



## Real Square Roots

### 1 Why

We want to solve equations with squares.

### 2 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 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.

### 3 Why

As with natural numbers, we denote the square root of  $x$  by  $\sqrt{x}$ .