

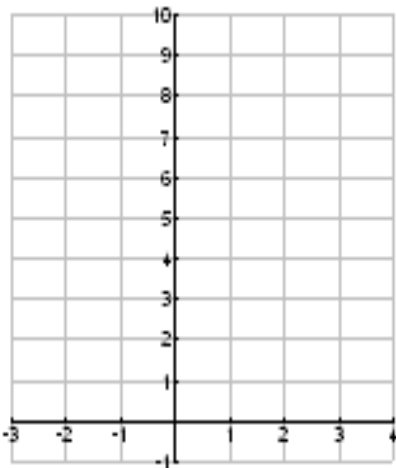
Name _____

Algebra II: Review Sections 7.1, 7.3-7.6

1. Graph $f(x) = \frac{1}{3}(3)^x$ on the grid below. Fill in the function values in the table using the numbers given for x. Use the graph to answer the questions to the right. Write **none** if that is the case.

X	-2	-1	0	1	2	3
Y						

A) What is the domain of $f(x) = \frac{1}{3}(3)^x$?



B) What is the range of $f(x) = \frac{1}{3}(3)^x$?

C) Is this function exponential growth, exponential decay, or neither? _____

D) What is the x-intercept? _____

E) What is the y-intercept? _____

F) Give the equation of any asymptote. _____

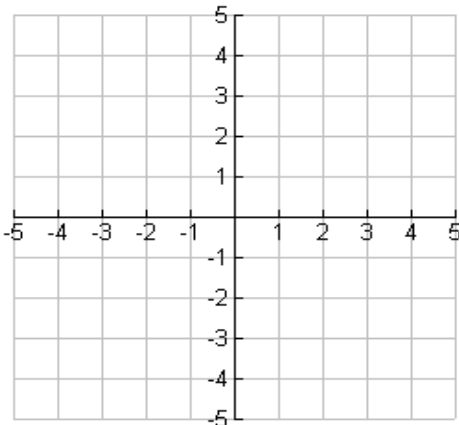
G) Complete the statements about the end behavior of this function.
 $x \rightarrow -\infty, f(x) \rightarrow$ _____
 $x \rightarrow \infty, f(x) \rightarrow$ _____

2. Identify each of the following as being exponential growth, exponential decay, or neither.

_____ A) $y = 2(0.33)^x$ _____ B) $y = 0.47(8)^x$ _____ C) $y = 2x^5$

3. Write the equation of the exponential function that is modeled by the following situation and answer the question. The amount of bacteria in a culture is growing at the rate of 24% per hour. At noon one day it was 1000 cells. What would the amount be by noon of the following day?

4. Graph the relation given by the points in the table below and connect the points. Then graph the inverse. Identify the domain and range of each relation after the points are connected.



X	-3	0	3	4
Y	-4	-3	2	4

A) Domain of the given function: _____

B) Range of the given function: _____

C) Domain of the inverse: _____

D) Range of the inverse: _____

5. Evaluate or simplify each of the following.

A) $\log_{45} 1 =$ _____ B) $\log_2 \frac{1}{4} =$ _____ C) $\log_3 243 =$ _____ D) $\log_{81} 9 =$ _____ E) $\log_2 2^p =$ _____

6. Write the equation $32 = 2^5$ in logarithmic form. _____

7. Write the equation $\log_3 81 = 4$ in exponential form. _____

8. If the point (2,6) was on the graph of a function, what point would have to be on the graph of its inverse? _____

9. Describe the relationship that exists between exponential and logarithmic functions. _____

Evaluate.

10. $\log_2 x = 5$

11. $\log_7 49^{\frac{1}{4}} = a$

Express as a single logarithm and simplify, if possible.

12. $3 - \log_5 125 + \log_5 5$

13. $\log_6 95 - \log_6 5$

Solve. Show all work

14. $16^{\frac{1}{2}} = 8^{2x}$

15. $\log_3 4x - 2 = \log_3 8 - x$

16. $\log_2 x + \log_2(x - 7) = 3$

17. $3\log_4 x^2 = 6$

18. Simplify $\ln e^{2x}$.

19. Use the change of base formula to approximate $\log_2 13$

20. Use the formula $A = Pe^{rt}$ to compute the total amount for an investment of \$5000 at 2.5% interest compounded continuously for 6 years

Name _____

Algebra II: Part II More Review

1. Using the properties of logarithms the expression $\log_2 7 + \log_2 6$ could be simplified to which of the following choices?

- A) 42 B) $\log_2 13$ C) $\log_2 42$ D) $\frac{\log_2 7}{\log_2 6}$ E) None of these

2. Using the properties of logarithms, the expression $\log_b \frac{x^2 y}{z^3}$ could be expanded to be written as which of the following choices?

- A) $A = Pe^{rt}$ B) $2\log_b x + \log_b y - 3\log_b z$
C) $2(\log_b x + \log_b y) - 3\log_b z$ D) $2\log_b x - \log_b y - 3\log_b z$

3. Which of the following correctly shows the change of base formula applied to $\log_b P$?

- A) $\log_p b$ B) $\log \frac{P}{b}$ C) $\frac{\log_{10} P}{\log_{10} b}$ D) $\frac{\log_{10} b}{\log_{10} P}$ E) None of these

4. Solve $27^{x-2} = 3$ using any method. Give **both** the exact answer and the approximate answer rounded to the **hundredths** place.

5. Use the formula $A = P\left(1 + \frac{r}{n}\right)^{nt}$ to determine each of the following.

A) What would the value of an investment be for an initial amount of \$6000 invested for 20 years earning 7% if compounding takes place every month? Round your final answer to the nearest cent.

B) Determine the length of time it would take for the investment to double. All steps using logarithms must be shown to receive credit for this problem. Give **both** the exact answer as well as a rounded answer (to the **hundredths** place).

6. Use the formula $A = A_0 \left(\frac{1}{2}\right)^{\frac{t}{h}}$ to answer the following questions.

A) What amount of radioactive Carbon-14 would be left after 2000 years if the initial amount was 24 grams and the half-life is 5700 years ?

B) Determine the time it would take for only 3 grams to remain. All steps using logarithms must be shown to receive credit for this problem. Give **both** the exact answer as well as a rounded answer (to the **hundredths** place).

7. Simplify. $\ln e^{x+5}$

8. Simplify $e^{5 \ln x}$

9. Using the formula $A = Pe^{rt}$ calculate the amount return on \$60000 at 6% interest compounded for 9 years.

10. In 1940 the beaver population was almost extinct in Arkansas with only 4300 beaver in Arkansas. With help from wildlife management the beaver population grew at an exponential rate and in 1980 there were about 8700 beaver in Arkansas. If this rate continued what would be the beaver population in Arkansas in the year 2011.