Ex 2.35. for $p_1, p_2 \in X$, $f_1^{-1}(0) = \{p_1\}$ & $f_2^{-1}(0) = \{p_2\}$
for cts f's f_1, f_2.

~~$f_1 \neq L$~~

$(\cdot)$

$f_1^{-1}(A)$

f_1, f_2 cts $\rightarrow g = f_2 + 2$ is cts.

then ~~letting~~ $A \supset \{0\}$, $B \supset \{2\}$ open ~~sets~~ disjoint sets in $\mathbb{R}$.

then $p_1 \in f_1^{-1}(A)$ $p_2 \in g^{-1}(B)$ disjoint & open

~~so then~~

Ex 2.38 $a_1, \dots, a_n$ points

~~$\forall i,j \; \exists \; U$~~

$\forall_{j \neq i} \; \exists \; U_{ij}$ s.t. $a_i \in U_{ij}$, $a_j \notin U_{ij}$

$\{a_i\} = \bigcap_{j \neq i} U_{ij}$ is open ~~and~~

2.40 $U = \bigcup_i B_i$ $B_i \in \mathcal{B}$. so done b) similarly $B_k = \bigcup B_r$ $0<r<k$ r rational so second,

2.42. a) Can write any open ball as the union of these sets ~~so~~ fine!