Name:_____ Adv Algebra 2 Homework 7.3 Part III

Standard: F-BF.4a, F-IF.7e, F-IF.8, F-IF.9

- Change expressions from exponential form to logarithmic form and vice-versa.

Evaluate each of the following logarithms without using a calculator.

1) $\log_2 2^7 =$

2) $\log_8 8^3 =$

3) $\ln e^3 =$

4) $\log 10^6 =$

5) $\log_b b^m =$

6) $\log_2 16 =$

7) $\log_{\left(\frac{1}{3}\right)} \frac{1}{27} =$

8) $\log_{16} 4 =$

The formula $\log \frac{I_1}{I_2} = M_1 - M_2$ compares the intensity levels of earthquakes where "I" is the intensity level determined by a seismograph, and "M" is the magnitude on a Richter scale.

In 1812, an earthquake of magnitude 7.9 shook New Madrid, Missouri.

9) In 1960, an earthquake of magnitude 9.5 hit Valdivia, Chile. Note that the difference in magnitudes between the two earthquakes is only 1.6. How many times stronger was the Valdivia earthquake?

10) In 2001, an earthquake of magnitude 3.2 occurred in Charlottesville, Virginia. How many times stronger was the earthquake in New Madrid, Missouri?