

Algebra II Review Unit 11 page 1

Calculators are **not** to be used on this page of the review.

Find the exact value of each of the following.

1. $\text{Log}_5 125 = \underline{\hspace{2cm}}$

2. $\text{Log}_2 1024 = \underline{\hspace{2cm}}$

3. $\text{Log}_5 0.04 = \underline{\hspace{2cm}}$

4. $\text{Log}_4 2 = \underline{\hspace{2cm}}$

5. $\text{Log}_8 0.5 = \underline{\hspace{2cm}}$

6. $\text{Log}_5 \sqrt[3]{5} = \underline{\hspace{2cm}}$

7. $\text{Log } 100 = \underline{\hspace{2cm}}$

8. $\text{Log } 0.1 = \underline{\hspace{2cm}}$

9. $\ln e^3 = \underline{\hspace{2cm}}$

Solve each of the equations. Show your work neatly organized.

10. $5^{(3x-1)} = 25$

11. $27^{(x-3)} = 9^{(x+1)}$

12. $9^{(2x+1)} = 3$

13. $4^x = 0.25$

14. $\text{Log}_7 x = 3$

15. $\text{Log}_3 x = -1$

16. $\text{Log}_4 x = 2.5$

17. $\text{Log } x = 3$

18. $\text{Log } x = -2$

Given: $\text{Log}_N 2 = a$; $\text{Log}_N 3 = b$; $\text{Log}_N 5 = c$. Express each of the following logarithms as an algebraic expression in terms of a, b, and/or c.

19. $\text{Log}_N 15 = \underline{\hspace{2cm}}$

20. $\text{Log}_N 27 = \underline{\hspace{2cm}}$

21. $\text{Log}_N 0.3 = \underline{\hspace{2cm}}$

22. $\text{Log}_N 2.5 = \underline{\hspace{2cm}}$

23. $\text{Log}_N \sqrt{15} = \underline{\hspace{2cm}}$

24. $\text{Log}_N \left(\frac{N}{8}\right) = \underline{\hspace{2cm}}$

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Calculators are **needed** on this page of the review.

Solve each of the equations. Express your answers rounded to the nearest hundredth. Show your work neatly organized.

25. $5^x = 35$

26. $2^{(3x+2)} = 100$

27. $e^{(2x-5)} = 100$

28. $e^x = 6$

29. $\text{Log}_3 x = 2.5$

30. $\text{Log} x = 1.7$

31. $\text{Log} x = -0.5$

32. $\ln x = 3.5$

33. $\ln x = -1.5$

Find the value of each of the following. Express your answers rounded to the nearest hundredth.

34. $\text{Log}_5 30 = \underline{\hspace{2cm}}$

35. $\text{Log}_2 0.2 = \underline{\hspace{2cm}}$

Answer the following questions. Express your answer rounded to the nearest tenth of a year. Show your work neatly organized.

36. Money is invested in an account that pays interest at an annual rate of 6% compounded quarterly. How long will it take for the value of the account to double?

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Calculators are **needed** on this page of the review.

Answer the following questions. Express your answer rounded to the nearest tenth of a year. Show your work neatly organized.

37. \$800 is invested in an account that pays interest at an annual rate of 4% compounded monthly. How long will it take for the value of the account to reach \$1200?

38. Money is invested in an account that pays interest at an annual rate of 2.5% compounded continuously. How long will it take for the value of the account to double?

39. \$900 is invested in an account that pays interest at an annual rate of 5% compounded continuously. How long will it take for the value of the account to reach \$2500?