Theorem (2.2.12)**.** *Let A and B be sets.* $A \cup (A \cap B) = A$.

Proof. Let x be an element in $A \cup (A \cap B)$. By the definitions for set union and set intersection we have $(x \in A) \vee [(x \in A) \wedge (x \in B)]$. Treating each parenthesized object as a discrete object we can immediately apply the logical law of absorption to this definition. The result is $x \in A$. Thus it follows directly from the definition that $A \cup (A \cap B) = A$; the consequence of which proves the absorption law for the union of a set with the intersection of itself and another set. ■