Precalculus A

Chapter 1

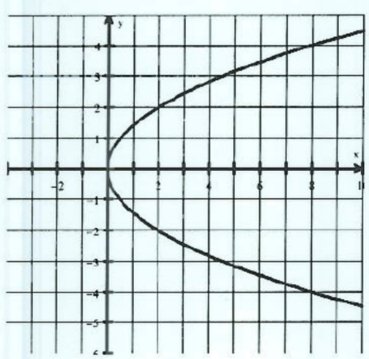
1.2 Functions and Their Properties D2

HW: Section 1.2 Practice #2 Worksheet

B. Paulson

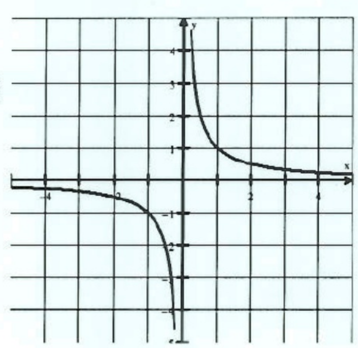
In exercises 1 and 2, use the vertical line test to determine whether the curve is the graph of a function.

1.



Not a function

2.



Function

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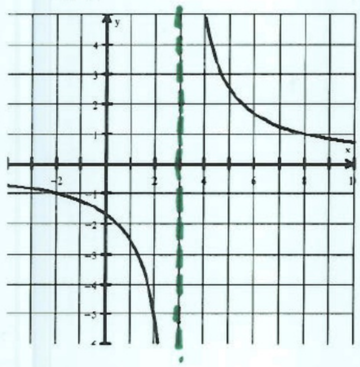
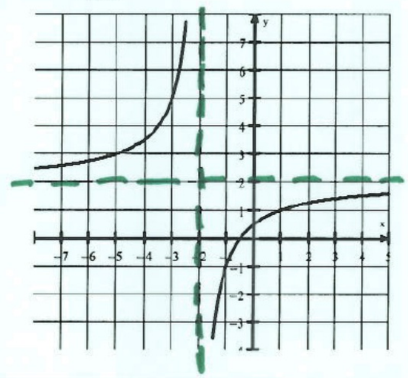
In exercises 3 and 6, use the equation and graph to determine the domain, range, continuity and asymptotes for the given functions.

3. $y = \frac{5}{x-3}$



Domain	$(-\infty, 3) \cup (3, \infty)$
Range	$(-\infty, 0) \cup (0, \infty)$
Continuity	Infinite
Vertical Asymptote	$x = 3$
Horizontal Asymptote	$y = 0$

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



Domain	$(-\infty, -2) \cup (-2, \infty)$
Range	$(-\infty, 2) \cup (2, \infty)$
Continuity	infinite
Vertical Asymptote	$x = -2$
Horizontal Asymptote	$y = 2$

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End Behaviors

- The **end behaviors** of a graph describes what happens to the f(x) or y value as x approaches (→) infinity or negative infinity.

- End behavior is written like this:

  right end
  - as $x \to \infty$ $f(x) \to$
  - as $x \to -\infty$ $f(x) \to$

  left end

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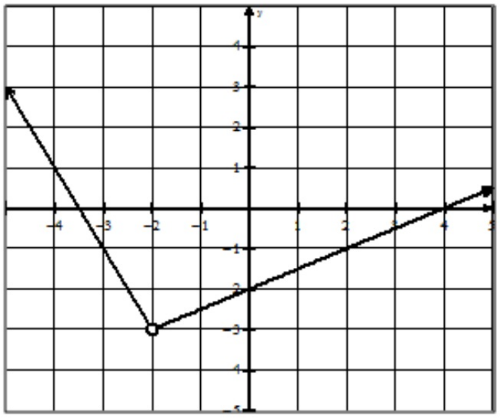
5.



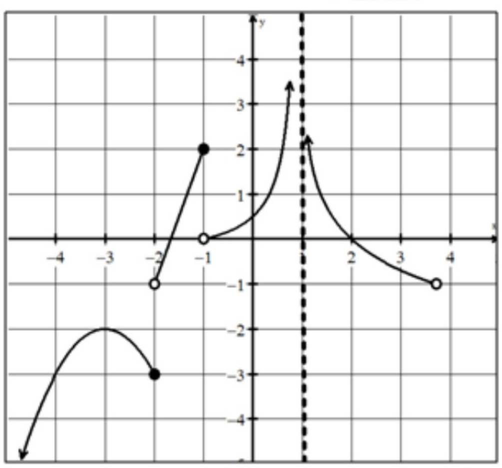
Domain	$(-\infty,-2)\cup(-2,\infty)$
Range	$(-3,\infty)$
Continuity	removable
Vertical Asymptote	none
Horizontal Asymptote	none

End Behaviors:

as $x\to\infty$, $f(x)\to\infty$

as $x\to-\infty$, $f(x)\to\infty$

6.



Domain	$(-\infty,1)\cup(1,3.75)$
Range	$(-\infty,-2]\cup(-1,\infty)$
Continuity	infinite, jump
Vertical Asymptote	$x=1$
Horizontal Asymptote	none

End Behaviors:

As $x\to\infty$, $f(x)\to-1$

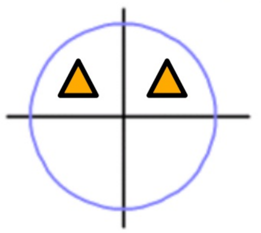
As $x\to-\infty$, $f(x)\to-\infty$

Even and Odd Functions

Even

Graphically

Reflections over the y-axis.



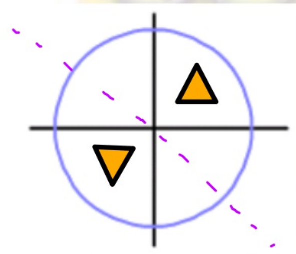
Algebraically

$f(-x) = f(x)$

Odd

Graphically

Rotation of 180° about the origin.



Algebraically

$f(-x) = -f(x)$

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Type of Symmetry

Determine whether the function has odd, even or neither symmetry. Confirm algebraically.

y

1. $f(x) = 2x^4 + 3x - 1$ Neither

$f(-x) = 2(-x)^4 + 3(-x) - 1 = 2x^4 - 3x - 1$

2. $f(x) = 2x^2 - x^6$ even

$f(-x) = 2(-x)^2 - (-x)^6 = 2x^2 - x^6$

3. $f(x) = 3x^5 + 2x^3 - x$ odd

$f(-x) = 3(-x)^5 + 2(-x)^3 - (-x) = -3x^5 - 2x^3 + x$

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