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## Key Equations

|                             |                                      |
|-----------------------------|--------------------------------------|
| Constant function           | $f(x) = c$ , where $c$ is a constant |
| Identity function           | $f(x) = x$                           |
| Absolute value function     | $f(x) =  x $                         |
| Quadratic function          | $f(x) = x^2$                         |
| Cubic function              | $f(x) = x^3$                         |
| Reciprocal function         | $f(x) = \frac{1}{x}$                 |
| Reciprocal squared function | $f(x) = \frac{1}{x^2}$               |
| Square root function        | $f(x) = \sqrt{x}$                    |
| Cube root function          | $f(x) = \sqrt[3]{x}$                 |

## Key Concepts

- A relation is a set of ordered pairs. A function is a specific type of relation in which each domain value, or input, leads to exactly one range value, or output.
- Function notation is a shorthand method for relating the input to the output in the form  $y = f(x)$ .
- In table form, a function can be represented by rows or columns that relate to input and output values.
- To evaluate a function we determine an output value for a corresponding input value. Algebraic forms of a function can be evaluated by replacing the input variable with a given value.
- To solve for a specific function value, we determine the input values that yield the specific output value.
- An algebraic form of a function can be written from an equation.
- Input and output values of a function can be identified from a table.
- Relating input values to output values on a graph is another way to evaluate a function.
- A function is one-to-one if each output value corresponds to only one input value.
- A graph represents a function if any vertical line drawn on the graph intersects the graph at no more than one point.
- A graph represents a one-to-one function if any horizontal line drawn on the graph intersects the graph at no more than one point.

## Glossary

**dependent variable** an output variable **domain** the set of all possible input values for a relation **function** a relation in which each input value yields a unique output value **horizontal line test** a method of testing whether a function is one-to-one by determining whether any horizontal line intersects the graph more than once **independent variable** an input variable **input** each object

or value in a domain that relates to another object or value by a relationship known as a function  
**one-to-one function** a function for which each value of the output is associated with a unique input value  
**output** each object or value in the range that is produced when an input value is entered into a function  
**range** the set of output values that result from the input values in a relation  
**relation** a set of ordered pairs  
**vertical line test** a method of testing whether a graph represents a function by determining whether a vertical line intersects the graph no more than once

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