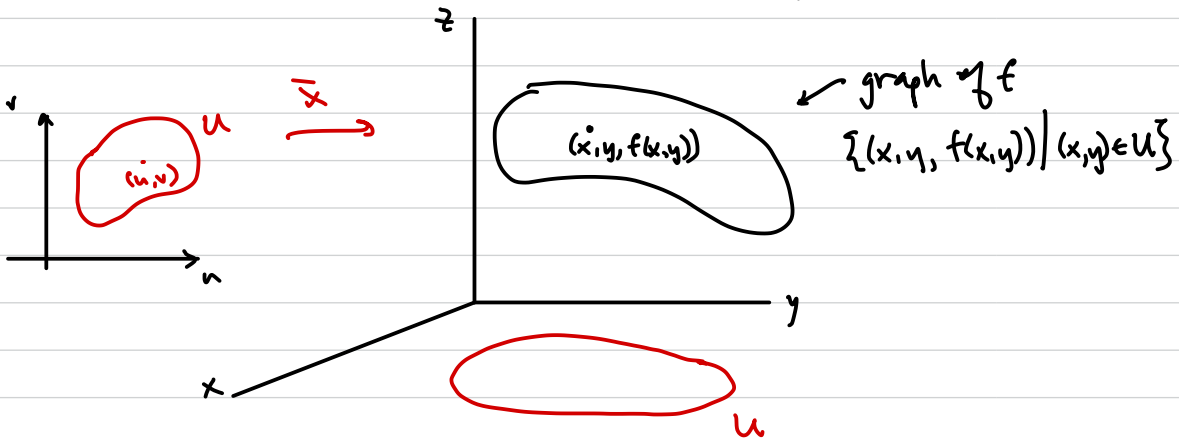


Ex Spc $f: U \subset \mathbb{R}^2 \rightarrow \mathbb{R}$ is a ^{open} diffeable function.

The graph of f over U is a regular surface.



↳ only need one coordinate chart. $\bar{x}(u, v) = (u, v, f(u, v))$

check: 1. \bar{x} diffeable b/c f is diffeable.

2. \bar{x} is cts, and is 1-1 b/c inverse exists,
given by $\bar{x}^{-1}(x, y, z) = (x, y)$
↑
 \bar{x}^{-1} cts. ✓

$$3. d\bar{x}_b = \begin{bmatrix} 1 & 0 \\ 0 & 1 \\ f_u & f_v \end{bmatrix}$$

... rank 2 b/c columns are not scalar mults.