

Homework 7, Math 215

1. If $f(x) = x^2 + 1$ and $g(x) = \sqrt{x}$ find $g \circ f(x)$.
2. Find a function $f : \mathbb{R} \rightarrow \mathbb{R}$ such that $Imf = \{y \in \mathbb{R} : y \geq 0\}$
3. Find a function $f : \mathbb{R} \rightarrow \mathbb{R}$ such that $Imf = \mathbb{R} - \mathbb{Z}$.
4. Suppose $f : X \rightarrow Y$ is an injection and $g : Y \rightarrow Z$ is an injection. Show that $g \circ f : X \rightarrow Z$ is an injection.