Math 3

Name: _____

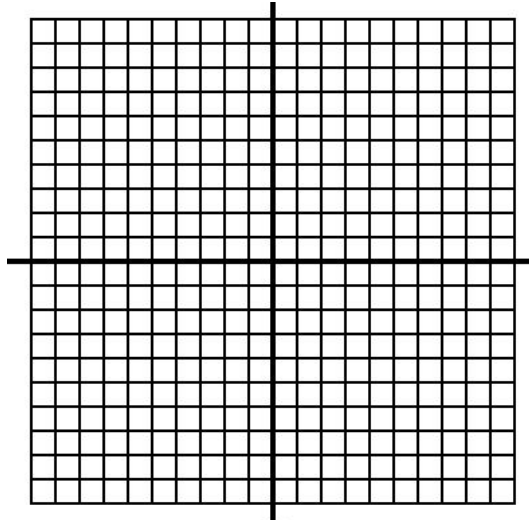| **Logarithms Practice #1** |

Date: _____

Period: A1 A2 A3 B1 B2 B3

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1. (NEW) Write the equation for <u>the inverse of</u> $y = 3^x$. (Hint: Use the x-y interchange method and then rewrite in logarithmic form.) Create multiple representations of <u>the inverse of</u> $y = 3^x$.

x	**y**

Equation:

Description:

2. (NEW) Using the idea behind the Ancient Puzzle you studied last class, what is the value of the unknown in each equation below?

    a. $log_b 243 = 5$

    b. $log_4(\frac{1}{16}) = z$

    c. $log_b 0.001 = 3$

    d. $log_{12} 144 = x$

    e. $log_5 x = -2$

    f. $log_8 x = \frac{1}{3}$

3. (REVIEW) Write the equation in graphing form of each circle described below.

    a. A circle with radius 12 centered at the point (–2,13).

    b. A circle with center (–1,–4) and radius 1.

    c. A circle with equation $x^2 + y^2 - 6x + 16y + 57 = 0$. (Hint: Complete the square for both x and y.)

4. (EXPLORE) A regular tetrahedron is a triangular-based pyramid in which every face is an equilateral triangle. Is it possible to slice a regular tetrahedron and get a cross-section that is *not* an equilateral triangle? Justify your response, explaining completely.

5. (REVIEW, but a little tricky) Sketch the graph of $y + 3 = 2^x$. Make a table if you need to.
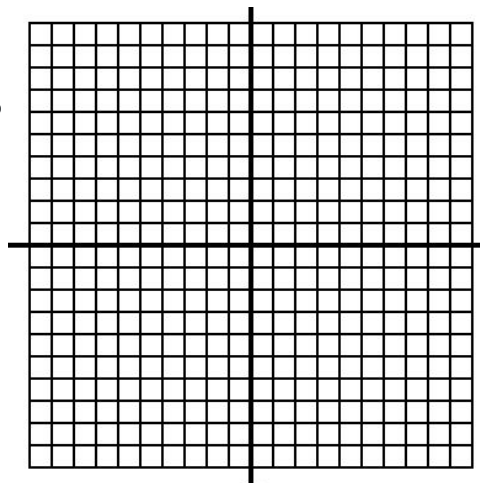   a. What are the domain and range of this function?

    b. Does this function have a line of symmetry or an asymptote? If so, what are they?

    c. What are the x- and y-intercepts?

    d. Sketch the inverse of this function on the same set of axes.
    e. What are the domain, range, x- and y-intercepts, and asymptotes or lines of symmetry of the inverse?

6. (REVIEW) Given the following systems of equations, determine the solution (or solutions).
    a. $f(x) = 2x^2 + 5$ and $g(x) = x^2 + 6$

    b. $|x + 2| = -y$ and $y = -7$

7. (NEW) Determine the value of each expression below?
    a. $\log_8(1)$ b. $\log_{12}(144)$ c. $\log_{16}(4)$

The end.