

Sets

Mackenzie Math Club

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1 Overview

1.1 Notation overview

- A set is an unordered collection of distinct elements.
- A set A is a subset of a set B if all elements in A are in B . This also makes B a superset of A .
- The cardinality of a set A , written as $n(A)$, is the number of elements in A .

1.2 Operations overview

For two sets A and B , the following operations are defined:

Union $A \cup B$ is a set containing all elements in either A or B .

Intersection $A \cap B$ is a set containing all elements in both A and B .

Relative complement $B \setminus A$ is the set of all elements in B that are not in A .

Cartesian product $A \times B = \{(a, b) \mid a \in A \text{ and } b \in B\}$

2 Questions

If $A = \{7, 3, 9, 18, 24\}$ and $B = \{24, 119, 9, 3\}$, then find:

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|--------------------|-----------------------|
| 1. $A \cup B$ | 2. $n(A \cup B)$ |
| 3. $A \cap B$ | 4. $n(A \cap B)$ |
| 5. $A \setminus B$ | 6. $n(A \setminus B)$ |
| 7. $A \times B$ | 8. $n(A \times B)$ |