Algebra & Trigonometry - Sullivan (Answers)

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0 Definitions

0.1 Intersection

If A and B are sets, the intersection of A with B, denoted $A \cap B$, is the set of all elements that belong to both A and B.

0.2 Union

The union of A with B, denoted $A \cup B$, is the set consisting of elements that belong to either A or B, or both.

1 Chapter R

1.1 Exercises 9-20

Problem: 13.

Solution:

1. Start visualizing the given sets:

$$U = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\},$$
$$A = \{1, 3, 4, 5, 9\},$$
$$B = \{2, 4, 6, 7, 8\},$$
$$C = \{1, 3, 4, 6\}.$$

2. Doing the first part of this question, we have:

$$A \cup B = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}, \quad \text{by the definition of union (0.2).}$$

3. Doing the second part of this question, we have:

$$(A \cup B) \cap C = \{1, 3, 4, 6\}, \quad \text{by the definition of intersection (0.1).}$$

4. **Answer:**

$$(A \cup B) \cap C = \{1, 3, 4, 6\}.$$