

Due Wed March 11 in class.

Problems with (*) are required but no need to hand in.

Problems with (**) are recommended but not required for this class.

Provide your solutions in a simple and clear manner. In particular, you should be able to read them out aloud without any modification.

1. (*) Read Chapter 2.1, 2.2.
2. Exercises 2.1.1, 2.1.2(*), 2.1.3(*), 2.1.9, 2.1.11, 2.1.12, 2.1.14, 2.2.2, 2.2.4, 2.2.5(*), 2.2.6.
3. Provide concrete constructions of n independent random variables with common probability Bernoulli (p) distribution on the common probability space $((0, 1), \mathcal{B}((0, 1)), \lambda)$, where $n \in \mathbb{N}$, $p \in (0, 1)$ and λ a probability measure on $((0, 1), \mathcal{B}((0, 1)))$ are to be specified below.
 - (a) Take $\lambda = \text{Leb}$, $n \in \mathbb{N}$, and $p = 1/2$.
 - (b) Take $\lambda = \text{Leb}$, $n = 3$, but arbitrary $p \in (0, 1)$.
 - (c) Let λ be the probability measure on $((0, 1), \mathcal{B}((0, 1)))$ induced by the Stieltjes measure function $F(x) = x^2$, $x \in (0, 1)$. Take $n = 2$, $p = 1/2$.
 - (d) (**) Take λ as in part (c), and arbitrary $p \in (0, 1)$, $n \in \mathbb{N}$.