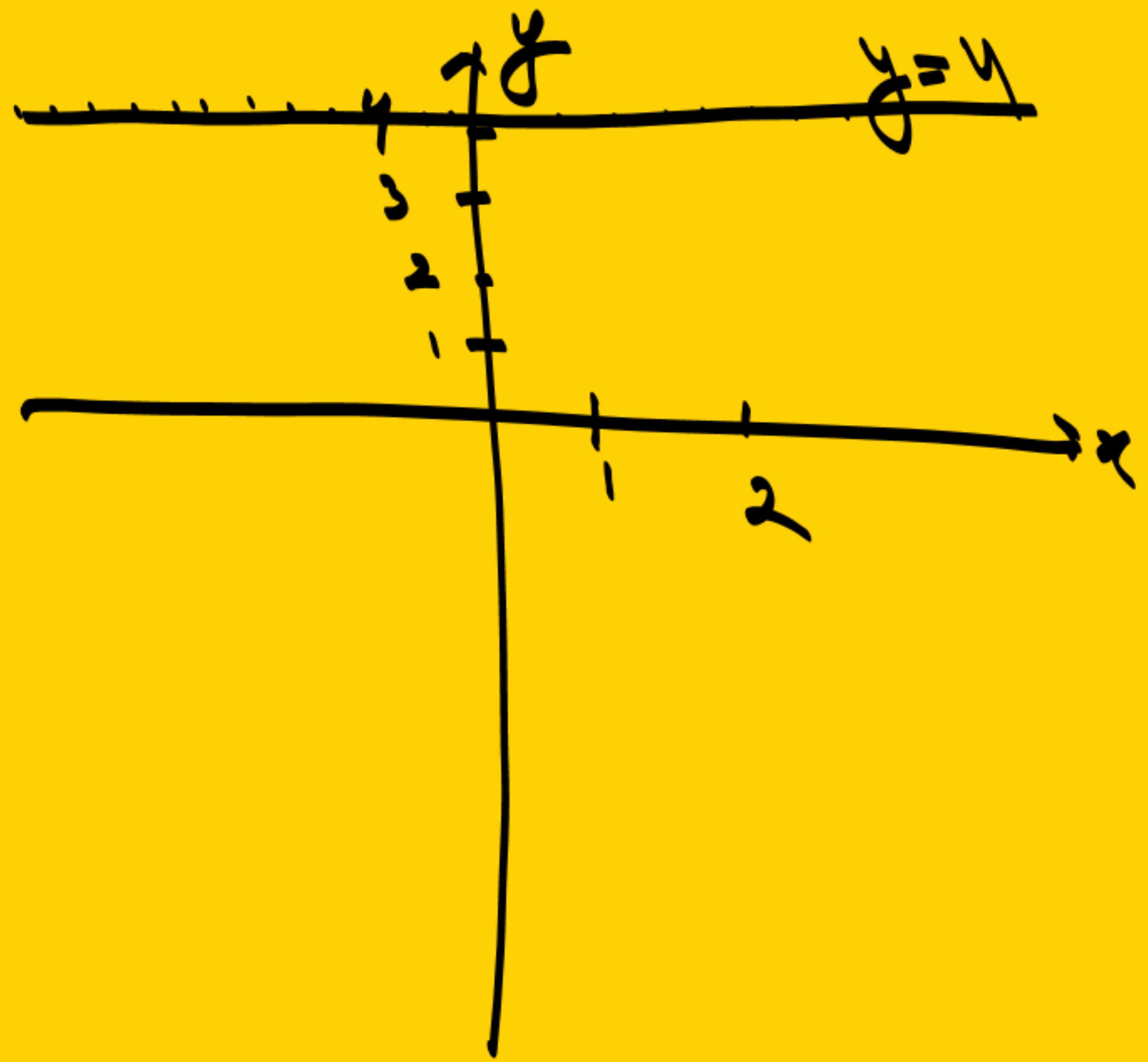
LP : Line y=4

(A) Parallel to Y-Axis

(B) Intersecting both axes

(C) Parallel to X-Axis

(D) Passes through origin



अभय

LP : A line segment is of length 5 cm. if the coordinates of its one end are (2, 2) and that of the other end are (-1, x), then find the value of x.

$AB = 5$

$\left(\cancel{\sqrt{(-1-2)^2+(x-2)^2}}\right)^{\cancel{2}} = (5)^2$

squaring both sides

$(-3)^2 + (x-2)^2 = 25$

$9 + x^2 + 4 - 4x = 25$

$x^2 - 4x + 13 - 25 = 0$

$\boxed{x^2 - 4x - 12 = 0}$

$x^2 - 6x + 2x - 12 = 0$

$x(x-6) + 2(x-6) = 0$

$(x-6)(x+2) = 0$

$x - 6 = 0$ | $x + 2 = 0$

$x = 6$ | $x = -2$

#LP: Show that the points $A(a,a)$, $B(-a,-a)$, $C(-\sqrt{3}a, \sqrt{3}a)$ are the vertices of equilateral Δ. Also find its area.

→ all sides length equal.

To prove: $AB = BC = AC$

Proof: $AB \Rightarrow$

A (a,a) —— B $(-a,-a)$

$$AB = \sqrt{(-a-a)^2 + (-a-a)^2}$$
$$= \sqrt{(-2a)^2 + (-2a)^2}$$
$$\Rightarrow \sqrt{4a^2 + 4a^2} \Rightarrow \sqrt{8a^2}$$

$BC =$

$$\Rightarrow \sqrt{(-\sqrt{3}a - (-a))^2 + (\sqrt{3}a - (-a))^2}$$
$$\Rightarrow \sqrt{(a - \sqrt{3}a)^2 + (\sqrt{3}a + a)^2}$$
$$\Rightarrow \sqrt{a^2 + 3a^2 - \cancel{2(a)(\sqrt{3}a)} + 3a^2 + a^2 \cancel{+ 2(\sqrt{3}a)(a)}}$$
$$\Rightarrow \sqrt{4a^2 + 4a^2}$$
$$\Rightarrow \sqrt{8a^2}$$

$AC = \sqrt{8a^2}$

$\therefore$ Eq. Δ

#K5B

CBSE 2025

✓ Square ⇒ All sides eq + diagonals equal

✓ Rhombus ⇒ All sides eq.

✓ Rectangle ⇒ opp. sides eq + one angle 90°

✓ ||gm ⇒ opp. sides eq.

✓ Eq. Δ ⇒ All sides eq.

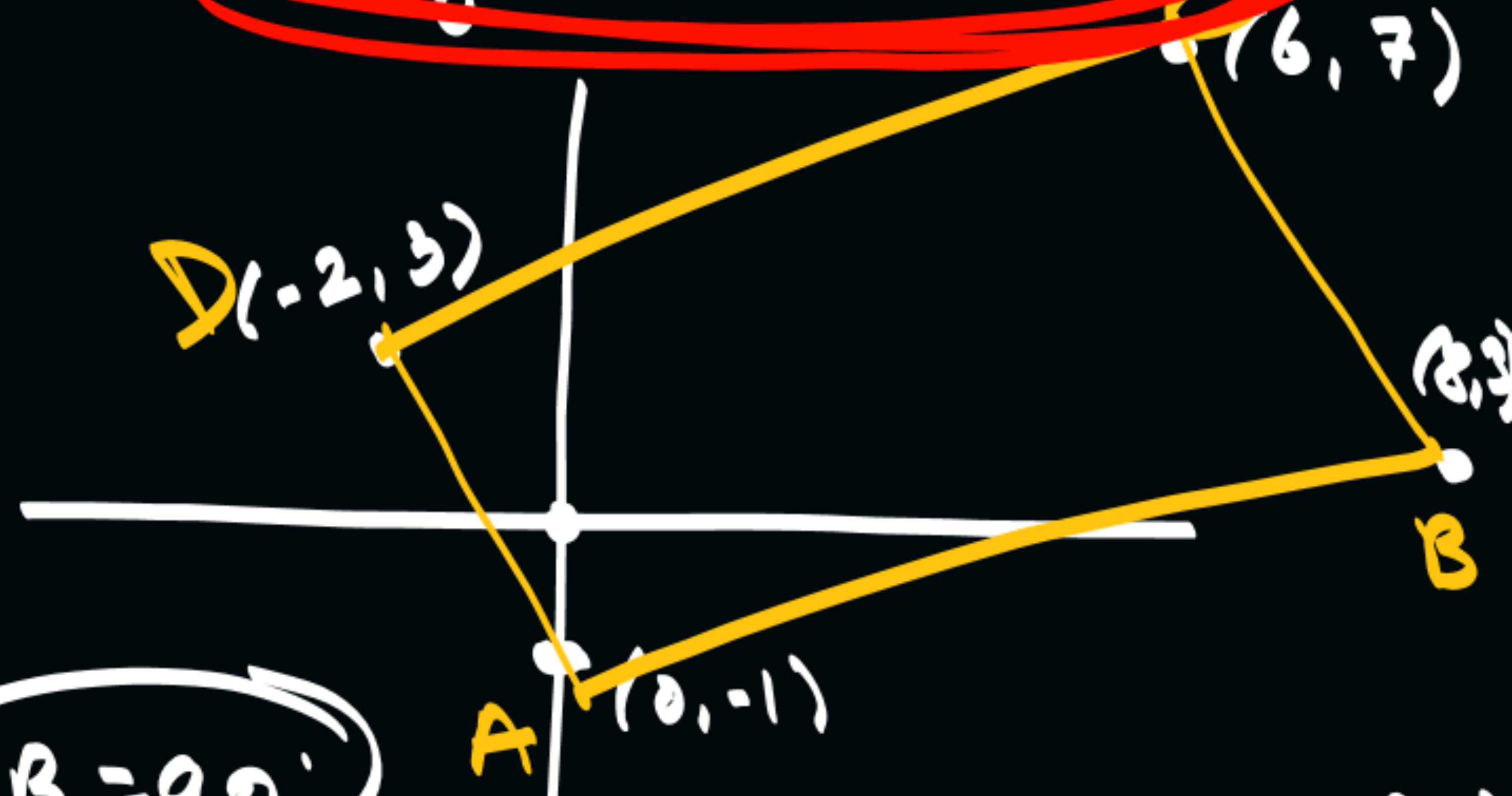
✓ Isos. Δ ⇒ any 2 sides eq.

✓ Right angle Δ ⇒ $H^2 = P^2 + B^2$

Q: Show that four points (0, −1), (6, 7), (−2, 3) and (8, 3) are vertices of a rectangle.

Random points dediye

Rough मे bana लेना

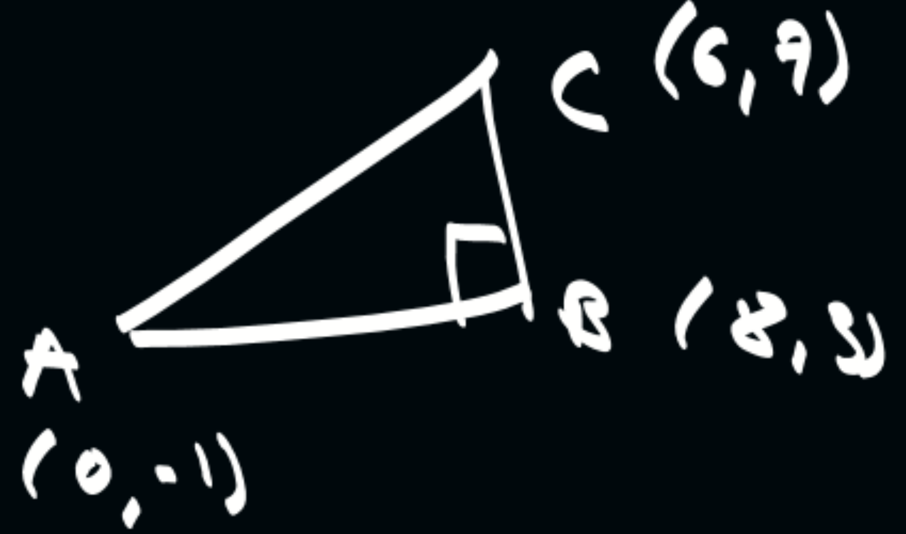


Let $A(0,-1)$
$B(8,3)$
$C(6,7)$
$D(-2,3)$

To prove:- $AB = CD$ & $AD = BC$, $\angle B = 90°$

Proof:

$AB =$, $CD =$] $\sqrt{80}$ | $AD =$, $BC =$ } $\rightarrow \sqrt{20}$



Check $AC^2 = AB^2 + BC^2$

LHS: $AC^2 = 100$

RHS

$AB^2 + BC^2$

$(\sqrt{80})^2 + (\sqrt{20})^2$

$80 + 20 = 100$

$\therefore$ ABC - right Δ

$\angle B = 90°$

HW

LP : If A (3, 5), B (-5,-4), C (7, 10) are the three vertices of a parallelogram taken in the order, then find the co-ordinates of the fourth vertex.

1. (13, 17)
2. (15, 19)
3. (15,17)
4. (13, 19)

Section Formula:-

बटवारा

$$\frac{AP}{PB} = \frac{m}{n}$$

$m : n$

A ——— P ——— B

$A(x_1, y_1)$ $\quad$ P $\quad$ $B(x_2, y_2)$

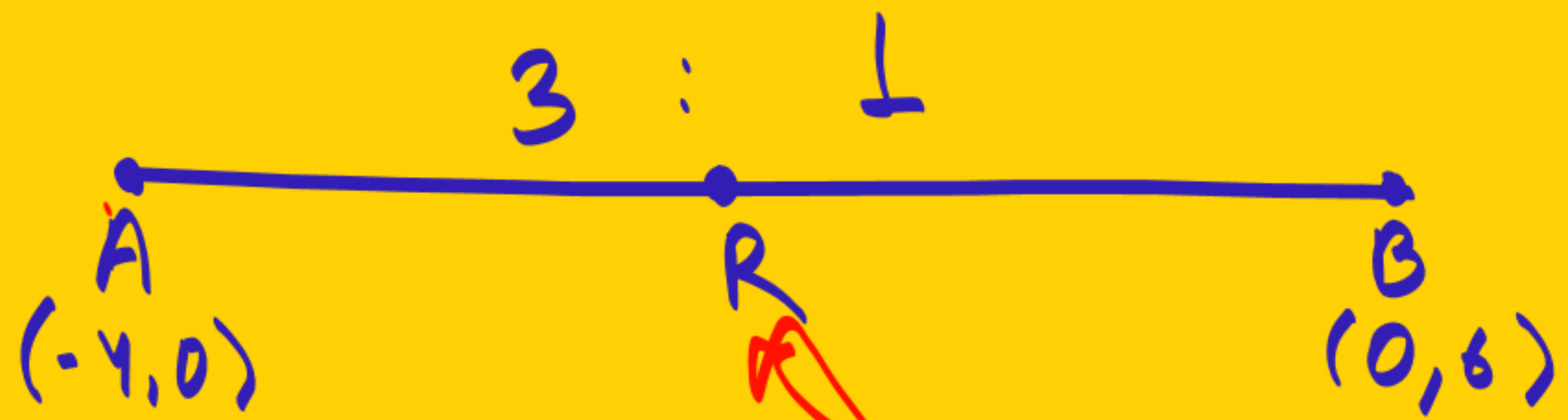
$$P\left(\frac{mx_2 + nx_1}{m+n}, \frac{my_2 + ny_1}{m+n}\right)$$

$$P\left(\frac{2(3)+1(2)}{2+1}, \frac{2(-4)+1(1)}{2+1}\right)$$

$$\boxed{P\left(\frac{8}{3}, \frac{-7}{3}\right)}$$

अभय

LP : The point R divides the line-segment AB, where A(-4, 0) and B(0, 6) are such that AR $= \frac{3}{4}$ AB. Find the coordinates of R.



$\boxed{R\left(-1, \frac{9}{2}\right)}$

$AR = \frac{3}{4} AB$

$\Rightarrow \frac{AR}{AB} = \frac{3}{4}$

$\Rightarrow \frac{AR}{(AR+RB)} = \frac{3}{4}$

$4AR = 3(AR+RB)$

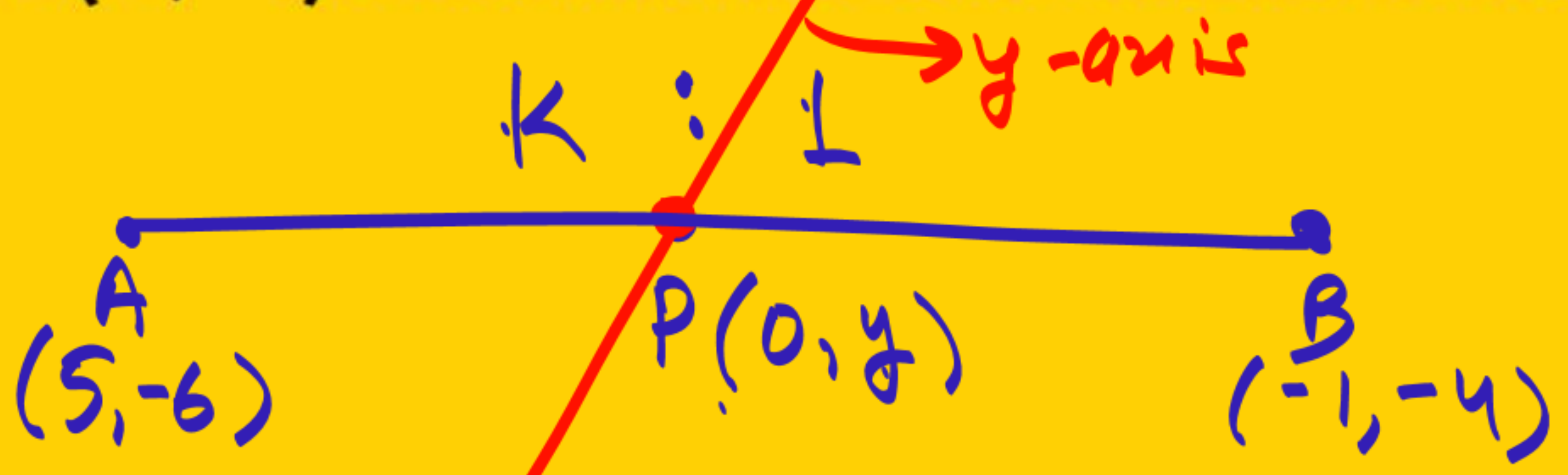
$4AR = 3AR + 3RB \rightarrow AR = 3RB$

$\frac{AR}{RB} = \frac{3}{1}$

$3:1$

Ratio find करने के लिए → $K:1$

LP : Find the ratio in which y-axis divides the line segment joining the points A(5, -6) and B(-1, -4). Also find the coordinates of the point of division.



$$P\left(\frac{K(-1)+1(5)}{K+1}, \frac{K(-4)+1(-6)}{K+1}\right)$$

$$\therefore \frac{K(-1)+1(5)}{K+1} = 0$$

$$-K+5=0$$

$$K=5$$

$$\frac{K(-4)+1(-6)}{K+1} = y$$

$$\frac{5(-4)-6}{6} = y \Rightarrow y = -\frac{26}{6}$$

$$\frac{AP}{PB} = \frac{K}{1} = \frac{5}{1}$$

$$\therefore AP:PB = 5:1$$

$$P\left(0, -\frac{26}{6}\right)$$

#KSB

Line ⇒ $\boxed{x+y=2}$

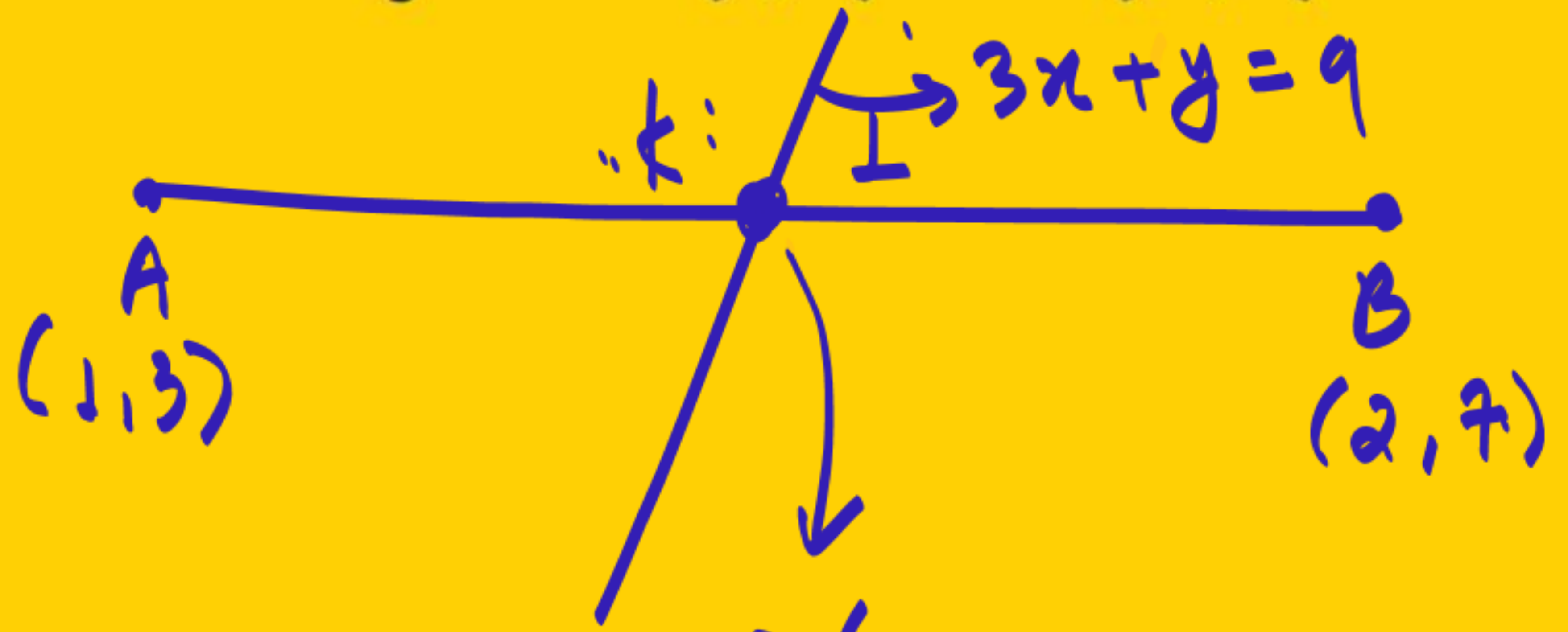
Point (a,b) lies on this line.

Point it will satisfy the eq^n of line

$a+b=2$.

LP : Find the ratio in which the join of (1,3) and (2,7) is divided by the line 3x+y=9

1. 3:4
2. 1:2
3. 2:3
4. 3:7



$$P\left(\frac{k(2)+1(1)}{k+1}, \frac{k(7)+1(3)}{k+1}\right)$$

$$\boxed{P\left(\frac{2k+1}{k+1}, \frac{7k+3}{k+1}\right)}$$

this point will also lie on $3x+y=9$

Mid. point Formula :-

$$\boxed{M\left(\frac{x_2+x_1}{2}, \frac{y_2+y_1}{2}\right)}$$

LP : If (a, b) is the mid – point of the line segment joining the points A(10, -6) and B(k, 4) and a – 2b = 18, then find the value of k and the distance AB.

A $(10, -6)$ M (a, b) B $(k, 4)$

$$M\left(\frac{10+k}{2}, -1\right)$$

$$a = \frac{10+k}{2} \qquad b = -1$$

ATQ

$$a - 2b = 18$$

$$\frac{10+k}{2} - 2(-1) = 18$$

$$\frac{10+k}{2} + 2 = 18$$

$$\frac{10+k}{2} = 16$$

$$10 + k = 32$$

$$k = 32 - 10$$

$$k = 22$$

$$AB = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

अभय

LP : If A (0, -1), B (2, 1) and C (0, 3) are the vertices of $\triangle ABC$ then length of medium drawn from A will be:

(A) 10 (B) $\sqrt{10}$

(C) $\sqrt{5}$ (D) None of these

✓ slides revision
✓ NCERT

THANKYOU
Coodies