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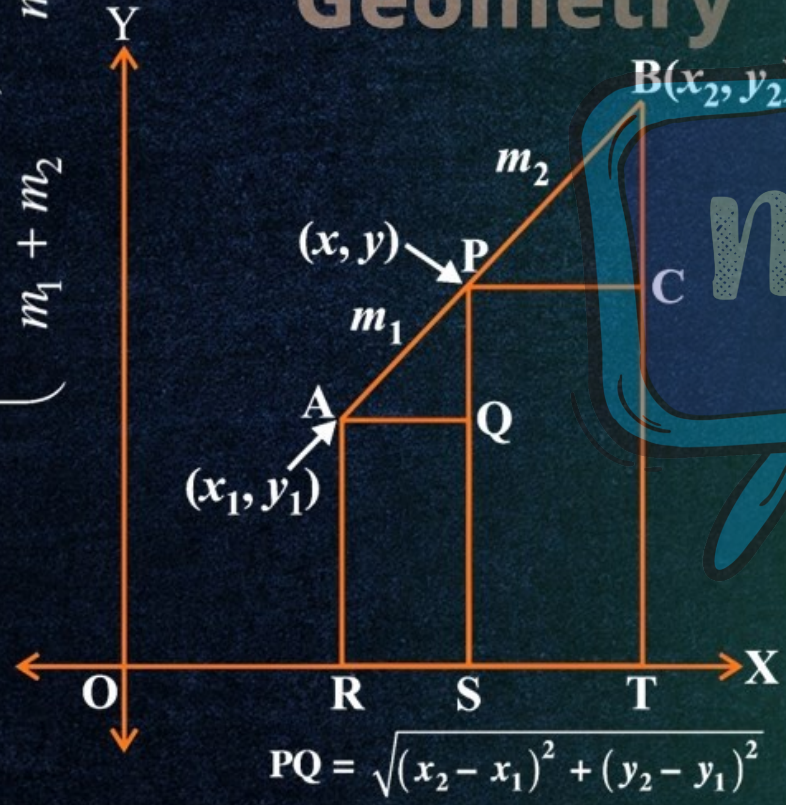
$$\left(\frac{m_1x_2 + m_2x_1}{m_1 + m_2}, \frac{m_1y_2 + m_2y_1}{m_1 + m_2}\right)$$

Coordinate Geometry



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

CLASS – 10

MATHEMATICS

Chapter – 7

Coordinate Geometry

Part – 6

Exercise 7.2 (Q.1–5)

Shubham Tiwari

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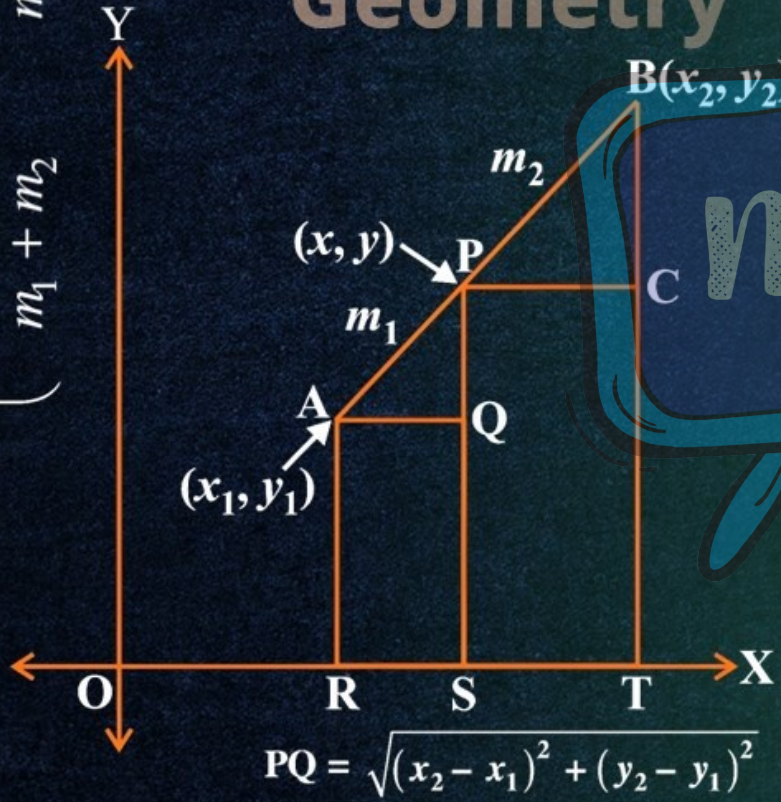
Coordinate Geometry

$$\left(\frac{m_1x_2 + m_2x_1}{m_1 + m_2}, \frac{m_1y_2 + m_2y_1}{m_1 + m_2}\right)$$



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

EXERCISE 7.2

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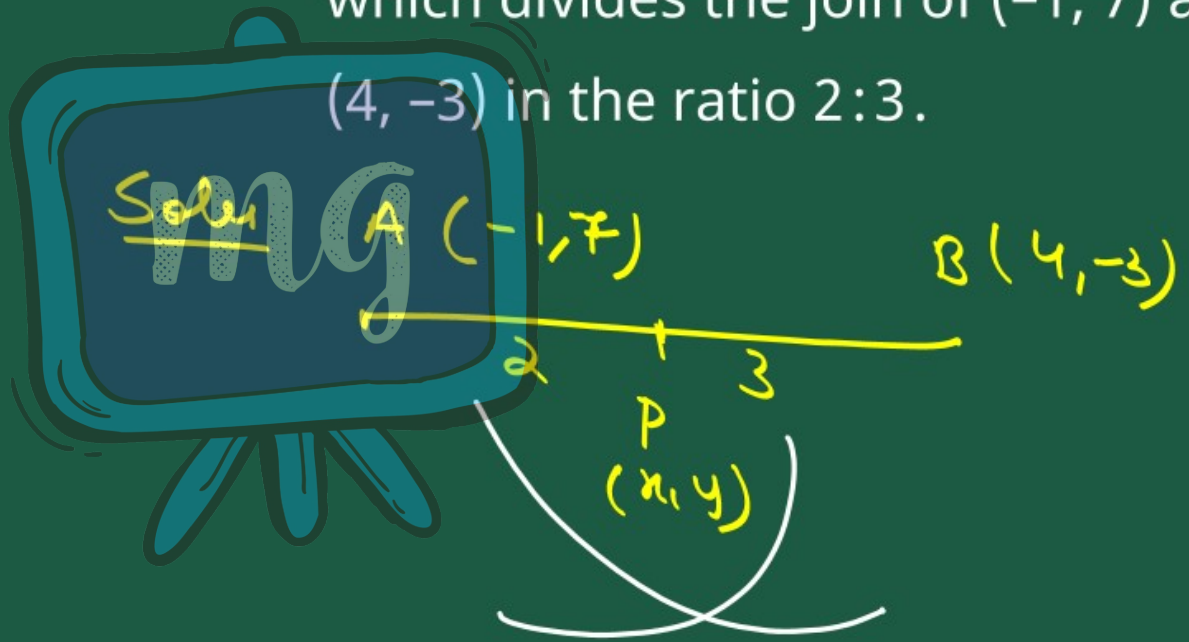
1. Find the coordinates of the point which divides the join of (–1, 7) and (4, –3) in the ratio 2:3.



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By applying section formula.

$$x = \frac{m_2 x_1 + m_1 x_2}{m_1 + m_2}$$

$$y = \frac{m_1 y_2 + m_2 y_1}{m_1 + m_2}$$

$$x = \frac{2 \times 4 + 3(-1)}{2+3}$$

$$x = \frac{8 + (-3)}{5}$$

$$y = \frac{2 \times -3 + 3 \times 7}{2+3}$$

$$= \frac{-6 + 21}{5}$$

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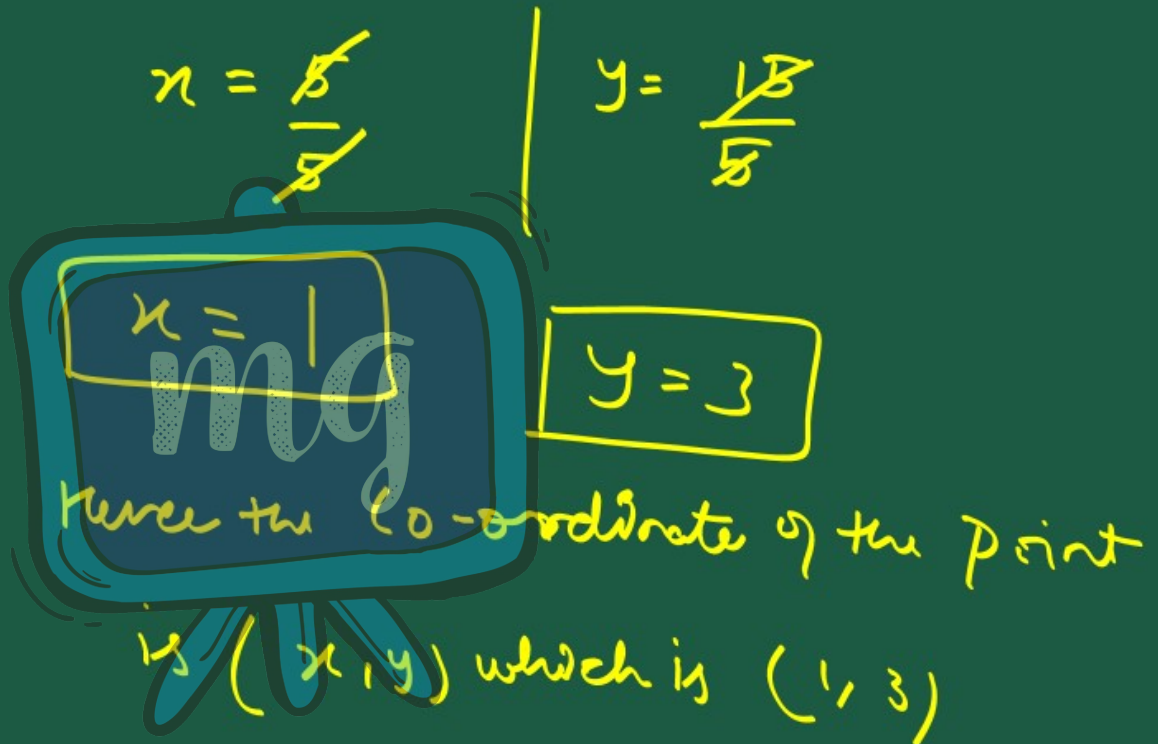

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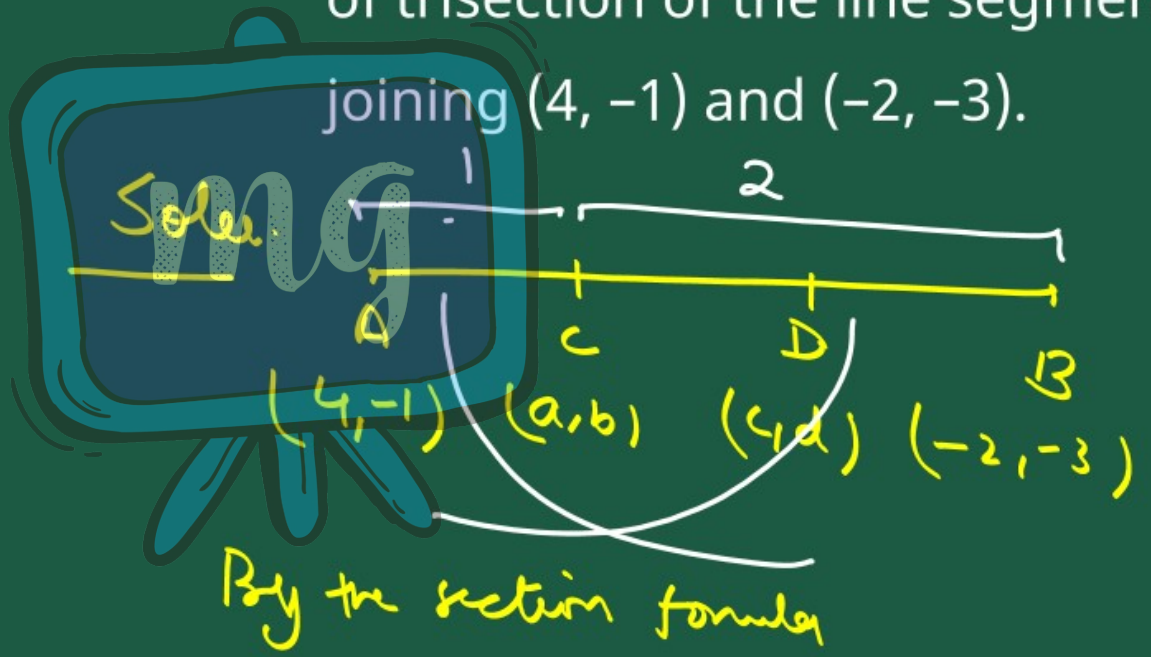
2. Find the coordinates of the points of trisection of the line segment joining (4, –1) and (–2, –3).



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$$x = \frac{m_2 x_1 + m_1 x_2}{m_2 + m_1}$$

$$y = \frac{m_2 y_1 + m_1 y_2}{m_2 + m_1}$$

$$x = \frac{1 \times -2 + 2 \times 4}{1+2}$$

$$= \frac{-2 + 8}{3}$$

$$x = \frac{6}{3} = 2$$

$$y = \frac{1 \times -3 + 2 \times -1}{1+2}$$

$$= \frac{-3 - 2}{3}$$

$$y = -\frac{5}{3}$$

hence the co-ordinate of C is $(2, -5/3)$

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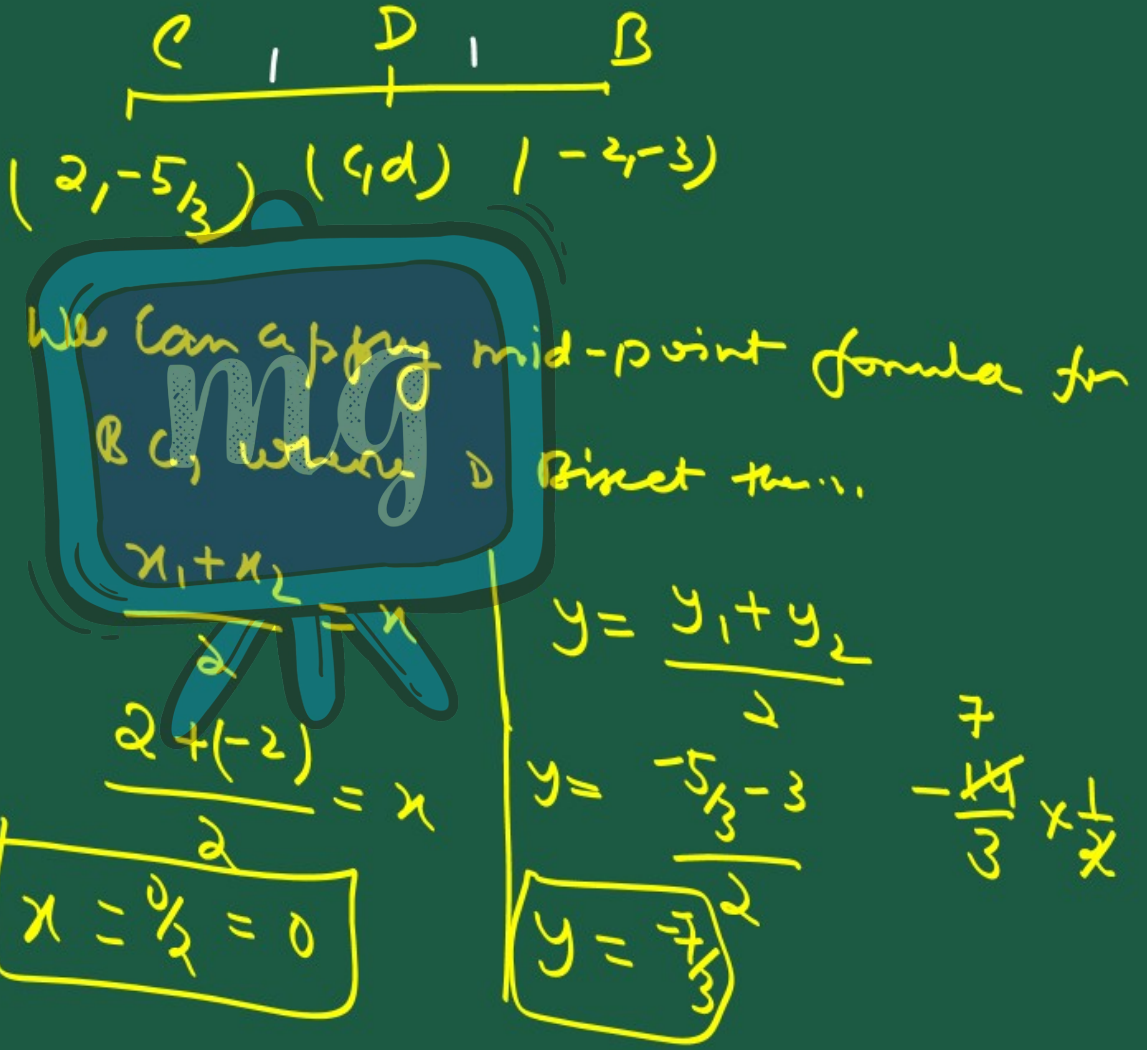

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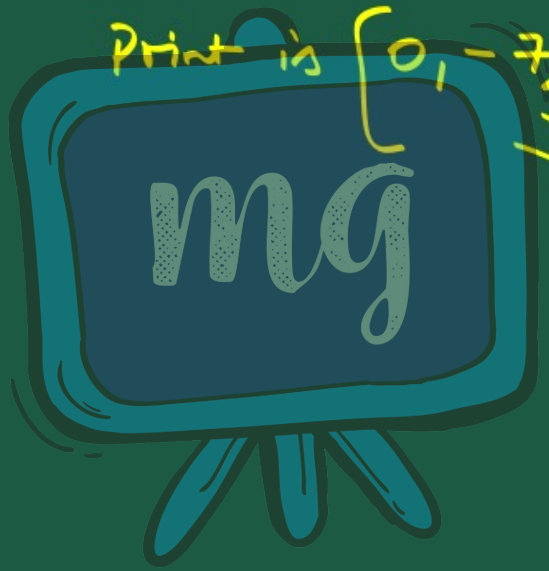
Hence the co-ordinate of d

Point is $\left[0, -\frac{7}{3}\right]$



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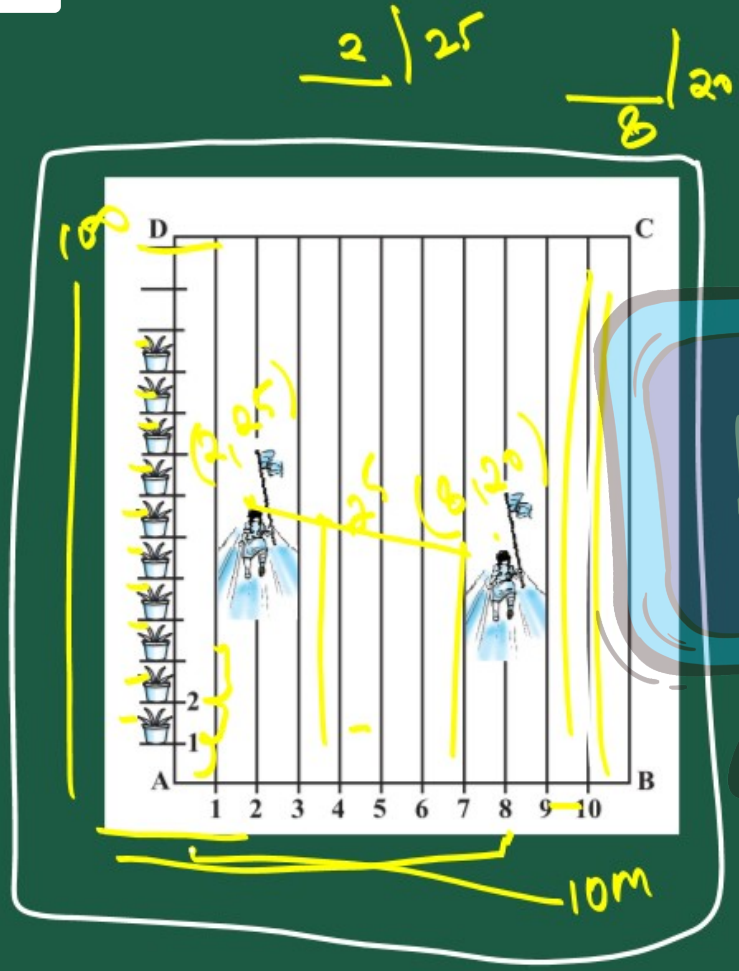

3. To conduct Sports Day activities, in your rectangular shaped school ground ABCD, lines have been drawn with chalk powder at a distance of 1m each. 100 flower pots have been placed at a distance of 1m from each other along AD, as shown in Fig. Niharika runs $\frac{1}{4}$th distance AD on

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the 2nd line and posts a green flag. Preet runs $\frac{1}{5}$th the distance AD on the eighth line and posts a red flag. What is the distance between both the flags? If Rashmi has to post a blue flag exactly halfway between the line segment joining the two flags, where should she post her flag?

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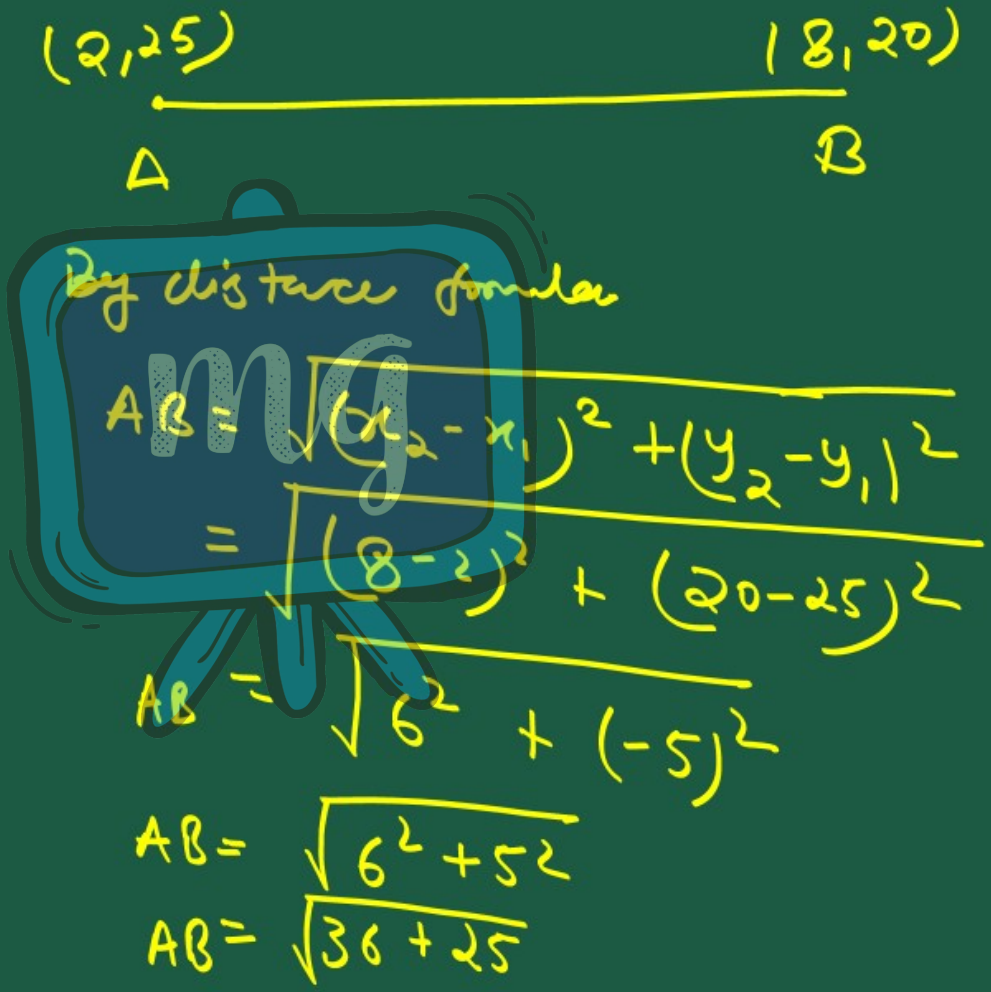

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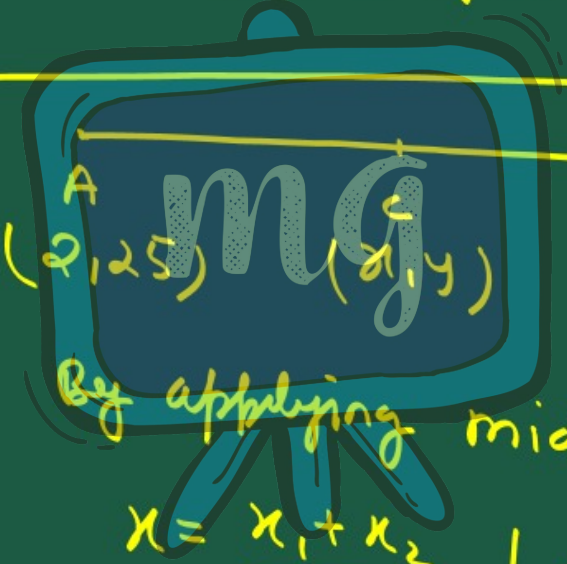
$$AB = \sqrt{36 + 25}$$

$$AB = \sqrt{61} \text{ m.}$$



A $(2, 25)$ (x, y) B $(8, 20)$

By applying mid-point formula

$$x = \frac{x_1 + x_2}{2}$$

$$x = \frac{8 + 2}{2}$$

$$y = \frac{y_1 + y_2}{2}$$

$$y = \frac{20 + 25}{2}$$

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$x = \frac{10}{2}$ | $y = \frac{45}{2}$

$x = 5$ $y = 22.5$

Hence the distance between the flags is $\sqrt{61}$ m. and co-ordinate of the blue flag is $(5, 22.5)$

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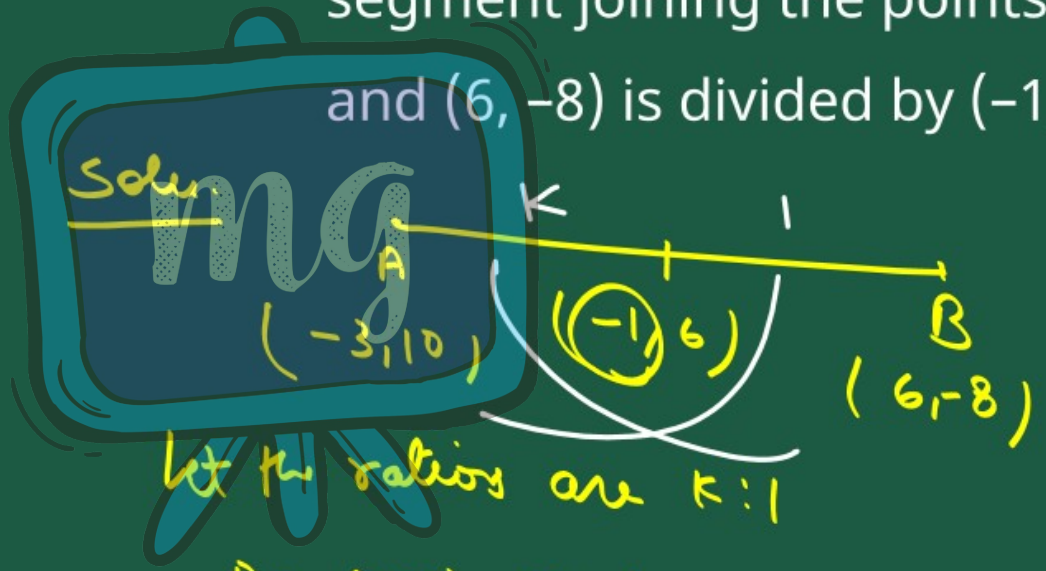
4. Find the ratio in which the line segment joining the points (–3, 10) and (6, –8) is divided by (–1, 6).



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$$-1 = \frac{K \times 6 + 1 \times -3}{K + 1}$$

$-1(K+1) = 6K - 3$

$-K - 1 = 6K - 3$

$3 - 1 = 6K + K$

$2 = 7K$

$\frac{2}{7} = \frac{K}{1}$

Therefore ratios are 2 : 7.

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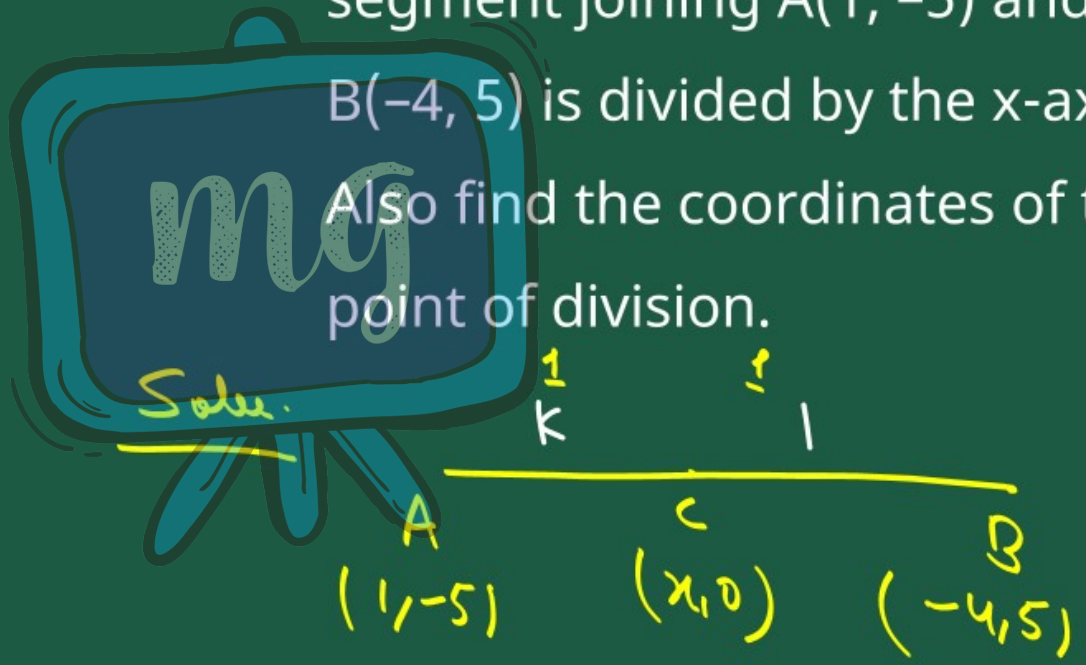
5. Find the ratio in which the line segment joining A(1, –5) and B(–4, 5) is divided by the x-axis. Also find the coordinates of the point of division.



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By section formula.

$$y = \frac{m_2 y_1 + m_1 y_2}{m_1 + m_2}$$

$$= \frac{k \times 5 + 1 \times (-5)}{k+1}$$

$$0 = 5k - 5$$

$$5 = 5k$$

$$\frac{5}{5} = k$$

$$\frac{k}{1} = \frac{1}{1}$$

Hence the ratio are 1 : 1

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To Find the point of Intersecti

let apply section formula

$$x = \frac{m_1 x_2 + m_2 x_1}{m_1 + m_2}$$

$$x = \frac{1 \times -4 + 1 \times 1}{2}$$

$$x = \frac{-4+1}{2} = -3/2$$

Therefore the co-ordinate is $\left(-\frac{3}{2}, 10\right)$