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Domain And Range Of Graphs Worksheet Questions and Answers PDF

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Part 1: Building a Foundation

What is the domain of a function?

Hint: Think about what values you can input into a function.

○ A) The set of all possible output values (y-values)
○ **B) The set of all possible input values (x-values)** ✓
○ C) The set of all positive numbers
○ D) The set of all negative numbers

▎ The domain of a function is the set of all possible input values (x-values).

Which of the following notations can be used to express the domain of a function?

Hint: Consider different ways to represent sets of numbers.

☐ **A) Interval notation** ✓
☐ **B) Set notation** ✓
☐ **C) Inequalities** ✓
☐ D) Function notation

▎ The domain can be expressed using interval notation, set notation, and inequalities.

Explain the difference between domain and range in your own words.

Hint: Think about what each term refers to in relation to a function.

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> The domain refers to the input values of a function, while the range refers to the output values.

List two types of functions and describe their typical domain and range.

Hint: Consider common functions like linear and quadratic.

1. Type of function 1 and its domain and range.

> Linear function: Domain is all real numbers, range is all real numbers.

2. Type of function 2 and its domain and range.

> Quadratic function: Domain is all real numbers, range is $y \geq 0$.

> Examples include linear functions with domain and range as all real numbers, and quadratic functions with domain as all real numbers and range as non-negative numbers.

Part 2: Understanding and Interpretation

If a graph has a hole at x = 3, what does this indicate about the domain?

Hint: Consider what a hole in a graph means for input values.

○ A) x = 3 is included in the domain

○ B) x = 3 is excluded from the domain ✓

○ C) The domain is all real numbers

○ D) The domain is only positive numbers

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| A hole at x = 3 indicates that x = 3 is excluded from the domain.

Which of the following graphs represents a function with a range of y ≥ 0?

Hint: Think about the shapes of different types of graphs.

☐ A) A linear graph
☐ **B) A quadratic graph opening upwards ✓**
☐ **C) A rational graph with a horizontal asymptote at y = 0 ✓**
☐ D) A cubic graph

| A quadratic graph opening upwards and a rational graph with a horizontal asymptote at y = 0 both have a range of y ≥ 0.

Describe how you would determine the range of a function by looking at its graph.

Hint: Consider the highest and lowest points of the graph.

| **To determine the range, observe the y-values that the graph reaches and identify any restrictions.**

Part 3: Application and Analysis

Given the function f(x) = √(x - 2), what is the domain of this function?

Hint: Consider the values of x that make the expression under the square root non-negative.

○ **A) x ≥ 2 ✓**
○ B) x > 2
○ C) x ≤ 2
○ D) x < 2

| The domain of f(x) = √(x - 2) is x ≥ 2.

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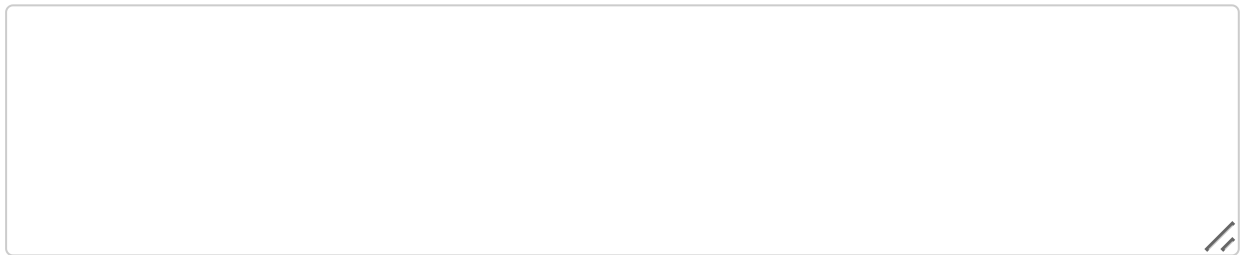**Which of the following functions have a domain of all real numbers?**

Hint: Think about the restrictions that might apply to each function.

☐ **A) f(x) = x^2 ✔**
☐ B) f(x) = 1/(x - 1)
☐ **C) f(x) = e^x ✔**
☐ D) f(x) = ln(x)

▍ The functions f(x) = x^2 and f(x) = e^x have a domain of all real numbers.

Analyze the graph of a rational function and describe how to determine any restrictions on its domain.

Hint: Consider points where the function is undefined.

▍ **To determine restrictions, look for vertical asymptotes and holes in the graph.**

Which aspect of a graph indicates a vertical asymptote?

Hint: Think about where the graph approaches but does not touch a line.

○ A) A point where the graph crosses the x-axis
○ **B) A line where the graph approaches but never touches ✔**
○ C) A point where the graph crosses the y-axis
○ D) A flat line at the top of the graph

▍ A vertical asymptote is indicated by a line where the graph approaches but never touches.

Part 4: Evaluation and Creation

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If a function's graph has both a vertical and a horizontal asymptote, what can be inferred about its domain and range?

Hint: Consider how asymptotes affect the values of x and y.

◯ A) The domain is all real numbers, and the range is limited

◯ B) The domain is limited, and the range is all real numbers

◯ **C) Both domain and range are limited ✓**

◯ D) Both domain and range are all real numbers

> If a function has both types of asymptotes, it typically indicates that the domain is limited and the range may also be limited.

Which strategies can be used to find the domain and range of a complex function?

Hint: Consider different approaches to analyze functions.

☐ **A) Break down the function into simpler parts ✓**

☐ **B) Analyze the graph for asymptotes and discontinuities ✓**

☐ **C) Use algebraic manipulation to find restrictions ✓**

☐ D) Assume the domain and range are all real numbers

> Strategies include breaking down the function, analyzing the graph, and using algebraic manipulation.

Create a real-world scenario where understanding the domain and range of a function is crucial. Explain how you would determine these values in your scenario.

Hint: Think about situations in business, science, or everyday life.

> **In a real-world scenario, such as modeling population growth, the domain could represent time, and the range could represent population size.**

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