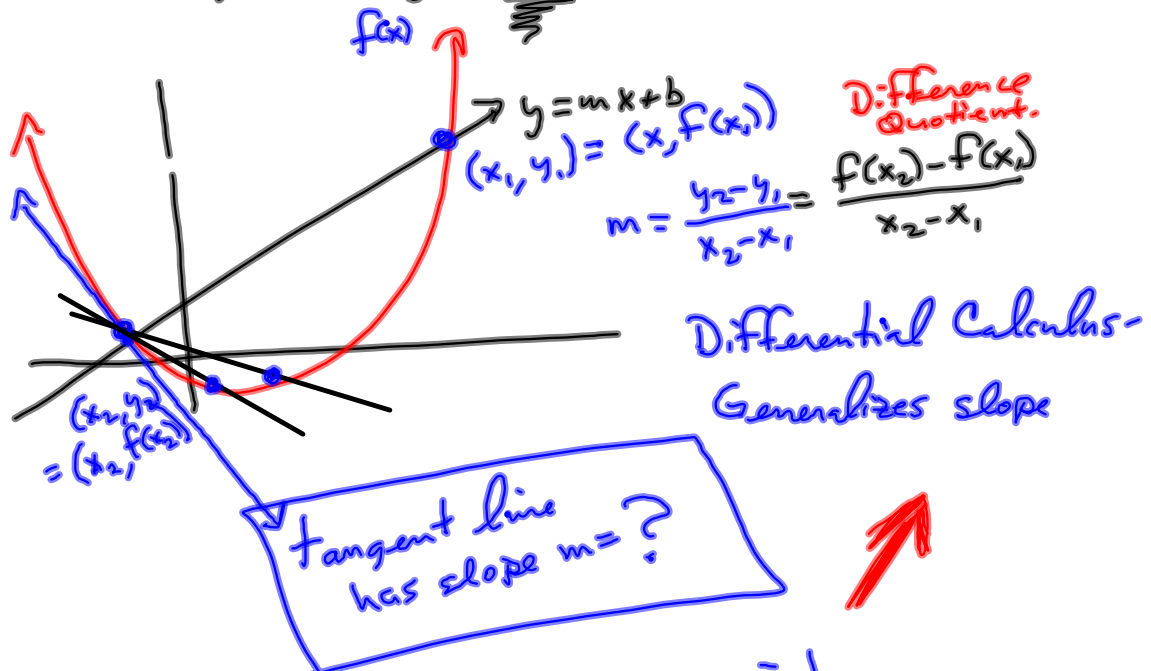


Calculus I

Algebra + Trig + Limits = calculus



Slope of a CURVE at a point.

The closer the 2nd pt is to the 1st, the closer the slope of the SECANT line is to the slope of the tangent line. we want

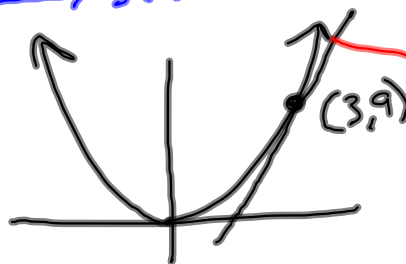
$$\frac{f(x_2) - f(x_1)}{x_2 - x_1} = \underline{\text{undefined}} \quad \text{when } x_1 = x_2.$$

Limits will let us "get small" in the denominator.

E $f(x) = x^2$ Find the slope @ $x=3$.

$$\text{Then } \frac{f(x_2) - f(x_1)}{x_2 - x_1} = \frac{x^2 - 3^2}{x - 3} = \frac{(x-3)(x+3)}{x-3}$$

$= x+3$ what happens when $x \rightarrow 3$
 $\rightarrow 3+3=6 = \text{slope of } x^2 \text{ is when } x=3.$

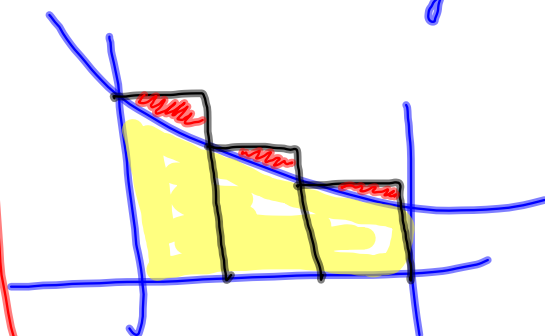


$f(x) = x^2$ has derivative
 $f'(x) = 2x.$

$$f'(3) = 2(3) = 6$$

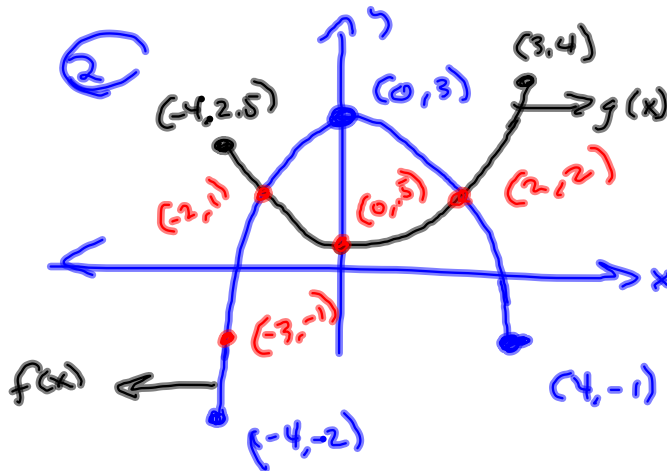
We generalize SLOPE
Differential Calc

We generalize area of a rectangle
Integral Calc



Course Website
Practice Tests
Discussion
E-mail (Click on classlist)
Assignments
Solutions to tests & homework

§ 1.1 I #5 2, 3, 7, 10, 17, 20, 22.



(a) $f(-4) = -2$

$g(3) = 4$

(b) $f(x) = g(x)$

$\Leftrightarrow$

$x = -2, 2$

$x \in \{-2, 2\}$ classy.

(c) $f(x) = -1 \Leftrightarrow$

$x \in \{-3, 4\}$

(d) f is decreasing on $[0, 4]$

$\downarrow$ y values $\downarrow$
as $x \rightarrow$

$\downarrow$ x-values for which
 f is decreasing.

(e) $D(f) = \text{Domain of } f = [-4, 4]$

$R(f) = \text{Range of } f = [-2, 3]$

(f) $D(g) = [-4, 3]$

Continue § 1.1 I & See Solutions!