

# Math 129 - Test 2

March 25, 2021

Name \_\_\_\_\_

Score \_\_\_\_\_

Show all work to receive full credit. Supply explanations where necessary. Label your axes when graphing.

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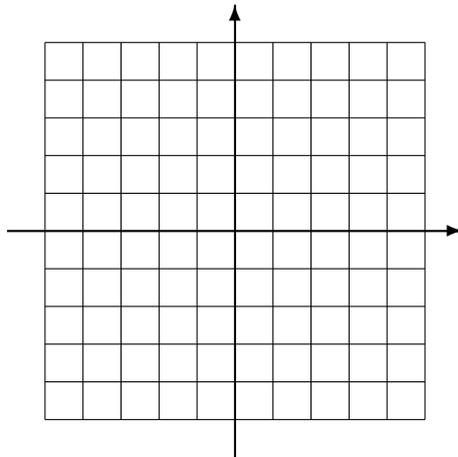
1. (3 points [7,11]) The equation  $(y^2 - 1)^2 - 10(y^2 - 1) + 25 = 0$  is “quadratic in form.” What substitution will reduce the equation to quadratic? Make the substitution and rewrite the equation, but do not solve.

2. (5 points [11]) Solve for  $r$ :  $2 = \sqrt{3r - 12} - 1$

3. (5 points [7,11]) Solve for  $x$ :  $(6x + 4)^{1/3} + 3 = 7$

4. (2 points [1,8,9,10]) Find a solution of the equation  $2z + 3t = 7$ . Write your solution as an ordered pair.

5. (6 points [1,9,10]) Make a table that shows five points on the graph of the equation  $y = 5 - 2x^2$ . Then plot your points and sketch the graph. (Label your axes.)

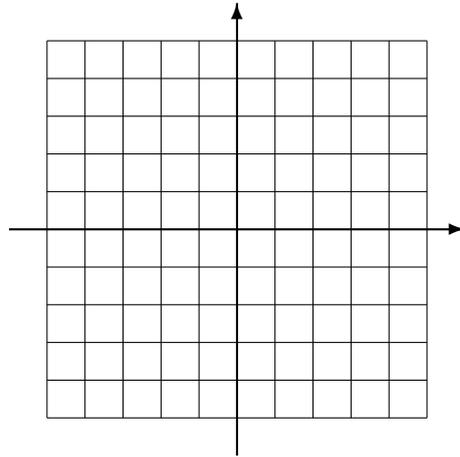


6. (3 points [11]) Calculate the distance from the point  $P(1, -5)$  to the point  $Q(-2, -3)$ . Round your final answer to the nearest hundredth.

7. (6 points [9,10]) A diameter of a circle connects the points  $(0, 0)$  and  $(4, 2)$ . Find the standard form equation for the circle.

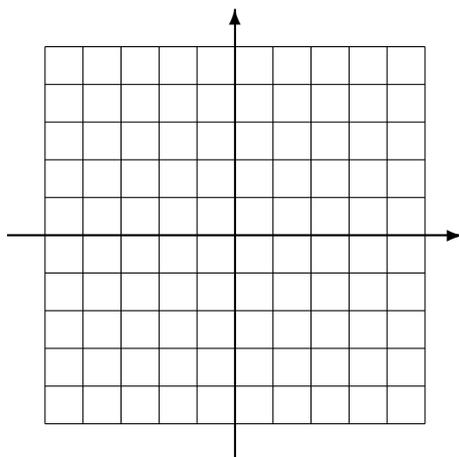
8. (6 points [3]) Find the  $x$ - and  $y$ -intercepts of the line described by  $-3x + 7y = 6$ . Label which is which.

9. (4 points [9,10]) Sketch the graph of the equation  $(x + 1)^2 + (y - 2)^2 = 9$ . Label your axes.



10. (3 points [2,3,4]) Determine an equation of the line that passes through the points  $(5, -3)$  and  $(5, 7)$ .

11. (6 points [2,4]) Carefully sketch the graph of the equation  $-3x + 6y = 9$ . Label your axes and label the coordinates of two points on your graph.



12. (6 points [2,4]) A line passes through the points  $(2, 7)$  and  $(-8, 3)$ . Find the slope and  $y$ -intercept of the line.

13. (3 points [2,4]) A line with slope 5 passes through the point  $(6, 1)$ . Find another point on the line.

14. (10 points [2,4]) A line has slope  $-3/7$  and passes through  $(0, -5)$ .

(a) Find an equation of the parallel line that passes through  $(7, 1)$ . Write your answer in standard form.

(b) Find an equation of the perpendicular line that passes through  $(3, -5)$ . Write your answer in standard form.

15. (2 points [10]) Carefully explain why this relation is not a function.

$$\{(1, 2), (2, 5), (3, 8), (4, 10), (-1, 8), (3, 9)\}$$

16. (2 points [10]) Does this table describe a function? How do you know?

$x$	3	2	1	0	-1	-2
$y$	3	3	1	1	1	3

17. (3 points [1]) Determine the domain of  $h(x) = \frac{x - 3}{(x + 2)(x - 1)}$ .

18. (6 points [1]) Let  $f(x) = \sqrt{x + 5}$ .

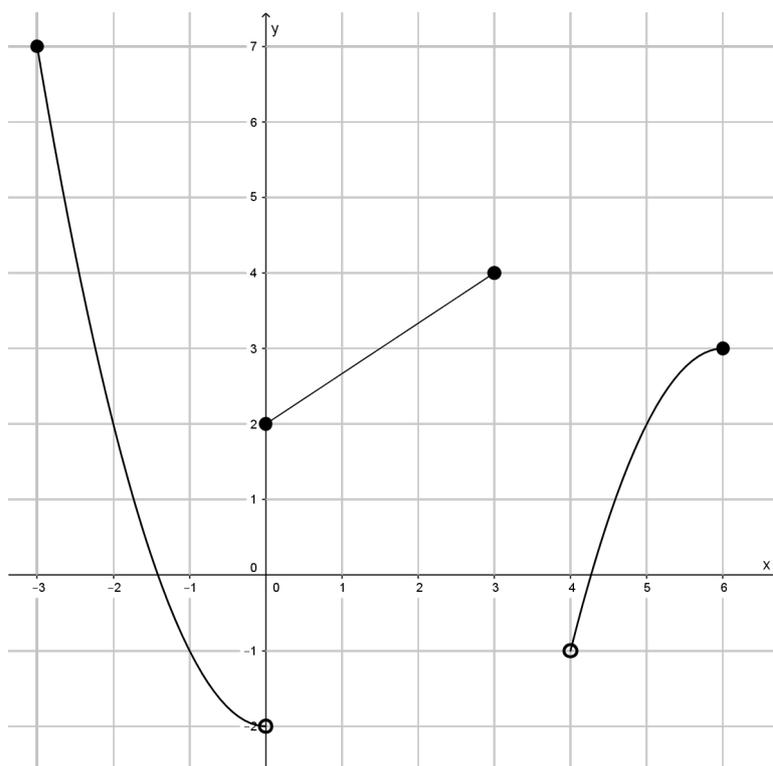
(a) What is the domain of  $f$ ?

(b) Evaluate  $f(-6)$ .

(c) Evaluate  $f(4)$ .

19. (5 points [5]) Let  $f(x) = x^2 + x$ . Expand and simplify the expression  $f(x + h) - f(x)$ .

20. (14 points [1,10]) The graph of  $y = f(x)$  is shown below. Use the graph for each part of this problem.



- (a) Is this the graph of a function? How do you know?
- (b) What is the domain of  $f$ ?
- (c) What is the range of  $f$ ?
- (d) Determine  $f(-2)$ .
- (e) Determine  $f(0)$ .
- (f) Determine  $f(4)$ .
- (g) How many solutions are there for the equation  $f(x) = 0$ ?