



## Complex Numbers

### 1 Why

We want to find roots of negative numbers

### 2 Definition

A *complex number* is an ordered pair of real numbers. The *real part* of a complex number is its first coordinate. The *imaginary part* of a complex number is its second coordinate.

#### 2.1 Notation

Let  $z$  be a complex number. We denote the real part of  $z$  by  $\mathbf{Re}(z)$ , read "real of  $z$ ," and the imaginary part by  $\mathbf{Im}(z)$ , read "imaginary of  $z$ ." So if  $z = (a, b)$ , then  $\mathbf{Re}(z) = a$  and  $\mathbf{Im}(z) = b$ .