

Name:

Recitation Instructor, Day, Time:

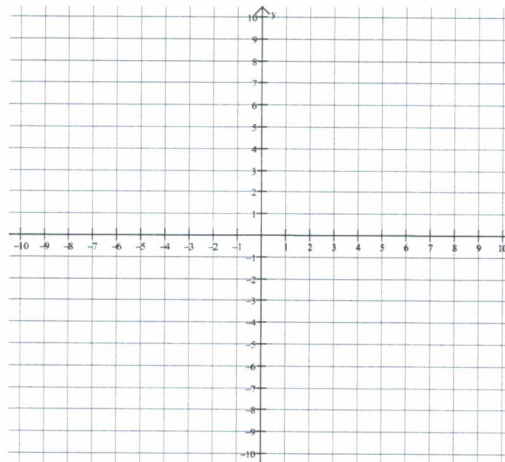
## TRADITIONAL MATH 100 – Exam 1 – SPRING 2019

**Directions:** You will find 15 problems listed below. No notes/books/friends are allowed. Graphing calculator models above the level of a TI-84 plus are not allowed. You have one hour to complete this exam.

Page 1 20 pts.	Page 2 20 pts.	Page 3 20 pts.	Page 4 20 pts.	Page 5 20 pts.	TOTAL 100 pts

1. (6 points) Find the union. Express answers in **interval notation** and on a **number line**:  
 $(-2, 7] \cup [-5, 4)$

2. (7 points) On the grid below, graph the relation  $\{(4, y) \mid -3 < y < 5\}$



3. (7 points) Find the distance between the two points  $(1, 4)$  and  $(-2, 7)$ .

4. (8 points) Consider  $g(x) = x^2 - 3x + 1$ . Answer the following:

(a) Find  $g(1)$ .

(b) Find  $g(-1)$ .

(c) Find  $g(a)$  where  $a$  is some generic input value.

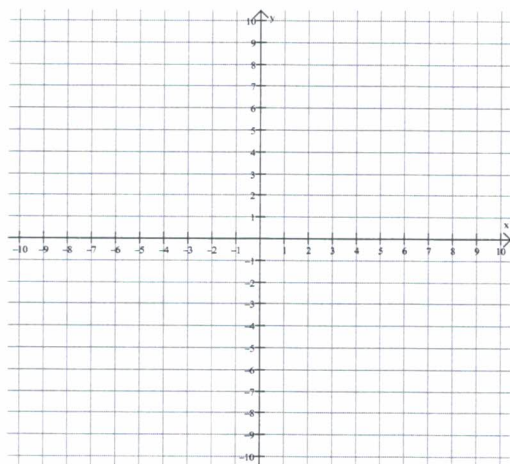
(d) Find  $g(x + h)$  where  $h$  is some constant; simplify as much as possible.

5. (6 points) Does the following relation represent a function? Explain:  $\{(1, 6), (2, 4), (1, 4), (2, 10)\}$ .

6. (6 points) Solve for  $x$  in the equation  $2(4x - 5) - 3 = -4(x + 2) + 1$ .

7. (6 points) Is the function  $f(x) = x^3 - 5x$  even, odd, or neither? Use the function notation definitions of even/odd to justify your answers. (Answers that only show a graph will only receive partial credit).

8. (8 points) Graph  $y = x^2 - 4$  on the grid below. Include at least 5 points on your graph, including the intercepts.



9. (6 points) Suppose the total cost function for a certain product is given by  $C(x) = 60x + 1200$  and the revenue function for the product is given by  $R(x) = 400x$ . Find a formula for the following functions:

(a) Profit Function,  $P(x)$

(b) Average Cost Function,  $\overline{C(x)}$

10. (6 points) Find the domain of the function  $f(x) = \frac{1}{3x - 5}$ .

11. (6 points) Find the midpoint of the points  $(1, -5)$  and  $(-8, 9)$ .

12. (8 points) Given  $f(x) = 3x^2 - x + 1$  and  $g(x) = x - 1$ , find  $(fg)(x)$ .

13. (8 points) Given  $h(x) = 4x^2 - 1$  and  $k(x) = x + 2$ , find  $(h + k)(-2)$ .

14. (6 points) Consider the graph of  $h(x) = x^2$ . Describe how the graph of  $h(x - 1) - 3$  would look compared to  $h(x)$ .

15. (6 points) Consider the function  $k(x) = x^2 - 25$ .

(a) Find the  $y$ -intercept of  $k(x)$ .

(b) Find the  $x$ -intercept(s) of  $k(x)$ .