alternate form

3.1 Derivative of a Function

Definition of Derivative

 $\lim_{h\to 0} \frac{f(x+h)-f(x)}{h}$

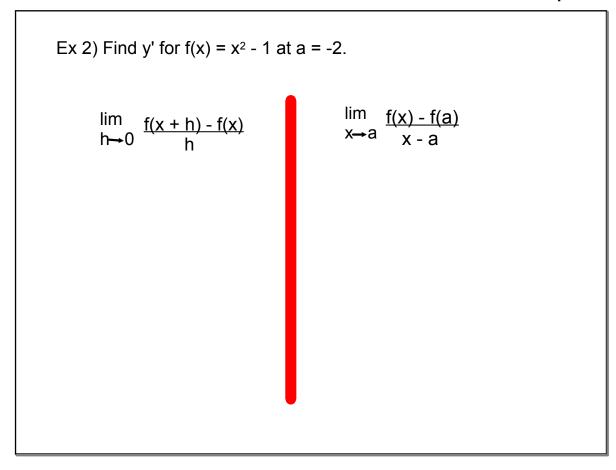
 $\lim_{x \to a} \frac{f(x) - f(a)}{x - a}$

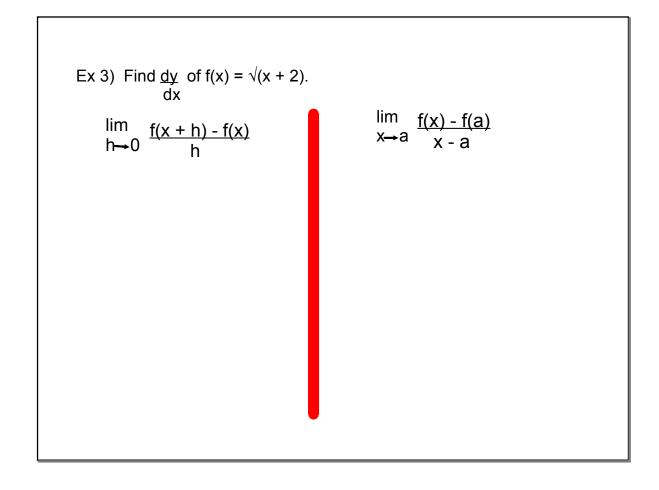
Notation for finding the derivative:

Ex 1) Find
$$f'(x)$$
 if $f(x) = x^2 + 4$ at $x = 1$.

$$\lim_{h\to 0} \frac{f(x+h)-f(x)}{h}$$

$$\lim_{x \to a} \frac{f(x) - f(a)}{x - a}$$





Ex 4) Use the definition of the derivative to find f'(1) for $f(x) = \frac{1}{x^2}$.

Ex 5) At what point is the tangent to $f(x) = x^2 + 4x - 1$ horizontal?

