



## Why

We want to solve equations with squares.

## Definition

Let  $b$  be any real number. We want to find  $a$  to solve

$$a^2 = b.$$

We call a solution  $a$  a *square root* of  $b$ .

**Proposition 1.** *A positive real number has two square roots.*

Despite the above proposition, we still speak of *the square root* of a real number, which is the positive square root. We also speak of the *square root function* which associates a real number to its positive square root.

**Proposition 2.** *A two roots or a positive real number are additive inverses.*

## Notation

As with natural numbers, we denote *the* (positive) square root of the real number  $x \in \mathbf{R}$  by  $\sqrt{x}$ . Some authors refer to both the roots of  $x$  by writing  $\pm\sqrt{x}$ .



