

## Domain And Range Of A Function Graph Worksheet

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### Part 1: Building a Foundation

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#### 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
- B) The set of all possible input values
- C) The set of all positive values
- D) The set of all negative values

#### Which of the following statements are true about the range of a function? (Select all that apply)

*Hint: Consider what values the function can output.*

- A) It includes all y-values that the function can produce.
- B) It is always a set of positive numbers.
- C) It can be determined by looking at the graph of the function.
- D) It is the same as the domain.

#### Explain in your own words the difference between the domain and range of a function.

*Hint: Think about inputs versus outputs.*

#### List two types of functions and describe their general shape on a graph.

*Hint: Think about common functions you have learned.*

1. Type of function 1

2. Description of shape

3. Type of function 2

4. Description of shape

## Part 2: Comprehension and Application

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**Which feature of a graph helps identify the domain of a function?**

*Hint: Consider the lines and points on the graph.*

- A) Horizontal asymptotes
- B) Vertical asymptotes
- C) Intercepts
- D) Maximum points

**What are common restrictions on the domain of a function? (Select all that apply)**

*Hint: Think about operations that can limit input values.*

- A) Division by zero
- B) Negative square roots
- C) Exponential growth
- D) Linear transformations

**Describe how the graph of a quadratic function can help you determine its range.**

*Hint: Consider the vertex and direction of the parabola.*

If a function is defined as  $f(x) = \frac{1}{x-2}$ , what is the domain of this function?

Hint: Consider what value would make the denominator zero.

- A) All real numbers
- B) All real numbers except 2
- C) All positive numbers
- D) All negative numbers

Given the function  $g(x) = \sqrt{x+3}$ , which of the following  $x$ -values are in the domain? (Select all that apply)

Hint: Consider what values make the expression under the square root non-negative.

- A) -4
- B) -3
- C) 0
- D) 3

Provide a real-world example where understanding the domain and range of a function is crucial, and explain why.

Hint: Think about situations where limits are important.

### Part 3: Analysis, Evaluation, and Creation

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**How does a vertical shift in a function's graph affect its range?**

*Hint: Consider how moving the graph up or down changes the output values.*

- A) It increases the domain.
- B) It decreases the domain.
- C) It shifts the range up or down.
- D) It does not affect the range.

**Analyze the function  $h(x) = x^2 - 4x + 3$ . Which of the following statements are true? (Select all that apply)**

*Hint: Consider the characteristics of quadratic functions.*

- A) The domain is all real numbers.
- B) The range is all real numbers.
- C) The graph is a parabola.
- D) The vertex affects the range.

**Examine the function  $f(x) = \frac{x^2 - 1}{x + 1}$ . Discuss any points of discontinuity and their impact on the domain.**

*Hint: Consider where the function is undefined.*

**Which of the following functions has the largest range?**

*Hint: Consider the output values of each function.*

- A)  $f(x) = x^2$
- B)  $g(x) = \sin(x)$
- C)  $h(x) = e^x$
- D)  $j(x) = \log(x)$

**Evaluate the following scenarios and determine which could affect the range of a function. (Select all that apply)**

*Hint: Think about transformations and their effects on output values.*

- A) Horizontal stretch
- B) Vertical compression
- C) Reflection over the x-axis
- D) Adding a constant to the function

**Design a function that has a domain of all real numbers except -2 and a range of all real numbers greater than 0. Explain your reasoning.**

*Hint: Consider how to create a function with these properties.*

**Create a scenario where understanding the domain and range is essential, and describe how you would determine these for the function involved.**

*Hint: Think about real-world applications of functions.*

1. Scenario description

2. Domain determination

3. Range determination