

SUBMERSÃO

$$X \cap \Omega = \pi^{-1}(\{0\})$$

$$f: \mathbb{R}^3 \rightarrow \mathbb{R}; x \mapsto \|x\|^2 - 1$$

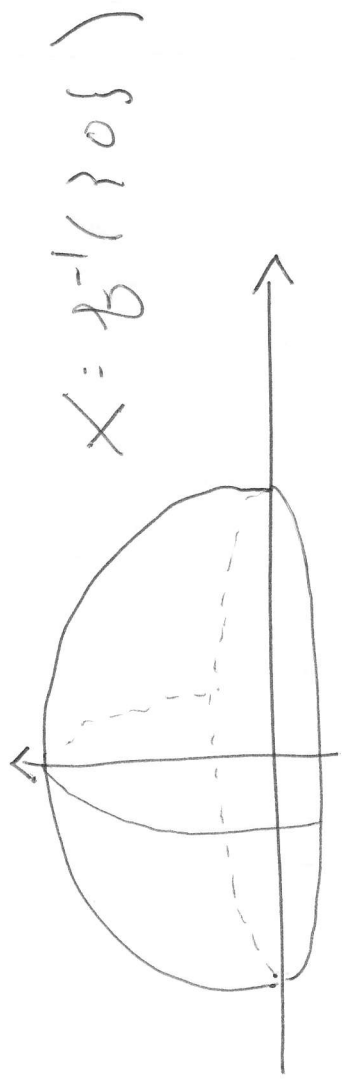
$$Df(x): \mathbb{R}^3 \rightarrow \mathbb{R}; y \mapsto 2\langle x, y \rangle$$

$$Df(x) \text{ SOB.} \iff x \neq 0$$

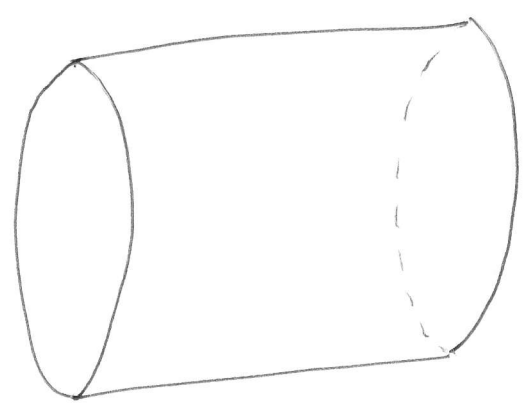
$$f: \mathbb{R}^3 \setminus \{0\} \rightarrow \mathbb{R} \quad \underline{\text{SUB.}}$$

$$f^{-1}(\{0\}) \in \text{UMA VAR}$$

$$f^{-1}(\{0\}) = \{x \mid \|x\|^2 = 1\}$$



ii |



$$f: \mathbb{R}^3 \rightarrow \mathbb{R} \quad ?$$

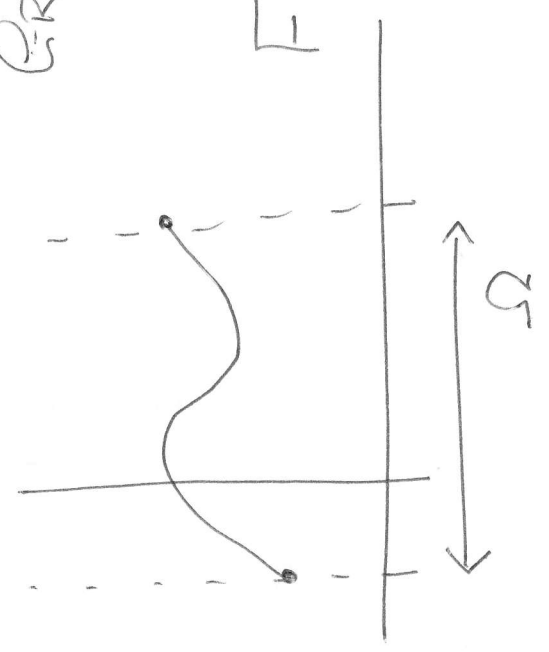
iii |  $\Omega \subseteq \mathbb{R}^2$

$$f: \Omega \rightarrow \mathbb{R}$$

$$G_R(f) := \{ (x, f(x)) \mid x \in \Omega \}$$

$$= F^{-1}(\{0\})$$

$$F(x, y) := y - f(x)$$



$$DF(x, y) : \mathbb{R}^2 \oplus \mathbb{R} \rightarrow \mathbb{R} ; \left( \begin{matrix} x \\ y \end{matrix} \right) \mapsto \mu - Df(x) \cdot y$$

$$z = 0 \quad \underline{DF(x, y) \cdot (0, \mu)} = \mu$$

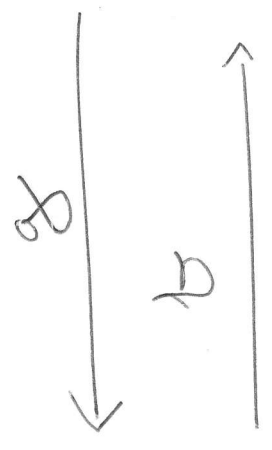
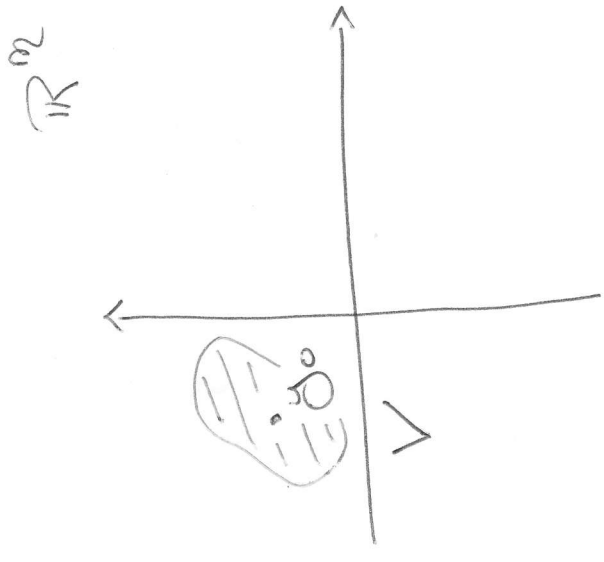
DF SOB.  $\ominus$  F SUB.

$$\hat{b} : \Omega \rightarrow \mathbb{R}^3 ; x \mapsto (x, f(x))$$

$\hat{D}\hat{b}$  ISO.  $\hat{b}$  IMM. HOMEO

$$\text{IM}(\hat{b}) = \text{GR}(\hat{b})$$

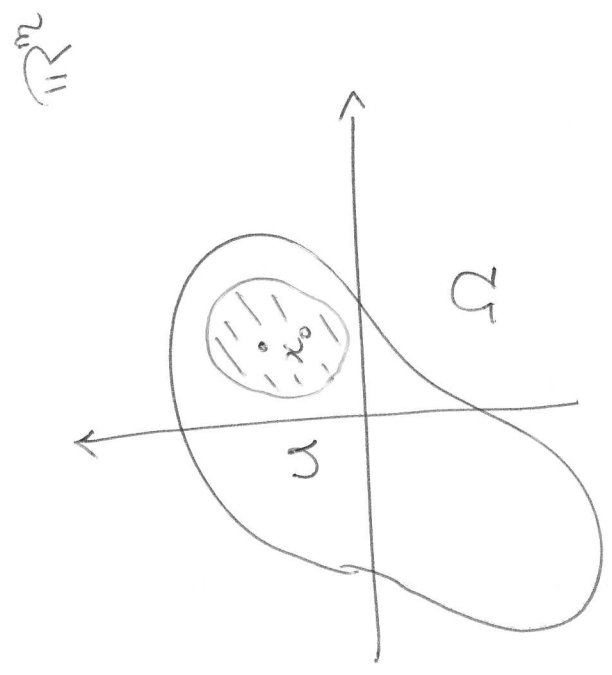
T.F.I.



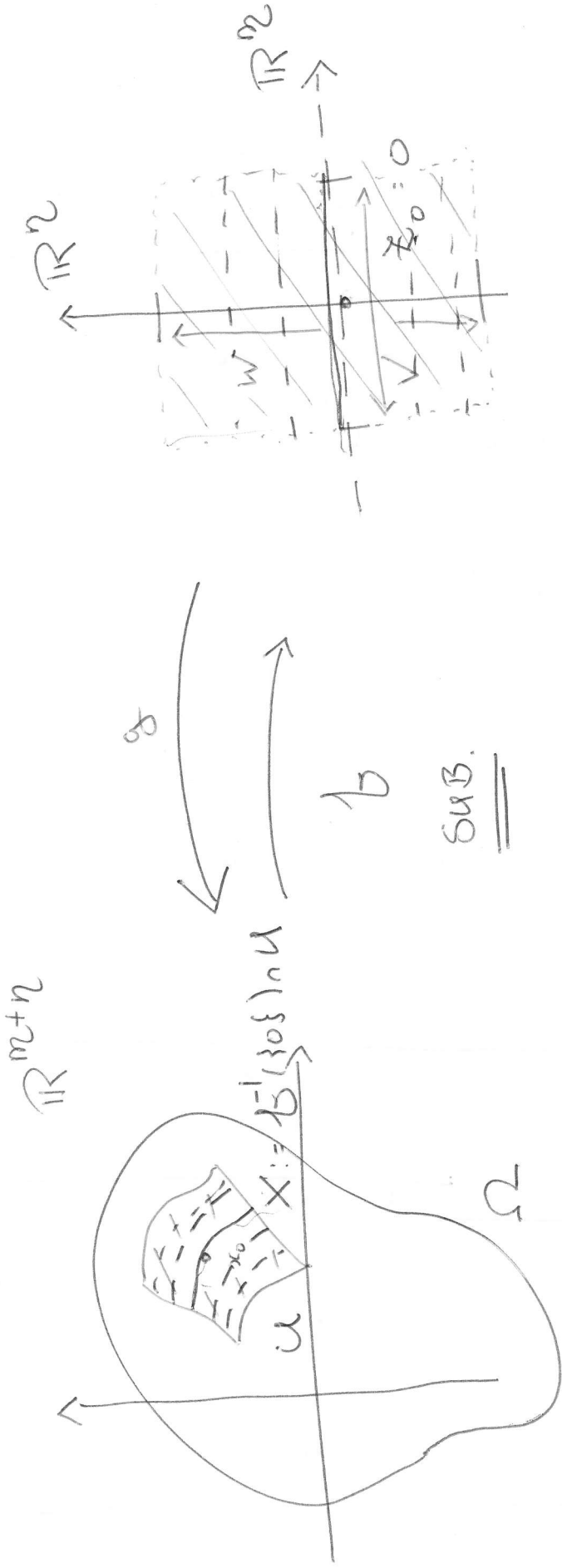
$D\phi(x_0)$  INV.

$$\phi \circ \alpha = I \circ \alpha$$

$$\alpha \circ \phi = I \circ \phi$$

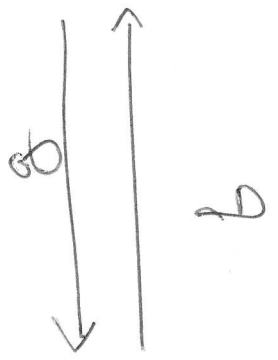
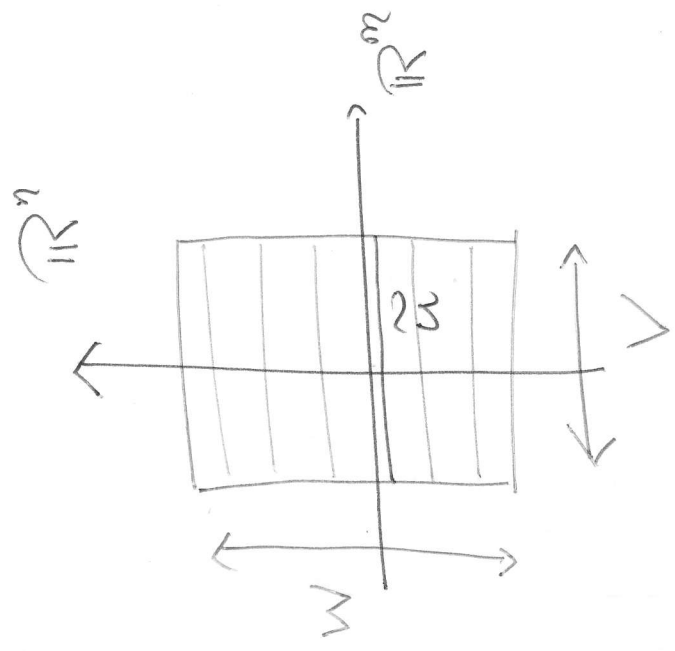
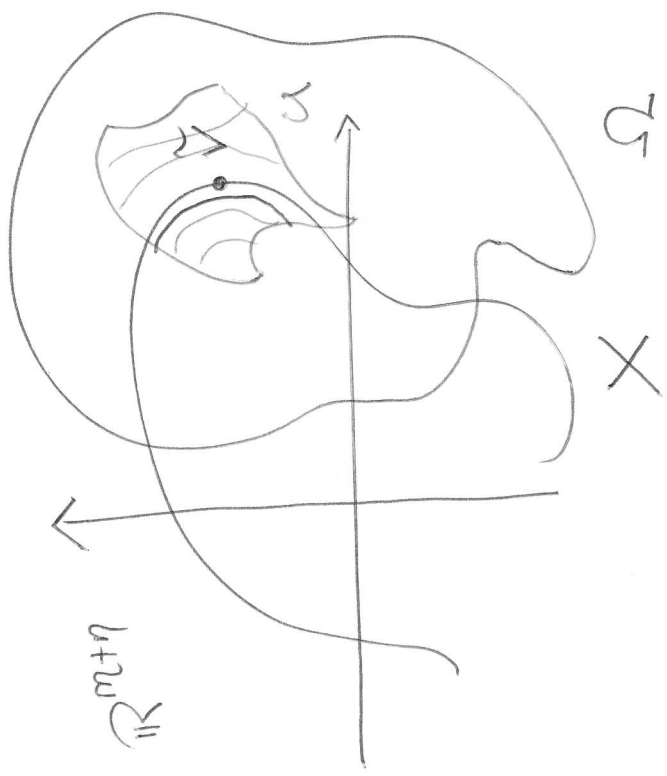


RUDIN



$g$   
 $(b \circ g)(y, z) = z$   
 $X = g(V \times \{0\})$

SUB.  
 SUB = OBS LOC.  
 APLADÍVEL



$$X_n \Omega = \Phi \setminus \{0\}$$

$$X_n U = \Phi (V \times \{0\})$$

$$V := U \times_n X \quad F := \Phi \setminus \{0\}$$

imm.

$$U := V \times \{0\}$$

$$F: U \rightarrow V$$

PARAM