

Name: _____

Pid: _____

1. (10 points) Let A_1, \dots, A_ℓ be different subsets of $[n]$ such that $A_i \cap A_j \neq \emptyset$ for all $i \neq j \in [\ell]$. Prove that $\ell \leq 2^{n-1}$.

2. (10 points) How many pairs of subsets $A, B \subseteq [n]$ are there such that $A \cap B \neq \emptyset$.