

DATA130004: Homework 4

Due in class on October 31, 2018

1. Rizzo book Exercise 5.6, 5.7, 5.9 and 5.10.
2. Monte Carlo method can be used to approximate the fraction of a d -dimensional hypersphere which lies in the inscribed d -dimensional hypercube. Simulate with different dimensions $d = 2, 3, 4, \dots, 10$. (Hint: use `apply` function.)
 - (1) Derive the formula for the EXACT values for the above problem for each d -dimension.
 - (2) Using the above formula, approximate the value of π . Find the number of points used which approximates π to the 4th digit for each dimension d . Set the random seed with `set.seed(123)` at the beginning of your R code.