

Student: _____
Date: _____

Instructor: Joe Better's

Course: Pre-Calculus Pre AP (Master Course)

Assignment: Chapter 1 Review

1. Find the distance $d(P_1, P_2)$ between the points P_1 and P_2 .

$$P_1 = (3, -8)$$

$$P_2 = (2, 1)$$

$$d(P_1, P_2) = \underline{\hspace{2cm}}$$

(Simplify your answer. Type an exact answer, using radicals as needed.)

2. Find the midpoint of the line segment joining the points P_1 and P_2 .

$$P_1 = (-3, 1)$$

$$P_2 = (4, 7)$$

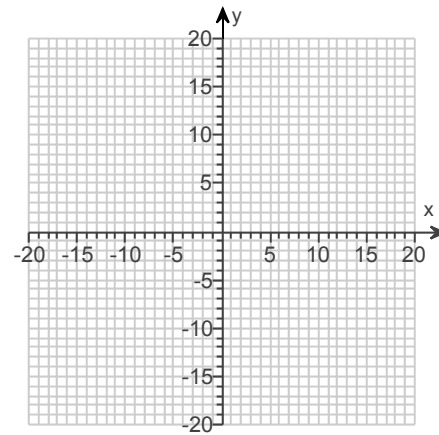
The midpoint is $\underline{\hspace{2cm}}$.

(Type an ordered pair. Use integers or simplified fractions for any numbers in the expression.)

3. Graph the equation by hand by plotting points. Verify your results using a graphing utility.

$$y = -x^2 + 6$$

Use the graphing tool to graph the equation.



4. Graph the equation using a graphing utility. Use a graphing utility to approximate the intercepts rounded to two decimal places. Use the TABLE feature to help establish the viewing window.

$$y = 11x^2 - 19$$

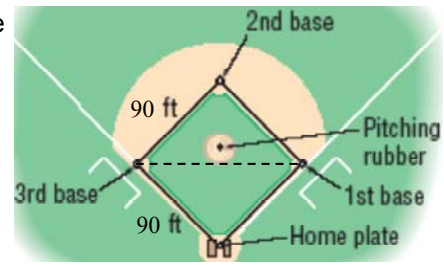
Enter the y-intercept(s). Select the correct choice below and fill in any answer boxes within your choice.

- A. $y = \underline{\hspace{2cm}}$
 (Round to two decimal places as needed. Use a comma to separate answers as needed.)
- B. There is no y-intercept.

Enter the x-intercept(s). Select the correct choice below and fill in any answer boxes within your choice.

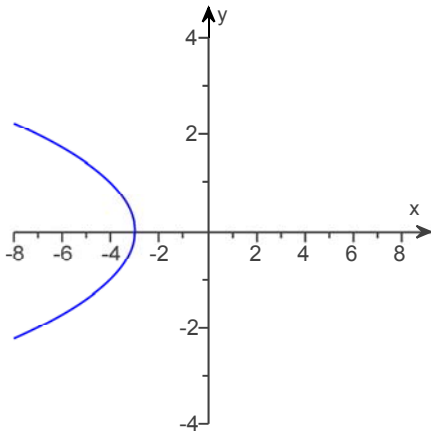
- A. $x = \underline{\hspace{2cm}}$
 (Round to two decimal places as needed. Use a comma to separate answers as needed.)
- B. There is no x-intercept.

5. A major league baseball "diamond" is actually a square, 90 feet on a side (see the figure). What is the distance directly from first base to third base (the diagonal of the square)?



The distance directly from first base to third base is approximately _____ feet.
(Type an integer or decimal rounded to two decimal places as needed.)

6. The graph of an equation is given.
(a) Find the intercepts.
(b) Indicate whether the graph is symmetric with respect to the x-axis, the y-axis, or the origin.



- (a) Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

A. The intercept(s) of the graph are

_____.
(Type an ordered pair. Use a comma to separate answers as needed.)

B. There are no intercepts.

- (b) Choose the correct answer below. Select all that apply.

A. The graph is symmetric with respect to the y-axis.

B. The graph is symmetric with respect to the origin.

C. The graph is symmetric with respect to the x-axis.

D. The graph is not symmetric.

7. For the given equation, list the intercepts and test for symmetry.

$$y = x^3 - 512$$

What are the intercept(s)? Select the correct choice below and fill in any answer boxes within your choice.

A. _____
(Type an ordered pair. Use a comma to separate answers as needed.)

B. There are no intercepts.

Is the graph of the equation symmetric with respect to the x-axis?

Yes

No

Is the graph of the equation symmetric with respect to the y-axis?

Yes

No

Is the graph of the equation symmetric with respect to the origin?

Yes

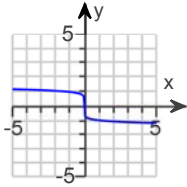
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8. Draw a quick sketch of the equation.

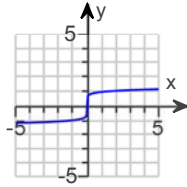
$$x = -y^9$$

Choose the correct graph of the function below.

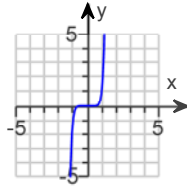
A.



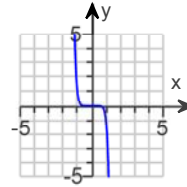
B.



C.



D.

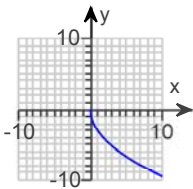


9. Draw a quick sketch of the equation.

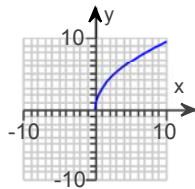
$$y = \sqrt{-9x}$$

Choose the correct graph of the function below.

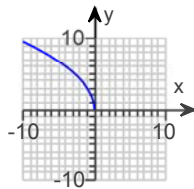
A.



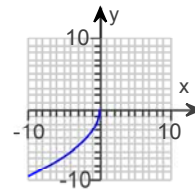
B.



C.



D.



10. In studios and on stages, cardioid microphones are often preferred for the richness they add to voices and for their ability to reduce the level of sound from the sides and rear of the microphone. Suppose one such cardioid pattern is given by the equation $(x^2 + y^2 - 6y)^2 = 36x^2 + 36y^2$.

- (a) Find the intercepts of the graph of the equation.
 (b) Test for symmetry with respect to the x-axis, y-axis, and origin.

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. The intercept(s) is/are _____.
 (Type an ordered pair. Use a comma to separate answers as needed. Type each answer only once.)
- B. There are no intercepts.

(b) What are the results of the tests for symmetry? Choose the correct answer below. Select all that apply.

- A. The graph is symmetric with respect to the x-axis.
- B. The graph is symmetric with respect to the origin.
- C. The graph is symmetric with respect to the y-axis.
- D. The graph has no symmetry.

11. Use a graphing utility to approximate the real solutions, if any, of the given equation rounded to two decimal places. All solutions lie between -10 and 10 .

$$x^4 - 2x^3 + 5x - 2 = 0$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- A. The solution set is $\{\underline{\hspace{2cm}}\}$.
(Round to two decimal places as needed. Use a comma to separate answers as needed.)
- B. There are no solutions.

12. Use a graphing utility to approximate the real solutions, if any, of the given equation rounded to two decimal places. All solutions lie between -10 and 10 .

$$-\frac{4}{9}x^4 - 2x^3 + \frac{7}{3}x = -\frac{4}{9}x^2 + \frac{1}{3}$$

What are the approximate real solutions? Select the correct choice below and fill in any answer boxes within your choice.

- A. The solution set is $\{\underline{\hspace{2cm}}\}$.
(Round to two decimal places as needed. Use a comma to separate answers as needed.)
- B. There are no solutions.

13. Solve the equation.

$$(x + 9)(x - 5) = (x + 1)^2$$

Select the correct choice below and fill in any answer boxes in your choice.

- A. The solution set is $\{\underline{\hspace{2cm}}\}$. (Simplify your answer.)
- B. There is no solution.

14. Solve the equation algebraically. Verify your solution using a graphing utility.

$$2x^2 = 11x + 40$$

Select the correct choice below and fill in any answer boxes within your choice.

- A. The solution set is $\{\underline{\hspace{2cm}}\}$. (Use a comma to separate answers as needed.)
- B. There are no solutions.

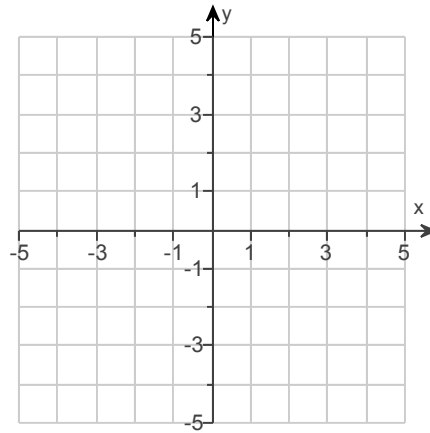
15. Plot the pair of points and determine the slope of the line containing them. Graph the line.

$$(1,4); (3, - 1)$$

What is the slope of the line containing the points (1,4) and (3, - 1)? Select the correct choice below and fill in any answer boxes within your choice.

- A. The slope is _____ .
(Simplify your answer.)
- B. The slope is undefined.

Use the graphing tool to graph the line. Use the two given points when drawing the line.



16. Find an equation for the line with the given properties. Express the equation in general form.

Slope $\frac{2}{9}$; containing the point (3,1)

What is the equation of the line?

_____ .
(Type your answer in general form. Use integers or fractions for any numbers in the equation.)

17. Find the equation of the line that contains the point (- 1,3) and has a slope that is undefined. Express the equation using either the general form or the slope-intercept form of the equation of a line.

The equation of the line is _____. (Type an equation.)

18. Find an equation for the line with the given properties.

Parallel to the line $2x - y = - 2$; containing the point (0,0)

$y =$ _____ (Type your answer in slope-intercept form.)

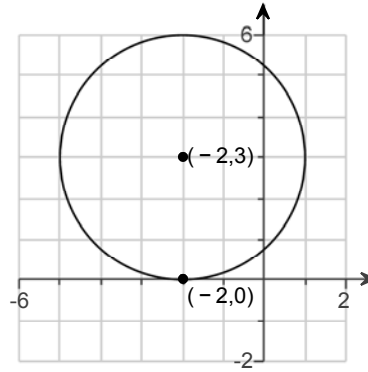
19. Find the equation of a line that is perpendicular to the line $y = \frac{1}{8}x + 7$ and contains the point (- 9,0).

$y =$ _____ (Type your answer in slope-intercept form.)

20. The cost to a newspaper company for Sunday home delivery is approximately \$0.73 per newspaper with fixed costs of \$2,050,000. Write a linear equation that relates the cost C and the number x of copies delivered.

$C =$ _____
(Use integers or decimals for any numbers in the expression. Do not include the \$ symbol in your answer.)

21. Find the center and radius of the circle. Write the standard form of the equation.



What is the center (h,k) of the circle?

$(h,k) =$ _____ (Type an ordered pair.)

What is the radius r of the circle?

$r =$ _____

Write the equation of the circle in standard form.

_____ (Type your answer in standard form.)

22. Write the standard form of the equation and the general form of the equation of the circle with radius r and center (h,k) . Then graph the circle.

$r = 5$; $(h,k) = (-3,4)$

The standard form of the equation of this circle is

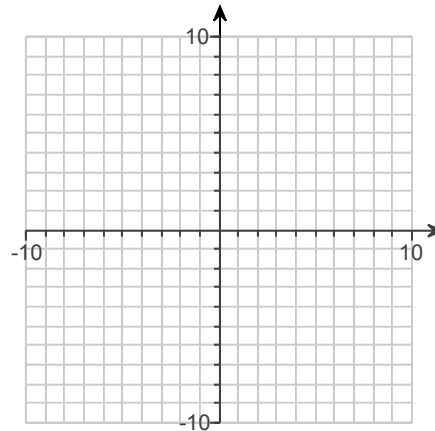
_____.

The general form of the equation of this circle is

_____.

(Simplify your answer.)

Graph the circle.



23. For the equation $x^2 + y^2 - 2x - 8y - 19 = 0$, do the following.

- (a) Find the center (h,k) and radius r of the circle.
 (b) Graph the circle.
 (c) Find the intercepts, if any.

(a) The center is _____.
 (Type an ordered pair.)

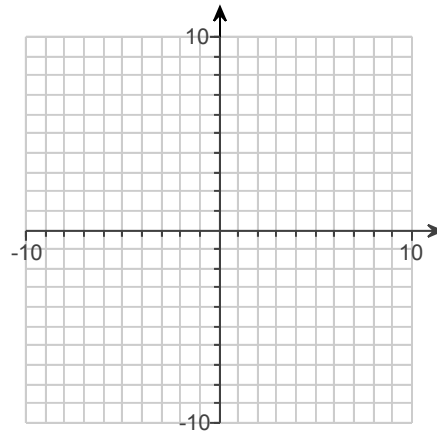
The radius is $r =$ _____.

- (b) Use the graphing tool to graph the circle.
 (c) Find the intercepts, if any. Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

A. The intercept(s) is/are

_____.
 (Type an ordered pair. Use a comma to separate answers as needed. Type exact answers for each coordinate, using radicals as needed.)

B. There is no intercept.



24. Find the standard form of the equation of the circle with endpoints of a diameter at the points $(9,2)$ and $(-5,6)$.

Type the standard form of the equation of this circle.

_____ (Type an equation.)

25. Find functions f and g so that $f \circ g = H$.

$$H(x) = \sqrt{x^2 + 18}$$

Choose the correct pair of functions.

A.
 $f(x) = \sqrt{x}$, $g(x) = x^2 + 18$

B.
 $f(x) = \sqrt{x} - 18$, $g(x) = x^2$

C.
 $f(x) = x^2 + 18$, $g(x) = \sqrt{x}$

D.
 $f(x) = x^2$, $g(x) = \sqrt{x} - 18$

26. Use $f(x) = mx + j$ and $g(x) = hx + b$ to find:

(a) $f \circ g$

(b) $g \circ f$

(c) the domain of $f \circ g$ and of $g \circ f$ (d) the conditions for which $f \circ g = g \circ f$

(a) $(f \circ g)(x) =$ _____

(b) $(g \circ f)(x) =$ _____

(c) What is the domain of $f \circ g$? A. All real numbers B. $\{x|x \neq h, x \neq b\}$ C. $\{x|x \neq m, x \neq j\}$ D. All lettersWhat is the domain of $g \circ f$? A. All letters B. All real numbers C. $\{x|x \neq m, x \neq j\}$ D. $\{x|x \neq h, x \neq b\}$ (d) What are the conditions for which $f \circ g = g \circ f$? A. $f \circ g = g \circ f$ whenever $m=h$ B. $f \circ g = g \circ f$ whenever $hj + b - j - mb = 0$ C. $f \circ g = g \circ f$ under all conditions D. $f \circ g = g \circ f$ whenever $j=b$

27. The price p of a certain product and the quantity x sold obey the demand equation shown.

$$p = -\frac{1}{5}x + 300, \quad 0 \leq x \leq 1500$$

Suppose that the cost C of producing x units is $C = \frac{\sqrt{x}}{150} + 700$.

Assuming that all items produced are sold, find the cost C as a function of the price p .
[Hint: Solve for x in the demand equation and then form the composite.]

What is the cost C as a function of the price?

$C(p) =$ _____ (Simplify your answer.)

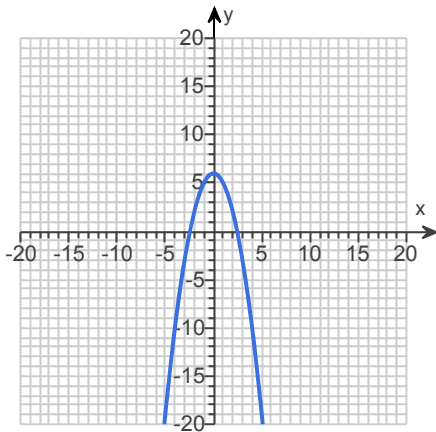
What are the restrictions on p in $C(p)$?

_____ $\leq p \leq$ _____

1. $\sqrt{82}$

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

3.

4. A. $y = \underline{-19.00}$ (Round to two decimal places as needed. Use a comma to separate answers as needed.)A. $x = \underline{-1.31, 1.31}$ (Round to two decimal places as needed. Use a comma to separate answers as needed.)

5. 127.28

6. A. The intercept(s) of the graph are $\underline{(-3, 0)}$.

(Type an ordered pair. Use a comma to separate answers as needed.)

C. The graph is symmetric with respect to the x-axis.

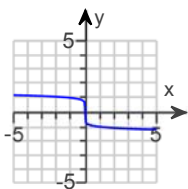
7. A. $\underline{(8, 0), (0, -512)}$ (Type an ordered pair. Use a comma to separate answers as needed.)

No

No

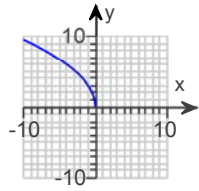
No

8.



A.

9.



C.

10. A. The intercept(s) is/are $(0,12), (0,0), (6,0), (-6,0)$.

(Type an ordered pair. Use a comma to separate answers as needed. Type each answer only once.)

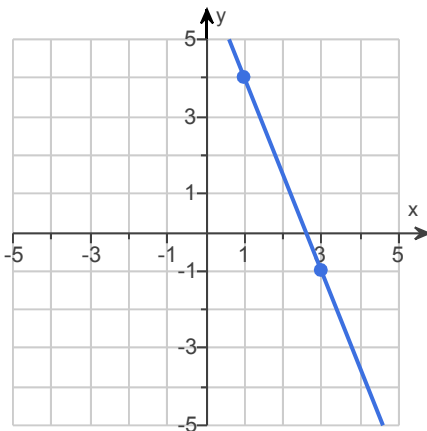
C. The graph is symmetric with respect to the y-axis.

11. A. The solution set is $\{-1.38, 0.42\}$.

(Round to two decimal places as needed. Use a comma to separate answers as needed.)

12. A. The solution set is $\{-4.45, -1.19, 0.14, 1.00\}$.

(Round to two decimal places as needed. Use a comma to separate answers as needed.)

13. A. The solution set is $\{23\}$. (Simplify your answer.)14. A. The solution set is $\{-\frac{5}{2}, 8\}$. (Use a comma to separate answers as needed.)15. A. The slope is $-\frac{5}{2}$. (Simplify your answer.)16. $-\frac{2}{9}x + y = \frac{1}{3}$ 17. $x = -1$

18. $2x$

19. $-8x - 72$

20. $0.73x + 2,050,000$

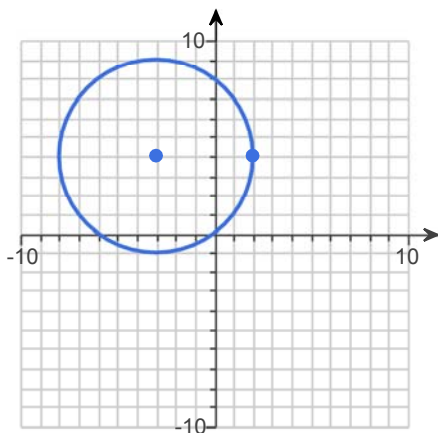
21. $(-2, 3)$

3

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

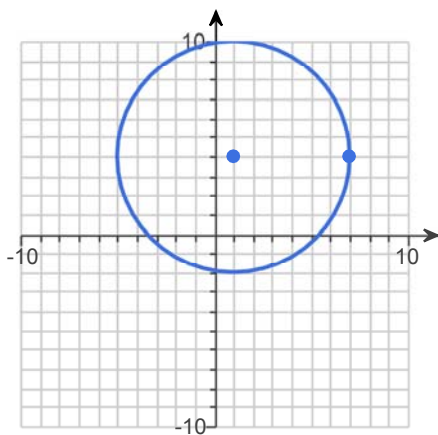
22. $(x + 3)^2 + (y - 4)^2 = 25$

$$x^2 + y^2 + 6x - 8y = 0$$



23. $(1, 4)$

6



A. The intercept(s) is/are $(1 - 2\sqrt{5}, 0), (1 + 2\sqrt{5}, 0), (0, 4 - \sqrt{35}), (0, 4 + \sqrt{35})$.

(Type an ordered pair. Use a comma to separate answers as needed. Type exact answers for each coordinate, using radicals as needed.)

24. $(x - 2)^2 + (y - 4)^2 = 53$

25. A. $f(x) = \sqrt{x}$, $g(x) = x^2 + 18$

26. $mhx + mb + j$

$hmx + hj + b$

A. All real numbers

B. All real numbers

B. $f \circ g = g \circ f$ whenever $hj + b - j - mb = 0$

27. $\frac{\sqrt{5(300 - p)}}{150} + 700$

0

300
