Section 3.8

Graphing Piecewise-Defined Functions and Shifting and Reflecting Graphs of Functions

# Objective 1: Graphing Piecewise-Defined Functions

A **piecewise-defined function** is a function defined by two or more expressions.

Graph the piecewise-defined function.

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| a.  Blank coordinate plane that spans from negative ten to positive ten on each axis with a scale of one unit. | b. g  Blank coordinate plane that spans from negative ten to positive ten on each axis with a scale of one unit. |

c. Consider the function . Complete the table and then use the table to graph .

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The absolute value function, , can also be written as a piecewise-defined function.

# Objective 2: Vertical and Horizontal Shifting

Consider the functions and .

a. Complete the table, and then graph and on the same axes.

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b. Describe the relationship between the graph of and the graph of .

**Vertical Shifts:**

Let be a positive number.

* The graph of is the graph of shifted units upward.
* The graph of is the graph of shifted units downward.

c. Graph .



Consider the functions and .

d. Complete the table, and then graph and on the same axes.

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e. Describe the relationship between the graph of and the graph of .

**Horizontal Shifts:**

Let be a positive number.

* The graph of is the graph of shifted units to the right.
* The graph of is the graph of shifted units to the left.

Graph each function.

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| f.  Blank coordinate plane that spans from negative ten to positive ten on each axis with a scale of one unit. | g.  Blank coordinate plane that spans from negative ten to positive ten on each axis with a scale of one unit. |

# Objective 3: Reflecting Graphs.

Consider the functions and .

a. Complete the table, and then graph and on the same axes.

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b. Describe the relationship between the graph of and the graph of .

**Reflection about the -axis:**

The graph of is the graph of reflected about the -axis.

c. Graph .

