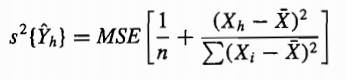
**HW4**

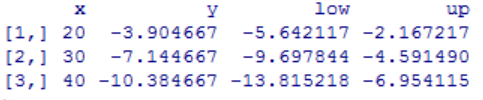
**Fangling Zhang**

**4.9**

**a.** The Bonferroni confidence limits for regression model are:

where: , and 

Here α=0.1



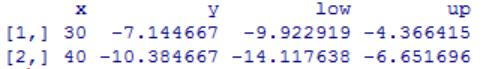
We get the desired confidence intervals are [-5.642, -2.167], [-9.698, -4.591], and [-13.815, -6.954] respectively when the elapsed time is 20, 30, and 40 hours.

The meaning of the family confidence coefficient here is 1-α/2 = 0.95.

b. We can also use Working-Hotelling procedure here. For large families, the Working-Hotelling confidence limits will always be the tighter than Bonferroni limit. However, here we cannot decide which one leads to tighter confidence limits yet because the number of statements is small. We can calculate the W and B multiples to determine.

c. The simultaneous confidence limits for mean responses with the Working-Hotelling procedure are:

, where 

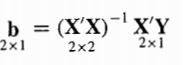
Then we get the desired confidence intervals are [-9.923, -4.366], and [-14.118, -6.652] respectively when the elapsed time is 30, and 40 hours.

We compare the results of Working-Hotelling and Bonferroni, we found that Bonferroni leads to tighter confidence limits. Therefore, the right answer are [-9.698, -4.591], and [-13.815, -6.954] respectively for 30, and 40 hours.

**5.26**

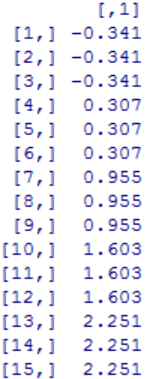
**a.**

(1)  = 

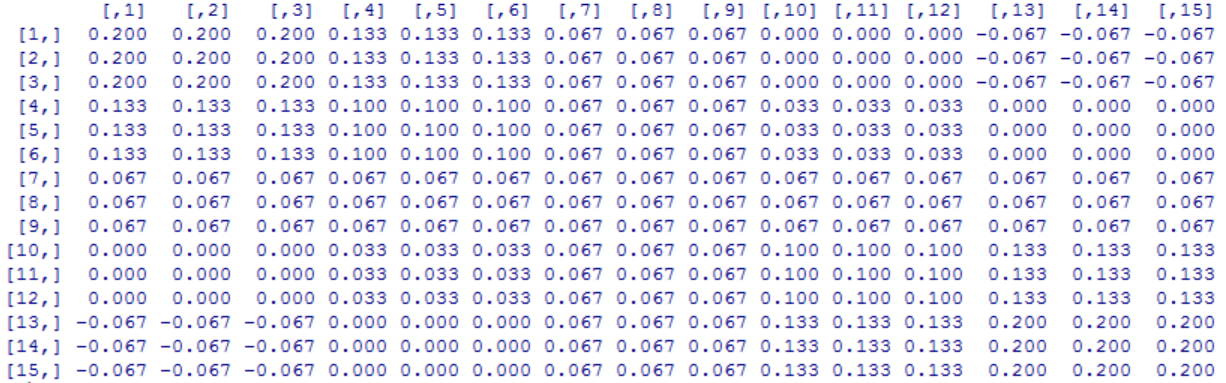
(2) with the function,we get

b=

(3)

=

(4)=



(5)

=2.925

(6)

MSE=SSE/n=0.195

=

(7)

When ,

=

b.

(1)

=0.053625

(2)

=-0.008125

(3)

=sqrt(0.001625)=0.04

c.