Hi Jesse!

If you're already registered on WebAssign, I hope you used your D2L address.

Charlie Dominas, whose username is cdominas should register on WebAssign with the e-mail cdominas@online.aims.edu

**Grades/Activities**

Orientation Stuff (Registering for WebAssign with correct name and e-mail address, e-mail settings on D2L.) - 10%

WebAssign Homework - 20%

WebAssign Tests - 25%

Written Midterm, Written Final - Room to be arranged (Most likely in Horizon Hall) - 25%

Written Chapter Assignments (Writing Projects) - 20%

Stay Tuned for a Gradebook Template.

What is differential calculus?

**Recall:** The difference quotient gives the average rate of change of a function over a given interval.

**In differential calculus, we take the two points on the curve arbitrarily close to one another, using a *limit*.**
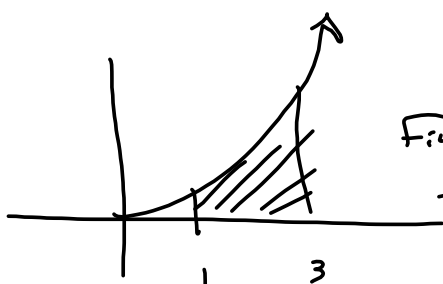


$(x, f(x))$

$(x_1, f(x_1))$

$(x_1, y_1)$

$(x_2, y_2) = (x_2, f(x_2)) = (x+h, f(x+h))$

Tangent Line

COLLEGE ALGEBRA
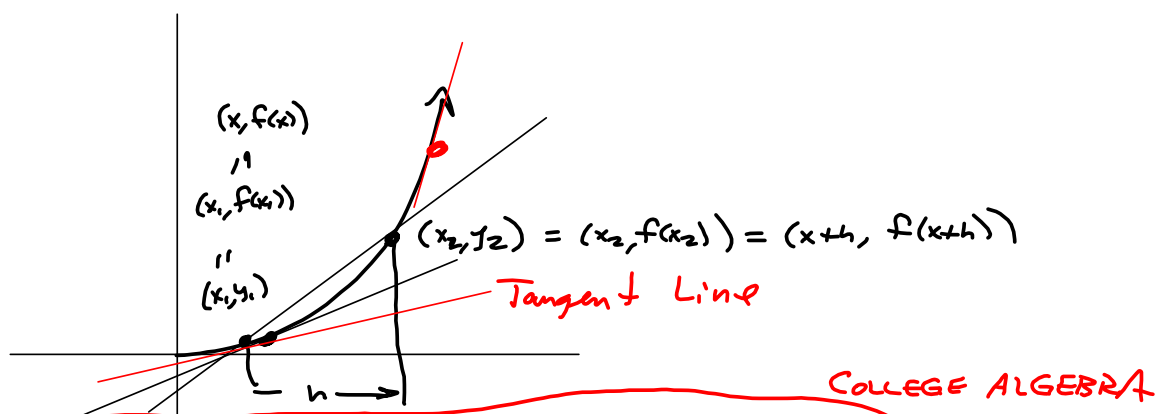
$$\text{Avg Slope} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{f(x_2) - f(x_1)}{x_2 - x_1} = \frac{f(x+h) - f(x)}{h}$$

$$h \longrightarrow 0 \quad \Rightarrow \quad f'(x) = \text{Slope of } f \text{ at } x.$$

↳ Calculus!

**Find the average rate of change of** $f(x) = x^2$ on the interval $[x, x+h]$.

$$\frac{f(x+h) - f(x)}{h} = \frac{(x+h)^2 - x^2}{h} = \frac{x^2 + 2xh + h^2 - x^2}{h}$$

$$= \frac{2xh + h^2}{h} = \frac{h(2x+h)}{h} = 2x + h \quad \xrightarrow{h \to 0} \quad 2x = \text{Slope}$$

$$(\text{if } h \neq 0) \qquad \text{of } f(x) = x^2$$

$$\text{@ } x!$$

Find area
that's shaded

Take the limit as
the width of the rectangles
approaches zero, then I
get the _exact_ area under
the curve.