Formulas-2

 $\lim_{(x,y)\to(x_0,y_0)}f\left(x,y\right)=L \text{ if for every ϵ>0, there exists a corresponding δ>0, such that for all (x,y) in the domain of f, <math>|f\left(x,y\right)-L|<\epsilon$ whenever $0<\sqrt{(x-x_0)^2+(y-y_0)^2}<\delta$

$$rac{\partial f}{\partial x}|_{(x_0,y_0)} = \lim_{h o 0} rac{f\left(x_0+h,y_0
ight)-f\left(x_0,y_0
ight)}{h} = f_x\left(x_0,y_0
ight)$$

$$egin{align*} f_{xx} &= rac{\partial^2 f}{\partial x^2} = rac{\partial}{\partial x} \left(rac{\partial f}{\partial x}
ight) \ f_{yy} &= rac{\partial^2 f}{\partial y^2} = rac{\partial}{\partial y} \left(rac{\partial f}{\partial y}
ight) \ f_{xy} &= rac{\partial^2 f}{\partial yx} = rac{\partial}{\partial y} \left(rac{\partial f}{\partial x}
ight) \ f_{yx} &= rac{\partial^2 f}{\partial xy} = rac{\partial}{\partial x} \left(rac{\partial f}{\partial y}
ight) \ rac{dw}{dt} &= rac{\partial w}{\partial x} \cdot rac{dx}{dt} + rac{\partial w}{\partial y} \cdot rac{dy}{dt} + rac{\partial w}{\partial z} \cdot rac{dz}{dt} \ rac{dy}{dx} &= -rac{F_x}{F_{yy}} \end{aligned}$$

$$\$\$\$ f_u'\left(x,y
ight) = D_u f\left(x,y
ight) = \lim_{s o 0} rac{f\left(x+su_1,y+su_2
ight) - f\left(x,y
ight)}{s} =
abla$$