Name: _____   **Date:** _____

Lesson 7 Assessment

1. Complete the table below.

Exponential Form	Logarithmic Form
$4^0 = 1$	
	$\log 1000 = 3$

2. Evaluate each of the following logarithms.

   a) $\log_5 1 =$ _____

   b) $\log_3\left(\dfrac{1}{3}\right) =$ _____

   c) $\log_2 2 =$ _____

   d) $\log_8(64) =$ _____
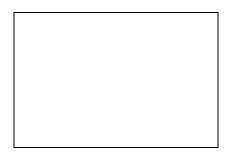
   e) $\log_5\left(\dfrac{1}{25}\right) =$ _____

   f) $\log\sqrt[3]{10} =$ _____

3. Solve the following equations. Simplify your answers. Where applicable, give <u>both</u> the exact answer and the decimal approximation rounded to three decimal places.   Show all algebraic work.

   a) $8 - 2\log_7 x = 10$

   b) $1000(1.12)^x = 2000$

4. Consider the function $g(x) = \log_3 x$

   a) Graph $g(x)$ on your graphing calculator. Use window x: [0..10] and y: [-2..2]. In the space below, draw what you see on your calculator screen.

   b) What is the domain of $g(x)$? _____

   c) What is the range of $g(x)$? _____

   d) For what values of x is $g(x)$ positive? _____

   e) For what values of x is $g(x)$ negative? _____

   f) For what values of x is $g(x)$ increasing? _____

   g) What is the vertical intercept? _____

   h) What is the horizontal intercept? _____

   i) Give the ***equation*** of the vertical asymptote for $g(x)$. _____

   j) For what value of x is $g(x) = 1$? _____

   k) For what value of x is $g(x) = 3$? _____

   l) Determine $g(42)$. Round your answer to three decimal places.