MATHS ASSAIGNMENT STD XI

CHAPTER 11. STRAIGHT LINES

General direction for the students :-Whatever be the notes provided , everything must be copied in the Maths Copy and then do the Home work in the same Copy.

Distance formula:

$Let\ A(x_1, y_1)\ and\ B(x_2, y_2)\ are\ any\ two\ points\ in\ a\ plane\ , then\ the\ distance$

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

Section formula

i) Internal division

$Let\ A(x_1, y_1)\ and\ B(x_2, y_2)\ are\ any\ two\ points\ in\ a\ plane\ and\ P(x, y) divides\ AB\ in\ the\ ratio$

$m : n\ internally$, then $x = \frac{mx_2 + nx_1}{m + n}$, $y = \frac{my_2 + ny_1}{m+n}$.

ii) External division

$Let\ A(x_1, y_1)\ and\ B(x_2, y_2)\ are\ any\ two\ points\ in\ a\ plane\ and\ P(x, y) divides\ AB\ in\ the\ ratio$

$m : n\ externally$, then $x = \frac{mx_2 - nx_1}{m - n}$, $y = \frac{my_2 - ny_1}{m - n}$.

Centroid of a Triangle

$Let\ A(x_1, y_1),\ B(x_2, y_2)\ and\ C(x_3, y_3) are\ the\ vertices\ of\ a\ triangle\ , then\ co -$
$ordinate\ of\ centroid\ is\ \ x = \frac{x_1 + x_2 + x_3}{3}$, $y = \frac{y_1 + y_2 + y_3}{3}$.

Incentre of a triangle

$Let\ A(x_1, y_1),\ B(x_2, y_2)\ and\ C(x_3, y_3) are\ the\ vertices\ of\ a\ triangle\ and\ the$

$sides\ BC = a, AB = c,\ AC = b$. Then co-ordinate of incentre is is

$$x = \frac{ax_1 + bx_2 + cx_3}{a+b+c}\ ,\ y = \frac{ay_1 + by_2 + cy_3}{a+b+c}.$$

Area of a triangle

$Let\ A(x_1, y_1),\ B(x_2, y_2)\ and\ C(x_3, y_3) are\ the\ vertices\ of\ a\ triangle$, then

$then\ area\ of\ triangle\ ABC = \frac{1}{2}|x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)|$

Collinearity of three points

$Let\ A(x_1\ ,y_1)\ ,\ \ B(x_2\ ,y_2)\ and\ C(x_3\ ,y_3) are\ three\ points\ in\ a\ plane\ and\ they\ are\ collinear$

$if\ and\ only\ if\ \ x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2) = 0.$

Steps of finding Equation of Locus

Step 1. Assume the moving point be $(x\ ,y)$.

Step 2. Apply the condition.

Step 3. Simplifly the above relation.

Results

- General point on X-axis is (x , 0).
- General point on Y-axis is (0, y).
- X co-ordinate is also known as Abscissa.
- Y co-ordinate is also known as Ordinate.
- If AD is the angle bisector of the angle A of a triangle ABC and D is a point on BC. Then $\frac{BD}{DC} = \frac{AB}{AC}$.
- Centroid of $\Delta ABC\ and\ \Delta PQR$ are same , if P , Q and R are the midpoints of sides of the ΔABC.