CpSc 3500 — Goddard

In-class Practice 24: Complexity Theory

Give an example of, or state that none exists, or state that the existence/nonexistence has not yet been determined:

(a) A problem in $\mathcal{P}$

Testing whether a string is a palindrome

(b) A problem in $\mathcal{NP}$ but not in $\mathcal{P}$

Existence unknown. Exists iff $\mathcal{P} \neq \mathcal{NP}$

(c) A problem not in $\mathcal{NP}$

S_{tm}

(d) A complexity class equal to $\mathcal{PSPACE}$

$\mathcal{NPSPACE}$

(e) A regular language not in $\mathcal{L}$

Does not exist.

(f) A context-free language that is $\mathcal{NP}$-complete

Existence unknown. Exists iff $\mathcal{P} = \mathcal{NP}$