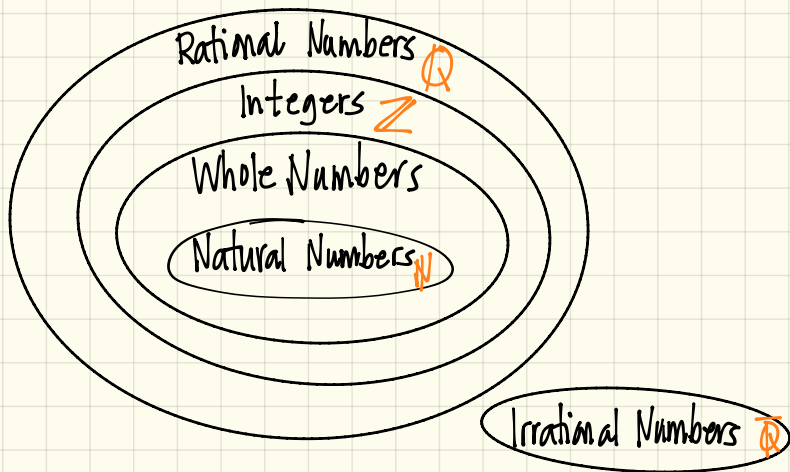


1.6 Complex Number System

Old Real Numbers (\mathbb{R})

- Natural Numbers - 1, 2, 3, 4, ... (positive whole numbers)
- Whole Numbers - 0, 1, 2, 3, 4, ... (natural numbers plus zero)
- Integers - ... -3, -2, -1, 0, 1, 2, 3, ... (positive & natural numbers plus zero)
- Rational Numbers - any quotient fraction, $\frac{p}{q}$, where p & q are integers.
- $\frac{1}{2}, \frac{2}{3}, \frac{1}{5}, \frac{1}{1}, \dots$
- Irrational Numbers - repeating decimals (decimal that does not terminate)
- π (3.14...), e (2.71...), $\sqrt{2}$

Real Numbers Systems \mathbb{R}



[Example] Classify the type of Real Number.

① 5 - Natural, Whole, Integer, Rational

③ $\sqrt{7}$ - Irrational Number

② 0.575 - Rational Number

④ $5.\overline{75}$ - Rational Number

⑤ $\frac{\sqrt{10}}{2}$ - Irrational Number

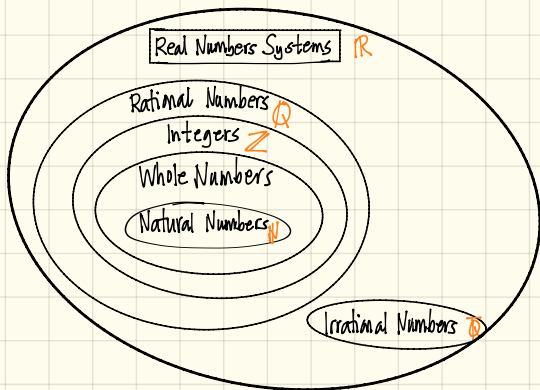
[New] Complex Numbers System \mathbb{C}

Let's consider the number $\sqrt{-16}$. Classify the type of number $\sqrt{-16}$ is.

$\sqrt{-16} = 4i$ → "4i" is an imaginary number.

(More Examples) $\sqrt{-20}$, $6i$, $5i$, $\sqrt{-80}$

How does imaginary numbers fit with Real Numbers?



Now, let's recall standard form for a complex number.

$$\text{Standard Form} = \underbrace{a}_{\text{Real Number}} + \underbrace{bi}_{\text{Imaginary Number}}$$

- The Standard Form for a Complex Number consist of a real number component & imaginary component.

