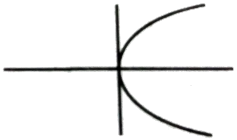
MATHS

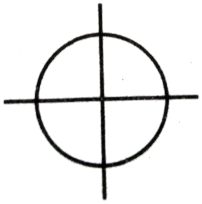
BOOKS - MHTCET PREVIOUS YEAR PAPERS AND PRACTICE PAPERS

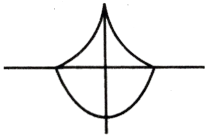
APPLICATIONS OF DEFINITE INTEGRALS

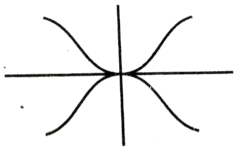
Exercise 1

1. Which of the following curve is symmetrical about origins ?

A. 

B. 

C. 

D. 

Answer: B

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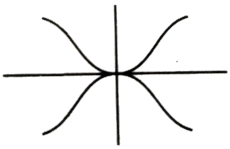
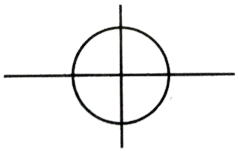
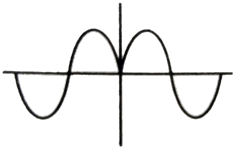
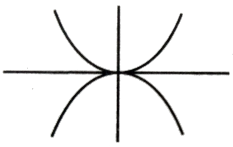
2. Which of the following curve is not symmetrical about both the axis?

A. 

B. 

C. 

D. 

Answer: C

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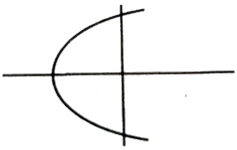
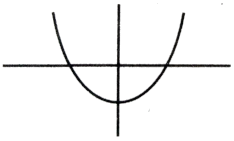
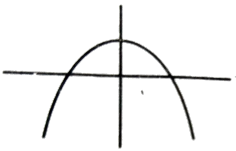
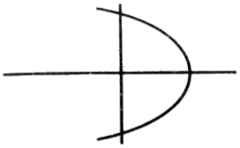
3. Which of the following curve is represented by $y^2 = 1 - x$?

A. 

B. 

C. 

D. 

Answer: D

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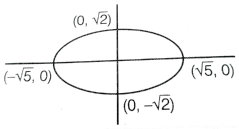
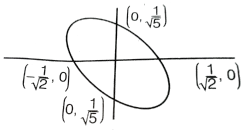
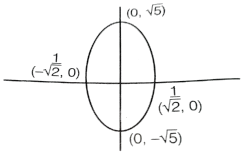
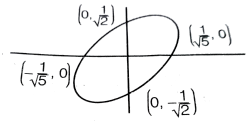
4. Which of the following curve is represented by $2x^2 + 6xy + 5y^2 = 1$?

A. 

B. 

C. 

D. 

Answer: B

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5. The curve xy = 1 is symmetrical

A. about x-axis

B. about y-axis

C. about both the axis

D. about origin

Answer: D

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6. 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

A. $\frac{3}{5}a^2\left(2.2^{2/3}-1\right)$ sq unit

B. $\frac{2}{5}a\left(2^{2/3}-1\right)$ sq unit

C. $\frac{3}{5}a^2\left(2^{2/3}+1\right)$ sq unit

D. None of these

Answer: A

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7. The area bounded by the curve $x=2-y-y^2$ and Y-axis is

A. $\frac{3}{2}$ sq units

B. $\frac{5}{2}$ sq units

C. $\frac{9}{2}$ sq units

D. None of these

Answer: C

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8. Using integration, find the area of the region bounded by the line $2y = 5x + 7$, the x-axis, and the lines $x = 2$ and $x = 8$.

A. 96 sq units

B. 72 sq units

C. $13\frac{1}{2}$ sq units

D. 14 sq units

Answer: A

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9. The area enclosed by y = 3x - 5, y = 0, x = 3 and x = 5 is

A. 12 sq units

B. 13 sq units

C. $13\frac{1}{2}$ sq units

D. 14 sq units

Answer: D

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10. Find by integration the area of the region bounded by the curve $y = 2x - x^2$ and the x-axis.

A. $\frac{8}{3}$ sq units

B. $\frac{4}{3}$ sq units

C. $\frac{7}{3}$ sq units

D. $\frac{2}{3}$ sq unit

Answer: B

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11. The area enclosed between the curve $y = 1 + x^2$, the Y-axis and the straight line y = 5 is given by

A. $\frac{14}{3}$ sq units

B. $\frac{7}{3}$ sq units

C. 5 sq units

D. $\frac{16}{3}$ sq units

Answer: D

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12. Area bounded by $y^2 = x, y = 0, x = 1, x = 4$ is

A. $\frac{14}{3}$ sq units

B. $\frac{3}{28}$ sq unit

C. $\frac{8}{3}$ sq units

D. $\frac{4}{3}$ sq units

Answer: A

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13. The area of the region bounded by the lines y = mx, x = 1, x = 2 and X-axis is 6 sq units, then m is equal to

A. 3

B. 1

C. 2

D. 4

Answer: D

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14. The area of the region (in sq units), in the first quadrant, bounded by the parabola $y = 9x^2$ and the lines x = 0, y = 1 and y = 4, is

A. $\frac{7}{9}$

B. $\frac{14}{3}$

C. $\frac{7}{3}$

D. $\frac{14}{9}$

Answer: D

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15. The area bounded by the curve $y = \frac{1}{2}x^2$, the X-axis and the lines x = 2 is

A. $\frac{1}{3}$ sq unit

B. $\frac{2}{3}$ sq unit

C. 1 sq unit

D. $\frac{4}{3}$ sq units

Answer: D

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16. The area bounded by the curve $x = 4 - y^2$ and the Y-axis is

A. 16 sq units

B. 32 sq units

C. $\frac{32}{3}$ sq units

D. $\frac{16}{3}$ sq units

Answer: C

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17. Find the area bounded by the curve $xy^2 = 4(2 - x)$ and y-axis.

A. 2π sq units

B. 4π sq units

C. 12π sq units

D. 6π sq units

Answer: B

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18. The area bounded by the curve $y^2(2a - x) = x^3$ and the line x = 2a is

A. $3\pi a^2$ sq units

B. $\frac{3\pi a^2}{2}$ sq units

C. $\frac{3\pi a^2}{4}$ sq unit

D. $\frac{6\pi a^2}{5}$ sq units

Answer: B

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19. The area of the smaller segment cut off from the circle $x^2 + y^2 = 9$ by x = 1 is

A. $\frac{1}{2}\left(9\sec^{-1}3-\sqrt{8}\right)$ sq unit

B. $\frac{1}{2}\left(9\sec^{-1}3-\sqrt{8}\right)$ sq unit

C. $\left(\sqrt{8}-9\sec^{-1}3\right)$ sq unit

D. None of the above

Answer: B

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20. Find the area of the smaller part of the circle $x^2+y^2=a^2$cut off by the line

$$x = \frac{a}{\sqrt{2}}$$

A. $\frac{a}{2}\left(\frac{\pi}{2}+1\right)$ sq units

B. $\frac{a^2}{2}\left(\frac{\pi}{2}-1\right)$ sq units

C. $a\left(\frac{\pi}{2}-1\right)$ sq units

D. None of these

Answer: B

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21. Find the area bounded by the curve $x^2 = 4y$ and the straight line $x = 4y - 2$.

A. $\frac{9}{8}$ sq units

B. $\frac{3}{8}$ sq unit

C. $\frac{1}{8}$ sq unit

D. None of these

Answer: A

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22. The area bended by the curve $y = x^2 + 2, y = x, x = 3$ and y-axis is

A. $\frac{9}{2}$ sq unit

B. 9 sq unit

C. 21 sq unit

D. $\frac{21}{2}$ sq unit

Answer: D

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23. The area (in square units) bounded by the curve $y^2 = 8x$ and $x^2 = 8y$, is

A. 64 sq units

B. $\frac{64}{3}$ sq units

C. $\frac{8}{3}$ sq units

D. None of these

Answer: B

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24. The area bounded by the curves $y^2 = 4x$ and $x^2 = 4y$

A. 0 sq units

B. $\frac{32}{3}$ sq units

C. $\frac{16}{3}$ sq units

D. $\frac{8}{3}$ sq units

Answer: C

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25. The area bounded by the parabola $y^2 = 8x,$ the x-axis and the latusrectum, is

A. $16/3$

B. $32/3$

C. $8/3$

D. $64/3$

Answer: B

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26. The area (in sq unit) of the region enclosed by the curves $y = x^2$ and $y = x^3$ is

A. $\frac{1}{12}$

B. $\frac{1}{6}$

C. $\frac{1}{3}$

D. 1

Answer: A

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27. Area bounded by the curve $y^2 = 16x$ and line y = mx is $\frac{2}{3}$, then m is equal to

A. 3

B. 4

C. 1

D. 2

Answer: B

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28. Area included between curves $y = x^2 - 3x + 2$ and $y = -x^2 + 3x - 2$ is

A. $\frac{1}{6}$ sq unit

B. $\frac{1}{2}$ sq unit

C. 1 sq unit

D. $\frac{1}{3}$ sq unit

Answer: D

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29. The area enclosed between the curves $y = x$ and $y = 2x - x^2$ (in square units), is

A. $\frac{1}{2}$

B. $\frac{1}{6}$

C. $\frac{1}{3}$

D. $\frac{1}{4}$

Answer: B

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30. Sketch the region bounded by the curves $y = \sqrt{5 - x^2}$ and $y = |x - 1|$ and find its area.

A. $\left(\frac{5\pi}{4} - 2\right)$ sq units

B. $\frac{(5\pi - 2)}{4}$ sq units

C. $\frac{(5\pi - 2)}{2}$ sq units

D. $\left(\frac{\pi}{2} - 5\right)$ sq units

Answer: B

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31. 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

Answer: C

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32. The area of the region bounded by $y^2 = x$ and y = |x| is

A. $\frac{1}{3}$ sq unit

B. $\frac{1}{6}$ sq unit

C. $\frac{2}{3}$ sq unit

D. 1 sq unit

Answer: B

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33. परवलय $y = x^2$ एवं y=|x| से घिरे क्षेत्र का क्षेत्रफल ज्ञात कीजिए |

A. $\frac{1}{2}$ sq unit

B. $\frac{1}{3}$ sq unit

C. $\frac{2}{3}$ sq unit

D. None of these

Answer: B

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34. The area bounded between the parabola $y^2 = 4x$ and the line y = 2x - 4 is equal to

A. $\frac{17}{3}$ sq units

B. $\frac{19}{3}$ sq units

C. 9 sq units

D. 15 sq units

Answer: C

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35. The area enclosed between the curves $y = x^3$ and $y = \sqrt{x}$ is

A. $\frac{5}{3}$ sq units

B. $\frac{5}{4}$ sq units

C. $\frac{5}{12}$ sq unit

D. $\frac{12}{5}$ sq units

Answer: C

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36. The area bounded by the curves $y = x^3$ and y = x is

A. $1/2$ sq unit

B. $1/4$ sq unit

C. $1/8$ sq unit

D. $1/16$ sq unit

Answer: A

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37. Find the area bounded by the curve $y = x^2 + x$ and the lines x = 0 and x = a. Hence, fnd the greatest or least area which is applicable.

A. Area = $\frac{a^3}{3} + \frac{a^2}{2}$, least are a = 0 sq. units, greatest area $= \frac{1}{6}$ sq units

B. Area $= a^3 + a^2$, least area a = 0 sq. units, greatest area $= \frac{1}{2}$ sq units

C. Area $= \frac{a^3}{3} + a$, least are a = 0 sq units greatest area = $\frac{1}{4}$ sq units

D. Area $= a^3 + 1$, least are a = 1 sq units

greatestarea = 6 sq units

Answer: A

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38. Find the area bounded by the curve y = cos x + 1 and the lines x = 0 and x = a. Hence find the greatest area

A. Area = sin a, Greatest area = 2 sq units

B. Area = cos a, Greatest area = 2 sq units

C. Area = sin a, Greatest area = 1 sq units

D. Area = cos a, Greatest area = 1 sq units

Answer: C

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39. Find the area included between the line $y = x$ and the parabola $x^2 = 4y$.

A. $\frac{8}{3}$ sq units

B. $\frac{4}{3}$ sq units

C. $\frac{9}{4}$ sq units

D. $\frac{7}{3}$ sq units

Answer: A

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40. The area bounded by the curve $x = 2 - y - y^2$ and Y-axis is

A. $\frac{9}{2}$ sq unit

B. $\frac{2}{3}$ sq unit

C. $\frac{8}{4}$ sq units

D. $\frac{5}{3}$ sq units

Answer: A

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41. Find the area of the region bounded by the parabola $y^2 = 4ax$, its axis and two ordinates $x = 4$ and $x = 9$

A. $\frac{86\sqrt{b}}{3}$ sq units

B. $\frac{76\sqrt{a}}{3}$ sq units

C. $\frac{92\sqrt{a}}{4}$ sq units

D. $\frac{93\sqrt{b}}{3}$ sq units

Answer: B

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42. Using integration, find the area of region bounded by the line 2x + y = 8, the y-axis and the lines y = 2 and y = 4.

A. 5 sq units

B. 9 sq unit

C. 6 sq units

D. 2 sq units

Answer: A

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43. Determine the area enclosed by the two curves given by $y^2 = x + 1$ and $y^2 = -x + 1$

A. $\frac{8}{3}$ sq units

B. $\frac{4}{3}$ sq units

C. $\frac{9}{4}$ sq units

D. $\frac{7}{3}$ sq units

Answer: A

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44. The area of the region bounded by the curves $y^2 = 4a^2(x - 1)$ and the lines x = 1 and y = 4a, is

A. $\frac{21a}{2}$ sq unit

B. $\frac{16}{3}$ sq unit

C. $\frac{17a}{3}$ sq unit

D. $\frac{16a}{3}$ sq unit

Answer: D

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Exercise 2

1. Find the area under the curve $y = \sqrt{x-1}$ in the interval [1, 5] between the lines x = 1 and x = 5, is

A. $\frac{4}{3}$ sq units

B. $\frac{8}{3}$ sq units

C. $\frac{16}{3}$ sq units

D. None of the above

Answer: C

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2. If a curve $y = a\sqrt{x} + bx$ passes through the point (1,2) and the area bounded by the curve, line x = 4 and X-axis is 8 sq units, then

A. a = 3, b = - 1

B. a = 3, b = 1

C. a = -3, b = 1

D. a = -3, b = -1

Answer: A

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3. What is the area bounded by the curves $y = e^x, y = e^{-x}$ and the straight line $x = 1$?

A. $e + \frac{1}{e}$

B. $e + \frac{1}{e} + 2$

C. $e + \frac{1}{e} - 2$

D. $e - \frac{1}{e} + 2$

Answer: C

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4. The area between the curve $y = 2x^4 - x^2$, the x-axis, and the ordinates of the two minima of the curve is

A. $\frac{7}{120}$ sq unit

B. $\frac{9}{120}$ sq unit

C. $\frac{11}{120}$ sq unit

D. $\frac{13}{120}$ sq unit

Answer: A

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5. The area bounded by the curve $y = \ln(x)$ and the lines $y = 0, y = \ln(3)$ and $x = 0$ is equal to

A. 3 sq units

B. 3 In (3) - 2sq units

C. 3 In (3) + 2 sq units

D. 2 sq units

Answer: D

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6. The area bounded between the parabolas $x^2 = \frac{y}{4} \text{and} x^2 = 9y$ and the straight line $y = 2$ is (1) $20\sqrt{2}$ (2) $\frac{10\sqrt{2}}{3}$ (3) $\frac{20\sqrt{2}}{3}$ (4) $10\sqrt{2}$

A. $20\sqrt{2}$ sq units

B. $\frac{10\sqrt{2}}{3}$ sq units

C. $\frac{20\sqrt{2}}{3}$ sq units

D. $10\sqrt{2}$ sq units

Answer: C

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7. The area of the figure bounded by the curves $y^2 = 2x + 1$ and $x - y - 1 = 0$, is

A. $\frac{2}{3}$ sq units

B. $\frac{4}{3}$ sq units

C. $\frac{8}{3}$ sq units

D. $\frac{16}{3}$ sq units

Answer: D

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8. The area of the plane region bounded by the curves $x + 2y^2 = 0$ and $x + 3y^2 = 1$ is equal to

A. $\frac{4}{3}$ sq units

B. $\frac{5}{3}$ sq unit

C. $\frac{1}{3}$ sq unit

D. $\frac{2}{3}$ sq unit

Answer: A

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9. The area enclosed between the curves $y = x^3$ and $y = \sqrt{x}$ is

A. $\frac{5}{3}$ sq units

B. $\frac{5}{4}$ sq units

C. $\frac{5}{12}$ sq unit

D. $\frac{12}{5}$ sq units

Answer: C

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10. The area enclosed between the parabola $y = x^2 - x + 2$ and the line y = x + 2 (in sq unit) equals to

A. $8/3$

B. $1/3$

C. $2/3$

D. $4/3$

Answer: D

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11. The area bounded by the curves $y^2 = 4a^2(x - 1)$ and lines x = 1 and y = 4a is

A. $4a^2$ sq units

B. $\frac{16a}{3}$ sq units

C. $\frac{16a^2}{3}$ sq units

D. None of these

Answer: B

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12. The area bounded by the curves y = cos x and y = sin x between the ordinates x = 0 and $x = \frac{3\pi}{2}$, is

A. $\left(4\sqrt{2} - 2\right)$ sq units

B. $\left(4\sqrt{2} + 2\right)$ sq units

C. $\left(4\sqrt{2} - 1\right)$ sq units

D. $\left(4\sqrt{2} + 1\right)$ sq units

Answer: A

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13. The area of the plane region bounded by the curve $x = y^2 - 2$ and the line y = - x is (in sq units)

A. $\frac{13}{3}$

B. $\frac{2}{5}$

C. $\frac{9}{2}$

D. $\frac{5}{2}$

Answer: C

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14. The area bounded by the curve $y = 2x - x^2$ and the line y = - x is

A. $\frac{3}{2}$ sq units

B. $\frac{9}{3}$ sq units

C. $\frac{9}{2}$ sq units

D. None of these

Answer: C

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15. For $0 \leq x \leq \pi$, the area bounded by $y = x$ and $y = x + \sin x$, is

A. 2

B. 4

C. 2π

D. 4π

Answer: A

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16. If the area above the x-axis, bounded by the curves $y = 2^{kx}$ and x = 0, and x = 2 is $\frac{3}{\log_e(2)}$, then the value of k is

A. $1/2$

B. 1

C. -1

D. 2

Answer: B

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17. The area of the region described by $A = \{(x, y) : x^2 + y^2 \leq 1 \text{ and } y^2 \leq 1 - x\}$ is

A. $\frac{\pi}{2} + \frac{4}{3}$

B. $\frac{\pi}{2} - \frac{4}{3}$

C. $\frac{\pi}{2} - \frac{2}{3}$

D. $\frac{\pi}{2} + \frac{2}{3}$

Answer: A

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18. The area in the first quadrant between $x^2 + y^2 = \pi^2$ and $y = \sin x$ is

A. $\frac{\pi^3 - 8}{4}$ sq units

B. $\frac{\pi^3}{4}$ sq units

C. $\frac{\pi^3 - 16}{4}$ sq units

D. $\frac{\pi^3 - 8}{2}$ sq units

Answer: A

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19. The area bounded by the curves $y = \sqrt{x}, 2y - x + 3 = 0,$ X-axis and lying in the first quadrant is

A. 9

B. 36

C. 18

D. $\frac{27}{4}$

Answer: A

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20. The area bounded by y = |sin x|, X-axis and the line $|x| = \pi$ is

A. 2 sq units

B. 3 sq units

C. 4 sq units

D. None of these

Answer: C

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21. Find the area bounded by the x-axis, part of the curve $y = \left(1 - \frac{8}{x^2}\right)$, and the ordinates at $x = 2 and x = 4$. If the ordinate at $x = a$ divides the area into two equal parts, then find a.

A. $\sqrt{2}$ sq units

B. $2\sqrt{2}$ sq units

C. $3\sqrt{2}$ sq units

D. None of these

Answer: B

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22. The area bounded by the graph of $y = f(x), f(x) > 0$ on [0,a] and x-axis is $\frac{a^2}{2} + \frac{a}{2}\sin a + \frac{\pi}{2}\cos a$ then find the value of $f\left(\frac{\pi}{2}\right)$.

A. $\frac{1}{2}$

B. $\frac{a}{2}$

C. $\frac{a^2}{2}$

D. $\frac{\pi}{2}$

Answer: A

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23. The line $x = \frac{\pi}{4}$ divides the area of the region bounded by y = sin x, y = cos x and X-axis $\left(0 \leq x \leq \frac{\pi}{2}\right)$ into two regions of areas A_1 and A_2. Then, $A_1 : A_2$ equals

A. $4:1$

B. $3:1$

C. $2:1$

D. $1:1$

Answer: D

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

A. 0 sq units

B. $\frac{1}{3}$ sq units

C. $\frac{2}{3}$ sq units

D. None of these

Answer: C

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25. The area (in sq units) of the region bounded by the curves $y = e^x, y = \log_e x$ and lines x = 1, x = 2 is

A. $(e-1)^2$

B. $e^2 - e + 1$

C. $e^2 - e + 1 - 2\log_e 2$

D. $e^2 + e - 2\log_e 2$

Answer: C

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26. The area (in sq units) of the region described by $\{(x, y) : y^2 \leq 2x \text{ and } y \geq 4x - 1\}$ is

A. $\frac{7}{32}$

B. $\frac{5}{64}$

C. $\frac{15}{64}$

D. $\frac{9}{32}$

Answer: D

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27. The larger of the area bounded by y = cosx, y = x + 1 and y = 0 is

A. $\frac{1}{2}$ sq unit

B. $\frac{3}{2}$ sq units

C. 1 sq unit

D. 2 sq units

Answer: B

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28. The parabola $y^2 = 2x$ divides the circle $x^2 + y^2 = 8$ in two parts. Then, the ratio of the areas of these parts is

A. $\frac{3\pi - 2}{10\pi + 2}$

B. $\frac{3\pi + 2}{9\pi - 2}$

C. $\frac{6\pi - 3}{11\pi - 5}$

D. $\frac{2\pi - 9}{9\pi + 2}$

Answer: B

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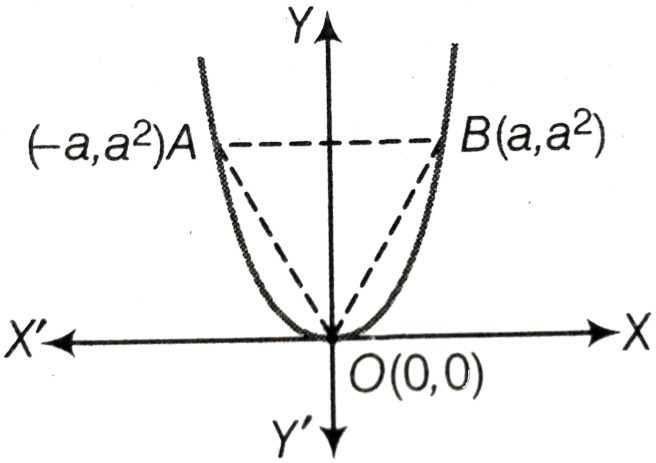
29. The figure shows a ΔAOB and the parabola $y = x^2$. The ratio of the area of the ΔAOB to the area of the region AOB of the

parabola $y = x^2$ is equal to



A. $\frac{3}{5}$

B. $\frac{3}{4}$

C. $\frac{7}{8}$

D. $\frac{5}{6}$

Answer: B

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30. The area bounded by $y = \sin^{-1} x, x = \frac{1}{\sqrt{2}}$ and X-axis is

A. $\left(\frac{1}{\sqrt{2}} + 1\right)$ sq units

B. $\left(1 - \frac{1}{\sqrt{2}}\right)$ sq units

C. $\frac{\pi}{4\sqrt{2}}$ sq units

D. $\left(\frac{\pi}{4\sqrt{2}} + \frac{1}{\sqrt{2}} - 1\right)$ sq units

Answer: D

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

A. $\frac{3\pi}{4}$ sq unit

B. $\frac{3\pi}{2}$ sq unit

C. $\frac{9\pi}{4}$ sq unit

D. $\frac{4\pi}{7}$ sq unit

Answer: B

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32. The area bounded by the curves $y^2 = 4a(x + a)$ and $y^2 = 4b(b - x)$, where $a, b > 0$ units

A. $\frac{8}{3}(a + b)\sqrt{ab}$ sq unit

B. $\frac{2}{3}(a + b)\sqrt{ab}$ sq unit

C. $\frac{2}{3}(a + b)2\sqrt{ab}$ sq unit

D. None of the above

Answer: A

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33. Find the area bounded by the curve $y = 2x - x^2$ and the straight line $y = -x$

A. $\frac{13}{2}$ sq unit

B. $\frac{9}{2}$ sq unit

C. $\frac{7}{2}$ sq unit

D. $\frac{21}{2}$ sq unit

Answer: B

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

A. $3\left(\frac{\pi}{4}-1\right)$ sq unit

B. $3\left(\frac{\pi}{2}-1\right)$ sq unit

C. $4\left(\frac{\pi}{3}-2\right)$ sq unit

D. $3\left(\frac{\pi}{4}-2\right)$ sq unit

Answer: B

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1. Find by integration the area of the region bounded by the curve $y = 2x - x^2$ and the x-axis.

A. $\frac{2}{3}$ sq. units

B. $\frac{4}{3}$ sq. units

C. $\frac{5}{3}$ sq. units

D. $\frac{8}{3}$ sq. units

Answer: B

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2. The area of the region bounded by the curves $x^2 + y^2 = 8$ and $y^2 = 2x$ (in sq. unit) is

A. $2\pi + \frac{1}{3}$

B. $\pi + \frac{1}{3}$

C. $2\pi + \frac{4}{3}$

D. $\pi + \frac{4}{3}$

Answer: C

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3. The area of the region bounded by the curves $y^2 = 8x$ and y = x (in sq unit) is

A. $\frac{64}{3}$

B. $\frac{32}{3}$

C. $\frac{16}{3}$

D. $\frac{8}{3}$

Answer: B

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4. The area bounded by the parabola $y^2 = x$, straight line $y = 4$ and y-axis is

A. $16/3$

B. $64/3$

C. $7\sqrt{2}$

D. None of these

Answer: B

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5. The volume of the solid formed by rotating the area enclosed between the curve $y^2 = 4x, x = 4$ and x = 5 about X-axis is (in cubic units)

A. 18π

B. 36π

C. 9π

D. 24π

Answer: A

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6. Area bounded between the curve $x^2 = y$ and the line y = 4x is

A. $\frac{32}{3}$ sq units

B. $\frac{1}{3}$ sq unit

C. $\frac{8}{3}$ sq units

D. $\frac{16}{3}$ sq units

Answer: A

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