

Sec 4.3 Logarithms ~Applications~

#103 together-
...from page
477

a. Express the formula so that the expression in parenthesis is written as a single logarithm.

The loudness level of a sound can be expressed by comparing the sound's intensity to the intensity of a sound barely audible to the human ear. The formula

$$D = 10(\log I - \log I_0)$$

describes the loudness level of a sound, D , in decibels, where I is the intensity of the sound, in watts per meter², and I_0 is the intensity of a sound barely audible to the human ear.

$$D = 10 \log \frac{I}{I_0}$$

$$D = 10 \log \frac{100 I_0}{I_0}$$

$$D = 10 \log 100 = 20$$

b. If a sound has an intensity 100 times the intensity of a softer sound, how much larger on the decibel scale is the loudness level of the more intense sound?

You try...#104. Answer- more than 20.5 weeks

The formula-

$$t = \frac{1}{c} [\ln A - \ln(A - N)]$$

describes the time, t , in weeks, that it takes to achieve mastery of a portion of a task, where A is the maximum learning possible, N is the portion of the learning that is to be achieved, and c is a constant used to measure an individual's learning style.

a. Express the formula so that the expression in brackets is written as a single logarithm.

b. The formula is also used to determine how long it will take chimpanzees and apes to master a task. For example, a typical chimpanzee learning sign language can master a maximum of 65 signs. Use the form of the formula from part a to answer this question: How many weeks will it take a chimpanzee to master 30 signs if c for that chimp is .03?

> 20.5
weeks

Only problem for this lesson

#104, page 478

