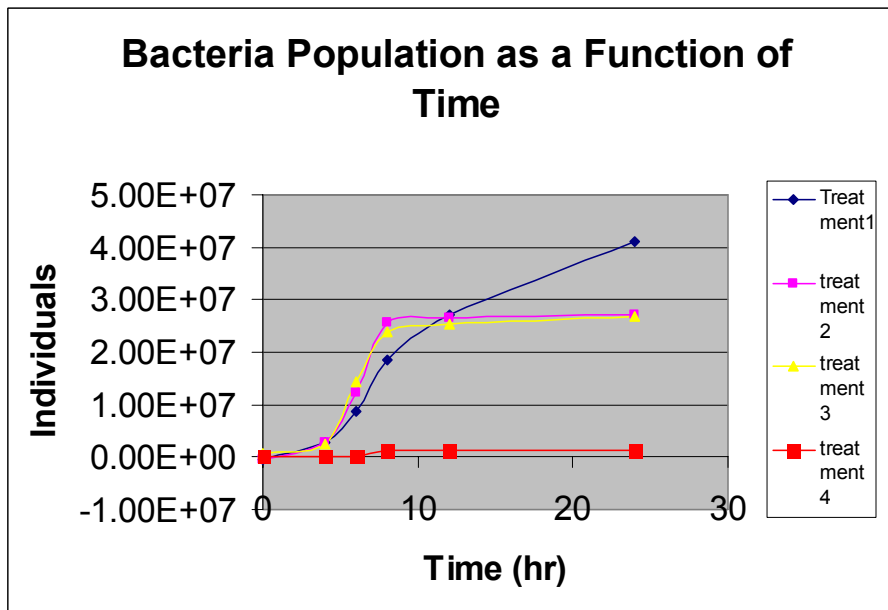


Quantitative Analysis of Population Growth

Data Analysis: The chart depicted below represents the data that you obtained during the experimental process. As you can see, and as some of you have already pointed out, there are various differences between the four treatments; although, in order to completely describe the behavior exhibited in the treatments we must combine your observations from the bacterial growth laboratory with quantitative measures of the growth curves themselves. The following questions are geared to help you begin building quantitative support for your observations, but these are just a few of the many questions that you might ask, and therefore you are encouraged to suggest and ask further questions that are of interest to you. Please submit these questions at the end of the period for extra credit.

- 1.) What three phases of growth are visible when you look at the graphed data?
- 2.) What is the carrying capacity for each treatment?
- 3.) What trends in the results of the four treatments, if any, do you observe that may be affecting the carrying capacity?
- 4.) Please give an expression for the growth rate:
- 5.) Where on the curve is the maximum growth rate?
- 6.) Describe how we might calculate this rate of growth?



Relating Population Growth Trends: My Family Compared with the World

How many children, including yourself, do your parents have?

How many children did your grandparents have?

Based on your reply, what type of growth is occurring in your family? How does this compare with world population growth?

How many children would you need to have in order to keep the earth's population growing at its current rate?

If you had two children, would you expect population to grow, drop or be steady? Why? Please explain your answer via graphs, numbers, a precise description of your expectations or a combination of these approaches.