

8-3 Classwork

Date _____ Period _____

Rewrite each equation in logarithmic form.

1) $4^1 = 4$

2) $20^2 = 400$

3) $11^0 = 1$

4) $12^2 = 144$

Evaluate each expression.

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

6) $\log_3 27$

7) $\log_4 4$

8) $\log_3 \frac{1}{9}$

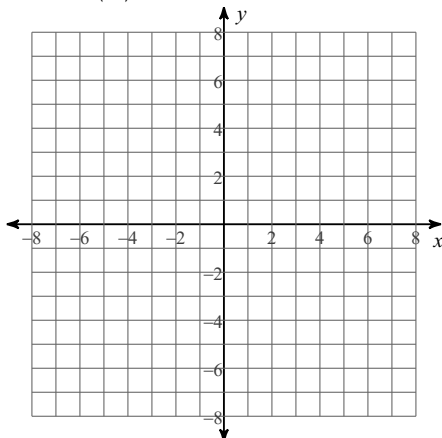
Use the formula $\log(\text{Intensity 1}/\text{Intensity 2}) = \text{Magnitude 1} - \text{Magnitude 2}$ to solve the following questions:

- 9) In 1812, an earthquake of magnitude 7.9 shook New Madrid, Missouri. Compare the intensity of that earthquake to the intensity level of each earthquake below:
- magnitude 7.7 in San Francisco, CA in 1906
 - magnitude 3.2 in Charlottesville, VA in 2001

Graph both functions on the same set of axes.

10) a) $y = \log_2 x$

b) $y = \left(\frac{1}{2}\right)^x$



Describe how the graph of each function compares to the graph of the parent function.

11) $y = \log_3(x - 5) + 3$

12) $y = \log_4(x + 2) - 1$

Use a calculator to approximate each to the nearest thousandth.

13) $\ln 64$

14) $\ln 5.1$

Solve each equation. Solve for exact and approximate solution (using calculator).

15) $-8e^{b-1} = -20$

16) $e^{2v} - 1 = 13$

17) $-4e^{3-9x} = -4$

18) $e^{7v+5} + 9 = 105$