

Math 111 - Logarithm Homework Problems

1. Find the $\log_5(25)$ and $\log_5(125)$.
2. Suppose that $\log_2 x = 5$. What is x ?
3. Use the fact that logarithms turn addition outside the logarithm into multiplication inside to find $\log_6(4) + \log_6(9)$.
4. Use the fact that logarithms turn subtraction outside the logarithm into division inside to find $\log_9(\frac{1}{2}) - \log_9(\frac{81}{2})$.
5. The magnitude of an earthquake with intensity I is measured using a seismograph. The intensity I is converted into the *Richter scale* number that you hear in the news using the following formula

$$R = \log_{10}(I).$$

The earthquake in Haiti on January 12, 2010 was a magnitude 7.0 on the Richter scale. The earthquake in Chile on February 27, 2010 was much larger. It was an 8.8 on the Richter scale. How many times more intense was the earthquake in Chile than the one in Haiti?