

## 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    $A \cap B \cap C$**

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