

Chapter 8

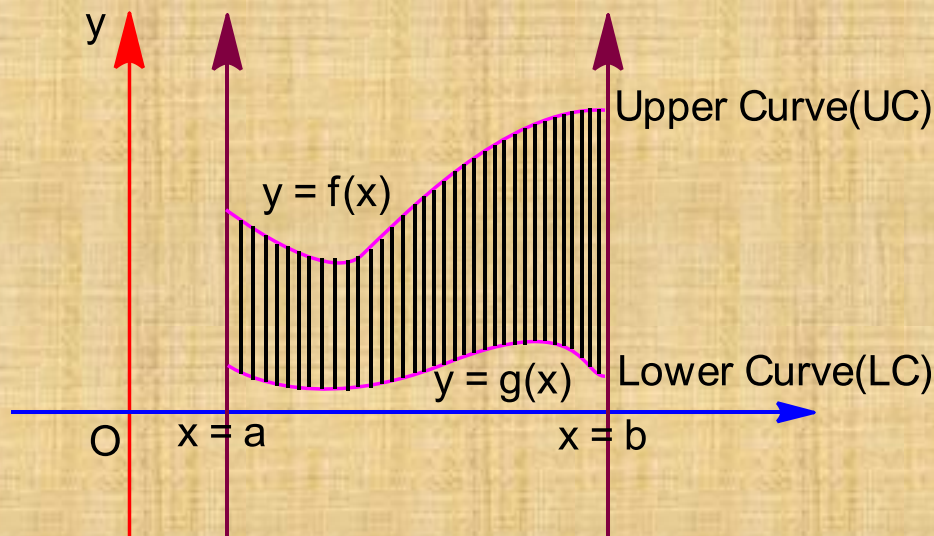
APPLICATION OF INTEGRALS

Rules to find the limits of integration for finding area of limits are not given.

- 1) To find area between curve and x – axis, find intersections of the curve with x – axis we put $y = 0$ in the equation, find values of x .
- 2) To find area between curve and y – axis, find intersections of the curve with y – axis we put $x = 0$ in the equation, find values of y .
- 3) To find area between the two curves, find their points of intersection. We solve the equations of the curves for x and y .

- If ‘ f ’ and ‘ g ’ are two continuous functions on $[a, b]$ such that $f(x) \geq g(x)$ $\forall x \in [a, b]$. Then the area of the region bounded by $y = f(x)$, $y = g(x)$ between the lines $x = a$ and $x = b$ is given by,

$$\text{Area} = \int_a^b f(x) dx - \int_a^b g(x) dx = \int_a^b f(x) - g(x) dx = \int_a^b (y_{UC} - y_{LC}) dx$$



- Area bounded w.r.t y – axis.

$$\text{Area} = \int_c^d [f(y) - g(y)] dy$$

$$= \int_c^d [x_{\text{RC}} - x_{\text{LC}}] dy$$

Where, RC = Right most curve

LC = Left most curve

