

**GUIDED PRACTICE** for Examples 3 and 4

Graph the function. State the domain and range.

4.  $y = \frac{x-1}{x+3}$

5.  $y = \frac{2x+1}{4x-2}$

6.  $f(x) = \frac{-3x+2}{-x-1}$

7. **WHAT IF?** In Example 4, how do the function and graph change if the cost of the 3-D printer is \$21,000?

## 8.2 EXERCISES

**HOMEWORK KEY**

- = **WORKED-OUT SOLUTIONS**  
on p. WS1 for Exs. 5, 21, and 39
- = **TAKS PRACTICE AND REASONING**  
Exs. 23, 35, 40, 41, 43, and 44
- = **MULTIPLE REPRESENTATIONS**  
Ex. 39

**SKILL PRACTICE**

1. **VOCABULARY** Copy and complete: The function  $y = \frac{7}{x+4} + 3$  has a(n)   ? of all real numbers except 3 and a(n)   ? of all real numbers except  $-4$ .

2. **WRITING** Is  $f(x) = \frac{-3x+5}{2^x+1}$  a rational function? *Explain* your answer.

**EXAMPLE 1**on p. 558  
for Exs. 3–10**GRAPHING FUNCTIONS** Graph the function. Compare the graph with the graph of  $y = \frac{1}{x}$ .

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

4.  $y = \frac{10}{x}$

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

6.  $y = \frac{-0.5}{x}$

7.  $y = \frac{0.1}{x}$

8.  $f(x) = \frac{15}{x}$

9.  $g(x) = \frac{-6}{x}$

10.  $h(x) = \frac{-3}{x}$

**EXAMPLE 2**on p. 559  
for Exs. 11–23**GRAPHING FUNCTIONS** Graph the function. State the domain and range.

11.  $y = \frac{4}{x} + 3$

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

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

14.  $f(x) = \frac{1}{x+2}$

15.  $y = \frac{-5}{x} - 7$

16.  $y = \frac{-6}{x} + 4$

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

18.  $g(x) = \frac{-2}{x-7}$

19.  $y = \frac{-4}{x+4} + 3$

20.  $y = \frac{10}{x+7} - 5$

21.  $y = \frac{-3}{x-4} - 1$

22.  $h(x) = \frac{11}{x-9} + 9$

23. **TAKS REASONING** What are the asymptotes of the graph of  $y = \frac{3}{x+8} - 3$ ?

Ⓐ  $x = 8, y = 3$

Ⓑ  $x = 8, y = -3$

Ⓒ  $x = -8, y = 3$

Ⓓ  $x = -8, y = -3$

24. **GRAPHING CALCULATOR** Consider the function  $y = \frac{a}{x-h} + k$  where  $a = 1$ ,  $h = 3$ , and  $k = -2$ . Predict the effect on the functions graph of each change in  $a$ ,  $h$ , or  $k$  described in parts (a)–(c). Use a graphing calculator to check your prediction by graphing the original and revised functions in the same coordinate plane.

a.  $a$  changes to  $-3$

b.  $h$  changes to  $-1$

c.  $k$  changes to  $2$