

**Logic 1, WS 2016. Homework 3, given Oct 27, due Nov 3.**

1. Define the syntax and the semantics of disjunction over sets. Study the special cases when the set is empty and when the set contains only one element.
2. Write the equivalences of implication over one constant and one variable.
3. Prove by reducing both sides to CNF:

$$((A \wedge B) \Rightarrow C) \equiv ((A \Rightarrow C) \vee (B \Rightarrow C)).$$

4. Prove by refutation, reduction to CNF, and resolution:

$$A \Rightarrow C, B \Rightarrow C \models (A \wedge B) \Rightarrow C$$