

QUESTION BANK

CHAPTER -8. APPLICATIONS OF INTEGRALS

1. Find the area of the region bounded by the curve $y = x^2 + 2$, $y = x$, $x = 0$ and $x = 3$.
2. Find the ratio of the areas into which curve $y^2 = 6x$ divides the region bounded by $x^2 + y^2 = 16$.
3. Find the area of the region bounded by the ellipse $\frac{x^2}{4} + \frac{y^2}{9} = 1$.
4. Find the area of the region bounded by $y = \sin x$ between $x = 0$ and $x = \pi$.
5. Find the area of the smaller region bounded by the ellipse $\frac{x^2}{9} + \frac{y^2}{4} = 1$ and the line $\frac{x}{3} + \frac{y}{2} = 1$.
6. Find the area of the region bounded by the lines $x+2y = 2$, $y-x = 1$ and $2x+y = 7$ using integration.
7. Find the area of that part of the circle $x^2 + y^2 = 16$ which is exterior to the parabola $y^2 = 6x$.
8. Find the area of the region bounded by the parabolas $y^2 = 4ax$ and $x^2 = 4ay$.
9. Find the area of the region enclosed between two circles $x^2 + y^2 = 4$ and $(x-2)^2 + y^2 = 4$.
10. Find the area of the region bounded by $y = x^2$ and $y = |x|$.
11. Find the area of the region bounded by the triangle whose vertices are $(-1,2)$, $(1,5)$ and $(3,4)$ using integration.
12. Using integration, find the area of the given region $\{(x, y) : |x + 2| \leq y \leq \sqrt{20 - x^2}\}$.
13. Find the area of the region $\{(x, y) : y^2 \leq 4x, 4x^2 + 4y^2 \leq 9\}$
14. Using integration, find the area bounded by the curve $|x| + |y| = 1$.
15. Sketch the graph $y = |x - 5|$ and find the area between the curve, x-axis, $x=0$ and $x = 6$.
16. Using integration, find the area of the region $\{(x, y) : x^2 + y^2 \leq 16, x^2 \leq 6y\}$.
17. Find the area of the region enclosed between the two curves $(x-6)^2 + y^2 = 36$ and $x^2 + y^2 = 36$.
18. Find the area of the region enclosed between the two circles: $X^2 + y^2 = 1$ and $(x + 1)^2 + y^2 = 1$
19. Using integration, find the area of the triangle with vertices $(-1,3)$, $(0,6)$ and $(3,1)$
20. Find the area of the region $\{(x, y) : x^2 + y^2 \leq 1 \leq x + y\}$
21. Find the area of the smaller region enclosed between the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ and the line $\frac{x}{a} + \frac{y}{b} = 1$

22. Find the area enclosed between $y = \sin x$ and $y = \cos x$ for $0 \leq x \leq \frac{\pi}{2}$.

23. Using integration find the area of the region bounded by the following curves after

making a rough sketch: $y = 1 + |x + 1|$, $x = -3$, $x = 3$ and $y = 0$.
