CIS 1600

# Recitation Guide - Week 12

**Topics Covered:** Probabilistic Method

**Problem 1:**

Let G be a bipartite graph with $|V| = n$. Suppose you give each vertex its own list of more than $\log_2 n$ possible colors.

Show that it is possible to provide a valid coloring of $G$ choosing each vertex's color from its own list

**Problem 2:**

Given an arbitrary graph $G(V, E)$, show that there exists an independent set of size at least:

$$\sum_{v \in V} \frac{1}{\deg(v) + 1}$$