Computer Science 4200/5200 Summer 2011
Homework 1 - chapter 1

(1) Let A and B be sets

Prove

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

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

(iii) $A - B = A \cap \overline{B}$

(2) Let $f: A \to B$ and $g: A \to B$ be functions

Then $f = g \iff$ (if and only if)

$f(x) = g(x) \ \forall x \in A$

Prove the above statement

(3) Bijections are 1-1 and onto functions.

Two sets A and B are equivalent if

$\exists f$, bijection $\to f: A \to B$

Then we write $A \cong B$.

Then the $Card(A) = Card(B)$

Suppose $A \cong C$ and $B \cong C$ with $A \cap B = \phi$ and $C \cap D = \phi$,
show

$$A \cup B \cong C \cup D$$

Hint: Define 1-1 & onto (bijection)

$$f: A \cup B \to C \cup D$$

(4) Graduate students.

Textbook # 40 - chapter 1.