Homework 4
MATH 165 - Fall 2020
Tufts University, Department of Mathematics
Due: October 8, 2020

1. Book Questions

Grinstead and Snell: Section 4.1 #37, #47, #49; Section 4.2, #1,#9.

2. Supplemental Question (Stick Breaking)

(a) Sample two points uniformly and independently at random from $[0, 1]$. Let L_1, L_2, L_3 be the lengths of the resulting subintervals. Compute the probability that line segments of lengths L_1, L_2, L_3 can be arranged into a triangle.

(b) Sample a point uniformly from $[0, 1]$, and then sample another point from the larger of the two resulting subintervals. Let L_1, L_2, L_3 be the lengths of the resulting subintervals. Compute the probability that line segments of lengths L_1, L_2, L_3 can be arranged into a triangle.

(c) Sample a point uniformly from $[0, 1]$, and then sample another point from the smaller of the two resulting subintervals. Let L_1, L_2, L_3 be the lengths of the resulting subintervals. Compute the probability that line segments of lengths L_1, L_2, L_3 can be arranged into a triangle.