Math 235B, Winter 2024

Homework 6

Durrett, Chapter 5, 5.1.1, 5.1.2, 5.2.6, 5.2.7, 5.2.8, 5.2.9.

1. Let $\mathcal{F}_n$, $n = 0, 1, \ldots$ be a filtration and X_n an adapted process.
(a) Assume that N is a stopping time. Show that $\mathcal{F}_N$, as defined in class, is a σ–algebra. Show that N and $X_N 1_{\{N < \infty\}}$ are $\mathcal{F}_N$-measurable.
(b) If $M \leq N$ are two stopping times, then $\mathcal{F}_M \subset \mathcal{F}_N$. Prove this.