

Analysis I — Quiz 1
14.09.10

Q1.1. Show that there exists a function $f : \{0, 1\} \rightarrow \{0, 1\}$ and a subset $B \subset \{0, 1\}$ such that $B \neq f(f^{-1}(B))$.

Q1.2. Let $X = \mathbb{Z} \times \mathbb{N}$ and define

$$R_{\mathbb{Q}} = \{((z, m), (\tilde{z}, \tilde{m})) \in (\mathbb{Z} \times \mathbb{N}) \times (\mathbb{Z} \times \mathbb{N}) : z \cdot \tilde{m} = \tilde{z} \cdot m\}.$$

Show that the relation $R_{\mathbb{Q}}$ is transitive.