Computability and Complexity: Homework December 2017

Aurélien Ooms*

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Instructions

The homework is due on Monday December 18 10AM at the beginning of the Q&A session. Your solution must be typeset and printed on paper. A correct solution will grant you bonus points for the final exam. Plagiarism will be severely sanctionned.

Homework

Let us start with a definition:

Definition 1. *Let ϕ be a 3CNF-formula. A $\neq$-assignment to the variables of ϕ is one where each clause contains two literals with unequal truth values.*

In other words, a $\neq$-assignment satisfies ϕ without assigning three true literals in any clause.
Let $\neq$SAT be the collection of 3CNF-formulas that have a $\neq$-assignment.

Definition 2. $\neq SAT = \{ \langle \phi \rangle : \phi \text{ has a } \neq\text{-assignment.} \}$

Your task: You are asked to prove that $\neq$SAT is NP-complete.

Hint: Prove that the negation of any $\neq$-assignment of ϕ is also a $\neq$-assignment of ϕ.

*aureooms@ulb.ac.be