

Ex 3.20

$\Gamma(f)$ homeo to U .

Φf clearly bijection
 $: U \rightarrow \Gamma(f)$

chart is: $\Phi_f^{-1} \varphi: \Gamma(f) \rightarrow U$.

Φf homeomorphism $\Rightarrow \Gamma(f)$ is open
 $\Rightarrow \exists$ open ball B around $\Phi f^{-1}(z)$

so $\forall z \in \Gamma(f)$ $(\Phi_f^{-1}(\Phi f(B)))$ is a
 chart.

Get Hausdorff & 2nd countability easily.

unit n -sphere: set of



Lemma 3.23 (Gluing Lemma)

Let $\{A_i\}$

$$f^{-1}(K) \cap A_i = f_i^{-1}(K)$$

Q: is the graph
 of a diffeable
 f a
 diffeable
 manifold?

$S \hookrightarrow X$ to be a

int. n-manifold if A_i is int. manifold as $f^{-1}(K)$
 might be on the ∂S .