

CHAPTER-8

1. Find the area of the region bounded by the curves $y^2 = 9x$, $y = 3x$.
2. Find the area of the region bounded by the parabola $y^2 = 2px$, $x^2 = 2py$.
3. Find the area of the region bounded by the curve $y = x^3$ and $y = x + 6$ and $x = 0$.
4. Find the area of the region bounded by the curve $y^2 = 4x$, $x^2 = 4y$.
5. Find the area of the region included between $y^2 = 9x$ and $y = x$
6. Find the area of the region enclosed by the parabola $x^2 = y$ and the line $y = x + 2$
7. Find the area of region bounded by the line $x = 2$ and the parabola $y^2 = 8x$
8. Sketch the region $(x, 0) : y = \sqrt{4 - x^2}$ and x -axis. Find the area of the region using integration.
9. Calculate the area under the curve $y = 2\sqrt{x}$ included between the lines $x = 0$ and $x = 1$.
10. Using integration, find the area of the region bounded by the line $2y = 5x + 7$, x -axis and the lines $x = 2$ and $x = 8$.
11. Draw a rough sketch of the curve $y = \sqrt{x - 1}$ in the interval $[1, 5]$. Find the area under the curve and between the lines $x = 1$ and $x = 5$.
12. Determine the area under the curve $y = \sqrt{a^2 - x^2}$ included between the lines $x = 0$ and $x = a$
13. Find the area of the region bounded by $y = \sqrt{x}$ and $y = x$.
14. Find the area enclosed by the curve $y = -x^2$ and the straight line $x + y + 2 = 0$.
15. Find the area bounded by the curve $y = \sqrt{x}$, $x = 2y + 3$ in the first quadrant and x -axis.

Long Answer (L . A)

16. Find the area of the region bounded by the curve $y^2 = 2x$ and $x^2 + y^2 = 4x$.
17. Find the area bounded by the curve $y = \sin x$ between $x = 0$ and $x = 2\pi$.
18. Find the area of region bounded by the triangle whose vertices are $(-1, 1)$, $(0, 5)$ and $(3, 2)$, using integration.
19. Draw a rough sketch of the region $(x, y) : y^2 \leq 6ax$ and $x^2 + y^2 \leq 16a^2$.
20. Compute the area bounded by the line $x + 2y = 2$, $y - x = 1$ and $2x + y = 7$.
21. Find the area bounded by the lines $y = 4x + 5$, $y = 5 - x$ and $4y = x + 5$.
22. Find the area bounded by the curve $y = 2 \cos x$ and the x -axis from $x = 0$ to $x = 2\pi$.
23. Draw a rough sketch of the given curve $y = 1 + |x + 1|$, $x = -3$, $x = 3$, $y = 0$, and find the area of the region bounded by them, using integration.

Objective Type Questions

Choose the correct answer from the given four options in each of the Exercises 24 to 34.

24. The area of the region bounded by the y -axis, $y = \cos x$ and $y = \sin x$, $0 \leq x \leq \frac{\pi}{2}$ is
 - (a) $\sqrt{2}$ sq units
 - (b) $(\sqrt{2} + 1)$ sq units
 - (c) $(\sqrt{2} - 1)$ sq units
 - (d) $(2\sqrt{2} - 1)$ sq units
25. The area of the region bounded by the curve $x^2 = 4y$ and the straight line $x = 4y - 2$ is
 - (a) $\frac{3}{8}$ sq units
 - (b) $\frac{5}{8}$ sq units
 - (c) $\frac{7}{8}$ sq units

- (d) $\frac{9}{8}$ sq units
26. The area of the region bounded by the curve $y = \sqrt{16 - x^2}$ and x -axis is
- (a) 8 sq units
- (b) 20π sq units
- (c) 16π sq units
- (d) 256π sq units
27. Area of the region in the first quadrant enclosed by the x -axis, the line $y = x$ and the circle $x^2 + y^2 = 32$ is
- (a) 16π sq units
- (b) 4π sq units
- (c) 32π sq units
- (d) 24π sq units
28. Area of the region bounded by the curve $y = \cos x$ between $x = 0$ and $x = \pi$ is
- (a) 2 sq units
- (b) 4 sq units
- (c) 3 sq units
- (d) 1 sq units
29. The area of the region bounded by parabola $y^2 = x$ and the straight line $2y = x$ is
- (a) $\frac{4}{3}$ sq units
- (b) 1 sq units
- (c) $\frac{2}{3}$ sq units
- (d) $\frac{1}{3}$ sq units
30. The area of the region bounded by the curve $y = \sin x$ between the ordinates $x = 0$, $x = \frac{\pi}{2}$ and the x - axis is

- (a) 2 sq units
 - (b) 4 sq units
 - (c) 3 sq units
 - (d) 1 sq units
31. The area of the region bounded by the ellipse $\frac{x^2}{25} + \frac{y^2}{16} = 1$ is
- (a) 20π sq units
 - (b) $20\pi^2$ sq units
 - (c) $16\pi^2$ sq units
 - (d) 25π sq units
32. The area of the region bounded by the circle $x^2 + y^2 = 1$ is
- (a) 2π sq units
 - (b) π sq units
 - (c) 3π sq units
 - (d) 4π sq units
33. The area of the region bounded by the curve $y = x + 1$ and the lines $x = 2$ and $x = 3$ is
- (a) $\frac{7}{2}$ sq units
 - (b) $\frac{9}{2}$ sq units
 - (c) $\frac{11}{2}$ sq units
 - (d) $\frac{13}{2}$ sq units
34. The area of the region bounded by the curve $x = 2 + 3$ and the y lines $y = 1$ and $y = -1$ is
- (a) 4 sq units
 - (b) $\frac{3}{2}$ sq units
 - (c) 6 sq units
 - (d) 8 sq units