Homework 6
MATH 165 - Fall 2020
Tufts University, Department of Mathematics
Due: October 22, 2020

1. Book Questions

Grinstead and Snell: Section 6.1 #6, #7

2. Supplemental Question (Measures of Central Tendency as Minimizers)

Let X be a random variable with discrete state space Ω. Suppose it has expected value μ.

(a) Show that the function $F(x) = \sum_{\omega \in \Omega} |X(\omega) - x|^2 \mathbb{P}(\omega)$ is minimized at $x = \mu$.

(b) What can be said about $F(x) = \sum_{\omega \in \Omega} |X(\omega) - x| \mathbb{P}(\omega)$?