Definition of the partial derivative

Isao Sasano

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The partial derivative of $f(x, y)$ with respect to x is defined by

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

and the partial derivative of $f(x, y)$ with respect to y is defined by

$$\frac{\partial f(x,y)}{\partial y} = \lim_{h \to 0} \frac{f(x, y+h) - f(x, y)}{h}.$$

The derivative of $f(x)$ is defined as follows.

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

The term "derivative" refers to the result of differentiation and the term "partial derivative" refers to the result of partial differentiation.