



MATHS

BOOKS - OMEGA PUBLICATION

APPLICATION OF INTEGRALS

Questions

1. Find the area of the region bounded by $x^2 = 4y$, $y = 2$, $y = 4$ and y-axis the first quadrant.



[Watch Video Solution](#)

2. Find the area of enclosed by the ellipse

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1.$$



[Watch Video Solution](#)

3. Find the area of the region bounded by

ellipse $\frac{x^2}{16} + \frac{y^2}{9} = 1.$



[Watch Video Solution](#)

4. Find the area of the region bounded by the

ellipse $\frac{x^2}{4} + \frac{y^2}{9} = 1$



Watch Video Solution

5. Find the area of the region bounded by the

curve $y^2 = x$ and the lines $x = 1$, $x = 4$ and the

x-axis in the first quadrant.



Watch Video Solution

6. Find the area of the region bounded by $y^2 = 9x$, $x = 2$, $x = 4$ and the x-axis in the first quadrant.



[Watch Video Solution](#)

7. Find the area between the curves $y = x$ and $y = x^2$



[Watch Video Solution](#)

8. Find the area of the region enclosed by the parabola $x^2 = y$, the line $y = x + 2$ and the x-axis.



Watch Video Solution

9. Find the area of the region bounded by the curve $x^2 = 4y$ and the straight line $y = 4y - 2$.



Watch Video Solution

10. Find the area of the region bounded by the parabola $y = x^2$ and the lines $y = |x|$.



[Watch Video Solution](#)

11. Find the area bounded by curves $\{(x, y) : y \geq x^2 \text{ and } y = |x|\}$



[Watch Video Solution](#)

12. Find the area lying above x-axis and included between the circle $x^2 + y^2 = 8x$ and the parabola $y^2 = 4x$.



Watch Video Solution

13. Find the area of the region enclosed between the two circles $x^2 + y^2 = 1$ and $(x - 1)^2 + y^2 = 1$.



Watch Video Solution

14. Find the area of the region bounded by the parabola $y = x^2 + 2$ and the lines $y = x$, $x = 0$ and $x = 3$.



Watch Video Solution

15. Find the area of the region included between : the parabola $4y = 3x^2$ and the line $3x - 2y + 12 = 0$.



Watch Video Solution

16. Find the area of the region bounded by two parabolas $y = x^2$ and $y^2 = x$.



Watch Video Solution

17. Find the area of the region bounded by $x^2 = 4y$, $y = 2$, $y = 4$ and y -axis the first quadrant.



Watch Video Solution

18. Find the area of enclosed by the ellipse

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1.$$



Watch Video Solution

19. Find the area of the region bounded by

ellipse $\frac{x^2}{16} + \frac{y^2}{9} = 1.$



Watch Video Solution

20. Find the area of the region bounded by the

ellipse $\frac{x^2}{4} + \frac{y^2}{9} = 1$



[Watch Video Solution](#)

21. Find the area of the region bounded by the

curve $y^2 = x$ and the lines $x = 1$, $x = 4$ and the

x-axis in the first quadrant.



[Watch Video Solution](#)

22. Find the area of the region bounded by $y^2 = 9x$, $x = 2$, $x = 4$ and the x-axis in the first quadrant.



Watch Video Solution

23. Find the area between the curves $y = x$ and $y = x^2$



Watch Video Solution

24. Find the area of the region enclosed by the parabola $x^2 = y$, the line $y = x + 2$ and the x-axis.



[Watch Video Solution](#)

25. Find the area of the region bounded by the curve $x^2 = 4y$ and the straight line $y = 4y - 2$.



[Watch Video Solution](#)

26. Find the area of the region bounded by the parabola $y = x^2$ and the lines $y = |x|$.



Watch Video Solution

27. Find the area bounded by curves $\{(x, y) : y \geq x^2 \text{ and } y = |x|\}$



Watch Video Solution

28. The area lying above x-axis and included between the circle $x^2 + y^2 = 8x$ and the parabola $y^2 = 4x$ is



[Watch Video Solution](#)

29. Find the area of the region enclosed between the two circles $x^2 + y^2 = 1$ and $(x - 1)^2 + y^2 = 1$.



[Watch Video Solution](#)

30. Find the area of the region bounded by the parabola $y = x^2 + 2$ and the lines $y = x$, $x = 0$ and $x = 3$.



Watch Video Solution

31. Find the area of the region included between : the parabola $4y = 3x^2$ and the line $3x - 2y + 12 = 0$.



Watch Video Solution

32. Find the area of the region bounded by two parabolas $y = x^2$ and $y^2 = x$.



[Watch Video Solution](#)

Important Questions From Miscellaneous Exercise

1. Using integration find the area of region bounded by the triangle whose vertices are (1, 0), (2, 2) and (3, 1).



[Watch Video Solution](#)

2. Using integration, find the area of the triangle ABC, co ordinate of whose vertics are A(2,0),B(4,5) and C(6,3).



[Watch Video Solution](#)

3. Using integration find the area of regeion bounded by the triangle whose vertices are (-1,0), (1,3) and (3,2)



[Watch Video Solution](#)

4. Sketch the graph of $y = |x + 3|$ and evaluate the area under the curve $y = |x + 3|$ above x-axis and between $x = -6$ and $x = 0$.



[Watch Video Solution](#)

5. Make a rough sketch of the region given below and find its area, using integration :

$$\{(x, y) : y^2 \leq 4x, 4x^2 + 4y^2 \leq 9\}$$



[Watch Video Solution](#)

6. Find the area of smaller region bounded by

the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ and the line

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



[Watch Video Solution](#)

7. Smaller area enclosed by the circle

$x^2 + y^2 = 4$ and the line $x + y = 2$ is:



[Watch Video Solution](#)

8. Find the area enclosed between the parabola $y^2 = 4ax$ and the line $y = mx$



[Watch Video Solution](#)

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



[Watch Video Solution](#)

10. Find the area bounded by curves

$$(x - 1)^2 + y^2 = 1 \text{ and } x^2 + y^2 = 1.$$



Watch Video Solution

11. Using integration find the area of region bounded by the triangle whose vertices are $(1, 0)$, $(2, 2)$ and $(3, 1)$.



Watch Video Solution

12. Using integration, find the area of the triangle ABC, co ordinate of whose vertics are A(2,0),B(4,5) and C(6,3).



Watch Video Solution

13. Using integration find the area of the region bounded by triangle whose vertices are A(-1, 0), B(1, 3) and C(3, 2).



Watch Video Solution

14. Sketch the graph of $y = |x + 3|$ and evaluate the area under the curve $y = |x + 3|$ above x-axis and between $x = -6$ and $x = 0$.



Watch Video Solution

15. Find the area of the region $\{(x, y) : y^2 \leq 4x, 4x^2 + 4y^2 \leq 9\}$.



Watch Video Solution

16. Find the area of smaller region bounded by the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ and the line $\frac{x}{a} + \frac{y}{b} = 1$.



Watch Video Solution

17. Smaller area enclosed by the circle $x^2 + y^2 = 4$ and the line $x + y = 2$ is:



Watch Video Solution

18. Find the area enclosed between the parabola $y^2 = 4ax$ and the line $y = mx$



Watch Video Solution

19. Find the area of smaller region founded by the ellipse $\frac{x^2}{9} + \frac{y^2}{4} = 1$ and the straight line $\frac{x}{3} + \frac{y}{2} = 1$



Watch Video Solution

20. Find the area bounded by curves

$$(x - 1)^2 + y^2 = 1 \text{ and } x^2 + y^2 = 1.$$



Watch Video Solution

Multiple Choice Questions

1. Area lying in the first quadrant and bounded by the circle $x^2 + y^2 = 4$ and the lines $x = 0$ and $x = 2$ is :

A. π

B. $\frac{\pi}{2}$

C. $\frac{\pi}{3}$

D. $\frac{\pi}{4}$

Answer: A



Watch Video Solution

2. Area of the region bounded by the curve

$y^2 = 4x$, y -axis and the line $y = 3$ is

A. 2

B. $\frac{9}{4}$

C. $\frac{9}{3}$

D. $\frac{9}{2}$

Answer: B



Watch Video Solution

3. (a) (i) Find the area of the circle $x^2 + y^2 = 16$, which is exterior to the parabola $y^2 = 6x$.

A. $\frac{4}{3}(4\pi - \sqrt{3})$

B. $\frac{4}{3}(4\pi + \sqrt{3})$

C. $\frac{4}{3}(8\pi - \sqrt{3})$

D. $\frac{4}{3}(8\pi + \sqrt{3})$

Answer: C



Watch Video Solution

4. Smaller area enclosed by the circle

$x^2 + y^2 = 4$ and the line $x + y = 2$ is:

A. $2(\pi - 2)$

B. $\pi - 2$

C. $2\pi - 1$

D. $2(\pi + 2)$

Answer: B



Watch Video Solution

5. Area lying between the curve $y^2 = 4x$ and the line $y = 2x$ is :

A. $\frac{2}{3}$

B. $\frac{1}{3}$

C. $\frac{1}{4}$

D. $\frac{3}{4}$

Answer: B



Watch Video Solution

6. Area bounded by the curve $y = x^3$, the x -axis and the ordinates $x = -2$, $x = 1$ is:

A. -9

B. $\frac{-15}{4}$

C. $\frac{15}{4}$

D. $\frac{17}{4}$

Answer: D



Watch Video Solution

7. The area bounded by the curve $y = x|x|$, x -axis and the ordinates $x = -1$, $x = 1$ is given by:

A. 0

B. $\frac{1}{3}$

C. $\frac{2}{3}$

D. $\frac{4}{3}$

Answer: C



Watch Video Solution

8. The area bounded by the Y-axis, $y = \cos x$

and $y = \sin x$, $0 \leq x \leq (\pi) / 2$ is

A. $2(\sqrt{2} - 1)$

B. $\sqrt{2} - 1$

C. $\sqrt{2} + 1$

D. $\sqrt{2}$

Answer: B



Watch Video Solution

9. Area lying in the first quadrant and bounded by the circle $x^2 + y^2 = 4$ and the lines $x = 0$ and $x = 2$ is :

A. π

B. $\frac{\pi}{2}$

C. $\frac{\pi}{3}$

D. $\frac{\pi}{4}$

Answer: A



Watch Video Solution

10. Area of the region bounded by the curve

$y^2 = 4x$, y -axis and the line $y = 3$ is

A. 2

B. $\frac{9}{4}$

C. $\frac{9}{3}$

D. $\frac{9}{2}$

Answer: B



Watch Video Solution

11. (a) (i) Find the area of the circle $x^2 + y^2 = 16$, which is exterior to the parabola $y^2 = 6x$.

A. $\frac{4}{3}(4\pi - \sqrt{3})$

B. $\frac{4}{3}(4\pi + \sqrt{3})$

C. $\frac{4}{3}(8\pi - \sqrt{3})$

D. $\frac{4}{3}(8\pi + \sqrt{3})$

Answer: C



Watch Video Solution

12. Smaller area enclosed by the circle $x^2 + y^2 = 4$ and the line $x + y = 2$ is:

A. $2(\pi - 2)$

B. $\pi - 2$

C. $2\pi - 1$

D. $2(\pi + 2)$

Answer: B



Watch Video Solution

13. Area lying between the curve $y^2 = 4x$ and the line $y = 2x$ is :

A. $\frac{2}{3}$

B. $\frac{1}{3}$

C. $\frac{1}{4}$

D. $\frac{3}{4}$

Answer: B



Watch Video Solution

14. Area bounded by the curve $y = x^3$, the x -axis and the ordinates $x = -2$, $x = 1$ is:

A. -9

B. $\frac{-15}{4}$

C. $\frac{15}{4}$

D. $\frac{17}{4}$

Answer: D



Watch Video Solution

15. The area bounded by the curve $y = x|x|$, x -axis and the ordinates $x = -1$, $x = 1$ is given by:

A. 0

B. $\frac{1}{3}$

C. $\frac{2}{3}$

D. $\frac{4}{3}$

Answer: C



Watch Video Solution

16. The area bounded by the Y-axis, $y = \cos x$ and $y = \sin x$, $0 \leq x \leq (\pi) / 2$ is

A. $2(\sqrt{2} - 1)$

B. $\sqrt{2} - 1$

C. $\sqrt{2} + 1$

D. $\sqrt{2}$

Answer: B



Watch Video Solution