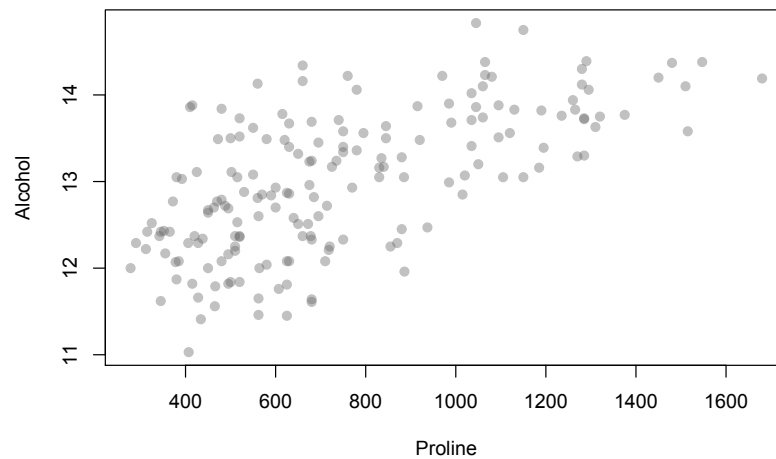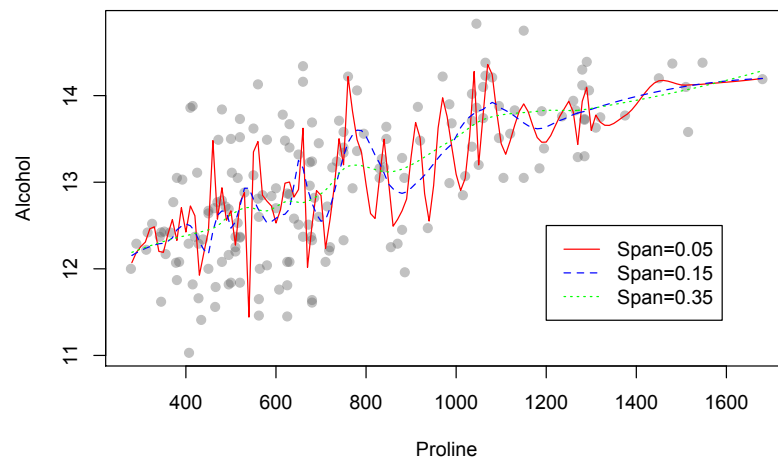1. Italian wine samples were tested for their proline and alcohol levels. There is interest in the relationship between proline levels and alcohol levels in the samples.

A lowess regression was proposed to study the relationship between proline and alcohol levels.

(a) Describe, in detail, how the lowess approach to non-parametric regression can be used to study the relationship between proline and alcohol. Include in your description a definition of any terms used.

(b) Three different lowess regressions were fitted to the data by varying the span.

1

Comment on the properties of the fit as the smoothing parameter is varied.

(c) Describe how kernel smoothing provides an alternative non-parametric regression method for these data.