Introduction to Mathematical Reasoning Assignment #6 Part C: Due Wednesday, 11/16/11

- 2. For each of the functions below, answer the following questions, and give a brief explanation for your answer (complete proofs are not necessary for now).
 - Is the function injective?
 - Is the function surjective?
 - (a) $f: \mathbb{R} \to \mathbb{R}$, defined by

$$f(x) = x^2 - 4x + 5.$$

(b) $g: \mathbb{R} \setminus \{-1\} \to \mathbb{R}$, defined by

$$g(x) = \frac{x+3}{x+1}.$$

(c) $h: \mathbb{R}^+ \to \mathbb{R}$, defined by

$$h(x) = \begin{cases} \frac{1-x}{x}, & \text{if } 0 < x \le 1, \\ 1-x, & \text{if } x \ge 1. \end{cases}$$