lecture 1

naive set theory

$\phi := \{\}$

$\subseteq$

$\in$

lecture 2

$A \setminus B$

$A \wedge B$

$A \cup B$

$A \cap B = (A^c \cup B^c)^c$

$A \cup B = (A^c \wedge B^c)^c$

Cartesian Product

$A \times B$

$(a,b) := \{\{a\},\{a,b\}\}$.

lecture 3

function

injection

surjection

bijective

f-image

f-preimage

left-inverse

right-inverse

inverse

lecture 4

relations

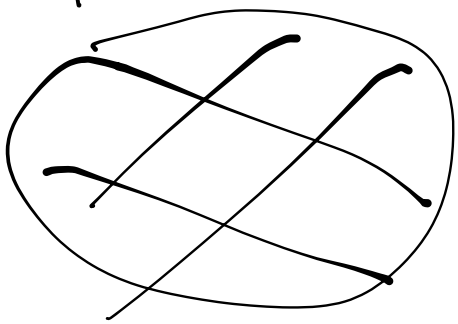
equivalence relation

R-class

$[x]_R := \{y \in A : xRy\}$

lecture 5

A partition



$P(x)$ powerset

quotient

X/R

$\frac{x}{y} := [(x,y)]_R$

$\mathbb{Q} = \mathbb{Z} \times \mathbb{Z}^{\dagger} / R$

the set of rational

ZFC alphabet

$= \wedge \vee \neg \forall \exists$

$\Rightarrow ( ) \in$

$x_1 \; x_2 \; x_3$

lecture 6.

Rosell's paradox

0 set existence

1. Pairing

2. Union

3. Powerset

4. Subset

lecture 7

5. replacement

6. infinity

7. foundation

8 axiom of choice

9 extensionality

partial orders

$\leq$

- total orders

$<$

well-orders.