Computational Complexity

Exercise Session 4

Exercise 1. Prove that L $\subseteq$ P.

Definition 1. We define DP to be the following complexity class:

$$DP = \{\ A \cap B \mid A \in NP, B \in coNP\ \}.$$

Exercise 2.

(a) Explain the difference between DP and the class NP $\cap$ coNP.

(c) Prove that NP $\cup$ coNP $\subseteq$ DP.

(d) Prove that P $=$ DP if and only if P $=$ NP.