

Class Name : Lacoste College Algebra Spring 2020 -CRN22385 MW3

Student Name : _____

Instructor Name : Prof. Lacoste

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 J = (-2, -6) and G = (-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 P = (3, -3) and Q = (-7, 5).



Question 3 of 47

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

$$x^2 + 16x +$$

Question 4 of 47

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

$$(x-1)^2 + (y+3)^2 = 16$$



Question 5 of 47

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

Question 6 of 47

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

Question 7 of 47

Give the equation of the circle centered at the origin and passing through the point (0, 7).

Question 8 of 47

Write an equation of the circle with center (6, -3) and radius 8.

Question 9 of 47

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

Question 10 of 47

Find an equation of the circle whose diameter has endpoints (-2, 5) and (6, -3).

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.





 $\{(x, n), (h, n), (n, h), (j, j)\}$

 $\{(-6, b), (7, u), (7, f), (7, j)\}$

Question 13 of 47

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



Question 14 of 47

The functions $f \, {\rm and} \, g$ are defined as follows.

$$f(x) = 2x^3 + 2$$
 $g(x) = -3x + 4$

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

Simplify your answers as much as possible.

Question 15 of 47

The function f is defined as follows.

$$f(x) = \frac{x^2 - 5x - 50}{x - 1}$$

Find f(9).

Simplify your answer as much as possible.

Question 16 of 47

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

$$f(x) = \sqrt{x-2} + 6 \qquad g(x) = \frac{x^2+2}{x+6} \qquad h(x) = \left|\frac{3}{2}x - 11\right|$$

Find f(7), g(4), and h(6).

Simplify your answers as much as possible.

Question 17 of 47

The function g is defined by $g(x) = x^2 + 6$.

Find g(2y).

Question 18 of 47

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

Find h(x+1).

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

h(x+1) =_____

Question 19 of 47

Suppose that the relation G is defined as follows.

$$G = \{(3, -5), (-7, -5), (7, 3)\}$$

Give the domain and range of G. Write your answers using set notation.

Question 20 of 47

The function h is defined below.

$$h(x) = \frac{x+2}{x^2+2x-15}$$

Find all values of x that are NOT in the domain of h. If there is more than one value, separate them with commas.

Question 21 of 47

The functions f and g are defined as follows.

$$f(x) = \frac{x+2}{x^2+6x+8}$$
$$g(x) = \frac{x^2}{x-6}$$

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.

$$v(x) = \sqrt{14 - 7x}$$

Write your answer using interval notation.

Question 23 of 47

Find the domain of the function.

$$f(x) = \frac{\sqrt{x+6}}{-3x+7}$$

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 = -2y	C Function	C Not a function
y = 7x	C Function	C Not a function
x + 4y = 8	C Function	C Not a function
$x = 2y^2 - 3$	C Function	C Not a function

Question 25 of 47

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

$2x = y^3$	C Function	C Not a function
$4 + y^2 = x^2$	C Function	C Not a function
$y = 6 \left x \right - 2$	C Function	C Not a function
$1 = \left y \right + x^2$	C Function	C Not a function

Question 26 of 47

Austin received a \$15.00 gift card for a photo center. He used it to buy prints that cost 9 cents each. The remaining balance, *B* (in dollars), on the card after buying *x* prints is given by the following function.

$$B(x) = 15.00 - 0.09x$$

What is the remaining balance on the card if Austin bought $20 \mbox{ prints}?$

Question 27 of 47

The Sugar Sweet Company is going to transport its sugar to market. It will cost \$4500 to rent trucks plus \$175 for each ton of sugar transported. The total cost, *C* (in dollars), for transporting *n* tons is given by the following function.

C(n) = 4500 + 175n

Answer the following questions.

(a) What is the total cost of transporting 13 tons?

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(b) If the total cost is \$8525, how many tons is the company transporting?

tons

Question 28 of 47

The graph of a function f is shown below. Find f(3).



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 S is shown below.



Give the domain and range of S. 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 (-3, 2) is shown in the figure below. Find the domain and the range.



Write the domain and range using interval notation.



range = _____

Question 34 of 47

Graph the line x = 2.



Question 35 of 47

Find an equation for the line below.



Question 36 of 47

Write equations for the horizontal and vertical lines passing through the point (0, -9).

horizontal line:

vertical line:

Question 37 of 47

Find the average rate of change of $g(x) = -2x^3 + 3x^2$ from x = -1 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 = -1 to x = 3.

Simplify your answer as much as possible.



Question 39 of 47

The number of bacteria in a culture increases rapidly. The table below gives the number N(t) of bacteria at a few times *t* (in hours) after the moment when N = 1000.

Time <i>t</i> (hours)	Number of bacteria $N\left(t ight)$
0	1000
3.1	1589
6.2	2612
12.4	4100
15.5	6425

(a) Find the average rate of change for the number of bacteria from 0 hours to 6.2 hours.

____ bacteria per hour

(b) Find the average rate of change for the number of bacteria from 12.4 hours to 15.5 hours.

___ bacteria per hour

Question 40 of 47

A line passes through the point (6, -6) and has a slope of $\frac{4}{3}$.

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: $y = \frac{5}{3}x + 8$ Line 2: 6x - 10y = 6Line 3: 3y = 5x + 4

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



Question 43 of 47

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

(a) Find the equation of the line that is perpendicular to this line and passes through the point (-4, -2).

(b) Find the equation of the line that is parallel to this line and passes through the point (-4, -2).

Question 44 of 47

Owners of a recreation area are filling a small pond with water. They are adding water at a rate of 25 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

Scientists are measuring a distant planet's temperature. The graph shows the temperature (in $^{\circ}C$) versus the height (in kilometers) above the planet's surface.



Height (kilometers)

(a) What is the temperature at 0 kilometers?

°C

- (b) Choose the statement that best describes how the height and temperature are related. Then fill in the blank.
 - As the height increases, the temperature decreases.

At what rate is the temperature decreasing?

_____°C per kilometer

• As the height increases, the temperature increases.

At what rate is the temperature increasing?

____°C per kilometer

Question 46 of 47

The credit remaining on a phone card (in dollars) is a linear function of the total calling time made with the card (in minutes). The remaining credit after 34 minutes of calls is \$19.56, and the remaining credit after 60 minutes of calls is \$15.40. What is the remaining credit after 75 minutes of calls?



Question 47 of 47

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



(a)	If Joe makes 80 minutes of long distance calls for the month, which plan costs more?	
	C Plan A	C Plan B
	How much more do	es 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 less than this amount, which plan costs less?
	C Plan A	© Plan B

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

Question 1 of 47

Distance: $\sqrt{89}$

Question 2 of 47

M = (-2, 1)

Question 3 of 47

 $x^2 + 16x + 64$

Question 4 of 47

Center: (1, -3)

Radius: 4



Question 5 of 47

Center: (-2, 3)

Radius: 2



Question 6 of 47

Radius: $\frac{7}{2}$

Center: (4, -2)



Question 7 of 47

 $x^2 + y^2 = 49$

Question 8 of 47

 $(x-6)^2 + (y+3)^2 = 64$

Question 9 of 47

$$(x-1)^2 + (y+5)^2 = 65$$

Question 10 of 47

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

Question 11 of 47

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

Question 12 of 47



Question 13 of 47



Question 14 of 47

$$f(-3) = -52$$
$$g(6) = -14$$

Question 15 of 47

$$f(9) = -\frac{7}{4}$$

Question 16 of 47

$$f(7) = \sqrt{5} + 6$$
$$g(4) = \frac{9}{5}$$

$$h(6) = 2$$

Question 17 of 47

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$$g\left(2y\right) = 4y^2 + 6$$

Question 18 of 47

 $h(x+1) = 5x^2 + 10x + 2$

Question 19 of 47

domain = $\{3, -7, 7\}$ range = $\{-5, 3\}$

Question 20 of 47

x = -5, 3

Question 21 of 47

Domain of $f: (-\infty, -4) \cup (-4, -2) \cup (-2, \infty)$ Domain of $g: (-\infty, 6) \cup (6, \infty)$

Question 22 of 47

$$(-\infty, 2]$$

Question 23 of 47

$$\left[-6,\frac{7}{3}\right)\cup\left(\frac{7}{3},\infty\right)$$

Question 24 of 47

x = -2y	⊙ Function	C Not a function
y = 7x	⊙ Function	C Not a function
x + 4y = 8	⊙ Function	C Not a function
$x = 2y^2 - 3$	C Function	

Question 25 of 47

$2x = y^3$	⊙ Function	C Not a function
$4 + y^2 = x^2$	C Function	● Not a function
$y = 6 \left x \right - 2$	⊙ Function	C Not a function
$1 = \left y \right + x^2$	C Function	● Not a function

Question 26 of 47

13.20 dollars

Question 27 of 47



Question 28 of 47

f(3) = 5

Question 29 of 47

(a) f(-2) = 2

(b) One value of x for which f(x) = 4:0

Question 30 of 47

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

Question 31 of 47

(a) domain = (-5, 5](b) range = (-4, 2]

Question 32 of 47

domain = $(-3, -2) \cup (0, 2)$ range = (-4, 5)

Question 33 of 47

domain: $(-\infty, \infty)$ range: $[2, \infty)$

Question 34 of 47



Question 35 of 47

$$y = \frac{1}{2}x - \frac{7}{2}$$

Question 36 of 47

horizontal line: y = -9vertical line: x = 0

Question 37 of 47

-3

Question 38 of 47

2

Question 39 of 47

(a) Find the average rate of change for the number of bacteria from 0 hours to 6.2 hours.

260 bacteria per hour

(b) Find the average rate of change for the number of bacteria from 12.4 hours to 15.5 hours.

750 bacteria per hour

Question 40 of 47

$$y+6=\frac{4}{3}(x-6)$$

Question 41 of 47

$$y = -\frac{1}{4}x + 1$$

Question 42 of 47

Line 1 and Line 2:OParallelOPerpendicularONeitherLine 1 and Line 3:OParallelOPerpendicularONeitherLine 2 and Line 3:OParallelOPerpendicularONeither

Question 43 of 47

Equation of perpendicular line: $y = \frac{2}{5}x - \frac{2}{5}$

Equation of parallel line: $y = -\frac{5}{2}x - 12$

Question 44 of 47



Question 45 of 47

(a)	a) What is the temperature at 0 kilometers?		
	<mark>36</mark> °C		
(b)	Choose the statement that best describes how the height and temperature are related. Then fill in the blank.		
	 As the height increases, the temperature decreases. 		
	At what rate is the temperature decreasing?		
	12 °C per kilometer		
	C As the height increases, the temperature increases.		
	At what rate is the temperature increasing?		
	°C per kilometer		

Question 46 of 47

\$13.00

Question 47 of 47

(a)	If Joe makes 80 minutes of long distance calls for the month, which plan costs more?	
	C Plan A	In Plan B
	How much more do	es it cost than the other plan?
	\$ <mark>4</mark>	
(b)	For what number of long distance minutes do the two plans cost the same?	
	160	
	If the time spent on	long distance calls is less than this amount, which plan costs less?
	In A	O Plan B