O/L MATHEMATICS

Set Theory

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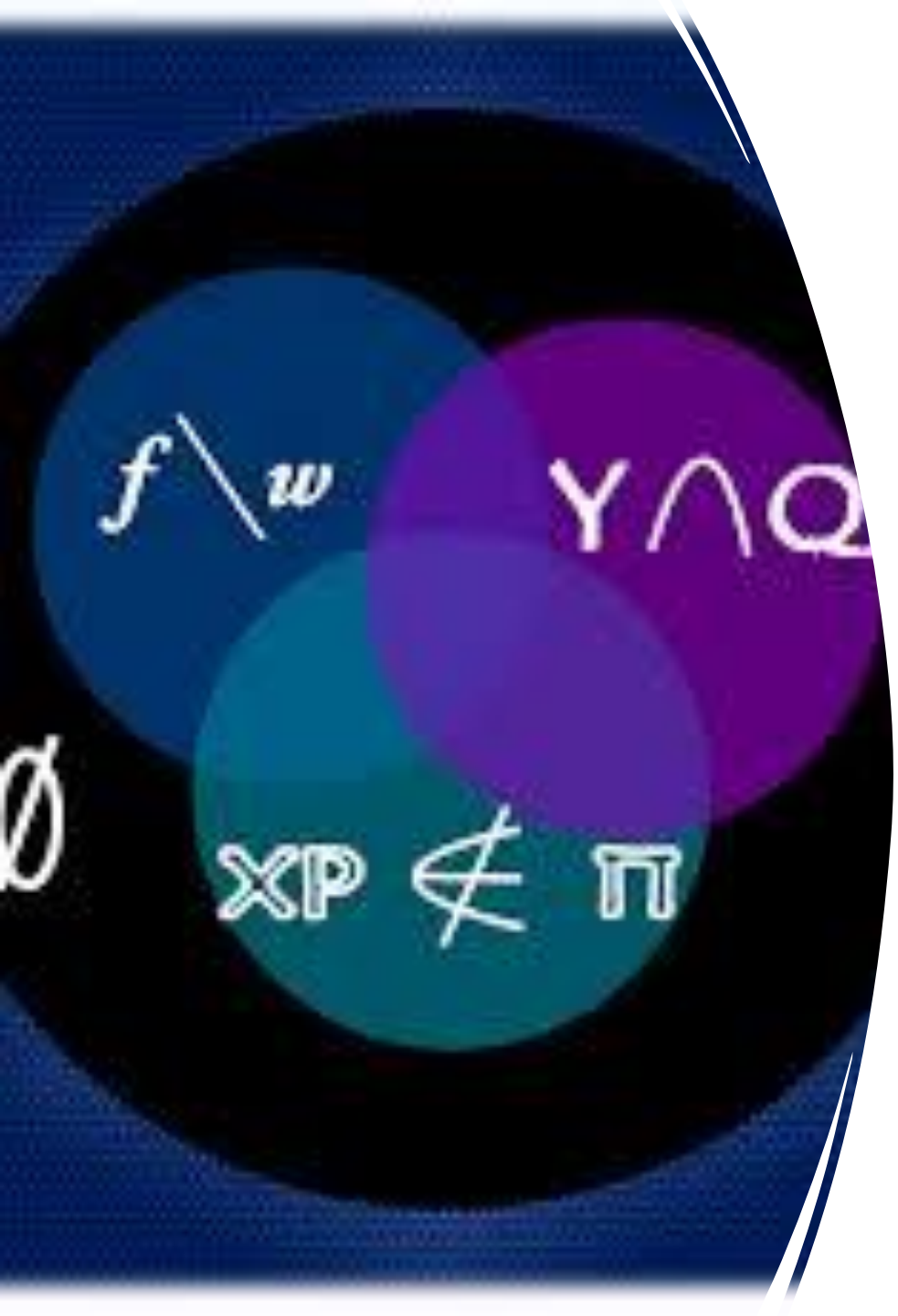


INTRODUCTION TO SET THEORY

- **What is "Set Theory"?**

Set theory is a branch of mathematical logic that studies sets, which are collections of distinct objects. It explores operations on sets, relationships between them, and serves as a foundational framework for various mathematical disciplines.

IMPORTANCE OF SET THEORY

- **Foundation of Mathematics**

  Foundational framework for various branches of mathematics

  Providing a basis for defining mathematical structures and relationships

- **Symbolic Representation**

  Set notation offers a concise and powerful way to represent mathematical concepts, making it easier to express and manipulate ideas.

- **Logical Framework**

  logical and rigorous foundation for mathematical reasoning and proofs

WHAT IS A SET?

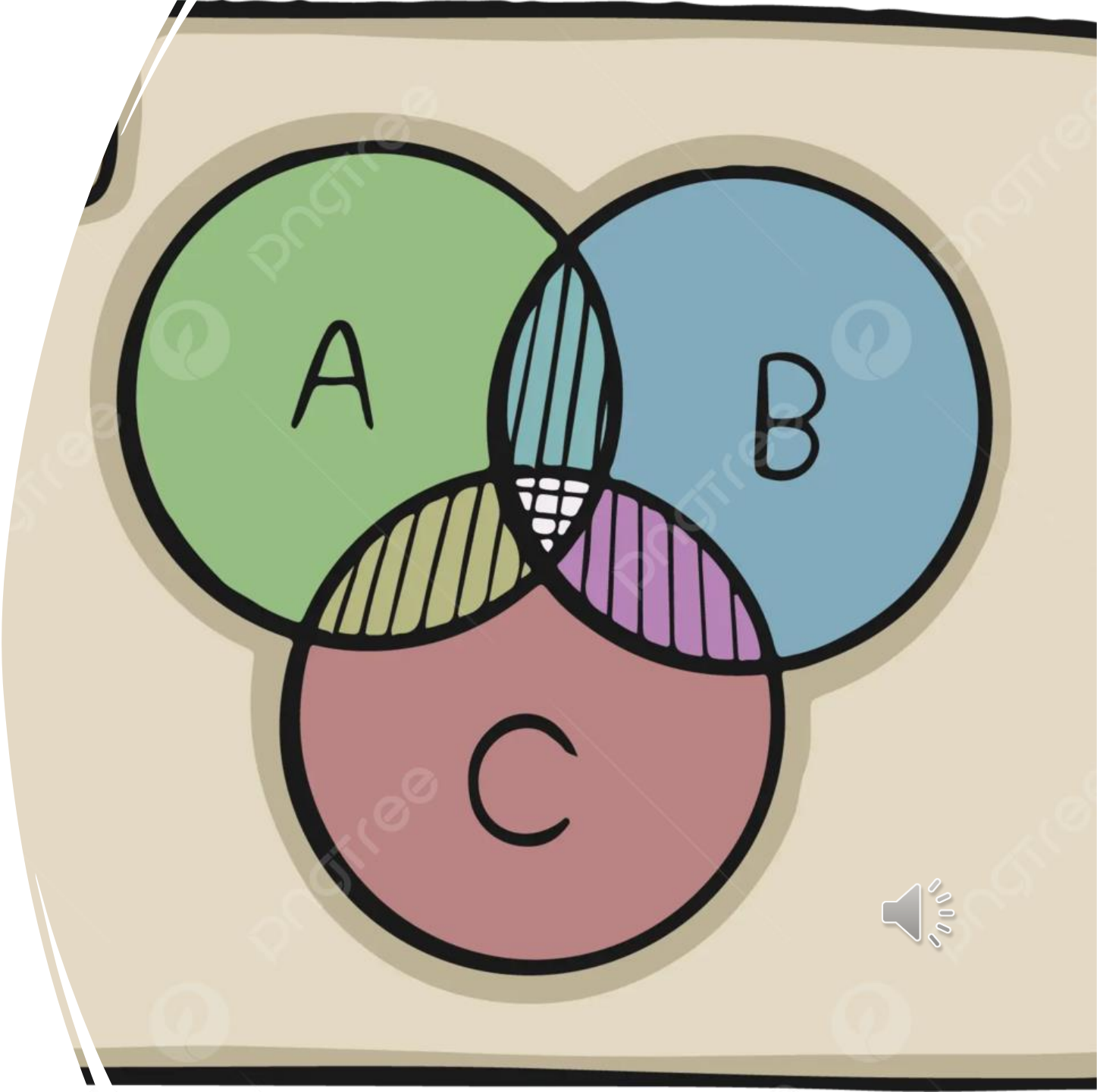
- Sets are collections of distinct elements. In set theory, everything is considered a set, and elements within a set can be anything

  numbers

  letters

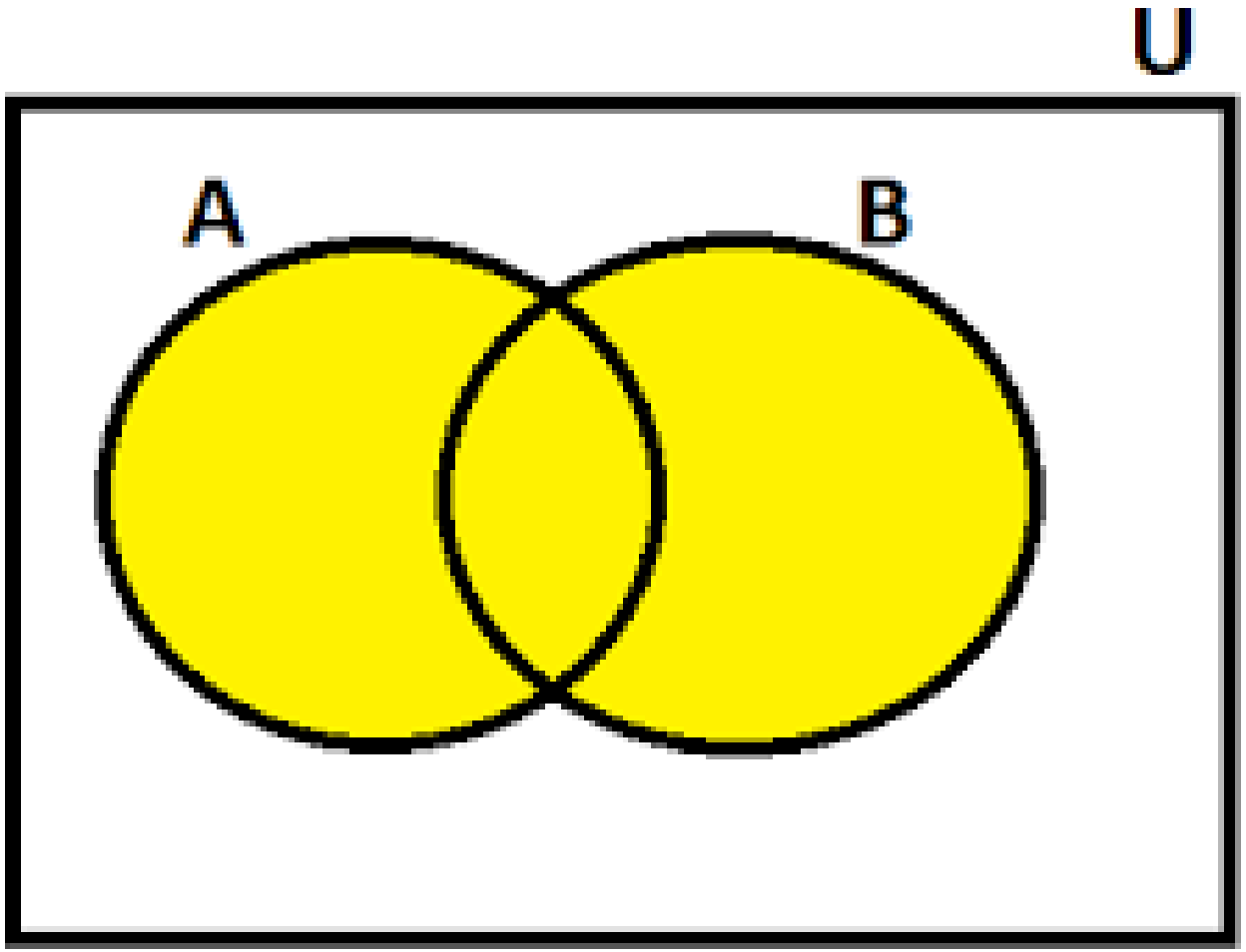
  other sets, etc.

Sets are typically denoted by curly braces, and their elements are listed inside the braces.



SET UNION

The union of two sets is a new set containing all distinct elements from both sets.

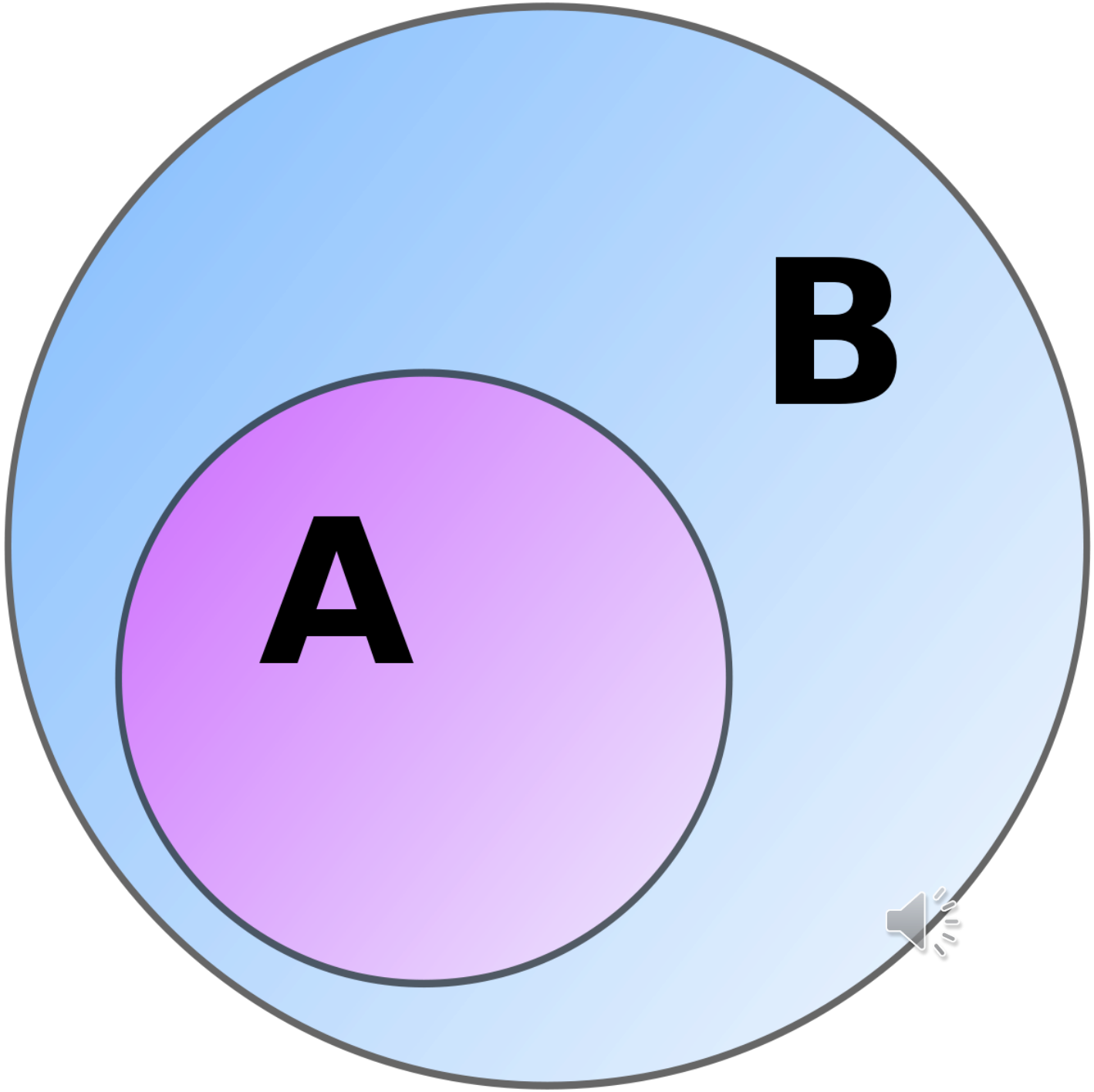


Intersection

The intersection of two sets is a new set containing only the elements that are common to both sets.

SUBSETS

A set A is a subset of set B if every element of A is also an element of B.



POWER SET

{a,b,c}

{},
{a}, {b}, {c},
{a,b}, {a,c}, {b,c}
{a,b,c}

The power set of a set S is the set of all possible subsets of S, including the empty set and S itself.

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COVERED POINTS

- Introduction to Set Theory
- Definition of Set
- Set Union
- Intersection
- Subset
- Powerset