

Algebra 2 (basic) – 6.3 (trb, pract, vs14x) Logarithmic Functions

Goal: 6.3: write equivalent forms for exponential and logarithmic equations;
use definitions of exponential and logarithmic functions to solve equations; apply

Write each equation in logarithmic form.

1. $19^2 = 361$

2. $20^3 = 8000$

3. $3375^{\frac{1}{3}} = 15$

4. $\left(\frac{3}{4}\right)^{-3} = 64$

5. $\left(\frac{3}{7}\right)^3 = \frac{27}{343}$

6. $11^{-3} = \frac{1}{1331}$

Write each equation in exponential form.

7. $\log_{12} 144 = 2$

8. $\log_5 15,625 = 6$

9. $\log_{21} 9261 = 3$

10. $\log_{3600} 60 = \frac{1}{2}$

11. $\log_{11} \frac{1}{14,641} = -4$

12. $\log_{\frac{1}{5}} 625 = -4$

Solve each equation for x. Round your answers to the nearest hundredth.

13. $10^x = 35$

14. $10^x = 91$

15. $10^x = 0.2$

16. $10^x = 1.8$

17. $10^x = 0.08$

18. $10^x = 1055$

Find the value of v in each equation.

19. $v = \log_{10} 1000$

20. $v = \log_{15} 225$

21. $v = \log_{12} 144$

22. $8 = \log_2 v$

23. $-4 = \log_5 v$

24. $-3 = \log_7 v$

25. $-2 = \log_v \frac{1}{100}$

26. $\log_v 729 = 6$

27. $\log_v \frac{1}{256} = -4$

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SOLUTIONS

1. $\log_{19} 361 = 2$

2. $\log_{20} 8000 = 3$

3. $\log_{3375} 15 = \frac{1}{3}$

4. $\log_{\frac{3}{4}} 64 = -3$

5. $\log_{\frac{3}{7}} \frac{27}{343} = 3$

6. $\log_{11} \frac{1}{1331} = -3$

7. $12^2 = 144$ 8. $5^6 = 15,625$

9. $21^3 = 9261$ 10. $3600^{\frac{1}{2}} = 60$

11. $11^{-4} = \frac{1}{14,641}$

12. $\left(\frac{1}{5}\right)^{-4} = 625$

13. $x \approx 1.54$ 14. $x \approx 1.96$ 15. $x \approx -0.70$

16. $x \approx 0.26$ 17. $x \approx -1.10$ 18. $x \approx 3.02$

19. $v = 3$ 20. $v = 2$ 21. $v = 2$

22. $v = 256$ 23. $v = \frac{1}{625}$ 24. $v = \frac{1}{343}$

25. $v = 10$ 26. $v = 3$ 27. $v = 4$