

# Assignment 3

Due: Tuesday September 25

1. Please do the following exercises from ‘Applied Multivariate Statistical Analysis’ by Johnson and Wichern. Next to each exercise there is an **H** and/or **R**, indicating whether the exercise should be done **by hand** [**H**] and/or **by R** [**R**].

- 2.24 [**H,R**]
- 2.25 [**H,R**]
- 2.30 [**H**]
- 3.14 [**H**]
- 3.15 [**H**]
- 3.16 [**H**]
- 3.18 [outline the appropriate calculations by hand, but then use R to get the answers]

2. I have placed data from O’Sullivan and Mahan on the website. The data consist of blood glucose levels on three occasions for 50 women. the *ys* represent fasting glucose measurements on the three occasions; the *xs* are glucose measurements 1 hour after sugar intake.

- (a) Conduct an exploratory data analysis.
- (b) Find the mean vector, covariance matrix, and correlation matrix for all six variables and partition them into:

$$\begin{pmatrix} \bar{\mathbf{y}} \\ \bar{\mathbf{x}} \end{pmatrix}, \quad \mathbf{S} = \begin{pmatrix} \mathbf{S}_{yy} & \mathbf{S}_{yx} \\ \mathbf{S}_{xy} & \mathbf{S}_{xx} \end{pmatrix}, \quad \mathbf{R} = \begin{pmatrix} \mathbf{R}_{yy} & \mathbf{R}_{yx} \\ \mathbf{R}_{xy} & \mathbf{R}_{xx} \end{pmatrix}.$$