Name: _____ Due : 12/7/16

Math 111 Graded Problem Set

Instructions: Show all your work and use appropriate notation and formatting. You may use any available academic resources (your notes, your book, your peers, your instructor, tutors, etc.) while working on this graded problem set. What you hand in should be your own work though. Collaboration is encouraged; direct copying is not academically appropriate under any circumstances.

1. Determine if either the function f and the function g could be linear or exponential. Give full justification for each response.

a. The function f:

Table 1

x	$f(x)$
-2	-9
-1	-6
0	-3
1	0
2	3

b. The function g:

Table 2

x	$g(x)$
-2	64
-1	32
0	16
1	8
2	4

[4 points]

2. Find the algebraic rule (or formula) for the exponential function h that passes through the points $(-1, 27)$ and $(2, 8)$.

[4 points]

3. Graph of $y = 3^x$ in Figure 1. Then graph $y = 3^{x+1} - 3$ in Figure 2 using transformations. Clearly draw and label any asymptotes for each of these functions.

Figure 1

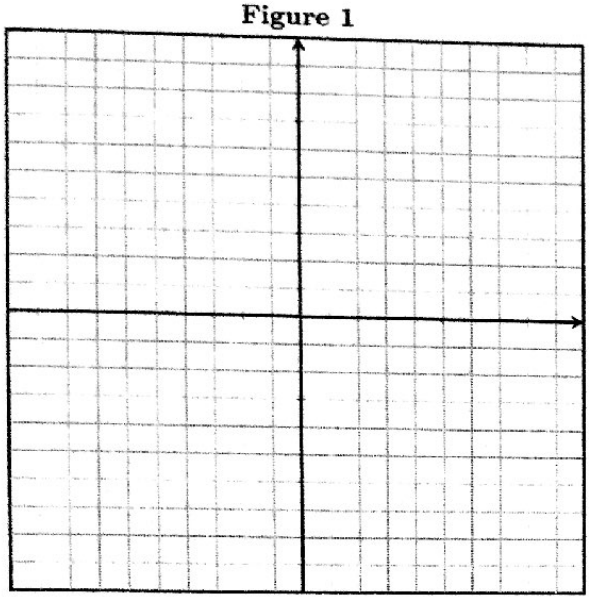
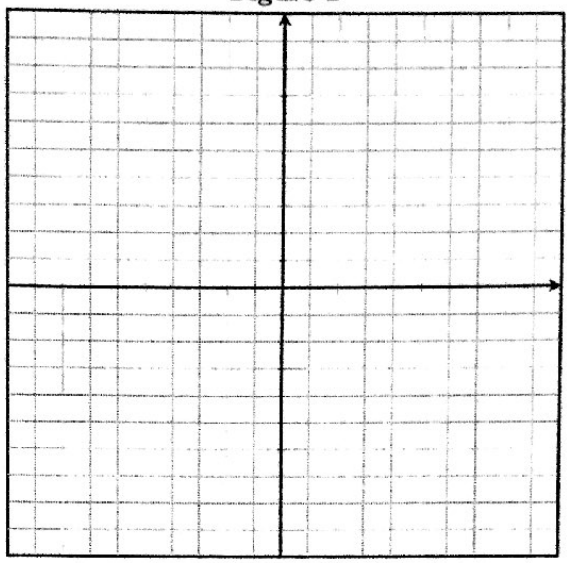


Figure 2



[8 points]

4. Solve the equation below. Clearly state your solution set. *Hint: Convert all terms to base 2 and use the rules of exponents.* No logarithms are needed to solve this problem.

$$2^{x^2} = 8 \cdot 4^{-x}$$

[4 points]