

NMMB415 Automata and Computational Complexity Fall 2024/2025

Homework Assignment 5 - Time and space hierarchy

Deadline: 10.1.2025, 23:30 in Moodle.

Problem 1. Let A be a language and $A' = \{x\#0^{|x|^2-|x|-1}; x \in A\}$. Show that $A \in DSPACE(n^3)$ if and only if $A' \in DSPACE(n^{3/2})$.

Problem 2. Show that $QBF \notin DSPACE(n^{1/10})$.

Problem 3. Order by inclusion the classes $EXP, L, NL, NP, P, PH, PSPACE$ and mark which of the inclusions are proper.