MATHS

BOOKS - ARIHANT PRAKASHAN

AREA UNDER PLANE CURVES

Practice Questions Exams Questions

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1. Find by integration the area bounded by the straight lines $y = 0$, $y = x$ and $x + 2y = 3$.

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

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3. Find the area of the trapezium bounded by the sides $y = x$, $x = 0$, $y = 3$, $y = 4$.

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4. What is the area bounded by $x = e^y$, $x = 0$, $y = 0$ and $y = 1$?

5. Write the area bounded by $y = -2x$, $y = 0$, $x = 1$ and $x = 3$.

6. Find the area of the region bounded by the curve $y = x^3$, $y = x + 6$ and $x = 0$.

7. Find the area enclosed bt the two paraboles $y^2 = 4$ ax and $x^2 = 4$ay.

8. Find the area of the circle

$$x^2 + y^2 = 2ax.$$

9. Find the area of the region bounded by the

curve $y = \sin$ x and the straight lines

$x = -\dfrac{\pi}{4}, x = \dfrac{\pi}{4}$ and $y = 0$.

10. Find the area bounded by the curve $xy = c^2$, the y=0 and $x = 2, x = 3$.

11. Determine the area of the region bounded by $y^2 = x^3$ and the double ordinate through (2,0).

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

13. Find the area of the region bounded by the curve $y = x$, X-axis, $x = -2$ and $x = 2$.

14. Find the area bounded by $y = e^x$, $y = 0$, $x = 6$ and $x = 2$.

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15. Find the area of the region between the curves $y = \cos x$ and $y = \sin x$, $x \in \left[0, \dfrac{\pi}{4}\right]$.

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16. Find the area of the region included between the parabola $y^2 = 2x$ and the straight line $x - y = 4$.

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17. Find the area enclosed by $y^2 = x^3$ and $x = 0, y = 2$.

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18. The latus rectum of the ellipse $\dfrac{x^2}{25} - \dfrac{y^2}{16} = 1$ are same .

19. Show that the area bounded by the parabolas $y^2 = 4x$ and $x^2 = 4y$ is equal to the area bounded by the curve $x^2 = 4y$ and the lines $y = 0$ and $x = 4$.

1. Express the area of a triangle with vertices at the points (0,0),(1,1),(3,0) as the sum of two integrals.

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2. What is the area bounded by $y = x$, $y = 0$, x=0 and $x = 1$?

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3. Find the area boundede by $y = \sin x$, $y = 0$

and $x = \pi$

4. Using integration, find the area of the region bounded between the line $x = 2$ and the parabola $y^2 = 8x$.

5. Write the formula in integral from for calculating the area bounded by the curves $y = 4x^2$, $x = 0$, $y = 1$ and $y = 4$.

6. Find the area of the parabola $y^2 = 4ax$ bounded by its latusrectum.

7. Find the area lying above the X-axis under the parabola $y = 4x - x^2$, x=4, x=2

8. Using integration, find the area of enclosed by the circle $x^2 + y^2 = a^2$.

9. Find the area of the region bounded by the curve $y = x^3$, $y = x + 6$ and $x = 0$.

10. Sketch the region common to the circle $x^2 + y^2 = 16$ and the parabola $x^2 = 6y$. Also, find the area of the region using integration.

Chapter Test

1. Find the area bounded by the curve $y = \sin x$ between $x = 0$ and $x = \pi$

2. Find the area enclosed by $y = e^x$, $x = 0$, $y = 2$, $y = 4$.

3. Find the area of the regions into which the circle $x^2 + y^2 = 4$ is divided by the line $x + \sqrt{3}y = 2$.

4. Find the area between the curve $x^2 = 4ay$, X-axis and ordinate $x = 2$.

5. Find the area bounded by $y^2 = x^3$, $x = 0$, $y = 9$.

6. Find the area of the portion of the parabola $y^2 = 4x$ bounded by the double ordinate through(3,0).

7. Determine the area within the ellipse

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

8. Find the area bounded by

$$xy = a^2, y = 0, x = \alpha, x = \beta(\beta > \alpha > 0)$$

9. Find the area between the curve $\dfrac{x^2}{a^2} + \dfrac{y^2}{b^2} = 1$ and the straight line $\dfrac{x}{a} + \dfrac{y}{b} = 1$ in first quadrant.

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10. Using integration find the area of triangular region ABC whose sides have the equation $y = 2x + 1$, $y = 3x + 1$ and $x = 4$.

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11. Using integration, find the area of the region bounded between the line $x = 2$ and the parabola $y^2 = 8x$.

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