

Rule Time: Salute to Speed!

The following group project is to be worked on by no more than four students. You may use any materials you think may be useful in solving the problems but you may not ask anyone for help other than the people you have chosen to work together. This means you may not ask a tutor or any person other than those in your immediate group for help.

You are to type a letter of response to the problem presented backing up your conclusions with mathematical reasoning, formulas, and solutions. Your grade will depend on how well you communicate your response as well as the accuracy of the conclusions. This project will be scored on a rubric that is attached.

Please sign and date here to indicate that you have read and agree to abide by the above mentioned stipulations.

Student Name #1

Date

Student Name #2

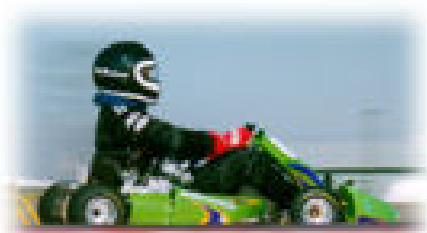
Date

Student Name #3

Date

Student Name #4

Date



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June 7, 2005

1892 W. Springfield Way
Chandler, AZ 85248

MAT 151 Advisors
Chandler-Gilbert Community College
2626 E. Pecos Rd.
Chandler, AZ 85225

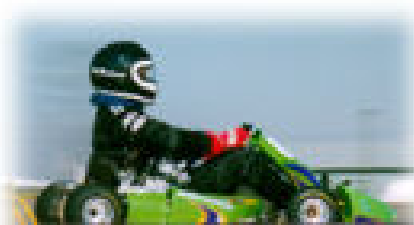
Dear Algebra Advisors:



Hi! I am Jim, "The Rule Man" Baylor and I am in desperate need of your mathematical expertise. It seems that the "curse of the Baylor's" is still active with regards to winning the Mode Michigan 500 race, which takes place soon. As you may be aware, over the generations, the Baylor's have unsuccessfully participated in this race. In fact, I embarrassingly admit that it was my Great-Grandfather Rim Baylor who literally "ran into" trouble when that pesky cow got in his way on the third turn back in '31. Then, Grandpa Dim Baylor, who must have been dropped as a baby, tried the triangle shaped wheels ("I can **get 3 times** the speed!"). This was back in '53. Then, in '75, my father Slim perpetuated the curse by going the wrong way around the track!

Well, it is my intention to break the Baylor curse! I have a buddy, Goober, who gave me some data that might help me. It includes the winning average speeds of the race for the past 30 years! Now, I would analyze this data myself, but I am a little busy working on my new car for this race. That is why I am consulting with you. Would you please take this data and

- Create a scatter plot.
- Find a linear regression model.
- Explain the meaning of the slope and y-intercept.
- Use the linear model to predict the average winning speed in the year 2001.
- Does there appear to be a trend in these data? Explain.



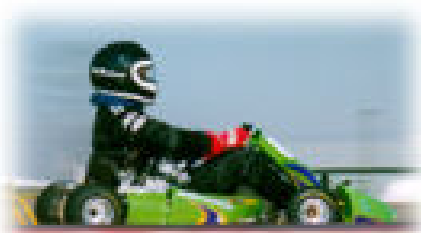
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Year	$t =$	Average Winning Speed (MPH)
1970	0	77.8
1972	2	81.4
1974	4	79.2
1976	6	74.3
1978	8	80.6
1980	10	71.4
1982	12	81.0
1984	14	81.4
1986	16	85.3
1988	18	72.4
1990	20	92.9
1992	22	67.2
1994	24	80.4
1996	26	73.9
1998	28	72.5

I really believe that this is all I will need. However, my fine-flannelled-friend, Hal Moreland has been trying to give me some different data regarding this race. I would never admit it to him, but he may have something here. Would you please analyze this data and provide the same information? Namely, I need you to

- Create a scatter plot.
- Find a linear regression model.
- Explain the meaning of the slope and y-intercept.
- Use the linear model to predict the average winning speed in the year 2001.
- Does there appear to be a trend in these data? Explain.

Year	$t =$	Qualifying Speed (MPH)
1970	0	85.1
1972	2	97.9
1974	4	95.8
1976	6	94.4
1978	8	101.0
1980	10	96.1
1982	12	103.5
1984	14	105.0
1986	16	108.4
1988	18	109.5
1990	20	112.6
1992	22	116.2
1994	24	114.0
1996	26	116.5
1998	28	111.7



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After carefully analyzing the data, here is what I really need to know. Based on the trends found in these data, ***how fast should my car go in order to be the most competitive?*** Should this speed be based on Goober's data or Hal's data? Why?

Please back up your ideas with graphs and equations as well as the thorough communication of the ideas.

I really appreciate your getting this information to me by

_____.

Sincerely,

The Rule Man!



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Writing Project Evaluation/Checklist

Gateway checklist - these items must be present in order for the paper to be evaluated

Yes	No	Expected Features
		1. Does this work meet the expectations for the presentation of technical work?
		2. Is the work all computer generated?
		3. Is there symbolic, numerical, and graphical support included in the work?
		4. Is the answer stated in a few complete sentences that stand on their own? That is, is the summary satisfactory?
		5. Is there a description of the solution(s)?
		6. Is the noise (i.e. grammatical, punctuation, spelling, etc. errors) level low enough to not cause communication problems?
		7. Is the project free of major errors?
		8. Is acknowledgment given where it is due, if appropriate?
		9. Is there an attached page describing the contributions of the team members?

Your final score will be calculated based on your performance on these features:

Very Good	Good	Poor	
			Clear summary of the problem to be solved <ul style="list-style-type: none">• Introductory paragraph lays the background for the problem situation and its solution• Shows why the question(s) to be addressed are important
			Precise and well-organized explanation of how the answer was found including <ul style="list-style-type: none">• assumptions• algebraic (symbolic) support• graphical support• numerical support



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Very Good	Good	Poor	Features
			Solve the problem(s) that were originally asked so that there are no obvious errors in the solution. Shows familiarity with the mathematical concepts and their appropriate use.
			Use of graph mechanics including <ul style="list-style-type: none">• labeled axes with units• labeled axis divisions• descriptive title• clear and descriptive legend• data points shown
			Concluding paragraph summarizes the purpose of the project and the outcome. Briefly closes the letter by stating any limitations or suggestions for improvement.
			Style and readability demonstrates a quality of imagination and rigor that results in a distinctive project. The project shows a personal exploration.

Comments on quality of submitted work and how any problems might be resolved

Final Score: _____

