Math 447: Quiz 1

September 5, 2014.

1. Let $f(x) = \frac{1}{x^2}, x \neq 0, x \in \mathbb{R}$.

- (a) Determine the direct image f(E) where $E = \{x \in \mathbb{R} : 1 \le x \le 2\}$.
- (b) Determine the inverse image $f^{-1}(G)$ where $G = \{x \in \mathbb{R} : 1 \le x \le 4\}$.

2. Prove that $n+1 \leq 2^n$ for all $n \in \mathbb{N}$.