# Classwork 16 <br> Intermediate Algebra MTH 35 <br> Topic: Modeling with Exponential and Logarithmic functions 

Name:

1. A certain bacteria population doubles every 4 hours. Initially there are 2000 bacteria in a colony.
(a) Find a model for the bacteria population after $t$ hours.
(b) How many bacteria are in colony after 15 hours?
(c) When will the bacteria count reach a million?
2. In a particularly bad zombie outbreak in Freaktown, the population of zombies was 100,000 in 2050, and 300,000 in 2055. Assuming that the zombie population grows exponentially,
(a) Find a function that models the zombie population $t$ years after 2050.
(b) Find the time require for the population to double.
(c) Predict the zombie population in 2075.
3. The half-life of strontium- 90 is 28 years. How long will it take a $50-\mathrm{mg}$ sample to decay to a mass of 32 mg .
4. After 3 days, a sample of radon- 222 has decayed to $58 \%$ of its original amount.
(a) What is the half-life of radon-222 ?
(b) How long will it take the sample to decay to $20 \%$ of its original amount ?
