Classwork 14, MATH 1113 Harrison Chapman   Name: _____

1. If a certain bacteria population quadruples in 3 hours, determine the time T in hours that it takes the population to triple.

2. 86% of a radioactive material remains after 20 days.

    a) Find the decay constant.

    b) Find the time T in days after the initial measurement when 44% of the original amount of material remains.

3. Alice invests $2000 at Bob's bank and $4000 at Charlie's bank. Bob compounds interest continuously at a nominal rate of 8%. Charlie compounds continuously at a nominal rate of 6%.
In how many years will the two investments be worth the same amount? How much will they each be worth then?

4. Air pressure $p(h)$ in lb/in^2 at an altitude of h feet above sea level is approximated by the formula $p(h) = 14.7e^{-0.0000385h}$.
At approximately what altitude h is the air pressure 14 lb/in^2?

5. Alice makes an initial investment on January 1, 2000 into a bank account on that compounds continuously at an unknown rate.
On January 1, 2003, the balance was $270.00. On January 1, 2014, the balance was $400.00.

    a) Determine the interest rate.

    b) Determine the initial investment.

6. A bacteria population begins with 540 bacteria present and grows exponentially. Each bacterium divides into 2 organisms every 35 minutes.

    a) Find the size of the population after 4 hours.

    b) After how many minutes will the population triple?