Part Six

EXERCISES AND PROBLEMS

This part of the book is a collection of exercises and problems for the separate chapters. We hope that these will further enhance the value of the book when used as a course text and also assist private study. A number of examples point to extensions of the ideas and act as a first introduction to additional methods.

CHAPTER 2

2.1. The following are temperature measurements z made every minute on a chemical reactor:

200, 202, 208, 204, 204, 207, 207, 204, 202, 199, 201, 198, 200, 202, 203, 205, 207, 211, 204, 206, 203, 203, 201, 198, 200, 206, 207, 206, 200, 203, 203, 200, 200, 195, 202, 204.

(a) Plot the time series.
(b) Plot z_{t+1} versus z_t.
(c) Plot z_{t+2} versus z_t.
After inspecting the graphs, do you think that the series is autocorrelated?

2.2. State whether or not a stationary stochastic process can have the following values of autocorrelations.
(a) $\rho_1 = 0.80$, $\rho_2 = 0.55$, $\rho_k = 0$ for $k > 2$
(b) $\rho_1 = 0.80$, $\rho_2 = 0.28$, $\rho_k = 0$ for $k > 2$