Homework 3

Make a copy of this document or answer in a separate document.
You must submit :

1. **.pdf of your answers to these questions**
2. **.pdf of your code / figures (File > Print > save as .pdf, *MAKE SURE THE BOTTOM ISN'T CUT OFF*)**
3. **Active link to your colab (Share > Anyone with Link, set to "Viewer") This link can be embedded in your .pdf.**

You may have multiple submissions on Canvas.

Problems 1-7 are in the Notebook here

8. (1 point) ISLP 3.7 question 1.
Describe the null hypotheses to which the p-values given in Table 3.4 correspond. Explain what conclusions you can draw based on these p-values. Your explanation should be phrased in terms of sales, TV, radio, and newspaper, rather than in terms of the coefficients of the linear model.
Null hypothesis:

- TV advertising does not affect sales
- Radio Advertising does not affect sales
- Newspaper advertising does not affect sales

Conclusions based on p-values:

- TV: p-value < 0.0001 which is small and provides strong evidence that TV advertising is positively associated with sales. Increasing TV advertisements increases sales.
- Radio: p-value < 0.0001 which is small and indicates that radio advertising positively affects sales. Increasing radio advertisements increases sales.
- Newspaper: p-value = 0.8599 which is a large p-value and that indicates that there is not statistically significant evidence that newspaper advertisement affects sales. Changes in newspaper spending are unlikely to meaningfully change sales.

Investing in TV and Radio advertisements seems to have more impact on sales rather than investing in newspaper advertisements.

9. (1 point) Explain the meaning of the coefficients in a Multiple Regression problem.
The meaning of coefficients in a multiple regression problem is that it represents the expected change in the dependent variable for a one-unit increase in that predictor, while keeping all other predictors constant.