

Name: \_\_\_\_\_  
Date: \_\_\_\_\_  
Class: \_\_\_\_\_

Algebra  
Review  
Graded Homework 17

Show all of your work for every problem. The numbers in the brackets are the points that each problem is worth. Multiple Choice Problems are worth 3.  
NO WORK = ZERO CREDIT

1) [3] Given that  $f(x) = 2x + 1$ , find  $g(x)$  if  $g(x) = 2[f(x)]^2 - 1$ .

2) [3]

Sue and Kathy were doing their algebra homework. They were asked to write the equation of the line that passes through the points  $(-3,4)$  and  $(6,1)$ . Sue wrote  $y - 4 = -\frac{1}{3}(x + 3)$  and Kathy wrote  $y = -\frac{1}{3}x + 3$ . Justify why both students are correct.

3) [4]

The sum of two numbers,  $x$  and  $y$ , is more than 8. When you double  $x$  and add it to  $y$ , the sum is less than 14.

Find 2 possible solutions for  $(x, y)$  using a graph and 2 inequalities.

4) [4] Graph the following system and state the solutions to  $f(x) = g(x)$

$$g(x) = \frac{1}{2}x + 1$$

and

$$f(x) = \begin{cases} 2x + 1, & x \leq -1 \\ 2 - x^2, & x > -1 \end{cases}$$

5) [3]

Franco and Caryl went to a bakery to buy desserts. Franco bought 3 packages of cupcakes and 2 packages of brownies for \$19. Caryl bought 2 packages of cupcakes and 4 packages of brownies for \$24. Let  $x$  equal the price of one package of cupcakes and  $y$  equal the price of one package of brownies.

Using a system of equations, solve the following to determine how much one of each costs.

6) [3]

The function,  $t(x)$ , is shown in the table below.

$x$	$t(x)$
-3	10
-1	7.5
1	5
3	2.5
5	0

Determine whether  $t(x)$  is linear or exponential. Explain your answer.

7) [3]

Let  $h(t) = -16t^2 + 64t + 80$  represent the height of an object above the ground after  $t$  seconds. Determine the number of seconds it takes to achieve its maximum height. Justify your answer.

State the time interval, in seconds, during which the height of the object *decreases*. Explain your reasoning.

8) [4]

The Reel Good Cinema is conducting a mathematical study. In its theater, there are 200 seats. Adult tickets cost \$12.50 and child tickets cost \$6.25. The cinema's goal is to sell at least \$1500 worth of tickets for the theater.

Using a system of inequalities, show the solution set and state 2 solutions to this system in terms of Adult tickets sold and child tickets sold.