

## Exercises

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.

Answer:

The correlation between TV radio and sales is relatively high, while the correlation between newspaper and sales is relatively low

3. (a)-i Answer: Incorrect,  $X_3 = \text{Level}$  (1 for College and 0 for High School),

(a)-ii Answer: correct,  $X_3 = \text{Level}$  (1 for College and 0 for High School)

(a)-iii Answer: incorrect,  $\beta_5 = -10$ . For the high school graduates, The final result of the GPA increasing salary is not necessarily large.

(a)-iv Answer: correct, For the college school graduates, The final result of the GPA increasing salary is large.

(b) 172.7

(c) false, There is some correlation between IQ and GPA, but the correlation is relatively low. Smart people are more likely to have a high GPA, but it is not absolute.

4.(a) we would expect them to be the same, Because the true relationship between X and Y is linear, the training RSS for the cubic regression cannot make the equation fit better.