MATHS

BOOKS - CENGAGE MATHS (HINGLISH)

AREA UNDER CURVES

Question Bank

1. The area enclosed by $g(x), x = -3, x = 5$ and x -axis where $g(x)$ is the inverse of $f(x) = x^3 + 3x + 1$ is

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2. Let `f(x) = { [2 x, 0 le x<1 ],[2, 1 le x le 3 ],[8-2 x, 3 If the area of region bounded by the curve $|y+1| = f(x+4) is S then f \in d the value of$ (S/3)`.

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3. A differentiable function satisfies $f'(x) = f(x) + 2e^x$ with initial conditions $f(0) = 0$. The area enclosed between $f(x)$ and the x -axis is.

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4. The area of the region (s) enclosed by the curves $y = x^2$ and $y = \sqrt{|x|}$ is

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5. The area (in sq. units) bounded by the curves $y = x$ $(x-3)^2$ and $y = x$ is

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6. Area of the region enclosed between the curves $x = y^2 - 1$ and $x = |y|\sqrt{1-y^2}$ is

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7. If $f(x)$ is a periodic function with period 3 and defined as

$f(x) = [\{x\}, x \in (0, 1)], \{x\}x \in (1, 2)], [\{-x\}x \in (2, 3)]$

then the value of $\frac{1}{3}\int_{3}^{12} f(x)dx$ (where [.] and . denote greatest integer and tionalpart functions, respectively)

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8. If area bounded by curves $y = (|x| - 2)^2$ and $y = 4 - x^2$ is 'A' (in sq. units), then value of $3A$ is

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9. If line $x = 1$ divides the area bounded by the curve $2x + 1 = \sqrt{4y} + 1, y = x$ and $y = 2$ in two regions of area R_1 and R_2, then $\frac{1}{R_1^2} \div \frac{1}{R_2^2}$ is equal to

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10. Area of the region bounded by the curves $y = 4, y = \sqrt{x}$ and $x = -\sqrt{y}$ is

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11. The shaded area enclosed by $f(x) = 12 + ax - x^2$ coordinate axes and the ordinate at $x = 3$ is 45 sq. units. If m and n are the x -axis intercepts of the graph of $y = f(x)$ then the value of $(m + n + a)$ equals FIGURE

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12. The area enclosed by the parabola $y^2 = 12x$ and its latus rectum is

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13. The area bounded by the curve $y = x^2 + 2x + 1$ and tangent at $(1, 4)$ and y -axis is

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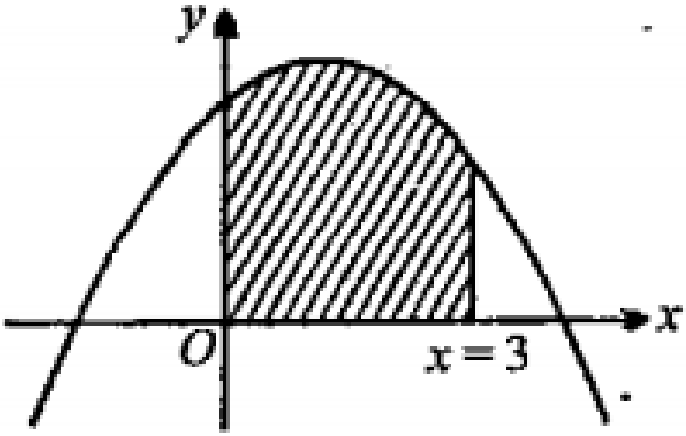
14. If the area enclosed between $f(x) = \min\left(\cos^{-1}(\cos x).\cot^{-1}(\cot x)\right)$ and x -axis

in $x \in (\pi, 2\pi)$ is $\frac{\pi^2}{k}$ where $k \in N$, then k is equal to



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15. If area bounded by $y = x^2 - 2x - 1$ and $mx + y - 1 = 0$ is minimum, then m 'is equal to

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16. The area bounded by the curve $y = x^2$ and $y = \frac{2}{1+x^2}$ is λ sq. units, 'then the value of $[\lambda]$ is [Note: $[k]$ denotes greatest integer less than or equal to

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17. If the area bounded by the parabolas $y^2 = 4\alpha(x+\alpha)$ and $y^2 = -4\alpha(x-\alpha)$, where $\alpha > 0$ is 48 sq. units then α is equal to

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18. 'If the area bounded by the graph of $y = xe^{-a}x(a > 0)$ and the abscissa axis is $\frac{1}{9}$ then the

value of ' a ' is equal to

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19. The area of the quadrilateral with its vertices at the foci of the conics $9x^2 - 16y^2 - 18x + 32y - 23 = 0$ and $25x^2 + 9y^2 - 50x - 18y + 33 = 0$, is

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20. $y = f(x)$ is a function which satisfies

(i) $f(0) = 0$

(ii) $f''(x) = f'(x)$ and

(iii) $f'(0) = 1$ then the area bounded by the graph of $y = f(x)$, the lines $x = 0, x - 1 = 0$ and $y \div 1 = 0$, is

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