Key

Logarithmic Functions HW

Write the logarithmic equation in exponential form

1. $\log_4 64 = 3$

$4^3 = 64$

2. $\log_7 \frac{1}{49} = -2$

$7^{-2} = \frac{1}{49}$

3. $\log_{32} 4 = \frac{2}{5}$

$32^{2/5} = 4$

Write the exponential equation in logarithmic form

4. $5^3 = 125$

$\log_5(125) = 3$

5. $6^{-2} = \frac{1}{36}$

$\log_6\left(\frac{1}{36}\right) = -2$

6. $81^{\frac{1}{4}} = 3$

$\log_{81}(3) = \frac{1}{4}$

Use the definition of the logarithmic function to find *x*.

7. $\log_2 x = 5$

$x = 2^5 = \boxed{32}$

8. $\log_2 16 = x$

$2^x = 16$ $\boxed{x = 4}$

9. $\log_{10} x = 2$

$x = 10^2 = \boxed{100}$

Use the properties of the logarithmic function to solve for *x*

10. $\log_4(3x - 2) = \log_4(x + 4)$

$3x - 2 = x + 4$

$2x = 6$

$\boxed{x = 3}$

11. $\log_5 1 = x$

$5^x = 1$

$\boxed{x = 0}$

12. $\log_3 3 = x$

$3^x = 3$

$\boxed{x = 1}$

13. $\log_5 5^2 = x$

$5^x = 5^2$

$\boxed{x = 2}$

Evaluate the expression

14. $\log_4 64$

$4^x = 64$

$\boxed{x = 3}$

15. $\log_3 \frac{1}{27}$

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

$\boxed{x = -3}$

16. $\log_{16} 4$

$16^x = 4$

$\boxed{x = \frac{1}{2}}$

17. $\ln(\sqrt[5]{e^3})$

$e^x = \sqrt[5]{e^3}$

$\boxed{x = 3/5}$

18. $\log(\sqrt[3]{100})$

$10^x = \sqrt[3]{100}$

$\boxed{x = 2/3}$

19. $\log_5\left(\frac{1}{25}\right)$

$5^x = \frac{1}{25}$

$\boxed{x = -2}$