

Homework, due Thursday February 28, 2002

Instructions: Show all your work. Provide all the derivations!

1. Describe the following as a graph-theoretic problem. I want to find the largest group of people in the 336 class so that they are all friends. I know who is friends with whom. Define the vertex set, the edge set, and what you are looking for.
2. Consider the question of computing the number of subsets of size k in an n element set? What notation is used for this value? What does that notation mean? Evaluate this for $k = 5$ and $n = 7$.
3. How many subsets are there of an n element set? Calculate this for $n = 5$.
4. How many binary strings (i.e. strings over the alphabet $\{0, 1\}$) are there of length n ? Calculate this for $n = 5$.
5. How many binary strings of length n are there which contain at least two 0's? (Assume $n \geq 2$.)
6. How many strings over the alphabet $\{a, b, c\}$ of length n are there? Calculate this for $n = 5$.
7. How many strings of length n are there (over the alphabet $\{a, b, c\}$) which begin with ab or end with ac ? Assume $n \geq 4$.