Math 12
Chapter Assignment

Part 2 Calculators Allowed. ** <u>All answers to 2 decimal places unless otherwise specified. Show all work.</u>

1. Write in the exponent form: $w = \log_t a$

2. Find w if $\log_2 x = 3$ and $\log_3 w = x$ _____

3. Solve for the variable. (Answer on another page. Show all steps.)

a) $6^{2x-1} = 60$

e) $(\log_x 7)(\log_5 4)(\log_7 5) = 4$

b) $5 = 9e^{0.4t}$

f) $\log(x+5) + \log(x-4) = 1$

c) $6 = \log_5\left(\frac{x}{4}\right)$

g) $\log_{11}(2x-7) - \log_{11}(4-x) = \log_{11} 5$

d) $6(2)^{3x} = 5^{x+2}$

4. Evaluate. $\log_7 83$

5. Express $\log_7 70$ using logs in base 8. _____

6. In 1992 the population of a city was 81 000 and was increasing at an annual rate of 3.2%. How long will it take for the population to double?

7. If 500 mg of radioactive isotope decays to 110 mg in 80 minutes, what is the half-life of this isotope?

8. A population of geckos in an area is 400. If they are declining at an annual rate of 3 %, how long until there are only 100 alligators in this area?

9. The population of bacteria in a dirty bathtub doubles every 18 minutes. How long would it take for the population to triple?

10. A major earthquake of magnitude 8.1 is 251 times as intense as minor earthquake. Find the magnitude of the minor earthquake. (solving using logarithms to one decimal place)

11. Find the Amount of time needed for money to quadruple at 6 % compound continuously.

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Name: _____
Date: _____
Block: _____

Part 1: No Calculators. (Suggested time 25 minutes)

*** Show all work on this page. Hand-in when finished and pick up part 2***

1. Solve for the variable.

A) $49^{3x+2} = 7^{1-x}$

B) $32^{x-5} = (\frac{1}{4})^{4-3x}$

2. Evaluate.

a) $\log_3(\frac{1}{81})$ _____

b) $\log_4 \sqrt[3]{8}$ _____

c) $\log 10$ _____

d) $e^{\ln w}$ _____

e) $\log_w 1$ _____

f) $16^{\log_{16} 7}$ _____

3. Write as a single log: $2\log a - 4\log b^2 - \frac{1}{2}\log c$ _____

4. Evaluate: $\frac{1}{2}\log_2 4 + \log_4 32 + 2\log_4 2$ _____

5. If $\log_2 w = 5$ evaluate $\log_2 16w^4$

6. Complete the chart.

Function	Equation of the asymptote	Domain	Range	Sketch the graph. Include the asymptote and one point on the graph
$y = \frac{1}{3}^x - 4$				
$y = \log_3(x+1)$				
$y = \log(2-x)$				

7. What is the domain of $y = \log_{4x+1}(x+2)$?