

Supplementary Homework Assignment #2
Due: October 10, 2012

This assignment is optional. You may use it to improve your grade on Assignment 2. If your grade on Assignment 2 was $\frac{a}{12}$ and your grade on this supplementary assignment is $\frac{b}{12}$, I will count your grade on Assignment 2 as $\max(\frac{a}{12}, \frac{a+b}{24})$.

1. Let $f(n) = n + n^3 \cdot |\cos(\frac{n\pi}{10})|$ and $g(n) = n^2$.
 - (a) Is $f(n)$ in $O(g(n))$? Prove your answer is correct.
 - (b) Is $g(n)$ in $O(f(n))$? Prove your answer is correct.

2. In the 18-CLIQUE problem, the input is a graph, and the question is whether there exists a clique of size 18. Prove that 18-CLIQUE is in P.