

Section 1.3: Operations on Sets

Tuesday, September 23, 2014
4:02 PM

union: $A \cup B$

$$\text{let } A = \{1, 2, 3\}$$

$$B = \{2, 3, 4, 5\}$$

$$\text{then } A \cup B = \{1, 2, 3, 4, 5\}$$

definition: the union of sets A and B is the set of all elements which belong to either A or B or both.

scary formal definition:

$$A \cup B = \{x \mid x \in A \text{ or } x \in B\}$$

intersection: $A \cap B$

using same sets as above

$$A \cap B = \{2, 3\}$$

↑ elements in both

then the intersection of sets A & B is the set

of all elements in both A and B

$$A \cap B = \{x \mid x \in A \text{ and } x \in B\}$$

examples:

$$\text{let } A = \{1, 2, 3\}$$

$$B = \{2, 4, 6\}$$

then find

$$A \cap B = \{2\}$$

$$A \cup B = \{1, 2, 3, 4, 6\}$$

$$A \cup \emptyset = \{1, 2, 3\} = A$$

$$B \cap \emptyset = \{ \} = \emptyset$$

$$\mathbb{N} \cup \mathbb{Z} = \mathbb{Z}$$

$$\mathbb{N} \cap \mathbb{Z} = \mathbb{N}$$