

Lesson 7.2: Exponential Growth and Decay

Exponential Growth and Decay

Mathematical models in which the rate of change of a variable is _____ to the variable itself are common in both the business and scientific worlds.

Suppose that the rate of change of y (with respect to time) is proportional to y itself.

1. Separate variables and solve the differential equation in the last notes box.

Constants:

Variables:

2. What is the growth rate of the population of a city whose population triples every 100 years? Assume that the population growth can be modeled by the Basic Law of Exponential Growth, and express your answer as a percent (rounded to the nearest thousandth of a percent).
3. Let y represent the mass, in pounds, of a radioactive element whose half-life is 4000 years. If there are 200 pounds of the element in an inactive mine, how much will still remain in 1000 years? Express your answer to 3 decimal place accuracy.