MCR3UI - Unit 5 Day 6

Applications of Exponential Functions

Practice Questions: To be done in class

1. At 9 a.m., Gina finds out that she has been promoted to vice-president of sales. By 9:30 a.m., she has told two people in the office about it. By 10 a.m., each person who heard the news at 9:30 a.m. has told two other people in the office the news. The news about Gina's promotion continues to spread this way throughout the company.

   (a) Make a table of values to relate the number of people who have just heard the news to time, in half-hour intervals.

   (b) Make a scatter plot. Describe the trend.

   (c) What type of function represents the spread of the news? Justify your answer.

   (d) Determine an equation to model this relation. Explain how you determined the equation.

2. The table shows the koala population in a natural park reserve over a number of years.

Year	*Population*
0	*800*
1	*830*
2	*870*
3	*900*
4	*940*
5	*970*

   (a) Make a scatter plot for the data. Does the trend suggest an exponential relationship? Explain.

   (b) Construct a curve of best fit and find an exponential equation to model the data.

   (c) Predict the koala population after 12 years.

   (d) How long will it take for the koala population to reach 2000? Describe how you found your answer and discuss any assumptions you must make.

3. The attached data comes from Statistics Canada and shows the research data on the farm value of potatoes from 1908 to 2004.

   (a) Construct a table with the headings Year, Year Number, and Value of Potatoes. Record the data for every 4 years, starting with 1908 (year number 0) and ending with 2004 (year number 24).

   (b) Make a scatter plot that relates Value of Potatoes to Year Number.

   (c) Determine the equation of the exponential function that best represents the data.

   (d) Graph the curve of best fit.