QUIZ 9 - MATH 111 Friday, November 12

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Read each problem **very carefully** before starting to solve it. Each problem is worth around 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. [4 points] Convert from a logarithmic to an exponential and from an exponential to a logarithmic form, as appropriate.

$\log_3 x = 2 \quad \longrightarrow$ $\quad \longleftarrow \quad e^x = 23$

$\log_b 7 = \frac{1}{2} \quad \longrightarrow$ $\quad \longleftarrow \quad b^7 = c$

2. [4 points]

   (a) Fill-in the values in the following table and sketch the graph of the function $y = \log_2 x$.

x	$y = \log_2 x$
$\frac{1}{2}$	
1	
2	

   (b) Write formulas and the corresponding transformations (in the parentheses provided) leading from $y = \log_2 x$ to $f(x) = 2\log_2(x+3) - 7$.

$y = \log_2 x \quad \longrightarrow$ ( )

$\longrightarrow$ ( )

$\longrightarrow$ ( )

   (c) Find the domain, range and vertical asymptote of $y = f(x)$ (you do not have to graph).

3. [4 points] Find a formula, based on logarithm base 3 for the graph depicted in the picture below. (Explain all your steps).