

Class Name : **Lacoste College Algebra Spring 2020 - CRN22385 MW3**

Instructor Name : **Prof. Lacoste**

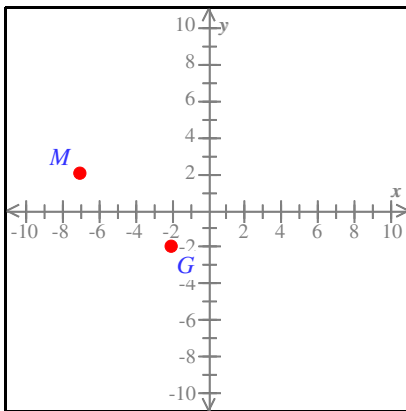
Student Name : _____

Instructor Note : **All Practice Problems for Exam 2. There are multiple versions so that you can try challenging problems more than once. Contact me if you need even more versions.**

Question 1 of 47

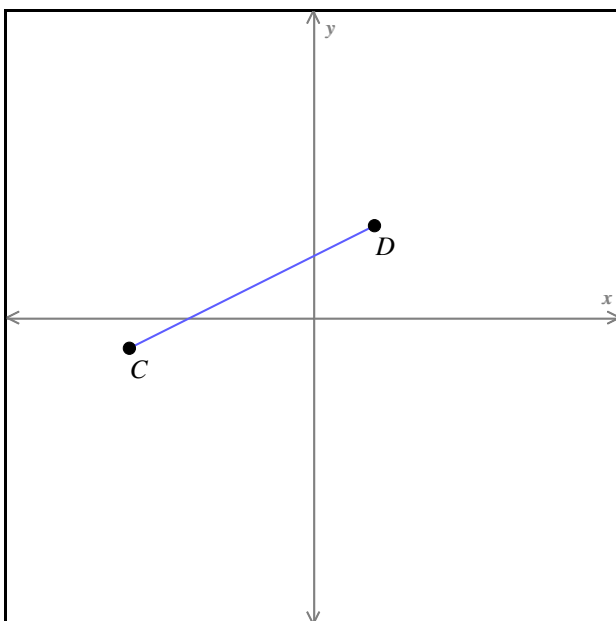
Calculate the distance between the points $G = (-2, -2)$ and $M = (-7, 2)$ in the coordinate plane.

Give an exact answer (not a decimal approximation).



Question 2 of 47

Find the midpoint M of the line segment joining the points $C = (-6, -1)$ and $D = (2, 3)$.



Question 3 of 47

Fill in the blank with a number to make the expression a perfect square.

$$u^2 + 14u + \boxed{}$$

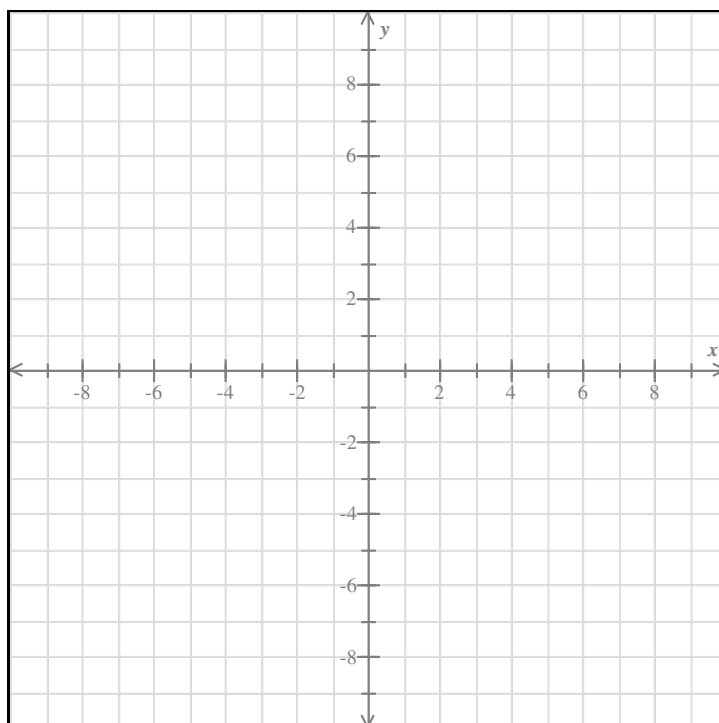
Question 4 of 47

The equation of a circle is given below. Identify the radius and center. Then graph the circle.

$$(x+4)^2 + (y-1)^2 = 9$$

Radius: _____

Center: (_____, _____)



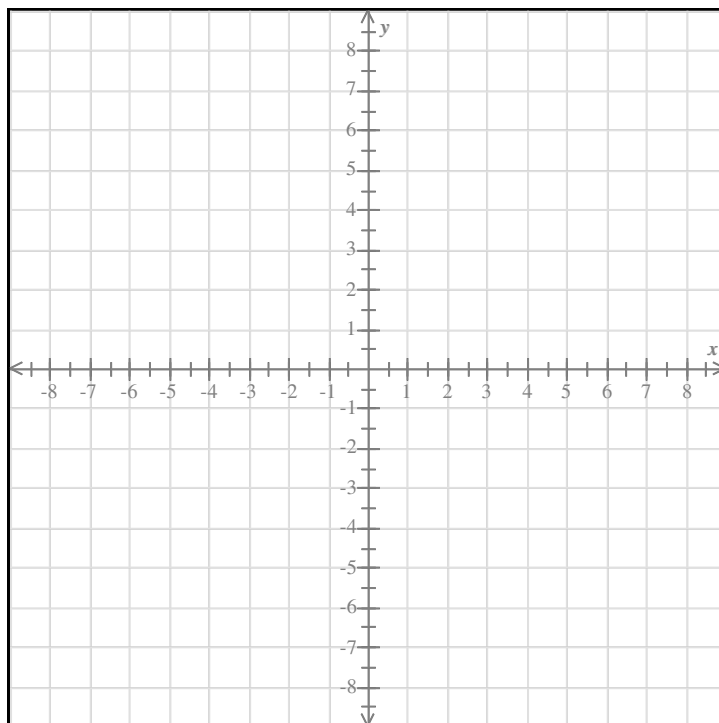
Question 5 of 47

The equation of a circle is given below. Identify the center and the radius. Then graph the circle.

$$x^2 + y^2 - 4x + 6y + 9 = 0$$

Center: (_____, _____)

Radius: _____



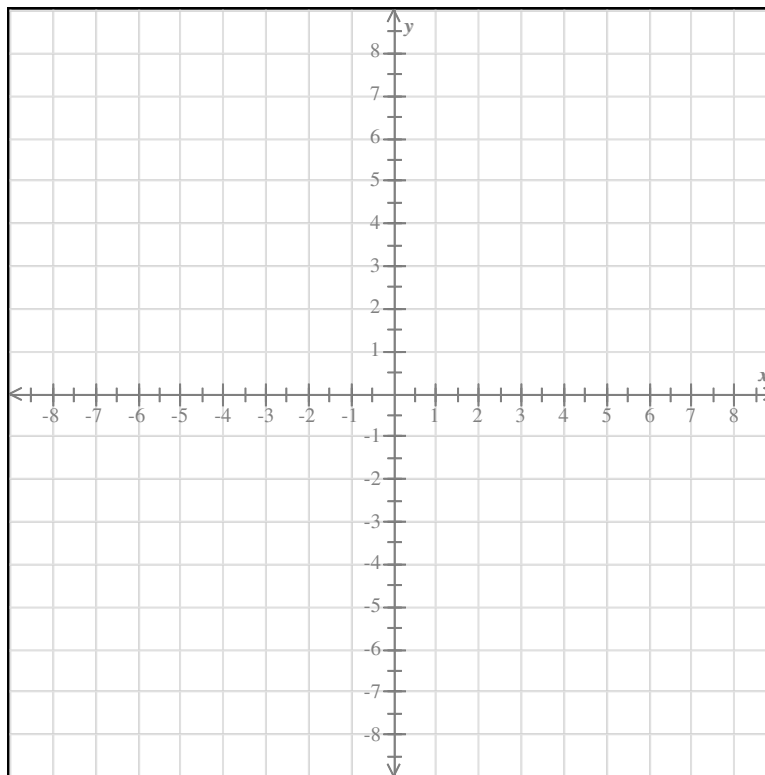
Question 6 of 47

The equation of a circle is given below. Identify the radius and the center. Then graph the circle.

$$2x^2 + 12x + 2y^2 - 10y = -\frac{45}{2}$$

Radius: _____

Center: (_____, _____)

**Question 7 of 47**

Give the equation of the circle centered at the origin and passing through the point $(-3, 0)$.

Question 8 of 47

Write an equation of the circle with center $(-8, 4)$ and radius 5.

Question 9 of 47

Find an equation of the circle that has center $(1, -6)$ and passes through $(5, -2)$.

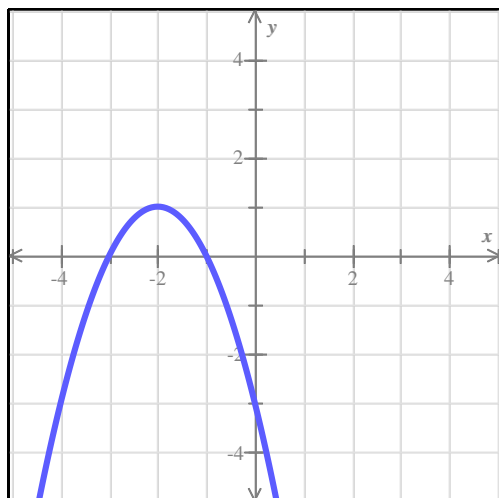
Question 10 of 47

Find an equation of the circle whose diameter has endpoints $(-4, 6)$ and $(6, -2)$.

Question 11 of 47

The graph of a function is given below.

Give all x -intercepts and y -intercepts shown.



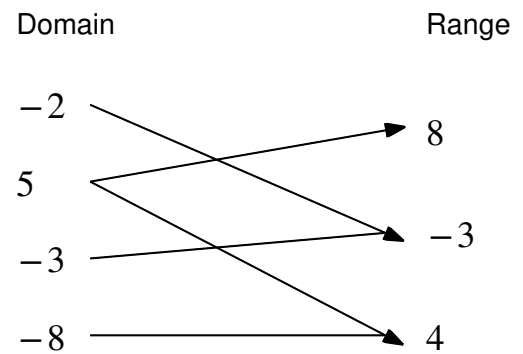
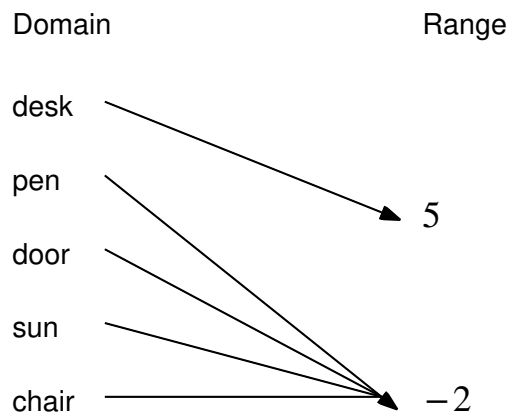
If there is more than one answer, separate them with commas.

x -intercept(s):

y -intercept(s):

Question 12 of 47

For each relation, decide whether or not it is a function.

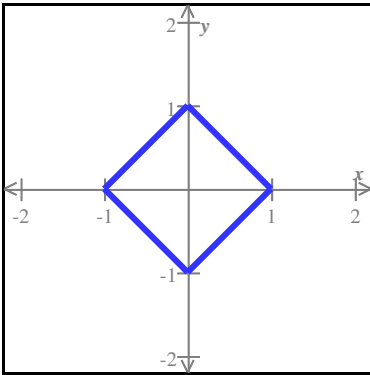
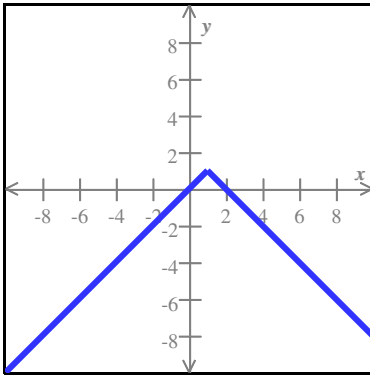
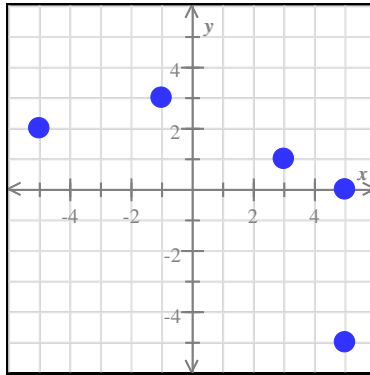
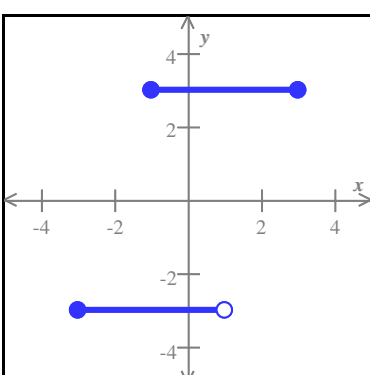
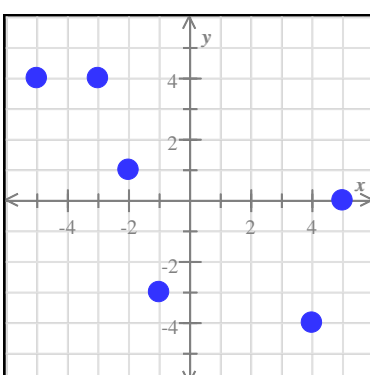
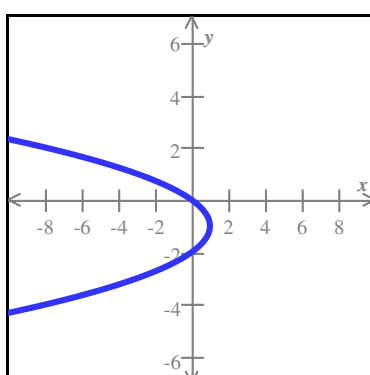


$$\{(s, x), (y, x), (x, a), (a, a)\}$$

$$\{(-9, n), (2, n), (-7, n), (6, n)\}$$

Question 13 of 47

For each graph below, state whether it represents a function.

Function?	<p>Graph 1</p>  <p><input type="radio"/> Yes <input type="radio"/> No</p>	<p>Graph 2</p>  <p><input type="radio"/> Yes <input type="radio"/> No</p>	<p>Graph 3</p>  <p><input type="radio"/> Yes <input type="radio"/> No</p>
Function?	<p>Graph 4</p>  <p><input type="radio"/> Yes <input type="radio"/> No</p>	<p>Graph 5</p>  <p><input type="radio"/> Yes <input type="radio"/> No</p>	<p>Graph 6</p>  <p><input type="radio"/> Yes <input type="radio"/> No</p>

Question 14 of 47

The functions f and g are defined as follows.

$$f(x) = -5x + 2 \quad g(x) = -3x^3 - 2$$

Find $f(4)$ and $g(-3)$.

Simplify your answers as much as possible.

Question 15 of 47

The function g is defined as follows.

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

Find $g(3)$.

Simplify your answer as much as possible.

Question 16 of 47

The functions f , g , and h are defined as follows.

$$f(x) = \frac{3x^2 - 6}{x^2} \quad g(x) = |-14 + 9x| \quad h(x) = \sqrt{-6 - 5x}$$

Find $f(4)$, $g\left(\frac{1}{3}\right)$, and $h(-4)$.

Simplify your answers as much as possible.

Question 17 of 47

The function f is defined by $f(x) = x^2 - 6$.

Find $f(3x)$.

Question 18 of 47

The function h is defined as $h(x) = 5x^2 - 3x$.

Find $h(x - 1)$.

Write your answer without parentheses, and simplify it as much as possible.

$$h(x - 1) = \underline{\hspace{2cm}}$$

Question 19 of 47

Suppose that the relation T is defined as follows.

$$T = \{(9, 0), (-2, 7), (9, 2), (6, -2)\}$$

Give the domain and range of T .

Write your answers using set notation.

Question 20 of 47

The function f is defined below.

$$f(x) = \frac{x^2 - 5x - 36}{x^2 - 3x + 2}$$

Find all values of x that are NOT in the domain of f .

If there is more than one value, separate them with commas.

Question 21 of 47

The functions f and g are defined as follows.

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

$$g(x) = \frac{x - 8}{x^2 - x - 56}$$

For each function, find the domain.

Write each answer as an interval or union of intervals.

Question 22 of 47

Find the domain of the function.

$$h(x) = \sqrt{-4x + 16}$$

Write your answer using interval notation.

Question 23 of 47

Find the domain of the function.

$$f(x) = \frac{\sqrt{x-1}}{x-8}$$

Write your answer as an interval or union of intervals.

Question 24 of 47

For each of the following equations, determine whether y is a function of x .

$x = -8y^2$	<input type="radio"/> Function	<input type="radio"/> Not a function
$x = \frac{2}{5}y$	<input type="radio"/> Function	<input type="radio"/> Not a function
$y^2 = 4x + 16$	<input type="radio"/> Function	<input type="radio"/> Not a function
$y = 9x + 4$	<input type="radio"/> Function	<input type="radio"/> Not a function

Question 25 of 47

For each of the following, determine whether the equation defines y as a function of x .

$x = \frac{5}{y}$	<input type="radio"/> Function	<input type="radio"/> Not a function
$x^2 + y = 25$	<input type="radio"/> Function	<input type="radio"/> Not a function
$6x = y^2$	<input type="radio"/> Function	<input type="radio"/> Not a function
$7 x + y = 7$	<input type="radio"/> Function	<input type="radio"/> Not a function

Question 26 of 47

Ryan purchased a prepaid phone card for \$20.00. Calls cost 20 cents a minute using this card. The credit, C (in dollars), left on the card after it is used for x minutes of calls is given by the following function.

$$C(x) = 20.00 - 0.20x$$

How much credit is left on the card after Ryan uses it for 20 minutes of calls?

Question 27 of 47

A railroad crew can lay 7 miles of track each day. They need to lay 189 miles of track. The length, L (in miles), that is left to lay after d days is given by the following function.

$$L(d) = 189 - 7d$$

Answer the following questions.

(a) How many miles of track does the crew have left to lay after 19 days?

miles

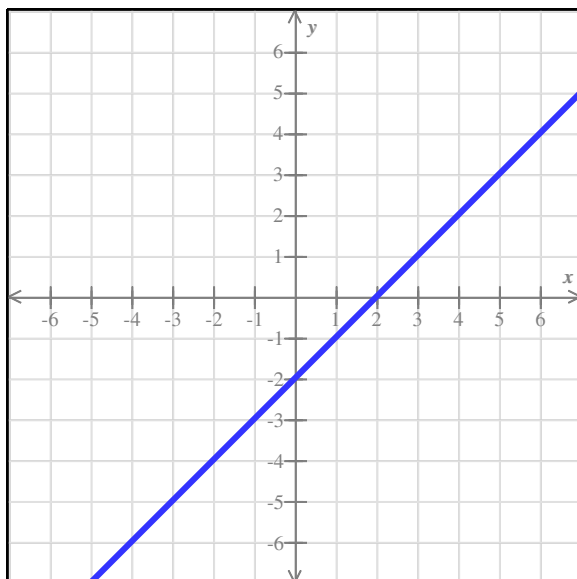
(b) How many days will it take the crew to lay all the track?

days

Question 28 of 47

The graph of a function f is shown below.

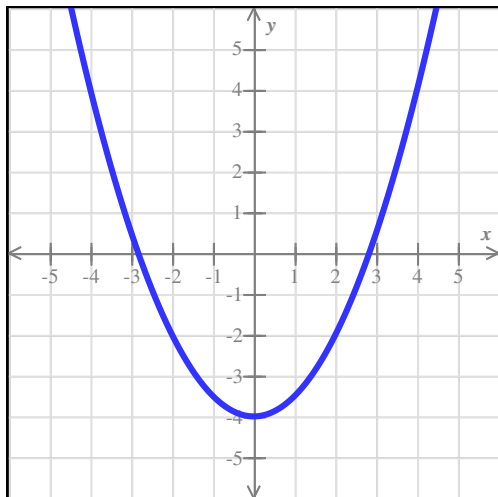
Find $f(-4)$.



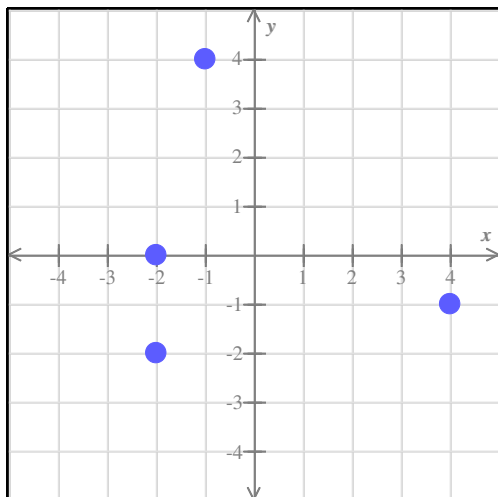
Question 29 of 47

The graph of a function f is shown below.

Find $f(2)$ and find one value of x for which $f(x) = -4$.

**Question 30 of 47**

The graph of the relation G is shown below.



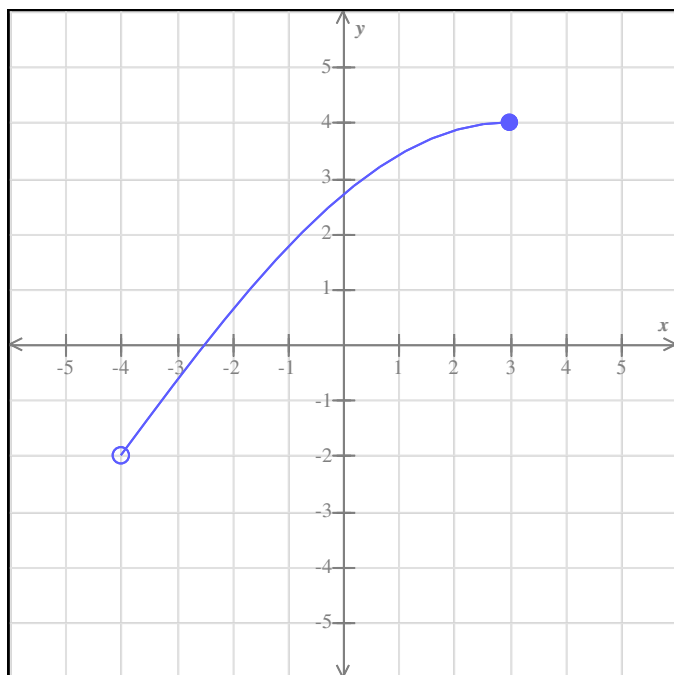
Give the domain and range of G .

Write your answers using set notation.

Question 31 of 47

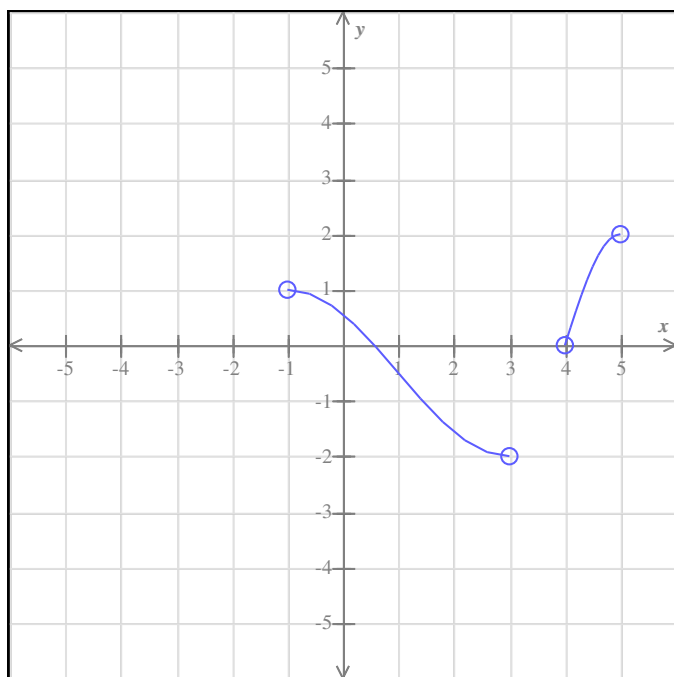
The entire graph of the function f is shown in the figure below.

Write the domain and range of f using interval notation.

**Question 32 of 47**

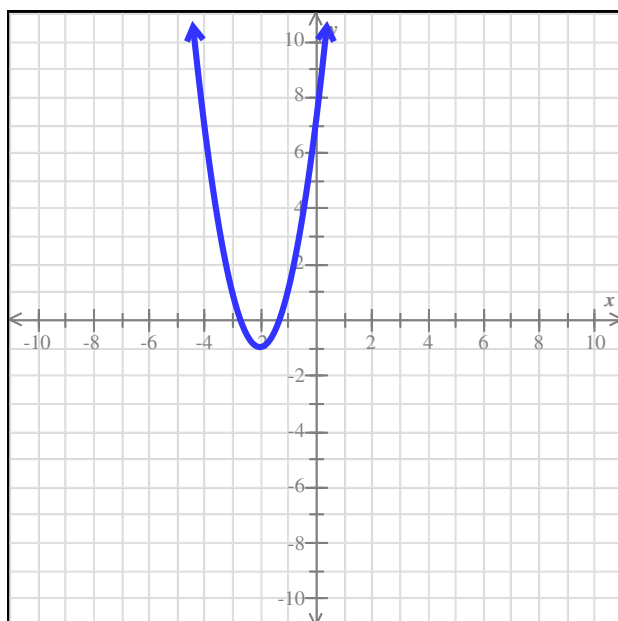
The entire graph of the function g is shown in the figure below.

Write the domain and range of g as intervals or unions of intervals.



Question 33 of 47

The graph of a quadratic function with vertex $(-2, -1)$ is shown in the figure below. Find the domain and the range.



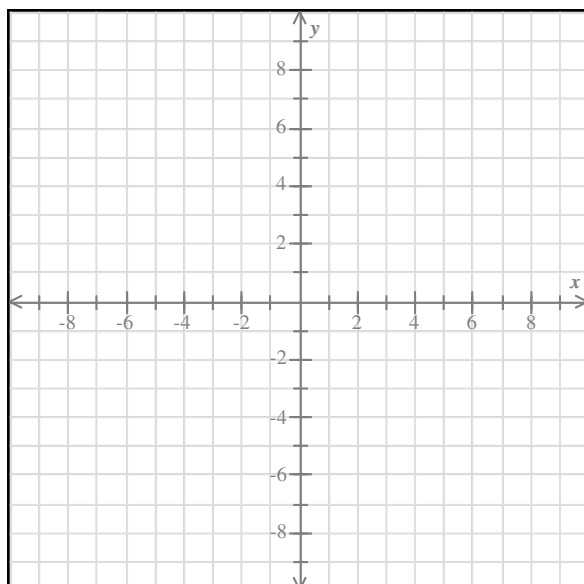
Write the domain and range using interval notation.

domain = _____

range = _____

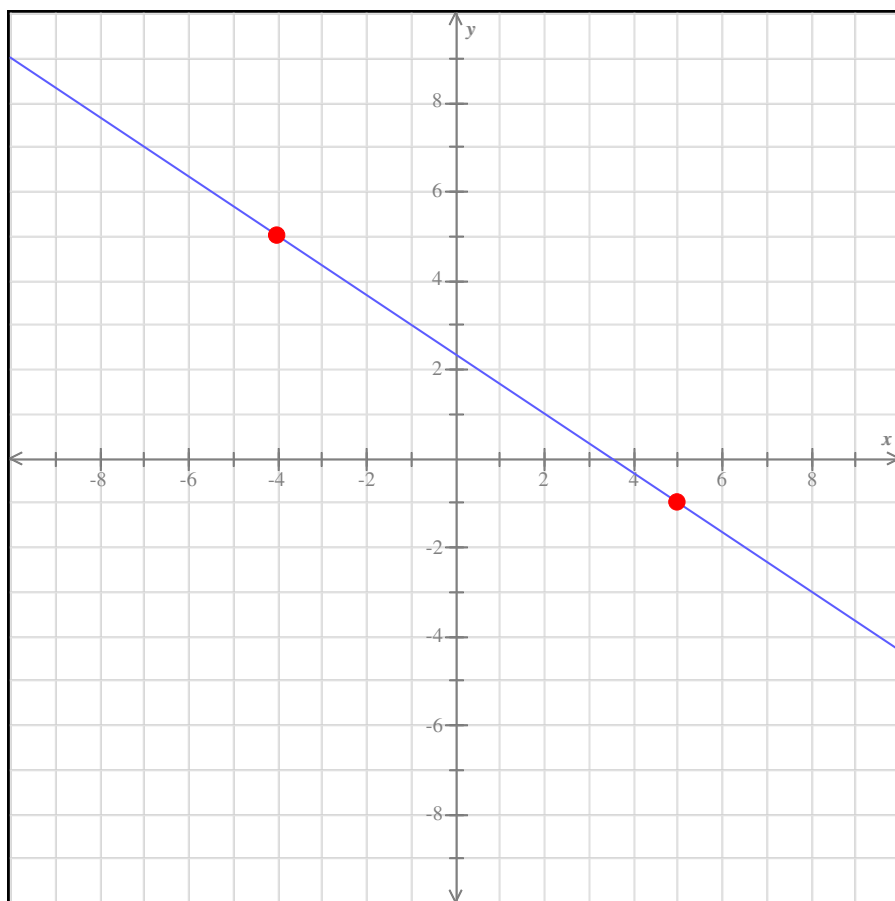
Question 34 of 47

Graph the line $y = -2$.



Question 35 of 47

Find an equation for the line below.



Question 36 of 47

Write equations for the vertical and horizontal lines passing through the point $(-1, -5)$.

vertical line:

horizontal line:

Question 37 of 47

Find the average rate of change of $g(x) = x^3 - 2x^2 + 3x$ from $x = -2$ to $x = 2$.

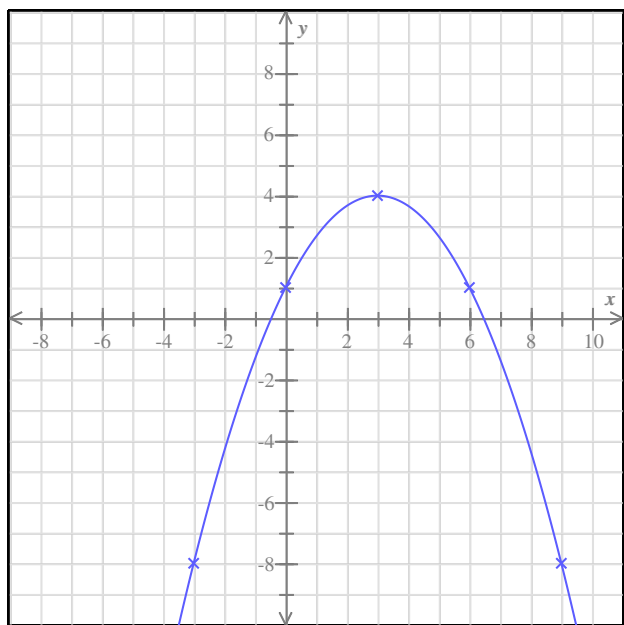
Simplify your answer as much as possible.

Question 38 of 47

The graph of a function f is shown below.

Use the graph of the function to find its average rate of change from $x = -3$ to $x = 3$.

Simplify your answer as much as possible.



Question 39 of 47

Carmen is driving a racecar. The table below gives the distance $D(t)$ (in meters) she has driven at a few times t (in seconds) after she starts.

Time t (seconds)	Distance $D(t)$ (meters)
0	0
3	78.3
4	147.6
6	185.4
9	287.1

(a) Find the average rate of change for the distance driven from 0 seconds to 4 seconds.
_____ meters per second
(b) Find the average rate of change for the distance driven from 6 seconds to 9 seconds.
_____ meters per second

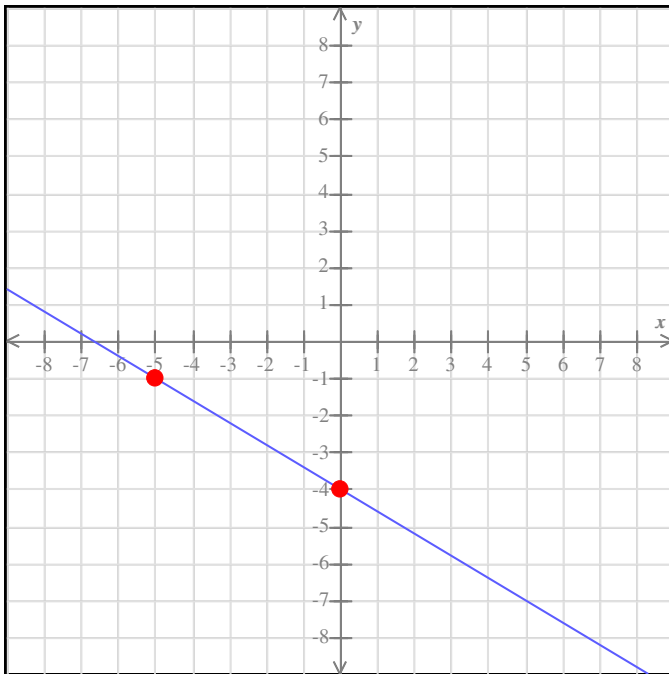
Question 40 of 47

A line passes through the point $(-10, 5)$ and has a slope of $\frac{1}{2}$.

Write an equation in point-slope form for this line.

Question 41 of 47

Write an equation of the line below.



Question 42 of 47

The equations of three lines are given below.

Line 1: $6x - 8y = 2$

Line 2: $y = \frac{4}{3}x - 5$

Line 3: $3y = 4x + 7$

For each pair of lines, determine whether they are parallel, perpendicular, or neither.

Line 1 and Line 2: ☐ Parallel ☐ Perpendicular ☐ Neither

Line 1 and Line 3: ☐ Parallel ☐ Perpendicular ☐ Neither

Line 2 and Line 3: ☐ Parallel ☐ Perpendicular ☐ Neither

Question 43 of 47

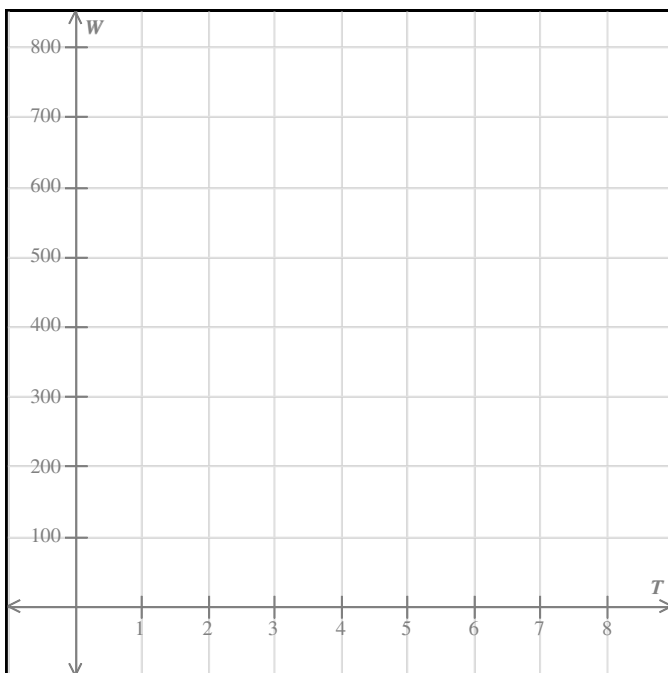
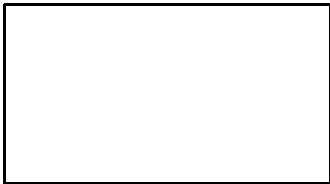
Consider the line $y = -\frac{3}{5}x - 2$.

- (a) Find the equation of the line that is perpendicular to this line and passes through the point $(-5, -3)$.
- (b) Find the equation of the line that is parallel to this line and passes through the point $(-5, -3)$.

Question 44 of 47

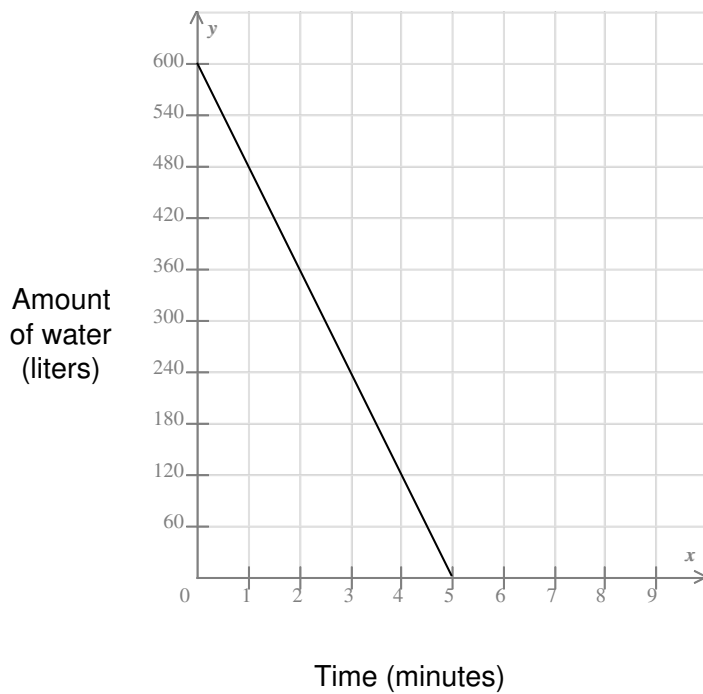
Owners of a recreation area are filling a small pond with water. They are adding water at a rate of 35 liters per minute. There are 500 liters in the pond to start.

Let W represent the amount of water in the pond (in liters), and let T represent the number of minutes that water has been added. Write an equation relating W to T , and then graph your equation using the axes below.



Question 45 of 47

Miguel is draining an aquarium. The graph shows the amount of water (in liters) in the aquarium versus time (in minutes).



(a) At what time does the amount of water in the aquarium reach 0 liters?

_____ minutes

(b) Choose the statement that best describes how the time and amount of water are related. Then fill in the blank.

- ☐ As time increases, the amount of water in the aquarium decreases.

At what rate is the amount of water decreasing?

_____ liters per minute

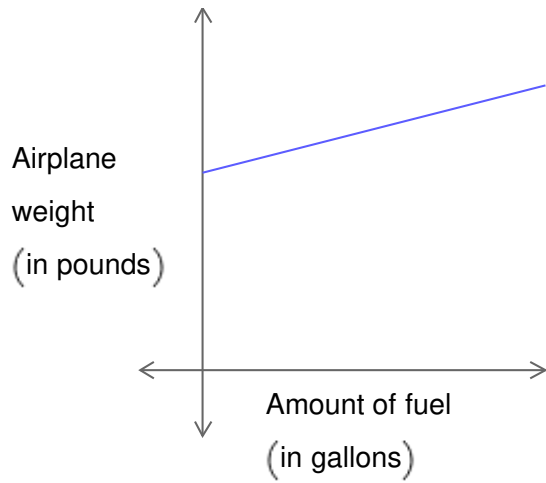
- ☐ As time increases, the amount of water in the aquarium increases.

At what rate is the amount of water increasing?

_____ liters per minute

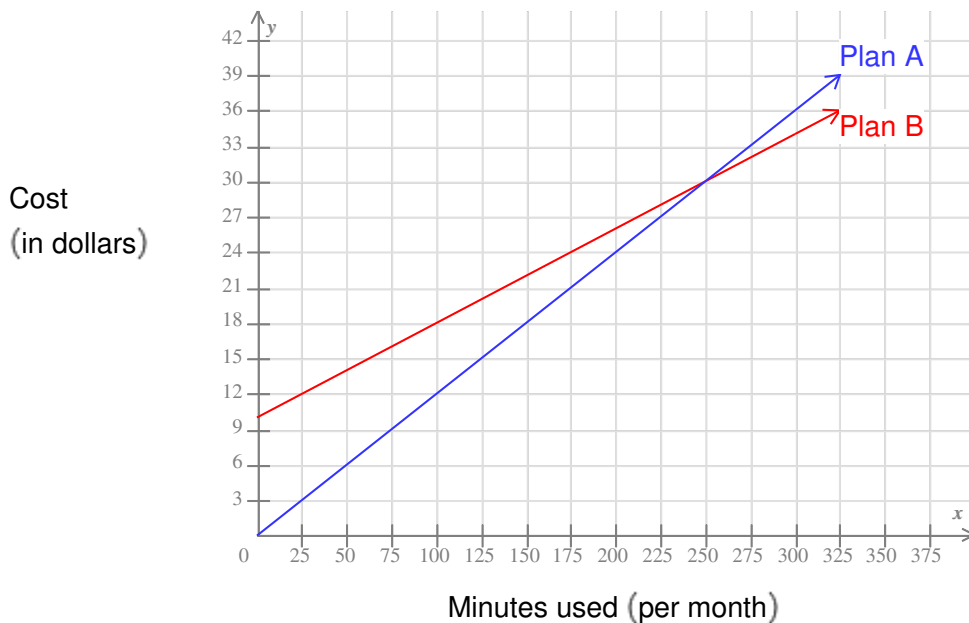
Question 46 of 47

Suppose that the weight (in pounds) of an airplane is a linear function of the amount of fuel (in gallons) in its tank. When carrying 20 gallons of fuel, the airplane weighs 2010 pounds. When carrying 52 gallons of fuel, it weighs 2186 pounds. How much does the airplane weigh if it is carrying 68 gallons of fuel?



Question 47 of 47

Jane can choose Plan A or Plan B for her long distance charges. For each plan, cost (in dollars) depends on minutes used (per month) as shown below.



(a) If Jane makes 100 minutes of long distance calls for the month, which plan costs more?

☐ Plan A ☐ Plan B

How much more does it cost than the other plan?

\$ _____

(b) For what number of long distance minutes do the two plans cost the same?

If the time spent on long distance calls is more than this amount, which plan costs less?

☐ Plan A ☐ Plan B

Exam 2 Practice Problems #3 Answers for class Lacoste College Algebra Spring 2020 - CRN22385 MW3

Question 1 of 47

Distance: $\sqrt{41}$

Question 2 of 47

$$M = (-2, 1)$$

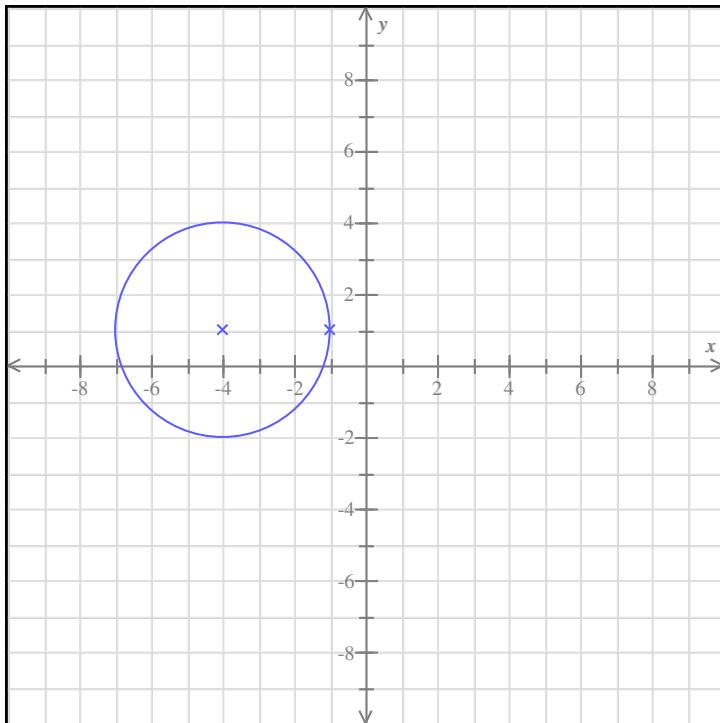
Question 3 of 47

$$u^2 + 14u + 49$$

Question 4 of 47

Radius: 3

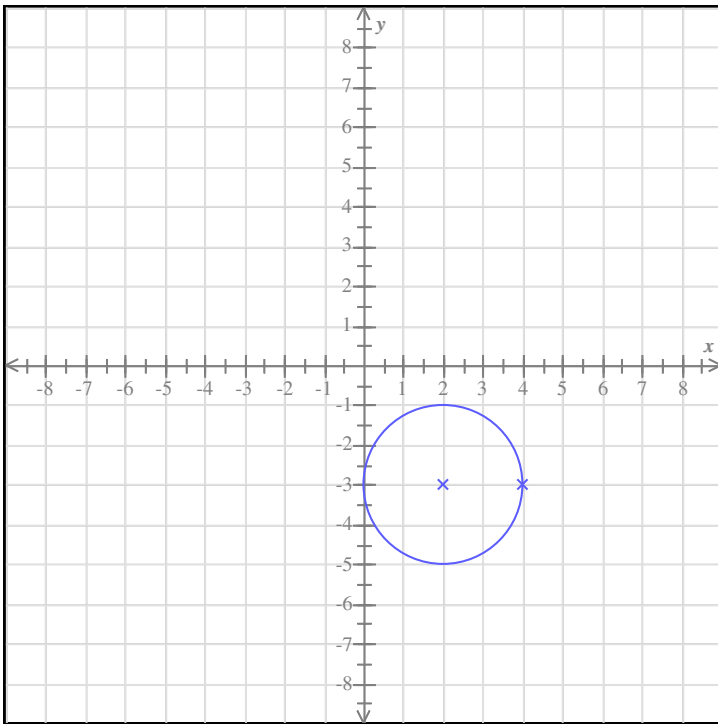
Center: $(-4, 1)$



Question 5 of 47

Center: $(2, -3)$

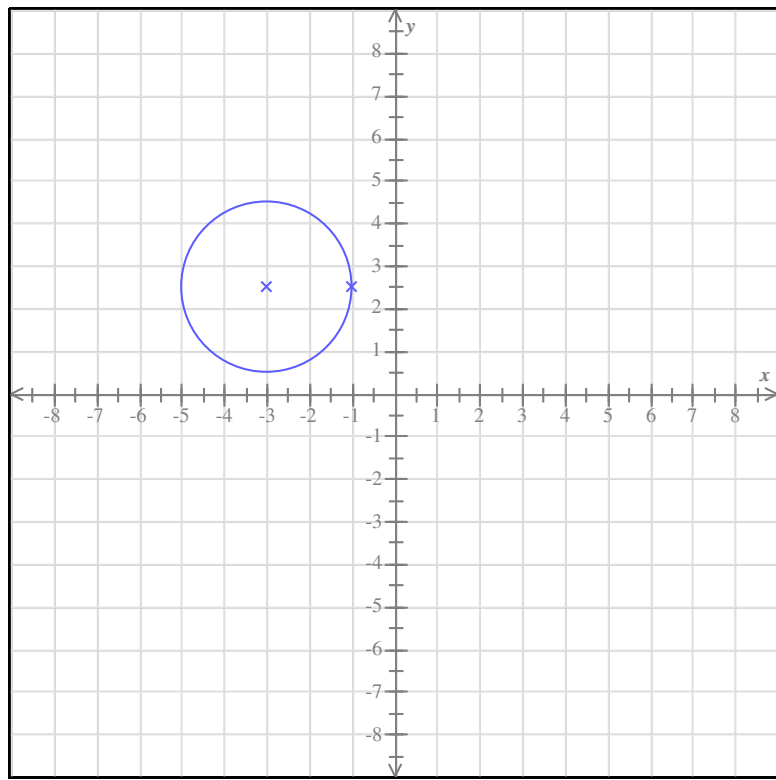
Radius: 2



Question 6 of 47

Radius: 2

Center: $\left(-3, \frac{5}{2}\right)$



Question 7 of 47

$$x^2 + y^2 = 9$$

Question 8 of 47

$$(x+8)^2 + (y-4)^2 = 25$$

Question 9 of 47

$$(x-1)^2 + (y+6)^2 = 32$$

Question 10 of 47

$$(x-1)^2 + (y-2)^2 = 41$$

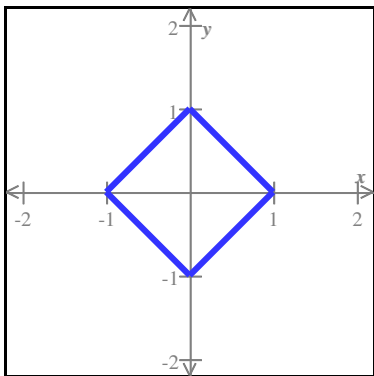
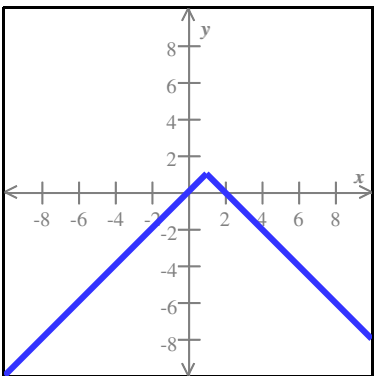
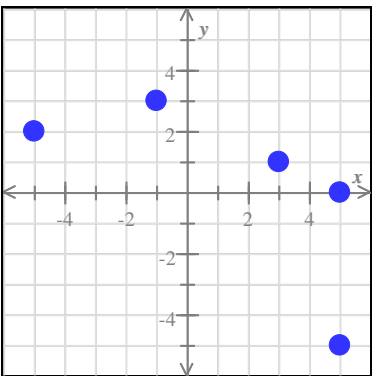
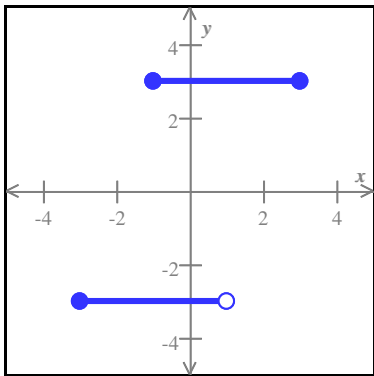
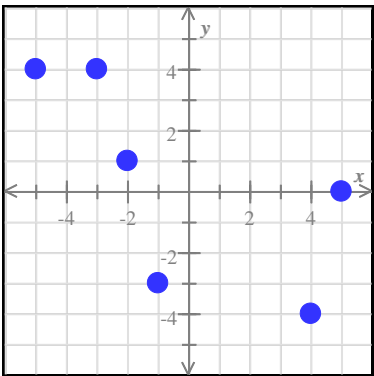
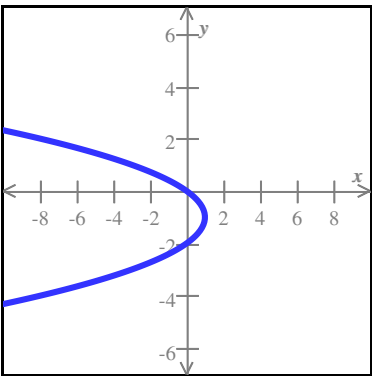
Question 11 of 47

- (a) x -intercept(s): $-3, -1$
- (b) y -intercept(s): -3

Question 12 of 47

<div> <div>Relation 1</div> <div> <div>Domain</div> <div>Range</div> </div> <div> <div>desk</div> <div>pen</div> <div>door</div> <div>sun</div> <div>chair</div> </div> <div> <div>5</div> <div>-2</div> </div> <div> <div><input checked="" type="radio"/> Function</div> <div><input type="radio"/> Not a function</div> </div> </div>	<div> <div>Relation 2</div> <div> <div>Domain</div> <div>Range</div> </div> <div> <div>-2</div> <div>5</div> <div>-3</div> <div>-8</div> </div> <div> <div>8</div> <div>-3</div> <div>4</div> </div> <div> <div><input type="radio"/> Function</div> <div><input checked="" type="radio"/> Not a function</div> </div> </div>
<div> <div>Relation 3</div> <div> $\{(s, x), (y, x), (x, a), (a, a)\}$ </div> <div> <div><input checked="" type="radio"/> Function</div> <div><input type="radio"/> Not a function</div> </div> </div>	<div> <div>Relation 4</div> <div> $\{(-9, n), (2, n), (-7, n), (6, n)\}$ </div> <div> <div><input checked="" type="radio"/> Function</div> <div><input type="radio"/> Not a function</div> </div> </div>

Question 13 of 47

Function?	<p>Graph 1</p>  <p><input type="radio"/> Yes <input checked="" type="radio"/> No</p>	<p>Graph 2</p>  <p><input checked="" type="radio"/> Yes <input type="radio"/> No</p>	<p>Graph 3</p>  <p><input type="radio"/> Yes <input checked="" type="radio"/> No</p>
	<p>Graph 4</p>  <p><input type="radio"/> Yes <input checked="" type="radio"/> No</p>	<p>Graph 5</p>  <p><input checked="" type="radio"/> Yes <input type="radio"/> No</p>	<p>Graph 6</p>  <p><input type="radio"/> Yes <input checked="" type="radio"/> No</p>

Question 14 of 47

$$f(4) = -18$$

$$g(-3) = 79$$

Question 15 of 47

$$g(3) = -\frac{11}{15}$$

Question 16 of 47

$$f(4) = \frac{21}{8}$$

$$g\left(\frac{1}{3}\right) = 11$$

$$h(-4) = \sqrt{14}$$

Question 17 of 47

$$f(3x) = 9x^2 - 6$$

Question 18 of 47

$$h(x-1) = 5x^2 - 13x + 8$$

Question 19 of 47

$$\text{domain} = \{9, -2, 6\}$$

$$\text{range} = \{0, 7, 2, -2\}$$

Question 20 of 47

$$x = 2, 1$$

Question 21 of 47

$$\text{Domain of } f: (-\infty, -3) \cup (-3, \infty)$$

$$\text{Domain of } g: (-\infty, -7) \cup (-7, 8) \cup (8, \infty)$$

Question 22 of 47

$$(-\infty, 4]$$

Question 23 of 47

$$[1, 8) \cup (8, \infty)$$

Question 24 of 47

$x = -8y^2$	<input type="radio"/> Function <input checked="" type="radio"/> Not a function
$x = \frac{2}{5}y$	<input checked="" type="radio"/> Function <input type="radio"/> Not a function
$y^2 = 4x + 16$	<input type="radio"/> Function <input checked="" type="radio"/> Not a function
$y = 9x + 4$	<input checked="" type="radio"/> Function <input type="radio"/> Not a function

Question 25 of 47

$x = \frac{5}{y}$	<input checked="" type="radio"/> Function <input type="radio"/> Not a function
$x^2 + y = 25$	<input type="radio"/> Function <input checked="" type="radio"/> Not a function
$6x = y^2$	<input type="radio"/> Function <input checked="" type="radio"/> Not a function
$7 x + y = 7$	<input checked="" type="radio"/> Function <input type="radio"/> Not a function

Question 26 of 47

16.00 dollars

Question 27 of 47

<p>(a) How many miles of track does the crew have left to lay after 19 days?</p> <p><input type="text" value="56"/> miles</p>
<p>(b) How many days will it take the crew to lay all the track?</p> <p><input type="text" value="27"/> days</p>

Question 28 of 47

$$f(-4) = -6$$

Question 29 of 47

- (a) $f(2) = -2$
- (b) One value of x for which $f(x) = -4$: 0

Question 30 of 47

$$\text{domain} = \{-2, 4, -1\}$$
$$\text{range} = \{-2, -1, 4, 0\}$$

Question 31 of 47

- (a) $\text{domain} = (-4, 3]$
- (b) $\text{range} = (-2, 4]$

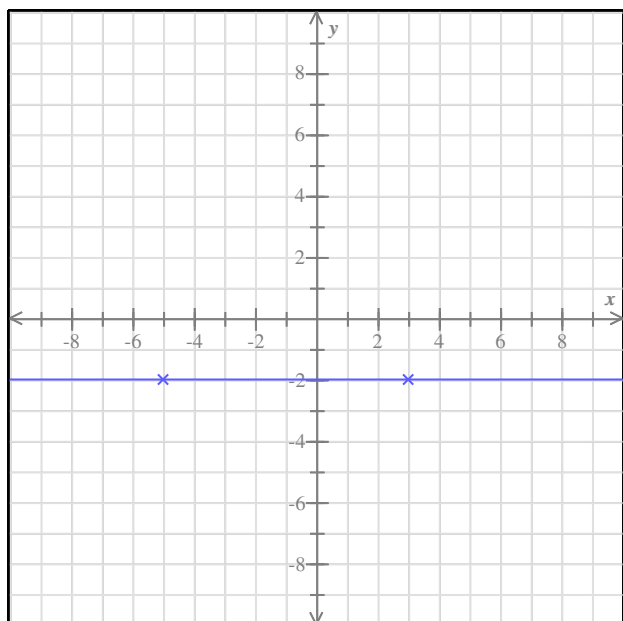
Question 32 of 47

$$\text{domain} = (-1, 3) \cup (4, 5)$$
$$\text{range} = (-2, 2)$$

Question 33 of 47

$$\text{domain: } (-\infty, \infty)$$
$$\text{range: } [-1, \infty)$$

Question 34 of 47



Question 35 of 47

$$y = -\frac{2}{3}x + \frac{7}{3}$$

Question 36 of 47

vertical line: $x = -1$

horizontal line: $y = -5$

Question 37 of 47

7

Question 38 of 47

2

Question 39 of 47

(a) Find the average rate of change for the distance driven from 0 seconds to 4 seconds.

36.9 meters per second

(b) Find the average rate of change for the distance driven from 6 seconds to 9 seconds.

33.9 meters per second

Question 40 of 47

$$y - 5 = \frac{1}{2}(x + 10)$$

Question 41 of 47

$$y = -\frac{3}{5}x - 4$$

Question 42 of 47

Line 1 and Line 2: ☐ Parallel ☐ Perpendicular ☒ Neither

Line 1 and Line 3: ☐ Parallel ☐ Perpendicular ☒ Neither

Line 2 and Line 3: ☒ Parallel ☐ Perpendicular ☐ Neither

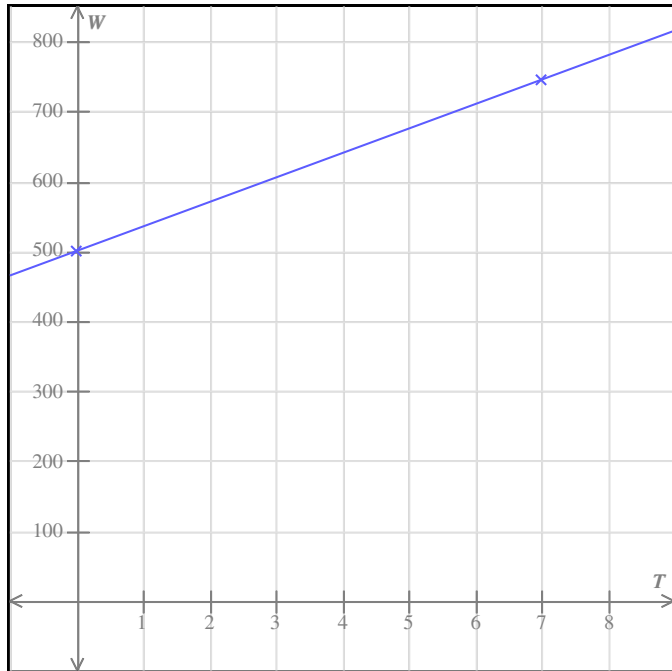
Question 43 of 47

Equation of perpendicular line: $y = \frac{5}{3}x + \frac{16}{3}$

Equation of parallel line: $y = -\frac{3}{5}x - 6$

Question 44 of 47

$$W = 500 + 35T$$



Question 45 of 47

- (a) At what time does the amount of water in the aquarium reach 0 liters?

5 minutes

- (b) Choose the statement that best describes how the time and amount of water are related. Then fill in the blank.



As time increases, the amount of water in the aquarium decreases.

At what rate is the amount of water decreasing?

120 liters per minute



As time increases, the amount of water in the aquarium increases.

At what rate is the amount of water increasing?

liters per minute

Question 46 of 47

2274 pounds

Question 47 of 47

- (a) If Jane makes 100 minutes of long distance calls for the month, which plan costs more?

☐ Plan A

☒ Plan B

How much more does it cost than the other plan?

\$6

- (b) For what number of long distance minutes do the two plans cost the same?

250

If the time spent on long distance calls is more than this amount, which plan costs less?

☐ Plan A

☒ Plan B