

Definition: Derivative

The derivative of a function $f(x)$ with respect to x is the function

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

With $y = f(x)$ then using Leibniz notation we have

$$\frac{dy}{dx} \stackrel{\text{D}}{=} f'(x)$$