MATH 115 Name_____

Test #2 – Spring 2004

Directions. Work on this test without the aid of any other person, and provide no aid to any other person. You may refer to your notes, textbook, or any other books you care to consult. Attach this cover sheet to your solutions and submit it with your completed test on later than 10:00am on Monday, May 17. (Deliver to Office 140 in Henson Science Building.)

Work these problems in the spirit of the approach to problem solving (modeling) used in this course. Pay particular attention to clearly communicating your thoughts, problem solving processes, and conclusions. Follow the guidelines for AFitting a Model to Data@posted on the course web site at http://faculty.salisbury.edu/~dccathca/MATH115/ModelFitting.html. For maximum credit on any problen show how you have used a spreadsheet in developing your model. Also, recall that you may not use calculator or computer curve fitting routines in the development of your models. However, you may use those routines in evaluating your models. The evaluation form for this test is attached to this test copy.

Sign one of the following two statements.

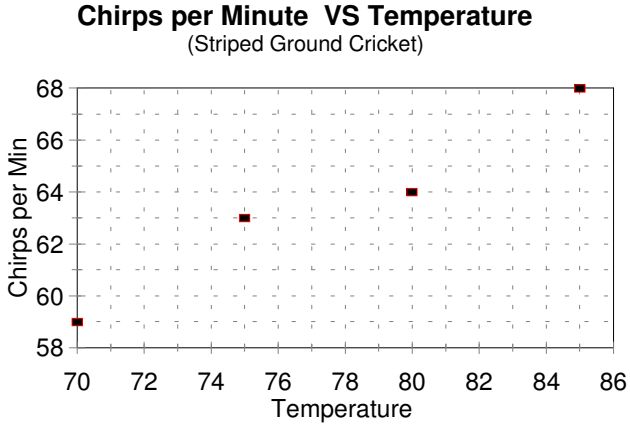
Statement: I worked this test in compliance with the above directions.

_____(Signature)

Statement: I am unable to sign the statement above due to the exception(s) listed below.

_____(Signature)

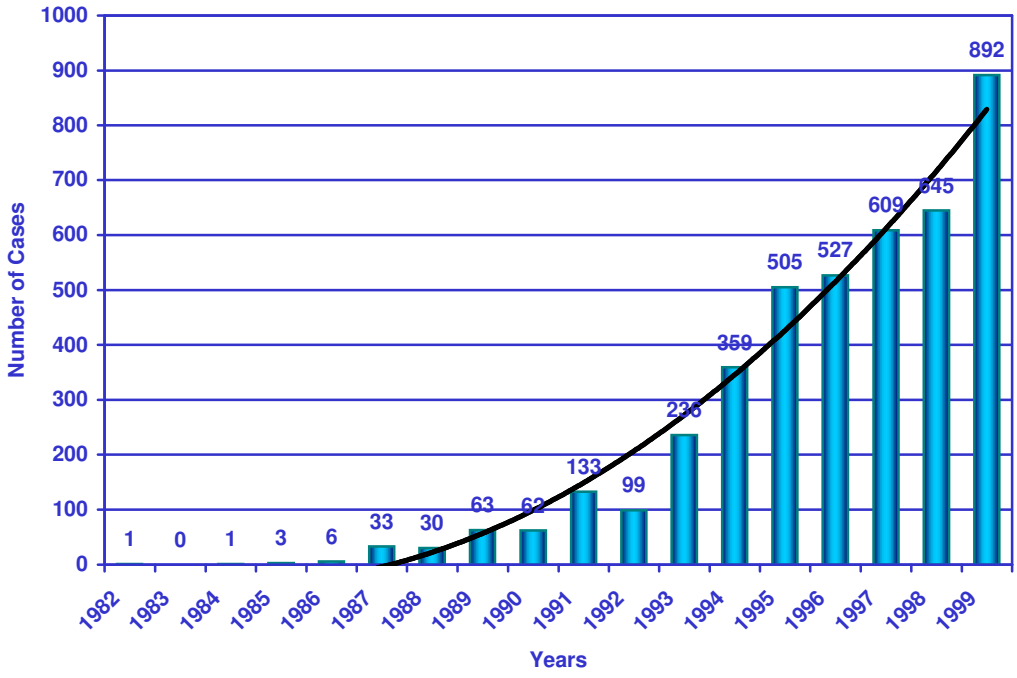
Problem 1. The graph below expresses the rate of chirping of a striped ground cricket as a function of the temperature in degrees Fahrenheit. Show how to find the equation of a line that seems to fit the data points reasonably well. Comment, using some numerical criterion, on how well you think your line fits the data points. Be sure to identify any variables you introduce.



Problem 2. Use the data in the table below to aid you in developing a power function model relating a mammal's heart weight (in grams) to the length (in cm) of the cavity of its left ventricle. (Be sure to identify any variables you introduce.)

Animal	Mouse	Rat	Rabbit	Dog	Sheep	Ox	Horse
Heart Wt	0.13	0.64	5.80	102.0	210.0	2030	3900
Length of Cavity	0.55	1.00	2.20	4.00	6.50	12.00	16.00

Problem 3. Develop both a power function and an exponential model to fit the data on reported AIDS cases in Jamaica 1982-1999. Comment on the goodness of your fits. Which model fits the data better?



Criteria	Problem 1	Problem 2	Problem 3
Demonstrate These Steps			
Formulate Key Question(s)			
Communicate Preconceptions			
Discuss Limitations, Assumptions, Scope			
Collect or Organize Data			
Display Data in Tables & Graphs			
Analyze & Interpret Data			
Fit Appropriate Model			
Vary Parameters			
Test Goodness of Fit			
Graphically			
Numerical Criterion			
Validate, Summarize, and Report Findings			
Evaluation or Critique			
Specific Instructions			
Define Symbols			
Functional Model			
Graphical Model			
Goodness of Fit Comments			
Predictions			
Accuracy of Predictions			
Appropriate Domain			
Clearly Communicate Conclusions			
Use of a Spreadsheet			
General Criteria			
Accuracy			
Format & Style			
Item Score			