PROBLEM SHEET 7

(1) Not 1-1, not su, not bijective, not invertible

(2) Not 1-1, su, not bijective, not invertible

(3) If $\#\{\text{students}\} \leq \#\{\text{chairs}\}$, then 1-1
If $\#\{\text{students}\} \geq \#\{\text{chairs}\}$, then su
If $\#\{\text{students}\} = \#\{\text{chairs}\}$, then bijective

(4) Proof of injectivity +

- $f^{-1}(x) = x^2 + 1$
- $f^{-1}(x) = \sqrt[3]{x}$
- $f^{-1}(x) = (x-1)^3$
- $f^{-1}(x) = -\sqrt{x}$
- $f^{-1}(x) = \dfrac{x}{1-x}$
- $f^{-1}(x) = \sqrt{\dfrac{x^2}{1-x^2}}$
- $f^{-1}(x) = \begin{cases} \sqrt{x-1} & \text{if } x \geq 1 \\ -\sqrt{1-x} & \text{if } x \leq 1 \end{cases}$

(5), (6), (7) proofs