

1.2 Sets of Numbers

Natural numbers: \mathbb{N}

Whole numbers: \mathbb{N}_0

Integers: \mathbb{Z}

Positive integers: \mathbb{Z}^+

Negative integers: \mathbb{Z}^-

Rational numbers: \mathbb{Q}

Real numbers: \mathbb{R}

Complex numbers: \mathbb{C}

26. Natural Numbers

Counting numbers: $\mathbb{N} = \{1, 2, 3, \dots\}$.

27. Whole Numbers

Counting numbers and zero: $\mathbb{N}_0 = \{0, 1, 2, 3, \dots\}$.

28. Integers

Whole numbers and their opposites and zero:

$$\mathbb{Z}^+ = \mathbb{N} = \{1, 2, 3, \dots\},$$

$$\mathbb{Z}^- = \{\dots, -3, -2, -1\},$$

$$\mathbb{Z} = \mathbb{Z}^- \cup \{0\} \cup \mathbb{Z}^+ = \{\dots, -3, -2, -1, 0, 1, 2, 3, \dots\}.$$

29. Rational Numbers

Repeating or terminating decimals:

$$\mathbb{Q} = \left\{ x \mid x = \frac{a}{b} \text{ and } a \in \mathbb{Z} \text{ and } b \in \mathbb{Z} \text{ and } b \neq 0 \right\}.$$

30. Irrational Numbers

Nonrepeating and nonterminating decimals.

31. Real Numbers
Union of rational and irrational numbers: \mathbb{R} .
32. Complex Numbers
 $C = \{x + iy \mid x \in \mathbb{R} \text{ and } y \in \mathbb{R}\}$,
where i is the imaginary unit.
33. $\mathbb{N} \subset \mathbb{Z} \subset \mathbb{Q} \subset \mathbb{R} \subset \mathbb{C}$

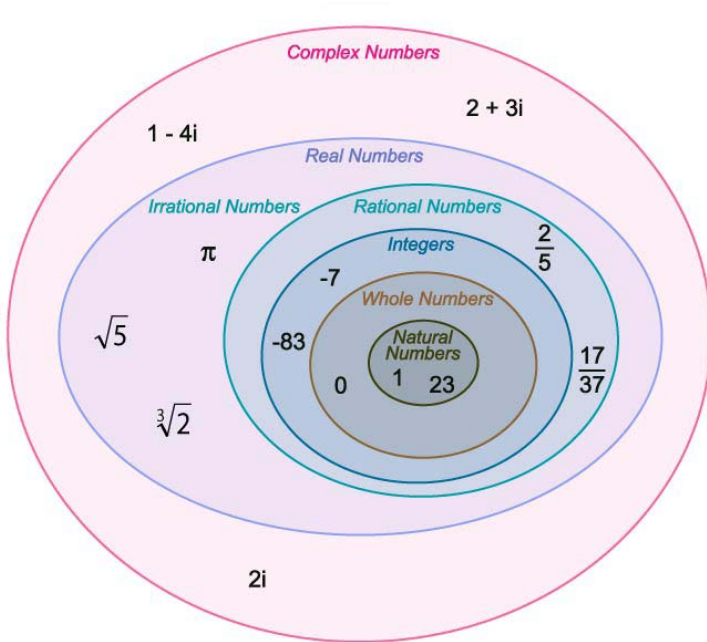


Figure 5.