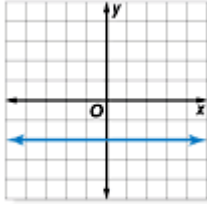


Lesson 9-5

**Example 1 Identify a Function Given the Graph**

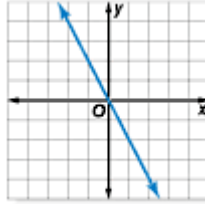
Identify the type of function represented by each graph.

a.



The graph is a horizontal line that crosses the y-axis below the x-axis. The graph represents a constant function.

b.

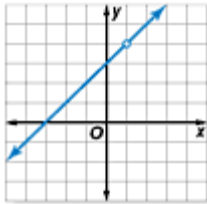


The graph is a line that passes through the origin and is neither horizontal nor vertical. The graph represents a direct variation function.

**Example 2 Match Equation with Graph**

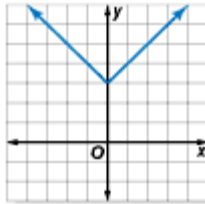
Match each graph with an equation at the right.

a.



The graph is a straight line with a hole in the graph. This indicates that the graph represents a rational function. The only rational equation is c. Therefore, the answer is c.

b.



The graph is in the shape of a V, so it is an absolute value function. The only absolute value equation is a. Therefore, the answer is a.

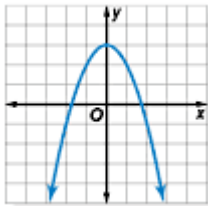
- |   |
|---|
| <p>a. <math>y =  x  + 3</math></p> <p>b. <math>y = \sqrt{x} + 3</math></p> <p>c. <math>y = \frac{(x - 1)(x + 3)}{x - 1}</math></p> <p>d. <math>y = x + 3</math></p> |
|---|

### Example 3 Identify a Function Given its Equation

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

a.  $y = -x^2 + 3$

Since the equation contains a variable term that is squared, this is a quadratic function. Determine some points on the graph and use what you know about graphs of quadratic functions to graph the function.



b.  $y = \frac{-3}{x}$

The equation is of the form  $y = \frac{a}{x}$ . It is an inverse variation function and a special case of a rational function. The vertical asymptote of the graph is  $x = 0$ . Draw the asymptote and determine some points on the graph. Use what you know about graphs of rational functions to graph the function.

