DPP
DAILY PRACTICE PROBLEMS

Class : XIth **Subject : Maths**
Date : **DPP No. :9**

Topic :-Applications of Intergrals

1. The area bounded by the parabola $y^2 = 4ax$, latusrectum and x-axis, is
   a) 0 b) $\frac{4}{3}a^2$ c) $\frac{2}{3}a^2$ d) $\frac{a^2}{3}$
2. If A is the area between the curve $y = \sin x$ and x-axis in the interval $[0,\pi/4]$, then in the same interval, area between the curve $y = \cos x$ and x-axis is
   a) A b) $\pi/2 - A$ c) $1 - A$ d) $A - 1$
3. The area bounded by $y = \tan^{-1} x$, $x = 1$ and x-axis is
   a) $\left(\frac{\pi}{4} + \log\sqrt{2}\right)$ sq unit b) $\left(\frac{\pi}{4} - \log\sqrt{2}\right)$ sq unit
   c) $\left(\frac{\pi}{4} - \log\sqrt{2} + 1\right)$ sq unit d) None of these
4. The area of the smaller segment cut off from the circle $x^2 + y^2 = 9$ by $x = 1$ is
   a) $\frac{1}{2}(9\sec^{-1}3 - \sqrt{8})$sq unit b) $(9\sec^{-1}3 - \sqrt{8})$sq unit
   c) $(\sqrt{8} - 9\sec^{-1}3)$sq unit d) None of the above
5. Area lying in the first quadrant and bounded by the circle $x^2 + y^2 = 4$, the line $x = \sqrt{3}y$ and x-axis, is
   a) π sq units b) $\frac{\pi}{2}$ sq units c) $\frac{\pi}{3}$ sq units d) None of these
6. The area of the figure bounded by $y = e^{x-1}$, $y = 0$, $x = 0$ and $x = 2$, is
   a) < 2 b) > 2 c) $= 2$ d) None of these
7. Area bounded by the curves $y = x\sin x$ and x-axis between $x = 0$ and $x = 2\pi$ is
   a) 2π b) 3π c) 4π d) 5π
8. The area of region $\{(x,y): x^2 + y^2 \leq 1 \leq x + y\}$ is
   a) $\frac{\pi^2}{5}$ sq unit b) $\frac{\pi^2}{2}$ sq unit c) $\frac{\pi^2}{4}$ sq unit d) $\left(\frac{\pi}{4} - \frac{1}{2}\right)$ sq unit
9. The area bounded by the curves $y = f(x)$, the x-axis and the ordinates $x = 1$ and $x = b$ is $(b-1)\sin(3b+4)$. Then, $f(x)$ is
   a) $(x-1)\cos(3x+4)$ b) $\sin(3x+4)$
   c) $\sin(3x+4) + 3(x-1)\cos(3x+4)$ d) None of the above

10. AOB is the positive quadrant of the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ in which $OA=a$, $OB=b$. The area between the arc AB and the chord AB of the ellipse is

a) $\frac{1}{2}ab(\pi+2)$ b) $\frac{1}{4}ab(\pi-4)$ c) $\frac{1}{4}ab(\pi-2)$ d) None of these

11. Area bounded by the curve $x^2=4y$ and the straight line $x=4y-2$ is equal to

a) $\frac{8}{9}$ sq unit b) $\frac{9}{8}$ sq unit c) $\frac{4}{3}$ sq unit d) None of these

12. The area of the region bounded by the curve $y=\tan x$, a line parallel to y-axis at $x=\frac{\pi}{4}$ and the x-axis is

a) $\frac{1}{4}$ sq unit b) $\log\sqrt{2}+\frac{1}{4}$ sq unit c) $\log\sqrt{2}-\frac{1}{4}$ sq unit d) None of these

13. Let A_1 be the area of the parabola $y^2=4ax$ lying between vertex and latusrectum and A_2 be the area between latusrectum and double ordinate $x=2a$. Then, $A_1/A_2=$

a) $2\sqrt{2}-1$ b) $(2\sqrt{2}+1)/7$ c) $(2\sqrt{2}-1)/7$ d) None of these

14. The area of the closed igure bounded by $x=-1$, $x=2$ and $y=\begin{cases}-x^2+2\,, x\le 1\\ 2x-1\ ,\ x>1\end{cases}$ and the x-axis is

a) $\frac{16}{3}$ sq unit b) $\frac{10}{3}$ sq unit c) $\frac{13}{3}$ sq unit d) $\frac{7}{3}$ sq unit

15. The area bounded by the curve $y=\log_e x$ and x-axis and the straight line $x=e$ is

a) e sq. units b) 1 sq. units c) $1-\frac{1}{e}$ sq. units d) $1+\frac{1}{e}$ sq. units

16. The area bounded by the curves $\sqrt{x}+\sqrt{y}=1$ and $x+y=1$ is

a) 1/3 sq unit b) 1/6 sq unit c) 1/2 sq unit d) None of these

17. If A is the area of the region bounded by the curve $y=\sqrt{3x+4}$, x-axis and the lines $x=-1$ and $x=4$ and B is that area bounded by curve $y^2=3x+4$, x-axis and the liens $x=-1$ and $x=4$, then A:B is equal to

a) 1:1 b) 2:1 c) 1:2 d) None of these

18. The area bounded by the curves $y=\sqrt{x}$, $2y+3=x$ and x-axis in the Ist quadrant is

a) 9 sq unit b) 27/4 sq unit c) 36 sq unit d) 18 sq unit

19. The sine and cosine meet each other at number of points and develop the symmetrical area number of times, area of one such region is

a) $4\sqrt{2}$ b) $3\sqrt{2}$ c) $2\sqrt{2}$ d) $\sqrt{2}$

20. Let $f(x)$ be a non-negative continuous function such that the area bounded by the curve $y=f(x)$, x-axis and the ordinates $x=\frac{\pi}{4}$ and $x=\beta>\frac{\pi}{4}$is$\pi\left(\beta\sin\beta+\frac{\pi}{4}\cos\beta+\sqrt{2}\,\beta\right)$ the $f\left(\frac{\pi}{2}\right)$s

a) $\left(1-\frac{\pi}{4}+\sqrt{2}\right)$ b) $\left(1-\frac{\pi}{4}-\sqrt{2}\right)$ c) $\left(\frac{\pi}{4}-\sqrt{2}+1\right)$ d) $\left(\frac{\pi}{4}+\sqrt{2}-1\right)$