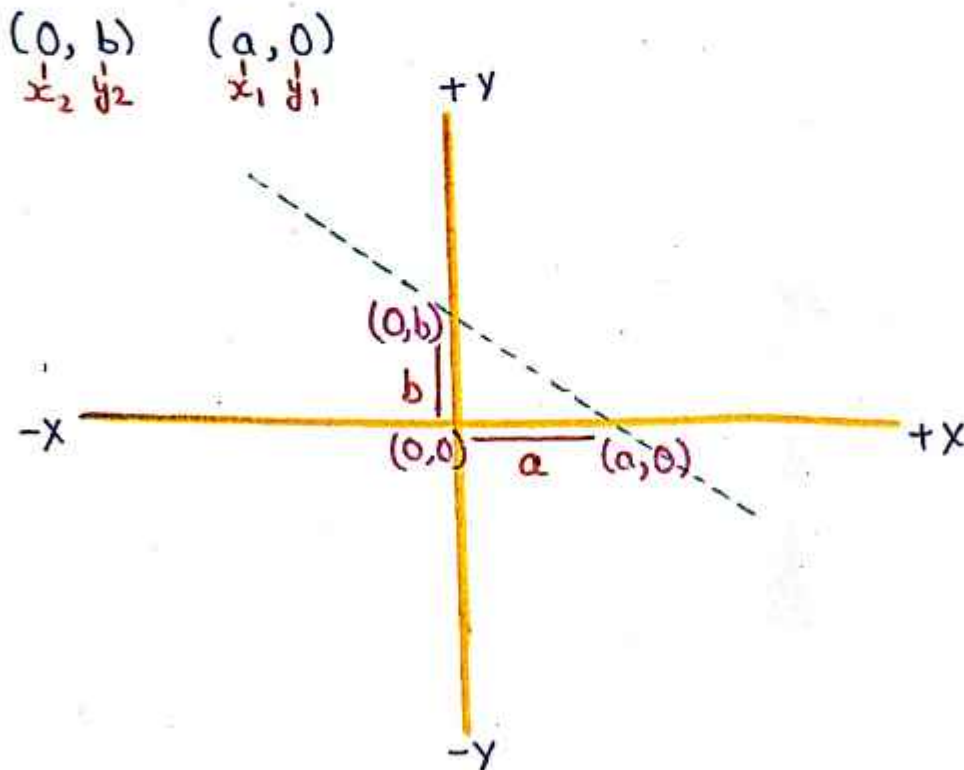


COORDINATE GEOMETRY

#



$$y - y_1 = m(x - x_1)$$

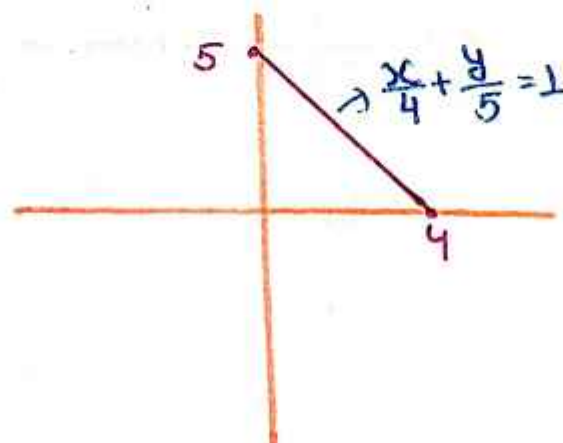
$$y - 0 = \frac{-b}{a}(x - a)$$

$$y = \frac{-b}{a}(x - a)$$

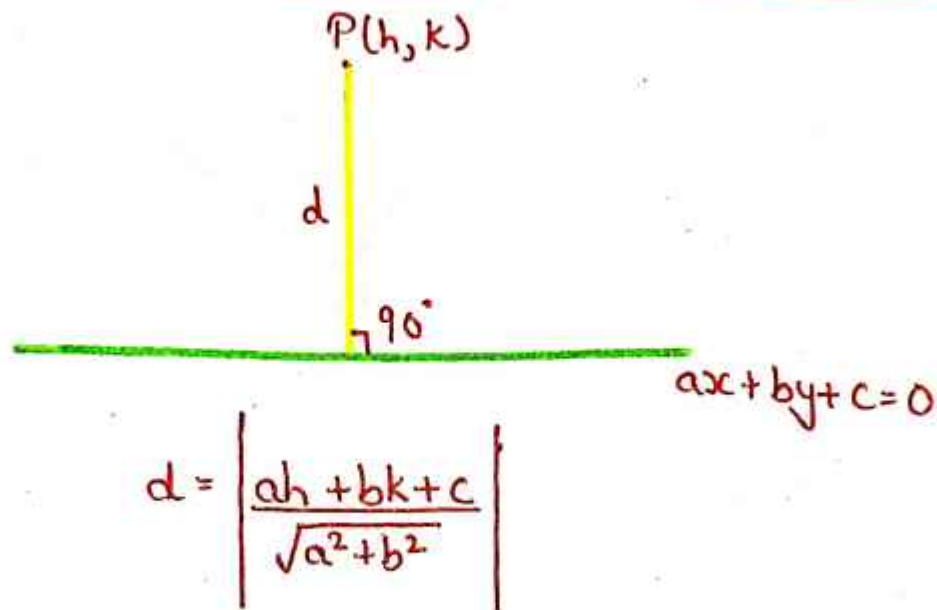
$$\frac{y}{-b} = \frac{x}{a} - 1$$

$$\boxed{\frac{x}{a} + \frac{y}{b} = 1}$$

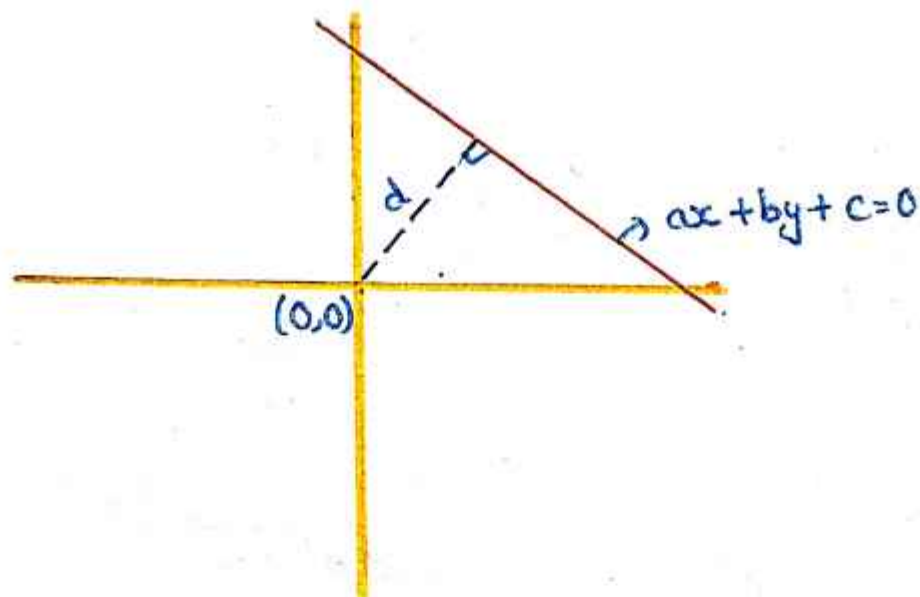
Ex:- $\frac{x}{4} + \frac{y}{5} = 1$



Perpendicular Distance of a point from a Line



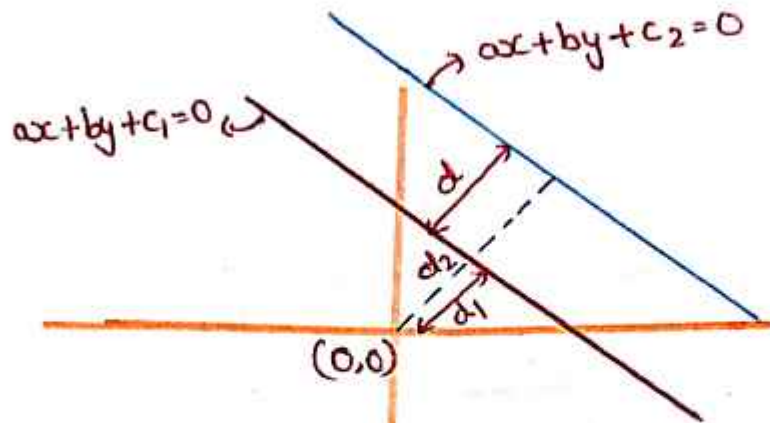
Perpendicular Distance from the Origin



$$d = \left| \frac{a \times 0 + b \times 0 + c}{\sqrt{a^2 + b^2}} \right|$$

$$d = \left| \frac{c}{\sqrt{a^2 + b^2}} \right|$$

Distance between Two Parallel Lines



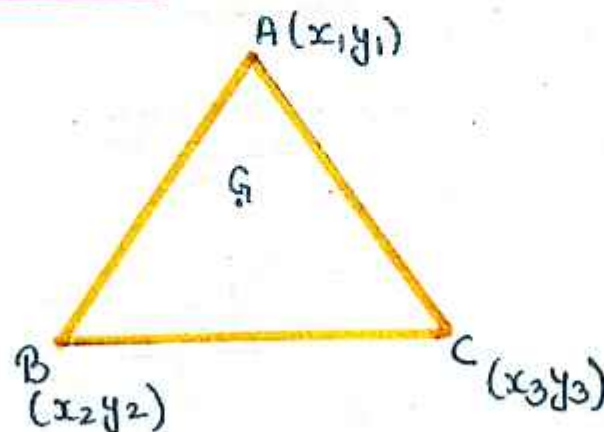
$$d = d_2 - d_1$$

$$d = \frac{c_2}{\sqrt{a^2+b^2}} - \frac{c_1}{\sqrt{a^2+b^2}}$$

$$d = \left| \frac{c_2 - c_1}{\sqrt{a^2+b^2}} \right|$$

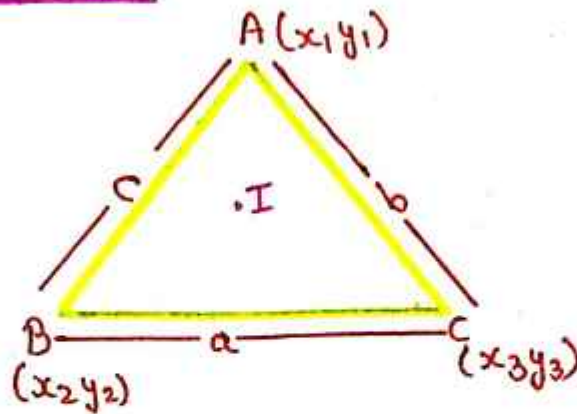
TRIANGLE

CENTROID (केन्द्रक)



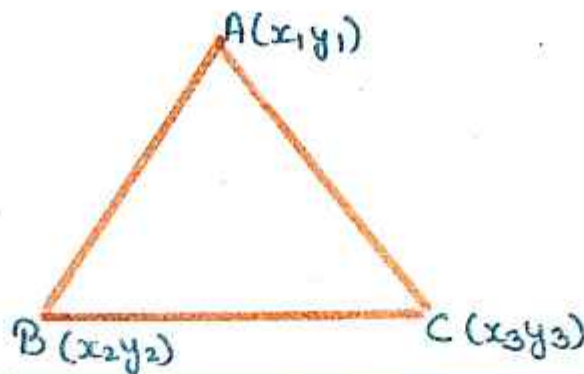
$$G = \left\{ \frac{x_1 + x_2 + x_3}{3}, \frac{y_1 + y_2 + y_3}{3} \right\}$$

Incenter (अंतःकेंद्र)



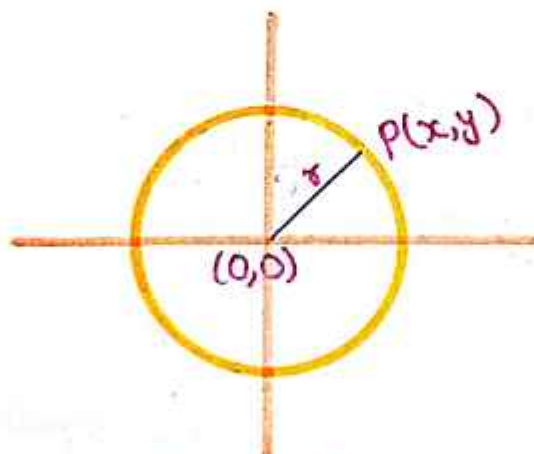
$$I = \left\{ \frac{ax_1 + bx_2 + cx_3}{a+b+c}, \frac{ay_1 + by_2 + cy_3}{a+b+c} \right\}$$

#



$$\text{Area of } \Delta = \frac{1}{2} [x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)]$$

CIRCLE



$$(x-0)^2 + (y-0)^2 = r^2$$

$$r^2 = x^2 + y^2$$

* General Equation

$$x^2 + y^2 + 2gx + 2fy + c = 0$$

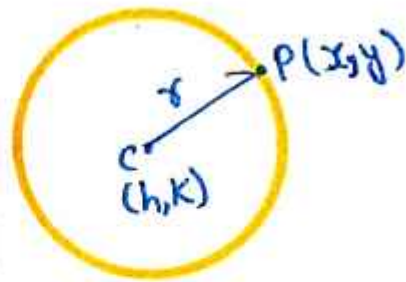
$$2gx = -2hx$$

$$\boxed{g = -h} \quad \boxed{f = -k}$$

$$\boxed{c = h^2 + k^2 - r^2}$$

$$r^2 = h^2 + k^2 - c$$

$$\boxed{r = \sqrt{h^2 + k^2 - c}}$$

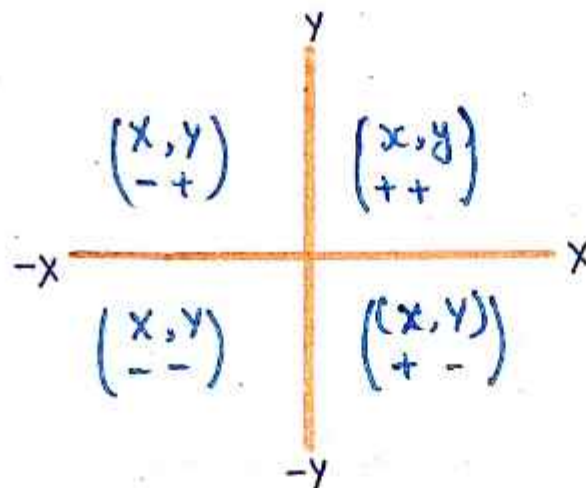


$$\boxed{r^2 = (x-h)^2 + (y-k)^2}$$

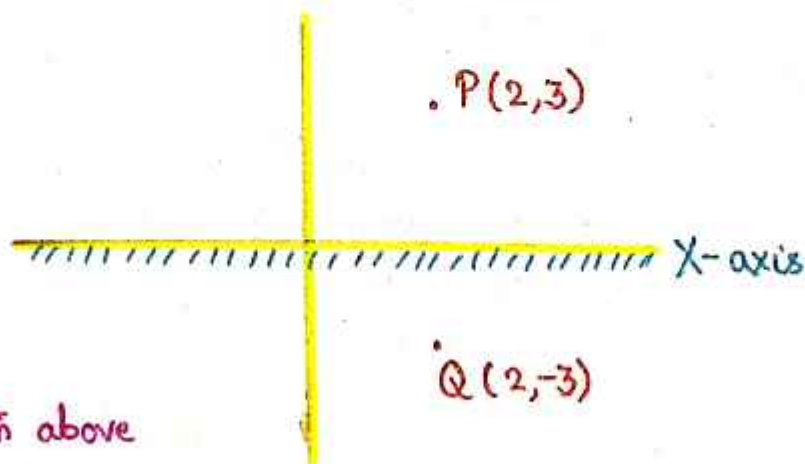
$$x^2 + h^2 - 2hx + y^2 + k^2 - 2ky = r^2$$

$$x^2 + y^2 - 2hx - 2ky + h^2 + k^2 - r^2 = 0$$

REFLECTION (प्रतिबिम्ब)

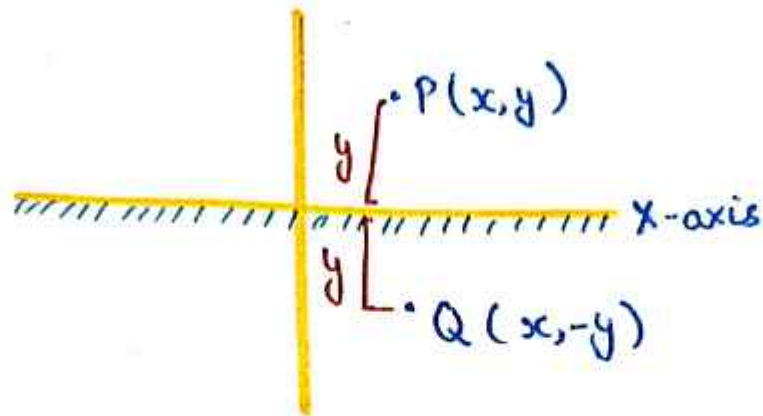


Reflection Above X-axis

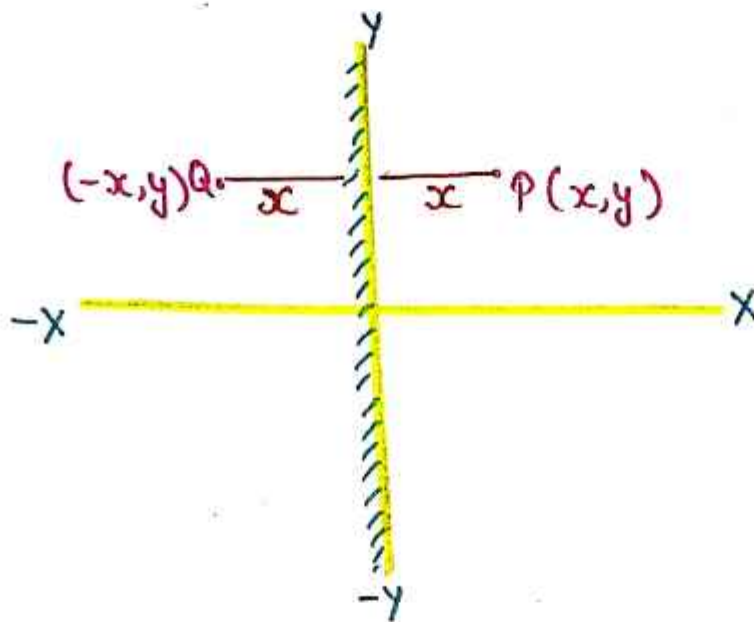


• X-axis के above

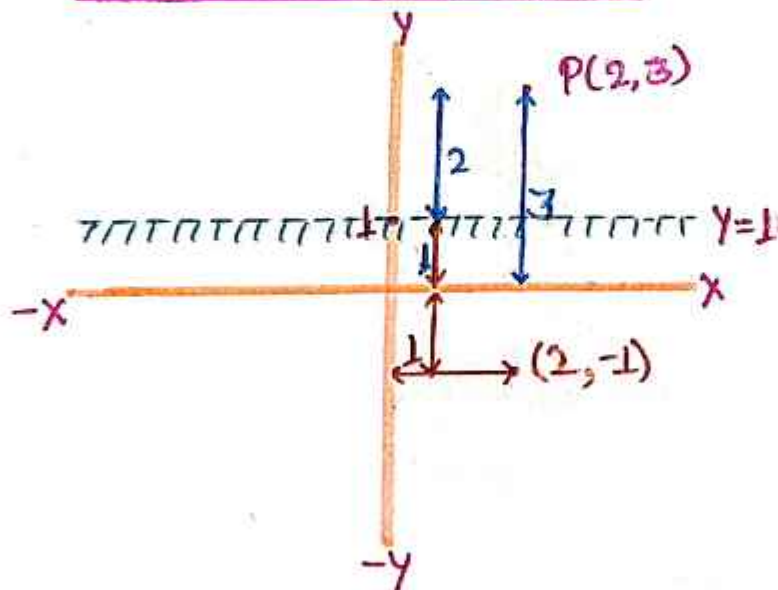
X-coordinate का Sign
Change नहीं होता है।

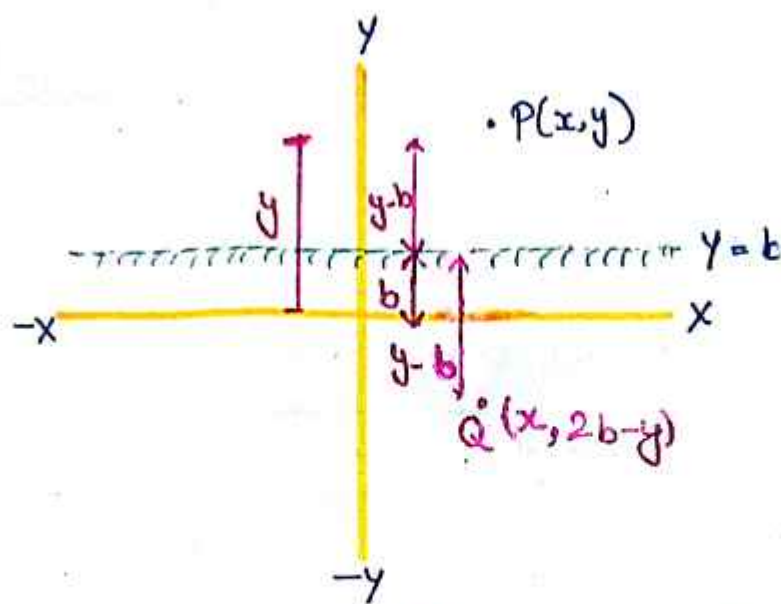


Reflection Above Y-axis



Reflection Above $y = b$





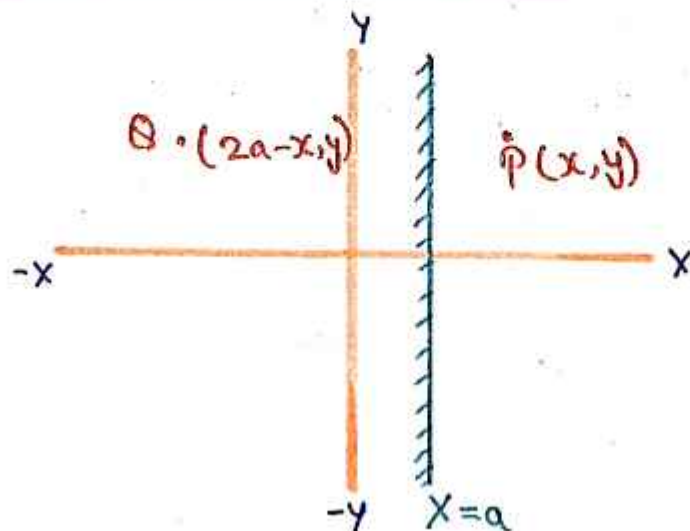
$$\begin{aligned}
 \text{Y coordinate} &= y - [(y - b) + (y - b)] \\
 &= y - (2y - 2b) \\
 &= -y + 2b \\
 &= (2b - y)
 \end{aligned}$$

Ex:- $P(1, 5)$
 $y = 3$

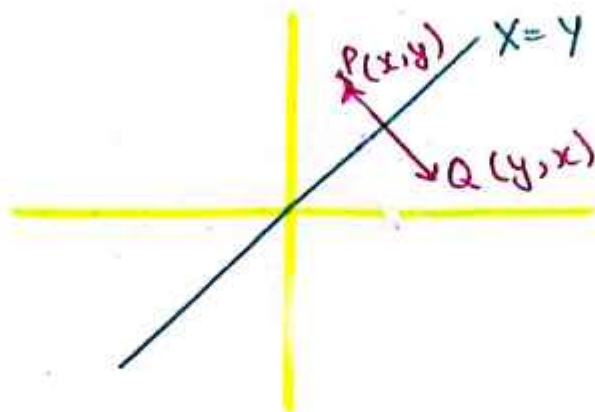
Reflection Coordinates = ?

$$\begin{aligned}
 &Q(1, 2 \times 3 - 5) \\
 &(1, 1)
 \end{aligned}$$

Reflection Above $X = a$



Reflection above $X=Y$



Reflection above $(X=-Y)$

