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# Study Guide and Intervention

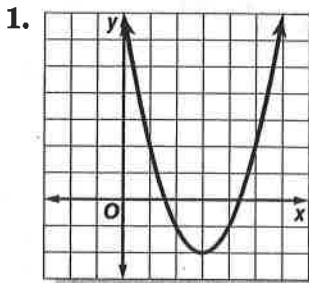
## Classes of Functions

**Identify Graphs** You should be familiar with the graphs of the following functions.

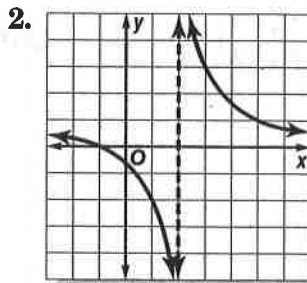
| Function          | Description of Graph   |
|-------------------|--|
| Constant          | a horizontal line that crosses the $y$ -axis at $a$  |
| Direct Variation  | a line that passes through the origin and is neither horizontal nor vertical                             |
| Identity          | a line that passes through the point $(a, a)$ , where $a$ is any real number                             |
| Greatest Integer  | a step function  |
| Absolute Value    | V-shaped graph   |
| Quadratic         | a parabola   |
| Square Root       | a curve that starts at a point and curves in only one direction  |
| Rational          | a graph with one or more asymptotes and/or holes   |
| Inverse Variation | a graph with 2 curved branches and 2 asymptotes, $x = 0$ and $y = 0$ (special case of rational function) |

### Exercises

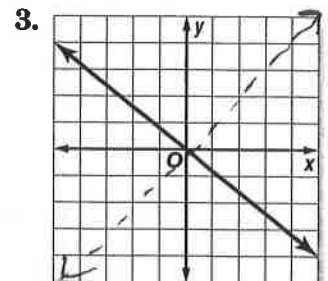
Identify the function represented by each graph.



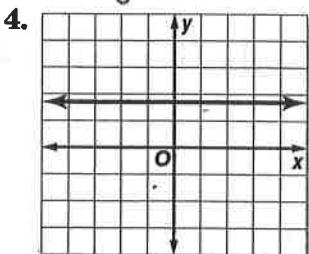
quadratic



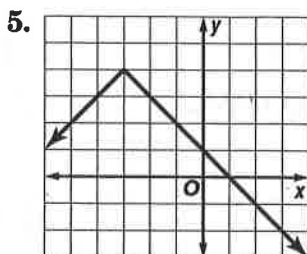
rational



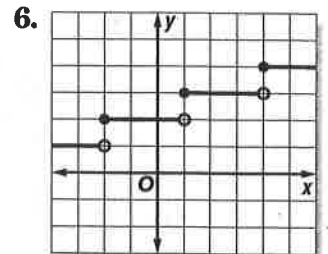
direct variation



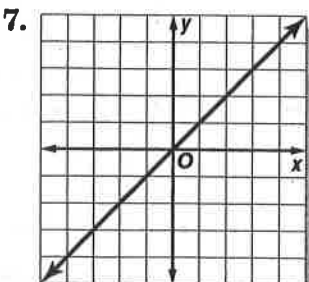
constant



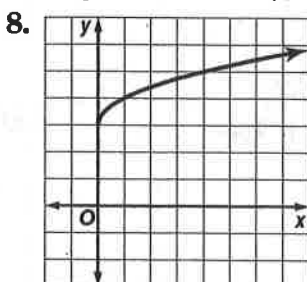
absolute value



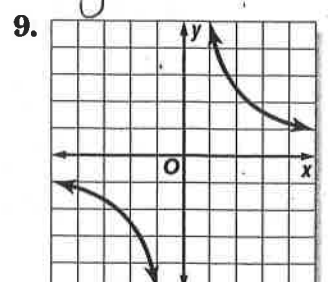
greatest integer



identity



square root



rational  
inverse variation

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Study Guide and Intervention (continued)

Classes of Functions

**Identify Equations** You should be able to graph the equations of the following functions.

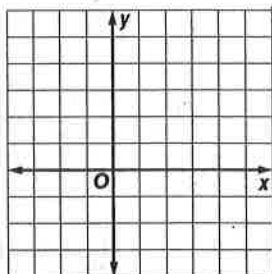
| Function          | General Equation   |
|-------------------|--|
| Constant          | $y = a$  |
| Direct Variation  | $y = ax$   |
| Identity          | $y = x$  |
| Greatest Integer  | equation includes a variable within the greatest integer symbol, $\llbracket \rrbracket$ |
| Absolute Value    | equation includes a variable within the absolute value symbol, $   $                     |
| Quadratic         | $y = ax^2 + bx + c$ , where $a \neq 0$   |
| Square Root       | equation includes a variable beneath the radical sign, $\sqrt{\quad}$                    |
| Rational          | $y = \frac{p(x)}{q(x)}$  |
| Inverse Variation | $y = \frac{a}{x}$  |

Exercises

Identify the function represented by each equation. Then graph the equation.

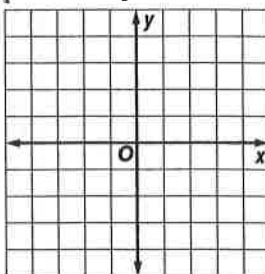
1.  $y = \frac{6}{x}$

*inverse variation*



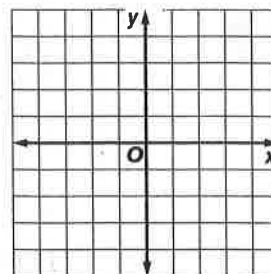
2.  $y = \frac{4}{3}x$

*direct variation*



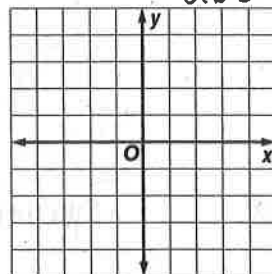
3.  $y = -\frac{x^2}{2}$

*quadratic*



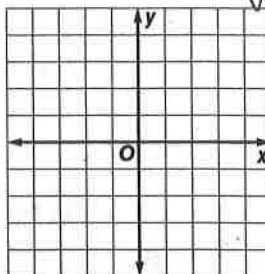
4.  $y = |3x| - 1$

*absolute value*



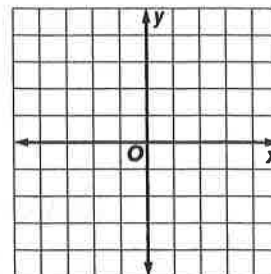
5.  $y = -\frac{2}{x}$

*inverse variation*



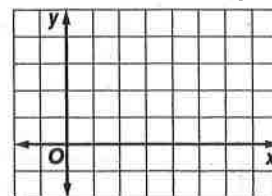
6.  $y = \left\lfloor \frac{x}{2} \right\rfloor$

*greatest integer*



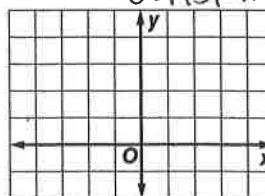
7.  $y = \sqrt{x-2}$

*square root*



8.  $y = 3.2$

*constant*



9.  $y = \frac{x^2 + 5x + 6}{x + 2}$

*rational*

