Approximation Algorithms, exercise sheet 8

December 9, 2013

1. Reduce SAT to 3SAT

Let SAT be the language of satisfiable boolean formulas in conjunctive normal form. Can you find a reduction from SAT to 3SAT?

2. PCP classes

Show that $\mathrm{PCP}(\log(n), 2) = \mathrm{P}$. Can you find functions $r(n)$ and $q(n)$ such that $\mathrm{PCP}(r(n), q(n))$ is strictly larger than P and strictly smaller than NP?

3. Bound on the length of a proof

Can you bound the length of a proof y for a PCP verifier in the number of random bits it is allowed to use and the number of queries it is allowed to make to the proof?