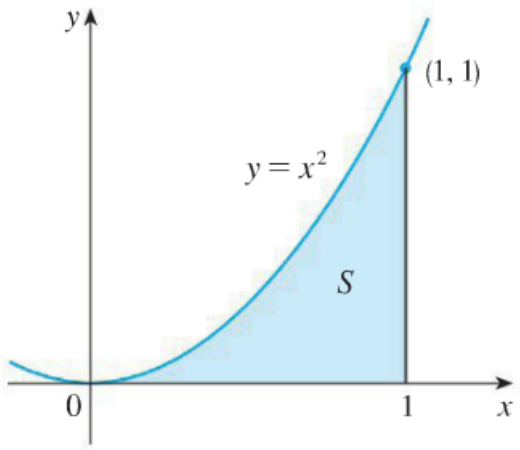
Sec05.01

January 21, 2018

1 5.1 Areas and Distances

1.0.1 Problem



example 1

Find the area of the regoin S.

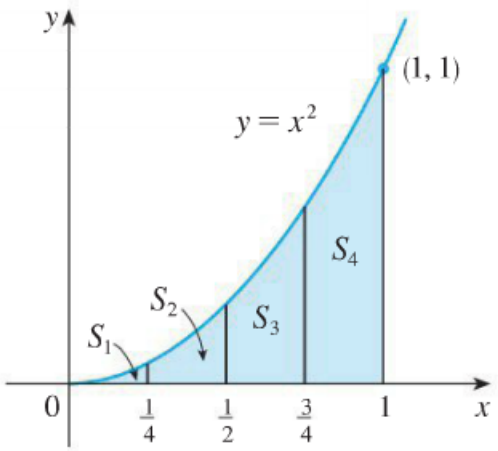
$$R_4 = \frac{1}{4} \cdot \left(\frac{1}{4}\right)^2 + \frac{1}{4} \cdot \left(\frac{1}{2}\right)^2 + \frac{1}{4} \cdot \left(\frac{3}{4}\right)^2 + \frac{1}{4} \cdot (1)^2$$

Here R_4 represens the sum of areas of **4** approximationg **rectangles** using the **right** endpoints of the intervals to construct their heights.

$$R_4 = 0.46875$$

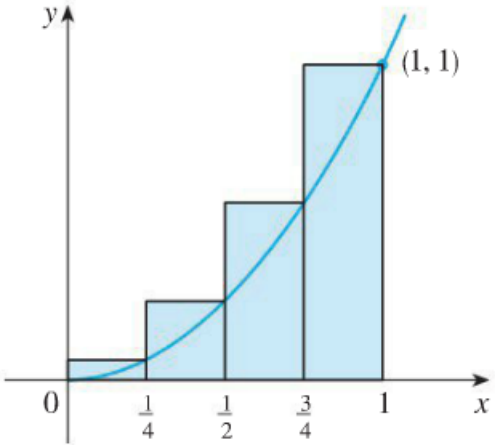
$$L_4 = \frac{1}{4} \cdot (0)^2 + \frac{1}{4} \cdot \left(\frac{1}{4}\right)^2 + \frac{1}{4} \cdot \left(\frac{1}{2}\right)^2 + \frac{1}{4} \cdot \left(\frac{3}{4}\right)^2$$

Here L_4 represens the sum of areas of **4** approximationg **rectangles** using the **left** endpoints of the intervals to construct their heights.



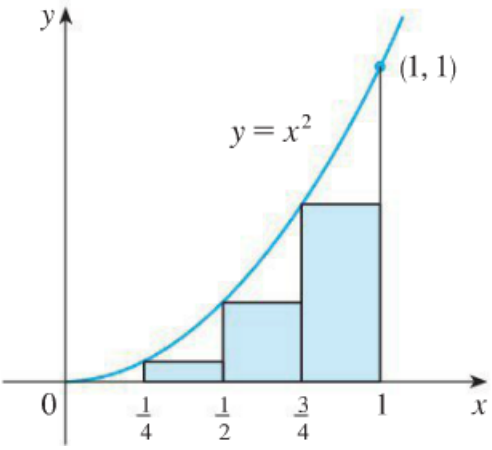
h

example 1 Step 1



h

example 1 Step 1



h

example 1 Step 1

$$L_4 = 0.21875$$

$$L_4 = 0.21875 < A < R_4 = 0.46875$$