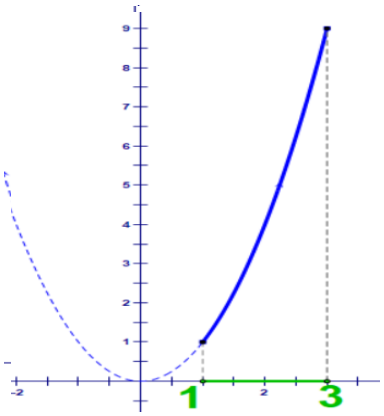
DATE: _____

Lengths of Curves

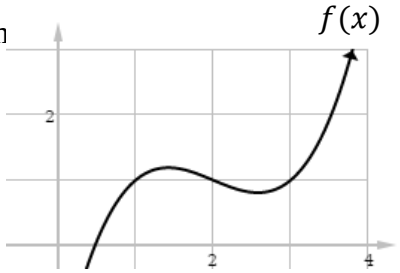
Estimate the length of the curve $y = x^2$ on [1,3].



Finding the Length of a Curve

Given 2 points (x_1, y_1) and (x_2, y_2), find the distance between them

Distance =



Sum of n segments $= \sum_{k=1}^{n}$

Sum of infinite # of segments

$= \sum_{k=1}^{n}$

$= \sum_{k=1}^{n}$

Length of a Curve

Length of a Curve =
(Arc Length)

Example 1:

Find the length of the curve $y = x^2$ on [1,3].

Example 2:

Find the length of the curve $x = \sin y$ from $y = 0$ to $y = \frac{\pi}{2}$.

Example 3:

Find the length of the curve $y = \frac{1}{3}(x^2 + 2)^{3/2}$ on [0,3].

Example 4:

Find the length of the curve $y = 2x^{1/5}$ from $(-32, -4)$ to $(32,4)$