Assignment 2

Math 1030

Due Friday, September 7th

Name: _____

1. *Sets*

   For the sets:

   $$A = \{1, 3, 5\}$$
   $$B = \{2, 4, 5\}$$
   $$C = \{2, 4, 6, \ldots\}$$

   answer:

   (a) $|A| =$

   (b) $A \cup B =$

   (c) $A \cap B =$

   (d) $A \cap C =$

   (e) $B - A =$

2. *Venn Diagrams*

   For the sets:

   $$R = \{\text{Ronald Reagan, Gerald Ford, Richard Nixon}\}$$
   $$D = \{\text{Bill Clinton, Jimmy Carter, Lyndon Johnson, John Kennedy}\}$$
   $$L = \{\text{Jimmy Carter, Ronald Reagan, George Bush, Bill Clinton}\}$$

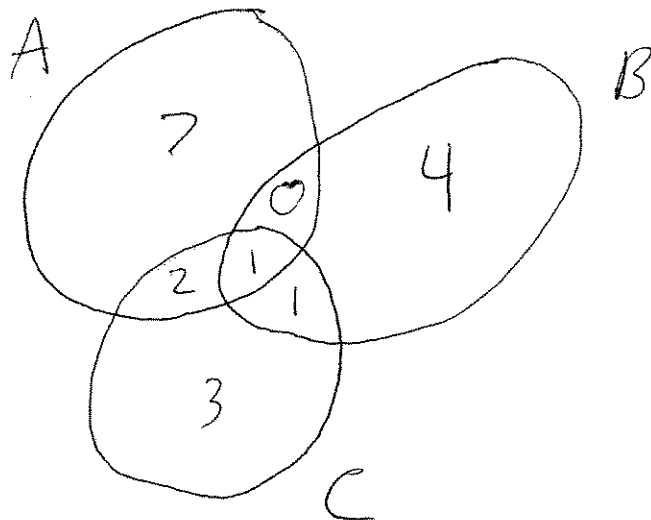   Draw Venn diagrams indicating the relation between the sets:

   (a) R and D

   (b) R and L

   (c) R, D, and L

3. *Using Venn Diagrams*

Based on the Venn diagram below for the sets A, B, and C:

where the numbers indicate the number of elements in that particular region give the size of (also known as number of elements in or the cardinality of) the sets:

(a) $|A| =$

(b) $|A \cap B| =$

(c) $|A \cup B| =$

(d) $|A \cup B \cup C| =$

(e) $|(A \cap B) - C| =$

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4. *Analyzing Arguments*

Analyze the validity of the following arguments. Say whether the argument is valid and whether the argument is sound, and explain why.

(a) Socrates is a man.
    Socrates is mortal.
    Therefore, Socrates is mortal.

(b) All math teachers have blonde hair.
    Dylan Zwick has blonde hair.
    Therefore, Dylan Zwick is a math teacher.

(c) All math teachers are giraffes.
    Dylan Zwick is a math teacher.
    Therefore, Dylan Zwick is a giraffe.