

Discrete Mathematics

First Session — Tuesday 18 August 2015

Hans Georg Schaathun

31st August 2015

The first session is used for two activities. Firstly, a presentation of the module and its requirements (see slides), and secondly a set of repetition exercise (see below). After the first session, it is important that you prepare for the first session of Week 1, i.e. that you watch the assigned videos.

All material for this module is available on the web. Some material is password protected. Username and password is published in Fronter.

Course web page <http://www.hg.schaathun.net/DisMath/>.

Mirror <http://kerckhoffs.schaathun.net/DisMath/>; please use this in the event of technical problems with the main server.

This document is available in a web version and a PDF version.

1 Repetition Exercises

You should be able to answer these exercises based on Level 1 syllabus. If you find the problems difficult, you should seek answers in previous textbooks.

Exercise 1.1 *Rewrite the following formulæ as plain English or Scandinavian sentences:*

1. $S = \{1, 2, 5\}$

2. $x \in A$

3. $A \ni x$

4. $A \subset \{1, 2, 3, \dots\}$

5. $|S| = n$

Exercise 1.2 Consider two sets $A = \{a, b, c, d\}$ and $B = \{b, c, e, f\}$. What are the elements of the following sets

$$A \cap B \tag{1}$$

$$A \cup B \tag{2}$$

$$A \setminus B \text{ sometimes written } A - B \tag{3}$$

Exercise 1.3 What do we mean when we say that A and B are disjoint?

Exercise 1.4

1. Explain what a function is?
2. Give an example of a function on the real numbers.
3. Give an example of a function from $\{1, 2\}$ to $\{a, b, c\}$

Exercise 1.5 Let $f : A \rightarrow B$ be a function. And suppose $y = f(x)$, and for simplicity, A and B are disjoint. True or false?

- $f(x) \in A$
- $f(x) \in B$
- $x \in A$
- $x \in B$