derivative of a function

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We define the derivative of a function f at x as

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

provided that the limit exists. If the limit exists, we say f is differentiable at x.

If we simply say f is differentiable, we mean f is differentiable at all values of x. In this case, $f'(x)$ is also a function of x.

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