EXERCISE 8.1 - Question No. 1

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

EXERCISE 8.1 - Question No. 2

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

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EXERCISE 8.1 - Question No. 3

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

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EXERCISE 8.1 - Question No. 4

Find the area of the region bounded by the ellipse $\frac{x^2}{16} + \frac{y^2}{9} = 1$.

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EXERCISE 8.1 - Question No. 5

Find the area of the region bounded by the ellipse $\frac{x^2}{4}+\frac{y^2}{9}=1$

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EXERCISE 8.1 - Question No. 6

Find the area of the region in the first quadrant enclosed by x-axis, line $x=\sqrt{3}y$ and the circle $x^2+y^2=4$.

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EXERCISE 8.1 - Question No. 7

Find the area of the smaller part of the circle $x^2+y^2=a^2$ cut off by the line $x=\frac{a}{\sqrt{2}}$

EXERCISE 8.1 - Question No. 8

The area between $x = y^2$ and $x = 4$ is divided into two equal parts by the line$x = a$, find the value of a.

EXERCISE 8.1 - Question No. 9

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

EXERCISE 8.1 - Question No. 10

Find the area bounded by the curve $x^2 = 4y$ and the line $x = 4y2$.

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EXERCISE 8.1 - Question No. 11

Find the area of the region bounded by the curve $y^2 = 4x$ and the line $x = 3$.

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EXERCISE 8.1 - Question No. 12

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) $\frac{\pi}{4}$

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EXERCISE 8.1 - Question No. 13

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) $\frac{9}{2}$

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EXERCISE 8.2 - Question No. 1

Find the area of the circle $4x^2 + 4y^2 = 9$ which is interior to the parabola $x^2 = 4y$.

EXERCISE 8.2 - Question No. 2

Find the area bounded by curves $(x-1)^2 + y^2 = 1$ and $x^2 + y^2 = 1$.

EXERCISE 8.2 - Question No. 3

Find the area of the region bounded by the curves $y = x^2 + 2$,

$y = x, x = 0$ and $x = 3$.

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EXERCISE 8.2 - Question No. 4

Using integration find the area of region bounded by the triangle

whose vertices are $(1, 0), (1, 3) and (3, 2)$.

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EXERCISE 8.2 - Question No. 5

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

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EXERCISE 8.2 - Question No. 6

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) $2(\pi + 2)$

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EXERCISE 8.2 - Question No. 7

Area lying between the curves $y^2 = 4x$ and $y = 2x$ is (A) $\frac{2}{3}$ (B) $\frac{1}{3}$ (C) $\frac{1}{4}$ (D) $\frac{3}{4}$

MISCELLANEOUS EXERCISE - Question No. 1

Find the area under the given curves and given lines: (i) $y = x^2$, $x = 1, x = 2$ and x-axis (ii) $y = x^4$, $x = 1, x = 5$ and x-axis

MISCELLANEOUS EXERCISE - Question No. 2

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

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MISCELLANEOUS EXERCISE - Question No. 3

Find the area of the region lying in the first quadrant and bounded by $y = 4x^2$,$x = 0, y = 1 and y = 4$.

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MISCELLANEOUS EXERCISE - Question No. 4

Sketch the graph of $y = |x + 3|$ and evaluate $\int - 60|x + 3|dx$.

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MISCELLANEOUS EXERCISE - Question No. 5

Find the area bounded by the curve $y = \sin x$ between $x = 0$ and $x = 2\pi$.

MISCELLANEOUS EXERCISE - Question No. 6

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

MISCELLANEOUS EXERCISE - Question No. 7

Find the area enclosed by the parabola $4y = 3x^2$ and the line

$2y = 3x + 12$.

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MISCELLANEOUS EXERCISE - Question No. 8

Find the area of the smaller region bounded by the ellipse

$\frac{x^2}{9} + \frac{y^2}{4} = 1$ and the line $\frac{x}{3} + \frac{y}{2} = 1$

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MISCELLANEOUS EXERCISE - Question No. 9

Find the area of the smaller region bounded by the ellipse

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

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MISCELLANEOUS EXERCISE - Question No. 10

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

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MISCELLANEOUS EXERCISE - Question No. 11

Using the method of integration find the area bounded by the curve

$|x| + |y| = 1$. [Hint: The required region is bounded by lines

$x + y = 1, x - y = 1, \ -x + y = 1$ and $-x - y = 1]$.

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MISCELLANEOUS EXERCISE - Question No. 12

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

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MISCELLANEOUS EXERCISE - Question No. 13

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

MISCELLANEOUS EXERCISE - Question No. 14

Using the method of integration find the area of the region bounded by lines: $2x + y = 4, 3x2y = 6$ and $x3y + 5 = 0$

MISCELLANEOUS EXERCISE - Question No. 15

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

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MISCELLANEOUS EXERCISE - Question No. 16

Area bounded by the curve $y = x^3$, the x-axis and the ordinates $x = 2$ and $x = 1$ is (A) -9 (B) $\frac{-15}{4}$ (C) $\frac{15}{4}$ (D) $\frac{17}{4}$

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MISCELLANEOUS EXERCISE - Question No. 17

The area bounded by the curve $y = x|x|$, x-axis and the ordinates $x = -1$ and $x = 1$ is given by (A) 0 (B) $\frac{1}{3}$ (C) $\frac{2}{3}$ (D) $\frac{4}{3}$ [Hint : $y = x^2$ if x and $> ; 0$ and $y = -x^2$ if x and $< ; 0$].

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MISCELLANEOUS EXERCISE - Question No. 18

The area of the circle $x^2 + y^2 = 16$ exterior to the parabola $y^2 = 6x$ is (A) $\frac{4}{3}\left(4\pi - \sqrt{3}\right)$ (B) $\frac{4}{3}\left(4\pi + \sqrt{3}\right)$ (C) $\frac{4}{3}\left(8\pi - \sqrt{3}\right)$ (D) $\frac{4}{3}\left(8\pi + \sqrt{3}\right)$

MISCELLANEOUS EXERCISE - Question No. 19

The area bounded by the y-axis, $y = \cos x$ and $y = s \in x$ when $0 \leq x \leq \frac{\pi}{2}$ is (A) $2\left(\sqrt{2-1}\right)$ (B) $\sqrt{2} - 1$ (C) $\sqrt{2} + 1$ (D) $\sqrt{2}$

SOLVED EXAMPLES - Question No. 1

Find the area enclosed by the circle $x^2 + y^2 = a^2$.

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SOLVED EXAMPLES - Question No. 2

Find the area enclosed by the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$.

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SOLVED EXAMPLES - Question No. 3

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

SOLVED EXAMPLES - Question No. 4

Find the area of the region in the first quadrant enclosed by the x-axis, the line $y = x$, and the circle $x^2 + y^2 = 32$.

SOLVED EXAMPLES - Question No. 5

Find the area bounded by the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ and the ordinates $x = 0$ and$x = ae$, where, $b^2 = a^2\left(1 - e^2\right)$ and$e < 1$.

SOLVED EXAMPLES - Question No. 6

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

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SOLVED EXAMPLES - Question No. 7

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

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SOLVED EXAMPLES - Question No. 8

In Figure, AOBA is the part of the ellipse $9x^2 + y^2 = 36$ in the first quadrant such that $OA = 2 and OB = 6$. Find the area between the arc AB and the chord AB.

SOLVED EXAMPLES - Question No. 9

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

SOLVED EXAMPLES - Question No. 10

Find the area of the region enclosed between the two circles:

$x^2 + y^2 = 4$ and $(x-2)^2 + y^2 = 4$.

SOLVED EXAMPLES - Question No. 11

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

SOLVED EXAMPLES - Question No. 12

Find the area of the region bounded by the line $y = 3x + 2$, the x-axis and the ordinates $x = 1 and x = 1$.

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SOLVED EXAMPLES - Question No. 13

Find the area bounded by the curve $y = \cos x$ between $x = 0$ and $x = 2\pi$.

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SOLVED EXAMPLES - Question No. 13

Prove that the curves $y^2 = 4x$ and $x^2 = 4y$ divide the area of the square bounded by $x = 0, x = 4, y = 4 and y = 0$ into three equal parts.

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SOLVED EXAMPLES - Question No. 14

Find the area of the region

$\{(x, y): 0 \leq y \leq x^2 + 1, 0 \leq y \leq x + 1, 0 \leq x \leq 2\}$

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