

## [MHT-CET 2022]

1. Area of the region bounded by the curve  $y = x^2 + 2$  and the lines  $y = x$ ;  $x = 0$  and  $x = 3$  is
- a)  $\frac{19}{2}$  sq. units      b)  $\frac{21}{2}$  sq. units      c) 15 sq. units      d)  $\frac{9}{2}$  sq. units
2. The area of region bounded by the Y-axis,  $y = \cos x$ ,  $y = \sin x$ , when  $0 \leq x \leq \frac{\pi}{4}$  is
- a)  $(\sqrt{2} - 1)$  sq. units      b)  $2(\sqrt{2} - 1)$  sq. units  
c)  $(\sqrt{2} + 1)$  sq. units      d)  $\sqrt{2}$  sq. units
3. The area bounded by the curve  $y = -x^2$ , x-axis,  $x = 1$  and  $x = 4$  is
- a) 10      b)  $\frac{21}{2}$       c) 20      d) 21
4. The area of the region bounded by the line  $2y + x = 8$ , X-axis and the lines  $x = 2$  and  $x = 4$  is
- a) 5      b) 10      c) 4      d) 6
5. The area (in sq. units) of the region bounded by parabola  $y = x^2 + 2$  and the lines  $y = x + 1$ ,  $x = 0$  and  $x = 3$  is
- a)  $\frac{17}{2}$       b)  $\frac{15}{2}$       c)  $\frac{15}{4}$       d)  $\frac{21}{2}$

## [MHT-CET 2021]

6. The area (in sq. units) of the region bounded by the parabola  $x^2 = y$  and the line  $y = x$  is
- a)  $\frac{1}{2}$       b)  $\frac{1}{6}$       c)  $\frac{1}{3}$       d)  $\frac{5}{6}$
7. The area of the region bounded by the curve  $y^2 = 4x$  and the line  $y = x$  is
- a)  $\frac{8}{3}$       b)  $\frac{5}{8}$       c)  $\frac{3}{8}$       d)  $\frac{3}{5}$
8. The area (in sq. units) bounded between the curve  $x^2 = y$  and the line  $y = 4x$  is
- a)  $\frac{32}{3}$       b)  $\frac{8}{3}$       c)  $\frac{1}{3}$       d)  $\frac{16}{3}$
9. The area (in sq. units) bounded by the parabola  $y^2 = 4ax$  and its latus rectum  $x = a$  is
- a)  $\frac{8}{3} a^2$       b)  $\frac{2}{3} a^2$       c)  $\frac{4}{3} a^2$       d)  $8 a^2$
10. Area (in sq. units) bounded by the lines  $y = x$ ,  $x = -1$ ,  $x = 2$  and the X-axis is
- a)  $\frac{1}{2}$       b)  $\frac{3}{2}$       c)  $\frac{5}{2}$       d)  $\frac{7}{4}$

22. The area (in sq. units) of the region bounded by the curves  $y + 2x^2 = 0$  and  $y + 3x^2 = 1$  is equal to

a)  $\frac{3}{5}$                       b)  $\frac{1}{3}$                       c)  $\frac{4}{3}$                       d)  $\frac{3}{4}$

[MHT-CET 2014] (JEE - 2014)

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

a)  $\frac{15}{64}$                       b)  $\frac{9}{32}$                       c)  $\frac{7}{32}$                       d)  $\frac{5}{64}$

[MHT-CET 2013]

24. Area bounded by the curve  $f(x) = \cos x$  which is bounded by the lines  $x = 0$  and  $x = \pi$  is

a) 4 sq. units                      b) 1 sq. unit                      c) 2 sq. units                      d) 3 sq. units

[MHT-CET 2012]

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

a)  $2\pi + \frac{1}{3}$                       b)  $\pi + \frac{1}{3}$                       c)  $2\pi + \frac{4}{3}$                       d)  $\pi + \frac{4}{3}$

26. 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)  $\frac{8}{3}$

[MHT-CET 2011]

27. The area bounded by the parabola  $y^2 = x$ , straight line  $y = 4$  and Y - axis (in sq. units) is

a)  $\frac{16}{3}$                       b)  $\frac{64}{3}$                       c)  $7\sqrt{2}$                       d)  $8\sqrt{3}$

[MHT-CET 2010]

28. The area bounded by the curve  $y = \sin^2 x$ , X - axis and the lines  $x = 0$  and  $x = \frac{\pi}{2}$  is

a)  $\frac{\pi}{4}$  sq. units                      b)  $\frac{\pi}{8}$  sq. units                      c)  $\frac{\pi}{2}$  sq. units                      d) 1 sq. unit

[MHT-CET 2009]

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

a) 12                      b)  $\frac{32}{3}$                       c)  $\frac{64}{3}$                       d)  $-\frac{16}{3}$

[MHT-CET 2008]

30. The area formed by the lines  $x^2 - y^2 = 0$  and  $x + 8 = 0$  is

a) 16 sq. units                      b) 32 sq. units                      c) 64 sq. units                      d) 128 sq. units



31. The area bounded by the curve  $y = x|x|$ ,  $x$ -axis and the lines  $x = -1$  and  $x = 1$  is  
 a)  $\frac{1}{2}$  sq. units      b)  $\frac{1}{3}$  sq. units      c)  $\frac{3}{2}$  sq. units      d)  $\frac{2}{3}$  sq. units
32. The area bounded by the  $x$ -axis and the curve  $y = x(x-2)(x+1)$  is  
 a)  $\frac{27}{12}$  sq. units      b)  $\frac{37}{12}$  sq. units      c)  $\frac{27}{4}$  sq. units      d)  $\frac{37}{4}$  sq. units
33. Let  $f: [-1, -2] \rightarrow (0, \infty)$  be a continuous function such that  $f(x) = f(1-x), \forall x \in [-1, -2]$ .  
 If  $R_1 = \int_{-1}^2 x f(x) dx$  and  $R_2$  is the area of the region bounded by  $y = f(x), x = -1, x = 2$  and the  $x$ -axis, then  
 a)  $R_1 = 2R_2$       b)  $2R_1 = R_2$       c)  $R_1 = 3R_2$       d)  $3R_1 = R_2$
34. 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)  $a = 3, b = 1$
35. The area of the region bounded by the curves  $y = e^x, y = \log x$  and lines  $x = 1, x = 2$  is  
 --- sq. units  
 a)  $e^2 - e - 1$       b)  $e^2 - e + 1$   
 c)  $e^2 - e - 2 \log 2 - 1$       d)  $e^2 - e - 2 \log 2 + 1$
36. The area of the region bounded by the curve  $y = \sqrt{49 - x^2}$  and  $x$ -axis is  
 a)  $49\pi$  sq. units      b)  $98\pi$  sq. units      c)  $\frac{49\pi}{4}$  sq. units      d)  $\frac{49\pi}{2}$  sq. units
37. The area of the smaller part of circle  $x^2 + y^2 = a^2$  cut off by the line  $y = \frac{a}{\sqrt{2}}$  is  
 a)  $\frac{a^2}{2}(\pi - 2)$  sq. units      b) sq. units  
 c)  $\frac{a^2}{4}(\pi - 2)$  sq. units      d)  $\frac{a^2}{4}(\pi - 1)$  sq. units
38. The area of the region bounded by the parabola  $y = x^2$  and the line  $y = x$  is  
 a)  $\frac{1}{2}$  sq. units      b)  $\frac{1}{3}$  sq. units      c)  $\frac{1}{4}$  sq. units      d)  $\frac{1}{6}$  sq. units
39. The area of the region  $A = \left\{ (x, y) : \frac{y^2}{2} \leq x \leq y + 4 \right\}$  is  
 a) 42 sq. units      b) 36 sq. units      c) 30 sq. units      d) 18 sq. units
40. The area of the region enclosed by the curve  $f(x) = \max \{ \sin x, \cos x, -x \}$  and the  $x$ -axis is  
 a) 4 sq. units      b)  $4\sqrt{2}$  sq. units  
 c)  $2 + 2\sqrt{2}$  sq. units      d) 1 sq. unit

41. The area in the first quadrant bounded by the curve  $y = x^2 + 2$  and the lines  $y = x + 1$ ,  $x = 0$  and  $x = 2$  is
- a)  $\frac{1}{3}$  sq. units      b)  $\frac{2}{3}$  sq. units      c)  $\frac{5}{3}$  sq. units      d)  $\frac{8}{3}$  sq. units
42. 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)  $\pi$  sq. units      b)  $\frac{\pi}{2}$  sq. units      c)  $\frac{\pi}{3}$  sq. units      d)  $\frac{\pi}{4}$  sq. units
43. The area of the region bounded by hyperbola  $x^2 - y^2 = 9$ , and the latus rectum is
- a)  $3(\sqrt{2} - \log(\sqrt{2} + 1))$  sq. units      b)  $4(\sqrt{2} - \log(\sqrt{2} + 1))$  sq. units
- c)  $9(\sqrt{2} - \log(\sqrt{2} + 1))$  sq. units      d)  $18(\sqrt{2} - \log(\sqrt{2} + 1))$  sq. units
44. The area of the region lying in the first quadrant by  $y = 4x^2$ ,  $y = 2$ ,  $y = 4$ ,  $x = 0$  is
- a)  $8 + 2\sqrt{2}$  sq. units      b)  $8 - 2\sqrt{2}$  sq. units
- c)  $\frac{8 - 2\sqrt{2}}{3}$  sq. units      d)  $\frac{8 - 2\sqrt{2}}{6}$  sq. units
45. The area of the region described by the curves  $y^2 = 2x$  and  $y = 4x - 1$  is
- a)  $\frac{15}{64}$  sq. units      b)  $\frac{9}{32}$  sq. units      c)  $\frac{7}{32}$  sq. units      d)  $\frac{5}{64}$  sq. units
46. The area bounded by  $y = \sqrt{x}$  and the line  $x = 2y + 3$ ,  $x$ -axis in first quadrant is
- a) 18 sq. units      b) 9 sq. units      c)  $\frac{34}{3}$  sq. units      d)  $2\sqrt{3}$  sq. units
47. The area of the region bounded by the curve  $x^2 = 4y$  and straight line  $x = 4y - 2$  is
- a)  $\frac{3}{4}$  sq. units      b)  $\frac{5}{4}$  sq. units      c)  $\frac{7}{8}$  sq. units      d)  $\frac{9}{8}$  sq. units
48. The area of the region bounded by  $y - x = 2$  and  $x^2 = y$  is
- a)  $\frac{2}{3}$  sq. units      b)  $\frac{4}{3}$  sq. units      c)  $\frac{16}{3}$  sq. units      d)  $\frac{9}{2}$  sq. units
49. If the area bounded by the curves  $ay^2 = x$  and  $ax^2 = y$ ,  $a > 0$  is 1 sq. units, then  $a =$
- a) 1      b)  $\frac{1}{\sqrt{3}}$       c)  $\frac{1}{3}$       d)  $\frac{1}{2}$
50. The area bounded by the curves  $y = (x - 1)^2$ ,  $y = (x + 1)^2$  and  $4y = 1$  is
- a)  $\frac{1}{2}$  sq. units      b)  $\frac{1}{3}$  sq. units      c)  $\frac{1}{4}$  sq. units      d)  $\frac{1}{6}$  sq. units