## **APPLICATIONS OF INTEGRALS**

## **4 Marks Questions**

- 1. Using integration, find the area of the circle :
  - (i)  $x^2 + y^2 = 4$  (ii)  $x^2 + y^2 = 9$

2. Using integration, find the area bounded between parabola  $x^2 = 4y$  and line y = 4.

- 3. Find the area of the region bounded by  $x^2 = 4y$ , y = 2, y = 4 and y axis in first quadrant.
- 4. Find the area of the region bounded by  $x^2 + y^2 = 16$ , y = x in the first quadrant.
- 5. Sketch the region  $\{(x, y): 4x^2 + 9y^2 \le 36\}$  and find its area using integration.

6. Using integration find the area of triangle whose sides are :

- (i) 3x y = 3, 2x + y = 12, x 2y = 1
- (ii) 5x 2y = 10, x + y = 9, 2x 5y = 4

7. Using integration, find the area of triangle whose vertices are (2,2), (5,6) and (9,1).

- 8. Using integration, find the area of triangle whose vertices are (-2,0), (7,9) and (11,3).
- 9. Find the area of the region (i)  $\{(x, y): x^2 + y^2 \le 1 \le x + y\}$ , (ii)  $\{(x, y): y^2 \le 4x, y \ge 2x\}$

10. Draw a rough sketch to indicate the region bounded between the curve  $y^2 = 4x$ , x = 3. Also find the area of this region.

11. Find the area of smaller region bounded by  $\frac{x^2}{9} + \frac{y^2}{4} = 1$  and  $\frac{x}{3} + \frac{y}{2} = 1$ .

- 12. Draw the rough sketch and find the area of the region included between the parabolas :
  - (i)  $y^2 = 4x \& x^2 = 4y$
  - (ii)  $y = 16x \& x^2 = 16y$
- 13. Calculate the area of the region enclosed between the circles :

(i) 
$$x^2 + y^2 = 9$$
 &  $(x - 3)^2 + y^2 = 9$ 

(ii) 
$$(x-6)^2 + y^2 = 36$$
 &  $x^2 + y^2 = 36$ 

- 14. Sketch the graph of y = |x + 1|. Evaluate the integral  $\int_{-4}^{2} |x + 1| dx$ .
- 15. Sketch the graph of y = |x + 4|. Evaluate the integral  $\int_{-6}^{0} |x + 4| dx$ .

Prepared By : Vaibhav(Lecturer, Maths), Govt. Multipurpose Sec. School, Patiala