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Relations and Functions

Mastering Relations and Functions in Mathematics!

DEFINITION

Relations and functions are ways to connect sets of inputs and outputs. A relation shows how elements from one set relate to another, while a function is a specific type of relation where each input has exactly one output.

KEY CONCEPTS

Relation

A relation is a set of ordered pairs that shows how elements from two sets are connected.

Function

A function is a special type of relation where each input corresponds to one unique output.

Domain

The domain is the set of all possible input values for a function.

Range

The range is the set of all possible output values that a function can produce.

Types of Functions

Functions can be classified as linear, quadratic, polynomial, and more, based on their equations.

EXAMPLES

- The relation $\{(1, 2), (2, 3), (3, 4)\}$ shows connections between numbers.
- The function $f(x) = 2x + 3$ gives a unique output for each input x .

MEMORY TIPS

- ★ Remember 'Function = One Input, One Output' to distinguish from general relations.
- ★ Use the acronym DR (Domain, Range) to recall the key components of functions.

COMMON MISTAKES

- ✗ Confusing relations with functions by not recognizing multiple outputs for one input.
- ✗ Forgetting to specify the domain and range when defining a function.

QUICK RECAP

Relations connect elements from sets, while functions ensure each input has one output. Remember to identify the domain and range for any function you analyze.