Fall 2019

CS 163 Discrete Math http://neilklingensmith.com/teaching/loyola/cs163/

## Homework 1

Due: September 10, 2019

## Name:

- 1. (15 points) Consider two sets  $S_1 = \{1, 2, 3, 4, 5\}$  and  $S_2 = \{1, 3, 5, 7, 9\}$ . Compute the following: (a) (5 points)  $S_1 \cup S_2 =$ 
  - (b) (5 points)  $S_1 \cap S_2 =$
  - (c) (5 points)  $|S_1 \cap S_2| =$
- 2. (20 points) Consider a sets Ω = {1, 2, 3, 4}
  (a) (10 points) Write the power set P(Ω)
  - (b) (5 points) What is the cardinality of  $\mathcal{P}(\Omega)$ ?
  - (c) (5 points) For a general (non-empty) set A, what is the relationship between the cardinality of A and the cardinality of its power set?

$$card(A) \stackrel{\geq}{\leq} card(\mathcal{P}(A))$$

$$\stackrel{\langle}{=}$$