Mathematics s21 2007 - Day Fourteen

1. 9:00-10:20
   (a) Presentation of selected homework problems.
   (b) In pairs, read section 5.6, doing all exercises and problems.
   (c) Presentation of selected exercises.
2. 10:20-10:35 Break
3. 10:35-11:30
   (a) In pairs, read section 7.1, doing all exercises and problems.
   (b) Prove Theorems 7.1.3 and 7.1.5.
4. 11:30-11:55 Maple
5. 11:55-1:00 Lunch
6. 1:00-3:00
   (a) Presentation of selected exercises.
   (b) In pairs, read section 7.2, doing the exercises and proving Theorem 7.2.3.
   (c) Decide whether the sets in each pair below have the same cardinality. If they do, find a one-to-one correspondence between them.
      i. $(-\infty, \infty)$ and $(0, \infty)$
      ii. $\{n \in \mathbb{N} : n \text{ is perfect and } n \leq 100\}$ and $\mathcal{P}(\mathcal{P}(\emptyset))$
      iii. $\mathbb{R}$ and $\mathcal{P}(\mathcal{P}(\emptyset))$
      iv. $(0, 1)$ and $(-\infty, \infty)$
      v. $(0, 1)$ and $[0, 1]$
   (d) Presentation of selected exercises.

Today's Key Ideas:
binary operation
commutative
associative
cardinality
finite
infinite

Homework

1. Do Problem 24 from page 134.
2. Do Problem 2 from page 176.
3. Show (by finding a function between the two sets and proving it is a one-to-one correspondence) or disprove that the sets in each pair below have the same cardinality.
   (a) $\mathbb{Z}$ and $\{x \in \mathbb{Z} : x \text{ is divisible by } 10\}$
   (b) $\mathbb{Z}$ and the odd natural numbers
4. Read sections 7.3 and 7.4.

LaTeX Assignment 4
(Due Thursday at 1 p.m. Returned to you Friday at 9 a.m. Final version due Monday at 1 p.m.)
Show (by finding a function between the two sets and proving it is a one-to-one correspondence) that $(1, 7)$ and $(5, 8)$ have the same cardinality.