

Place your name on the back of this sheet of paper and nowhere else. Staple your answers on the front of this sheet of paper. Failure to follow these directions will cost you 1 point. If you use double-sided printing or print on the back of scrap paper, I will give you one additional point.

1) (20 points) Draw a Venn Diagram where the universal set is Bethany College students. Draw set F which represents students who are in fraternities or sororities. Draw set S to represent the students involved in intercollegiate sports. Given your diagram, what percentage of the students are in  $F \cap S$ , and  $F \cup S$ ? Explain your logic and state what the interpretation of those sets is.

2) (5 points each) Suppose  $A = \{x \in \mathbb{R}: 0 < x < 10\}$ ,  $B = \{1, 3, 5, 7, 9, 11, 13\}$  and  $C = \{2, 4, 6, 8\}$ . Find the following sets. State what you did.

A)  $A \cap B$

B)  $B \cap C$

C)  $B \cup C$

D) Is any of those sets a subset of one of the others? If yes, then which are they? State how you know.

3) (10 points) Suppose the universal set is  $U = \{x \in \mathbb{Z}: 0 < x \leq 10\}$ ,  $D = \{1, 3, 7, 8\}$ , and  $E = \{4, 6, 8\}$ . What is  $\bar{D} \cap E$ . State how you found it.

4) (5 points each) For each of the following, determine the units, a.k.a. dimensions, of the variables. Explain how you reached that conclusion.

A) price

B) total costs

C) marginal costs

D) GDP per capita

5) (10 points each) Plot the following and state how you found them.

A)  $(0, 10]$

B)  $[11, \infty)$

C) The point  $(3, -2, 3)$