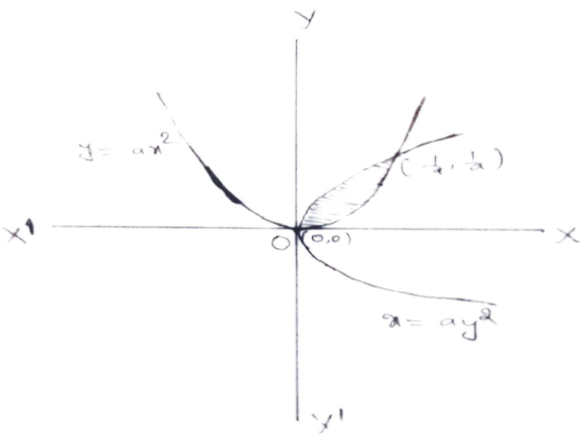
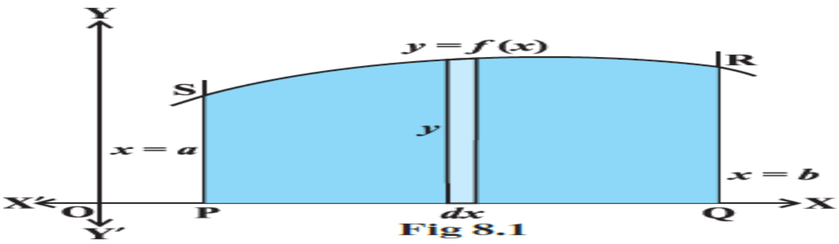
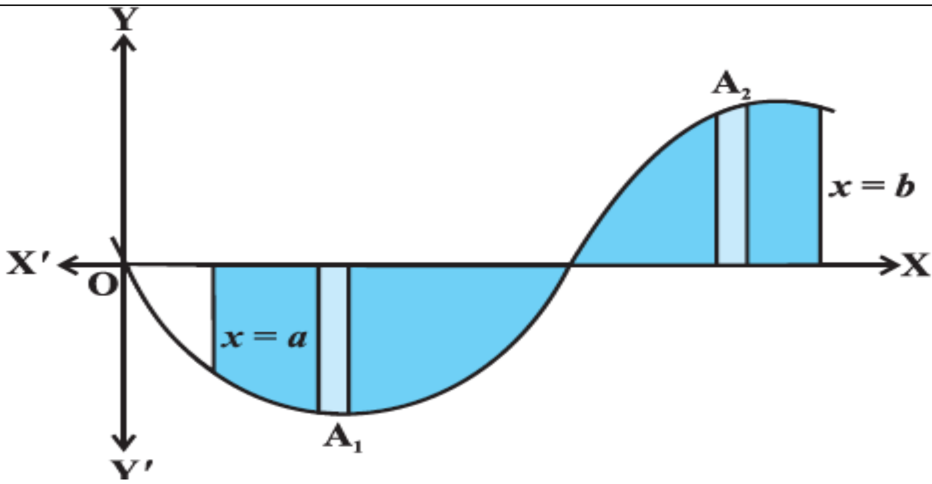
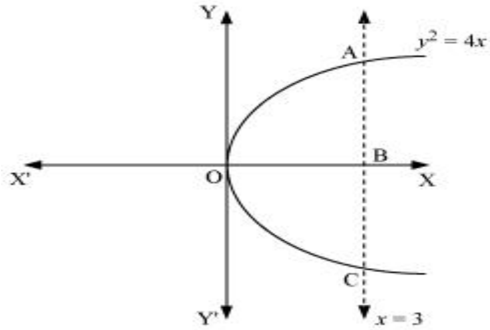
	CHAPTER 8 APPLICATION OF INTEGRALS ASSERTION REASIONING QUESTIONS
	OPTIONS: (A) Both Assertion and reason are true and reason is correct explanation of assertion. (B) Assertion and reason both are true but reason is not the correct explanation of assertion. (C) Assertion is true, reason is false. (D) Assertion is false, reason is true.
1	Assertion: The area bounded by the curve y = f(x), the x - axis and the ordinates x = a and y = b is given by Reason: If the curve y = f(x) lies below x – axis, then the area bounded by the curve y = f(x), the x -axis and the ordinates x = a and y = b is given by
2	Assertion : The area bounded by the parabola $y^2 = 4ax$ and its latus rectum is $\frac{8}{3}a^2$ *sq. unit.* Reason:: The area bounded by the parabola $x^2 = 4ay$ and its latus rectum is $\frac{8}{3}a^2$ *sq. unit.*
3	Assertion: The area bounded by the parabola $x^2 = 4ay$ and its latus rectum is $\frac{8}{3}a^2$ *sq. unit.* Reason: The area bounded by $y = 2x – x^2$ and x – axis is 8/3 sq. unit.
4	Assertion: The area bounded by $y = 2x – x^2$ and x – axis is 8/3 sq. unit.

	Reason:: The area bounded by the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ *is* πab *sq. unit.*
5	Assertion: The area bounded by the parabola $y^2 = 4ax$ and its latus rectum is $\frac{8}{3}a^2$ *sq. unit.* Reason:: The area bounded by the curve y = f(x), the x - axis and the ordinates x = a and y = b is given by
6	(A) If the area enclosed between the curve $y = ax^2$ and $x = ay^2 (a > 0)$ is 1 sq.unit then value of a is . (R) Area between $y = ax^2$ and $x = ay^2$ is given by  Solving the integral $= \frac{1}{3a^2}$ $\frac{1}{3a^2} = 1$ $(a > 0)$
7.	

	(A)The points of intersection of the curve y^2=2x and the line $x - y = 4$ are $(8,4)$ And $(2,-2)$ (R) solving y^2=2x and $x - y = 4$ Using $x = \frac{y^2}{2}$ in $x - y = 4$ We will get $y^2 - 2y - 8$ =0,solving $y^2 - 2y - 8$=0 y= -2,4 using these values of y in $x - y = 4$ $x = 2,8$ Points are $(2,-2)$ and $(8,4)$
8	 Fig 8.1 (A) (R) The area of the region PQRSP is the sum of the area of thin strips across the region and symbolically express by
9	 (A) (R) If the position of the curve under consideration is the below x-axix,then since $f(x) < 0$from $x = a$ to $x = b$,the area bounded by the cuve,x-axix and the ordinates $x = a$

	and $x = b$ is given by
10	 (A) In given figure area of the region OACO is 8 sq.units (R) Since the curve is symmetric about $x -$ axis hence area of OACO = $\frac{1}{2}$ x area OAB.
11	Assertion: The area enclosed by the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ is πab *sq units.* Reason: The area enclosed by the ellipse dx
12.	Assertion: Area of region bounded by the triangle whose vertices are A(1,0), B(2,2) and C(3,1) is $\frac{3}{2}$ sq units. Reason: The area of the circle $x^2 + y^2 = 32$ is 32π *sq units.*
13.	Assertion: There are two curves represented by y=f(x) and y=g(x), here the points of intersection of these two curves. Then the area between two curves is . Reason: Integration is the act of calculating the area by cutting the region into a large number of small strips of elementary area and then adding up these elementary areas.
14.	Assertion: The area function defined by where the function f is assumed to be continuous on [a,b].Then $A'(x) = f(x)$ *for all* $x \in [a,b]$ Reason: f be a continuous function of x defined on the closed interval [a,b] and F be another function such that $\frac{dF(x)}{dx} = f(x)$ for all x in the domain of f, then
15.	Assertion: The area bounded by the curve

	f(x) $= x^3$, *the x − axis and the ordinates* $x = -2$ *and* $x = -1$ is $\frac{17}{4}$ sq units. Reason: represent the area between curve f(x), lines x=a, x=b and x=axis.
16	Assertion (A): The area bounded by the curve y^2=4ax and the line y=2a and y-axis is $\frac{2}{3}a^2$ sq. units. Reason (R): If the curve y = f(x) ,the y-axis and the abscissa y=c and y=d is given by
17	Assertion (A):The area bounded by the curve y=x$\|x\|$,x-axis and the ordinates x=-3 and x=3 is 20 sq. units. Reason (R): y=x$\|x\|$, being an odd function is symmetric in opposite quadrants. Therefore, required are is twice of the area of the shaded region in first quadrant
18	Assertion (A): The area of triangle ABC whose vertices have coordinates A(2,5) ,B(4,7) and C(6,2) is 7 sq.units. Reason (R):Two curves are symmetric about x=1/ .So, required area=4(Area OACD)
19	Assertion (A): If the area enclosed between the curves y=ax^2 and x= ay^2 (a>0)is 1 square unit, then the value of a is . Reason (R):When we rotate the above figure the area of the bounded region is change
20	Assertion (A): The area between the curve y = 1- |x | and the positive x-axis is $\frac{1}{2}$ Reason (R): The area between the curve and the x-axis is half of the area between the curve and positive x-axis
21	A:Numerical calculation of Area under a curve can be negative R:Integration can be negative
22	A: Area bounded by the curve y = sin x between x = 0 and x = π is same as Area bounded by the curve y = sin x between x =π and x =2 π R:y = sin x curve is symmetric in the intervals ....[-π,0],[0,π],[π,2π],.....
23	

	A: The definite integral of f in [a,b] cannot give exactly same area under the curve from a to b R: indefinite integral is done by approximation and it is a limiting value
24	A:Formula for finding area inside an ellipse can be determines by application of integral R:it can be done for standard equation of ellipse, then as per situation the value of constants in that equation can be put
25	A:To find area under identity function f(x)=6 in [1,4] we do not need integration R: the area is simply a rectangle with length 3 unit and breadth 6 unit
26	Assertion: Area of the region enclosed by the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ is πab sq. units Reason: Expression for the area is 4 (taking vertical strips)
27	Assertion: The area of the region bounded by the curve y = x^2 and the line y = 4 is 32/3 sq units. Reason: Expression for the area is 2 (considering horizontal strips).
28	Assertion: The area enclosed by the circle $x^2 + y^2 = a^2$ is πa^2. Reason: expression for area is 4 (considering Horizontal strip)
29	Assertion: The area of the parabola $y^2 = 4ax$ bounded by its latus rectum is 8/3 a^2 sq. units. Reason: Equation of latus rectum is x = a.
30	Assertion: The area of the region bounded by the line y = 3x+2, the x axis and the ordinates x = - 1and x = 1is 13/3 sq units. Reason: The graph of line lies below x- axis for x (-1, -2/3) and above x- axis for x (-2/3, 1)

ANSWERS

	ANSWER

QUESTION NUMBER	
1	A
2	B
3	C
4	D
5	A
6	D
7	A
8	A
9	B
10	C
11	1
12	2
13	1
14	2
15	1
16	A
17	D
18	C
19	C
20	A
21	1
22	1
23	1
24	1
25	1
26	A
27	C
28	A
29	A

30	A

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