

# CSCI 480, Fall 2018

## Math Exercises #1

YOUR NAME HERE

Due date: Friday, October 12, Midnight

- Copy this file to your own computer and simply add your own name and answers.
  - Delete this itemized list from your solutions.
  - Submit both your `hw01.tex` file and your `hw01.pdf` file. Do **NOT** zip or combine them into a single file.
  - To make grading easier, please leave the question with the answer.
  - Show your work and explain your answer. If the answer is an integer, I need to know how you got it.
1. Explicitly write out the contents of the following set:

$$\{X \in \mathcal{P}(\{1, 2, 3\}) : 2 \in X\}$$

**Answer:**

2. Negate the following statement:

If  $x$  is a rational number and  $x \neq 0$ , then  $\tan(x)$  is not a rational number.

**Answer:**

3. Compute how many 7-digit numbers can be made from the digits 1,2,3,4,5,6,7 if there is no repetition and the odd digits must appear in an unbroken sequence. Examples: 3571264 or 2415376 or 2467315, but not 7234615.

**Answer:**

4. This problem concerns 4-card hands dealt off a standard 52-card deck. How many 4-card hands are there for which all 4 cards are of different suits or all 4 cards are red?

**Answer:**