

Pledge:

10/29/04
Dr. Lunsford

MATH 271 - Applied Stats
Quiz 5

Name: _____
(20 points possible)

You may use your calculator, Excel, the formula sheet given to you in class, any formulas I write on the board, and/or the tables in the back of your textbook for this quiz. Please show all specified work.

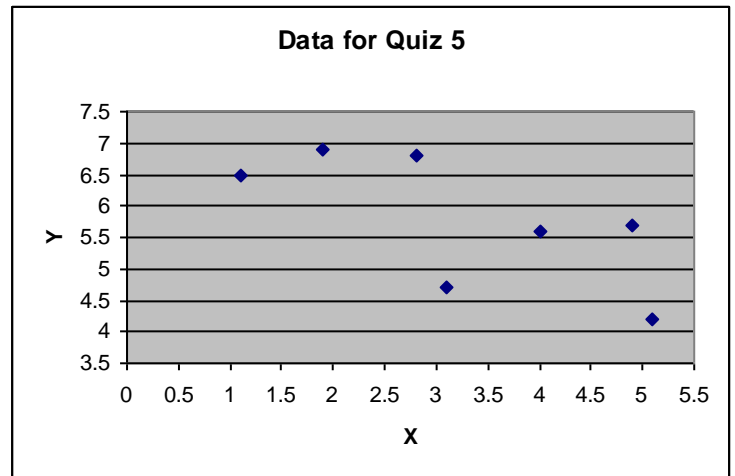
To the right you are given (X, Y) sample data (from a bivariate normal distribution) and a scatterplot of the data. Please use this to answer the questions below:

X	Y
1.1	6.5
1.9	6.9
2.8	6.8
3.1	4.7
4	5.6
5.1	4.2
4.9	5.7

(a) Find the centroid of the data and plot it on the graph. (2 points)

(b) Find the sample covariance of the data. (2 points)

(c) Find the sample correlation coefficient of the data. (2 points)



(d) Formulate a null and alternative hypothesis (at the $\alpha = 0.05$ level) to test if there is a significant negative correlation between the two variables. Clearly indicate your hypotheses, what you are using for your test statistic, the value of the test statistic, the p-value of the test, and your conclusion. (6 points)

(e) Find the equation of the regression line for the data and accurately plot it on the graph above. (4 points)

(f) Use the regression line to predict y when $x = 3.2$. (1 points)

(g) What is the magnitude of the residual for the data point $(1.9, 6.9)$? Represent this value on the graph above. (3 points)