Integrated Math 3. Chapter 13. Exponential and Logarithmic Equations
13.1 Exponential and Logarithmic Forms. Homework Day 1

Name:
Date: $\qquad$ Period: $\qquad$

Solve for the unknown.

| $\text { 1.) } \begin{gathered} \log _{7} 343=x \\ 7^{x}=343 \\ 7^{x}=7^{3} \\ x=3 \end{gathered}$ | 2.) $\log _{\frac{1}{4}} 64=x$ $\frac{1}{4}^{4} x=64$ $\begin{gathered} -1 x=3 \\ x=-3 \end{gathered}$ <br> $\left(4^{-1}\right)^{x}$ $4^{-1 x}=4^{3}$ $x=-3$ |
| :---: | :---: |
| $\text { 3.) } \log _{x} 1024=5 ~\left(\begin{array}{l} 5 \\ x^{5}=1024 \\ x^{5}=4^{5} \\ x=4 \end{array}\right.$ | $\text { 4.) } \begin{aligned} \log _{x} \frac{1}{625} & =-4 \\ x^{-4} & =\frac{1}{625} \\ x^{-4} & =5^{-4} \\ x & =5 \end{aligned}$ |
| $\begin{aligned} & \text { 5.) } \log x=6 \\ & 10^{6}=x \\ & x=1,000,000 \end{aligned}$ | $\text { 6.) } \begin{aligned} & \log _{16} 4=x \\ & 16^{x}=4 \\ & 4^{2 x}=41 \\ & 2 x=1 \\ & \frac{2}{x}=1 / 2 \\ & \hline \end{aligned}$ |
| $\text { 7.) } \begin{array}{rlr} \log _{x} \sqrt[4]{8} & =\frac{3}{4} & x^{3 / 4}=2^{3 / 4} \\ x^{3 / 4} & =8^{1 / 4} & x=2 \\ x^{3 / 4} & =\left(2^{3}\right)^{1 / 4} & \end{array}$ | $\text { 8.) } \begin{aligned} \log _{81} \frac{1}{9} & =x \\ g!^{x} & =\frac{1}{9} \\ 9^{2 x} & =q^{-1} \quad x \quad x=-1 / 2 \\ -1 & =2 x \end{aligned}$ |
| 9.) Write three logarithmic expressions $\log _{5} 125$ $\begin{aligned} & \log _{2} 8 \\ & \log _{3} 27 \\ & \log _{4} 67 \end{aligned}$ | quivalent to the given expression. |

