ALGEBRA II REVIEW CHAPTERS 14 TO 16

EXPONENTIAL AND LOGRATHMIC FUNCTIONS

Without graphing, determine whether each equation represents exponential growth or exponential decay. Then find the *y*-intercept.

1. $y = 10^x$

2. $y = 327(0.05)^x$

3. $y = 1.023(0.98)^x$

4. $y = 0.5(1.67)^x$

5. $y = 1.14^x$

6. $y = 8(1.3)^x$

7. $y = 2\left(\dfrac{9}{10}\right)^x$

8. $y = 4.1(0.72)^x$

9. $y = 9.2(2.3)^x$

10. Mr. Andersen put $1000 into an account that earns 4.5% annual interest. The interest is compounded annually and there are no withdrawals. How much money will be in the account at the end of 30 years?

11. A manufacturer bought a new rolling press for $48,000. It has depreciated in value at an annual rate of 15%. What is its value 5 years after purchase? Round to the nearest hundred dollars.

Write each equation in logarithmic form.

12. $100 = 10^2$

13. $9^3 = 729$

14. $64 = 4^3$

15. $\left(\dfrac{1}{2}\right)^4 = \dfrac{1}{16}$

16. $49^{\frac{1}{2}} = 7$

17. $\left(\dfrac{1}{3}\right)^{-3} = 27$

18. $625^{\frac{1}{4}} = 5$

19. $2^{-5} = \dfrac{1}{32}$

20. $6^2 = 36$

Evaluate each logarithm.

21. $\log 1000$

22. $\log_4 256$

23. $\log_{27} 9$

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24. $\log_{\frac{1}{3}} 256$

25. $\log_{125} 625$

26. $\log_8 \dfrac{1}{32}$

Write each expression as a single logarithm.

27. $\log 8 + \log 3$

28. $4(\log_2 x + \log_2 3)$

Expand each logarithm.

29. $\log_b 2x^2y^3$

30. $\log_b 3m^3p^2$

31. $\log_b (4mn)^5$

Solve each equation.

32. $\sqrt[3]{y^2} = 4$

33. $2 - 4^x = -62$

34. $\log x + \log 2 = 5$

35. $\log_3 (x + 1) = 4$

36. $e^x = 5$

37. $e^{\frac{x}{4}} = 5$

Simplify each expression.

38. $5 \ln 1$

39. $\ln e^2$

40. $\dfrac{1}{\ln e^{20}}$

41. $\dfrac{\ln e}{3 \ln e^3}$

42. $2 \ln e^{-5}$

43. $\dfrac{3 \ln e^4}{2 \ln e^6}$