MAT 171 - CLASS NOTES - Section 4.5: Exponential Growth and Decay: Modeling Data

1) **Exponential Growth Model**

2) Iraq's population, A, in millions, t years after 2006 is modeled by the equation $A = 26.8e^{.027t}$.

   a) What was the population of Iraq in 2006?

   b) What is the rate of growth?

   c) When will Iraq's population be 95.6 million?

3) In 2000, the population of the Palestinians in the West Bank, Gaza Strip, and East Jerusalem was approximately 3.2 million and by 2050 it is projected to grow to 12 million.

a) Use the exponential growth model where t is the number of years after 2000, to find the exponential growth function that models the data.

b) In which year will the Palestinian population be 9 million?

4) Skeletons were found at a construction site in San Francisco in 1989. The skeletons contained 88% of the expected amount of carbon-14 found in a living person. The exponential decay model for carbon-14 is $A = A_o e^{-0.000121t}$. In 1989, how old were the skeletons?

5) For the radioactive isotope Uranium-238, the half-life is 4560 years, what is the rate of decay?

6) The half-life of aspirin in your bloodstream in 12 hours. How long will it take for the aspirin to decay to 70% of the original dosage?