Technische Universität München
Fakultät für Informatik
Lehrstuhl für Effiziente Algorithmen
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Spring Semester 2014
Problem Set 10
June 30, 2014

Complexity Theory

Due date: July 7, 2014 **before** *class!*

Problem 1 (10 Points)

BPL $\subseteq \mathcal{P}$.

Problem 2 (10 Points)

Show the following two claims:

1. *Perfect soundness* collapses the class **IP** to $\mathcal{NP}$, where perfect soundness means soundness with error probability 0.
2. *Perfect completeness* does not change the power of **IP**, where perfect completeness means completeness with error probability 0.

Problem 3 (10 Points)

Show that **IP** $\subseteq$ **PSPACE**.

Problem 4 (10 Points)

Give an interactive protocol to show that Graph Isomorphism $\in$ **IP**.