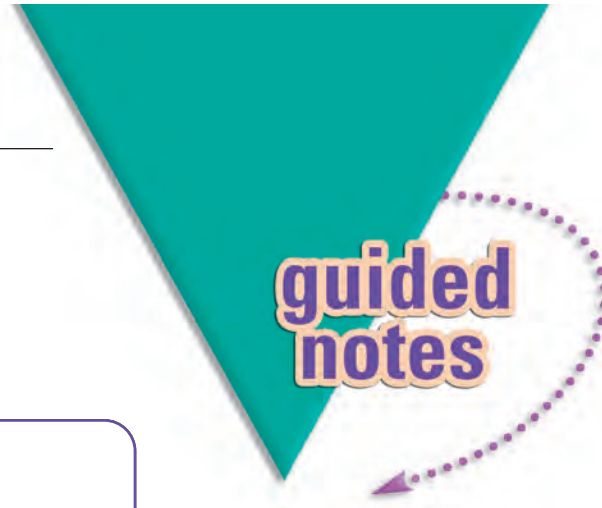


NAME \_\_\_\_\_

**Module 9** Using Functions  
**Lesson 4** Graphing Functions



guided  
notes

### Lesson Objectives

- Graph linear functions from slope-intercept form.
- Graph constant functions.
- Graph absolute value functions.
- Graph piecewise functions.

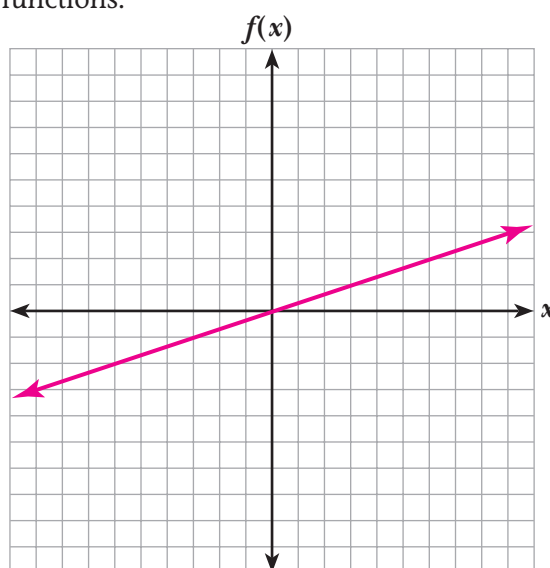
The **identity** \_\_\_\_\_ function is  $f(x) = x$ .

All **nonvertical** \_\_\_\_\_ straight lines are linear functions.

- 1 Graph the linear function  $f(x) = \frac{x}{3}$ .

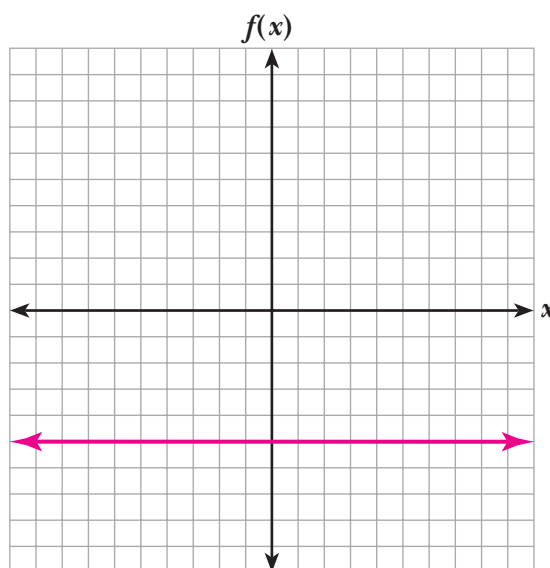
Then use the graph to evaluate  $f(-6)$ .

**$f(-6) = -2$**  \_\_\_\_\_



- 2 Graph the constant function  $f(x) = -5$ .

All horizontal lines are **constant** \_\_\_\_\_ functions.



For any positive value  $a$ :

$f(x) = |x| + a$  translates the parent graph **up** \_\_\_\_\_  $a$  units.

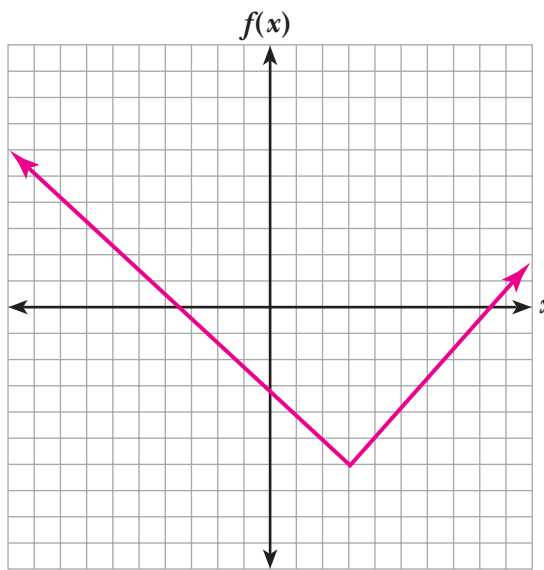
$f(x) = |x| - a$  translates the parent graph **down** \_\_\_\_\_  $a$  units.

For any positive value  $a$ :

$f(x) = |x + a|$  translates the parent graph **left** \_\_\_\_\_  $a$  units.

$f(x) = |x - a|$  translates the parent graph **right** \_\_\_\_\_  $a$  units.

3 Graph the function  $f(x) = |x - 3| - 6$ .



A **piecewise** \_\_\_\_\_ function is a combination of functions whose graphs do not overlap.

4 Graph the following piecewise function:

$$f(x) = \begin{cases} x + 1, & x \leq -3 \\ 2x, & -3 < x \leq 1 \\ 4, & x > 1. \end{cases}$$

