MA 16010 LESSON 29: EXPONENTIAL DECAY (PROBLEM SET)

<u>Example 1:</u> The population of a country follows exponential growth and the continuous annual rate of change k of the population is -0.001. The population is 10 million when $t = 2$. What is the population when $t = 6$?

<u>Example 2:</u> The radioactive isotope ^{226}Ra has a half-life of 1,599 years. If there are 10 grams of ^{226}Ra initially, how much is there after 1,000 years?

<u>Example 3:</u> The radioactive isotope ^{14}C has a half-life of 5,715 years. If there are 1.6 grams left after 1,000 years, how much is the initial quantity?

How much is there after 10,000 years?

<u>Example 4:</u> Radioactive radium has a half-life of approximately 1,599 years. What percent of a given amount remains after 300 years?

<u>Example 5:</u> The radioactive isotope ^{14}C has a half-life of 5,715 years. A piece of ancient charcoal contains only 73% as much of the radioactive carbon as a piece of modern charcoal. How long ago was the tree burned to make the ancient charcoal.