James Hahn
STAT1221
Homework #8
MINITAB Output

Chapter 15

2a)

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Regression	1	442.91	442.915	4.16	0.053
INC	1	442.91	442.915	4.16	0.053
Error	23	2448.13	106.440		
Lack-of-Fit	18	2432.93	135.163	44.46	0.000
Pure Error	5	15.20	3.040		
Total	24	2891.05			

2b)

Polynomial Regression Analysis: Time versus INC

The regression equation is
Time = - 19.87 + 0.007871 INC - 0.000000 INC^2

Model Summary

S	R-sq	R-sq(adj)
3.97749	87.96%	86.87%

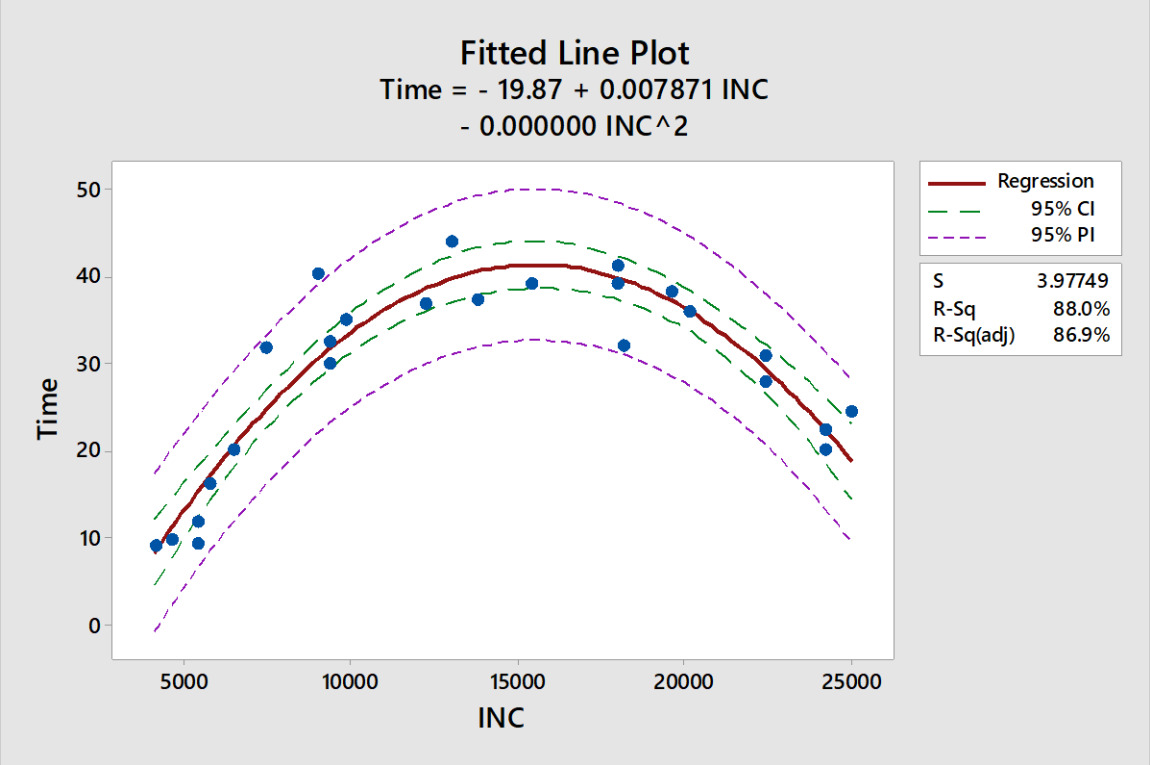
Analysis of Variance

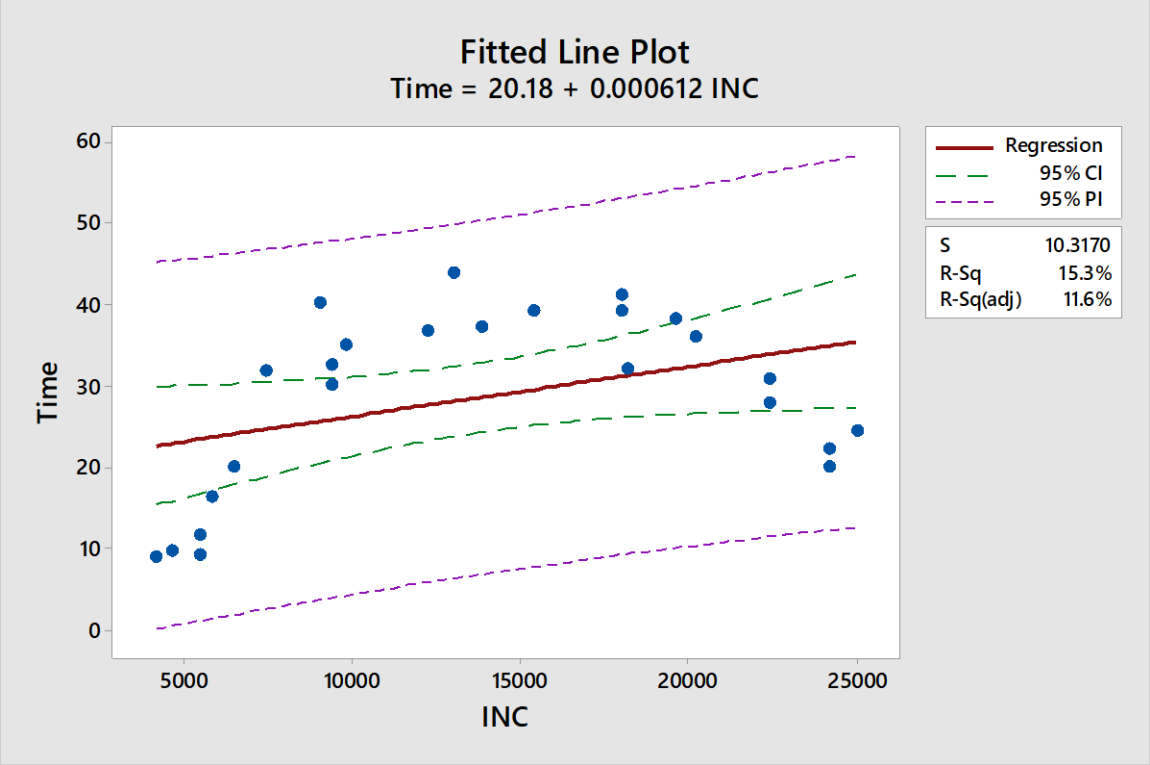
Source	DF	SS	MS	F	P
Regression	2	2543.00	1271.50	80.37	0.000
Error	22	348.05	15.82		
Total	24	2891.05			

Sequential Analysis of Variance

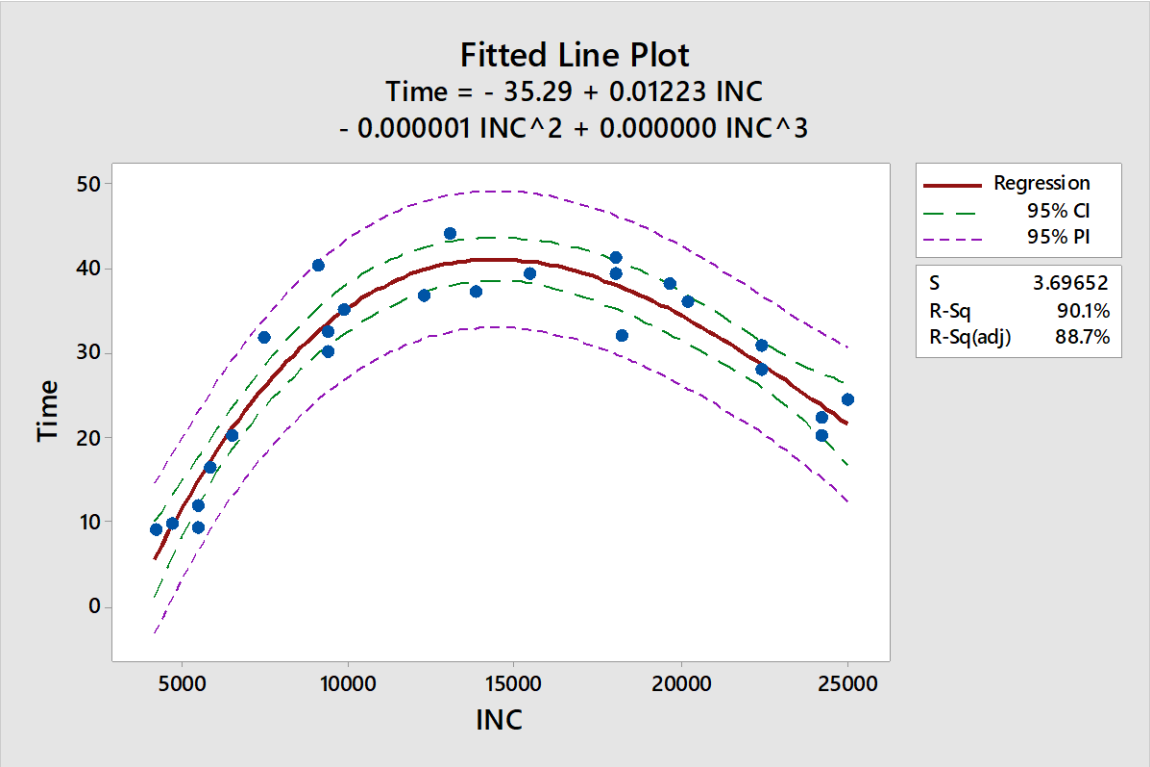
Source	DF	SS	F	P
Linear	1	442.91	4.16	0.053
Quadratic	1	2100.08	132.74	0.000

2c)

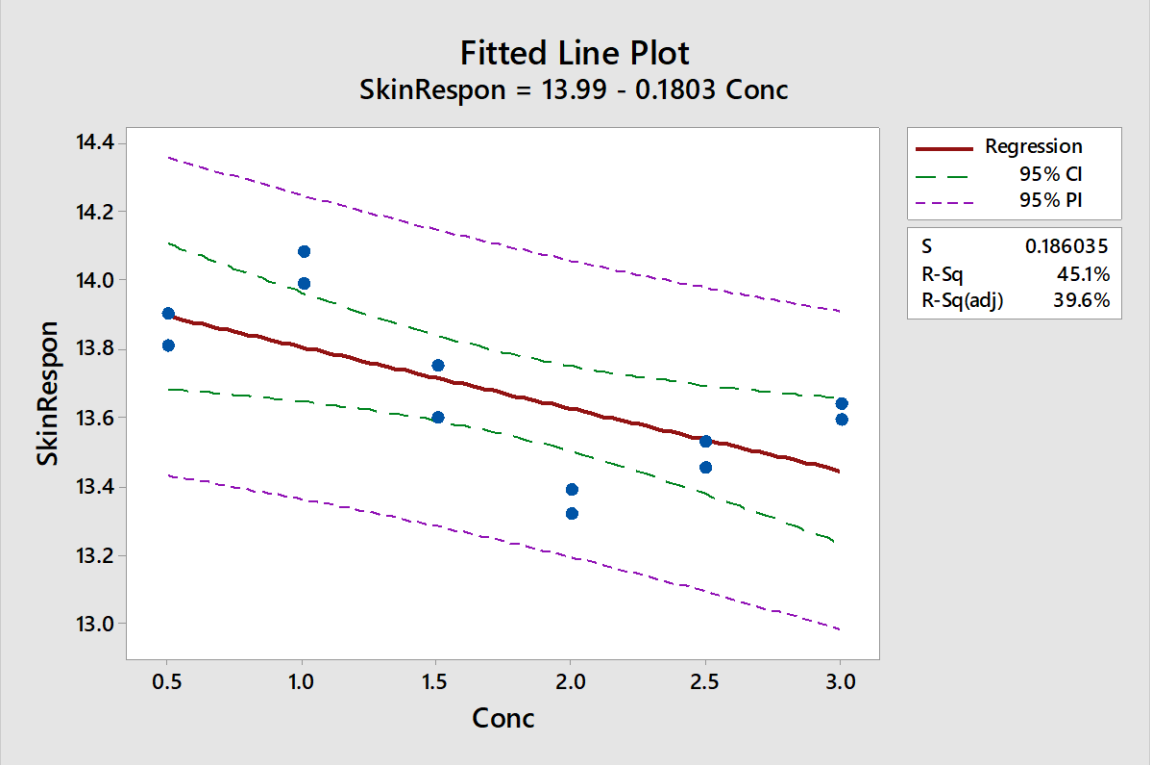

Fitted Line Plot
Time = - 19.87 + 0.007871 INC
- 0.000000 INC^2
Regression
95% CI
95% PI
S 3.97749
R-Sq 88.0%
R-Sq(adj) 86.9%
Time
INC
0
10
20
30
40
50
5000
10000
15000
20000
25000

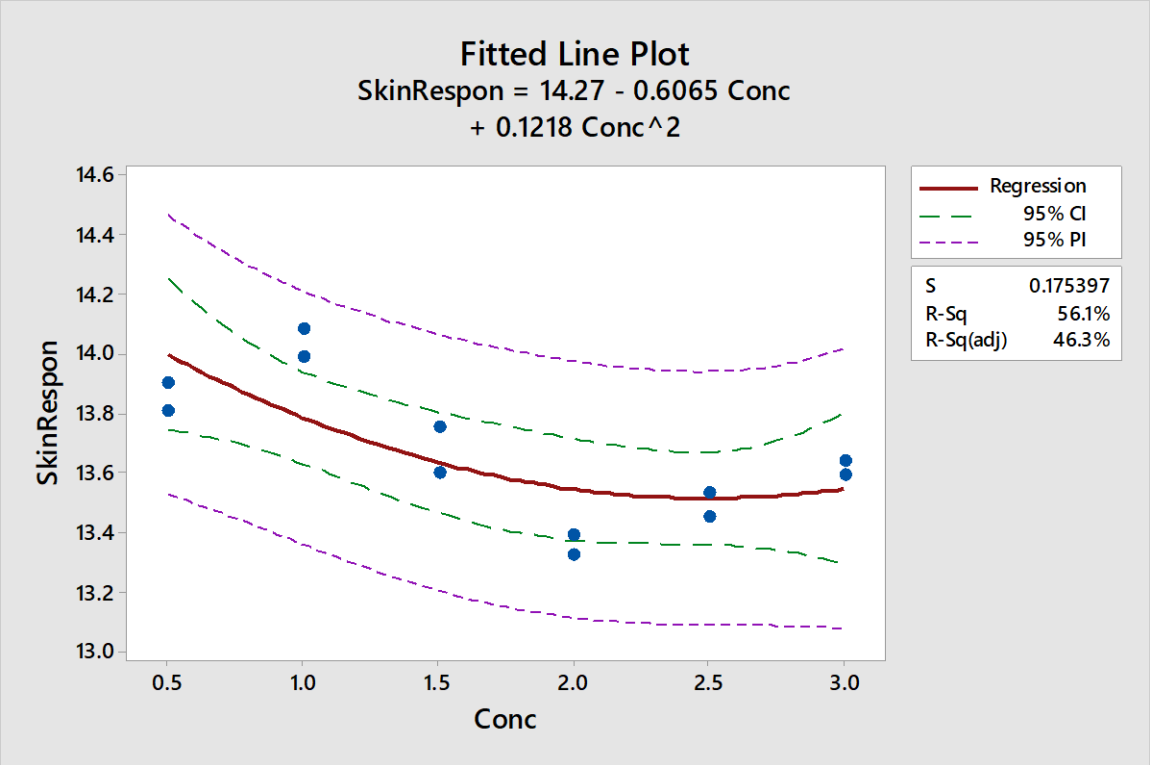

Fitted Line Plot
Time = 20.18 + 0.000612 INC
Regression
95% CI
95% PI
S 10.3170
R-Sq 15.3%
R-Sq(adj) 11.6%
Time
INC
0
10
20
30
40
50
60
5000
10000
15000
20000
25000

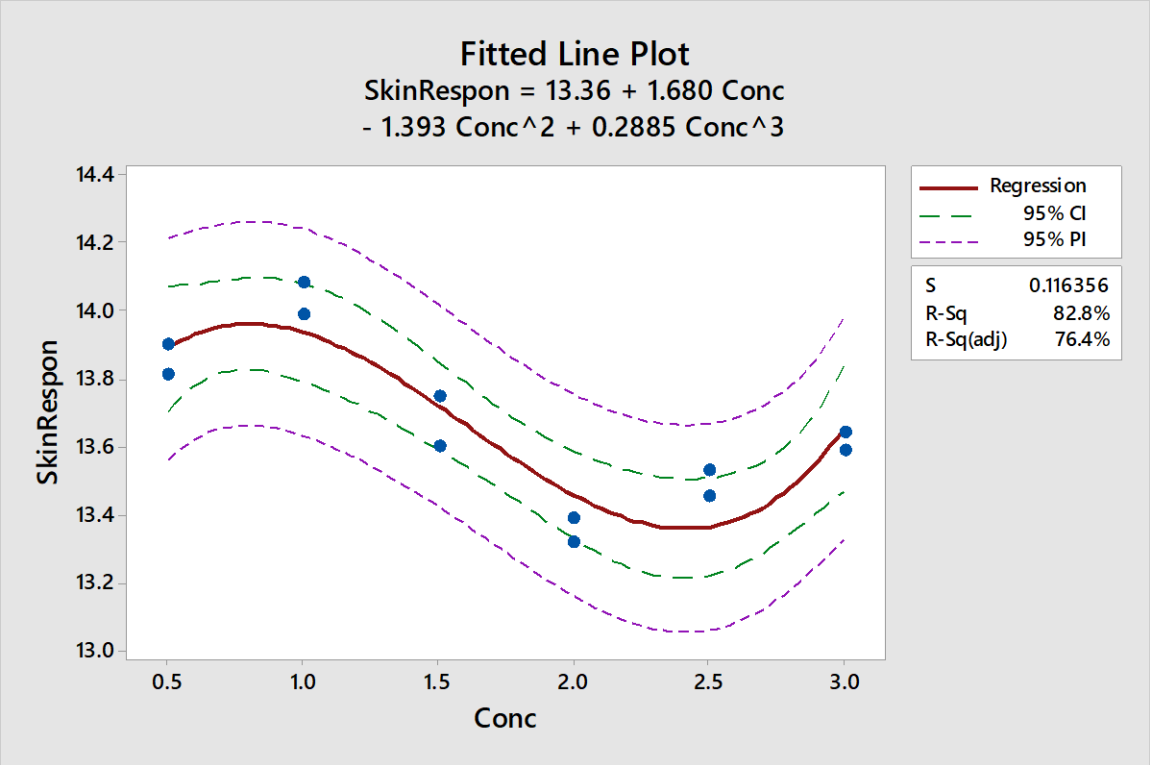
2d)


Fitted Line Plot
Time = - 35.29 + 0.01223 INC
- 0.000001 INC^2 + 0.000000 INC^3
Regression
95% CI
95% PI
S 3.69652
R-Sq 90.1%
R-Sq(adj) 88.7%
Time
INC
0
10
20
30
40
50
5000
10000
15000
20000
25000

7a)


Fitted Line Plot
SkinRespon = 13.99 - 0.1803 Conc
Regression
95% CI
95% PI
S 0.186035
R-Sq 45.1%
R-Sq(adj) 39.6%
SkinRespon
Conc
14.4
14.2
14.0
13.8
13.6
13.4
13.2
13.0
0.5
1.0
1.5
2.0
2.5
3.0


Fitted Line Plot
SkinRespon = 14.27 - 0.6065 Conc
+ 0.1218 Conc^2
Regression
95% CI
95% PI
S 0.175397
R-Sq 56.1%
R-Sq(adj) 46.3%
SkinRespon
Conc
14.6
14.4
14.2
14.0
13.8
13.6
13.4
13.2
13.0
0.5
1.0
1.5
2.0
2.5
3.0



7b)

Regression Analysis: SkinRespon versus Conc

The regression equation is

SkinRespon = 13.99 - 0.1803 Conc

Model Summary

S	R-sq	R-sq(adj)
0.186035	45.11%	39.62%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	1	0.284401	0.284401	8.22	0.017
Error	10	0.346091	0.034609		
Total	11	0.630492			

Polynomial Regression Analysis: SkinRespon versus Conc

The regression equation is

SkinRespon = 14.27 - 0.6065 Conc + 0.1218 Conc^2

Model Summary

S	R-sq	R-sq(adj)

0.175397	56.09%	46.33%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	2	0.353616	0.176808	5.75	0.025
Error	9	0.276876	0.030764		
Total	11	0.630492			

Sequential Analysis of Variance

Source	DF	SS	F	P
Linear	1	0.284401	8.22	0.017
Quadratic	1	0.069215	2.25	0.168

Polynomial Regression Analysis: SkinRespon versus Conc

The regression equation is

SkinRespon = 13.36 + 1.680 Conc - 1.393 Conc^2 + 0.2885 Conc^3

Model Summary

S	R-sq	R-sq(adj)
0.116356	82.82%	76.38%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	3	0.522183	0.174061	12.86	0.002
Error	8	0.108309	0.013539		
Total	11	0.630492			

Sequential Analysis of Variance

Source	DF	SS	F	P
Linear	1	0.284401	8.22	0.017
Quadratic	1	0.069215	2.25	0.168
Cubic	1	0.168567	12.45	0.008