Matlab Example 1

Exponential Growth and Decay

A model for exponential growth, or decay, of a quantity is given by:

$$A(t) = A_0 e^{kt}$$

Where $A(t)$ and A_0 are the quantity at time t and time 0, respectively, and k is a constant unique to the specified application.

Write a user defined function that uses this model to predict the quantity $A(t)$ at time t from knowing A_0 and $A(t_1)$ at this time t_1. For function name and arguments use:

$$At = expGD(A0, At1, t1, t)$$

Use the function file you create to solve for these two cases in the command window.

a) The population of Mexico was 67 million in the year 1980 and 79 million in 1986. Estimate the population in the year 2000.

b) The half-life of a radioactive material is 5.8 years. How much of a 7-gram sample would be left after 30 years?