**Math 30-1 8.1 to 8.3 Review of Logarithms**

1. Sketch a graph of each function listed. Determine the characteristics for each graph.

 a) 

 domain \_\_\_\_\_\_\_\_\_\_\_\_

 range \_\_\_\_\_\_\_\_\_\_\_\_

 equation of asymptote

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 *x*- intercept \_\_\_\_\_\_\_\_\_

 *y*- intercept \_\_\_\_\_\_\_\_\_

 increasing or decreasing

b) 

 domain \_\_\_\_\_\_\_\_\_\_\_\_

 range \_\_\_\_\_\_\_\_\_\_\_\_

 equation of asymptote

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 *x*- intercept \_\_\_\_\_\_\_\_\_

 *y*- intercept \_\_\_\_\_\_\_\_\_

 increasing or decreasing

1. The point  is on the graph of the logarithmic function *f* (*x*)  log*c* *x*. The point (*k*, 64) is on the graph of the inverse, *y*  *f* −1(*x*). Determine the value of *k*.
2. Describe in words how the graph of  can be obtained from the graph of *y*  log4 *x*.
3. Write the equation of the asymptote of the inverse of *f* (*x*)  3 log7 (*x*  2)  1.
4. Write the equation of the final transformed image function if the graph of *y*  log2 *x*  is stretched horizontally by a factor of 3 about the *y*-axis, translated 5 units to the right and translated 4 units down.



1. In the graph shown, the solid curve is a stretch and/or reflection of the dashed curve. Write the equation of the solid graph in the form.
2. Express in logarithmic form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Express *y*  2*x*  1  5 in logarithmic form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Write  in exponential form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Express in exponential form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. Express log2 (*x*  1)  5  *y* in exponential form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. Evaluate each expression

 a)  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 b)  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 c)  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 d)  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 e)  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 f)  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 g)  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 h)  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 i)  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 j)  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Evaluate each to three decimal places:

a)  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b)  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Express  as a single logarithm \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Write each expression as a single logarithm.

 a)  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 b)  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 c)  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Express as a sum or difference of logarithms.

 a)  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 b)  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Determine if each statement is true or false.

 a)  \_\_\_\_\_\_\_\_\_ b)  \_\_\_\_\_\_\_\_\_

 c)  \_\_\_\_\_\_\_\_\_ d)  \_\_\_\_\_\_\_\_\_

 e)  \_\_\_\_\_\_\_\_\_ f)  \_\_\_\_\_\_\_\_\_

 f)  \_\_\_\_\_\_\_\_\_ g)  \_\_\_\_\_

 h)  \_\_\_\_\_\_\_\_ i)  \_\_\_\_\_\_\_\_\_

1. If  and , express  in terms of *x* and *y*.
2. If log5 9  *k*, write an algebraic expression in terms of *k* for log5 94.
3. Simplify each expression.

 a)  \_\_\_\_\_\_\_\_\_\_\_\_\_

 b)  \_\_\_\_\_\_\_\_\_\_\_\_\_

 c)  \_\_\_\_\_\_\_\_\_\_\_\_\_

 d)  \_\_\_\_\_\_\_\_\_\_\_\_\_

 e)  \_\_\_\_\_\_\_\_\_\_\_\_\_

 f)  \_\_\_\_\_\_\_\_\_\_\_\_\_

 g)  \_\_\_\_\_\_\_\_\_\_\_\_\_

 h)  \_\_\_\_\_\_\_\_\_\_\_\_\_

1. Given that , determine an expression in terms of *x* for 
2. If log5 *x*  25, determine the value of .
3. Determine the value of log*n* *ab*2 if log*n* *a*  5 and log*n* *b*  3.
4. If , then  \_\_\_\_\_\_\_\_\_\_\_\_\_
5. If , then  \_\_\_\_\_\_\_\_\_\_\_\_\_
6. If , then  \_\_\_\_\_\_\_\_\_\_\_\_\_
7. If  can be expressed as \_\_\_\_\_\_\_\_\_\_\_\_\_