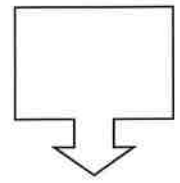


Name _____

Honors Math III - Unit 4 - Rational Functions



Date	Lesson/Objective	Homework
Tues. Oct. 24	<i>Graph Rational Functions</i>	4-4
Wed. Oct. 25	Graph Rational Functions	4-5
Thurs. Oct. 26	<i>Graph Rational Functions and Applications</i>	4-6
Fri. Oct. 27	<i>Review All of Unit 4</i>	Review
Mon. Oct. 30	<i>TEST – Unit 4</i>	TEST – Unit 4 – Will count on 2 nd quarter

Do ALL WORK ON NOTEBOOK PAPER!

8.2 – 8.3 Practice Worksheet

HW 4-4

Complete the table.

Function	Degree of Numerator	Degree of Denominator	Horizontal Asymptote	Y-intercept	Vertical Asymptote(s)	Root(s)
1. $y = \frac{4}{x^2 + 5x - 24}$						
2. $y = \frac{2}{x+1} - 7$	X	X				
3. $y = \frac{(x+1)(x-9)}{x-6}$						
4. $y = \frac{4x^2}{x^2 + 4x + 3}$						
5. $y = \frac{-2x^2}{x+6}$						
6. $y = \frac{3x+2}{x^2 - 4x - 12}$						
7. $y = \frac{1}{x}$						
8. $y = \frac{x-1}{2x+3}$						
9. $y = \frac{x^2 - 4}{x-1}$						
10. $y = \frac{3x}{x^2 + 6}$						
11. $y = \frac{x+2}{x-3}$						
12. $y = \frac{2}{x-6} + 3$	X	X				

Graphing Rational Functions

Identify the points of discontinuity, holes, vertical asymptotes, x-intercepts, and horizontal asymptote of each.

1) $f(x) = \frac{1}{3x^2 + 3x - 18}$

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

* 2 pages

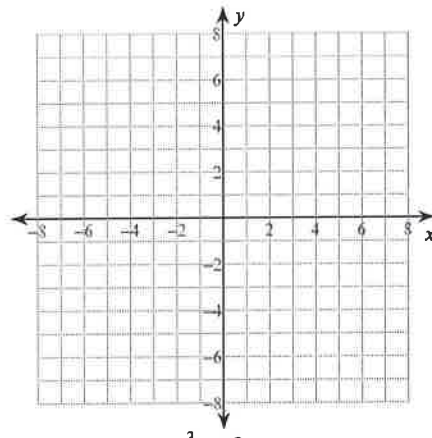
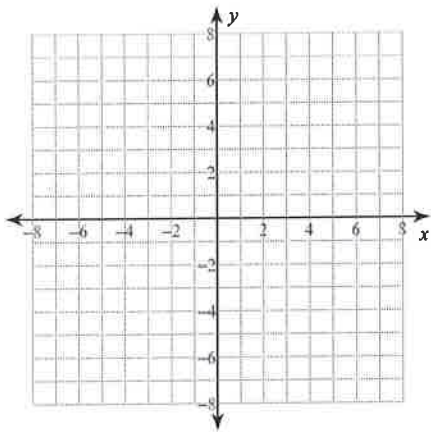
3) $f(x) = \frac{x^3 - x^2 - 6x}{-3x^2 - 3x + 18}$

4) $f(x) = \frac{x^2 + x - 6}{-4x^2 - 16x - 12}$

Identify the points of discontinuity, holes, vertical asymptotes, and horizontal asymptote of each. Then sketch the graph.

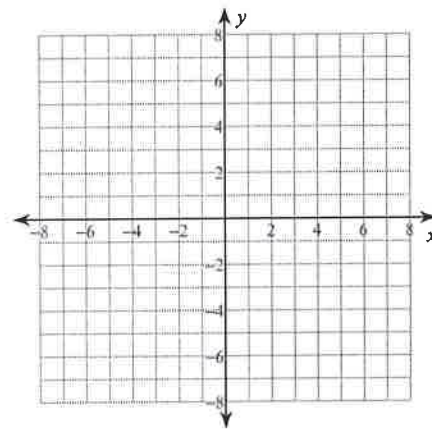
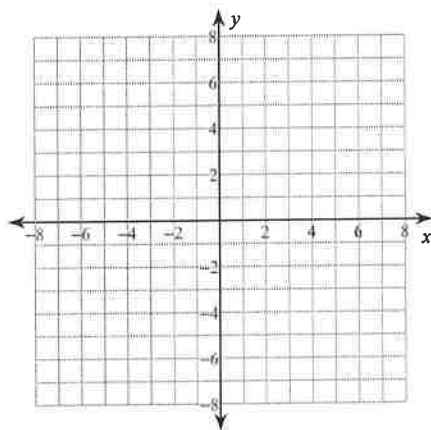
5) $f(x) = -\frac{4}{x^2 - 3x}$

6) $f(x) = \frac{x-4}{-4x-16}$

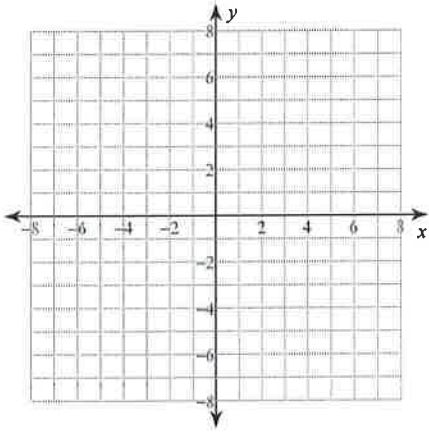


7) $f(x) = \frac{x+4}{-2x-6}$

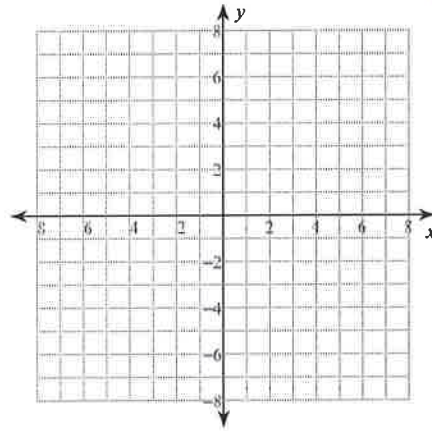
8) $f(x) = \frac{x^3 - 9x}{3x^2 - 6x - 9}$



$$9) f(x) = \frac{3x^2 - 12x}{x^2 - 2x - 3}$$

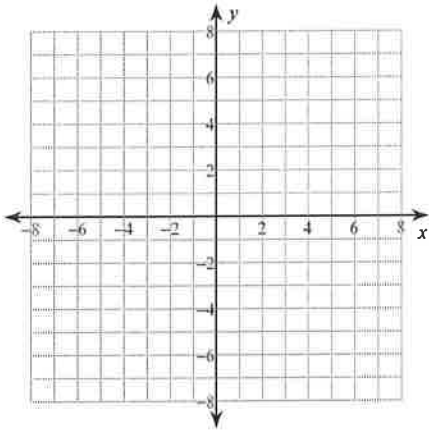


$$10) f(x) = \frac{x^3 - 16x}{-4x^2 + 4x + 24}$$

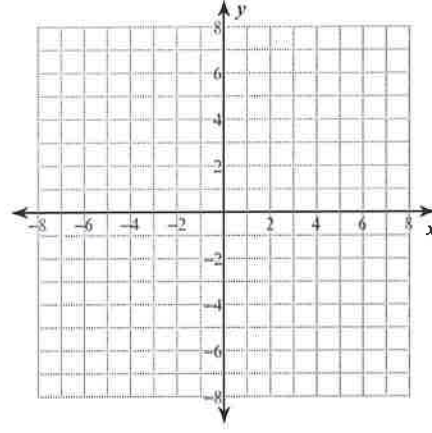


4-5
cont

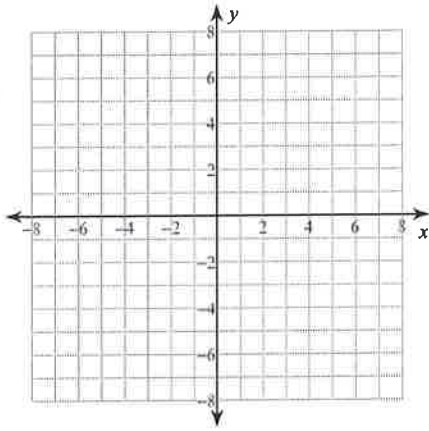
$$11) f(x) = \frac{x^2 + 2x}{-4x + 8}$$



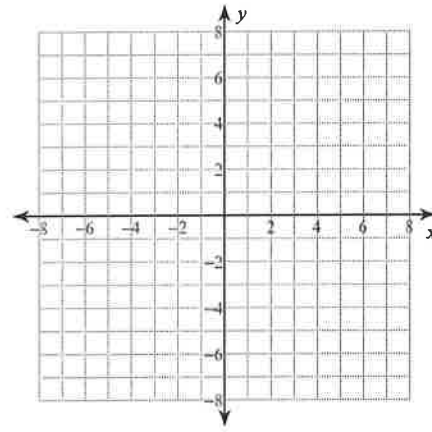
$$12) f(x) = \frac{x + 2}{2x + 6}$$



$$13) f(x) = \frac{2x^2 + 10x + 12}{x^2 + 3x + 2}$$



$$14) f(x) = \frac{3}{x - 2}$$



HW 4-6

Classwork/Notes

1. Bob the Builder and Fix-It Felix are building a skyscraper. Bob can build 16 feet of building in an hour. Felix can build 28 feet in 1.5 hours. How many feet of skyscraper can they build working together?
2. Wreck-It Ralph and Donkey Kong are throwing barrels to tear down a skyscraper. Ralph can destroy 18 feet of building in 2 hours. D.K. can destroy 8 feet in half an hour. How long will it take them to destroy a 50-foot skyscraper if they work together?
3. Johnny Appleseed can plant 18 apple trees per day. Johnny and Mike can plant 100 trees in 3 days. How many trees can Mike plant in one day?
4. Distance is equal to rate, times time ($d=r*t$). If you drive a car at a constant speed of 60 mph for 4 hours, how many miles were driven?
5. You drive a boat 3 miles down a calm river for one hour. As you turn around to drive back, the current suddenly picks up and is pushing against your boat at a rate of 2 mph. How long will it take you to get home?
6. You are competing in a 5 mile triathlon in which you run, bike, and then swim. You finish with a time of 1 hour and 40 minutes. You run at a rate of 8 mph, and bike at twice that speed. If you run for 1.5 miles, bike for 3, and swim the remaining distance, how fast do you swim?

Homework

1. A brick skyscraper being constructed is going to be 50 feet tall. A bricklayer can lay 2 feet of brick per hour. A machine can lay 3 feet of brick in 45 minutes. How many feet of brick can be laid in one hour? How many hours will it take to complete the skyscraper?
2. A 74 foot metal pipe is being driven into the ground to dig a well. A working crew can bury 3 feet of pipe in 1.5 hours, while a machine can bury 4 feet of pipe in 45 minutes. How many days would it take to bury 4 pipes if the machine and the crew work together?

$$d=rt$$

3. A patch of rain clouds are 6000 feet above the ground. Rain falling straight to the ground takes 186.5 seconds to reach the ground. At what speed does the rain fall?
4. You drive a boat 12 miles up a river against the current. The trip takes you two hours. On the way back home, the current has stopped and the trip takes 1 hour and 30 minutes. How fast was the current on the way up the river?

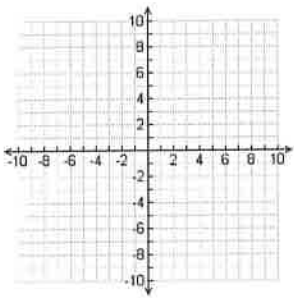
Unit 4 Part 2 Rational Expressions Exam Review

Do odd problems

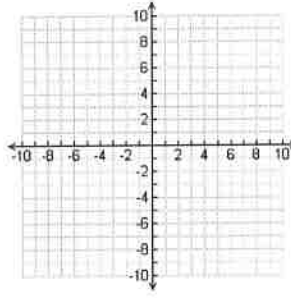
Unit 4 Part 2 Review

Directions: Sketch the asymptotes and the graph of each function. Identify the domain and the range.

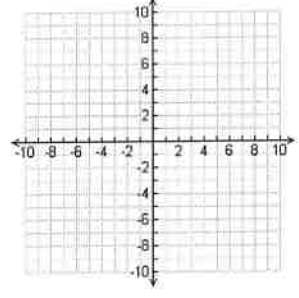
1. $y = \frac{8}{x} - 1$



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

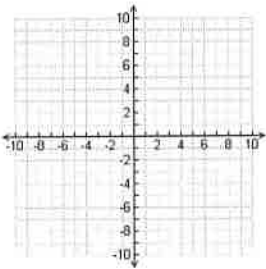


3. $y = \frac{2}{x+1}$

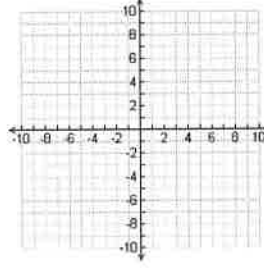


Directions: Find points of discontinuity, the domain, and x- and y-intercepts of each rational function.

4. $y = \frac{x+3}{x^2-9}$



5. $y = \frac{5-x}{x^2-25}$



Simplify. State any restrictions on the variables.

6. $\frac{5x^2y}{10xy^4}$

7. $\frac{4d^2+8d}{2d}$

8. $\frac{x^2+9x+18}{x+6}$

9. $\frac{x^2-2x-8}{x+3} \div \frac{x-4}{x+3}$

10. $\frac{3x+1}{x^2-x-6} \div \frac{6x^2+11x+3}{x^2+4x+4}$

11. $\frac{3x^4-x^3-2x^2}{6x^2-2x-4}$

12. $\frac{2x^2+5x-3}{x^2-4x} \cdot \frac{2x^3-8x^2}{x^2+6x+9}$

13. $\frac{x^2+3x+2}{x-1} \cdot \frac{1-x}{x+2}$

Simplify each sum or difference. State any restrictions on the variables.

14. $\frac{6x+1}{x+2} + \frac{2x-5}{2x+4}$

15. $\frac{8}{x^2-25} + \frac{9}{x-5}$

16. $\frac{x-3}{x^2+3x} + \frac{7}{x+3}$

17. $\frac{3x}{x^2+5x+6} - \frac{2x}{x^2+8x+16}$

18. $\frac{2}{x^2-1} - 3$

19. $\frac{2x}{x-5} - \frac{x}{x+7}$

Solve each equation. Check each solution.

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

21. $\frac{2}{x^2-1} = \frac{4}{x+1}$

22. $\frac{3x}{5} + \frac{4}{x} = \frac{4x+1}{5}$

23. $\frac{3x}{x-2} = 4 + \frac{x}{5}$

24. $x + \frac{x}{4} - \frac{x}{5} = 21$

25. $\frac{3}{x+4} + \frac{5}{4} = \frac{18}{x+4}$

26. It would take an apprentice house painter 1.5 h longer than his supervisor to paint an apartment. If they work together, they can complete the job in 4 h. About how long would it take the apprentice to complete the job working alone? Round your answer to the nearest tenth of an hour.

27. A master roofer can cover a garage in 1 h less than her new assistant. If they work together, they can complete the job in 7.75 h. How long would it take the assistant to complete the job working alone?