

Homework 8
MATH 165 - Fall 2020
Tufts University, Department of Mathematics
Due: November 5, 2020

1. BOOK QUESTIONS

Grinstead and Snell: Section 6.3 #18; 7.1 #7; 7.2 #13, #20

2. SUPPLEMENTAL QUESTION (EXPECTATION FOR COUPON COLLECTOR PROBLEM)

Consider a collection of n distinct coupons $\{x_i\}_{i=1}^n$. Let us draw them uniformly at random with replacement. Let X_n be the random variable equal to the number of draws until all n distinct coupons are selected.

- (a) Compute $\mathbb{E}(X_n)$.
- (b) Perform a numerical simulation across a range of n values to show the scaling of $\mathbb{E}(X_n)$ as a function of n . Does it agree with your computation in (a)?