MA 137 Worksheet #3

Sections 1.2-1.4
8/25/20

1. The decibel is a unit used to measure the intensity of sounds. If a sound produces waves of pressure P Pascals, then the decibel level of the sound is

$$L = 20 \log \left(\frac{P}{2 \times 10^{-5}} \right)$$

decibels. What is the pressure of sound waves with decibel level 92?

2. The half-life of C^{14} is 5730 years. If a sample of C^{14} has a mass of 20 micrograms at time $t = 0$, how much is left after 2000 years?

3. The initial amount of a certain medication in a patient's bloodstream is 5 mg/cm^3. Every hour the concentration is reduced by 11%. What is the function $A(t)$ of the amount of medication in the bloodstream measured in mg/cm^3, over time t, in hours?

4. Suppose that the number $N(t)$ of yeast cells in a culture grows exponentially as a function of time t, measured in hours. There are initially 300 yeast cells, and after 5 hours the number of cells has increased to 5,000.

1. Find a formula for $N(t)$.
2. At what time will there be 10,000 yeast cells in the culture?