MATHS

BOOKS - CBSE COMPLEMENTARY MATERIAL MATHS (HINGLISH)

APPLICATIONS OF INTEGRALS

Four Six Mark Questions

1. Calculate the area bouded by the parabola $y^2 = 4ax$ and its latus rectum

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2. Find the area of the region $\{(x, y) : x^2 \leq y \leq x\}$

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3. Find the area of the region in the first quadrant enclosed by the x-axis, the line $y = x$, and the circle $x^2 + y^2 = 32$.

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4. Find the area of the region $\{(x, y) : y^2 \leq 4x, 4x^2 + 4y^2 \leq 9\}$

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5. Prove that the curve $y = x^2$ and, $x = y^2$ divide the square bounded by x = 0, y = 0, x = 1, y = 1 into three equal parts.

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6. Find the area of the smaller region bounded by the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$and the line $\frac{x}{a} + \frac{y}{b} = 1$

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7. Find the area of the region bounded by the curves $x^2 + y^2 = 4$ and $(x-2)^2 + y^2 = 4$.

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8. Using the method of integration find the area of the region bounded by lines: $2x + y = 4, 3x2y = 6$and $x3y + 5 = 0$

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9. Using integration, find the area of the triangle whose vertices are $(- 1, 0)(1, 3)$ and (3, 2).

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10. The area of the region $\{(x, y): x^2 + y^2 \leq 1 \leq x + y\}$, is

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11. Find the area of the region bounded by the parabola $\mathrm{x}^2 = 4\mathrm{y}\backslash$ and the line $\mathrm{x} = 4\mathrm{y} - 2$

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12. Find the area lying above x-axis and included between the circle $x^2 + y^2 = 8x$and the parabola $y^2 = 4x$.

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13. Using integration, find the area enclosed by the curve $y = \cos$, $y = \sin x$ and x - axis in the interval $[0, \pi / 2]$.

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14. Using integration find area of the region bounded by the curves $y=\sqrt{5-x^2}$ and $y=|x-1|$

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15. Show that the area of the triangle formed by the pósitive x-axis and the normal and tangent to the circle $x^2+y^2=4$ at $(1, \sqrt{3})$ is $2\sqrt{3}$

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16. Using integration, find the area of the region bounded by the line $xy + 2 = 0$, the curve $x = \sqrt{y}$ and $y - a\xi s$.

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17. The area of the region bounded by the curve $ay^2 = x^3$, the Y-axis and the lines y = a and y = 2a, is

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18. Find the area bounded by x - axis, the curve $y = 2x^2$ and tangent to the curve at the point whose abscissa is 2.

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19. Using integration, find the area of the region bounded by the curve $y = 1 + |x + 1|$ and lines $x = -3, x = 3, y = 0.$

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20. Draw a rough sketch of the region $\{(x, y) : y^2 \leq 6$ a x and $x^2 + y^2 \leq 16a^2\}$.

Also, find the area of the region sketched using method of integration.

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21. Find the area of the region enclosed between curves $y = |x - 1|$ and $y = 3 - |x|$.

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22. If the area bounded by the parabola $y^2 = 16$ ax and the line y = 4 mx is $\frac{a^2}{12}$ sq unit then using integration find the value of m.

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23. Given $\frac{dy}{dx}$ is directly proportional to the square of x and $\frac{dy}{dx} = 6$ at x = 2. Then find the equation of the curve, when x = 2 and y = 4. Also find the area of the region bounded by curve between lines y = 1 and y = 3.

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24. Find the area between x - axis, curve $x = y^2$ and its normal at the point (1, 1).

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25. Find the area of the region bounded by the curve $x = at^2$ and $y = 2at$ between the ordinates corresponding to t = 1 and t = 2.

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26. Using integration find the area bounded by the tangent to the curve $y = 3x^2$ at the point (1, 3), and the Lines whose equations are $y = \frac{x}{3}$ and $x + y = 4$.

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