

Domain And Range From A Graph Worksheet Questions and Answers PDF

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Part 1: Foundational Knowledge

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

■ The domain of a function is the set of all possible input 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 produce.

- A) It includes all y-values that the function can output. ✓
- B) It is always the same as the domain.
- C) It can be found by looking at the graph's extent along the y-axis. ✓
- D) It only includes positive numbers.

■ The range includes all y-values that the function can output and can be found by looking at the graph's extent along the y-axis.

Define the term "domain" in your own words and explain how it is identified on a graph.

Hint: Think about the inputs of a function and how they are represented.

The domain refers to the set of all possible input values for a function, which can be identified on a graph by observing the x-values that the graph covers.

List two characteristics of a quadratic function's graph that help determine its range.

Hint: Consider the shape and vertex of the graph.

1. Characteristic 1

The vertex of the parabola.

2. Characteristic 2

The direction it opens (upward or downward).

The vertex and the direction the parabola opens (upward or downward) are key characteristics that help determine the range.

Which notation is used to express a domain that includes all real numbers?

Hint: Think about the symbols used to represent infinity.

- A) $[0, \infty)$
- B) $(-\infty, \infty)$ ✓
- C) $\{x \mid x > 0\}$
- D) $(0, 1)$

The notation used to express a domain that includes all real numbers is $(-\infty, \infty)$.

Part 2: Understanding and Interpretation

When analyzing a graph, what does the term "continuous" imply about the domain and range?

Hint: Consider how the graph behaves without breaks.

- A) They consist of discrete points.
- B) They include all numbers within an interval. ✓
- C) They are limited to positive values.
- D) They exclude zero.

The term 'continuous' implies that the domain and range include all numbers within an interval without any gaps.

Which of the following graphs represent a function with a domain of all real numbers? (Select all that apply)

Hint: Think about the characteristics of the graphs.

- A) A linear graph ✓
- B) A quadratic graph ✓
- C) A rational graph with a vertical asymptote
- D) An exponential graph ✓

A linear graph, a quadratic graph, and an exponential graph represent functions with a domain of all real numbers.

Explain 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 of a function from its graph, observe the y-values covered by the graph, identifying the minimum and maximum points.

Part 3: Applying Knowledge to New Situations

If a graph has a hole at $x = 2$, what is the domain of the function?

Hint: Think about how holes affect the input values.

- A) All real numbers
- B) All real numbers except $x = 2$ ✓
- C) $x > 2$
- D) $x < 2$

■ The domain of the function is all real numbers except $x = 2$ due to the hole.

Given a graph of a function that opens upwards and has a vertex at $(0, -3)$, what is the range of the function? (Select all that apply)


Hint: Consider the lowest point of the graph.

- A) $y \geq -3$ ✓
- B) $y \leq -3$
- C) $y > -3$
- D) $y < -3$

■ The range of the function is $y \geq -3$, as the vertex is the minimum point.

Sketch a graph of a function with a domain of $x \geq 0$ and a range of $y \geq 0$. Describe the key features of your graph.

Hint: Think about the shape and position of the graph.



■ The graph should start at the origin and extend into the first quadrant, showing that both the domain and range are non-negative.

Part 4: Analyzing Relationships

How does the presence of a horizontal asymptote affect the range of a rational function?

Hint: Consider what an asymptote represents.

- A) It limits the domain.
- B) It creates a boundary for the range. ✓
- C) It has no effect on the range.
- D) It only affects the domain.

■ A horizontal asymptote creates a boundary for the range, limiting the output values of the function.

Analyze the graph of a piecewise function. Which sections of the graph contribute to the domain? (Select all that apply)

Hint: Consider which parts of the graph are defined.

- A) The linear section ✓
- B) The constant section ✓
- C) The undefined section
- D) The quadratic section ✓

■ The linear section, constant section, and quadratic section contribute to the domain, while the undefined section does not.

Compare and contrast the domain and range of a linear function with those of a quadratic function.

Hint: Think about the differences in their graphs.

■ A linear function has a domain and range of all real numbers, while a quadratic function's range is limited based on its vertex and direction of opening.

Part 5: Synthesis and Reflection

Which of the following scenarios would require adjusting the domain of a function?

Hint: Consider changes that affect input values.

- A) Adding a vertical asymptote ✓
- B) Shifting the graph upwards
- C) Reflectin the graph over the x-axis
- D) Stretchin the graph horizontally

■ Adding a vertical asymptote would require adjusting the domain of a function.

Evaluate the impact of a vertical shift on the range of a function. Which statements are true? (Select all that apply)

Hint: Think about how shifting affects the output values.

- A) The range shifts up or down by the same amount. ✓
- B) The domain remains unchanged. ✓
- C) The range becomes undefined.
- D) The range is compressed.

■ A vertical shift moves the range up or down, while the domain remains unchanged.

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

Hint: Think about a situation that involves limits or constraints.

■ A real-world scenario could involve a business's profit function, where the domain is limited by production capacity and the range is determined by profit values.