

1 323 Homework 8 Question 5

Let $A = \{-2, 0, 3, 4, \}$, $B = \{0, 1, 2, 3, 4, 5\}$, $C = \{0, 6, 7\}$ and $D = \{8, 9\}$

Then:

$$A \cap B = \{0, 3, 4\}$$

$$A \cup B \cup C = \{-2, 0, 1, 2, 3, 4, 5, 6, 7\}$$

$$A \cap C = \{0\}$$

$$A \cap D = \emptyset$$

Homework 8 Question 4

Let $S = \mathbb{R}$, $A = \{x: x \in S \text{ and } 0 < x < 4\}$, $B = \{x: x \in S \text{ and } 1 < x \leq 3\}$, and $C = \{x: x \in S \text{ and } 2 < x \leq 5\}$. What are the sets:

1 $A \cup B \cup C$

$$\begin{aligned} A \cup B \cup C &= \{x: x \in S \text{ and } 0 < x < 4\} \cup \{x: x \in S \text{ and } 1 < x \leq 3\} \cup \{x: x \in S \text{ and } 2 < x \leq 5\} \\ &= \{x: x \in S \text{ and } 0 < x \leq 5\} \end{aligned}$$

2 $A \cap B \cap C$

$$\begin{aligned} A \cap B \cap C &= \{x: x \in S \text{ and } 0 < x < 4\} \cap \{x: x \in S \text{ and } 1 < x \leq 3\} \cap \{x: x \in S \text{ and } 2 < x \leq 5\} \\ &= \{x: x \in S \text{ and } 2 < x \leq 3\} \end{aligned}$$

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Homework 8, Problem 3

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Problem 3

- $\bar{S} = \emptyset$
- $\bar{\emptyset} = S$
- $\overline{(\bar{A})} = \bar{A} = S \sim A$