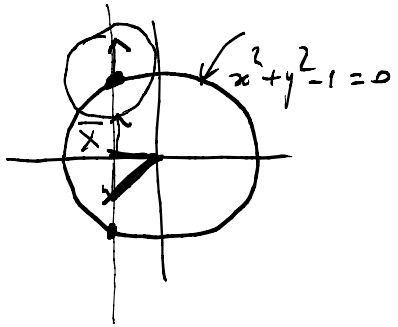
Note Title 3/12/2021

$f(x,y) = 0$

$f(x,y) = x^2+y^2-1$

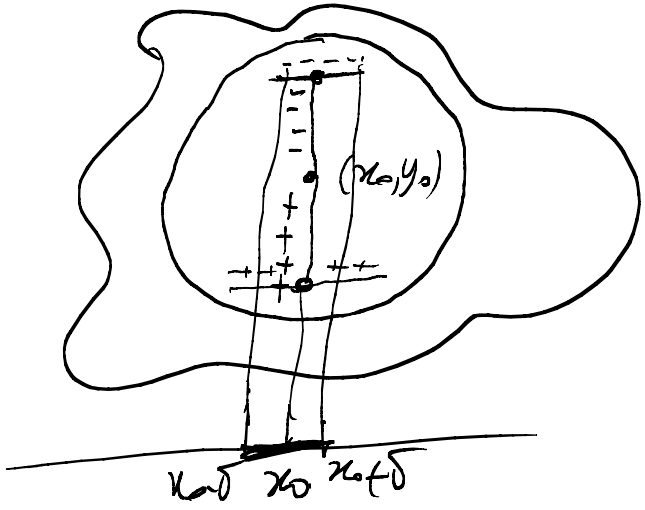
prodotto della distanza di (x,y) dall'origine



$y \to f(x,y)$

strett. monotona

strett. decresc

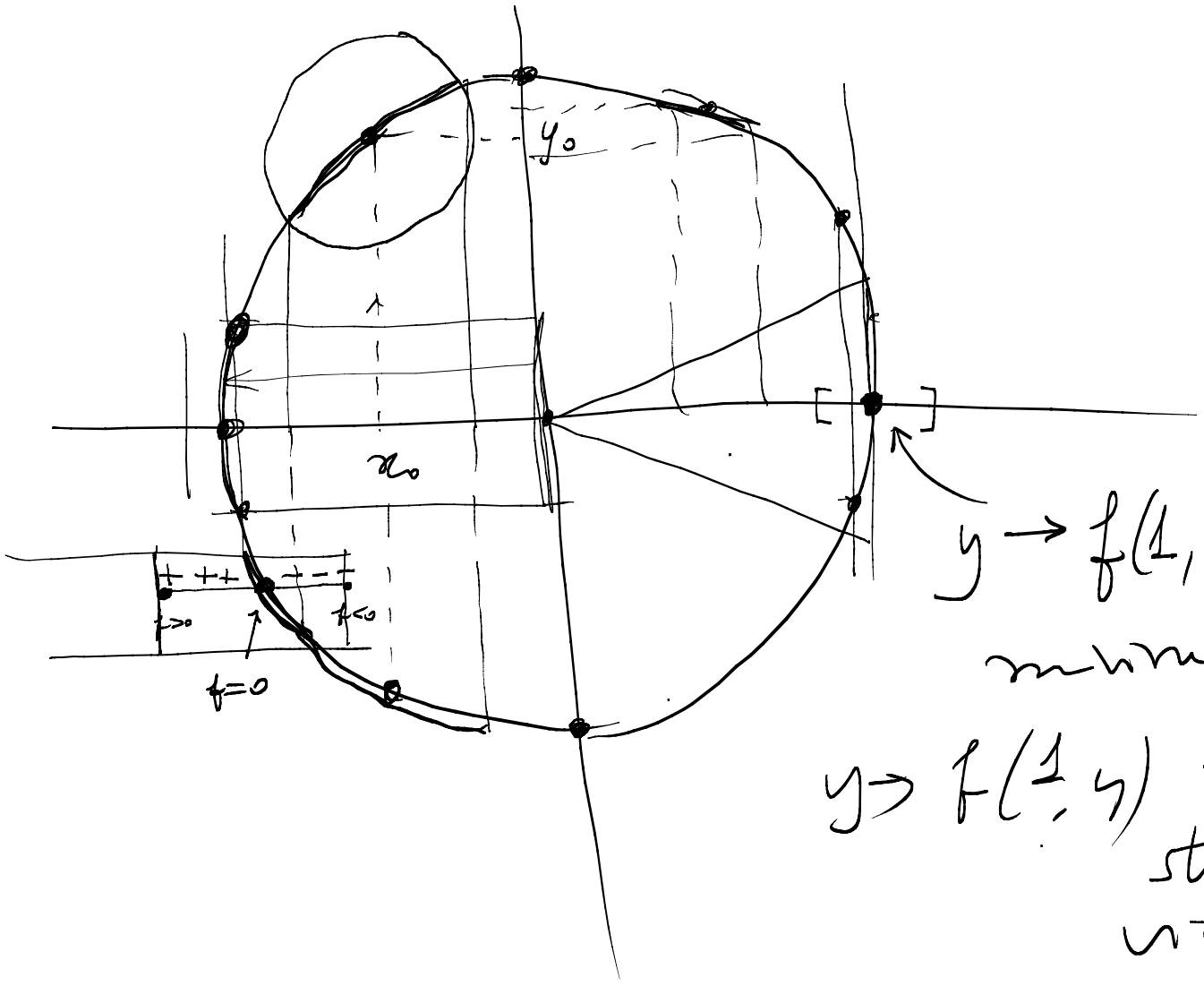


f è continua su $\mathbb{R}^2$

$(x_0,y_0) \in \mathring{\mathbb{R}}^2 = \mathbb{R}^2$ perché $\mathbb{R}^2$ è aperto

$f(x_0,y_0)=0$

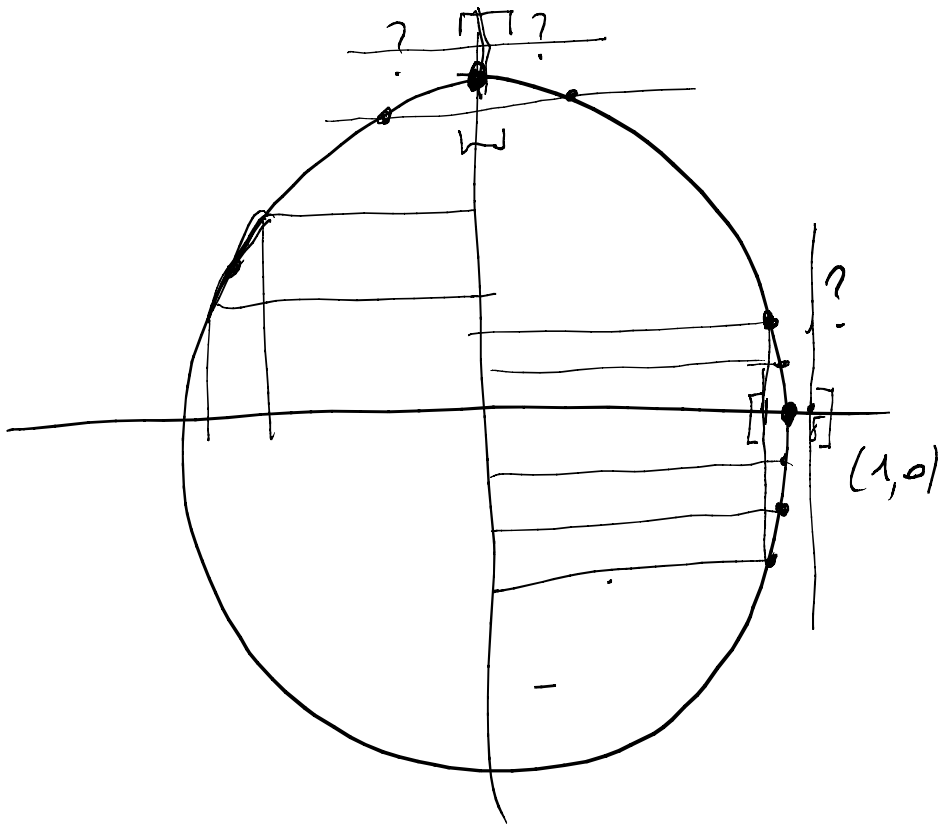
$y \to x^2+y^2-1$ fissato x $\quad y \to f(\bar{x},y)$! è strett. cres. per $y>0$ è strett. decr. $y<0$.



$y \to f(1,y)$ ha minimo in $y=0$

$y \to f(\frac{1}{2},y)$ non è strett. monot. vicino a 0.

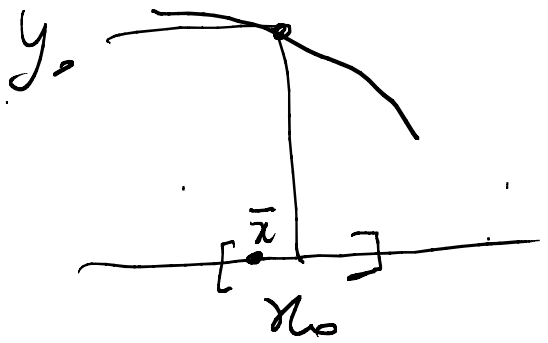
4') Se $x \to f(x,y)$ è strett. mon. allora la tesi scritta analoga $x = \psi(y)$



$\varphi : [1-\delta, 1+\delta] \to \mathbb{R}$

$f(x, \varphi(x)) = 0$

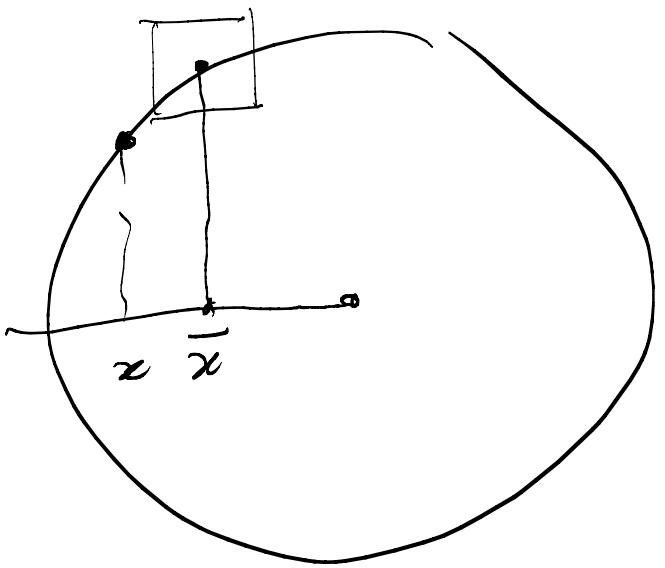
φ è continua in x_0



$[x_0 - \varepsilon, x_0 + \varepsilon]$?

Per provare la continuità in $\bar{x}$, basta ridim. il teorema con

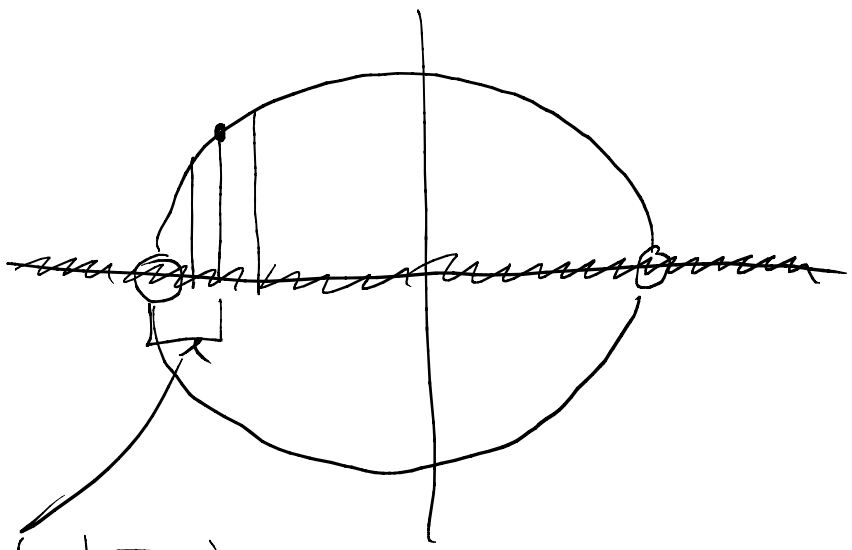
punto iniziale $(\bar{x}, \varphi(\bar{x}))$



$\varphi(\bar{x})$ = lontano $y \to f(\bar{x}, y)$

$x \neq 0$ $x \to f(x, \bar{y})$ è strett. monot.

$y = \varphi(x)$



arbitrariamente piccola

---

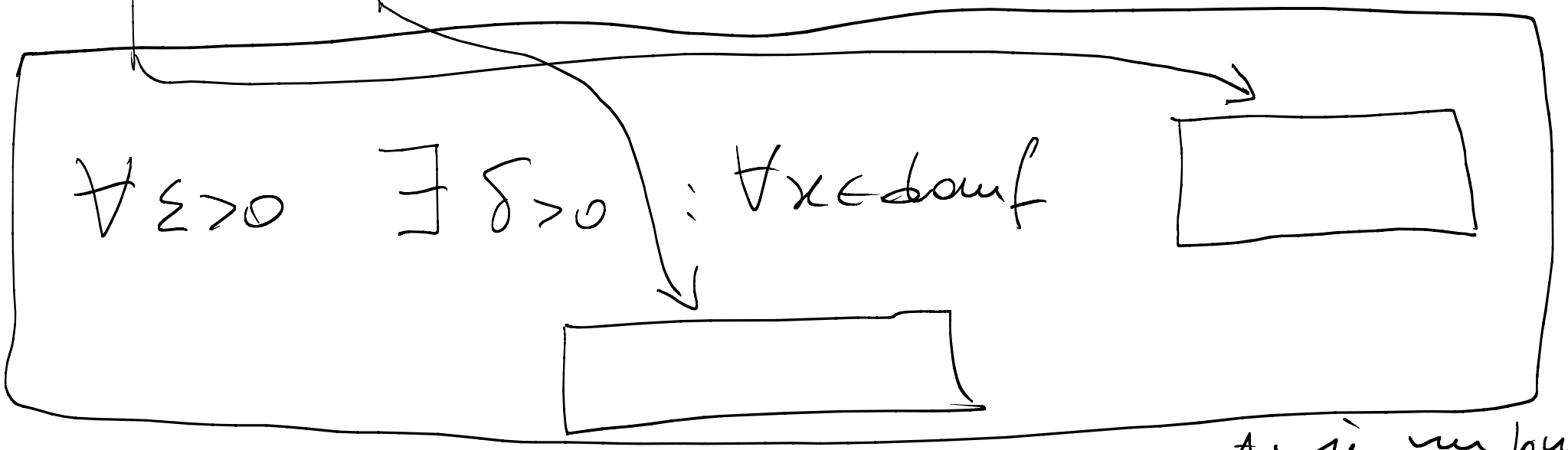
th. Weierstrass (max e min)

Una funzione continua su un insieme chiuso e limitato ha max e min

COMPATTO ≡ CHIUSO E LIMITATO

$\lim f = \square$

$f : \mathbb{R}^N \to \mathbb{R}^M$



funzioni continue in un punto.

$\lim_{x \to x_0} f(x) = L$

$\forall \varepsilon > 0 \quad \exists \delta > 0 : \forall x \in \text{dom} f \quad |x - x_0| < \delta, \; x \neq x_0$

$\Rightarrow |f(x) - L| < \varepsilon$