

Natural Square Roots

1 Why

We want to solve equations with squares.

2 Definition

Let m be a square number. We want to find n to satisfy

$$n^2 = m$$
.

We call such an n a square root of m.

Proposition 1. The square root of a square number is unique.

This result motivates definining a function the *square root function* which square numbers to their roots.

3 Notation

Let S denote the set of square numbers. $(S \subset \mathbf{N})$. Let $f : S \to N$ be the function such that f(s) is the square root of s. each square number with its root. We denote the result of f on n by \sqrt{n} .