MAT 331 Fall 2018, Homework 0
Summing the digits of π

(1) What is the sum of the first $N = 10,000$ digits of π? For example, the sum of the first three digits is $3 + 1 + 4 = 8$.

(2) If the digits of π are uniformly random in $\{0, 1, \ldots, 9\}$ what do we expect the sum to be? How far apart are the actual and expected sums?

(3) For $1 \leq k \leq N$, plot the difference between the expected and the actual sum of the first k digits of π. Do you see any pattern?

(4) Draw a histogram of how many times each digit is used. Which digit is used the most and which is used the least?