

Examlet 3b Foundations of Advanced Math 3/24/17

1. a) State the definition of sets A and B being **equipollent**.

b) Give five distinct examples of sets equipollent to \mathbb{N} .

2. The composition of two injective functions is injective.

3. The composition of two surjective functions is surjective.

4. Let $f(x) = \sqrt{9x+5}$. What is the inverse function for f , and what are its domain and codomain?

5. a) Let $f_1: \mathbb{R} \rightarrow \mathbb{R}$ and $f_2: \mathbb{R} \rightarrow \mathbb{R}$ be odd functions. Then $f_1 + f_2$ is an odd function.

b) Let $n \in \mathbb{N}$, and $f_i: \mathbb{R} \rightarrow \mathbb{R}$ be an odd function for each $i \in \{x \in \mathbb{N} \mid 1 \leq x \leq n\}$. Then $\sum_{i=1}^n f_i$ is an odd function.

