Topic :-Applications of Intergrals

1. *The part of straight line $y = x + 1$ between $x = 2$ and $x = 3$ is revolved about x-axis, then the curved surface of the solid thus generated is*

   a) $\dfrac{37\pi}{3}$ b) $7\pi\sqrt{2}$ c) 37π d) $7\pi/\sqrt{2}$

2. Area bounded by $y^2 = x$, $y = 0$, $x = 1$, $x = 4$ is

   a) $\dfrac{28}{3}$ sq units   b) $\dfrac{3}{28}$ sq units   c) $\dfrac{8}{3}$ sq units   d) $\dfrac{4}{3}$ sq units

3. The figure shows a ΔAOB and the parabola $y = x^2$. The ratio of the area of the ΔAOB to the area of the region AOB of the parabola $y = x^2$ is equal to

   a) $\dfrac{3}{5}$ b) $\dfrac{3}{4}$ c) $\dfrac{7}{8}$ d) $\dfrac{5}{6}$
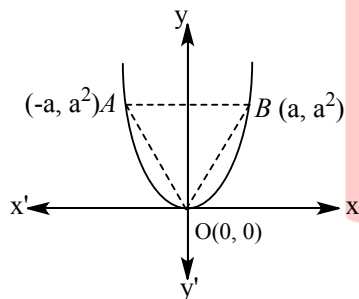
4. If the area above x-axis, bounded by the curves $y = 2^{kx}$ and $x = 0$ and $x = 2$ is $\dfrac{3}{\log 2}$, then the value of k is

   a) $1/2$ b) 1 c) -1 d) 2

5. The area between the curves $y = \cos x$, x-axis and the line $y = x + 1$, is

   a) $1/2$ b) 1 c) 3 d) 2

6. The area bounded by the parabola $x = 4 - y^2$ and $y -$ axis, in square units, is

   a) $\dfrac{3}{32}$ b) $\dfrac{32}{3}$ c) $\dfrac{33}{2}$ d) $\dfrac{16}{3}$

7. The volume of the solid formed by rotating the area enclosed between the curve $y = x^2$ and the line $y = 1$ about $y = 1$ is (in cubic unit)

   a) $\dfrac{9\pi}{5}$ b) $\dfrac{2\pi}{5}$ c) $\dfrac{8\pi}{3}$ d) $\dfrac{7\pi}{5}$

8. The volume of spherical cap of height h cut off from a sphere of radius a is equal to

   a) $\frac{\pi}{3}h^2(3a-h)$ b) $\pi(a-h)(2a^2-h^2-ah)$

   c) $\frac{4\pi}{3}h^3$ d) None of these above

9. The area of the region bounded by the straight lines $x=0$ and $x=2$ and the curves $y=2^x$ and $y=2x-x^2$ is equal to

   a) $\frac{2}{\log 2}-\frac{4}{3}$ b) $\frac{3}{\log 2}-\frac{4}{3}$ c) $\frac{1}{\log 2}-\frac{4}{3}$ d) $\frac{4}{\log 2}-\frac{3}{2}$

10. The area bounded by the curves $f(x)=ce^x(c>0)$, the x-axis and the two ordinates $x=p$ and $x=q$, is proportional to

   a) $f(p)f(q)$ b) $|f(p)-f(q)|$ c) $f(p)+f(q)$ d) $\sqrt{f(p)f(q)}$

11. The area between x-axis and curve $y=\cos x$ when $0 \le x \le 2\pi$, is

   a) 0   b) 2   c) 3   d) 4

12. Area enclosed between the curves $y^2(2a-x)=x^3$ and line $x=2a$ above x-axis is

   a) πa^2 sq unit   b) $\frac{3\pi a^2}{2}$ sq unit   c) $2\pi a^2$ sq unit   d) $3\pi a^2$ sq unit

13. The area lying between parabola $y^2=4ax$ and it's latusrectum is

   a) $\frac{4}{3}a^2$ sq unit   b) $\frac{16}{3}a^2$ sq unit   c) $\frac{8}{3}a^2$ sq unit   d) None of these

14. Ratio of the area cut off a parabola by any double ordinate is that corresponding rectangle contained by that double ordinate and its distance from the vertex is

   a) 1/2   b) 1/3   c) 2/3   d) 1

15. The area cut off the parabola $4y=3x^2$ by the straight line $2y=3x+12$ in square units is

   a) 16   b) 21   c) 27   d) 36

16. The area bounded by the curve $y^2(2a-x)=x^3$ and the line $x=2a$ is

   a) $3\pi a^2$ sq units   b) $\frac{3\pi a^2}{2}$ sq units   c) $\frac{3\pi a^2}{4}$ sq units   d) $\frac{6\pi a^2}{5}$ sq units

17. The area bounded by $y=-x^2+2x+3$ and $y=0$ is

   a) 32 sq units   b) 32/3 sq units   c) 1/32 sq unit   d) 1/3 sq unit

18. The area of the region bounded by the curve $a^4y^2=(2a-x)x^5$ is to that of the circle whose radius is a, is given by the ratio

   a) 4:5   b) 5:8   c) 2:3   d) 3:2

19. The area bounded by the curves $y^2=x$ and $y=x^2$ is

   a) $\frac{2}{3}$ sq unit   b) 1 sq unit   c) $\frac{1}{2}$ sq unit   d) None of these

20. Area common to the curves $y=\sqrt{x}$ and $x=\sqrt{y}$ is

   a) 1   b) 2/3   c) 1/3   d) 4/3