

In a previous lesson, we found the slope of a curve using the following limit

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

This same limit is used to find the **derivative** of a function

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

The **derivative** of a **function** is a “new” **function** that gives the **slope** of the **tangent line** to the graph of **f** at any point **(x, f(x))**.

Derivative Notation for function $y = f(x)$

$f'(x)$	$\frac{dy}{dx}$	y'	$\frac{d}{dx}[f(x)]$	$D_x[y]$
“f prime of x”	“dy - dx”	“y prime”		“D x y”
	“the derivative of y with respect to x”		“the derivative of f(x) with respect to x”	

The derivative of a function is a “new” function that gives the slope of the tangent line to the graph of f at any point $(x, f(x))$.

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

