Problem 1: Let $F: \mathbb{N}^{\mathbb{N}} \to \mathbb{N}$ be the function $F(f) = f(0)$

a. Is f 1-1?

b. Is f onto?

Problem 2: Let $f: \mathbb{R} \to \mathbb{R}$ be defined by:

$$f(x) = \begin{cases} x^2 & x \geq 0 \\ .5x & x < 0 \end{cases}$$

(a) What is $f \circ f$?

(b) Show that f is invertable

(c) Compute f^{-1}

Problem 3: Find a bijection between the following pairs of sets:

(1) $\mathbb{N}$, $(\mathbb{N}_{even} \setminus \{0, 2\}) \cup \{-5\}$

(2) $\mathbb{R}$, $(-\infty, 0] \cup (1, \infty)$

Problem 4: Let $f: A \to B$ $g: B \to C$ be functions show that if f, g are 1-1 then $g \circ f$ is 1-1