

8.1 cont

Ex 5) Richter scale pg. 378

$$M = \log\left(\frac{A}{A_0}\right)$$

$$a) M = \log\left(\frac{10^{7.3} \times A_0}{A_0}\right)$$

$$M = \log_{10} 10^{7.3}$$

$$M = 7.3$$

$$b) 8.1 = \log\left(\frac{A}{A_0}\right)$$

$$10^{8.1} = \frac{A}{A_0 \times A_0}$$

$$10^{8.1} \times A_0 = A$$

$$c) \frac{10^{8.1}}{10^{7.3}} = 10^{0.8} \doteq 6.3 \text{ times as intense}$$

We know  $\log x$  means  $\log_{10} x$ .

What if use base  $e$ ?  $\log_e x \rightarrow \ln x$   
 "natural  
 log"

ex) Evaluate  $\ln(10) = 2.3\dots$   
 $(\log_e 10)$

$\ln(x)$  is called  
 "lawn" of  $x$ .

ex) Evaluate  $\ln e = 1$   
 $(\log_e e)$

ex) Solve for  $x$ :  $\ln x = 4$        $y_1 = \ln x$        $e^x$        $e$   
 $e^4 = x$        $y_2 = 4$

pg. 380-382  
 #8, 17-24