MATHS

BOOKS - V PUBLICATION

APPLICATION OF INTEGRALS

Question Bank

1. Find the area enclosed by the circle $x^2 + y^2 = a^2$

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2. Find the area enclosed by the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$

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3. Find the area of the region bounded by the curve $y = x^2$ and the line $y = 4$

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

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5. Find the area of the region bounded by the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$, the ordinates x=0and x= ae where

$b^2 = a^2(1 - e^2), e < 1$

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6. Find the area of the region bounded by the curve

$y^2 = x$

x-axis and the lines x=1 and x=4

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7. Find the area of the region bounded by $y^2 = 9x, x = 2, x = 4$ and the x-axis is the first quadrant.

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8. Find the area of the region bounded by

$x^2 = 4y, y = 2, y = 4$

and the y-axis in the first quadrant ?

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9. Find the area of the region bounded by the ellipse $\frac{x^2}{16} + \frac{y^2}{9} = 1.$

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10. Find the area of the region bounded by the ellipse $\frac{x^2}{4} + \frac{y^2}{9} = 1.$

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11. Find the area of the smaller part of the circle$x^2 + y^2 = a^2$cut off by the line $x = \frac{a}{\sqrt{2}}$

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12. The area between $x = y^2$ and `x=4 is divided into two equal parts by the line x=a, find the value of a.

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13. Find the area of the region bounded by the curve

$y = x^2$ and $y = |x|$

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14. Find the area enclosed between the curve

$x^2 = 4y$

and the line x = 4y - 2

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15. Choose the correct answer. Area of the region bounded by the curve$y^2 = 4x$, y-axis and the line y=3 is :

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16. Choose the correct answer. Area lying in the first quadrant and bounded by the circle $x^2 + y^2 = 4$ and the lines x=0 and x=2 is

A. pi/'

B. pi/2'

C. 'pi/3'

D. 'pi/4'.

Answer: A

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17. Choose the correct answer. Area of the region bounded by the curve$y^2 = 4x$, y-axis and the line y=3 is :

A. 2

B. 9/4'

C. 9/3'

D. 9/2'

Answer: B

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18. Consider the parabolas $y = x^2$ and $y^2 = x$. Find the area of the region bounded by the two parabolas.

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19. Using integration, find the area of the region bounded by the triangle whose vertices are {1,0},{2,2} and {3,1}

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20. Choose the correct answer. Smaller area enclosed by the circle $x^2 + y^2 = 4$ and the line x+y=2 is:

A. 2(pi-2)'

B. pi-2'

C. 2(pi-1)'

D. 2(pi+2)'

Answer: B

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21. Choose the correct answer. Area lying between the curves $y^2 = 4x$ and y=2x is :

A. 2/3

B. 1/3

C. 1/4

D. 3/4

Answer: B

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22. Find the area of the parabola $y^2 = 4ax$ bounded by its latus rectum.

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23. Find the area of the region bounded by the line $y = 3x + 2$, the x-axis and the ordinates $x = -1$ and $x = 1$.

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24. Find the area bounded by the curve $y = \cos x$ between $x = 0$ and $x = 2\pi$

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25. Find the area under the given curves a given line :

$y = x^2, x = 1, x = 2$and x-axis

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26. Find the area between the curves y=x and $y = x^2$.

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27. Find the area of the region lying in the first quadrant and bounded by $y = 4x^2 x = 0, y = 1$ and y=4.

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28. Sketch the graph of $y = |x + 3|$ and evaluate $\int_{-6}^{0} |x + 3| \, dx$.

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29. Find the area bounded by the curve y= sin x with x-axis, between x=0 and $x = 2\pi$

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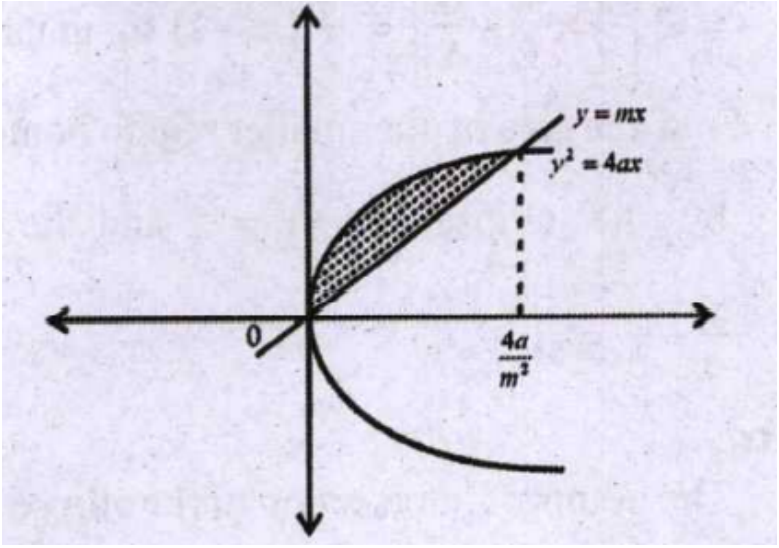
30. Find the area enclosed between the parabola $y^2 = 4ax$ and the line y= mx.



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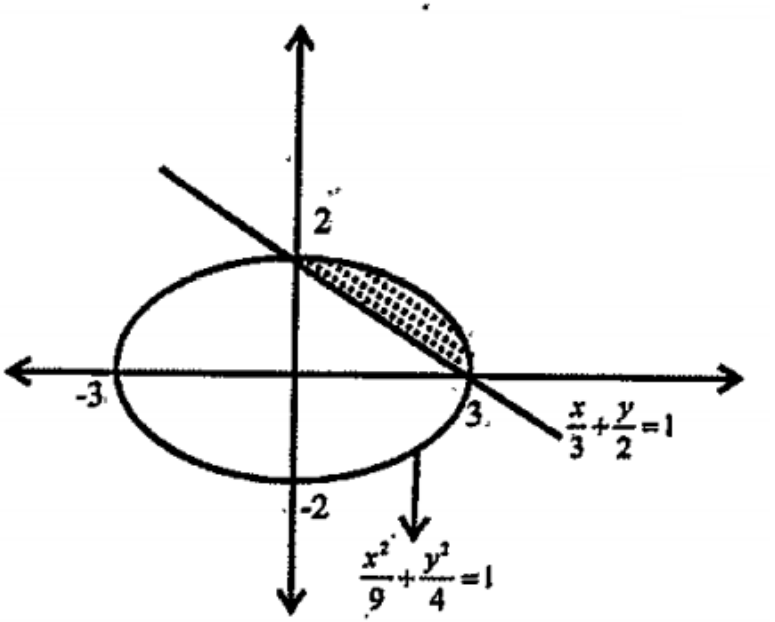
31. Find the area of the smaller region bounded by the ellipse $\frac{x^2}{9} + \frac{y^2}{4} = 1$and the line $\frac{x}{3} + \frac{y}{2} = 1$.



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32. 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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33. Using the method of integration find area bounded by the curve $|x|+|y|=1$

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34. Find the area of the region bounded by the curve

$y = x^2$ and $y = |x|$

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35. Area bounded by the curve $y = x^3$, the x-axis and the ordinates $x = -2$and $x = 1$ is

a)-9 b)$-\frac{15}{4}$ c)$\frac{15}{4}$ d)$\frac{17}{4}$

A. -9'.

B. -(15)/4'

C. (15)/4'.

D. (17)/4'

Answer: D

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36. The area bounded by the curve $y = x|x|$, x -axis and the ordinates x=-1 and x=1 is given by:

A. 0

B. 1/3

C. 23'

D. 43'.

Answer: C

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37. Find the area of the circle ,

$x^2 + y^2 = 16$

which Is exterior to parabola

$y^2 = 6x$

A. 4/3(4 pi/-sqrt3)'

B. 4/3(4 pi/+sqrt3)'

C. 4/3(8 pi/-sqrt3)'

D. 4/3(8 pi/+sqrt3)'

Answer: C

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38. The area bounded by the y-axis,y=cos x and y =sin x when

$0 \leq x \leq \frac{\pi}{2}$

A. 2(sqrt2-1)'

B. sqrt2-1'

C. sqrt2+4'

D. sqrt2'

Answer: B

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39. The area bounded by the curve y=f(x), x-axis and the line x=a and x=b is ?

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40. Find the area of the region bounded by $y^2 = 4x, x = 1, x = 4$ and x -axis in the first quadrant.

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41. Find the area bounded by the curve y= sin x with x-axis, between x=0 and $x = 2\pi$

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42. Find the area of the smaller part of the circle$x^2 + y^2 = a^2$cut off by the line $x = \frac{a}{\sqrt{2}}$

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43. Find the area of the region bounded by the curve

$y = x^2$ and $y = |x|$

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44. Find the area included between the curves

$x^2 = 4y$ and $y^2 = 4x$

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45. Find the area of the region bounded by

$y = 2x + 1, y = 3, y = 5$ and the y axis.

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