Function Domain Range Graph Worksheet Answer Key PDF

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Part 1: Building a Foundation

What is the definition of a function?

undefined. a) A relation where each input has exactly one output ✓

undefined. b) A set of ordered pairs

undefined. c) A graph with no intercepts

undefined. d) A calculation involving variables

A function is defined as a relation where each input has exactly one output.

Which of the following are examples of domains?

undefined. a) All real numbers ✓

undefined. b) $x \geq 0$ ✓

undefined. c) $y \leq 5$

undefined. d) $x \neq 2$ ✓

Examples of domains include all real numbers, $x \geq 0$, and $x \neq 2$.

Explain in your own words what the range of a function represents.

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

List two types of functions and describe their general graph shapes.

1. Type of function 1

Linear function

2. Description of graph shape 1

Straight line

3. Type of function 2

Quadratic function

4. Description of graph shape 2

Parabola

Examples include linear functions (straight line) and quadratic functions (parabola).

Part 2: Understanding and Interpretation

What does the graph of a linear function typically look like?

undefined. a) A curve

undefined. b) A straight line ✓

undefined. c) A circle

undefined. d) A parabola

The graph of a linear function typically looks like a straight line.

When analyzing a graph, which features help determine the range?

undefined. a) Intercepts ✓

undefined. b) Maximum and minimum points ✓

undefined. c) Asymptotes ✓

undefined. d) Slope

Features such as maximum and minimum points, and intercepts help determine the range.

Describe how you would find the domain of a function given its equation.

To find the domain, identify any restrictions on the input values from the equation.

Part 3: Application and Analysis

Given the function $f(x) = x^2$, what is the domain?

undefined. a) $x > 0$
undefined. b) $x < 0$
undefined. c) All real numbers ✓
undefined. d) $x \neq 0$

The domain of $f(x) = x^2$ is all real numbers.

For the function $g(x) = \sqrt{x}$, which of the following are true about its domain?

undefined. a) $x \geq 0$ ✓
undefined. b) $x > 0$
undefined. c) $x \leq 0$
undefined. d) $x \neq -1$

The domain of $g(x) = \sqrt{x}$ is $x \geq 0$.

Sketch the graph of the function $h(x) = 2x + 3$ and identify its domain and range.

The graph is a straight line with a domain of all real numbers and a range of all real numbers.

Part 4: Evaluation and Creation

Which of the following transformations will affect the range of a function?

undefined. a) Horizontal shift
undefined. b) Vertical shift ✓
undefined. c) Reflection over the y-axis
undefined. d) Rotation

A vertical shift will affect the range of a function.

When analyzing a quadratic function, which aspects are crucial for determining its range?

undefined. a) Vertex ✓
undefined. b) Axis of symmetry ✓
undefined. c) Direction of opening (up or down) ✓
undefined. d) Intercepts

Aspects such as the vertex, direction of opening, and axis of symmetry are crucial for determining the range.

Analyze the function $f(x) = -x^2 + 4x + 1$. Determine its vertex and explain how it affects the range.

The vertex can be found using the formula, and it affects the range by determining the maximum or minimum value.

If a function's graph passes the vertical line test, what can be concluded?

undefined. a) It is not a function

undefined. b) It is a function ✓

undefined. c) It has no domain

undefined. d) It has no range

If a graph passes the vertical line test, it can be concluded that it is a function.

Which scenarios indicate a function is not one-to-one?

undefined. a) Two different inputs have the same output ✓

undefined. b) The graph fails the horizontal line test ✓

undefined. c) The graph is a straight line

undefined. d) The function is quadratic ✓

Scenarios such as two different inputs having the same output indicate a function is not one-to-one.

Create a real-world scenario where determining the domain and range of a function is necessary. Explain the steps you would take to find them.

A real-world scenario could involve a business model, and steps would include identifying constraints and possible outputs.