$\boxed{\text{Quiz 2}}$ Please come talk to me if u have questions

$\overline{E} = E \cup E'$ is closed $\Longleftrightarrow$

$(\overline{E})^c = E^c \cap (E')^c$ is open.

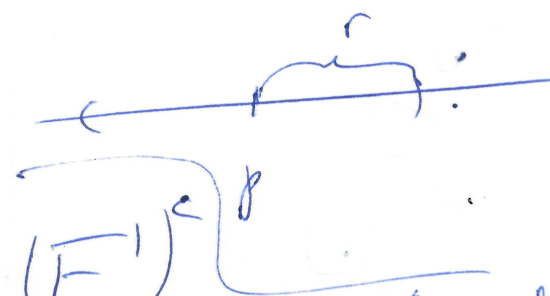
Let $p \in (\overline{E})^c$. We will obtain a neighborhood of p which is in E^c and $(E')^c$.

We know $p \in (E')^c$ and $p \in E^c$.

$p \in (E')^c \to \exists\ N_r(p) \setminus \{p\} \cap E = \emptyset$

$p \in E^c \to N_r(p) \cap E = \emptyset$

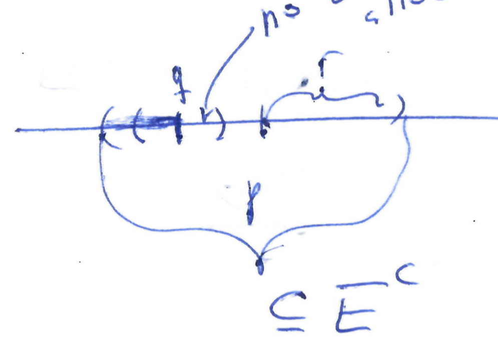
Now, $N_r(p) \subseteq E^c$.



Remains to show $N_r(p) \subseteq (E')^c$

B.W.C. $\exists\ q$, a limit point of E,

s.t. $q \in N_r(p)$.



Set $s = r - d(p,q)$, then

$N_s(q) \subseteq N_r(p)$, but $N_s(q) \cap E \neq \emptyset$. $\otimes$.