

# Interactive lecture module 8 and 9 - solutions

TMA4268 Statistical learning

*Mette Langaas*

*15 March, 2019*

## Contents

<b>8. Tree-based methods</b>	<b>1</b>
Problems for interactive lecture . . . . .	1
Problem 1: Regions and tree . . . . .	1
Compulsory exercise 3 in 2018: Problem 1 on Classification with trees . . . . .	2
<b>9. Support vector machines</b>	<b>3</b>
Compulsory exercise 3 in 2018: Problem 3: . . . . .	3

## 8. Tree-based methods

### Problems for interactive lecture

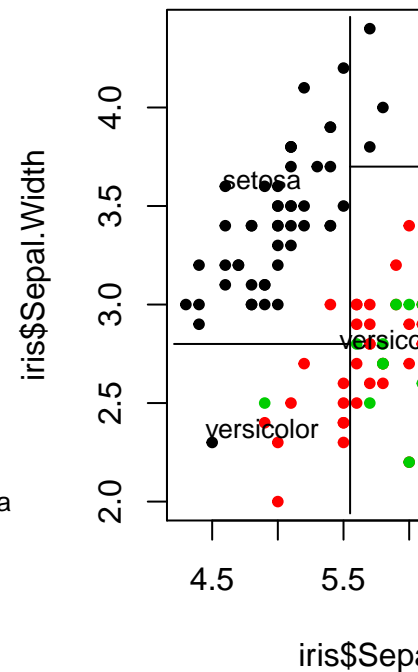
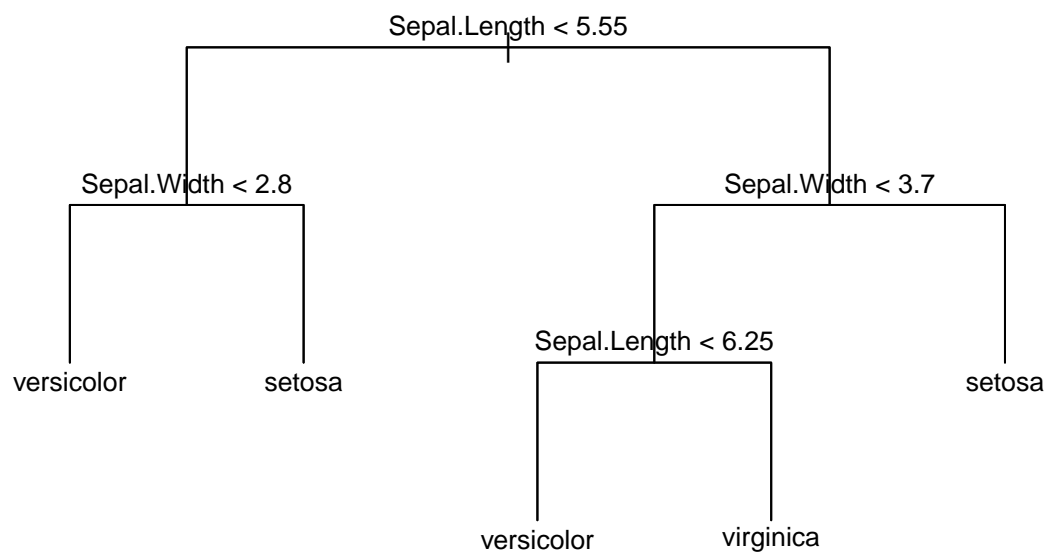
#### Problem 1: Regions and tree

We have a classification problem with covariates (predictors) `Sepal.Width` and `Sepal.Length` and response `Species` (three species)

The graph below gives a partition of the predictor space of variables `Sepal.Width` and `Sepal.Length`, where the observations are shown in different colors for the different species

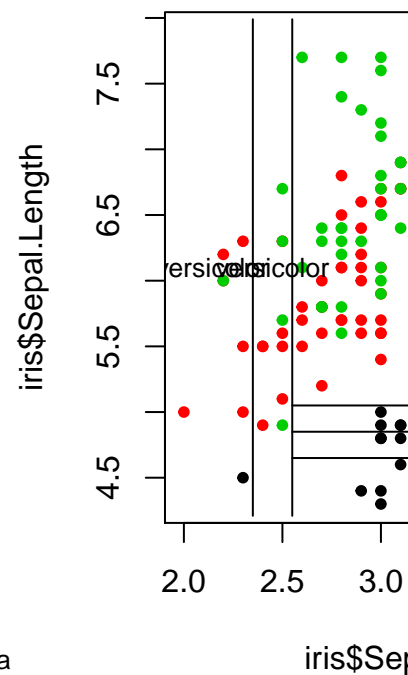
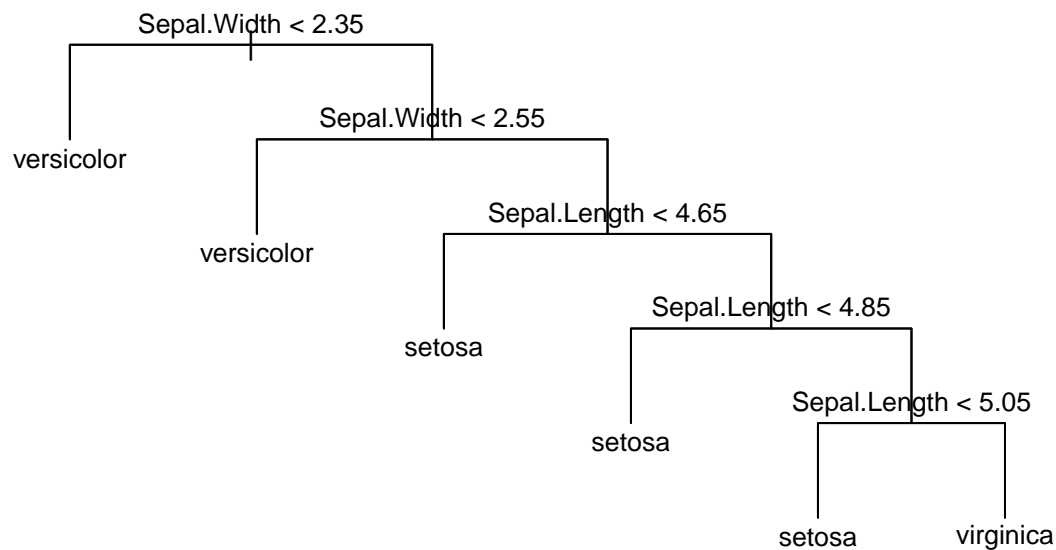
#### a) From regions to tree

Sketch the classification tree corresponding to the partition. Specify variables that are split on and an approximate value of the split point



## b) From tree to regions

For the tree plot, draw the corresponding region plot.



## Compulsory exercise 3 in 2018: Problem 1 on Classification with trees

<https://www.math.ntnu.no/emner/TMA4268/2018v/CompEx/Compulsory3solutions.html>

## 9. Support vector machines

### Compulsory exercise 3 in 2018: Problem 3:

<https://www.math.ntnu.no/emner/TMA4268/2018v/CompEx/Compulsory3solutions.html>