CS5955 *Chad Brubaker, U00580695*

HW5

Q1

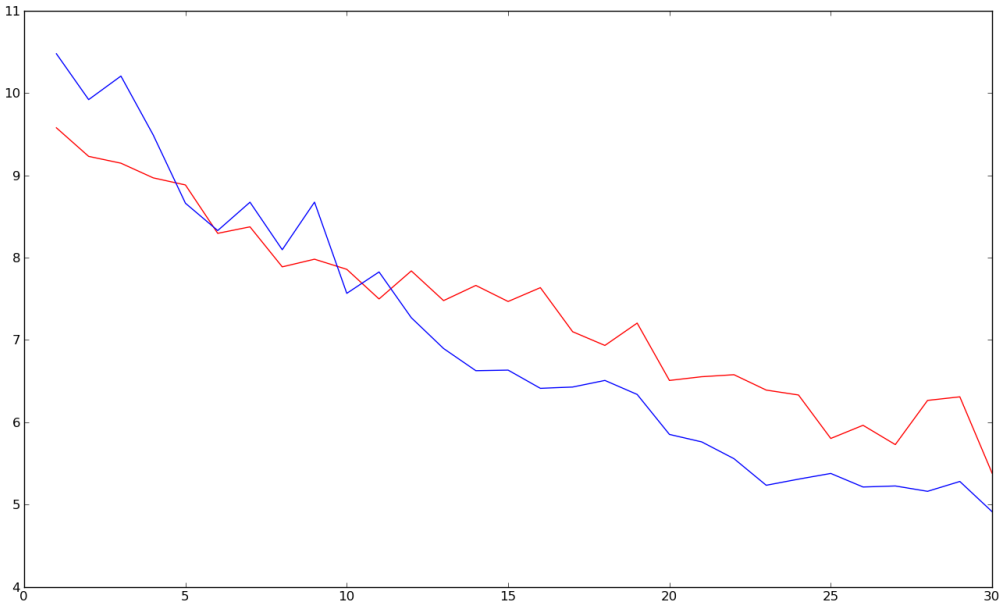
We get the following values:

k	norm
1	9
2	8
3	7
4	5
5	5
6	5
7	4
8	4
9	4
10	4

Q2

A

Here is a graph of the two sampling types errors as averaged over a series of 50 runs(red is Type 1, blue is Type 2).



B

For Type 1 sampling we see the error reaching about 5 at $t = 30$, through experiments I found that to consistently get an error of 5 I would need closer $t = 35$. Type 1 bounces around much more than Type 2 though so a larger t would give a better guarantee about getting that error consistently.

For Type 2 sampling it reached the same error around about $t = 30$, it was much more stable about this than Type 1 sampling.

Q3

0.1 A

For Least squares we get coefs of $\{1.3626, 0.212, 1.6477, -1.40199, 0.3531, -0.0205\}$ and an error of 2.646466

For $s = 0.1$ we get $\{1.3645, 0.20805, 1.6342, -1.3858, .34328, -.0009\}$ and an error of 2.647344

For $s = 0.3$ we get $\{1.36778, 0.19952, 1.60854, -1.355, 0.3234, 0.0125\}$ with an error of 2.653911

For $s = 0.5$ we get $\{1.3705, 0.1914, 1.5845, -1.3259, 0.30524, 0.033099\}$ and an error of 2.66597

For $s = 1.0$ we get $\{1.37533, 0.1727, 1.53077, -1.25977, 0.26473, 0.07978\}$ and an error of 2.7142

For $s = 2.0$ we get $\{1.37867, 0.1411, 1.4445, -1.14996, .20009, 0.15756\}$ and an error of 2.855114