You are to each, **individually**, create flash cards for each of the following properties. You are then to use these flash cards to help you memorize these properties so that you are able to evaluate and/or solve logarithmic and exponential functions and equations with ease.

Paper and markers/colored pencils are available for your use, but please remember to clean up after yourself when you are finished.

Once done, please show the teacher so that they can mark off that you completed the flash cards.

After showing the teacher, you are to begin the Chapter 3 review, which is attached to this paper.

$$If \ \log_b x = y, \ then \ b^y = x.$$

$$\log_b b^x = x$$

$$b^{\log_b x} = x$$

$$\ln e^x = x$$

$$e^{\ln x} = x$$

$$\log 10^x = x$$

$$10^{\log x} = x$$

$$\log_b 1 = 0$$

$$\log_b xy = \log_b x + \log_b y$$

$$\log_b \frac{x}{y} = \log_b x - \log_b y$$

$$\log_b x^p = p \log_b x$$

$$\log_b x = \frac{\log x}{\log b}$$

$$If \ \log_b x = \log_b y, \ then \ x = y.$$

$$If \ \ln x = \ln y, \ then \ x = y.$$

$$If \ b^x = b^y, \ then \ x = y.$$

Name_____ Period_____ Date_____

Complete each problem in the space below.

1. Describe the transformation that occurs from the parent function $f(x) = 10^x$ to $f(x) = 10^{-x+3}$.

2. Moose receives a 3.5% raise at the end of each year from his employer to account for inflation. When he started working for the company in 1994, he was earning a salary of $31,000. Use $A = P\left(1 + \dfrac{r}{n}\right)^{nt}$

   a. What was Moose's salary in 2000 and 2004?

   b. If Moose continues to receive a raise at the end of each year, how much money will he earn during his final year if he plans on retiring in 2024?

3. Evaluate $\log_{36} \sqrt[5]{6}$.

4. Evaluate $4^{\log_4 (x-3)}$.

5. Express $\ln \dfrac{4}{5}$ in terms of $\ln 2$ and $\ln 5$.

6. Evaluate $\log_5 \sqrt[4]{25}$.

7. Evaluate $36 \ln e^{\frac{1}{2}} - 4 \ln e^5$.

8. Expand $\log_3 \dfrac{x^2 y}{\sqrt[5]{3x-1}}$.

9. Expand $\log_7 h^2 j^{11} k^{-5}$.

10. Condense $\dfrac{1}{4}\ln\left(2x-y\right)-\dfrac{1}{5}\ln\left(3y+x\right)$.

11. Condense $\log_3 4 - \dfrac{1}{2}\log_3\left(6x-5\right)$.

12. Solve $\log_8\left(x^2+11\right)=\log_8 92$.

13. Solve $\log_{11} 3x = \log_{11}\left(x+5\right)-\log_{11} 2$.

14. Solve $\log_7 6x = \log_7 9 + \log_7\left(x-4\right)$.

15. Solve $32^{x+1}=64^{x-1}$.