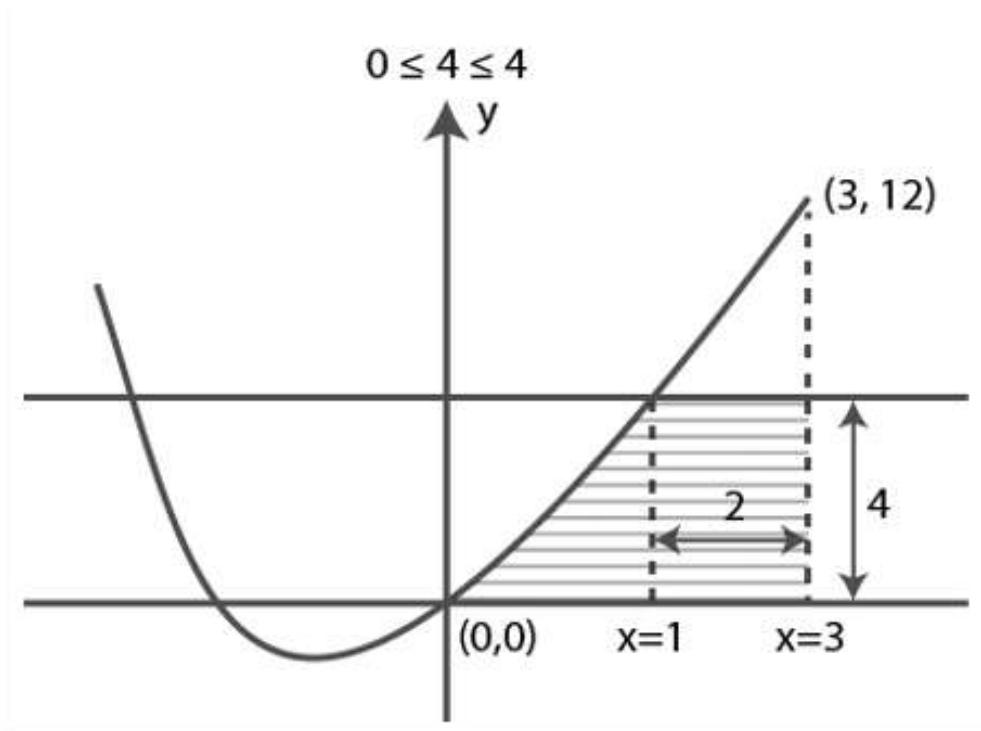


JEE Main Past Year Questions With Solutions on Application of Integrations

Question 1: Find the area of the region $A = \{(x,y) \in \mathbb{R} \times \mathbb{R} \mid 0 \leq x \leq 3 \text{ and } 0 \leq y \leq 4 \text{ and } y \leq x^2 + 3\}$. [area in sq. units]

Solution:

Given: $A = \{(x,y) \in \mathbb{R} \times \mathbb{R} \mid 0 \leq x \leq 3 \text{ and } 0 \leq y \leq 4 \text{ and } y \leq x^2 + 3\}$.



Shaded region be required region. So, from above diagram

Required Region =

$$\int_0^1 (x^2 + 3x) dx + (2 \times 4)$$

=

$$\left(\frac{x^3}{3} + \frac{3x^2}{2}\right)_0^1$$

+ 8

= 50/6