

Examlet 3 Foundations of Advanced Math 3/23/12

1. a) State the definition of a surjection.

b) Give an example of a function from \mathbb{N} to \mathbb{N} which is injective, or make it clear why it is not possible.

2. a) Let f and g be bounded functions, both with domain D . Then $f + g$ is a bounded function.

a) Let f and g be bounded functions, both with domain D . Then $f - g$ is a bounded function.

3. If $f:A \rightarrow B$ and $g:B \rightarrow C$ are surjective functions, then $g \circ f$ is surjective.

4. a) If $f: A \rightarrow B$ has an inverse function g , then g has f as an inverse function also.

b) Let $f: \mathbb{N} \rightarrow \mathbb{N}$ be defined by $f(n) = 5$ for all $n \in \mathbb{N}$. Find the inverse function of f , or explain why one doesn't exist.

5. If A is equipollent to B , and B is equipollent to C , then A is equipollent to C .

