

Rewrite the equation in Logarithmic Form.

1. $5^3 = 125$

$\log_5 125 = 3$

2. $6^{-1} = \frac{1}{6}$

$\log_6 \frac{1}{6} = -1$

3. $100^{-\frac{1}{2}} = \frac{1}{10}$

$\log_{100} \frac{1}{10} = -\frac{1}{2}$

4. $10^3 = 1000$

$\log_{10} 1000 = 3$

Rewrite the equation in exponential form.

5. $\log_5 25 = 2$

$5^2 = 25$

6. $\log_8 2 = \frac{1}{3}$

$8^{\frac{1}{3}} = 2$

7. $\log_3 \frac{1}{27} = -3$

$3^{-3} = \frac{1}{27}$

8. $\log_{13} 1 = 0$

$13^0 = 1$

Solve for x.

9. $\log_3 9 = x$

$3^x = 9$

$3^x = 3^2$

$x = 2$

10. $\log_6 \frac{1}{36} = x$

$6^x = \frac{1}{36}$

$6^x = 6^{-2}$

$x = -2$

11. $\log_7 1 = x$

$7^x = 1$

$x = 0$

12. $\log_{16} 8 = x$

$16^x = 8$

$2^{4x} = 2^3$

$4x = 3$

$x = \frac{3}{4}$

13. $\log_{32} 64 = x$

$32^x = 64$

$2^{5x} = 2^6$

$5x = 6$

$x = \frac{6}{5}$

14. $\log_5 x = 3$

$5^3 = x$

$125 = x$

15. $\log_{\frac{1}{10}} x = -3$

$\left(\frac{1}{10}\right)^{-3} = x$

$10^3 = x$

$1000 = x$

16. $\log_{25} x = \frac{3}{2}$

$25^{\frac{3}{2}} = x$

$(5^2)^{\frac{3}{2}} = x$

$5^3 = x$

$125 = x$

17. $\log_x 121 = 2$

$x^2 = 121$

$x^2 = 11^2$

$x = 11$

18. $\log_3 x = 3$

$$3^3 = x$$

$$27 = x$$

19. $\log_x 64 = 3$

$$x^3 = 64$$

$$x^3 = 4^3$$

$$x = 4$$

20. $\log_3 x = -4$

$$3^{-4} = x$$

$$\frac{1}{81} = x$$

21. $\log_{\frac{1}{2}} x = 4$

$$\left(\frac{1}{2}\right)^4 = x$$

$$\frac{1}{16} = x$$

22. $\log_3 \frac{1}{9} = x$

$$3^x = \frac{1}{9}$$

$$3^x = 3^{-2}$$

$$x = -2$$

23. $\log_{\frac{1}{2}} 8 = x$

$$\left(\frac{1}{2}\right)^x = 8$$

$$2^{-x} = 2^3$$

$$-x = 3$$

$$x = -3$$

24. $\log_{\frac{1}{5}} \left(\frac{1}{125}\right) = x$

$$\left(\frac{1}{5}\right)^x = \frac{1}{125}$$

$$\left(\frac{1}{5}\right)^x = \left(\frac{1}{5}\right)^3$$

$$x = 3$$

25. $\log_{25} x = \frac{3}{2}$

$$25^{3/2} = x$$

$$(5^2)^{3/2} = x$$

$$5^3 = x$$

$$125 = x$$

26. $\log_3 3 = x$

$$3^x = 3$$

$$x = 1$$

27. $\log_x 4 = 1$

$$x^1 = 4$$

$$x = 4$$

28. $\log_x 64 = \frac{3}{4}$

$$x^{3/4} = 64$$

$$\left(x^{3/4}\right)^{4/3} = \left(4^3\right)^{4/3}$$

$$x = 4^4$$

$$x = 256$$

29. $\log_x \left(\frac{1}{216}\right) = \frac{3}{2}$

$$x^{3/2} = \frac{1}{216}$$

$$\left(x^{3/2}\right)^{2/3} = \left(6^{-3}\right)^{2/3}$$

$$x = 6^{-2}$$

$$x = \frac{1}{36}$$