

## CISC 1100: HW 1

NAME:

Let

$$A = \{0, 1, 2, 3, 4, 5, \}$$

$$B = \{2, 4, 6, 8, 10\}$$

$$C = \{1, 2, 3, 5, 7\}$$

$$D = \{1, 3, 5, 7, 9\}$$

1) a) Find  $A \cup B$ .

b) Find  $A - C$ .

c) Find  $D \cap B$ .

d) Find  $(D \cup B) \cap C$ .

e) Find  $D \cup (B \cap C)$ .

2) Let  $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$  be a universal set, with  $A, B \subseteq U$ .

a) Write in set lister notation:  $A = \{x \in U \mid x \text{ is a multiple of } 3\}$ .

b) Write in set builder notation:  $B = \{2, 3, 5, 7\}$ .

c) Find  $A - B$  and  $B - A$ .

d) What is  $[(B - A) \cap (A - B)]'$ ? Hint: this is a trick question.

3) Suppose that  $U$  is a universal set with  $A, B \subseteq U$ . Prove the following law in any fashion:

$$(A \cup B)' = A' \cap B'$$

4) Prove the following law in any fashion:

$$A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$$