

Followings are of 2 Marks each (Q01-05).

Q01. Find the area of smaller part of circle $x^2 + y^2 = a^2$ cut off by the line $x = \frac{a}{\sqrt{2}}$.

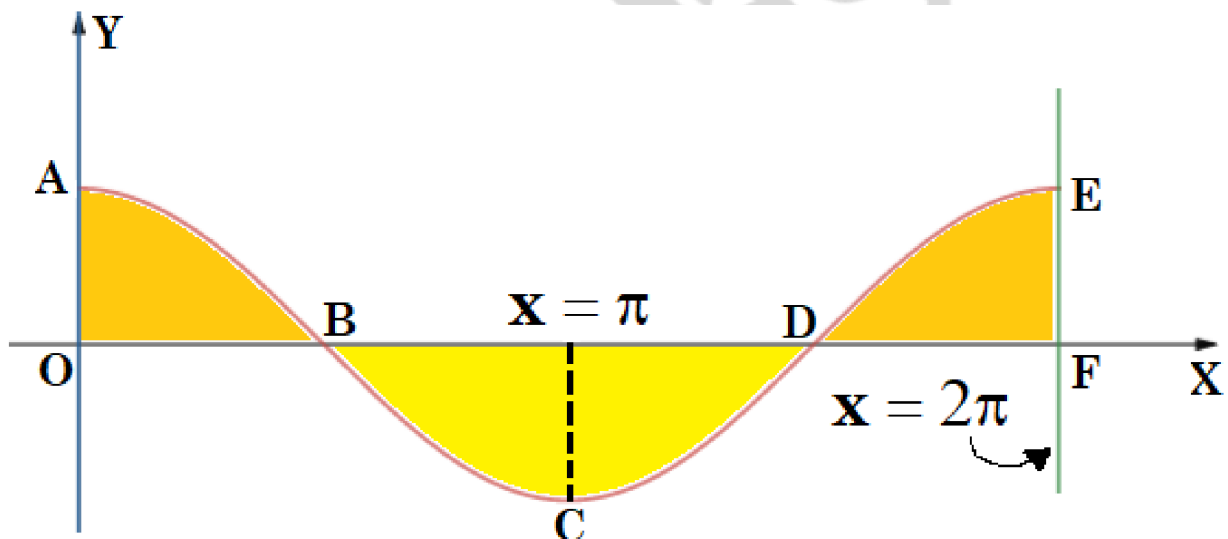
OR

Find the area enclosed between the circle $x^2 + y^2 = 16$ and lines $y = \sqrt{3}x$, $y = 0$, in first quadrant.

Q02. Find the area of the region bounded by the ellipse $\frac{x^2}{49} + \frac{y^2}{4} = 1$. [3 × 2 = 6]

Following is of 4 Marks (Q03).

Q03. CASE STUDY : A poor deceased farmer had agriculture land bounded by the curve $y = \cos x$, between $x = 0$ and the line $x = 2\pi$. He had two sons. Now they want to distribute this land in two parts as decided by their deceased father.



Based on the information given above, answer the following :

(i) Find the combined area above x-axis, of the region ar(OABO) and ar(DEFD).

(ii) Determine the area of the region below x-axis, ar(BCDB). [2 × 2 = 4]

Followings are of 5 Marks each (Q04-06).

Q04. Find the area of the region bounded by the curve $x^2 = y$, $y = x + 2$ and x-axis, using integration.

OR

The area of the region bounded by the line $y = mx$ ($m > 0$), the curve $x^2 + y^2 = 4$ and the x-axis in the first quadrant is $\frac{\pi}{2}$ units. Using integration, find the value of m .

Q05. Find the area of the region bounded by the lines $y = 4x + 5$, $x + y = 5$ and $4y = x + 5$, using integration.

OR

Find the area of the following region using integration : $\{(x, y) : y^2 \leq 2x \text{ and } y \geq x - 4\}$.

Q06. Make a rough sketch of the region $y = 1 + |x + 1|$, $x = -3$, $x = 3$ and $y = 0$.

Using integrals, find the area of the region bounded.

[5 × 3 = 15]

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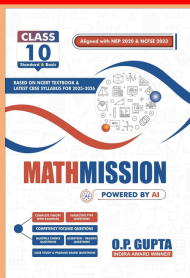
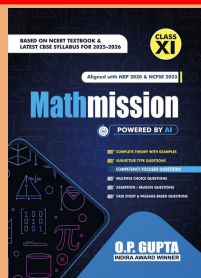
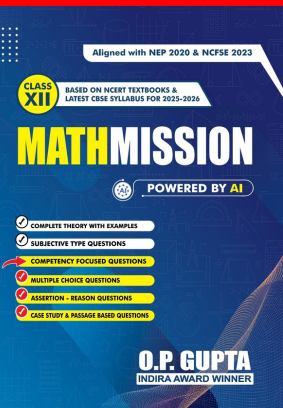
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