DISKRET MATEMATIK 1

Set, Functions

Exercice 2,3 of section 1.3.
  Exercice 1, 12, 18,19 of section 2.1.
  Exercice 1,5,6,9, 10 of section 2.3.
  Exercice 2,9,10,11,12,13,15,16,19,20 of section 1.2 of Hein.

1. If l is a list of integers we write S_l the set of integers that occur in the list l. Write sml programs of type

   ```
   int list * int list -> bool
   ```

   that decides $S_l \subseteq S_{l'}$ and $S_l = S_{l'}$.

2. Define the symmetric difference of two sets $A \oplus B$ as $A - B \cup B - A$. Prove that $\oplus$ is associative: $A \oplus (B \oplus C) = (A \oplus B) \oplus C$.

   Hence we can write expressions such as $A_1 \oplus \ldots \oplus A_k$ without parenthesis. Prove that $A_1 \oplus \ldots \oplus A_k$ is the set of elements x such that $|\{i \mid x \in A_i\}|$ is odd.