

Due Monday March 23 in class.

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

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 2.3, 2.4.
2. Exercises 2.1.12 (redo), 2.3.1, 2.3.3, 2.3.10 (*), 2.3.13, 2.3.14 (*), 2.3.15 (i), (iii), 2.3.17.

For 2.3.3, to make the problem easier, assume in addition $\lambda_n \leq 1$ for all $n \in \mathbb{N}$.

3. Let $\{X_n\}_{n \in \mathbb{N}}$ be a collection of random variables such that $X_n \rightarrow X$ as $n \rightarrow \infty$ in probability. Let $\{a_n\}_{n \in \mathbb{N}}$ be a collection of real numbers such that $\lim_{n \rightarrow \infty} a_n = a \in \mathbb{R}$. Show that

$X_n + a_n \rightarrow X + a$ as $n \rightarrow \infty$ in probability.