

## Examples on Injective, Surjective, and Bijective functions

### Example 12.4.

**Proposition:** The function  $f : \mathbb{R} - \{0\} \rightarrow \mathbb{R}$  defined by the formula  $f(x) = \frac{1}{x} + 1$  is injective but not surjective.

**Example 12.5.**

**Proposition:** The function  $f : \mathbb{R} - \{0\} \rightarrow \mathbb{R} - \{1\}$  is injective and surjective (hence bijective).

**Example 12.6**

**Proposition:** The function  $g : \mathbb{Z} \times \mathbb{Z} \rightarrow \mathbb{Z} \times \mathbb{Z}$  defined by the formula  $g(m, n) = (m + n, m + 2n)$  is both injective and surjective.