Self-study - week 36, 2019

Note first the printing errors in the book as listed in the note on the course website.

Chapter 1

1. Go through the proof of Proposition 1.24 (Boole's inequality).
2. Prove (1.16) on p. 27, for example by appropriate modification of the proof of (1.15) (see also the proof done in class).
3. Study the statement and proof of Theorem 1.29, where the Monotone Class Theorem is used! A motivation for the result of Theorem 1.29 is Example 1.30 below it.
4. Section 1.4 looks at probabilities when $\Omega = \mathbb{R}$ and $\mathcal{F} = \mathcal{B}(\mathbb{R})$. Read Def. 1.31 and Proposition 1.32.
5. Study in detail the statement and proof of Theorem 1.33. Investigate the statement of existence of left and right limits. Perhaps draw a figure?
6. Theorem 1.36 has no proof in the book, because it is somewhat involved. But you shluld read the statement carefully to understand what it says. Consider it also in connection with Proposition 1.32. What is the difference between the results of Proposition 1.32 and Theorem 1.36?
7. Sections 1.4.2, 1.4.3, 1.4.4 are essentially well known from other courses. But you should check that the presentation in Karr's book is very strictly following the general theory of Section 1.4.1.

NOTE: Section 1.6 is not in the curriculum.

Chapter 2

Read from the beginning of the chapter and until the start of Section 2.2.4.

Def. 2.1 and Proposition 2.2 are key elements of the chapter. Proposition 2.2 in essence shows that inverse images $X^{-1}(B)$ have very nice properties in connection with unions, intersections etc.

Note that there is in fact something to prove also in Proposition 2.13.

Note: Sections 2.2.4 and 2.2.5 are mainly for use later in the book.