Computational Complexity

Exercise Session 5

Exercise 1. A decision problem $L \subseteq \{0,1\}^*$ is *sparse* if there exists a polynomial p such that for every $n \in \mathbb{N}$ it holds that $|L \cap \{0,1\}^n| \leq p(n)$. Show that every sparse decision problem is in $\mathrm{P}_{/\mathrm{poly}}$.

Exercise 2. Prove that RP $\subseteq$ BPP and that coRP $\subseteq$ BPP.

Exercise 3. Prove that BPP $\subseteq$ PSPACE.