

Graphing Rational Functions

0+0010H03-51001

- I can determine the vertical asymptotes and/or the points of discontinuity (Holes) for rational functions.
- I can graph rational functions

Continuity: _____

To find the asymptote(s) and/or hole(s) of a rational function, we look at its **denominator**.

Example Determine the equations of any vertical asymptotes and the values of x for any holes in the graph of $f(x) = \frac{4x^2 + x - 3}{x^2 - 1}$.

Asymptote(s): _____

Hole(s): _____

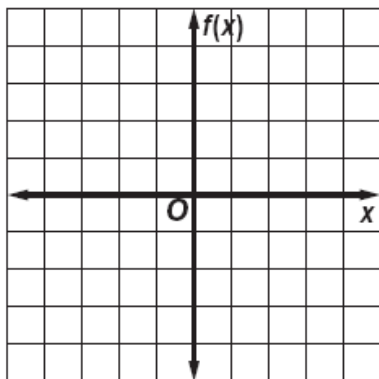
In your own words,

✓ the vertical asymptote: _____

✓ the hole: _____

Vocabulary

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

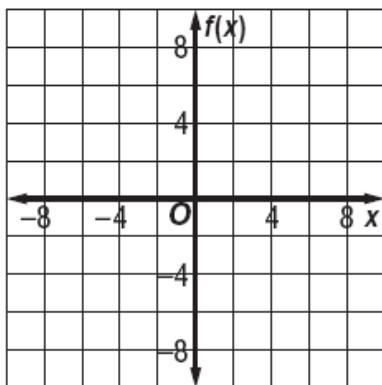


x	$f(x)$

Asymptote(s): _____

Hole(s): _____

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



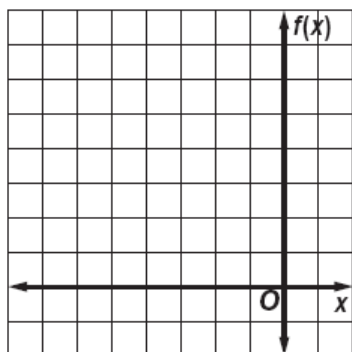
x	$f(x)$

Asymptote(s): _____

Hole(s): _____

Use your graphing calculator to get the table of values.

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

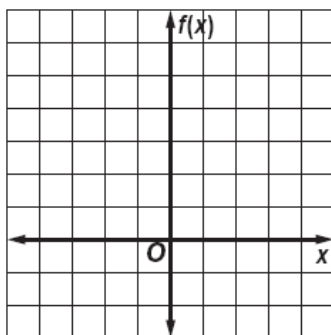


x	$f(x)$

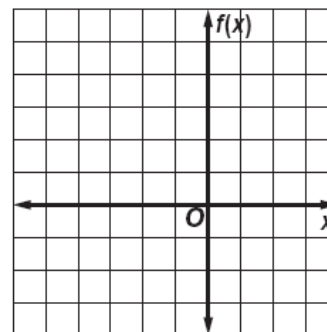
Asymptote(s): _____

Hole(s): _____

5. $f(x) = \frac{x^2 - x - 6}{x - 3}$



6. $f(x) = \frac{x^2 - 6x + 8}{x^2 - x - 2}$



Asymptote(s): _____

Asymptote(s): _____

Hole(s): _____

Hole(s): _____

Classes of Functions

VOICERARY	<input type="checkbox"/> I can identify graphs and equations as different types of functions. <input type="checkbox"/> I can graph parent function equations with small variations.		
	<i>Family Name</i>	<i>Parent Function Equation</i>	<i>Sample of Graph</i>
	<i>Constant</i>		
	<i>Identity</i>		
	<i>Direct (Linear)</i>		
	<i>Quadratic</i>		
	<i>Square Root</i>		
	<i>Absolute Value</i>		
	<i>Rational (Inverse)</i>		
	<i>Greatest Integer</i>		

Use your Family Functions Cheat sheet to identify the functions represented by each graph.

1. Match each graph below with the type of function it represents. Some types may be used more than once and others not at all.

I. square root

II. quadratic

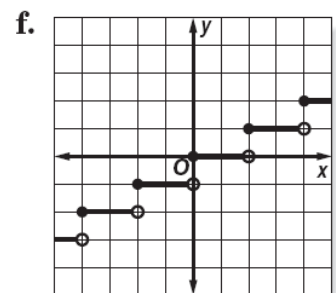
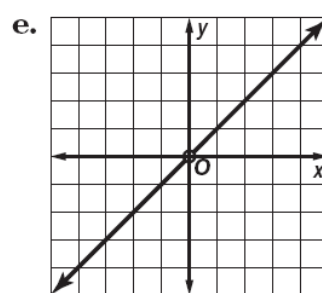
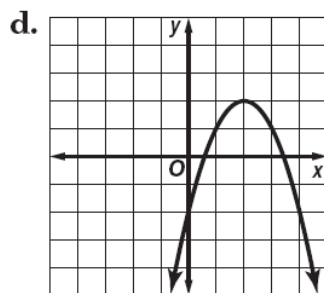
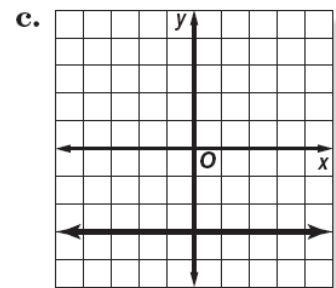
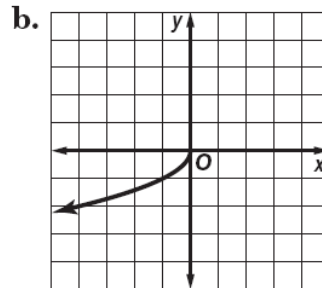
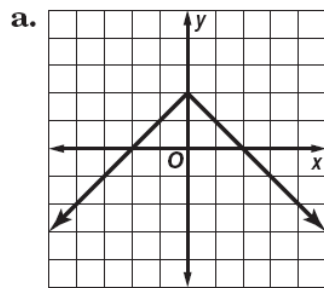
III. absolute value

IV. rational

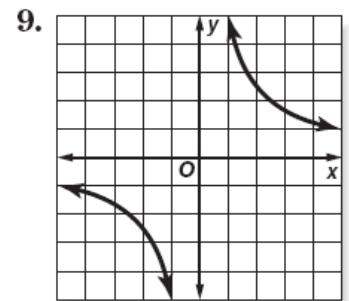
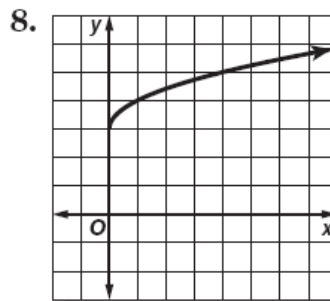
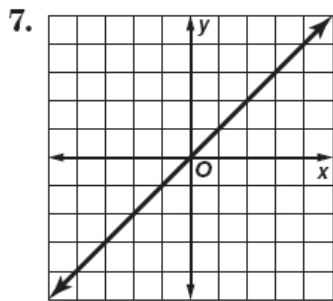
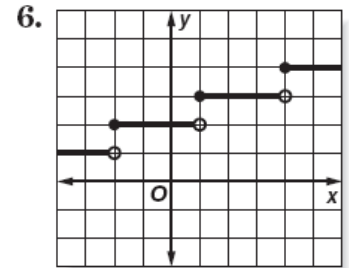
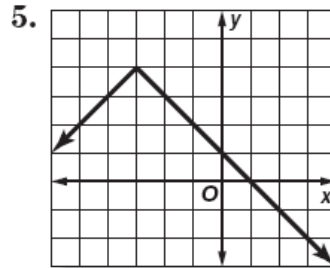
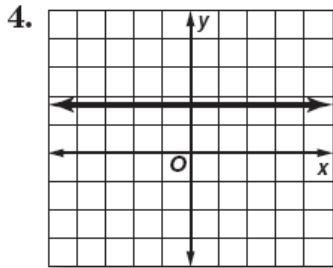
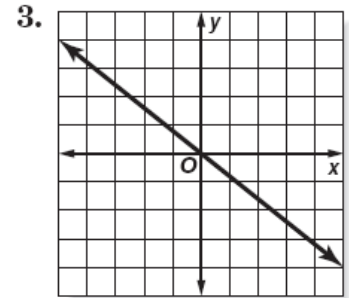
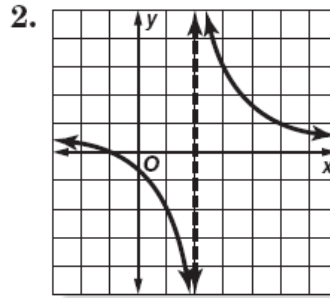
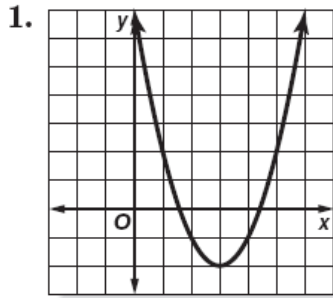
V. greatest integer

VI. constant

VII. identity



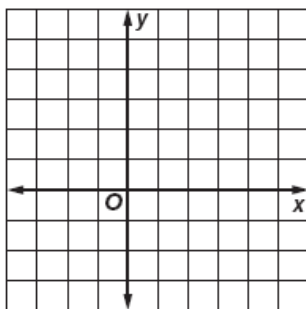
Identify the function represented by each graph.



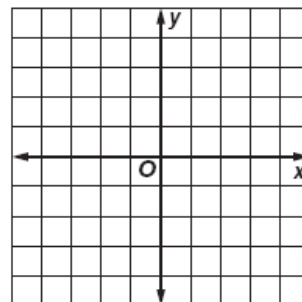
Identify the function represented by each equation.

Then graph the equation.

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

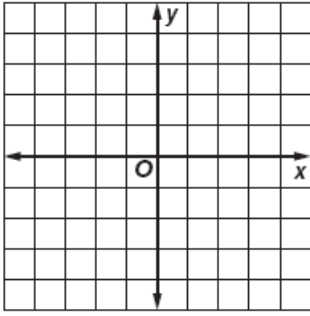


5. $y = -\frac{2}{x}$

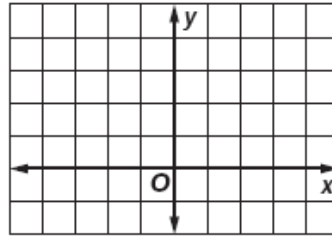


NO-INTERSECTION

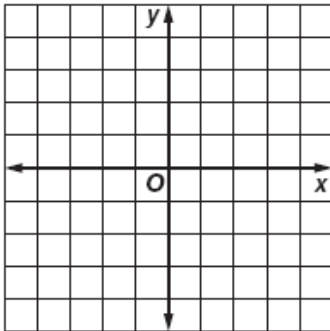
2. $y = \frac{4}{3}x$



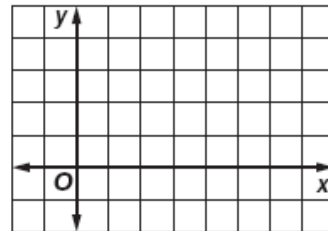
8. $y = 3.2$



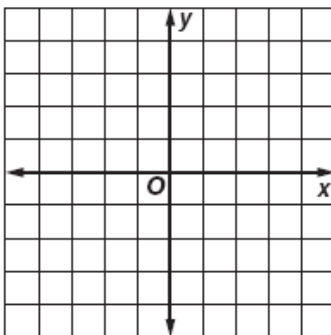
3. $y = -\frac{x^2}{2}$



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



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



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

