

Math 663-101, Fall 2008**Quiz # 5**

Name: _____

Student ID: _____

November, 18

Must show all work for full credit!

I pledge I have not violated the NJIT Honor Code _____

1. Consider the following data reflecting lengths of stay (LOS) in the hospital (recorded in days) and the total charge (in thousands of dollars) for seven patients:

Length of Stay:	5	7	9	10	12	15	8
Total Charges	6	5	7	8	9	8	5.5

(10 points)

- Compute the sample correlation coefficient.
- Compute the regression equation for total charges in terms of LOS.
- Estimate the total charges for an individual who stays 10 days in the hospital in dollars.
- Suppose we compare two patients and one stays 2 days longer in the hospital than the other. What is the expected difference in total charges between these patients in dollars?

Length of stay total charges LOS*Total Charges

5	6	30
7	5	35
9	7	63
10	8	80
12	9	108
15	8	120
8	5.5	44
66	48.5	480

STD X = 3.309438163 **STD Y =** 1.484042099 **Var(X) =** 10.952381 **Var(Y) =** 2.202380952

(a)

Cov = 3.785714286 i.e., $[480 - (66 \cdot 48.5)/7]/6$ **Corr =** 0.770810003

(b)

Beta1hat = 0.345652174 i.e., $\text{Corr}(\text{STD Y}/\text{STD X})$ **Beta0hat =** 3.669565217 i.e., $48.5/7 - \text{Beta1hat} \cdot (66/7)$

(c)

Estimated cost for a length of stay of 10 day is

7.126086957 i.e., $\text{Beta0hat} + 10 \cdot \text{Beta1hat}$

\$7,126.09

(d)

expected difference in cost is estimated to be

0.691304348 i.e., $2 \cdot \text{Beta1hat}$

\$691.30