● Question 1 ☑ 0/1 pt ↺ 3 ⇄ 99

In **4** years, **25 %** of a radioactive element decays. Find its half-life rounded to 2 decimal places.

_____ years

● Question 2 ☑ 0/1 pt ↺ 3 ⇄ 99

The rodent population in a city is currently estimated at **40000**. If it is expected to double every **10** years, when will the population reach **1** million? Round to the nearest hundredth of a year.

_____ years

● Question 3 ☑ 0/1 pt ↺ 3 ⇄ 99

The cost of a can of Coca-Cola in **1960** was **$0.10**. The function that models the cost of a Coca-Cola by year is $C(t) = 0.10e^{0.0576t}$, where t is the number of years since **1960**. In what year is it expected that a can of Coca-Cola will cost **$1.00**?

In the year _____, Coca-Cola was expected to cost **$1.00**.

● Question 4 ☑ 0/1 pt ↺ 3 ⇄ 99

The number of airline passengers in **1990** was **466** million. The number of passengers traveling by airplane each year has increased exponentially according to the model, $P(t) = 466 \cdot 1.035^t$, where t is the number of years since **1990**. In what year is it predicted that **900** million passengers will travel by airline?

It predicted **900** million passengers in the year _____.

● Question 5 ☑ 0/1 pt ↺ 3 ⇄ 99

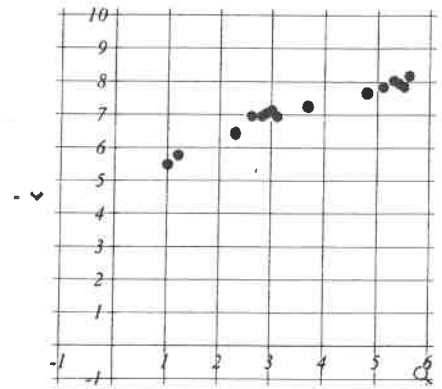
Supposed the population of a city is given by the equation

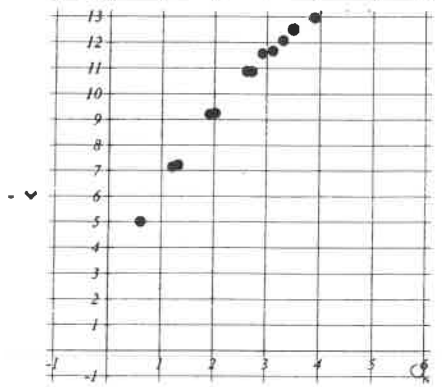
$$P(t) = 100,000e^{0.05t}$$

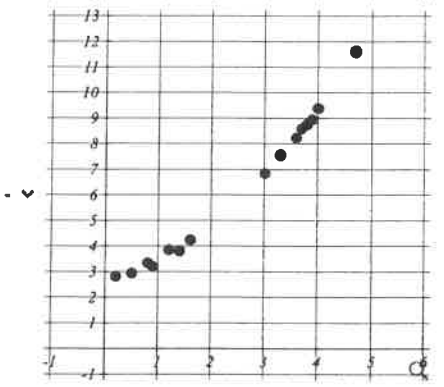
where t is the number of years from the present time. How large is the population now?

The population now is _____

Match the given functions of best fit with the appropriate scatterplot







a. $y = 2.458(1.396)^x$

b. $y = \dfrac{14.017}{1 + 2.94e^{-0.884x}}$

c. $y = 5.345 + 1.554\ln(x)$

For the following exercise, refer to the table below.

x	f(x)
1	1402
2	2412
3	4253
4	7432
5	13020
6	22791

a. Use the regression feature on your calculator to find an exponential function that best fits the data in the table. Round your values to 3 decimal places

$f(x) =$

b. Use your rounded answers in part *a.* and write the exponential function as an exponential equation with base *e*.

$f(x) =$

● [illegible] 0/1 pt 999 998

To the nearest whole number, what is the initial value of population modeled by the logistic equation $P(t) = \frac{475}{1 + 6.515e^{-0.53t}}$?

_____ people

What is the carrying capacity?

_____ people

● [illegible] 0/1 pt 999 998

A logarithmic model is given by the equation $h(p) = 67.166 - 5.053\ln(p)$. To the nearest thousandth, for what value of p does $h(p) = 63$?

$p =$ _____

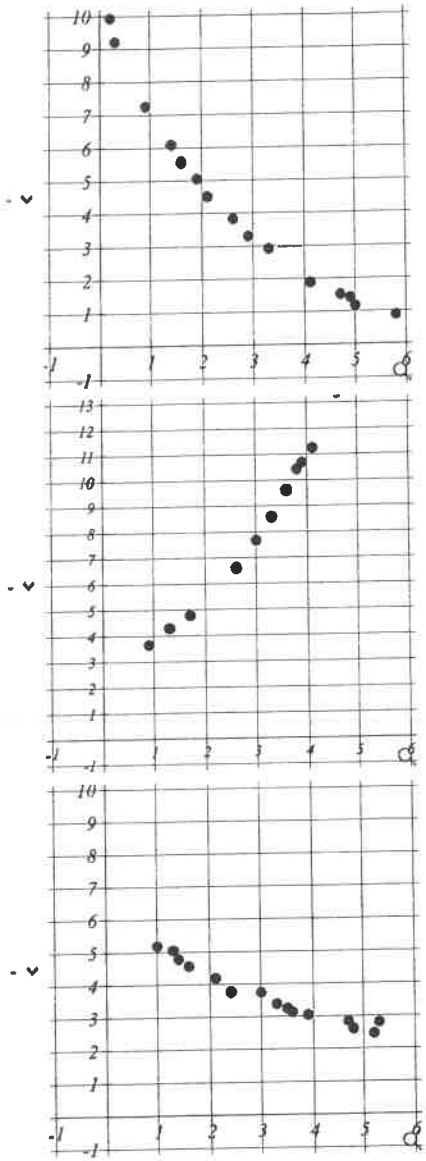
● [illegible] 0/1 pt 999 998

A logistic model is given by the equation $P(t) = \frac{110}{1 + 4e^{-0.36t}}$ To the nearest hundredth, for what value of t does $P(t) = 55$?

$t =$ _____

● [illegible] 0/1 pt 999 998

Match the given functions of best fit with the appropriate scatterplot



a. $y = 2.666(1.424)^x$

b. $y = 10.631e^{-0.413x}$

c. $y = 5.371 - 1.653\ln(x)$