

Homework 1

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Exercise 3

Monty Hall problem through simulation.

► Code

When there are three doors, switching the door is the correct choice 67.7 percent of the time and the wrong choice 32.3 percent of the time.

When there are five doors, switching the door is the correct choice 80.5 percent of the time and the wrong choice 19.5 percent of the time.

Exercise 4

Monte Carlo approximation of pi.

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This is the Monte Carlo estimate alongside a 95% confidence interval

for a sample size of 1000: (3.184, (3.1340474475366875, 3.233952552463313))

This is the Monte Carlo estimate alongside a 95% confidence interval

for a sample size of 2000:

(3.182, (3.146646060259145, 3.217353939740855))

This is the Monte Carlo estimate alongside a 95% confidence interval

for a sample size of 4000: (3.139, (3.1135262247026474, 3.164473775297352))

This is the Monte Carlo estimate alongside a 95% confidence

interval
for a sample size of 8000: (3.134, (3.1159494880349614,
3.1520505119650384))

Exercise 5

Find the first 10-digit prime number occurring in consecutive digits of pi.

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