Theorem (2.2.37d)**.** *Let A be a subset of a universal set U. $A \oplus \overline{A} = U$.*

Proof. By Theorem 2.2.35, $A \oplus \overline{A} = (A \cup \overline{A}) - (A \cap \overline{A})$. By the set complementation laws that is $U - \emptyset$. Rather, $U \cap \overline{\emptyset}$ by Theorem 2.2.19. Since $\overline{\emptyset} = U$ we have $U \cap U$, which is obviously U, by the idempotent law. Thus, $A \oplus \overline{A} = U$. ■