



INDIAN SCHOOL AL WADI AL KABIR
Dept. of Mathematics 2025 – 2026
Class XII – Mathematics
Work Sheet – Applications of Integrals



1	Using integration, find the area of the region $\{(x, y): y^2 \leq x \leq y\}$. [CBSE Term-2 2022]
2	Find the area bounded by the curves $y = x - 1 $ and $y = 1$, using integration. [CBSE Term-2 2022]
3	Using integration, find the smaller area enclosed by the circle $x^2 + y^2 = 4$ and the line $x + y = 2$ [CBSE 2020]
4	Find the area enclosed between the parabola $4y = 3x^2$ and the straight line $3x - 2y + 12 = 0$ [CBSE 2015]
5	Using integration, find the area of the region bounded by the line $x - y + 2 = 0$, the curve $x = \sqrt{y}$ and y - axis. [CBSE 2015]
6	Find the area of the smaller region bounded by the ellipse $\frac{x^2}{9} + \frac{y^2}{4} = 1$ and the line $\frac{3}{x} + \frac{y}{2} = 1$ [CBSE 2014]
7	Make a rough sketch of the region $\{(x, y): 0 \leq y \leq x^2 + 1, 0 \leq x + 1, 0 \leq x \leq 2\}$ and find the area of the region, using the method of integration. [CBSE SQP 2023]
8	Using Integration, find the area of triangle whose vertices are $(-1, 1)$, $(0, 5)$ and $(3, 2)$ of the region using integration. [CBSE SQP 2022]
9	Make a rough sketch of the region $\{(x, y): 0 \leq y < y < x^2, 0 \leq x, 0 \leq x \leq 2\}$ and find the area of the region using integration. [CBSE SQP 2022]
10	Using integration, find the area of the region bounded by the curves $x^2 + y^2 = 4$, $x = \sqrt{3y}$ and x - axis lying in the first quadrant. [CBSE Term-2 2022]
11	Using integration, find the area of the region in the first quadrant enclosed by the x - axis, the line $y = x$ and the circle $x^2 + y^2 = 32$ [CBSE 2018, 2015, 2014]
12	Find the area bounded by the circle $x^2 + y^2 = 16$ and the line $\sqrt{3y} = x$ in the first quadrant, using integration. [CBSE 2017]
13	Using integration, find the area bounded by the curves: $y = x + 1 + 1$, $x = -3$, $x = 3$ and $y = 0$ [CBSE 2014]
14	Using integration, find the area bounded by the curve $x^2 = 4y$ and the line $x = 4y - 2$. [CBSE 2014]
15	Using integration, find the area of the region in the first quadrant enclosed by the x -axis the line $y = x$ and the circle $x^2 + y^2 = 18$. [CBSE 2014]

16	Using integration, find the area of the region bounded by the triangle whose vertices are $(-1, 2)$, $(1, 5)$ and $(3, 4)$. [CBSE 2014]
17	If A_1 denotes the area of region bounded by $y^2 = 4x$, $x = 1$ and x-axis in the first quadrant and A_2 denotes the area of region bounded by $y^2 = 4x$, $x = 4$, Find $A_1 : A_2$. (2024)
18	Using integration, find the area of the region enclosed between the circle $x^2 + y^2 = 16$ and the lines $x = -2$ and $x = 2$. (2024)
19	Using integration, find the area bounded by the ellipse $9x^2 + 25y^2 = 225$, the lines $x = -2$, $x = 2$, and the X-axis. (2024)
20	Area of the region bounded by curve $y^2 = 4x$ and the X-axis between $x = 0$ and $x = 1$ is (a) $\frac{2}{3}$ (b) $\frac{8}{3}$ (c) 3 (d) $\frac{4}{3}$

Answers

1	$\frac{1}{6}$ sq. Unit	11	4π sq. units.
2	1 sq. Unit.	12	$\frac{4\pi}{3}$ sq. Units
3	$(\pi - 2)$ sq. Units.	13	16 sq. Units
4	27 sq. Units.	14	$\frac{9}{8}$ sq. Units.
5	$\frac{10}{3}$ sq. Units	15	$\frac{9\pi}{4}$ sq. Units
6	$\frac{3\pi}{2} - 3$ sq. Units	16	4 sq. Units.
7	$\frac{23}{6}$	17	The ratio $A_1 : A_2$ is 1 : 8.
8	$\frac{15}{2}$ sq. units	18	$A = 8(\pi + \sqrt{3})$
9	$\frac{11}{6}$	19	$A = 30 \left(\sin^{-1} \frac{2}{5} + \frac{2\sqrt{21}}{50} \right)$
10	$\frac{\pi}{3}$ sq. units.	20	(D) $\frac{4}{3}$