Algebra II - Chapter 8 Exam Review

Please do all work on separate paper. REVIEWS REQUIRED FOR RETEST ELIGIBILITY. NO LATE REVIEWS ACCEPTED

- 1. The table shows the number of rabbits in a particular meadow t years after a forest fire.
 - Write an exponential function to model the situation $(y = ab^x)$ (p 440, ex. 3) Number of Rabbits

Number of Kabbits			
Years	Rabbits		
0	50		
1	100		
2	200		
3	400		
4	800		
5	1600		

2. Find the annual percent (r) increase or decrease that $y = 0.43(1.5)^{x}$ models. (p 439, ex 2)

Expand the logarithmic expression. (p463 ex 3,)	3.	log,10 <i>q5</i>	4.	$\log_{s} \frac{c}{10}$
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5. Simplify $\ln e^{\gamma}$.

Write the equation in logarithmic form. (p455, ex 2) 6. $7^3 = 343$ 7. $216^{\frac{3}{3}} = 1296$

- 8. A polynomial equation with rational coefficients has the roots $2 + \sqrt{7}$ and 4 + 6i. Find two additional roots. (*p* 344 ex5)
- 9. Write the equation $\log_3 243 = 5$ in exponential form. (p455, ex 2)

 Evaluate the logarithm. (p455, ex32) 10.
 log 0.0001
 11.
 log_2 $\frac{1}{32}$

 Factor the expression. (p334, ex3) 12.
 $c^3 - 216$

13. The exponential decay graph shows the expected depreciation for a new motorcycle, selling for \$9000, over 10 years. (p440, ex3)



a. Write an exponential function for the graph.

b. Use the function in part **a** to find the value of the motorcycle after 5.5 years.

Graph the exponential function. Show a table of values. (p438, ex4) 14. $y = 5^x$ Graph the logarithmic equation. (P456, ex5) 15. $y = \log_5 x$ 16. $y = \log(x + 1) + 3$ **Graph the following equations** (p 438, ex 1)

17.
$$y = -5\left(\frac{1}{7}\right)^n$$
. 18. $y = 4(6)^{x+2} + 1$.

- 19. An initial population of 550 quail increases at an annual rate of 22%. Write an exponential function to model the quail population.(*P439*, *ex 2*)
- 20. Write an exponential function $y = ab^x$ for a graph that includes (0, 5) and (1, 10).(P440, ex3)
- 21. For an annual rate of change of -31%, find the corresponding growth or decay factor.(P339, ex2)
- 22. The half-life of a certain radioactive material is 53 hours. An initial amount of the material has a mass of 87 kg. Write an exponential function that models the decay of this material. Find how much radioactive material remains after 14 hours. Round your answer to the nearest thousandth.(*p* 448, *ex3*)
- 23. Suppose you invest \$1000 at an annual interest rate of 5.9% compounded continuously. How much will you have in the account after 25 years?(*p* 450, *ex5*)

The pH of a liquid is a measure of how acidic or basic it is. The concentration of hydrogen ions in a liquid is labeled $[H^+]$. Use the formula $pH = -\log[H^+]$ to answer questions about pH.(P 456, ex4)

- 24. Find the pH level, to the nearest tenth, of a liquid with $[H^+]$ about 7.8 × 10⁻⁵.
- 25. The pH of a juice drink is 3.5. Find the concentration of hydrogen ions in the drink.

Write the expression as a single logarithm. (p 478, ex1)

- 26. $7 \log_{\delta} t + 4 \log_{\delta} q$ 27. $\log_{10} 36 \log_{10} 4$
- 28. Solve $4^{8\pi} = 118$. Round to the nearest ten-thousandth. (p469, ex14)
- 29. Use the Change of Base Formula to evaluate $\log_2 66$. (p478, ex14)

Write the expression as a single natural logarithm. $30. 2 \ln 4 + 6 \ln y$

31. The sales of televisions r years after a particular model is introduced is given by the function $y = 5500 \ln(9r + 4)$, where y is the number of TVs sold. How many TVs will be sold 3.5 years after a model is introduced? Round the answer to the nearest whole number.

 $\ln x - \ln 8 = 0.$

Solve (p479, ex 3)32. $\ln 3 + \ln y = 4$

Use natural logarithms to solve. Round to the nearest thousandth. .(p480, ex 4)

- 34. $5e^{3x} 8 = 9$
- 35. Simplify $\sqrt[3]{48a^{13}b^{12}}$. Assume that all variables are positive. (p381, ex2)

33.

Divide and simplify. Assume that all variables are positive. 36.

$$\frac{\sqrt[3]{750x^{23}}}{\sqrt[3]{2x}}$$
 (p 382, ex4)

Rationalize the denominator of the expression. Assume that all variables are positive. (p 382, ex5)

37.
$$\frac{\sqrt{6x^{10}y^{10}}}{\sqrt{7x^4y^5}}$$
 38. $\frac{\sqrt{3} - \sqrt{6}}{\sqrt{3} + \sqrt{6}}$

Graph the logarithmic equation. .(p457, ex6)

39. $y = \log_2 x - 3$



a.
$$y = \sqrt{x+5} + 5$$

b. $y = \sqrt{x-5} - 5$
c. $y = \sqrt{x+5} - 5$
d. $y = \sqrt{x-5} + 5$

Graph the functions

41.
$$y = \sqrt{x} + 2$$
 42. $y = \sqrt{x+3}$

Chapter 8 Review Answer Section













