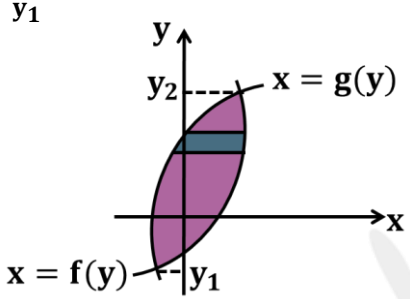
2. Area Enclosed between two Curves

Area Under the Curve

(2) In case horizontal strip is taken Then we have,

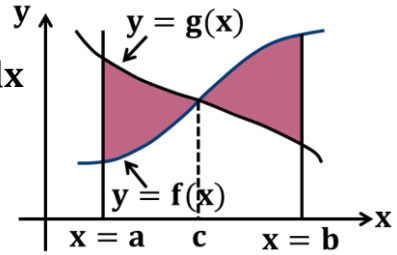
$$A = \int_{y_1}^{y_2} [f(y) - g(y)]dy$$



(3) If the curves y = f (x) and y = g(x) intersect at x = c, then required area is :

$$A = \int_a^c (g(x) - f(x))dx + \int_c^b (f(x) - g(x))dx$$

$$= \int_a^b |f(x) - g(x)|dx$$

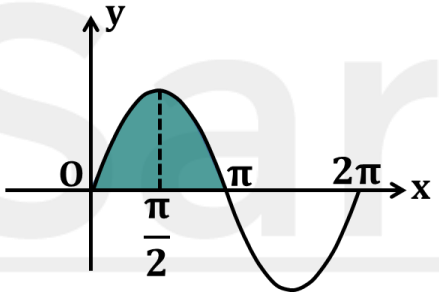


3. Standard Areas To Be Remembered

(1) Area bounded by :

$y = \sin x$ Where, $x \in [0, \pi]$

$$\therefore \text{Area} = \int_0^{\pi} \sin x\, dx = 2$$

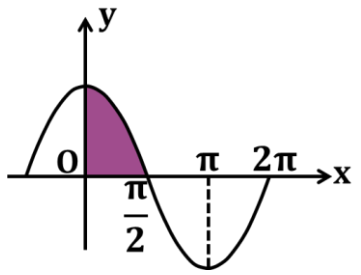


(2) Area bounded by :

$y = \cos x$

Where, $x \in [0, \pi/2]$

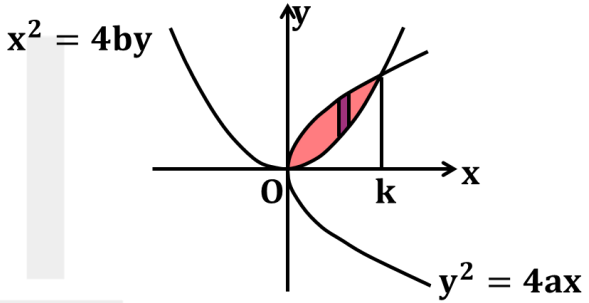
$$\therefore \text{Area} = \int_0^{\pi/2} \cos x\, dx = 1$$



(3) Area bounded by :

Parabolas $y^2 = 4ax$; $x^2 = 4by$

$(a > 0; b > 0)$ $A = \frac{16ab}{3}$



(4) Area enclosed by

Curve : $y^2 = 4ax$; its double ordinate at $x = k$

(chord perpendicular to the axis of symmetry)

Required Area $= \frac{2}{3}$(area □ ABCD)