Math 181 F1 Quiz 1 Name:

Two pages, 3 problems, 10 points. Explain each answer, but don't simplify it.

Problem 1. *Consider the sets* $A = \{1, 2, 1, 5, 4\}, B = \{2, 0.1, A\}, C = \{A, B\}$.

a. (3 points) How many elements does each set have?

4
3
2

b. (1 point) Is $\emptyset$ *an element of* A*? Explain.*

No, its elements are 1, 2, 4, 5. None of those is $\emptyset$.

c. (1 point) Is $\emptyset$ *a subset of* B*? Explain.*

Yes. Every element of $\emptyset$ is also an element of B (there are no elements to check).

d. (1 point) Write out $B \cup C$*, writing each element only once.*

$\{2, 0.1, A, B\}$

Problem 2 (1 points). *Suppose that for next semester you are interested in taking classes X, Y, and Z. Suppose that there are 3 sections of X, 4 sections of Y, and five sections of Z. How many students can register for all three classes without any two having the same schedule? Explain.*

$3 \times 4 \times 5 = 60$ (schedules)

This is the number of combinations possible. We can give each student one of these without any two having to share — but not more

Problem 3. *There are 52 cards in a standard deck.*

a. *(1 point) At the beginning of a pocker game, you are given two cards at random. How many starting combinations are there? (Note: you don't care what order they are in.)*

$$\frac{52 \times 51}{2}$$

b. *(2 points) During a pocker game, five cards are displayed to everyone: first three at the same time (flop cards), then one more (turn card), and then one more (river card). How many flop-turn-river combinations are there?*

$$\frac{52 \times 51 \times 50}{6} \times 49 \times 48$$

flop turn river