

Released Algebra 1 Questions, 2016

Chapter 1

Complete the first table so that $f(x)$ is a function.

Complete the second table so that $g(x)$ is not a function.

x	$f(x)$		x	$g(x)$
-1	<input type="text"/>		-1	<input type="text"/>
<input type="text"/>	-8		<input type="text"/>	-8
6	<input type="text"/>		6	<input type="text"/>

A function is shown.

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

What is the value of $f(12)$?

$$f(12) = \text{$$

Released Algebra 1 Questions, 2016

Chapter 2

Fred solved the equation $8(3x - 7) = -6(x + 7) + 4$ as shown.

Given	$8(3x - 7) = -6(x + 7) + 4$
Step 1	$24x - 56 = -6x - 42 + 4$
Step 2	$24x - 56 = -6x + 46$
Step 3	$30x = 102$
Step 4	$x = \frac{17}{5}$

Fred made an error between Step 1 and Step 2.

- Explain the error that Fred made.
- What is the solution to the original equation?

Chapter 4

An equation is shown.

$$y = \frac{1}{2}x + \frac{3}{4}$$

Select all of the points that are contained in the graph of the equation.

$\left(0, \frac{1}{2}\right)$

$\left(0, \frac{3}{4}\right)$

$\left(\frac{3}{4}, 0\right)$

$\left(\frac{3}{4}, \frac{1}{2}\right)$

$\left(\frac{1}{2}, 1\right)$

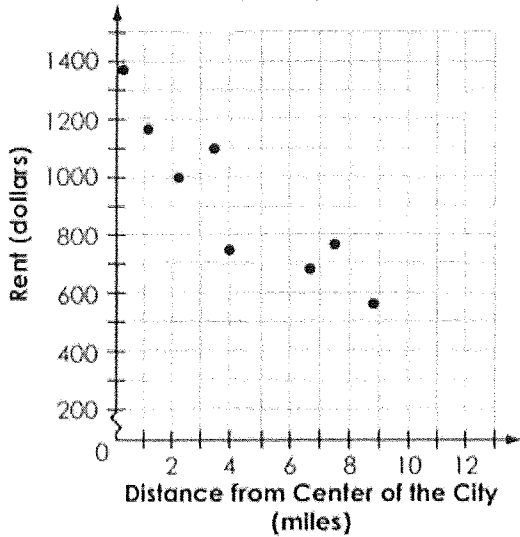
A shipping company charges a cost per pound plus a fixed fee to ship a package. The total cost, $f(x)$, in dollars, of shipping x pounds is modeled by the function shown.

$$f(x) = 4.99x + 5.75$$

Which part of the function represents the fixed fee?

- (A) x
- (B) 4.99
- (C) 5.75
- (D) $4.99x$

Distance and Rent

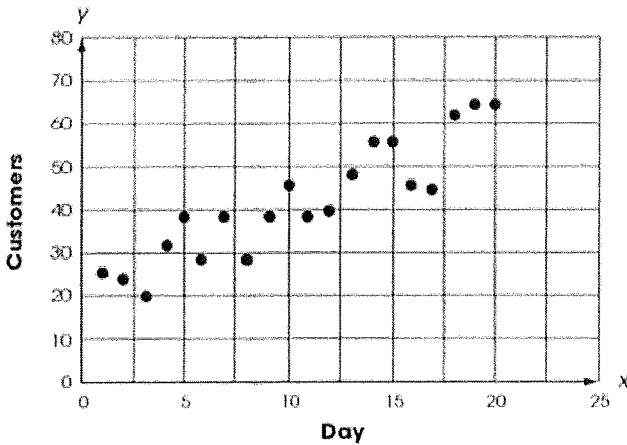


Juan wants to rent a house. He gathers data on many similar houses. The distance from the center of the city, x , and the monthly rent for each house, y , are shown in the scatter plot. Juan models the data with a linear equation.

What could the number 1275 represent in this context?

- (A) The estimated rent for a house in the center of the city
- (B) The estimated minimum rent for a house far from the center of the city
- (C) The estimated change in rent for each additional mile from the center of the city
- (D) The estimated change in distance from the center of the city for each dollar change in rent

Business Growth



Ms. Musto opened a new coffee shop. She recorded the number of customers she served between opening and noon for the first 20 days of business. Her results are shown on the graph.

Which line best fits the data?

- (A) $y = 3x + 10$
- (B) $y = 2x + 20$
- (C) $y = 3x + 30$
- (D) $y = x + 20$

A linear model shows that the relationship between the number of grocery items purchased and the total cost of the grocery bill has a correlation coefficient of 0.97.

Which statement about the variables is true?

- (A) Purchasing more items causes a higher cost of the grocery bill.
- (B) If a grocery bill has a higher cost, then more items must have been purchased.
- (C) There is no relationship between the number of items purchased and the total cost of the grocery bill.
- (D) There is a strong relationship between the number of items purchased and the total cost of the grocery bill.

Released Algebra 1 Questions, 2016

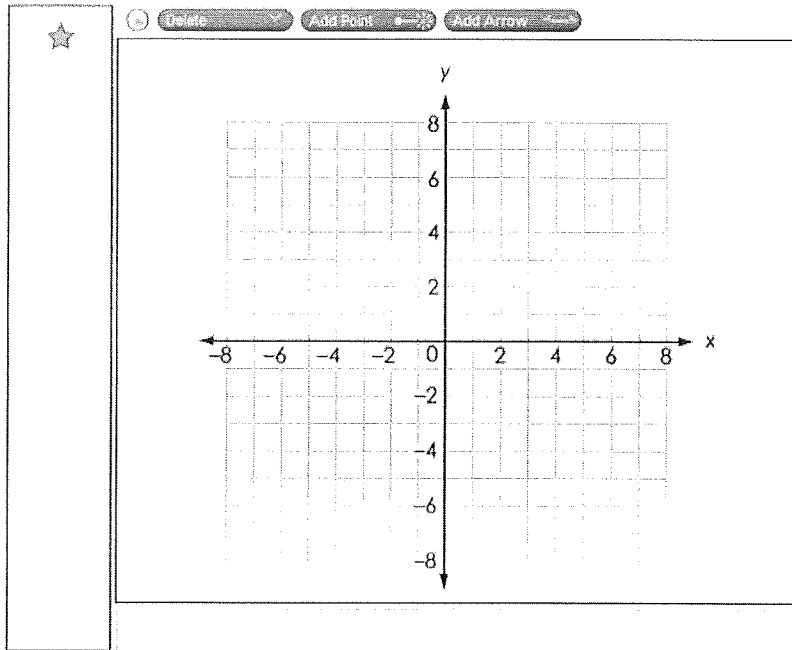
Chapter 5

A system of inequalities is shown.

$$y \geq 5$$

$$y \leq \frac{2}{3}x + 3$$

- A. Use the Add Arrow tool to graph the boundary lines of the system.
- B. Place a star on the coordinate plane to show one solution to the system.



Released Algebra 1 Questions, 2016

Chapter 6

A system of equations is shown.

$$y = 3x - 2$$

$$y = x^2$$

(<input type="text"/>	,	<input type="text"/>)
(<input type="text"/>	,	<input type="text"/>)

What are the solutions to the system of equations?

Juan buys peaches and grapefruit at the store. He writes the equations shown to model the relationship between the number of pounds of peaches, p , and the number of pounds of grapefruit, g , that he buys.

$$p + g = 2.5$$

$$1.58p + 1.09g = 3.46$$

What is the total number of pounds of peaches and grapefruit that Juan buys?

<input type="text"/>	<i>pounds</i>
----------------------	---------------

A theater sells tickets for a concert. Tickets for lower-level seats sell for \$35 each, and tickets for upper-level seats sell for \$25 each. The theater sells 350 tickets for \$10,250.

How many tickets of each type were sold?

Lower level tickets:

Upper level tickets:

Released Algebra 1 Questions, 2016

Chapter 7

A scientist is studying wildlife. She estimates the population of bats in her state to be 270,000. She predicts the population to grow at an average annual rate of 2.9 percent.

Using the scientist's prediction, create an equation that models the population of bats, y , after x years.

The population of rabbits on a large island doubles every year. On January 1, the population is 150 rabbits.

Which equation can be used to find the number of years, x , it will take for the population to reach 4,800?

A $4,800 = 2x + 150$

B $4,800 = 2 \cdot 150^x$

C $4,800 = 2^x + 150$

D $4,800 = 150 \cdot 2^x$

The first five terms of a sequence are shown.

4, 12, 36, 108, 324, ...

Write an explicit function to model the value of the n th term in the sequence such that $f(1) = 4$.

$f(n) =$

A landscaper puts 5 fish into a new pond. The number of fish doubles each month over a period of time.

Write a function $f(x)$ to model the number of fish in the pond after x months.

$f(x) =$

Which expression is equivalent to $(2x^2 - 3)(x + 4)$?

- (A) $2x^3 + 12$
- (B) $2x^2 + 11x + 12$
- (C) $2x^3 + 6x^2 + 4x + 12$
- (D) $2x^3 + 8x^2 + 3x + 12$

An equation is shown.

$$2x^2 - 5x - 3 = 0$$

What values of x make the equation true?

$x =$

$x =$

Select all of the expressions that are equivalent to $9x^4 - y^2$.

- $(3x^2 - y)^2$
- $(3x^2)^2 - (y)^2$
- $9(x^2)^2 - (y)^2$
- $(9x^2)^2 - (y)^2$
- $(3x^2 + y)(3x^2 - y)$

Which expression is equivalent to $(8x^3)^{\frac{2}{3}}$?

- (A) $4x^2$
- (B) $4x^3$
- (C) $\sqrt{8x^9}$
- (D) $\sqrt{(8x^3)^3}$

Released Algebra 1 Questions, 2016

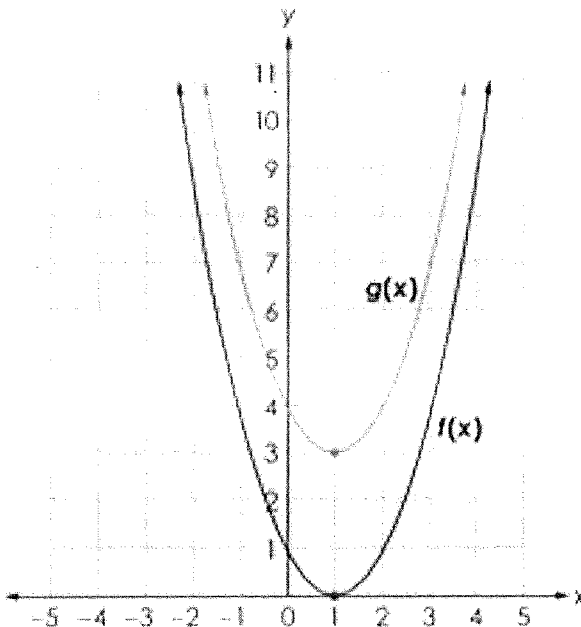
Chapter 9

A grasshopper jumps off of a tree stump. The height, in feet, of the grasshopper above the ground after t seconds is modeled by the function shown.

$$h(t) = -t^2 + \frac{4}{3}t + \frac{1}{4}$$

After how many seconds will the grasshopper land on the ground?

Function $f(x)$ undergoes a single transformation to create function $g(x)$. The graphs of both $f(x)$ and $g(x)$ are shown.



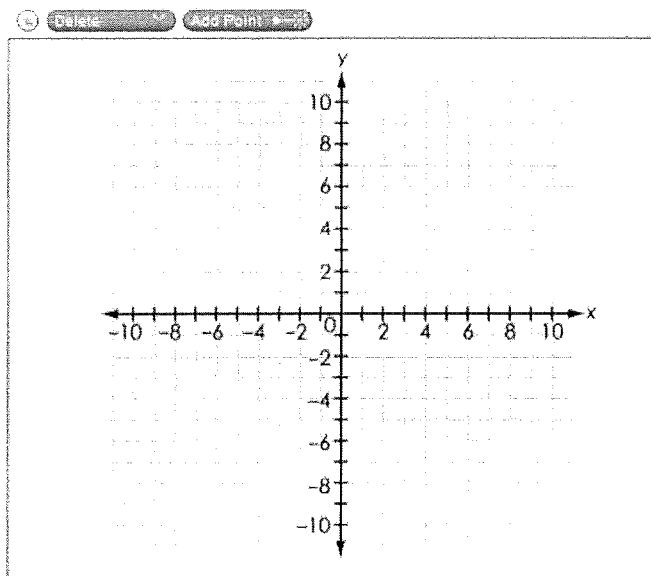
Create $g(x)$ in terms of $f(x)$.

$$g(x) = \boxed{}$$

A function is shown.

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

Use the Add Point tool to show the x -intercepts and maximum or minimum of the function.



Released Algebra 1 Questions, 2016

Chapter 12

An analyst researches the relationship between different energy sources in each state for 2014. The data in the table show the number of states that use coal and nuclear power as an energy source.

		Nuclear	
		Yes	No
Coal	Yes	16	20
	No	2	12

Given that a state does not use nuclear power, what percentage of those states use coal?

 %

A group of students measures the distance a toy car has traveled after different amounts of time. A table of the data is shown.

Time (seconds)	Distance (meters)
5	1.0
6	1.2
7	2.4
8	3.3
9	3.7
10	11.0
11	4.2
12	3.7
13	4.8
14	4.5
15	4.9

The students want to perform an analysis of the data set and consider removing the outlier point.

Select all of the quantities that will change if the outlier point is removed from the data set.

- mean of the time
- mean of the distance
- median of the time
- median of the distance
- range of the time
- range of the distance