sns academy
a fingerprint school
Sincerity, Nobility and Service

Grade: XII **APPLICATION OF INTEGRATION**

1. Using integration find the area of the triangle formed by positive x –axis and tangent and normal to the circle $x^2 + y^2 = 4at\left(1, \sqrt{3}\right)$
2. Using integration , 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.
3. Using integration find the area of the region bounded by the line $x - y + 2 = 0$, the curve $x = \sqrt{y}$ and y-axis.
4. Find the area of the smaller region bounded by the ellipse $\frac{x^2}{9} + \frac{y^2}{4} = 1$ and the line $\frac{x}{3} + \frac{y}{2} = 1$.
5. Using integration, find the area of the region enclosed between the two circles $x^2 + y^2 = 4 and \left(x-2\right)^2 + y^2 = 4$.
6. Using integration, find the area bounded by the curve $x^2 = 4y$ and the line $x = 4y - 2$.
7. Find the area of the region bounded by the parabola $y = x^2$ and $y = |x|$.
8. Find the area of the region $\left\{(x, y): y^2 \le 6ax \, and \, x^2 + y^2 \le 16a^2\right\}$ using method of integration.
9. Find the area of the region $\left\{(x, y): y^2 \le 4x, \, 4x^2 + 4y^2 \le 9\right\}$ using method of integration.
10. Find the area enclosed by the parabola $4y = 3x^2$ and the line $2y = 3x + 12$
11. Find the area of the region bounded by the parabola $y^2 = 2x$ and the line $x - y = 4$.

12. Find the area of the region lying between the parabolas $y^2 = 4ax$ and $x^2 = 4ay$.
13. Find the area of the region $\{(x, y): x^2 + y^2 \le 4,\ x + y \ge 2\}$.
14. Using integration find the area of the region in the first quadrant enclosed by the x-axis, line $x = \sqrt{3}y$ and the circle $x^2 + y^2 = 4$.
15. Find the area of the triangular region whose sides have equations $y = 2x + 1,\ y = 3x + 1$ and $x = 4$.
16. Sketch the graph of $y = |x + 3|$ and evaluate the area under the curve $y = |x + 3|$ above x-axis and between x = -6 and x = 0.
17. Find the area of the circle $4x^2 + 4y^2 = 9$ which is interior to the parabola $x^2 = 4y$.
18. Find the area of the region in the first quadrant enclosed by the x-axis, the line $y = x$ and the circle $x^2 + y^2 = 32$
19. Using integration , find the area of the region bounded by the triangle whose vertices are (-1, 2), (1, 5) and (3, 4) .
20. Using integration , find the area of the region bounded by the triangle whose vertices are (2, 0), (4, 5) and (6,3) .
21. Using integration, find the area of the following region.
$\{(x, y): |x + 2| \text{ and } y \le \sqrt{20 - x^2}\}$
22. Using integration, find the area of the region
$\{(x, y): 25x^2 + 9y^2 \le 225 \text{ and } 5x + 3y \ge 15\}$.
23. Find the area of the region bounded by the following lines: 3x – y – 3 = 0, 2x + y -12 = 0,x – 2y -1 =0.
24. Find the area of the region bounded by the lines 5x – 2y -10 = 0, x+y – 9 = 0, 2x-5y-4=0
25. Using integration find the area of the region in the first quadrant enclosed by the x –axis, line $x = \sqrt{3}y$ and the circle $x^2 + y^2 = 4$
26. Using integration find the area of the region in the first quadrant enclosed by the x –axis, line $y = \sqrt{3}x$ and the circle $x^2 + y^2 = 16$