

Second Exam

Write all answers in your blue book and show all work there. Return your exam and printout(s) in your blue book.

25 pts

Suppose we have this data.

1)

A	B	C
1	7	11
2	6	8
3	5	8
4	4	5

- Fit a regression where C is a function of B, show work.
- Find the  $r^2$  for the model and interpret it.
- Find the correlation coefficient and test it for significance. ( $\alpha = .01$ , show all steps to the test)
- Find the standard error of the estimate and  $s_b$ , using them to test for a significant effect of B. ( $\alpha = .05$ , show all steps to the test)

15 pts

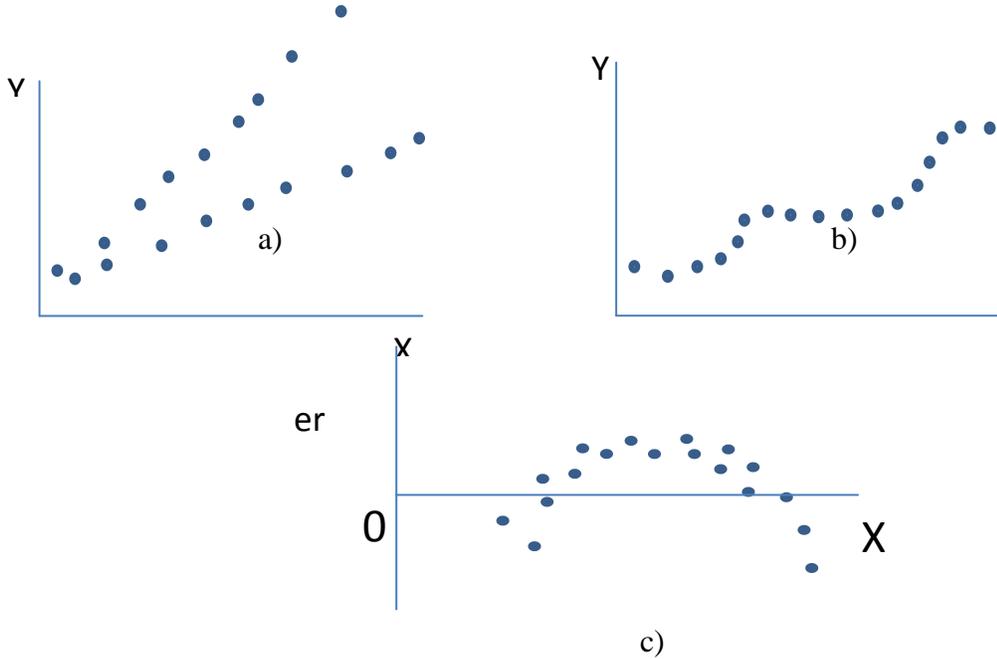
2) Use the normal equations for the data in problem 1 to find the regression coefficients for a model where C is a function of B and A. Show all work.

25 pts

- Use the Auto2 data from chapter 15 to:
  - Fit a model where Speed is a function of Horse Power and Curb Weight
  - Interpret the adjusted  $R^2$ .
  - Interpret the Anova, show all steps to the test.
  - Does there appear to be a colinearity problem. Explain.

20 pts

4) a) Examine the diagrams below and briefly describe the econometric problems that they suggest.



4 b) In which, if any, of the diagrams above does a Cook's Distance statistic over 1 seem plausible? Why.

15 pts

5) If  $Y = 100 + 2X - 5R$ ,

where  $R = 1$  if republican,  $= 0$  otherwise

a) Draw a well-labeled diagram that depicts this model.

Then if  $Y = 100 + 2X - 5R + 3R \cdot X$

b) Draw a well-labeled diagram that depicts this model.

I have neither given nor received unfair aid on this test nor am I aware of anyone else who has.

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