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**DUE: Friday February 24th, 5:00pm**

## Problem 1

Prove: If  $\text{SAT} \in \text{PCP}(o(\log n), O(1))$ , then  $\text{P} = \text{NP}$ .

## Problem 2

Definition: For undirected  $G = (V, E)$ :

$$\text{Neighbors}(S) = \{v : \exists u \in S, (u, v) \in E\}$$

$$f(G) = \min \left\{ |S| : V \subseteq \left( S \cup \text{Neighbors}(S) \right) \right\}$$

Prove: There exists  $\gamma < 1$  s.t. obtaining an  $1/\gamma$  approximation to  $f(G)$  is NP-hard.