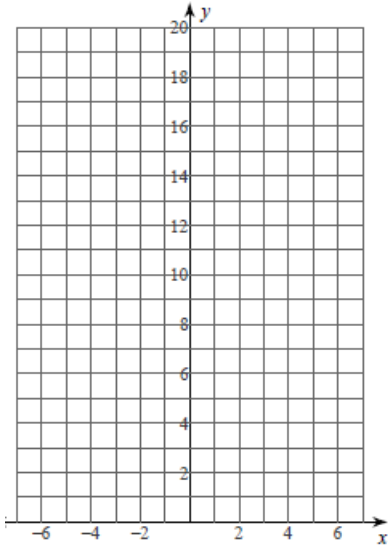


Algebra 2 Honors
WS: 4.1, 4.3, 4.4 Review

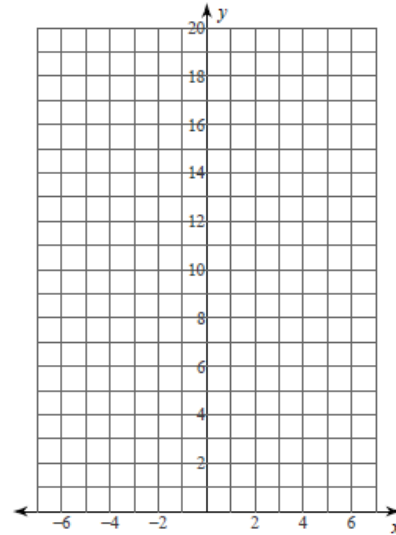
Name _____
Date _____ Block _____

In 1 – 2, tell whether the function represents exponential growth or decay. Graph the function and state its domain and range. Include a table showing the points used to make your graph.

1. $f(x) = 4 \cdot 2^x$



2. $f(x) = 2\left(\frac{1}{2}\right)^x$



3. Since January 1980, the population of the city of Brownville has grown according to the mathematical model $f(x) = 720,500(1.022)^x$, where x is the number of years since January 1980.
- Explain what the numbers 720,500 and 1.022 represent in this model.
 - What would the population be in 2000 if the growth continues at the same rate?
 - Use your graphing calculator to predict when the population of Brownville will first reach 1,000,000.
4. Your new computer cost \$1500 but it depreciates in value by about 18% each year.
- Write an equation that would indicate the value of the computer after x years.
 - How much will your computer be worth in 6 years?
 - About how long will it take before your computer is worth close to zero dollars, according to your equation?

In 5 – 8, rewrite each equation in exponential form.

5. $\log_6 36 = 2$

7. $\log_u \frac{15}{16} = v$

6. $\log_{14} \frac{1}{196} = -2$

8. $\log_u v = -16$

In 9 - 12, rewrite each equation in logarithmic form.

9. $64^{1/2} = 8$

11. $u^{-14} = v$

10. $9^{-2} = \frac{1}{81}$

12. $9^y = x$

In 13 – 26, evaluate. NO CALCULATORS!

13. $\log_4 64$

18. $\log_2 4$

23. $12^{\log_{12} 144}$

14. $\log_6 216$

19. $\log_{343} 7$

24. $5^{\log_5 17}$

15. $\log_4 16$

20. $\log_8 4$

25. $x^{\log_x 72}$

16. $\log_3 \frac{1}{243}$

21. $\log_{64} 4$

26. $9^{\log_3 20}$

17. $\log_5 125$

22. $\log_6 \frac{1}{216}$

In 27 – 32, expand each logarithm.

27. $\log(6 \cdot 11)$

30. $\log \frac{x}{y^6}$

28. $\log \left(\frac{6}{11} \right)^5$

31. $\log \sqrt[3]{xyz}$

29. $\log \frac{2^4}{5}$

32. $\log \frac{u^4}{v}$

In 33 – 40, condense each expression to a single logarithm.

33. $\log 3 - \log 8$

35. $\log \frac{7}{12^2}$

34. $4 \log 3 - 4 \log 8$

36. $6 \log_3 u + 6 \log_3 v$

$$37. \log_4 u - 6\log_4 v$$

$$39. \log x - 4\log y$$

$$38. 20\log_6 u + 5\log_6 v$$

$$40. 2(\log 2x - \log y) - (\log 3 + 2\log 5)$$

In 41 – 44, use the change of base formula to evaluate. Work must be shown!

$$41. \log_2 8.7$$

$$43. \log_{12} 3$$

$$42. \log_{13} 194$$

$$44. \log_3 62$$