Lesson 16

Read Chapter 11

Exponential modelling

Find a formula for the exponential function that passes through the points $(1, 2)$ and $(4, 5)$

Find a formula for the exponential function that passes through $(1, 2)$ and has doubling time 80.

Suppose a quantity is modelled by n exponential function

$q(t) = A_0 a^t$

if you know the quantity triples every 5 years:

quadruples every 7 years :

increase 5 % every 3 years:

increases 2 % every 7 years:

decreases 2 % every 7 years:

Flu and cold are spreading in Sickville. The number of cases of both diseases is growing exponentially. There were 100 flu cases a week ago and 1350 cases yesterday. There were also 100 cold cases a week ago, and the number of cold cases doubles every 5 days. When will there be 20 times as many people having the flu than a cold ?

The population of Arcadia increases by 8% every 10 years. The population of Brom triples every 120 years. Arcadia had 10,000 residents in 2000. The population of Brom was 10,000 in 2005. In what year will the city of Brom have twice as many residents as the city of Arcadia ?

Archaeologists use the exponential, radioactive decay of carbon 14 to estimate the death dates of organic material. The half-life of carbon 14 is 5,730 years. If a fossil is found that has 35% carbon 14 compared to the living sample. How old is the fossil?