

## Homework 4

Due 10.06.11 (Thursday)

1. Let  $A = \{1, 2, 3, 4, 5\}$  and  $B = \{3, 4, 5, 6\}$ . Please compute the following:
  - a.  $A \cup B$
  - b.  $A \cap B$
  - c.  $A - B$
  - d.  $B - A$
  - e.  $A \times B$
  - f.  $B \times A$
  - g. the power set of  $A$
2. True or False. For each of the following statements, determine whether the statement is true or false. If it is true, please supply a proof like what we've done in class. If the statement is false, please present a counterexample that violates the statement. Let  $A, B$  and  $C$  be sets.
  - a.  $A - (B - C) = (A - B) - C$
  - b. If  $A \cup C = B \cup C$  then  $A = B$ .
  - c. If  $A \cap C = B \cap C$  then  $A = B$ .
  - d. If  $A = B - C$  then  $B = A \cup C$ .
  - e.  $|A - B| = |A| - |B|$ .
  - f.  $(A - B) \cup B = A$ .
  - g.  $(A \cup B) - B = A$ .
3. Sec. 2.2: 2, 26, 48.