CUET Mathematics Test

Chapter: Applications of Integrals

General Instructions

1. Total Questions: **20**
2. Duration: **60 Minutes**
3. All questions are compulsory.
4. Each question carries **5 marks**.
5. For each correct answer: **+5 marks**.
6. For each incorrect answer: **-1 mark**.
7. No negative marking for unanswered questions.
8. Use of calculator or electronic devices is strictly prohibited.
9. Choose the most appropriate answer from the given options.

1. The area of the region bounded by the curve $y^2 = x$, the y-axis, and the lines $y = 2$ and $y = 3$ is:
   (A) 19/3 sq. units
   (B) 26/3 sq. units
   (C) 7/3 sq. units
   (D) 13/3 sq. units

2. Find the area of the region bounded by the circle $x^2 + y^2 = 16$ in the first quadrant.
   (A) 16π sq. units
   (B) 8π sq. units
   (C) 4π sq. units
   (D) 2π sq. units

3. The area bounded by the ellipse $\frac{x^2}{4} + \frac{y^2}{9} = 1$ is:
   (A) 6π sq. units
   (B) 13π sq. units
   (C) 36π sq. units
   (D) 12π sq. units

4. The area of the region bounded by the parabola $y^2 = 4x$ and the line $x = 3$ is:
   (A) $4\sqrt{3}$ sq. units
   (B) $8\sqrt{3}$ sq. units
   (C) $12\sqrt{3}$ sq. units
   (D) $16\sqrt{3}$ sq. units

5. Find the area of the region bounded by $y = \cos x$ between $x = 0$ and $x = \pi$.
   (A) 0 sq. units
   (B) 1 sq. unit
   (C) 2 sq. units
   (D) 4 sq. units

6. The area of the region bounded by the curve $y = x^2$ and the line $y = 4$ is:
   (A) 32/3 sq. units
   (B) 16/3 sq. units
   (C) 8/3 sq. units
   (D) 64/3 sq. units

7. Area bounded by the curve $y = x^3$, the x-axis and the ordinates $x = -2$ and $x = 1$ is:
   (A) $-15/4$ sq. units
   (B) 15/4 sq. units
   (C) 17/4 sq. units
   (D) 31/4 sq. units

8. The area of the region bounded by the curve $y = |x - 1|$ and $y = 0$ for $x \in [0, 2]$ is:
   (A) 1 sq. unit
   (B) 2 sq. units
   (C) 1/2 sq. unit
   (D) 4 sq. units

9. Find the area of the smaller part of the circle $x^2 + y^2 = a^2$ cut off by the line $x = a/\sqrt{2}$.
   (A) $\frac{a^2}{4}(\pi - 2)$ sq. units
   (B) $\frac{a^2}{2}(\pi - 1)$ sq. units
   (C) $\frac{a^2}{4}(\pi + 2)$ sq. units
   (D) $a^2\pi$ sq. units

10. The area of the region bounded by the parabola $x^2 = 4y$ and the line $y = 2$ is:
    (A) $\frac{16\sqrt{2}}{3}$ sq. units
    (B) $\frac{8\sqrt{2}}{3}$ sq. units
    (C) $4\sqrt{2}$ sq. units
    (D) $32\sqrt{2}$ sq. units

11. Area between the curves $y^2 = x$ and $x^2 = y$ is:
    (A) 1 sq. unit
    (B) 1/2 sq. unit
    (C) 1/3 sq. unit
    (D) 1/4 sq. unit

12. The area of the region bounded by the curve $y = \sqrt{x}$ and $y = x$ is:
    (A) 1/6 sq. unit
    (B) 1/3 sq. unit
    (C) 2/3 sq. unit
    (D) 1/2 sq. unit

13. Find the area of the region bounded by the line $y = 3x + 2$, the x-axis and the ordinates $x = -1$ and $x = 1$.
    (A) 13/3 sq. units
    (B) 5 sq. units
    (C) 13/2 sq. units
    (D) 4 sq. units

14. Area of the region bounded by the curve $x = 2y^2$ and $x = 0, y = 1, y = 2$ is:
    (A) 14/3 sq. units
    (B) 16/3 sq. units
    (C) 18/3 sq. units
    (D) 7/3 sq. units

15. The area of the region bounded by the circle $x^2 + y^2 = 1$ and the line $x + y = 1$ in the first quadrant is:
    (A) $\pi/4 - 1/2$ sq. units
    (B) $\pi/4 - 1$ sq. units
    (C) $\pi/2 - 1/2$ sq. units
    (D) $\pi/4$ sq. units

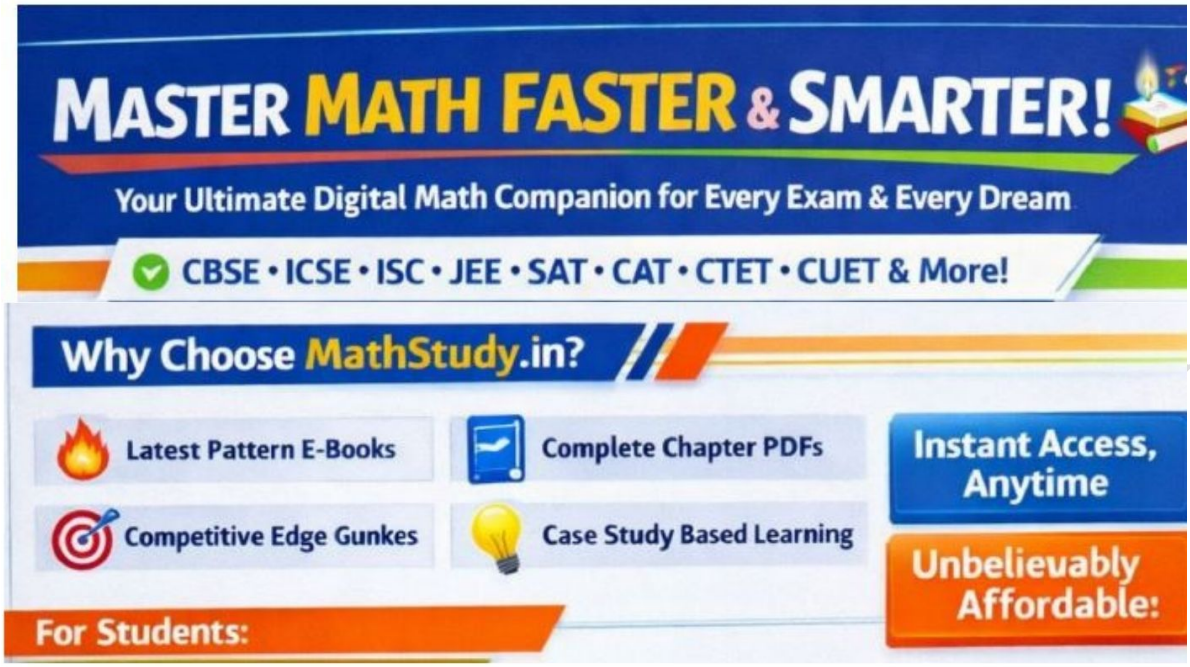
16. The area of the region bounded by $y = e^x$, $y = 0$, $x = 0$ and $x = \log 2$ is:
    (A) 1 sq. unit
    (B) 2 sq. units
    (C) $\log 2$ sq. units
    (D) e sq. units

17. The area of the region bounded by the parabola $y = 4 - x^2$ and the x-axis is:
    (A) 32/3 sq. units
    (B) 16/3 sq. units
    (C) 8/3 sq. units
    (D) 64/3 sq. units

18. Find the area bounded by the curve $y = \sin 2x$ from $x = 0$ to $x = \pi/4$.
    (A) 1/2 sq. unit
    (B) 1 sq. unit
    (C) 2 sq. units
    (D) 1/4 sq. unit

19. The area of the region bounded by the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ and the line $\frac{x}{a} + \frac{y}{b} = 1$ in the first quadrant is:
    (A) $\frac{ab}{4}(\pi - 2)$ sq. units
    (B) $\frac{ab}{2}(\pi - 2)$ sq. units
    (C) $\frac{ab}{4}(\pi - 1)$ sq. units
    (D) $ab\pi$ sq. units

20. Area of the region bounded by the curve $y = \log x$, x-axis and the ordinate $x = e$ is:
    (A) 1 sq. unit
    (B) e sq. units
    (C) $e - 1$ sq. units
    (D) $1/e$ sq. units



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