

Theory of Probability and Measure Theory – Math 8651

Homework #1

Chapter 1, Problems 1,3,4,5. Additional problems:

A) Find the probability that in n flips of a fair coin the number of heads is even.

B) Find the probability that the number of flips to get the first head is even.

C) Let \mathcal{E} be the collection of intervals in $\mathbb{R} = (-\infty, \infty)$ of type (r, ∞) where r is an arbitrary rational number. Prove that $\sigma(\mathcal{E}) = \mathcal{B}(\mathbb{R})$, where $\sigma(\mathcal{E})$ denotes the smallest σ -field containing \mathcal{E} .