

THE DEFINITE INTEGRAL

Lesson 4.2

SUMMATION FORMULAS (PAGE 309)

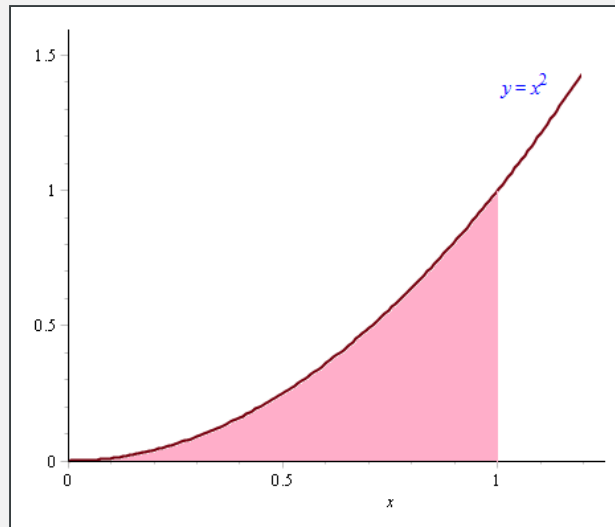
$$1. \sum_{i=1}^n i = \frac{n(n+1)}{2}$$

$$2. \sum_{i=1}^n i^2 = \frac{n(n+1)(2n+1)}{6}$$

$$3. \sum_{i=1}^n i^3 = \frac{n^2(n+1)^2}{4}$$

PROBLEM

Consider the region bounded by
 $f(x) = x^2$, $x = 0$, $x = 1$, and the x -axis:



Use an infinite number of rectangles
to determine this area **exactly**.