

# Practice 16

For use with Section 2-7

Find  $x$  for the given value of  $f(x)$ .

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

2.  $f(x) = \frac{x^2-5}{x-2}; f(x) = 4$

3.  $f(x) = \frac{x^2-3x+4}{x}; f(x) = 2$

4.  $f(x) = \frac{x^2+2x+1}{x-1}; f(x) = 9$

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

6.  $f(x) = \frac{3x^2+4x-7}{x+1}; f(x) = -4$

For Exercises 7–12:

a. Graph the function.

b. Write the equations of all asymptotes of the graph.

c. Find the domain and range of the function.

7.  $f(x) = \frac{3}{x+1}$

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

9.  $r(x) = \frac{x-2}{3x}$

10.  $g(x) = \frac{3x+4}{x+2}$

11.  $f(x) = \frac{4-x}{2x-1}$

12.  $h(x) = \frac{x+3}{6-2x}$

Find the domain of the function without graphing.

13.  $y = \frac{4}{x-5}$

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

15.  $y = \frac{2x}{x^2-4}$

16.  $y = \frac{x}{x^2-7x+12}$

17.  $y = \frac{x-1}{x^2-2x-15}$

18.  $y = \frac{x-1}{x^2+9}$

19. **Writing** Find several rational functions whose graphs have as their asymptote the line  $x = 5$ . Conjecture several rational functions whose graphs have as asymptotes both of the lines  $x = 5$  and  $x = 6$ . Check your conjecture by graphing your functions using a graphics calculator. Describe a method for finding a rational function that has as asymptotes the lines  $x = a$  and  $x = b$ , where  $a$  and  $b$  are any two given real numbers.