|  |  |
| --- | --- |
| **Module:** | ST4400 |
| **Name:** | James Henry Hehir |
| **Student Number:** | 120224791 |
| **Chapter:** | 5 |

**Maximum 2 pages! Do not delete the page number in the footer.**

**(A)**

Text

Description automatically generated

Weighted regression is needed because each response is a mean of varying number of locations.

**(B)**

Text

Description automatically generated

Graphical user interface, text, application, email

Description automatically generated

RSS in weighted model = SS(lof) un-weighted

SS(lof) = *RSS* – SS(pe) = 551.23 − 119.45 = 431.78.

df(lof) = (n − (p+1)) − df(pe) = 116 − 6= 110.

The test statistic for testing lack of fit is *F* = = 5.07.

A picture containing text

Description automatically generated P-value would be 0.0001

**Reject hypothesis of no lack of fit**

**(C)**

**![Text

Description automatically generated]()**

A picture containing text

Description automatically generated

F test statistic is 5.1924

P-value is 0.00009742

**Reject hypothesis of no lack of fit**

**(D)** You calculate variance using a weight in one and you calculate variance by pooling variance from values of y with the same predictor value. Variance is calculated differently and F uses variance in its calculation and because of this the two Fs are different.