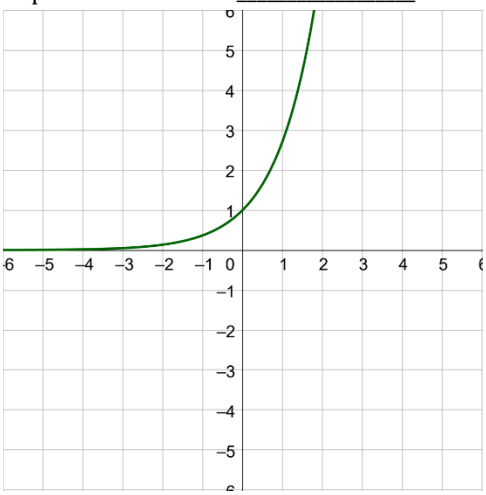
Precalculus

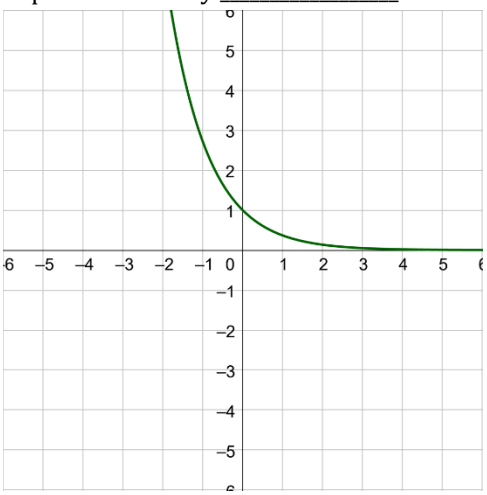
3-05 Exponential and Logarithmic Models

Exponential Growth and Decay

Exponential Growth _____



Exponential Decay _____



Suppose a population growing according to the model $P = 800e^{0.03t}$ where t is in years.
What is the initial size?

How long to double?

Radioactive decay

- $y = ae^{-bx}$
- $A = A_0e^{kt}$

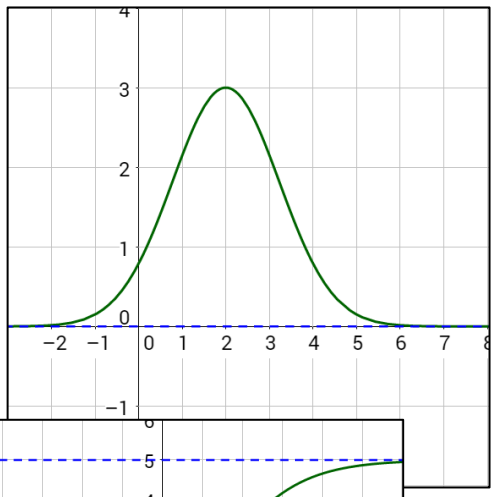
Half-life

- Time it takes for _____ of the material to _____

C^{14} has a half-life of 5700 years. If a sample starts with 3 g of C^{14}, how much will remain after 100 years?

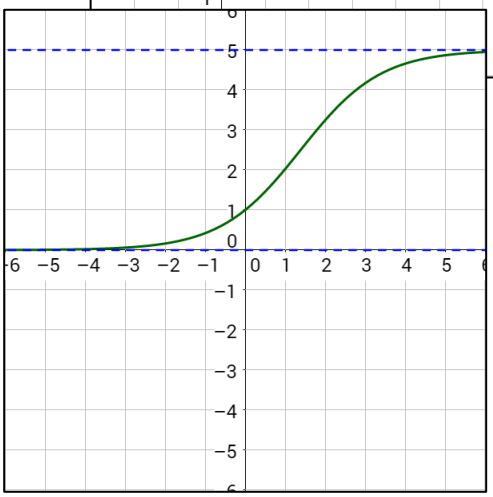
Gaussian Model "The Curve"

- _____Distribution
- $y = ae^{-\frac{(x-b)^2}{c}}$



Logistic Growth Model

- Used for _____
- $y = \frac{a}{1+be^{-rx}}$



Logarithmic Models

- $y = a + b \ln x$
- $y = a + b \log x$
- Richter Scale
  - _____magnitude
- Decibels
  - _____of sound