Exercise 0.1. Read Chapter 14.

Exercise 0.2. Prove the following using induction for infinite lists on the list xs.

Thm. 1 For every list ys and every infinite list xs, $xs = xs \mathbin{++} ys$

Consider the definition of the function *cycle*.

$$cycle\,[\,] = \bot$$
$$cycle(x : xs) = (x : xs) \mathbin{++} cycle(x : xs)$$

Exercise 0.3. Prove the following using induction for infinite lists on the list xs.

Thm. 2 For every infinite list xs, $cycle(xs) = xs$.

Consider the definition of the function *length*.

$$length\,[\,] = 0$$
$$length(x : xs) = 1 + length\,xs$$

Exercise 0.4. Prove the following using induction for infinite lists on the list xs.

Thm. 3 For every infinite list xs, $length(xs) = \bot$.