

Homework 6.1: Intro to Logarithms

Directions: Answer questions #1-16 on the front, and questions #1-11 odd on the back.

Write each equation in logarithmic form.

1. $9^2 = 81$

2. $\frac{1}{64} = \left(\frac{1}{4}\right)^3$

3. $8^3 = 512$

4. $\left(\frac{1}{3}\right)^{-2} = 9$

5. $2^9 = 512$

6. $4^5 = 1024$

7. $5^4 = 625$

8. $10^{23} = 0.001$

Evaluate each logarithm.

9. $\log_2 128$

10. $\log_4 32$

11. $\log_9 (27)$

12. $\log_2 (-32)$

13. $\log_{\frac{1}{3}} \frac{1}{9}$

14. $\log 100,000$

15. $\log_7 7^6$

16. $\log_3 \frac{1}{81}$

Homework 8.1: Intro to Logarithms

Directions: Answer questions 1-16 on the front and questions 17-21 on the back.

1. Write the logarithmic form of each exponential form.

$$2^3 = 8 \rightarrow \log_2 8 = 3$$

$$10^2 = 100 \rightarrow \log_{10} 100 = 2$$

$$5^4 = 625 \rightarrow \log_5 625 = 4$$

$$e^x = y \rightarrow \log_e y = x$$

$$1000 = 10^3 \rightarrow \log_{10} 1000 = 3$$

$$25 = 5^2 \rightarrow \log_5 25 = 2$$

$$10000 = 10^4 \rightarrow \log_{10} 10000 = 4$$

$$100 = 10^2 \rightarrow \log_{10} 100 = 2$$

2. Write the exponential form of each logarithmic form.

$$\log_2 8 = 3 \rightarrow 2^3 = 8$$

$$\log_{10} 100 = 2 \rightarrow 10^2 = 100$$

$$\log_5 625 = 4 \rightarrow 5^4 = 625$$

$$\log_e y = x \rightarrow e^x = y$$

$$\log_2 16 = 4 \rightarrow 2^4 = 16$$

$$\log_{10} 1000 = 3 \rightarrow 10^3 = 1000$$

$$\log_5 125 = 3 \rightarrow 5^3 = 125$$

$$\log_e e^x = x \rightarrow e^x = e^x$$

Logarithmic Equations

Solve each equation.

1) $\log 5x = \log (2x + 9)$

2) $\log (10 - 4x) = \log (10 - 3x)$

3) $\log (4p - 2) = \log (-5p + 5)$

4) $\log (4k - 5) = \log (2k - 1)$

5) $\log (-2a + 9) = \log (7 - 4a)$

6) $2\log_7 -2r = 0$

7) $-10 + \log_3 (n + 3) = -10$

8) $-2\log_5 7x = 2$

9) $\log -m + 2 = 4$

10) $-6\log_3 (x - 3) = -24$

11) $\log_{12} (v^2 + 35) = \log_{12} (-12v - 1)$

12) $\log_9 (-11x + 2) = \log_9 (x^2 + 30)$

Logarithmic Equations:

Solve each equation.

1) $\log 2x = \log (x + 9)$

2) $\log (10 + 4) = \log (19 - 3x)$

3) $\log (1y - 2) = \log (-2y + 2)$

4) $\log (4x - 2) = \log (2x - 1)$

5) $\log (-2u + 9) = \log (7 - 4u)$

6) $3 \log v - 2v = 0$

7) $-10 + \log_2 (w + 2) = -10$

8) $2 \log_3 z = 2$

9) $\log_2 w - 3 = 4$

10) $\log_2 (x - 2) = -2$

11) $\log_2 (x + 2) = \log_2 (12 - 11x)$

12) $\log_2 (x + 2) = \log_2 (x + 30)$

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