

Name Key Period _____
Logarithms and Exponentials Recap

1. What is the value of x ? $4^x = 7$ $\ln 4^x = \ln 7$
 $x = \frac{\ln 7}{\ln 4}$

$x \approx 1.404$

2. What is the value of x in the equation $5^{3-2x} = 5^x$?

$$3 - 2x = -x$$
$$3 = x$$

3. Rewrite in exponential form. $\log_2 \frac{1}{64} = -6$

$$2^{-6} = \frac{1}{64}$$

4. What is the value of x ? $\log_3 x - \log_3 4 = 2\log_3 3$

$$\log_3 \left(\frac{x}{4} \right) = \log_3 9$$
$$\frac{x}{4} = 9 \quad x = 36$$

5. Evaluate $\log 16$.

$$1.204 \quad 10^x = 16$$

$$\log 10^x = \log 16$$

6. Evaluate $\log_6 10$.

$$1.285 \quad 6^x = 10 \quad \frac{\log 10}{\log 6} \quad x \log 6 = \log 10$$
$$x = \frac{\log 10}{\log 6}$$

7. What is the inverse of $y = \log_6(x+4)$?

$$6^y = x + 4$$

$$6^x = y + 4$$

$$y = 6^x - 4$$

8. Condense. $2\log_7 3 + 3\log_7 x - \log_7 4$

$$\log_7 \left(\frac{3^2 \cdot x^3}{4} \right) = \log_7 \left(\frac{9x^3}{4} \right)$$

9. Expand. $\log_6 6x^3$

$$\log_6 6 + 3\log_6 x$$

$$1 + 3\log_6 x$$