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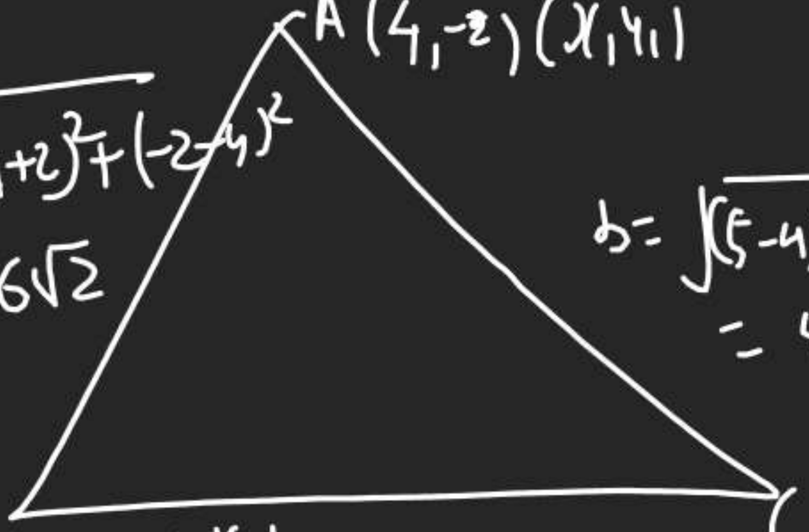
Q Find Incentre of Δ whose vertices are $(4,-2), (-2,4)$ & $(5,5)$



$c = \sqrt{(4+2)^2+(-2-4)^2} = 6\sqrt{2}$

$b = \sqrt{(5-4)^2+(5+2)^2} = 5\sqrt{2}$

$a = \sqrt{(-2-5)^2+(4-5)^2} = \sqrt{49+1} = 5\sqrt{2}$

$$I = \left(\frac{4\times5\sqrt{2} + -2\times5\sqrt{2} + 5\times6\sqrt{2}}{5\sqrt{2}+5\sqrt{2}+6\sqrt{2}}, \frac{5\sqrt{2}\times-2 + 4\times5\sqrt{2} + 5\times6\sqrt{2}}{5\sqrt{2}+5\sqrt{2}+6\sqrt{2}} \right)$$

$$= \left(\frac{40\cancel{\sqrt{2}}}{16\cancel{\sqrt{2}}}, \frac{40\cancel{\sqrt{2}}}{16\cancel{\sqrt{2}}} \right) = \left(\frac{5}{2}, \frac{5}{2} \right)$$

$P(-2,-1), Q(4,0), R(3,3), S(-3,2)$

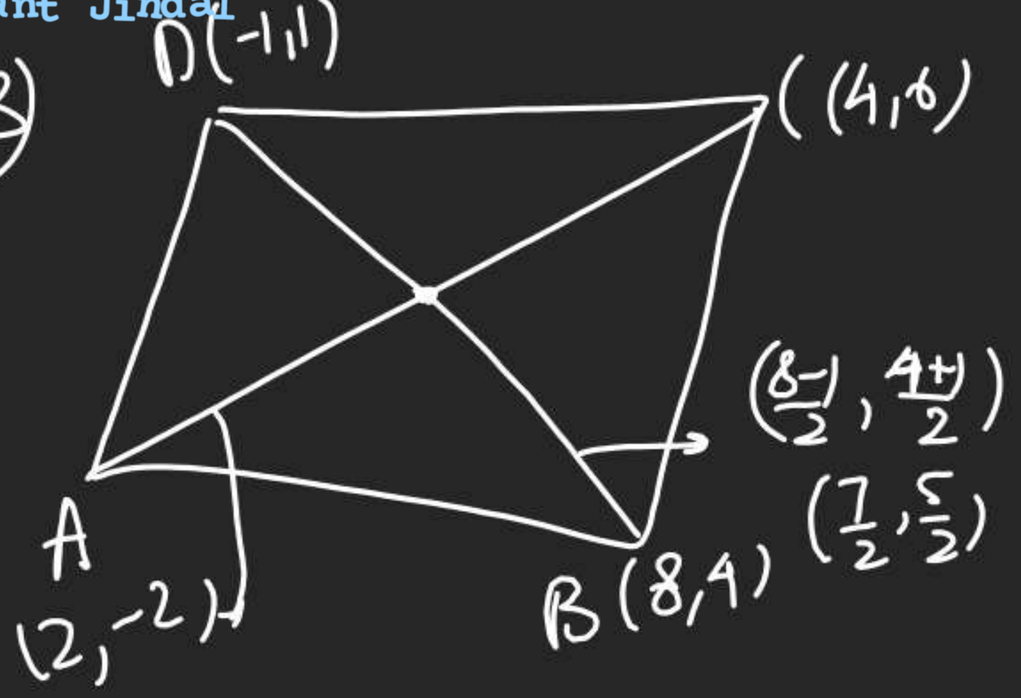
HW 17, 19, 20, 21, 22, 23, 24, 25,
40, 41, 42, 43, 45, 47, 50, 52, 55

Q → Mid Pt. matching.

Area 99

OA = OB = OC

23)



$\left(\frac{2+4}{2} \quad\right)$ ×

$\left.\begin{array}{l} Sq^n \times \\ Rh \times \\ Rect \times \end{array}\right\}$ trap.

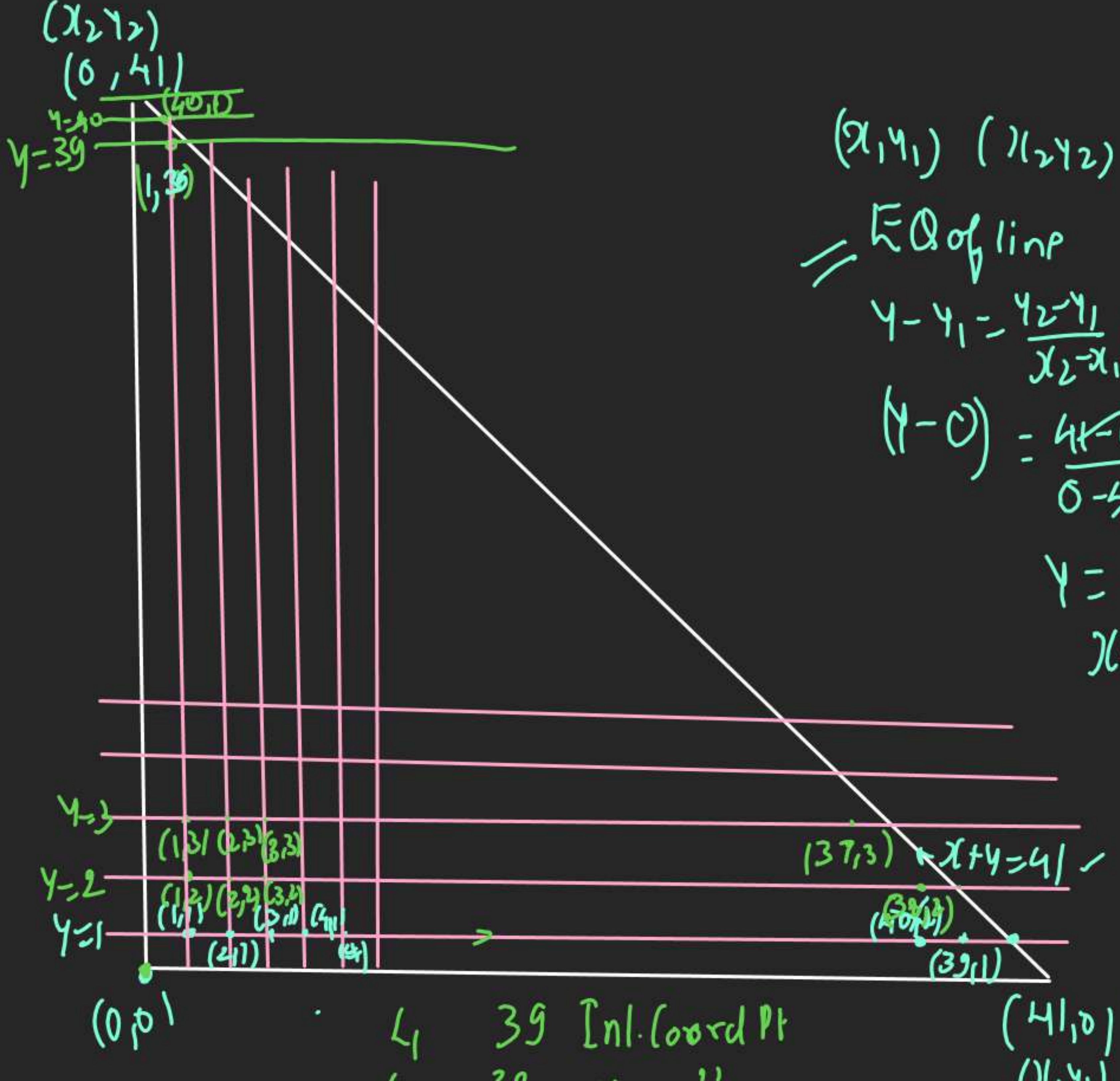
$$\frac{1+2+3 - - - 39}{}$$

$$= \frac{39(39+1)}{2}$$

$$= 39 \times 20$$

$$= 780$$

25).



(x_1, y_1) $(x_2 y_2)$

= EQ of line

$$y - y_1 = \frac{y_2 - y_1}{x_2 - x_1}(x - x_1)$$

$$(y - 0) = \frac{41 - 0}{0 - 41}(x - 41)$$

$$y = -x + 41$$

$$x + y = 41$$

$40 + 1 = 41$

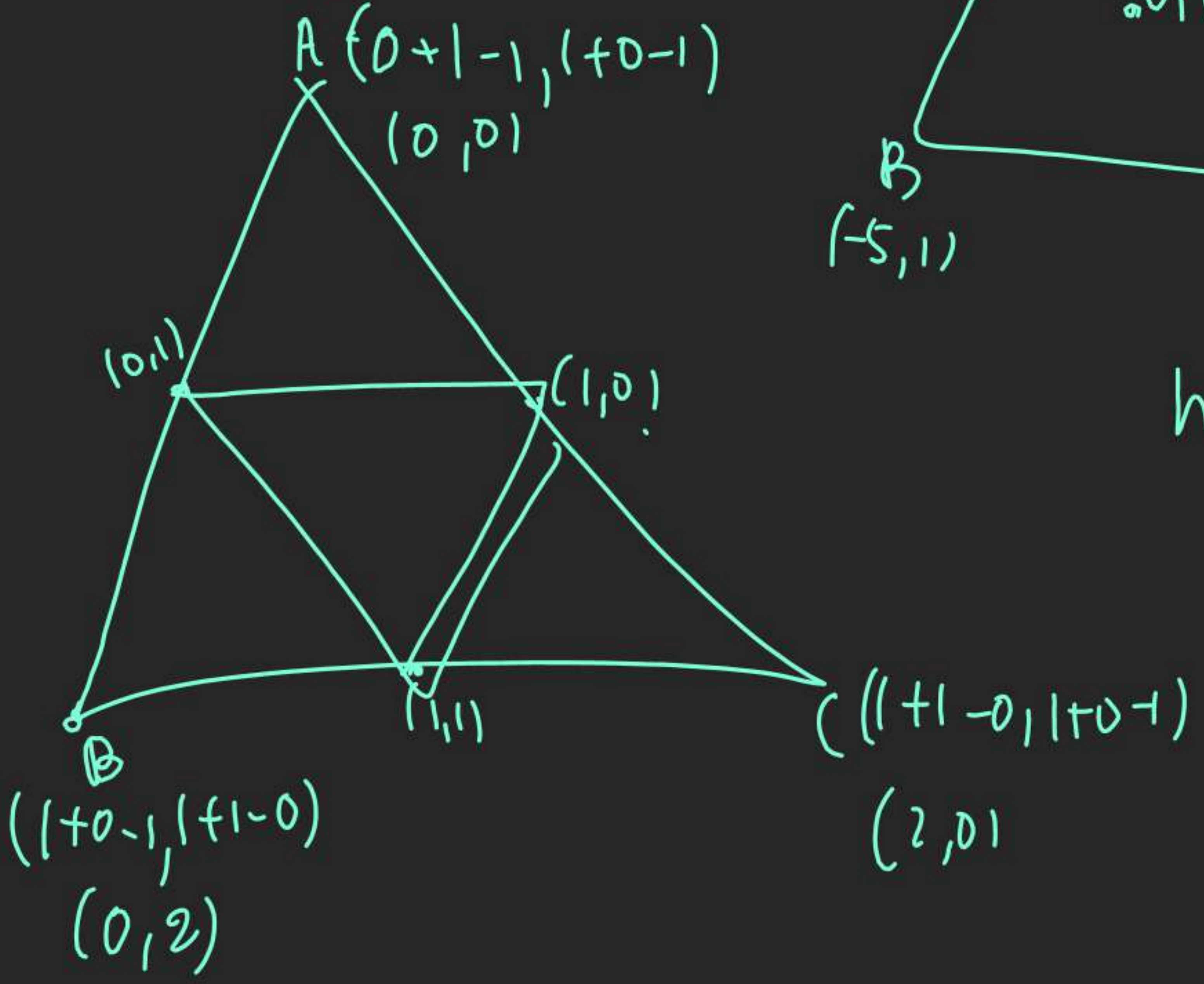
$39 + 2 = 41$

L_1	39	Int. Coord Pt
L_2	38	" "
L_3	37	" "
L_4	36	

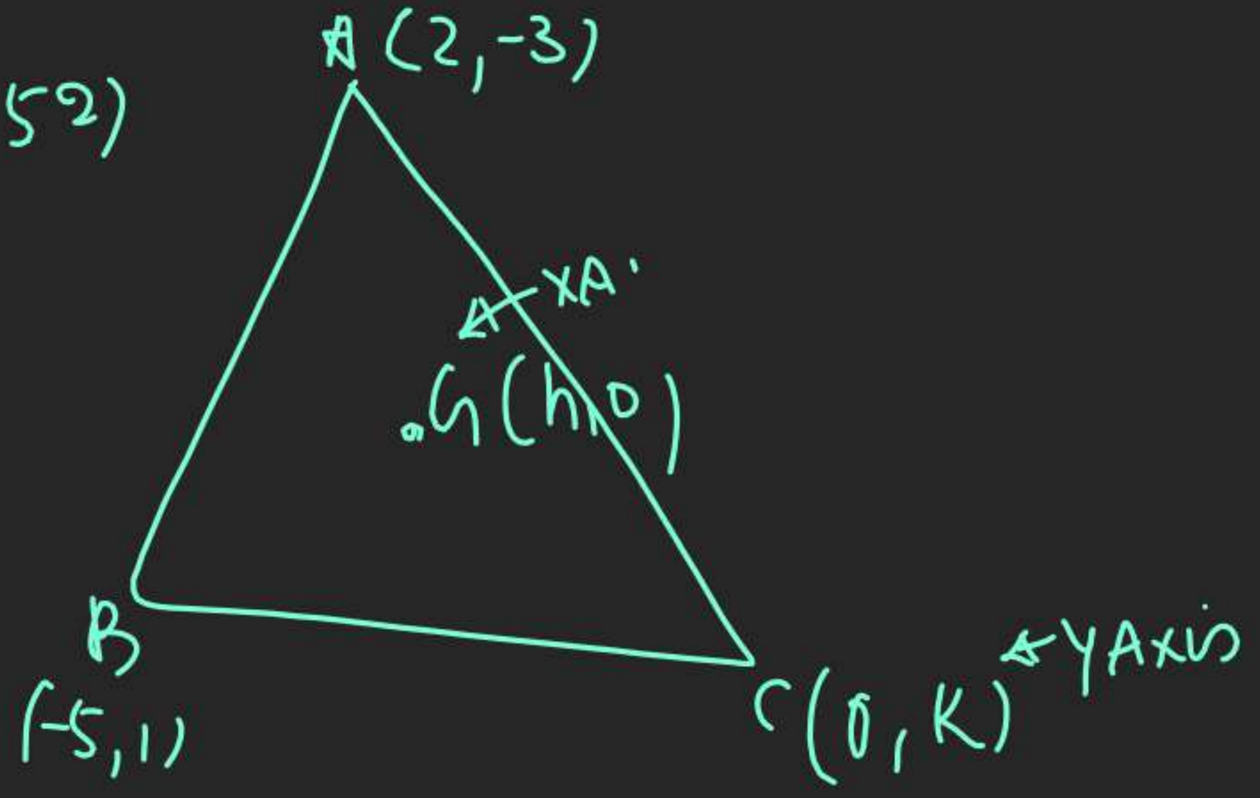
Note :- If Midpt of Δ is given.

then also we will get same

Centroid as of vertices.



52)



$$h = \frac{-5+0+2}{3}, \quad 0 = \frac{1+K+-3}{3}$$

Timely, regularly h.w kia·
+ discussion के साथ copy
History बनेगी → 50% chapter आजायेगा

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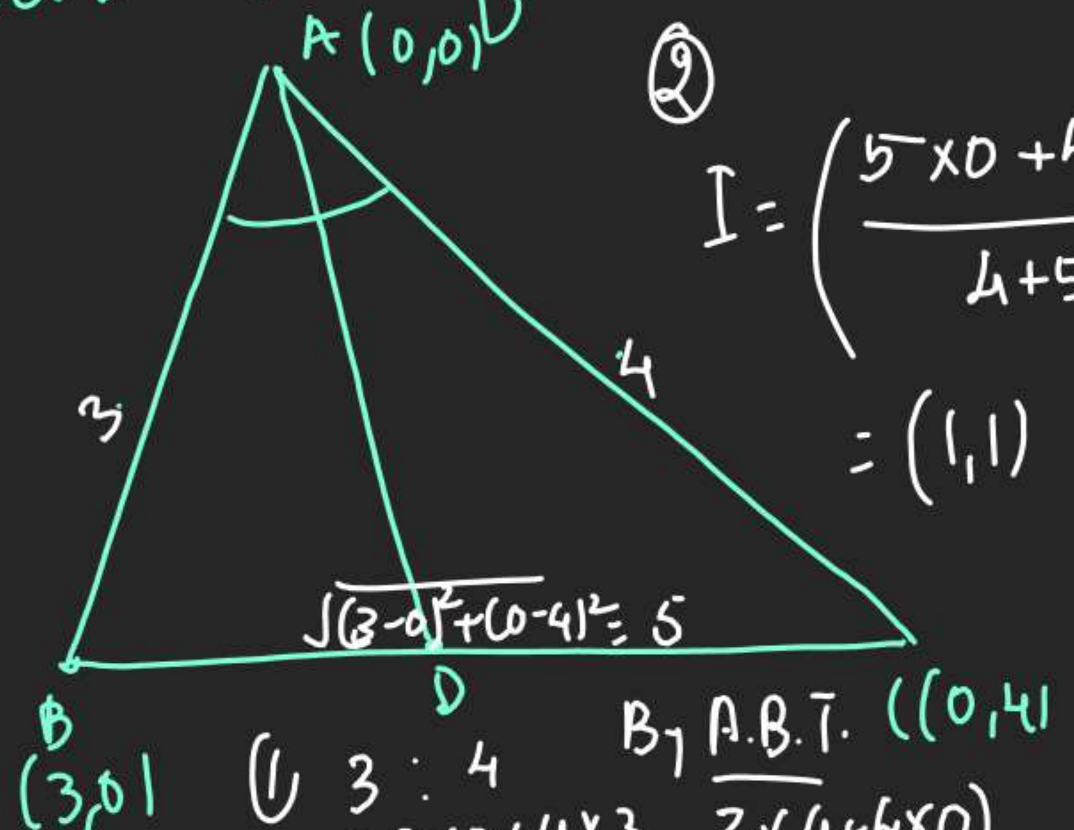
Q If $A(0,0)$, $B(3,0)$, $C(0,4)$

& Angle Bis. of A meets BC at D find D & Coord of Incentre.



① $3 : 4$ By A.B.T.

$\left(\frac{3\times0+4\times3}{3+4}, \frac{3\times4+4\times0}{3+4}\right)$

$\left(\frac{12}{7}, \frac{12}{7}\right)$ Ans

②

$$I = \left(\frac{5\times0+4\times3+3\times0}{4+5+3}, \frac{4\times0+5\times0+3\times4}{4+5+3}\right)$$

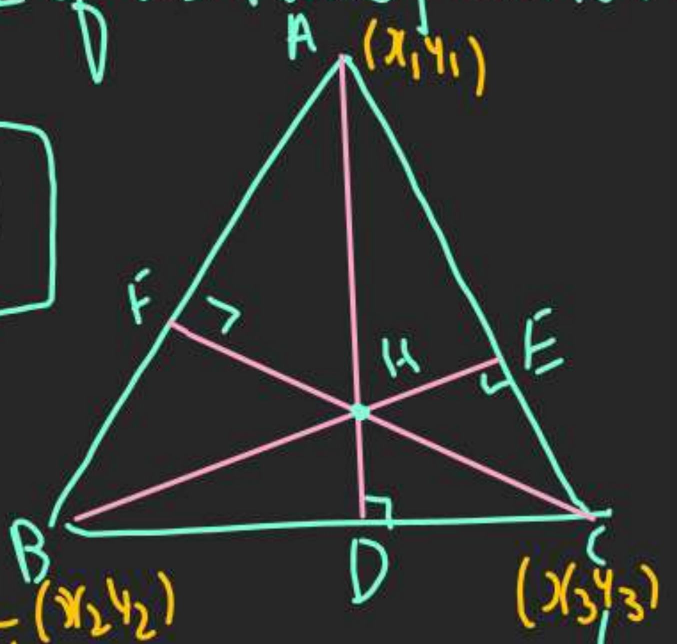
$$= (1,1)$$

OrtHocentre

(1) Orthocentre is Rep. by H.

(2) It is PoI of altitudes from vertices to their opp Side.

(3)



AD is altitude on BC

BE ,, on AC

CF ,, on AB

Steps to find "H"

① Find Eqn of AD & BE

② Solve & Get H

$$m_{AD} = \frac{-1}{\left(\frac{y_3-y_2}{x_3-x_2}\right)}$$

$$m_{BE} = \frac{-1}{\left(\frac{y_3-y_1}{x_3-x_1}\right)}$$

$m_{AD} \times m_{BC} = -1$ $\quad m_{AD} = \frac{-1}{m_{BC}}$

$m_{BE} \times m_{AC} = -1$

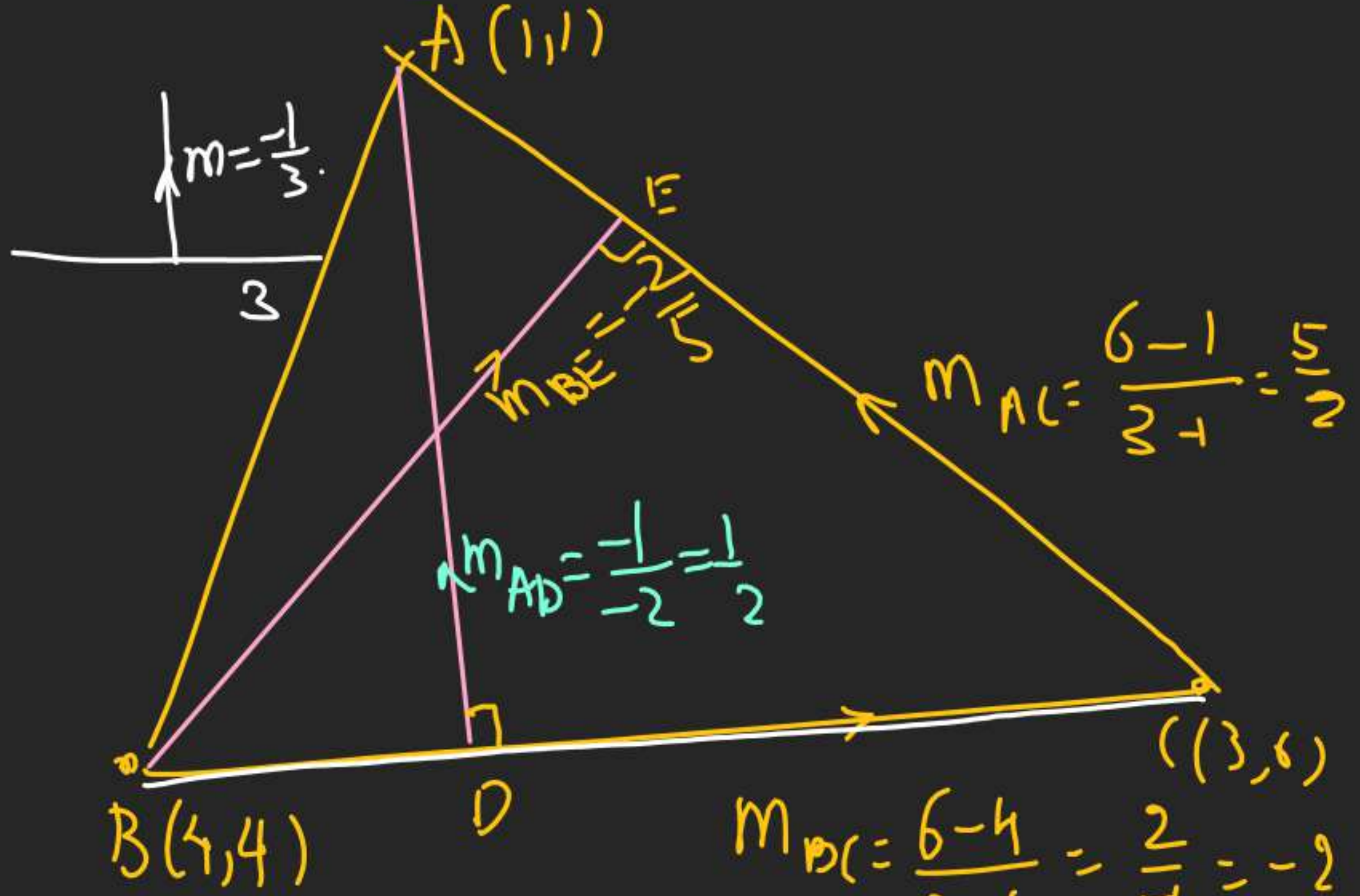
$m_{CF} \times m_{AB} = -1$

Eq AD

$$(y-y_1) = -\frac{1}{\left(\frac{y_3-y_2}{x_3-x_2}\right)}(x-x_1)$$

Q Find orthocentre of Δ made by.

Vertices $(1,1)(4,4)(3,6)$



$m_{BC} = \frac{6-4}{3-4} = \frac{2}{-1} = -2$

$E_{AD} \rightarrow (y-1) = \frac{1}{2}(x-1) \Rightarrow 2y-2 = x-1 \Rightarrow \boxed{x-2y+1=0}$

$E_{BE} \rightarrow (y-4) = -\frac{2}{5}(x-4) \Rightarrow 5y-20 = -2x+8 \Rightarrow \boxed{2x+5y=28}$

$$H \rightarrow \begin{array}{l} 2x-4y=-2 \\ \underline{2x+5y=28} \\ -9y=-30 \end{array}$$

$$y = \frac{+\cancel{30}^{10}}{+\cancel{9}_3}$$

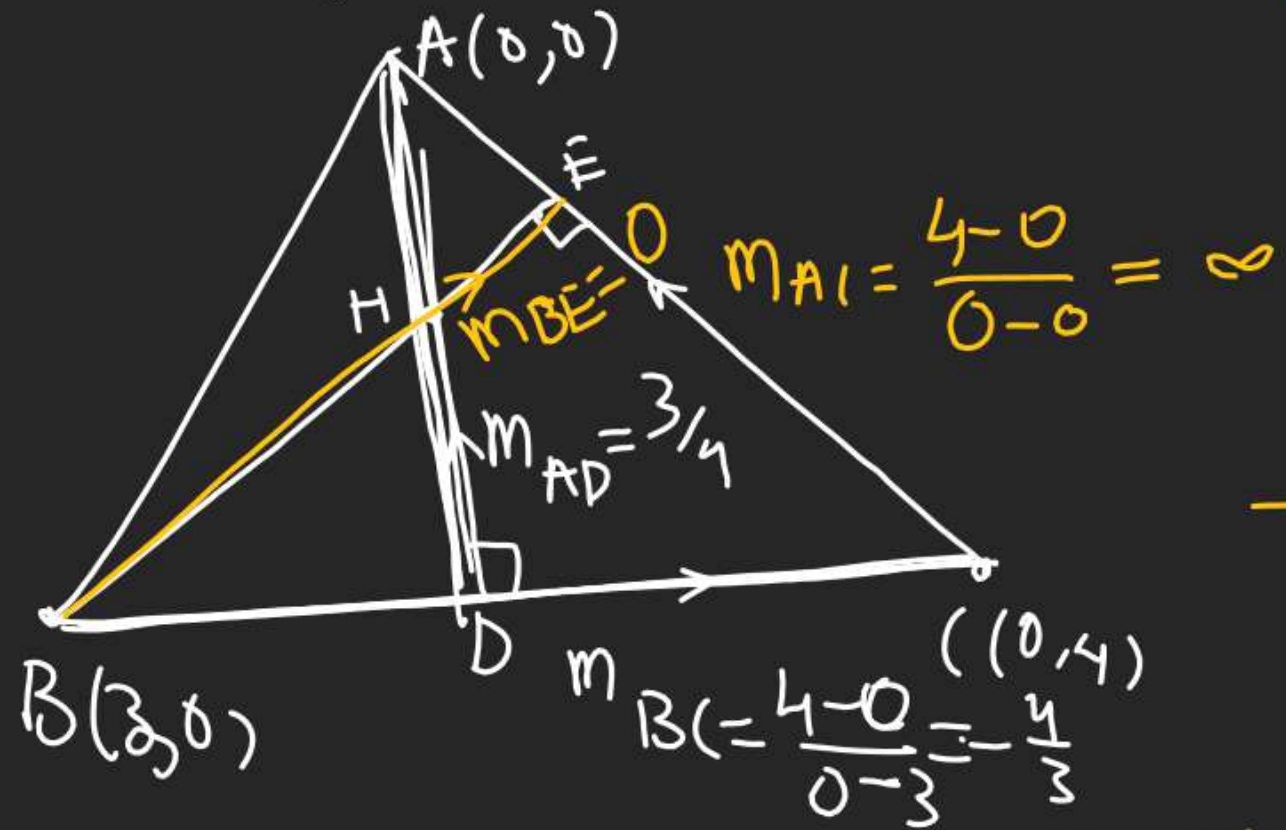
$$x+1 = \frac{20}{3}$$

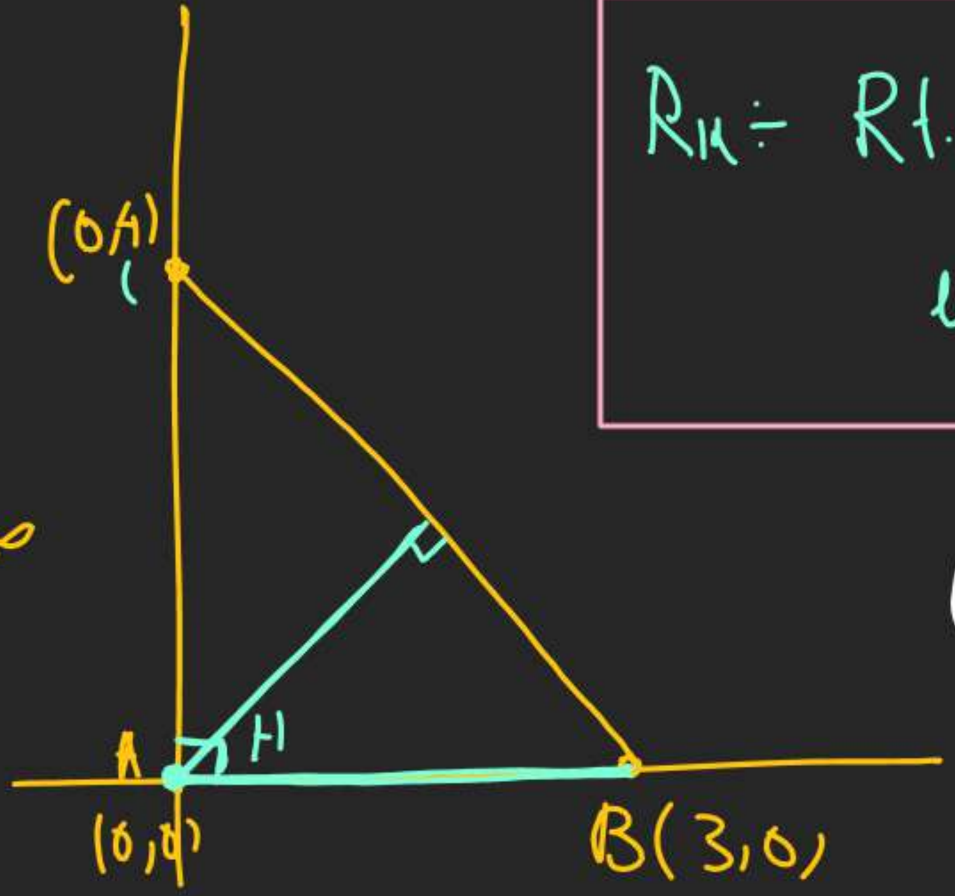
$$x = \frac{17}{3}$$

$$\therefore H \equiv \left(\frac{17}{3}, \frac{10}{3}\right)$$

Q A(0,0), B(3,0), C(0,4)

find H?





R_H: Rt. angle Δ has orthocentre at its Rt. angle itself.

$m_{AD} = \frac{3}{4} \rightarrow AD \rightarrow (y-0) = \frac{3}{4}(x-0) \Rightarrow 4y = 3x$

$m_{BE} = 0 \rightarrow BE \rightarrow (y-0) = 0\,(x-3) \Rightarrow y = 0$

$\Rightarrow 4 \times 0 = 3x$

$3x = 0$

$x = 0$

$\rightarrow H(0,0)$

Q Find Slope of line through the points (4,−6) & (−2,−5)

$m = \frac{-5-(-6)}{-2-(4)} = \frac{1}{-6}$

Q Find Slope of line ⊥ to line joining (2,7) & (4,−3)

$m = \frac{-3-7}{4-2} = \frac{-10}{2} = -5$

$\therefore \perp$ line $m' = \frac{-1}{-5} = 1/5$

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Q S.T. Pts $A(-1,3)$, $B(0,5)$, $C(3,1)$ are vertices of Rt. angle Δ.

$m_{AB} = \frac{5-3}{0+1} = 2$

$m_{BC} = \frac{1-5}{3-0} = \frac{-4}{3}$

$m_{CA} = \frac{1-3}{3-(-1)} = \frac{-2}{4} = \frac{-1}{2}$

$m_{AB} \times m_{CA} = 2 \times -\frac{1}{2} = -1$

$\therefore$ Δ is Rt. angled.

Q Line through $(-2,6)$ & $(4,8)$ is $\perp^r$ to line through $(8,12)$ & $(4,24)$ (T/F)

Line$_1$ $m_1 = \frac{8-6}{4+2} = \frac{2}{6} = \frac{1}{3}$.

Line$_2$ $m_2 = \frac{24-12}{4-8} = \frac{12}{-4} = -3$

$m_1 \times m_2 = -1$

$L_1 \perp L_2$ (True)

Q Eq^n of line$_1$

$(y-6) = \frac{1}{3}(x+2)$

$3y - 18 = x + 2$

$x - 3y + 20 = 0$

Q S.T. Pts $A(2,3)$, $B(1,4)$, $C(-3,8)$ are collinear?

$m_{AB} = \frac{4-3}{1-2} = \frac{1}{-1} = -1$

$m_{BC} = \frac{8-4}{-3-1} = \frac{4}{-4} = -1$

$m_{AB} = m_{BC} \Rightarrow$ ABC are collinear

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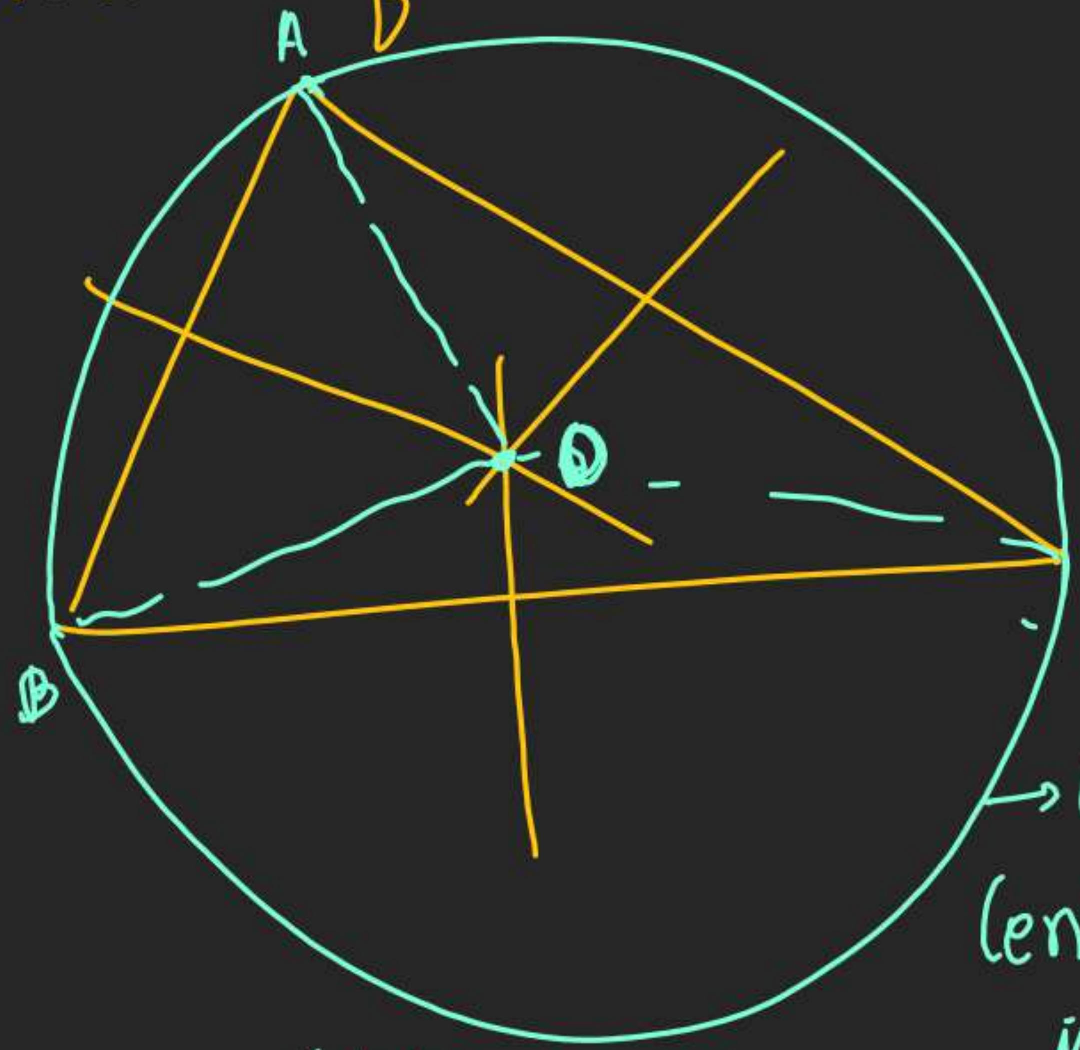
(D) Circumcentre

① Rep. by O

② It is PoI of Side ⊥ Bisectors.

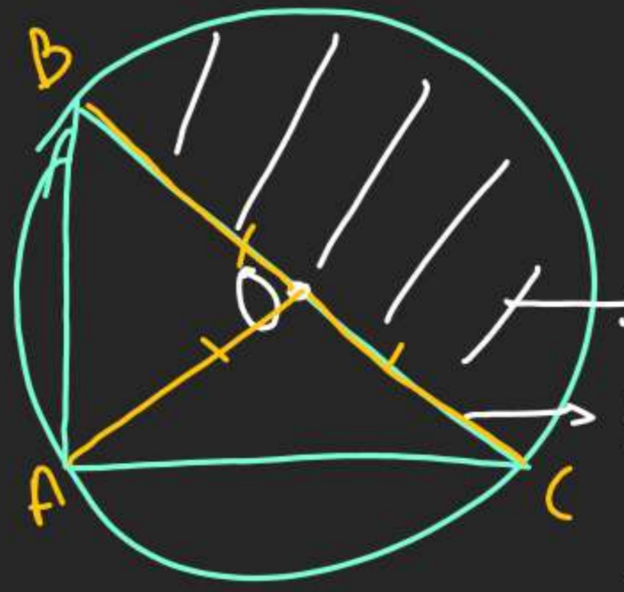


→ Circumcircle

Centre of Circumcircle is Circumcentre = O

(3) OA = OB = OC

(4) Circumcentre of Rt. Δ



→ Semicircle.

→ Hypotenuse of Δ ABC = Diametre

mid Pt. of hypotenuse = O = Circumcentre

Q Pts $\left(2, \frac{\sqrt{3}-1}{2}\right)$ $\left(\frac{1}{2}, -\frac{1}{2}\right)$ $\left(2, -\frac{1}{2}\right)$ make Δ find its orthocentre.

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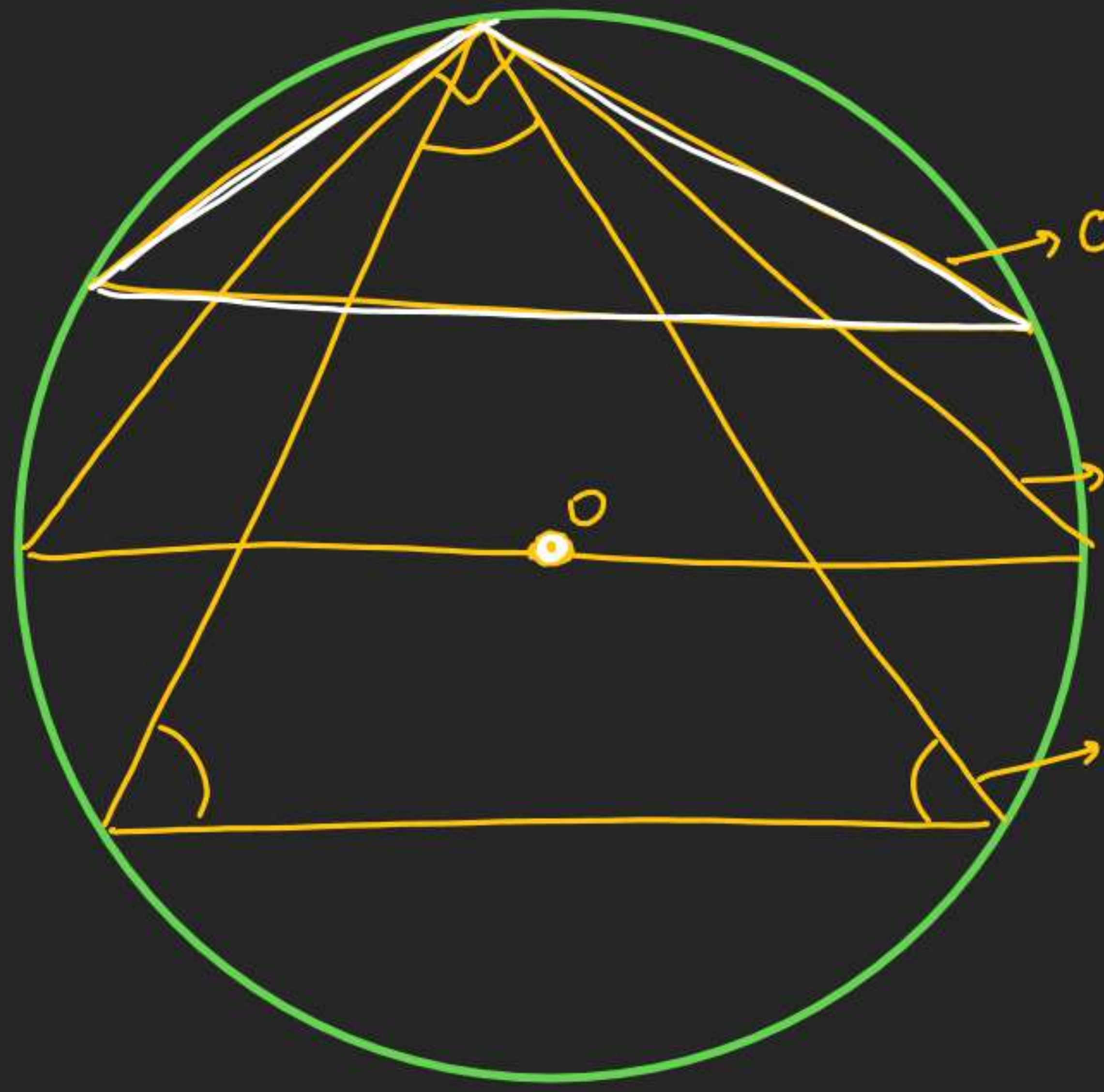

→ obtose angle Δ

O, Δ के बाहर

→ Rt. angle Δ

O → Hypotnuse पर

→ acute angle Δ

O Δ के अन्दर

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Area of Δ.

If $(x_1, y_1)\ (x_2 y_2)\ (x_3 y_3)$ are Vertices of Δ.

then Area $= \frac{1}{2} \begin{vmatrix} x_1 & y_1 \\ x_2 & y_2 \\ x_3 & y_3 \\ x_1 & y_1 \end{vmatrix}$

Q Find Area of Δ.

made by Vertices.

$A(3,2), B(11,8)\ C(8,12)$

$\Delta = \frac{1}{2} \begin{vmatrix} 3 & 2 \\ 11 & 8 \\ 8 & 12 \\ 3 & 2 \end{vmatrix}$

$\begin{vmatrix} 3 & 2 \\ 11 & 8 \end{vmatrix} = 24 - 22$

$\begin{vmatrix} 11 & 8 \\ 8 & 12 \end{vmatrix} = 132 - 64$

$\begin{vmatrix} 8 & 12 \\ 3 & 2 \end{vmatrix} = 16 - 36$

$= \frac{1}{2}\{(24-22) + ((132-64) + (16-36)\}$

$= \frac{1}{2}(2 + 68 + (-20))$

$= \frac{1}{2}(50) = 25$

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