1---------------

H0 = coef(newspapers adv) + coef(tv adv) + coef(radio adv) = 0

TV and radio are significant and have effect on the income

Newspapers are insignificant and don’t have effect on the model.

2---------------

KNN classifier creates classes based on the k number of neighbors a value from X has. Then these classes are used to predict qualitative data.

KNN regression is a non-linear model, which is mixed from KNN classifier and least squares. It uses the values of X to predict quantitative data

3------------

A - iii

Y = 50 + 20(gpa) + 0.07(iq) + 35(gender) + 0.01(gpa \* iq) - 10 (gpa \* gender)

(a) Y = 50 + 20 k\_1 + 0.07 k\_2 + 35 gender + 0.01(k\_1 \* k\_2) - 10 (k\_1 \* gender)

male: (gender = 0) 50 + 20 k\_1 + 0.07 k\_2 + 0.01(k\_1 \* k\_2)

female: (gender = 1) 50 + 20 k\_1 + 0.07 k\_2 + 35 + 0.01(k\_1 \* k\_2) - 10 (k\_1)

Once the GPA is high enough, males earn more on average. => iii.

C – it is not that little, it is because the value for IQ is low initially and it is connected not only with GPA, but with the salary as well.

4-------------

A – Yes, the model with the X squared will be with less RSS than the one with only the X data, because the f(X) is linear by default and the linear model doesn’t need to be readjusted to cubic or quadratic or etc.

C – There is not enough information to tell, because it can be close enough to linear that the linear model will work better, but it can also be, that the quadratic model will work better. You have to try and see.