

CLASS-XII, SUBJECT-MATHEMATICS

CHAPTER.APPLICATION OF INTEGRATION (Area under the curve)

WORKSEET (STANDARD)

(One Mark questions)

- The area enclosed by the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ is equal to
(A) $\pi^2 ab$ (B) πab (C) $\pi a^2 b$ (D) πab^2
- The area of the region bounded by the curve $y = x^2$ and the line $y = 16$
(A) $\frac{32}{3}$ (B) $\frac{256}{3}$ (C) $\frac{64}{3}$ (D) $\frac{128}{3}$
- 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
- 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
- Area of the region bounded by the curve $y = \sqrt{16 - x^2}$ and the x-axis is
(A) 8 sq units (B) 20π sq units (C) 16π sq units (D) 256π sq units
- 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) 24 sq units
- 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
- 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
- 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
- The area bounded by the curve $y = |x|$, x-axis and the ordinates $x = -1$ and $x = 1$ is given by
(A) 0 (B) $\frac{1}{3}$ (C) $\frac{2}{3}$ (D) $\frac{4}{3}$

(2/4 Marks questions)

11. Find area of the region bounded by the curves $y^2 = 4ax$ and $x^2 = 4ay$;
 $a > 0$
12. Find area of the region enclosed between two circles $x^2 + y^2 = 9$
and $(x - 3)^2 + y^2 = 9$.
13. Find area of the region enclosed by the parabola $y^2 = x$ and the line
 $x + y = 2$
14. Find area of the region $\{(x, y) : x^2 + y^2 \leq 4, x + y \geq 2\}$
15. Find area of the region $\{(x, y) : x^2 + y^2 \leq 1 \leq x + y = 1\}$.
16. Find area of the region enclosed by the parabola $x^2 = 4y$ and
 $4y - 2 = x$.
17. Find area of the region bounded by the curves $y = \sqrt{x}$, $2y + 3 = x$ and
x-axis
18. Using integration, find the area of the region bounded by the line $y = 3x + 2$, $x = -2$, $x = 1$ and x-axis.
19. Find area of the region enclosed by the parabola $x^2 = y$ and $y = x$.
20. Using integration find the area of the region bounded by the parabola
 $y = x^2$ and the line $y = x$.