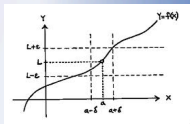
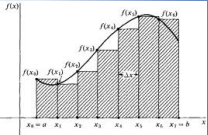


7 Slope of Curve



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

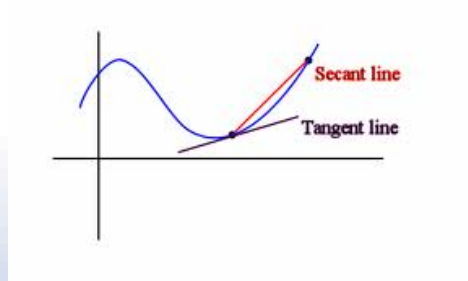
$$\frac{d}{dx} \int_a^x f(t) dt = f(x)$$



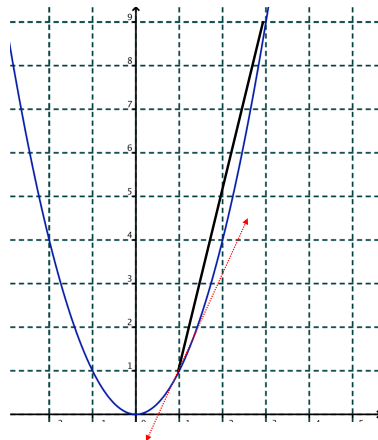
$$\lim_{\max \Delta x_i \rightarrow 0} \sum_{i=1}^n f(x_i) \Delta x_i = \int_a^b f(x) dx$$

$$\int_a^b f(x) dx = F(b) - F(a)$$

Calculus: The Slope of A Curve



How do we find the slope of a curve?



Try to find the slope of this curve at the point (1,1).

Second point:	Slope at that point:
(3,9)	
(2,4)	
(1.1, 1.21)	
(1.01, 10.201)	
(1+h, (1+h) ²)	

Slope to the left of the origin?

Slope to the right of the origin?

7 Slope of Curve

EX 1

Find the slope of the curve $y = x^2 - 5x$ at $(2, -6)$

hint: Calculate the slope between $(2, -6)$ and $(2+h, f(2+h))$

Definition: The slope of a function, f , at a point $x = (x, f(x))$ is given by

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

$f'(x)$ is called the derivative of f with respect to x .

Other names for $f'(x)$:

- slope
- instantaneous rate of change
- speed
- velocity

EX 2

Find the derivative of $f(x) = 4x - 1$

7 Slope of Curve

EX 3

Find the derivative of $f(x) = x^2 + 4x - 1$

What is the slope at point P ?

