

# CS113/DISCRETE MATHEMATICS-SPRING 2024

## Worksheet 14

### Topic: Cardinality Of Sets

In our exploration of cardinality, we will learn how to determine the size of a set, even when dealing with infinite sets. We will study different types of cardinal numbers and will use our previous knowledge of bijections and one-to-one correspondences to determine a sets's cardinality. Happy Learning!

Student's Name and ID: \_\_\_\_\_

Instructor's name: \_\_\_\_\_

1. Show that if  $A$  and  $B$  are sets and  $A \subset B$  then  $|A| \leq |B|$ .

2. Show that if  $A$  and  $B$  are sets,  $A$  is uncountable, and  $A \subseteq B$ , then  $B$  is uncountable.

3. Show that if  $A$  and  $B$  are sets,  $|A| = |B|$ , then  $|\mathcal{P}(A)| = |\mathcal{P}(B)|$ .

4. . If  $A$  is an uncountable set and  $B$  is a countable set, must  $A - B$  be uncountable?