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Graphing Absolute Value Functions Worksheet Answer Key PDF

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Part 1: Building a Foundation

What is the general shape of the graph of an absolute value function?

undefined. A) Linear

undefined. B) Parabolic

undefined. C) V-shaped ✓

undefined. D) Circular

The graph of an absolute value function is V-shaped.

Which of the following are characteristics of the graph of an absolute value function?

undefined. A) It has a vertex. ✓

undefined. B) It is symmetric about the y-axis. ✓

undefined. C) It is always increasing.

undefined. D) It is V-shaped. ✓

The graph has a vertex, is symmetric about the y-axis, and is V-shaped.

Explain what the vertex of an absolute value function represents in the context of its graph.

The vertex represents the minimum or maximum point of the graph, depending on its orientation.

List the parameters in the vertex form of an absolute value function f(x) = a|x - h| + k and describe their roles.

1. a:

Determines the vertical stretch or compression and direction of the graph.

2. h:

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Shifts the graph horizontally left or right.

3. k:

Shifts the graph vertically up or down.

The parameters a, h, and k affect the graph's vertical stretch, horizontal shift, and vertical shift, respectively.

Part 2: comprehension and Application

If the vertex form of an absolute value function is f(x) = 2|x + 3| - 4, what is the vertex of the graph?

undefined. A) (-3, -4) ✓

undefined. B) (3, 4)

undefined. C) (-3, 4)

undefined. D) (3, -4)

The vertex of the graph is at (-3, -4).

How does the graph of f(x) = -|x| differ from the graph of f(x) = |x|?

undefined. A) It is shifted downwards.

undefined. B) It is reflected across the x-axis. ✓

undefined. C) It is wider.

undefined. D) It is narrower.

The graph of f(x) = -|x| is reflected across the x-axis compared to f(x) = |x|.

Graph the function f(x) = -\frac{1}{2}|x - 4| + 2 and describe the transformations applied to the parent function f(x) = |x|.

The graph is reflected, vertically compressed, shifted right, and shifted up.

Which transformations are applied to the graph of f(x) = |x| to obtain f(x) = 2|x + 1| - 3?

undefined. A) Vertical stretch by a factor of 2 ✓

undefined. B) Horizontal shift left by 1 unit ✓

undefined. C) Vertical shift down by 3 units ✓

undefined. D) Reflection across the x-axis

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The graph undergoes a vertical stretch, horizontal shift left, and vertical shift down.

Part 3: Analysis, Evaluation, and Creation

If the graph of an absolute value function opens downwards and has a vertex at (2, -3), which of the following could be its equation?

undefined. A) f(x) = -lx - 2l - 3 ✓

undefined. B) f(x) = -lx - 2l + 3

undefined. C) f(x) = lx - 2l - 3

undefined. D) f(x) = -lx + 2l - 3

The equation could be f(x) = -lx - 2l - 3.

Analyze the function f(x) = -3lx + 2l + 5. Which of the following statements are true?

undefined. A) The graph is reflected across the x-axis. ✓

undefined. B) The vertex is at (-2, 5). ✓

undefined. C) The graph is compressed vertically. ✓

undefined. D) The graph is shifted 5 units up.

The graph is reflected across the x-axis, the vertex is at (-2, 5), and it is vertically compressed.

Compare and contrast the graphs of f(x) = lxl and g(x) = lx - 4l + 2. Discuss the transformations involved.

The graph of g(x) is shifted right and up compared to f(x).

Which of the following functions represents a graph that is both vertically stretched and shifted downwards?

undefined. A) f(x) = 2lxl + 3

undefined. B) f(x) = \frac{1}{2}lxl - 4

undefined. C) f(x) = 3lxl - 2 ✓

undefined. D) f(x) = -2lxl + 1

The function f(x) = 3lxl - 2 represents a vertically stretched graph that is shifted downwards.

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Design a function that has a vertex at (1, -2) and opens upwards. Which of the following could be correct?

undefined. A) f(x) = |x - 1| - 2 ✓

undefined. B) f(x) = 2|x - 1| - 2 ✓

undefined. C) f(x) = -|x - 1| + 2

undefined. D) f(x) = \frac{1}{2}|x - 1| - 2

The functions f(x) = |x - 1| - 2 and f(x) = 2|x - 1| - 2 both have the desired vertex and orientation.

Create an absolute value function that has a vertex at (-3, 4), opens downwards, and is vertically compressed. Provide the equation and describe the transformations applied.

An example function is f(x) = -\frac{1}{2}|x + 3| + 4, which opens downwards and is vertically compressed.

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