

## Pre-Calc

Name \_\_\_\_\_

## Homework 3.2-3.3

Evaluate the expression without using a calculator.

1)  $\log_8 512$

1) \_\_\_\_\_

2)  $\log_{11} \sqrt{11}$

2) \_\_\_\_\_

3)  $\log_5 \frac{1}{125}$

3) \_\_\_\_\_

4)  $\log_{16} 4$

4) \_\_\_\_\_

5)  $\log_8 \frac{1}{\sqrt{8}}$

5) \_\_\_\_\_

6)  $\log_5 1$

6) \_\_\_\_\_

7)  $\log_2 2^{11}$

7) \_\_\_\_\_

Use properties of logarithms to condense the logarithmic expression. Write the expression as a single logarithm whose coefficient is 1. Where possible, evaluate logarithmic expressions.

8)  $3 \log_z 3 + \log_z 3$

8) \_\_\_\_\_

9)  $\log_5 375 - \log_5 3$

9) \_\_\_\_\_

10)  $3 \ln x - \frac{1}{2} \ln y$

10) \_\_\_\_\_

11)  $(\log_a q - \log_a r) + 4 \log_a p$

11) \_\_\_\_\_

12)  $\log x + \log (x^2 - 49) - \log 3 - \log (x - 7)$

12) \_\_\_\_\_