CSE 321: Discrete Structures
Assignment #2
October 9, 2002
Due: Wednesday, October 16

Reading Assignment: Sections 1.5, 1.6, 2.3 - 2.5.

Problems:

1. Give the negation of each of the following statements:

   - All good students study hard.
   - No males give birth to their young.
   - No students in mathematics are unable to use a computer.
   - $\forall x \exists y \ x = y^2$

2. Section 1.3, exercise 12, parts a, c, d, h.

3. Section 1.3, exercise 24, a, b, d.

4. Which of the following statements are true?

   - $\{x\} \subseteq \{x\}$
   - $\{x\} \in \{x, \{x\}\}$
   - $\{x\} \in \{x\}$
   - $\{x, \{x\}\} \subseteq \mathcal{P}(\{x\})$

5. Prove the following statements using set builder notation:

   - $(A \cap B = A) \rightarrow (A \subseteq B)$
   - $(A \subseteq B) \leftrightarrow (\bar{B} \subseteq \bar{A})$

6. Section 1.6, exercise 6, parts a, f, g and h.

7. Section 1.6, exercise 12.

8. **Extra Credit:** Fuzzy logic and fuzzy sets.

   - Section 1.1, exercise 32
   - Section 1.5, exercise 50