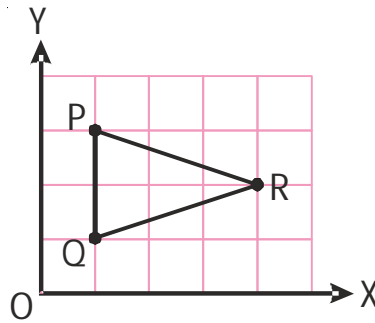


**01**

In the given figure the scale on the X – axis is 1 : 3 and the scale on the Y – axis is 1 : 2. Find the area of  $\Delta PQR$  on the Cartesian plane in square units.



Height of triangle = 9 units

PQ = 4 units

$$\text{Area of } \Delta PQR = \frac{1}{2} \times 9 \times 4 = 18 \text{ sq. units}$$

**02**

The centroid of a triangle formed by  $(7, p)$ ,  $(q, -6)$ ,  $(9, 10)$  is  $(6, 3)$ , find  $(p, q)$ .

$$\left( \frac{7+q+9}{3}, \frac{p-6+10}{3} \right) = (6, 3)$$

$$\Rightarrow (p, q) = (5, 2)$$

03

Find the locus of the point equidistant from  $(-1, 2)$  and  $(3, 0)$ .

$$\begin{aligned}(x+1)^2 + (y-2)^2 &= (x-3)^2 + y^2 \\ \Rightarrow x^2 + 1 + 2x + y^2 + 4 - 4y &= x^2 + 9 - 6x + y^2 \\ &= x^2 + 9 - 6x + y^2 \\ \Rightarrow 8x - 4y - 4 &= 0 \text{ or } 2x - y = 1\end{aligned}$$

04

A point moves so that its distance from  $y$ -axis is half of its distance from the origin. Find the locus of the point.

$$\begin{aligned}x &= \frac{1}{2}\sqrt{x^2 + y^2} \\ \Rightarrow 2x &= \sqrt{x^2 + y^2} \\ \Rightarrow 4x^2 &= x^2 + y^2 \\ \Rightarrow 3x^2 - y^2 &= 0\end{aligned}$$

**05**

Find the area of quadrilateral formed by joining the points  $(-4, 2)$ ,  $(1, -1)$ ,  $(4, 1)$  and  $(2, 5)$ .

Let A, B, C, D be the points  $(-4, 2)$ ,  $(1, -1)$ ,  $(4, 1)$  and  $(2, 5)$  respectively. Then the area of the quadrilateral ABCD

$$= \frac{1}{2} \{-4 \times -1 - 2 \times 1 + 1 \times 1 - 4 \times -1 + 4 \times 5 - 2 \times 1 + 2 \times 2 \times -5 \times -4\}$$

$$= \frac{1}{2}(4 - 2 + 1 + 4 + 20 - 2 + 4 + 20)$$

$$= \frac{49}{2} = 24.5 \text{ sq. units}$$