February 26

What does the derivative tell you about a function?

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Students will verbally explain how to find derivative, using the definition of the derivative

(using the words: limit, expand, simplify...)

Slope of Secant Line

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

Average Rate of Change

→ Algebra I Slope

Slope of Tangent Line

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

Instantaneous Rate of Change

Derivative

→ Calculus Slope

Definition of the Derivative

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

$$f'(a)=\lim_{h\to 0}\frac{\ln(2+h)-\ln(2)}{h}$$

find $f(x)$ and a

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

$a=2$ $\quad f(x)=\ln(x)$

$$f'(a)=\lim_{h\to 0}\frac{(3+h)^4-81}{h}$$

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

$a=3$ $\quad f(x)=x^4$

$$\lim_{h\to 0}\frac{(3+h)^4-3^4}{h}$$