§2.1 # WrittenHW #3 TCSS 321

1. [3] Suppose $A = \{2, 6, 8\}$, $B = \emptyset$, $C = \{2x | x \in \mathbb{Z}\}$, and $D = \{4, 6, 8\}$. Determine which of these sets are subset of which other of these sets.

2. [2] Determine whether the following statement is true or false.

   (a) $\emptyset \in \{\emptyset\}$

   (b) $\{\emptyset\} \in \{\emptyset\}$

3. [3] Let A and B be two sets. If the power set of A is equal to the power set of B, is $A = B$? Justify your answer.

4. [2] Let A, B, C, and D be sets. Is $(A \times B) \times (C \times D) = A \times (B \times C) \times D$? Justify your answer.

§2.2 # TCSS 321 Winter 2013

1. [2] If A and B are sets such that $A \setminus B = \{2, 5, 6, 8\}$, $B \setminus A = \{1, 10\}$, and $A \cap B = \{3, 7, 9\}$, find the sets A and B.

2. [3] Let A, B, and C be sets, prove $(A \setminus B) \setminus C \subseteq A \setminus C$.

3. [3] Let A, B, and C be sets, prove the (second) associative law. That is, prove: $A \cap (B \cap C) = (A \cap B) \cap C)$.

4. [2] Let A, B, C, and D be sets. Draw the Venn diagram for $\overline{A} \cup \overline{B} \cup \overline{C} \cup \overline{D}$