

1.1 Preview of Calculus -- Discussion of Limits

p.40 Swimming Speed

p.41-43 Preview of Calc

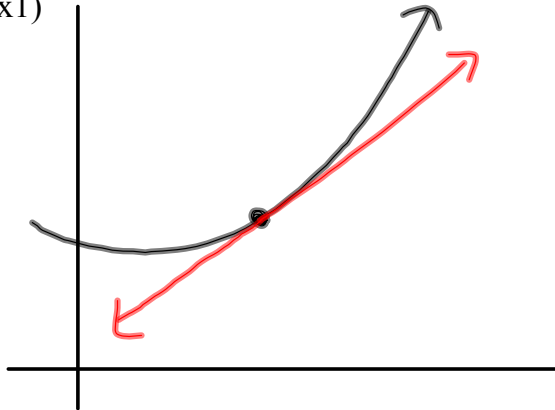
Tangent Line Problem

Tangent Line -- touches the curve at a single point within a given domain.

-- to write the eqn. of the tangent line, you must find the slope.

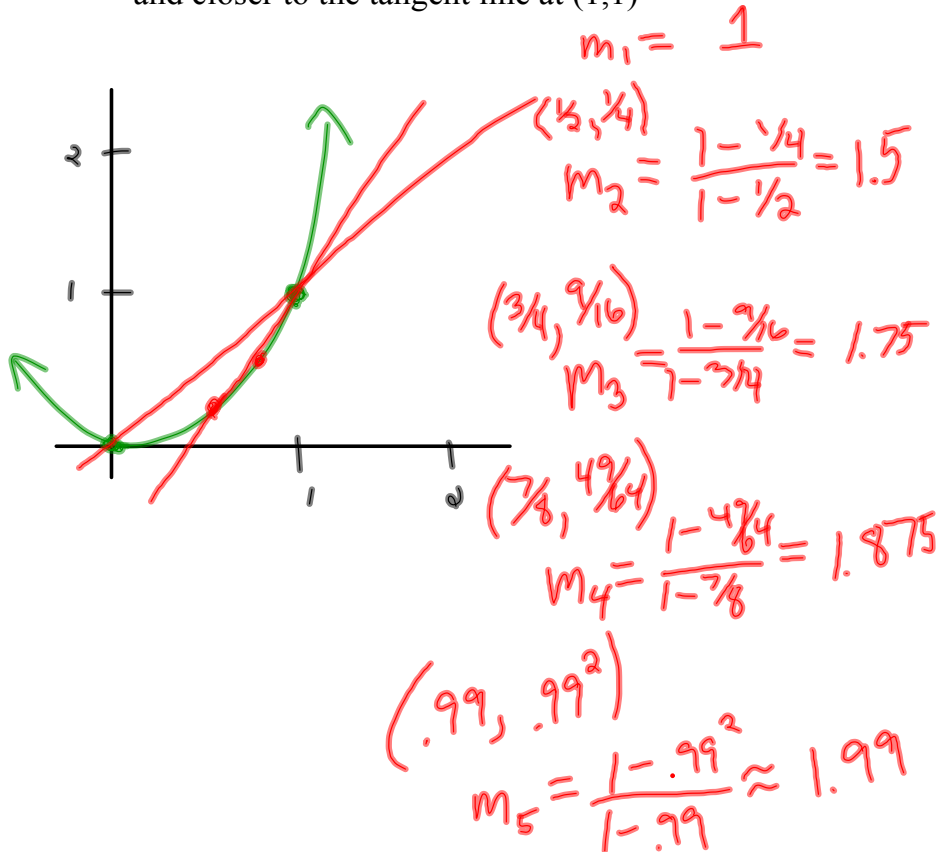
-- on a curve the slope is constantly changing.

ex1)



ex2) Approximate the slope of $f(x) = x^2$ at point $(1,1)$.

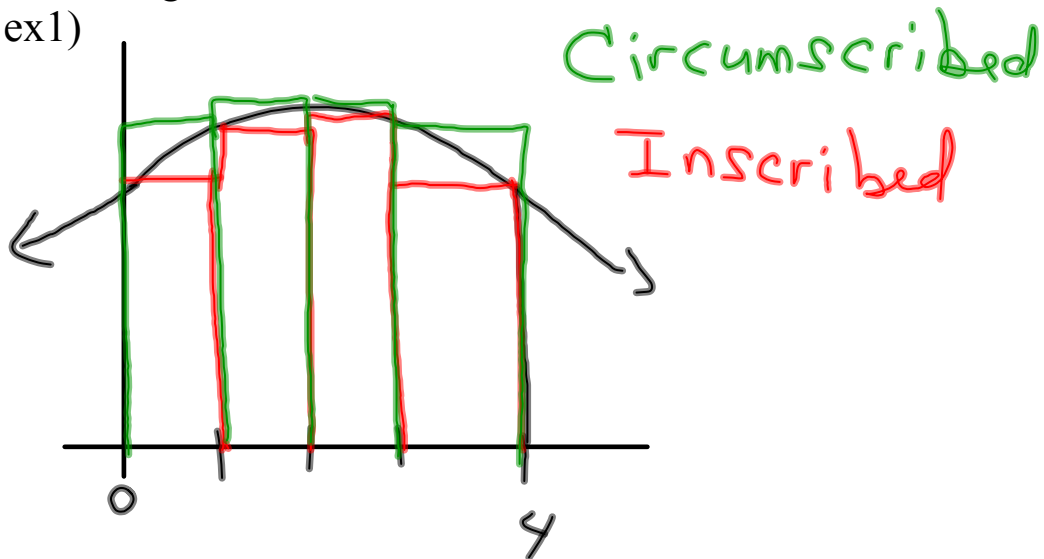
-- find the slope of several secant lines that get closer and closer to the tangent line at $(1,1)$



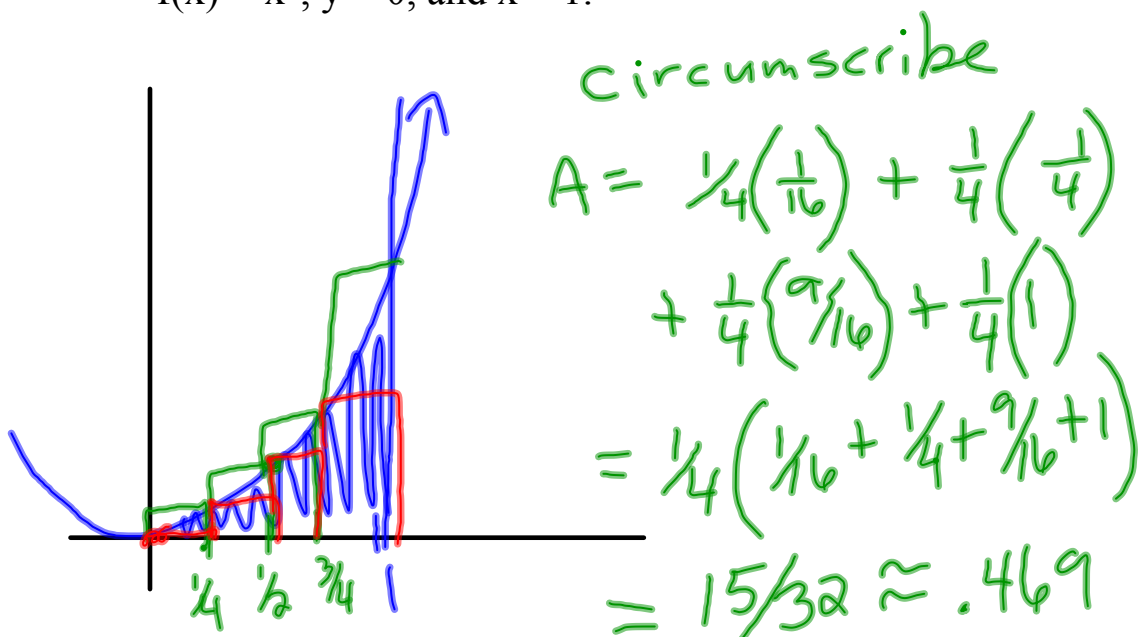
Area Problem

-- use several rectangles to approximate the area of a region under a curve.

ex1)



ex2) Approximate the area of the region bounded by $f(x) = x^2$, $y = 0$, and $x = 1$.



$$\begin{aligned}
 \text{Inscribed } A &= \frac{1}{4}\left(0 + \frac{1}{16} + \frac{1}{4} + \frac{9}{16}\right) \\
 &= \frac{7}{32} \approx .219
 \end{aligned}$$

HW: p46 #1-8,10,11

Rate of Change = Slope