1. Let , where is independently identically normally distributed with N(0,,
2. write the likelihood function
3. find the MLS estimations for
4. Based on the following table,
5. calculate and 95% confidence intervals for
6. for Xh=3, predict Yh and calculate 95% prediction interval

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| n | Xbar | Ybar | SXX | SYY | SXY | SSE |
| 120 | 28 | 3 | 2340 | 49 | 92 | 46 |

1. Based on the table above, write the ANOVA table and perform the F test, and perform a General Linear F test.
2. Copy and paste the data below in R

House.Price<-c(245,312,279,308,199,219,405,324,319,255)

Square.Feet<-c(1400,1600,1700,1875,1100,1550,2350,2450,1425,1700)

1. Fit a regression model to predict house price. Obtain, the residuals and plot them against the fitted values. Also prepare a normal probability plot. What do your plots show?
2. Conduct the Brown-Forsythe test to determine whether or not the error variance varies with the level of X.
3. Calculate the simultaneous interval for
4. Calculate the simultaneous confidence intervals for the predicted house prices for 1200,1400,1500 square feet
5. Copy and paste the data below in R

y<-c(243,195,275,190,213,249,239,243,269,273)

x<-c(5.5,5.3,5.6,5.3,5.4,5.5,5.5,5.5,5.6,5.6)

1. Fit a linear regression function. Obtain, the residuals and plot them against the fitted values. Also prepare a normal probability plot. What do your plots show?
2. Use the Box-Cox procedure to find an appropriate power transformation by using λ = -.2, -.1,0, .1, .2. What transformation of Y is suggested?
3. Use the transformation suggested by part b and obtain the estimated linear regression function for the transformed data.
4. Express the estimated regression function in the original units. Predict Y for X=0.5 and calculate the 95% confidence interval.