



## REAL SQUARE ROOTS

### 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  $b$ .

**Prop. 1.** *A positive real number has two square roots.*<sup>1</sup>

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.

**Prop. 2.** *A two roots of a positive real number are additive inverses.*<sup>2</sup>

### 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  $\pm\sqrt{x}$ .

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<sup>1</sup>Future editions will include an account.

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