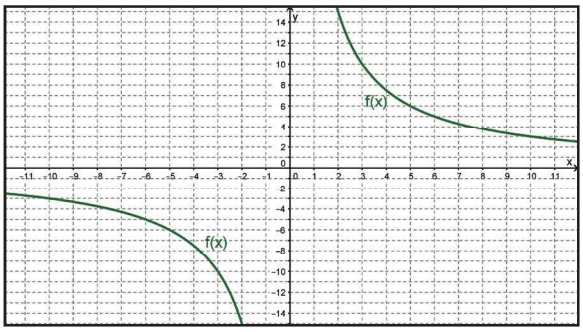
YOU TRY IT! #3

Sugar concentration in the bloodstream varies over the time passed after a sugary beverage is consumed. The blood sugar level, B, in milligrams per 100 milliliters of blood, of a healthy adult male as he metabolizes a single serving of a sugary beverage can be represented by the rational function $B(t) = \frac{170t}{15t^2 + 2}$ where t is time in hours. How long after an adult male consumes a standard serving of a sugary beverage will his blood sugar level reach 6 milligrams per 100 milliliters? Write an equation to represent the situation, and solve it algebraically.

PRACTICE/HOMEWORK

1. The function $f(x) = \frac{30}{x}$ is graphed.



A. What is the value of x when $f(x) = 10$

B. What is the value of x when $f(x) = -10$

C. What is the value of x when $f(x) = 6$

2. A summer camp director must decide on the number of groups she needs for various activities. This year, she has 120 campers attending camp. The table below shows some possible groupings.

NUMBER OF GROUPS, x	2	3	5	6	8	10	12	15	20	24
NUMBER OF CAMPERS IN A GROUP, $c(x)$	60	40	24	20	15	12	10	8	6	5

The function $c(x) = \frac{120}{x}$ is describes the number of campers in a group, based on the number of groups.

A. How many campers would be in a group if there are 15 groups?

B. If there are 24 campers in a group, how many groups are there?

C. If there were 160 campers, instead of 120, what would be the new function?

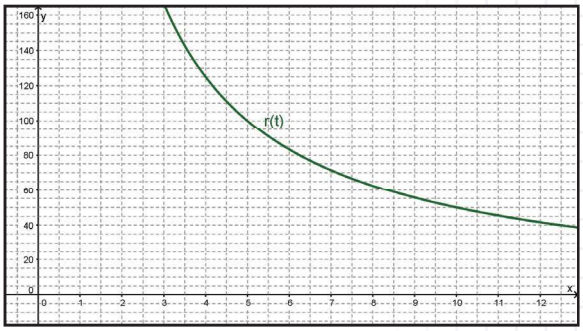
Use the situation described below to answer questions 3 – 5.

SPORTS

In the Indianapolis 500, racers compete to be the first to finish the 500 miles. The function that represents a racer's average speed during the race, $r(t)$, for a given finish time, t, is $r(t) = \frac{500}{t}$.

3. One of the race finishers had an average speed of 148 miles per hour during the race. Write an equation whose solution would give you his approximate race time.

4. Reference the given graph of $r(t)$. Determine the approximate point on the graph of $r(t)$ with a function value of 148.



5. What does the intersection point mean for the situation?

Use the situation described below to answer questions 6 – 8.

SPORTS

Colton has made 73% of his basketball free throws this year, making 37 out of 51 attempts. The function that would represent his free throw percentage, $f(x)$, for a given number of consecutive free throw shots made, x, is $f(x) = \frac{37 + x}{51 + x}$.

6. Colton wants a free throw percentage of 80%. Write an equation whose solution would give you the number of consecutive free throw shots he would need to make to achieve his goal.

7. Use graphing technology to graph $f(x)$ and the line $y = 0.8$. Determine the point on the graph of $f(x)$ with a function value of 0.8.

8. What does the intersection point mean for the situation?

Use the situation described below to answer questions 9 – 11.

CRITICAL THINKING

Anne is creating an enclosed garden in her backyard. She estimates that the work will take about 35 hours to complete. Some of her friends have offered to help, which will reduce the number of hours Anne will need to work. The function that represents the work time per person, $h(p)$, for a given number of people working, p, is $h(p) = \frac{35}{p}$.

9. Anne is hoping that she and her friends can complete the job in about 8 hours. Write an equation whose solution would give you the number of people who would need to work on the task to complete it in 8 hours.

10. Use graphing technology to make a table of values for $h(p)$. Use the table to determine the approximate point of $h(p)$ with a function value of 8.

11. What does the intersection point mean for the situation?

Use the situation described below to answer questions 12 – 14.

FINANCE

A school choir is taking a trip. Those going on the trip will each pay $300, plus their share of the $2500 deposit. The function that represents the cost per person, $c(p)$, for a given number of people going on the trip, p, is $c(p) = \frac{2500}{p} + 300$.

12. Write an equation whose solution would give you the number of people who would need to go on the trip in order for the cost per person to be $425.

13. Use graphing technology to make a table of values for $c(p)$. Use the table to determine the approximate point of $c(p)$ with a function value of 425.

14. What does the intersection point mean for the situation?

Use the situation described below to answer questions 15 – 16.

SPORTS

Gus is planning a 25-mile bike ride in the Texas hill country. The function that represents his average speed, $r(h)$, for h hours is $r(h) = \frac{25}{h}$.

15. Write an equation whose solution would give you the average speed Gus would need to go in order to finish his ride in 2 hours.

16. Solve your equation algebraically to determine the necessary average speed.

Use the situation described below to answer questions 17 – 18.

FINANCE

A neighborhood is planning a block party. They want to rent an inflatable bounce house for $399, and they will share in the cost. They already have 5 families willing to contribute toward the bounce house, but more plan to participate. The function that represents the cost per family, $c(f)$, for the number of additional families, f, is $c(f) = \frac{399}{5+f}$.

17. Write an equation whose solution would give you the number of additional families who would need to participate in order for the cost per family to be about $40.

18. Solve your equation algebraically to determine the number of additional families needed.

For problems 19 – 23, solve using any method.

19. Given the function $f(x) = \frac{x}{x-4}$, determine the value of x when $f(x) = 2$.

20. Given the function $f(x) = \frac{25}{x+10}$, determine the value of x when $f(x) = 2$.

21. Given the function $f(x) = \frac{3}{x+12}$, determine the value of x when $f(x) = 9.3$.

FINANCE

22. A club is renting a mini-bus to attend a competition. Those going on the trip will each pay a $25 entry fee for the competition, plus their share of the $600 bus cost. The function that represents the cost per person, $c(p)$, for a given number of people going to the competition, p, is $c(p) = \frac{600}{p} + 25$.

A. Write an equation whose solution would give you the number of people going to the competition if they are each paying a total of $50.

B. What is the solution to your equation, and what does it mean for the situation?

BUSINESS

23. A company spent $3,000 in fixed expenses prior to printing a set of advertisement flyers, and each flyer costs $0.15 to print. The function $c(x) = \frac{3{,}000 + 0.15x}{x}$ can be used to determine the cost per flyer if x flyers are printed. How many flyers should be printed in order for each flyer to cost $0.35 to print?

A. Write an equation whose solution would give you the number of flyers that need to be made in order for each flyer to cost $0.35 to print.

B. What is the solution to your equation, and what does it mean for the situation?