

Algebra 2 Honors
Mar 23 to Mar 31

Date	Topic	Assignment
Monday 3/23	8.3 - Writing Rational Functions from a graph	Worksheet
Tuesday 3/24	Polynomial and Rational Inequalities	Worksheet
Wednesday 3/25	Rational Word Problems Day 1 (Work and Motion)	Worksheet
Thursday 3/26	Rational Word Problems Day 2 (Mixture and Rate)	Worksheet
Friday 3/27	Rational Word Problems Continued	
Monday 3/30	Review - Graphing Rationals, Inequalities, Word Problems	
Tuesday 3/31	TEST 4.2 - Rational Functions	

Graphing Rational Functions and writing equations of Rational Functions - Thursday, 3/23

For each of the following: (a) state the domain, (b) state the ordered pair of any holes the graph may have, (c) write the equations of the asymptotes, (d) find the intercepts, (e) sketch a graph of the function

1.) $y = \frac{7x^2 - 3x}{x^3 - 4x}$

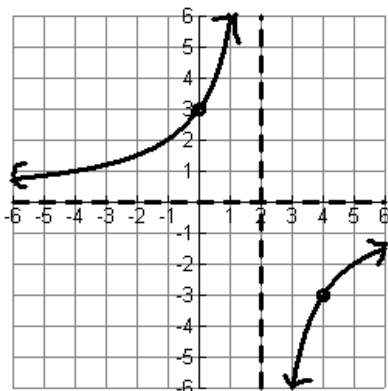
2.) $y = \frac{x^2 + 4x + 4}{(x+2)(x-3)^2}$

3.) $y = \frac{x^2 - 5x + 6}{x^2 + x - 2}$

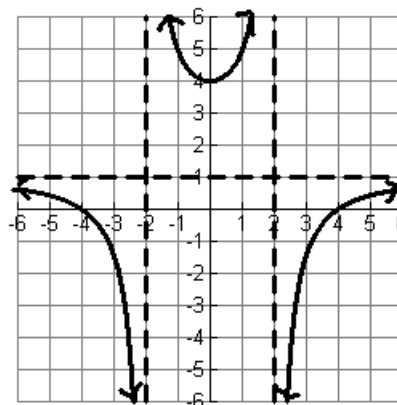
4.) $y = \frac{x^3 + 3x^2 + 2x}{x^2 - x}$

Write the equation for each of the following graphs:

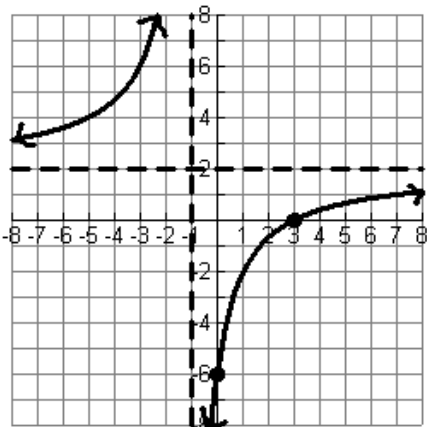
5)



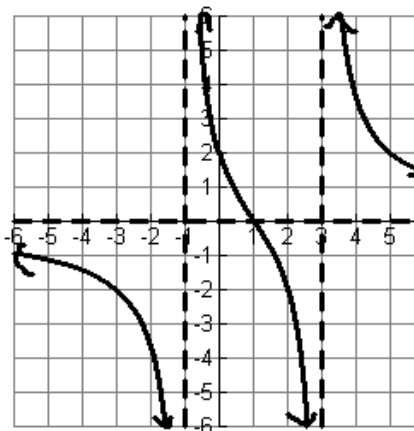
6)



7)



8)



Polynomial and Rational Inequalities - Monday, 3/25

Find the solution to each inequality. Write your answer in interval notation.

1) $(x-5)(x+2) > 0$

2) $x^2 + 8x \geq 0$

3) $x^2 - 1 < 0$

4) $2x^2 - 5x \leq 3$

5) $x(x-7) > 8$

6) $x^3 - 2x^2 - 3x > 0$

7) $4x^2 + 9 < 6x$

8) $(x-1)(x-2)(x-3)^2 < 0$

9) $\frac{x+1}{x-1} > 0$

10) $\frac{(x-3)(x+2)}{x-1} < 0$

11) $\frac{(x-2)^2}{x^2-1} \geq 0$

12) $\frac{x+4}{x-2} \leq 1$

13) $\frac{(x+5)^2}{x^2-4} \geq 0$

14) $\frac{2x^2-x-1}{x-4} \leq 0$

15) $\frac{3x^2+2x-1}{x+2} > 0$

16) $x + \frac{12}{x} < 7$

Rational Word Problems (Day 1) - Tuesday, 3/26

(a) Identify the variable(s) (b) write the equation(s) (c) Write the answer in a complete sentence.

Leave answers exact.

Work Problems:

1. An old conveyor belt takes 21 hours to move one day's coal output from the rail line. A new belt can do it in 15 hours. How long does it take when both are used at the same time?

2. Joe and Bill can retila a roof in 10 hours. Working alone, Joe could do the job 4.5 hours faster than Bill. How long would each man need to do the job alone?

3. A vat can be filled by the hot-water faucet in 8 minutes and by the cold-water faucet in 6 minutes. It can be emptied through the drain in 4 minutes. If the drain is accidentally left open while both faucets are turned on, how long does it take to fill the vat?

Motion Problems:

4. Pam jogged up a hill at 6 km./hr and then jogged back down the hill at 10 km./hr. How many kilometers did she travel in all if her total jogging time was 1 hour and 20 minutes?

5. Sharon drove for a part of a 150 km. trip at 45 km./hr and the rest of the trip at 75 km./hr. How far did she drive at each speed if the entire trip took her 2 hours and 40 minutes?

6. A passenger boat travels 35 km upstream and then back again in 4 h 48 min. If the speed of the boat in still water is 15 km/h, what is the speed of the current?

Mixed Problems:

7. Phil is making a 40-kilometer canoe trip. If he travels at 30 kilometers per hour for the first 10 kilometers, and then at 15 kilometers per hour for the rest of the trip, how many minutes longer will it take him than if he makes the entire trip at 20 kilometers per hour?

8. Julien can mulch a garden in 20 minutes. Together, Julien and Remy can mulch the same garden in 11 minutes. How long will it take Remy to mulch the garden when working alone?

10. Kyle paddled his kayak 12 km upstream against a 3 km/h current and back again in 5h 20 min. In that time how far could he have paddled in still water?

11. A glassblower can produce a set of simple glasses in about 2 h. When the glassblower works with an apprentice, the job takes about 1.5 h. How long would it take the apprentice to make a set of glasses when working alone?

12. To measure the speed of the jet stream, a weather plane left its base at noon and flew 800 km directly against the stream with an air speed of 750 km/h. It then returned directly to its base, arriving at 2:24 p.m. What was the speed of the jet stream?

13. Mr. Perry likes to take a leisurely walk at 3 mph and return home over the same route by bus at 12 mph. If he spends 12.5 hours for the entire trip, find the greatest distance he can walk.

*14. At 10:00 A.M. pipe A began to fill an empty storage tank. At noon, pipe A malfunctioned and was closed. Pipe B was used to finish filling the tank. If pipe A needs 6 hours to fill the tank alone and pipe B needs 8 hours, at what time was the tank full?

Rational Word Problems (Day 2) - Wednesday, 3/27

(a) Identify the variable(s) (b) write the equation(s) (c) Write the answer in a complete sentence.

Leave answers exact.

I. Average Rate Problems

1. Because of traffic Katie could average only 40 km/h for the first 20% of her trip, but she average 75 km./h for the entire trip. What was her average speed for the last 80% of her trip?
2. Phil is making a 40-kilometer canoe trip. If he travels at 30 kilometers per hour for the first 10 kilometers, and then at 15 kilometers per hour for the rest of the trip, how many minutes longer will it take him than if he makes the entire trip at 20 kilometers per hour?
3. An elevator went from the bottom to the top of a tower at an average speed of 4 m/s, remained at the top for 90 seconds, and then returned to the bottom at 5 m. /s. If the total elapsed time was **4.5** minutes, how high was the tower?
4. Because of traffic Katie could average only 40 km/h for the first 20% of her trip, but she average 75 km./h for the entire trip. What was her average speed for the last 80% of her trip?
5. An elevator went from the bottom to the top of a 240-meter tower, remained there for 12 seconds, and returned to the bottom at an elapsed time of 2 minutes. If the elevator traveled 1 m/s faster on the way down, find the speed going up.
6. Elizabeth drove the first half of the trip at 36 mi/h. At what speed should she cover the remaining half of the trip in order to average 45 mi./h for the entire trip?
7. An elevator went from the bottom to the top of a tower, remained there for 51 seconds, and returned to the bottom in an elapsed time of 90 seconds. If the elevator traveled 5 m/sec on the way up and 8 m/sec on the way down, determine the height of the tower.

II. Mixture Problems

8. Al Gee had a 45% algicide and a 70% algicide solution. How much of each solution should he use to make 100 g. of a 50% solution?
9. A tub contains 300 liters of a 32% salt solution. How much water must be added to reduce it to a 20% salt solution?
10. Ten liters of a 20% acid solution are mixed with 30 liters of a 30% acid solution. What is the percent of acid in the final mixture?
11. How many pounds of 70% Columbian coffee must be added to ten pounds of 90% Columbian coffee to have
 - a. 75% Columbian coffee?
 - b. 80% Columbian coffee?
 - c. 85% Columbian coffee?
12. A zookeeper needs to mix feed for the prairie dogs so that the feed has the right amount of protein. Feed A has 12% protein. Feed B has 8% protein. How many pounds of each does he need to mix to get 100 lbs of feed that is 10% protein?