(1) **Page 100, 8c.** Prove that $\overline{A - B} \supset \overline{\bar{A} - \bar{B}}$.

Assume on the contrary that $\exists x \in \bar{A} - \bar{B}$ such that $x \notin \overline{A - B}$.

Note that $x \notin \overline{A - B} \implies x \notin \overline{B} \implies \exists$ an open set $U_1$ such that $x \in U_1$ and $U_1 \cap B = \phi$.

As $x \notin \overline{A - B}$, $\exists U_2$ such that $x \in U_2$ and $U_2 \cap (A - B) = \phi$.

Note that $A = (A \cap B) \cup (A - B)$ and also that $U = U_1 \cap U_2$ is open.

Now, $U \cap A = (U_1 \cap U_2) \cap ((A \cap B) \cup (A - B)) = (U_1 \cap U_2 \cap (A \cap B)) \cup (U_1 \cap U_2 \cap (A - B)) \subset (U_1 \cap B) \cup (U_2 \cap (A - B)) = \phi$.

This contradicts the fact that $x \in \bar{A}$ and so each open set containing $x$, in particular $U_1 \cap U_2$, intersects $A$. 