

Class Name : **Lacoste College Algebra Fall 2019**Instructor Name : **Master Templates**

Student Name : \_\_\_\_\_

Instructor Note : **This represents half of the questions that might be on Exam 2.****Question 1 of 36**

Multiply.

$$(4 + 2\sqrt{6})(2 - 4\sqrt{3})$$

Simplify your answer as much as possible.

**Question 2 of 36**

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

$$u^2 - 18u + \square$$

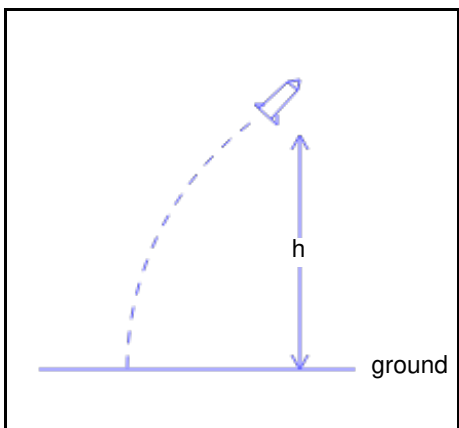
**Question 3 of 36**

A model rocket is launched with an initial upward velocity of 215 ft/s. The rocket's height  $h$  (in feet) after  $t$  seconds is given by the following.

$$h = 215t - 16t^2$$

Find all values of  $t$  for which the rocket's height is 97 feet.

Round your answer(s) to the nearest hundredth.  
(If there is more than one answer, use the "or" button.)



**Question 4 of 36**

Solve for  $v$ .

$$|v - 5| + 5 = 17$$

**Question 5 of 36**

Solve for  $w$ , where  $w$  is a real number.

$$\sqrt{2w + 18} + 1 = 5$$

**Question 6 of 36**

Solve for  $w$ , where  $w$  is a real number.

$$w - 2 = \sqrt{24 - 3w}$$

**Question 7 of 36**

Suppose a pendulum is  $L$  meters long. The time,  $t$ , in seconds that it takes to swing back and forth once is given by  $t = 2.01\sqrt{L}$ . If a pendulum is 21.16 meters long, how long does it take to swing back and forth once?

Round your answer to the nearest tenth.

**Question 8 of 36**

Solve the inequality for  $u$ .

$$8u - 40 \geq -3(4 - 5u)$$

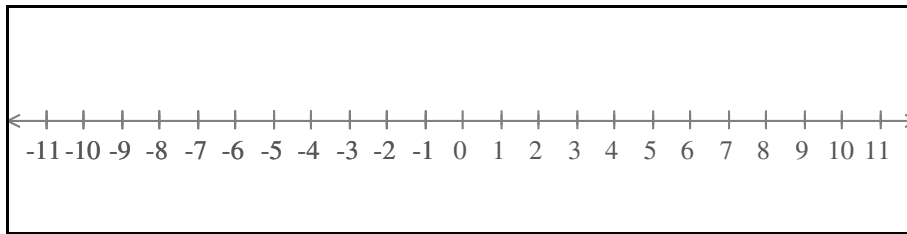
Simplify your answer as much as possible.

**Question 9 of 36**

Solve the compound inequality.

$$-8 < 2x + 2 < 8$$

Graph the solution on the number line.

**Question 10 of 36**

Maya is going to rent a truck for one day. There are two companies she can choose from, and they have the following prices.

Company A charges \$74 and allows unlimited mileage.

Company B has an initial fee of \$65 and charges an additional \$0.60 for every mile driven.

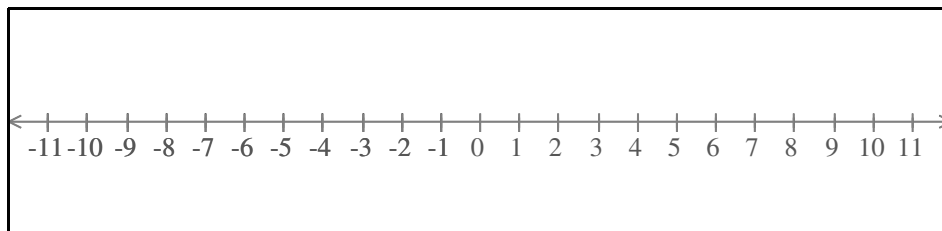
For what mileages will Company A charge less than Company B?

Use  $m$  for the number of miles driven, and solve your inequality for  $m$ .

**Question 11 of 36**

Graph the solution to the inequality on the number line.

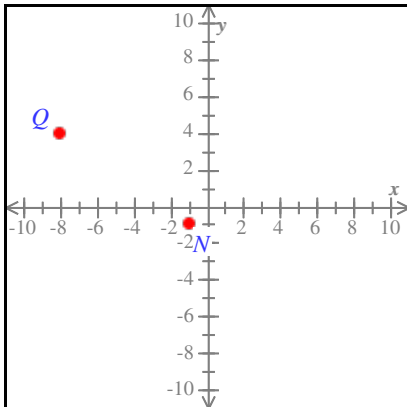
$$|3x - 12| < 3$$



### Question 12 of 36

Calculate the distance between the points  $N = (-1, -1)$  and  $Q = (-8, 4)$  in the coordinate plane.

Give an exact answer (not a decimal approximation).



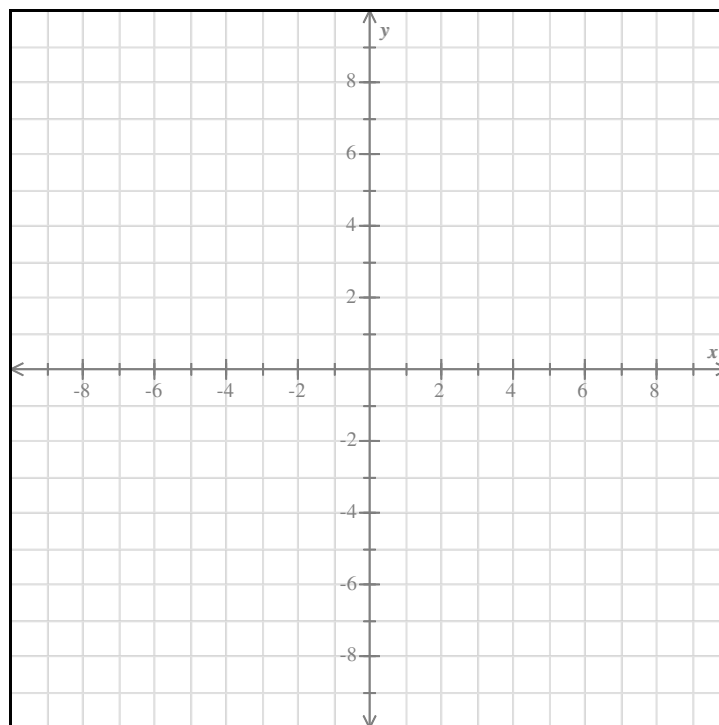
### Question 13 of 36

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

$$(x - 4)^2 + (y + 5)^2 = 9$$

Center: (\_\_\_\_, \_\_\_\_)

Radius: \_\_\_\_



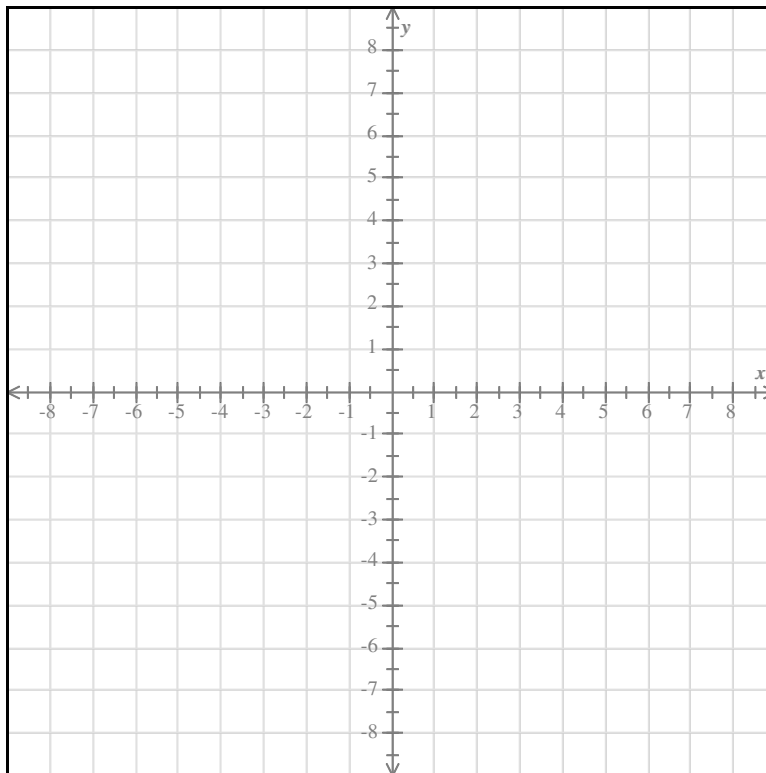
**Question 14 of 36**

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

$$4x^2 + 4y^2 - 16x + 8y - 101 = 0$$

Radius: \_\_\_\_\_

Center: (\_\_\_\_\_, \_\_\_\_\_)

**Question 15 of 36**

Write an equation of the circle with center  $(-8, 2)$  and radius 9.

**Question 16 of 36**

Find an equation of the circle whose diameter has endpoints  $(-1, -1)$  and  $(5, 3)$ .

### Question 17 of 36

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

<p style="text-align: center;">Relation 1</p> <p style="text-align: center;"><math>\{(-2, t), (8, x), (-6, n), (-6, x)\}</math></p> <p> <input type="radio"/> Function  <input type="radio"/> Not a Function         </p>	<p style="text-align: center;">Relation 2</p> <p style="text-align: center;"><math>\{(4, t), (-4, m), (9, k), (6, k)\}</math></p> <p> <input type="radio"/> Function  <input type="radio"/> Not a Function         </p>
<p style="text-align: center;">Relation 3</p> <div style="display: flex; justify-content: space-around; margin-bottom: 10px;"> <span><i>Domain</i></span> <span><i>Range</i></span> </div> <p> <input type="radio"/> Function  <input type="radio"/> Not a Function         </p>	<p style="text-align: center;">Relation 4</p> <div style="display: flex; justify-content: space-around; margin-bottom: 10px;"> <span><i>Domain</i></span> <span><i>Range</i></span> </div> <p> <input type="radio"/> Function  <input type="radio"/> Not a Function         </p>

### Question 18 of 36

The functions  $f$  and  $g$  are defined as follows.

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

Find  $f(-3)$  and  $g(6)$ .

Simplify your answers as much as possible.

**Question 19 of 36**

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

$$f(x) = \frac{3+x^2}{x+7} \quad g(x) = |-14+16x| \quad h(x) = \sqrt{x-3} - 1$$

Find  $f(5)$ ,  $g\left(-\frac{1}{4}\right)$ , and  $h(8)$ .

Simplify your answers as much as possible.

**Question 20 of 36**

The function  $g$  is defined as  $g(x) = \frac{7}{3x^2 - 2x}$ .

Find  $g(x+5)$ .

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

$$g(x+5) = \underline{\hspace{2cm}}$$

**Question 21 of 36**

The function  $f$  is defined below.

$$f(x) = \frac{x^2 + x - 6}{x^2 - 81}$$

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 22 of 36**

Find the domain of the function.

$$u(x) = \sqrt{8+x}$$

Write your answer using interval notation.

**Question 23 of 36**

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

$y = \frac{1}{3}x^2$
<input type="radio"/> Function <input type="radio"/> Not a function
$y = 6x$
<input type="radio"/> Function <input type="radio"/> Not a function
$y = 2x + 5$
<input type="radio"/> Function <input type="radio"/> Not a function
$y^2 = -2x$
<input type="radio"/> Function <input type="radio"/> Not a function

**Question 24 of 36**

Salma rented a truck for one day. There was a base fee of \$10.50, and there was an additional charge of 10 cents for each mile driven. The total cost,  $C$  (in dollars), for driving  $x$  miles is given by the following function.

$$C(x) = 0.10x + 10.50$$

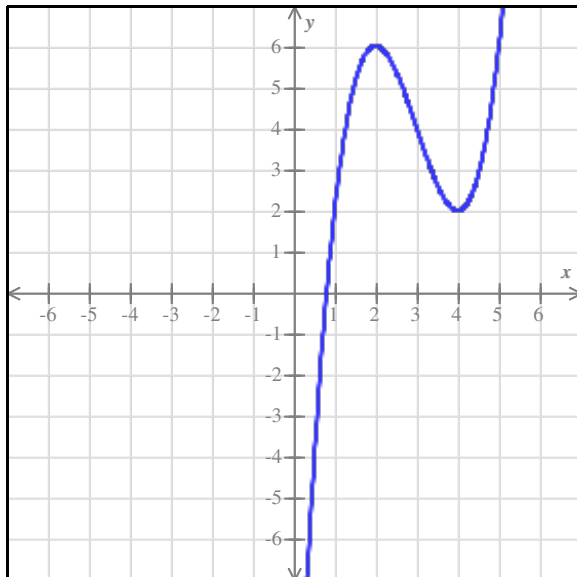
What is the total rental cost if Salma drove 40 miles?



Question 25 of 36

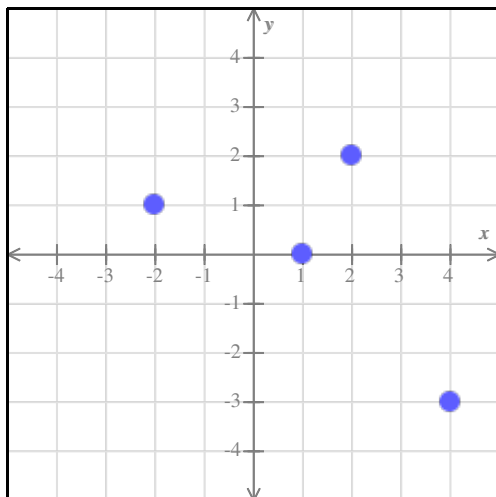
The graph of a function  $f$  is shown below.

Find  $f(4)$ .



Question 26 of 36

The graph of the relation  $S$  is shown below.



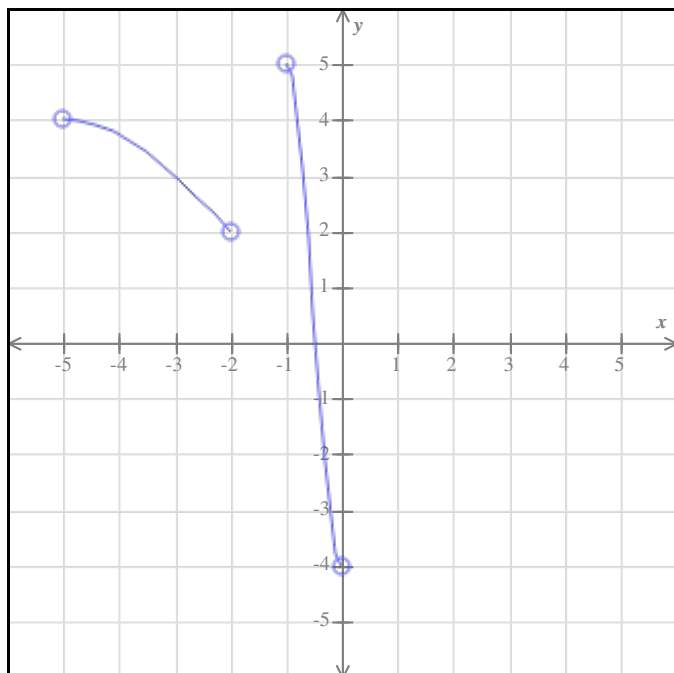
Give the domain and range of  $S$ .

Write your answers using set notation.

### Question 27 of 36

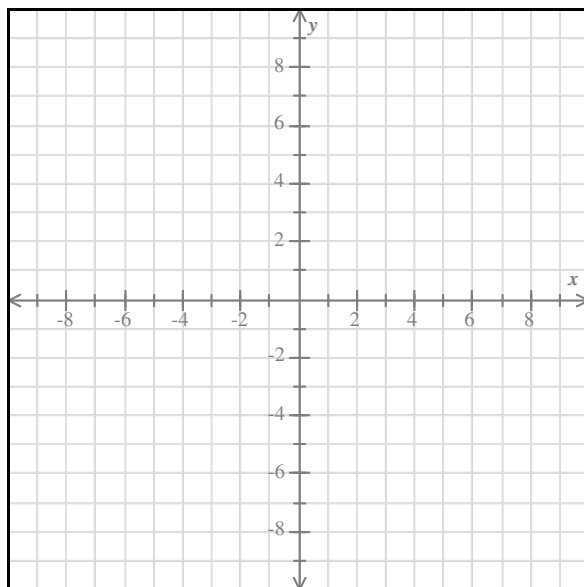
The entire graph of the function  $g$  is shown in the figure below.

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



### Question 28 of 36

Graph the line  $y = 7$ .



### Question 29 of 36

Write equations for the horizontal and vertical lines passing through the point  $(5, 9)$ .

horizontal line:

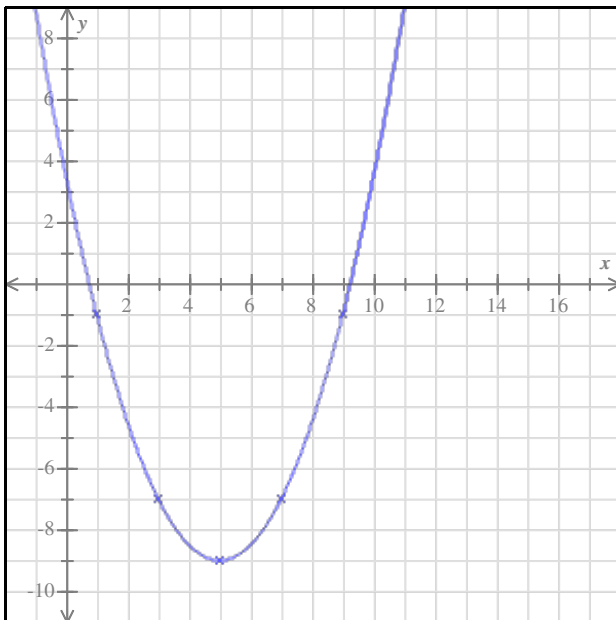
vertical line:

### Question 30 of 36

The graph of a function  $f$  is shown below.

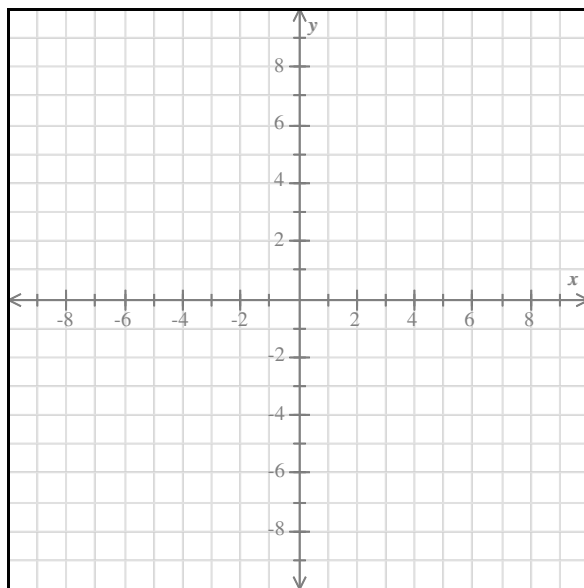
Use the graph of the function to find its average rate of change from  $x = 7$  to  $x = 9$ .

Simplify your answer as much as possible.



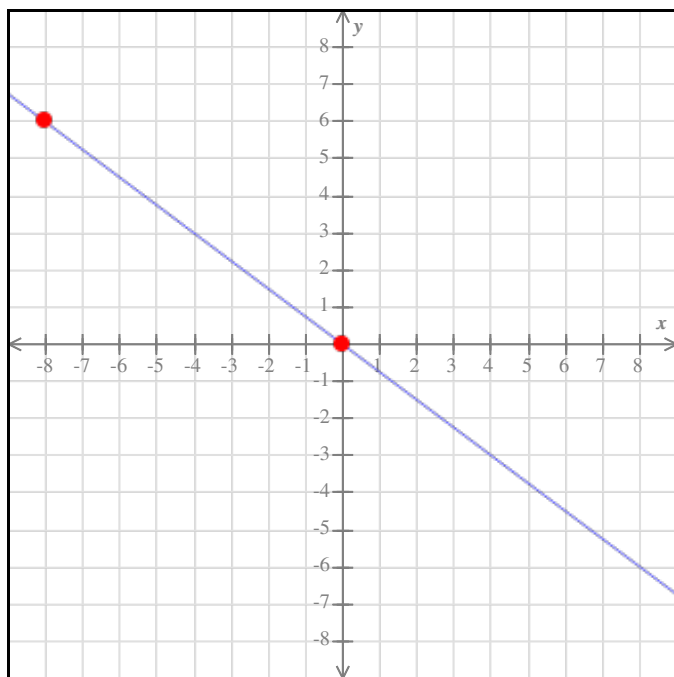
**Question 31 of 36**

Graph the line  $x = 2$ .



**Question 32 of 36**

Write an equation of the line below.



**Question 33 of 36**

Write equations for the vertical and horizontal lines passing through the point  $(-4, 2)$ .

vertical line:

horizontal line:

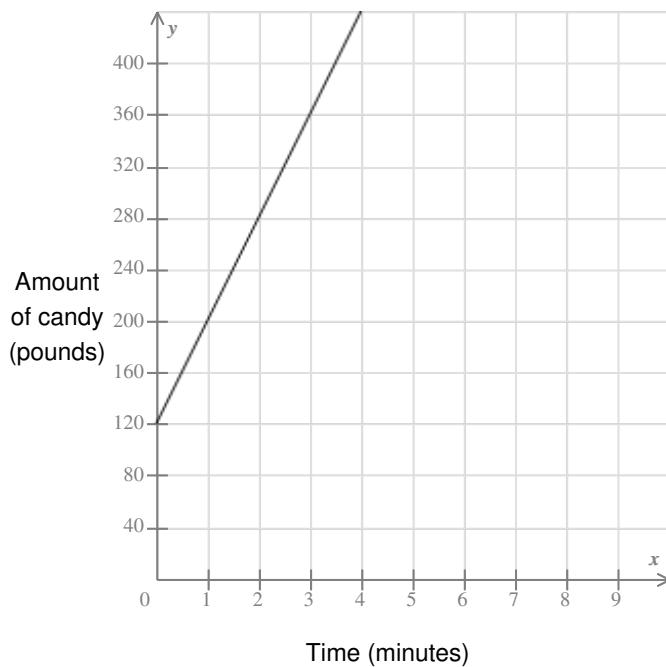
**Question 34 of 36**

Consider the line  $y = 6x - 7$ .

- (a) Find the equation of the line that is parallel to this line and passes through the point  $(4, 6)$ .
- (b) Find the equation of the line that is perpendicular to this line and passes through the point  $(4, 6)$ .

### Question 35 of 36

At a candy factory, a machine is putting candy into a container. The graph shows the amount of candy (in pounds) in the container versus time (in minutes).



(a) What is the amount of candy in the container at 0 minutes?

\_\_\_\_\_ pounds

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

- ☐ As time increases, the amount of candy in the container decreases.

At what rate is the amount of candy decreasing?

\_\_\_\_\_ pounds per minute

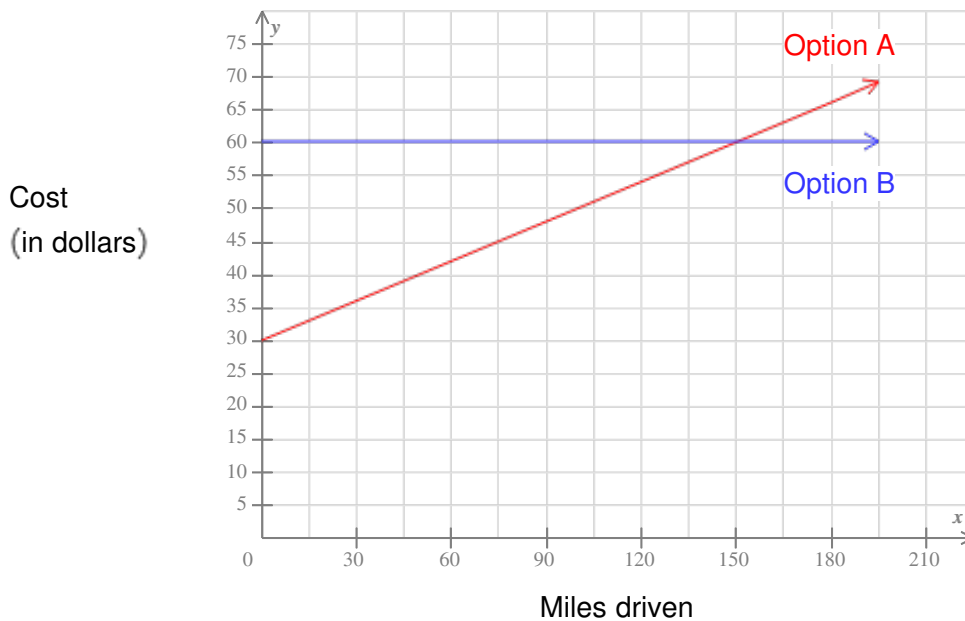
- ☐ As time increases, the amount of candy in the container increases.

At what rate is the amount of candy increasing?

\_\_\_\_\_ pounds per minute

### Question 36 of 36

Ivanna will rent a car for a day. The rental company offers two pricing options: Option A and Option B. For each pricing option, cost (in dollars) depends on miles driven, as shown below.



(a) If Ivanna drives the rental car 75 miles, which option costs more?

☐ Option A      ☐ Option B

How much more does it cost than the other option?

\$ \_\_\_\_\_

(b) For what number of miles driven do the two options cost the same?

\_\_\_\_\_

If Ivanna drives more than this amount, which option costs more?

☐ Option A      ☐ Option B

# Practice Exam 2 Version 3 #1 Answers for class Lacoste

## College Algebra Fall 2019

### Question 1 of 36

$$8 - 16\sqrt{3} + 4\sqrt{6} - 24\sqrt{2}$$

### Question 2 of 36

$$u^2 - 18u + 81$$

### Question 3 of 36

$$t = 0.47 \text{ seconds}$$

or  $t = 12.97 \text{ seconds}$

### Question 4 of 36

$$v = 17, -7$$

### Question 5 of 36

$$w = -1$$

### Question 6 of 36

$$w = 5$$

### Question 7 of 36

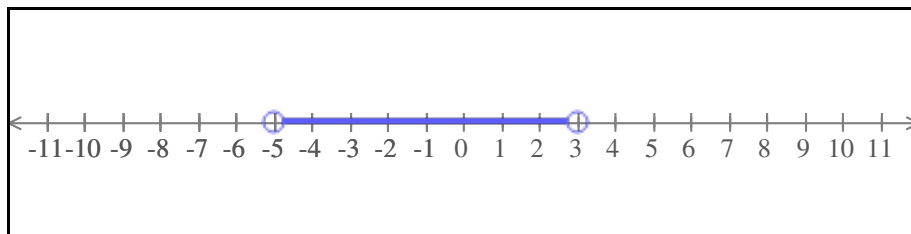
$$9.2 \text{ seconds}$$

### Question 8 of 36



$$u \leq -4$$

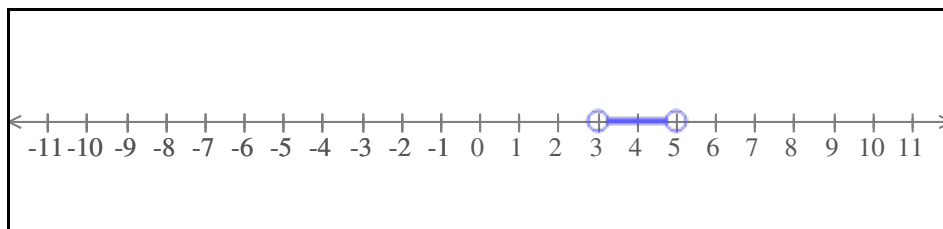
Question 9 of 36



Question 10 of 36

$$m > 15$$

Question 11 of 36



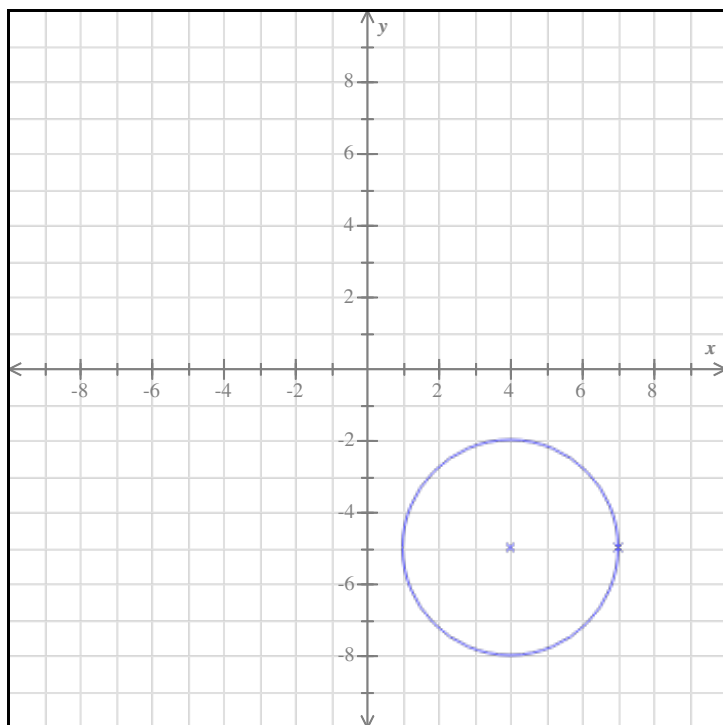
Question 12 of 36

$$\text{Distance: } \sqrt{74}$$

Question 13 of 36

Center:  $(4, -5)$

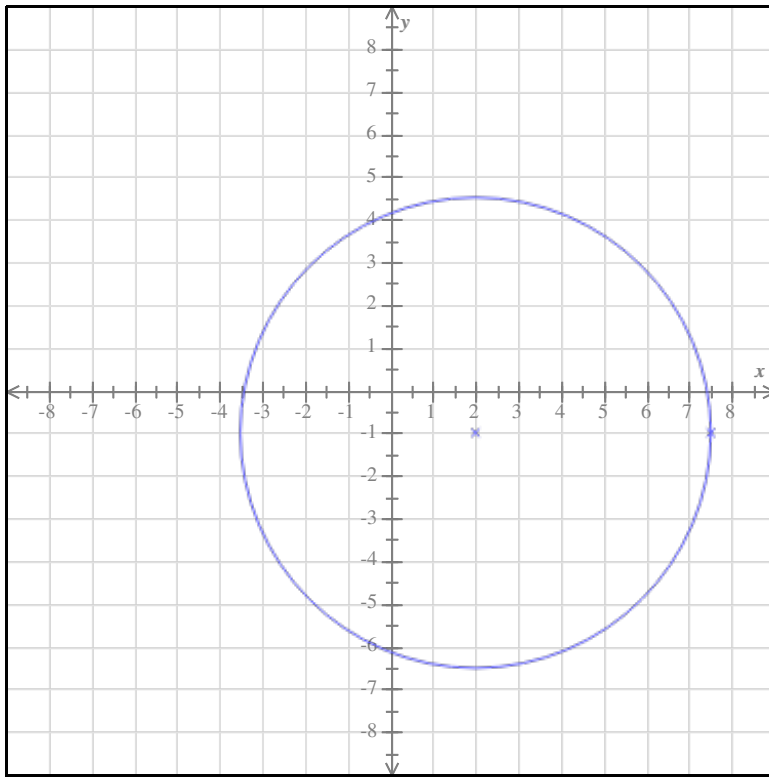
Radius: 3



Question 14 of 36

Center:  $(2, -1)$

Radius:  $\frac{11}{2}$



**Question 15 of 36**

$$(x + 8)^2 + (y - 2)^2 = 81$$

**Question 16 of 36**

$$(x - 2)^2 + (y - 1)^2 = 13$$

**Question 17 of 36**

<p style="text-align: center;">Relation 1</p> <p style="text-align: center;"><math>\{(-2, t), (8, x), (-6, n), (-6, x)\}</math></p> <p> <input type="radio"/> Function  <input checked="" type="radio"/> Not a Function         </p>	<p style="text-align: center;">Relation 2</p> <p style="text-align: center;"><math>\{(4, t), (-4, m), (9, k), (6, k)\}</math></p> <p> <input checked="" type="radio"/> Function  <input type="radio"/> Not a Function         </p>																								
<p style="text-align: center;">Relation 3</p> <table style="width: 100%; border: none;"> <thead> <tr> <th style="text-align: left; padding-bottom: 10px;"><i>Domain</i></th> <th style="text-align: right; padding-bottom: 10px;"><i>Range</i></th> </tr> </thead> <tbody> <tr> <td>4</td> <td style="text-align: right;">4</td> </tr> <tr> <td>-3</td> <td style="text-align: right;">-3</td> </tr> <tr> <td>6</td> <td style="text-align: right;">6</td> </tr> <tr> <td>-1</td> <td style="text-align: right;">-1</td> </tr> <tr> <td>-6</td> <td style="text-align: right;">-6</td> </tr> </tbody> </table> <p> <input type="radio"/> Function  <input checked="" type="radio"/> Not a Function         </p>	<i>Domain</i>	<i>Range</i>	4	4	-3	-3	6	6	-1	-1	-6	-6	<p style="text-align: center;">Relation 4</p> <table style="width: 100%; border: none;"> <thead> <tr> <th style="text-align: left; padding-bottom: 10px;"><i>Domain</i></th> <th style="text-align: right; padding-bottom: 10px;"><i>Range</i></th> </tr> </thead> <tbody> <tr> <td>f</td> <td style="text-align: right;">f</td> </tr> <tr> <td>x</td> <td style="text-align: right;">f</td> </tr> <tr> <td>y</td> <td style="text-align: right;">n</td> </tr> <tr> <td>b</td> <td style="text-align: right;">n</td> </tr> <tr> <td>k</td> <td style="text-align: right;">c</td> </tr> </tbody> </table> <p> <input checked="" type="radio"/> Function  <input type="radio"/> Not a Function         </p>	<i>Domain</i>	<i>Range</i>	f	f	x	f	y	n	b	n	k	c
<i>Domain</i>	<i>Range</i>																								
4	4																								
-3	-3																								
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-1	-1																								
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f	f																								
x	f																								
y	n																								
b	n																								
k	c																								

**Question 18 of 36**

$$f(-3) = 36$$

$$g(6) = -16$$

**Question 19 of 36**

$$f(5) = \frac{7}{3}$$

$$g\left(-\frac{1}{4}\right) = 18$$

$$h(8) = \sqrt{5} - 1$$

**Question 20 of 36**

$$g(x+5) = \frac{7}{3x^2 + 28x + 65}$$

**Question 21 of 36**

$$x = 9, -9$$

**Question 22 of 36**

$$[-8, \infty)$$

**Question 23 of 36**

$y = \frac{1}{3}x^2$	<input checked="" type="radio"/> Function <input type="radio"/> Not a function
$y = 6x$	<input checked="" type="radio"/> Function <input type="radio"/> Not a function
$y = 2x + 5$	<input checked="" type="radio"/> Function <input type="radio"/> Not a function
$y^2 = -2x$	<input type="radio"/> Function <input checked="" type="radio"/> Not a function

Question 24 of 36

14.50 dollars

Question 25 of 36

$$f(4) = 2$$

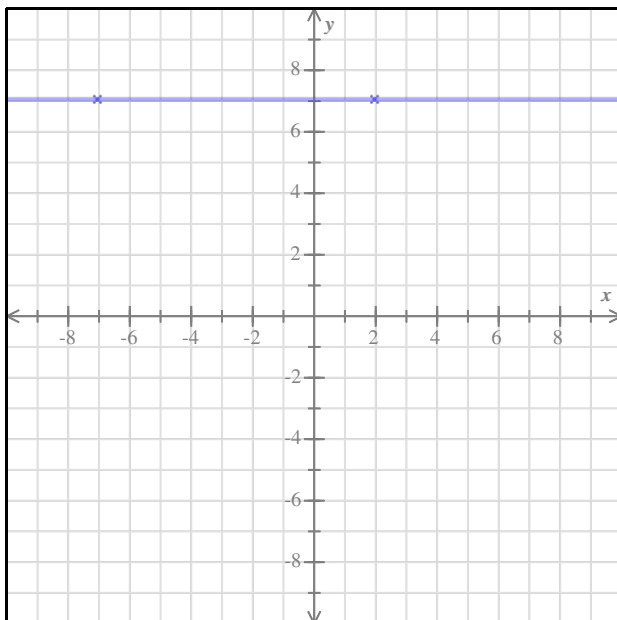
Question 26 of 36

$$\text{domain} = \{2, -2, 4, 1\}$$
$$\text{range} = \{2, 1, -3, 0\}$$

Question 27 of 36

$$\text{domain} = (-5, -2) \cup (-1, 0)$$
$$\text{range} = (-4, 5)$$

Question 28 of 36



Question 29 of 36

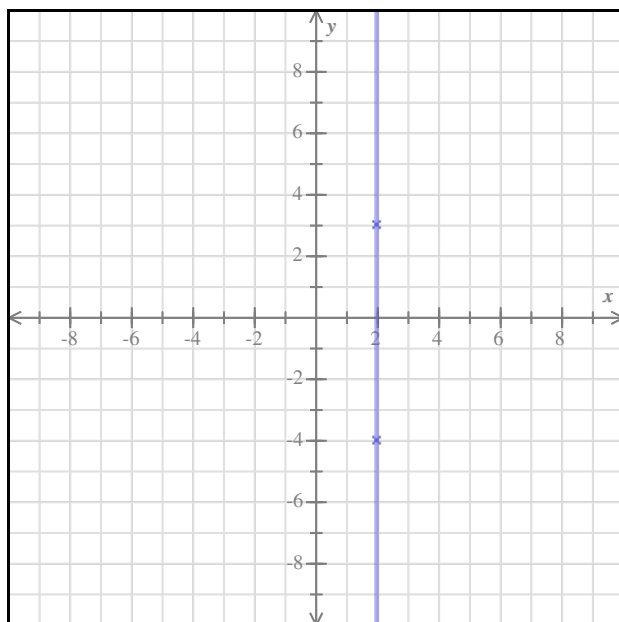
horizontal line:  $y = 9$

vertical line:  $x = 5$

**Question 30 of 36**

3

**Question 31 of 36**



**Question 32 of 36**

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

**Question 33 of 36**

vertical line:  $x = -4$

horizontal line:  $y = 2$

**Question 34 of 36**

Equation of parallel line:  $y = 6x - 18$

Equation of perpendicular line:  $y = -\frac{1}{6}x + \frac{20}{3}$



### Question 35 of 36

(a) What is the amount of candy in the container at 0 minutes?

120 pounds

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

- ☐ As time increases, the amount of candy in the container decreases.

At what rate is the amount of candy decreasing?

\_\_\_\_\_ pounds per minute

- ☒ As time increases, the amount of candy in the container increases.

At what rate is the amount of candy increasing?

80 pounds per minute

### Question 36 of 36

(a) If Ivanna drives the rental car 75 miles, which option costs more?

- ☐ Option A      ☒ Option B

How much more does it cost than the other option?

\$15

(b) For what number of miles driven do the two options cost the same?

150

If Ivanna drives more than this amount, which option costs more?

- ☒ Option A      ☐ Option B