Prove that $A \cap B=A-(A-B)$.
Solution: First we show that $A \cap B \subseteq A-(A-B)$. Let $x \in A \cap B$. Then $x \in A$ and $x \in B$. By definition, $x \notin(A-B)$. However, since $x \in A$ and $x \notin(A-B)$, we have that $x \in A-(A-B)$.

Next, we show that $A-(A-B) \subseteq A \cap B$. Let $x \in A-(A-B)$. By definition, this means that $x \in A$ and $x \notin(A-B)$. For $x \notin(A-B)$ to be true, either $x \notin A$ (which we know is false) or $x \in A$ and $x \in B$. Thus $x \in A$ and $x \in B$ and hence by definition, $x \in A \cap B$.

Therefore, $A \cap B=A-(A-B)$

