Unit 4 Day 7

Quiz Day #2

Warm-Up Quiz #2 Day!

Use g(x) for questions 1 – 6 and round to 3 decimal places.

$$g(x) = \frac{x^2 - 36}{x - 7}$$

(Hint: You may need to Zoom Out!)

1. Maximum:
2. Minimum:
3. Increasing:
4. Decreasing:
5. Domain:
6. Range:

Express the end behavior with correct limit notation.

7. g(x) seen above
8. $f(x) = \frac{4x^2 - 49}{2x + 1 + 7x^2}$
9. $h(x) = \frac{49 - 4x}{2x + 1 + 7x^2}$

Warm-Up Quiz #2 Day! ANSWERS

Use g(x) for questions 1 – 6 and round to 3 decimal places.

$$g(x) = \frac{x^2 - 36}{x - 7}$$

(Hint: You may need to Zoom Out!)

1. Maximum:

6.789 occurs at x = 3.394

2. Minimum:

21.211 occurs at x = 10.606

3. Increasing:

$(-\infty, 3.394] \cup [10.606, \infty)$

4. Decreasing:

$[3.394, 7) \cup (7, 10.606]$

5. Domain:

$(-\infty, 7) \cup (7, \infty)$

6. Range:

$(-\infty, 6.789] \cup [21.211, \infty)$

Warm Up Continued →

Warm-Up Quiz #2 Day! ANSWERS

Express the end behavior.

7. g(x) seen above $g(x) = \dfrac{x^2 - 36}{x - 7}$

Top degree is bigger → No HA → look at ends on graph

$\lim_{x \to -\infty} g(x) = -\infty$ $\lim_{x \to \infty} g(x) = \infty$

8. $f(x) = \dfrac{4x^2 - 49}{2x + 1 + 7x^2}$

Same degree → HA is y = ratio of leading coeff.

$\lim_{x \to -\infty} f(x) = 4/7$

$\lim_{x \to \infty} f(x) = 4/7$

9. $h(x) = \dfrac{49 - 4x}{2x + 1 + 7x^2}$

Bottom degree is bigger → HA is y = 0

$\lim_{x \to -\infty} h(x) = 0$

$\lim_{x \to \infty} h(x) = 0$

Homework Questions?

Tonight's Homework

Update your outline!

- Packet p. 6-7

Practice Quiz #2 Day

Using the graph of *f(x)* below, find the following limits.

$\lim_{x \to -5} f(x)$

$\lim_{x \to -3} f(x)$

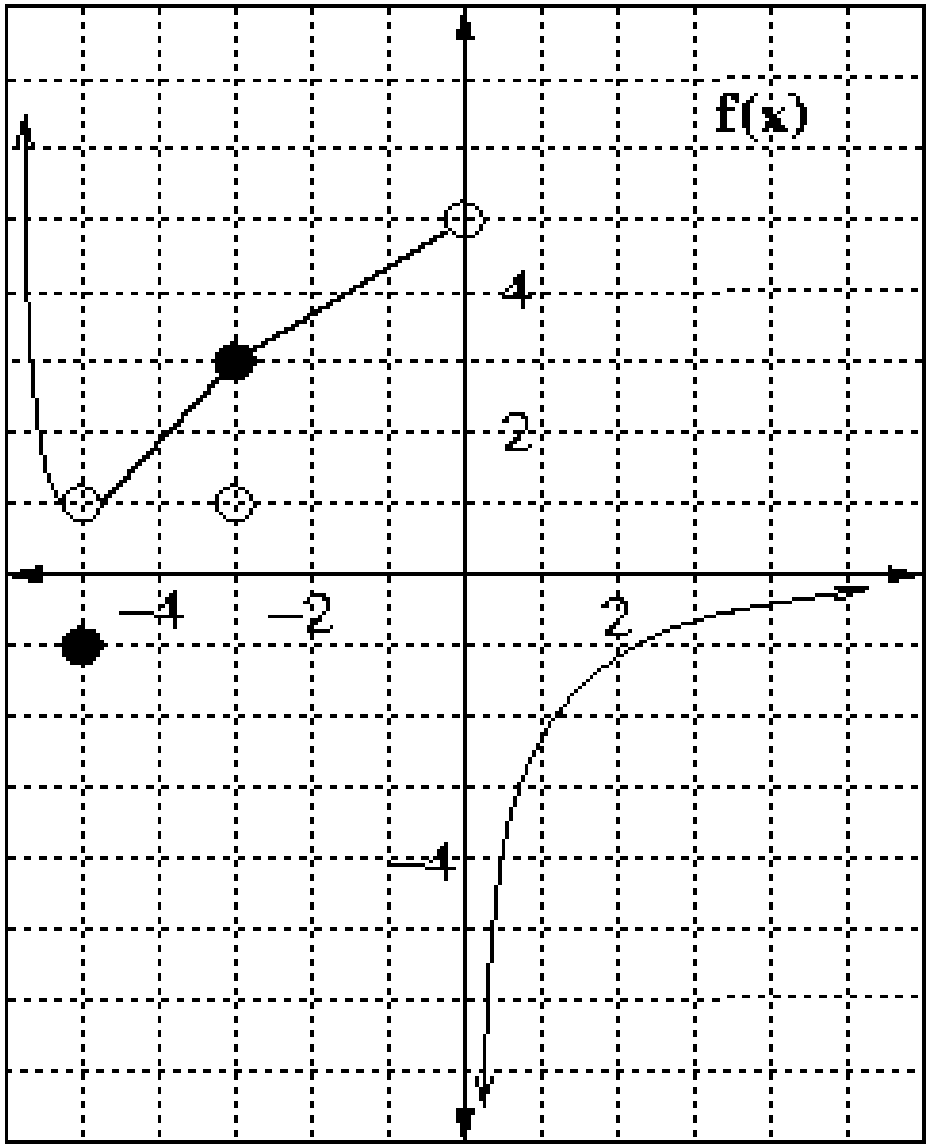
$\lim_{x \to -\infty} f(x)$

$\lim_{x \to 0^-} f(x)$

$\lim_{x \to \infty} f(x)$

$\lim_{x \to 0} f(x)$

$f(-5)$



Practice Quiz #2 Day ANSWERS

Using the graph of *f(x)* below, find the following limits.

$\lim_{x \to -5} f(x) = 1$

$\lim_{x \to -3} f(x) = 3$

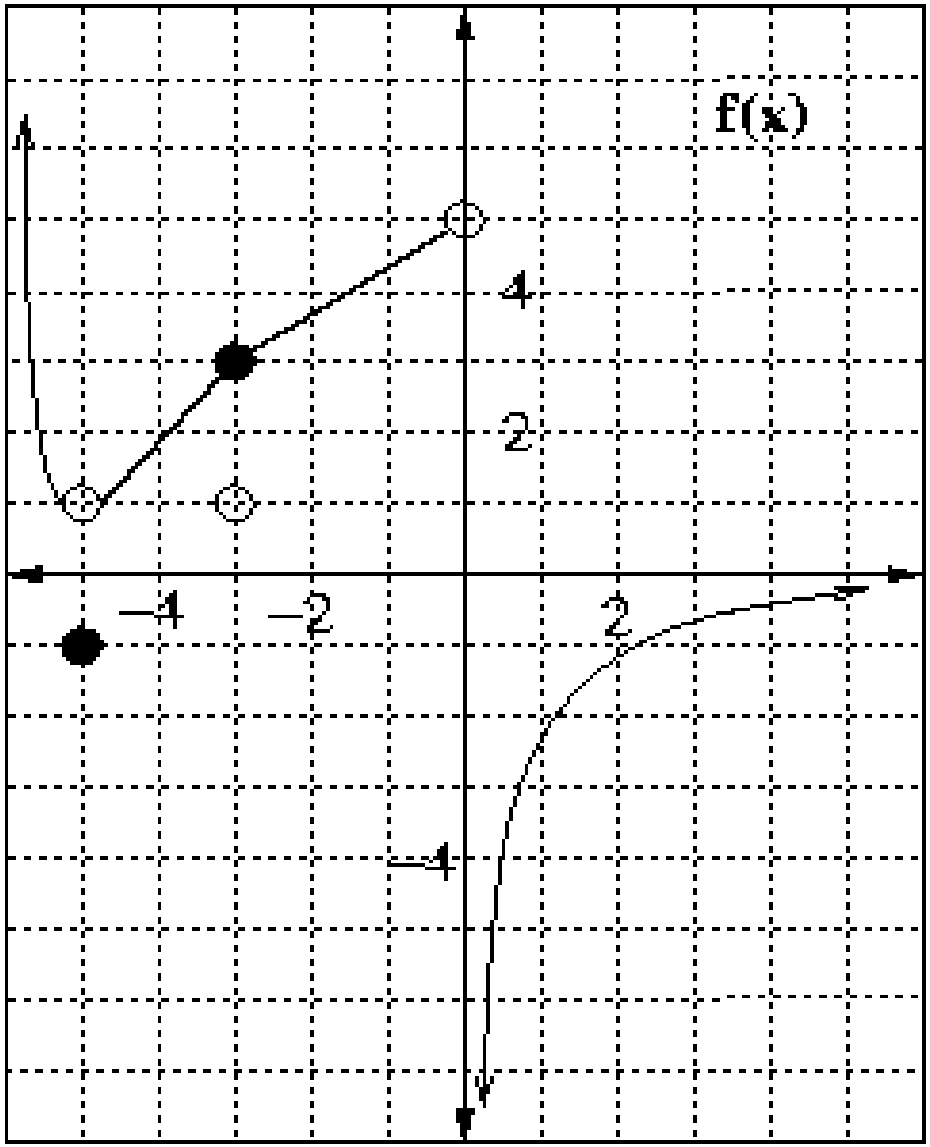
$\lim_{x \to -\infty} f(x) = \infty$

$\lim_{x \to 0^-} f(x) = 5$

$\lim_{x \to \infty} f(x) = 0$

$\lim_{x \to 0} f(x)$ *DNE*

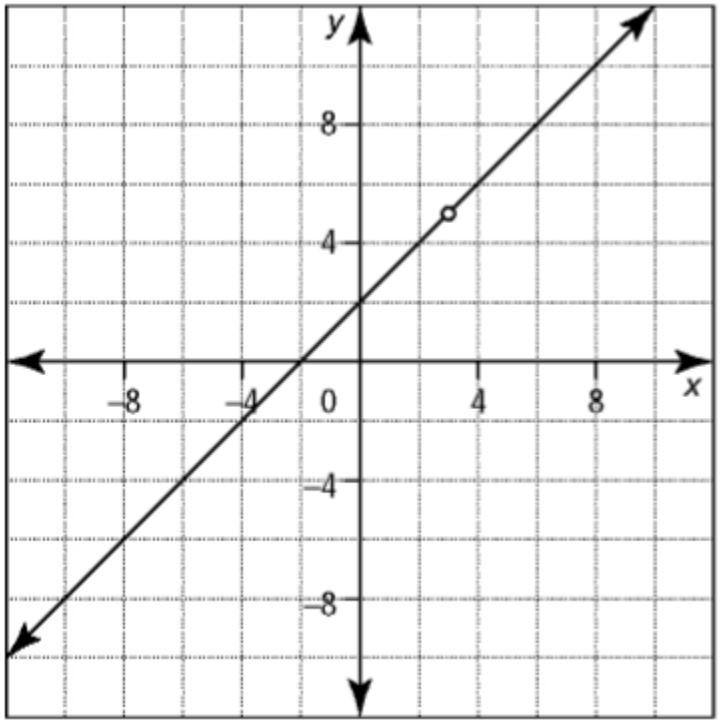
$f(-5) = -1$



More Practice for Quiz #2

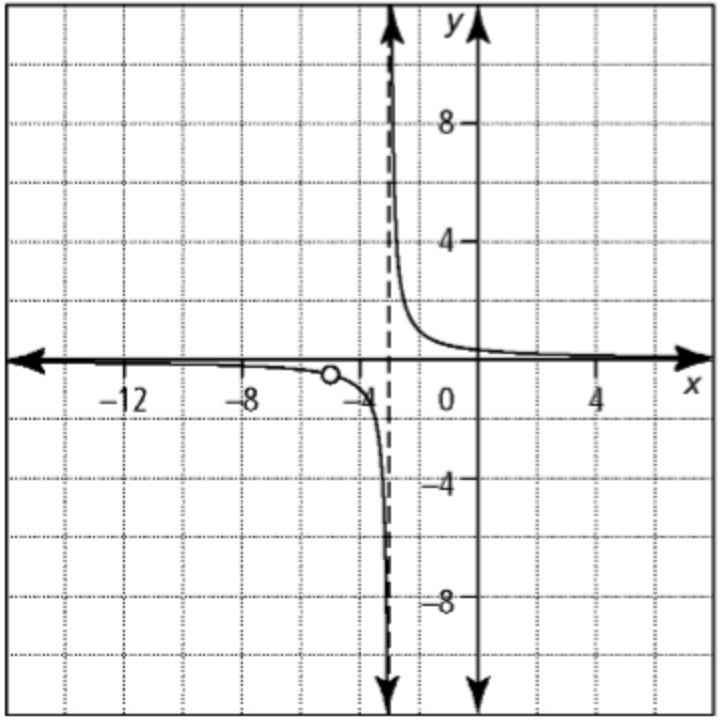
Write an equation for the graphed rational function.

a.



Hole (3, 5)

b.

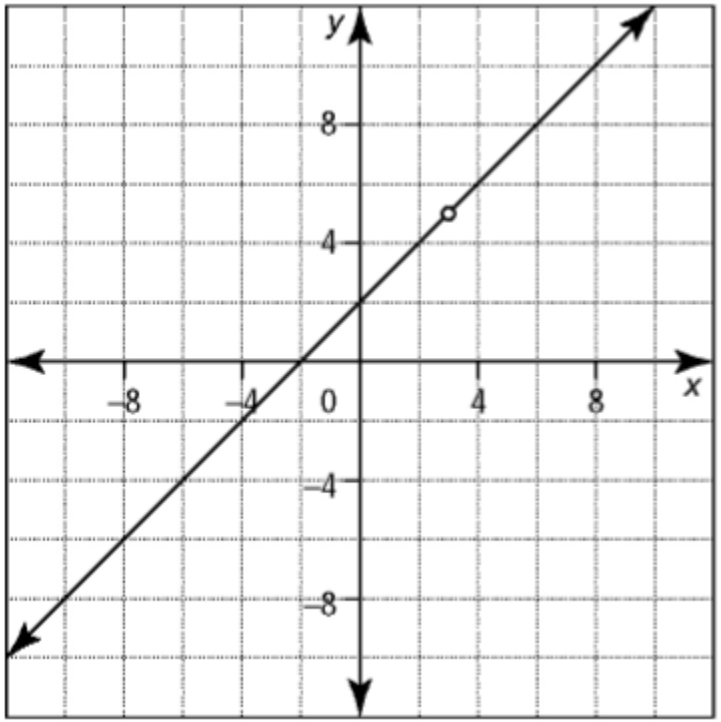


Hole (-5, -1/2)

More Practice for Quiz #2: ANSWERS

Write an equation for the graphed rational function.

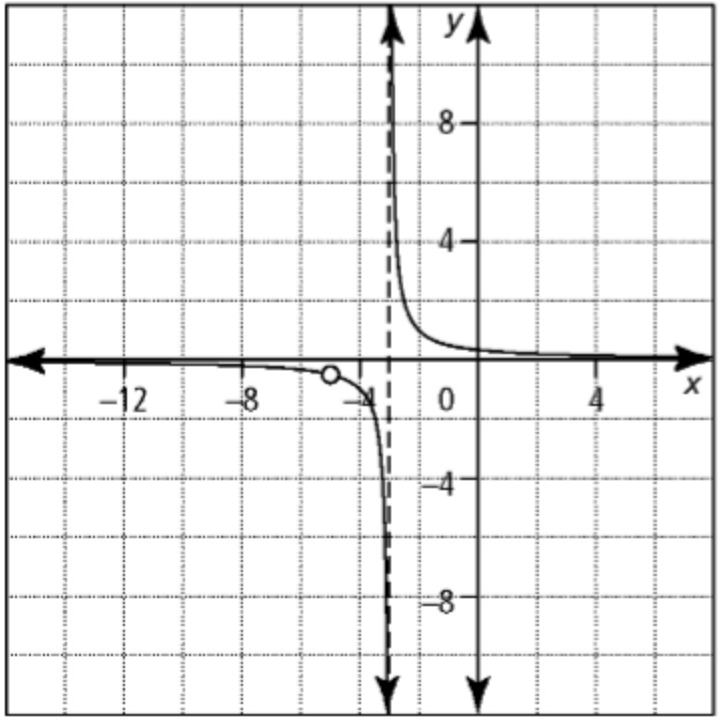
7.



Hole (3, 5)

$$y = \frac{(x-3)(x+2)}{(x-3)}$$

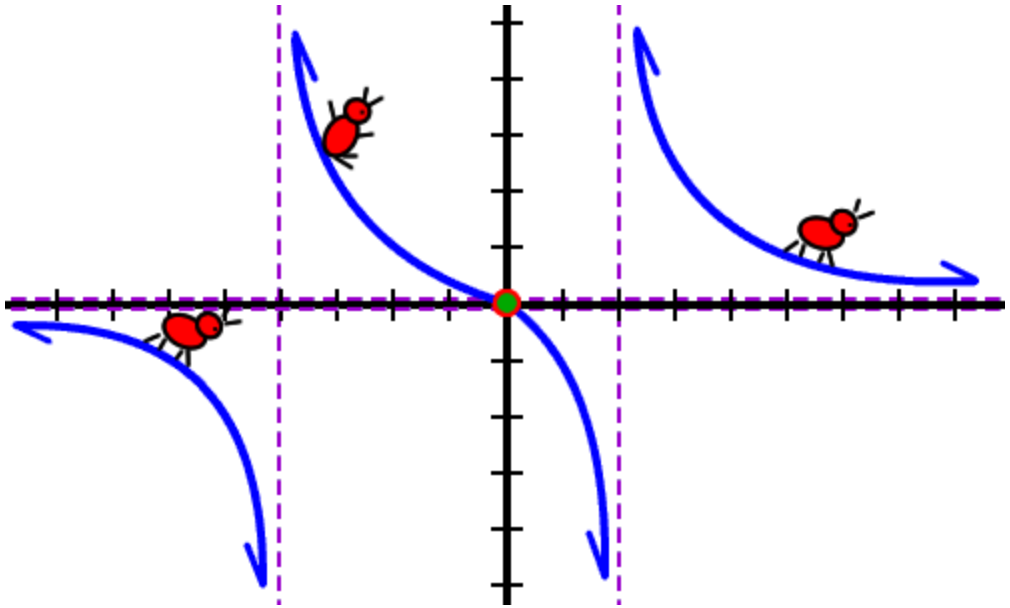
8.



Hole (-5, -1/2)

$$y = \frac{(x+5)}{(x+5)(x+3)}$$

Rational Functions Handout



Quiz Time!

- After you finish the quiz, complete the Rational Functions Handout

Rational Functions Handout

Use g(x) for questions a – d and round to 3 decimal places.

$$g(x) = \frac{2x^2 - 8}{x - 3}$$

a. Maximum:

3.056 occurs at x = .764

b. Minimum:

20.944 occurs at x = 5.236

c. Increasing:

$(-\infty, 0.764] \cup [5.236, \infty)$

d. Decreasing:

$[0.764, 3) \cup (3, 5.236]$

	$f(x)=\frac{2x-1}{x-7}$	$g(x)=\frac{x^2+5x}{x^2+7x+10}$	$h(x)=\frac{x^2-7x+12}{x^2-9}$	$f(x)=\frac{2x^2+5x-3}{x+3}$
Vertical Asymptote(s) Analyze Denominator	$x=7$	$x=-2$	$x=-3$	*none*
Horizontal Asymptote(s) Analyze Degrees of Polynomial	$y=2$	$y=1$	$y=1$	*none*
HOLES or Removable Point(s) of Discontinuity Simplify rational by factoring	*none*	$(-5,\frac{5}{3})$	$(3,-\frac{1}{6})$	$(-3,-7)$

	$f(x)=\frac{2x-1}{x-7}$	$g(x)=\frac{x^2+5x}{x^2+7x+10}$	$h(x)=\frac{x^2-7x+12}{x^2-9}$	$f(x)=\frac{2x^2+5x-3}{x+3}$
x-intercepts set y = 0	$(\frac{1}{2},0)$	$(0,0)$	$(4,0)$	$(\frac{1}{2},0)$
y-intercepts set x = 0	$(0,\frac{1}{7})$	$(0,0)$	$(0,-\frac{4}{3})$	$(0,-1)$
Domain (consider vertical asymptotes and x-value of hole)	$(-\infty,7)\cup(7,\infty)$	$(-\infty,-2)\cup(-2,-5)\cup(-5,\infty)$	$(-\infty,-3)\cup(-3,3)\cup(3,\infty)$	$(-\infty,-3)\cup(-3,\infty)$
Range (consider horizontal asymptote and y-value of hole)	$(-\infty,2)\cup(2,\infty)$	$(-\infty,1)\cup(1,\frac{5}{3})\cup(\frac{5}{3},\infty)$	$(-\infty,-\frac{1}{6})\cup(-\frac{1}{6},1)\cup(1,\infty)$	$(-\infty,-7)\cup(-7,\infty)$

	$f(x)=\frac{2x-1}{x-7}$	$g(x)=\frac{x^2+5x}{x^2+7x+10}$	$h(x)=\frac{x^2-7x+12}{x^2-9}$	$f(x)=\frac{2x^2+5x-3}{x+3}$
Find the following limits for the functions above.	$\lim_{x\to 7^-} f(x)$ $-\infty$	$\lim_{x\to -5} g(x)$ $\frac{5}{3}$	Increasing: $(-\infty,-3)\cup(-3,3)$ $\cup(3,\infty)$	$\lim_{x\to -\infty} f(x)$ $-\infty$
	Decreasing: $(-\infty,7)\cup(7,\infty)$	$\lim_{x\to -2^+} g(x)$ $-\infty$	$\lim_{x\to 3} h(x)$ $-\frac{1}{6}$	$\lim_{x\to -3} f(x)$ -7