Lec 6

Last reminder: don't send emails regarding attendance. instead, come to office hours for any such issue about 'that' week's attendance.

Partial derivatives of $f(x,y)$.

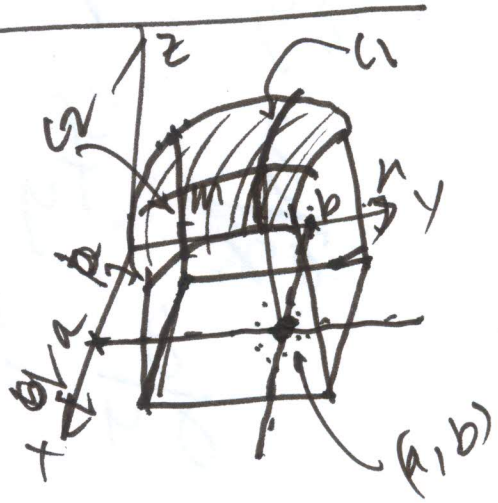
$$f: D \subseteq \mathbb{R}^2 \longrightarrow \mathbb{R}$$
$$z = f(x,y), \quad (x,y) \in D.$$

Local behavior of $f(x,y)$ around $(a,b) \in D$

$D = [\phi, \varphi] \times [m,n]$

Fixing $y = b$, $c_1 := f(x,b)$

$x = a$, $c_2 := f(a,y)$



$$y = f(x)$$

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

$$\frac{d^2y}{dx^2} = f''(x) = \frac{d}{dx} f'(x)$$

For 2-variable fcns.

$$f_x(x,y), \; f_y(x,y)$$

$$\frac{\partial}{\partial x} f_x(x,y) = f_{xx}(x,y)$$

$$\frac{\partial}{\partial y} f_x(x,y) = f_{yx}(x,y)$$

$$\frac{\partial}{\partial x} f_y(x,y) = f_{xy}(x,y)$$

$$\frac{\partial}{\partial y} f_y(x,y) = f_{yy}(x,y)$$