

# NCERT/CBSE MATHEMATICS CLASS 12 textbook

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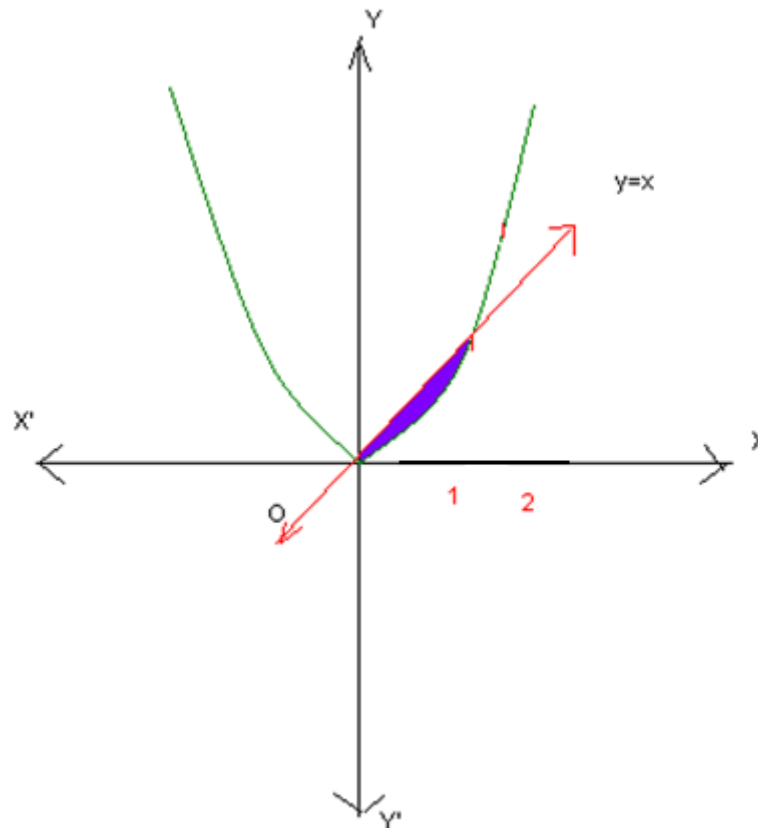
MISCELLANEOUS EXERCISES

Answers to NCERT/CBSE MATH (Class XII) textbook

Chapter 8

APPLICATIONS OF INTEGRALS

2. Find the area between the curves  $y = x$  and  $y = x^2$ .



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$$2. y = x^2; y = x$$

The point of intersection is given by

$$x^2 = x \Rightarrow x^2 - x = 0 \Rightarrow x(x-1) = 0$$

$$\Rightarrow x = 0, x = 1 \Rightarrow y = 0, y = 1$$

The points of intersection : (0,0) and (1,1)

The required area is given by the definite integral:

$$\int_0^1 x dx - \int_0^1 x^2 dx = \left[ \frac{x^2}{2} \right]_0^1 - \left[ \frac{x^3}{3} \right]_0^1$$

$$= \left[ \frac{1}{2} - 0 \right] - \left[ \frac{1}{3} - 0 \right]$$

$$= \frac{1}{2} - \frac{1}{3} = \frac{1}{6} \text{ square units}$$

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