ISLR 6.6.3

a) As s increases from 0, all βs increase to least squae estimate values from zero. Training error for all β = 0 is the maximum and it steadily decreases to the OLS RSS

b) Initially decreases and subseuqently increasing in a new shape. test RSS decereases to a certain level post which it hits an inflection point and then residual sum error of test will start to increase

c) β is nearly zero in the start indicating that there is negligible variance in the start. Variance starts going up only after the module becomes flexible

d) when s is zero, model starts predicting a constant and the prediction is very far from the true value, increasing the bias. As s grows, more βs become non-zerp and as an impact the model fits training data better decresing bias.

e) irreducible error is independent of the model and remains unchanged irrespective of choice of s

ISLR 6.6.5

A screenshot of a math notebook

Description automatically generated

ISLR 8.4.5

For majority polling, probabilities >= 0.5 will be true and classification is false otherwise. False is 4 and True is 6, red samples are greater in number than green samples and hence the classification will be to a red class.

For average probability, the average is 0.45 hence prediction is green.