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) $f \colon \mathbb{R} \to \mathbb{R}$, defined by
$$f(x) = x^2 - 4x + 5.$$

(b) $g \colon \mathbb{R} \setminus \{-1\} \to \mathbb{R}$, defined by
$$g(x) = \frac{x+3}{x+1}.$$

(c) $h \colon \mathbb{R}^+ \to \mathbb{R}$, defined by
$$h(x) = \begin{cases} \dfrac{1-x}{x}, & \text{if } 0 < x \le 1, \\ 1 - x, & \text{if } x \ge 1. \end{cases}$$