

Monday

**Exercise 1** Let  $\mathcal{L}$  be the language of predicate logic formed with the symbols  $\mathbb{C}$ ,  $\mathbb{N}$ ,  $0$ ,  $=$ ,  $\wedge$  — power —,  $\in$  and  $\#$  — cardinal.

1. Write the proposition

*Every non zero complex number has  $n$   $n$ th roots.*

*as a proposition of the language  $\mathcal{L}$ .*

2. Which symbols are predicate symbols? Which symbols are function symbols?
3. What is the arity of each symbol?

**Exercise 2** Let  $P$  be a property such that

- $0$  satisfies  $P$ ,
- and if  $n$  satisfies  $P$ , then so does  $n + 2$ .

*Show that all even numbers satisfy  $P$ .*