CSC236 Worksheet 3

Hyungmo Gu

May 4, 2020

Question 1

Rough Work:

Predicate logic: $\forall a \subseteq \mathbb{N},\ A \neq \emptyset \wedge (\exists a \in A,\ \forall a' \in A \Rightarrow a \leq a')$

Notes:

- **Principle of Well-Ordering:** Any nonempty subset A of $\mathbb{N}$ contains a minimum element; i.e. for any $A \subseteq \mathbb{N}$ such that $A \neq \emptyset$, there is some $a \in A$ such that for all $a' \in A$, $a \leq a'$.
- examples of well-ordered sets
  1. $\mathbb{N} \cup \{0\}$
  2. $\mathbb{N} \cup \{1, 2\}$
  3. $\{n \in \mathbb{N} : n > 5\}$
- examples of non-well-ordered sets
  1. $\mathbb{R}$ and the open interval $(0, 2)$
  2. $\mathbb{Z}$

Question 2

Question 3