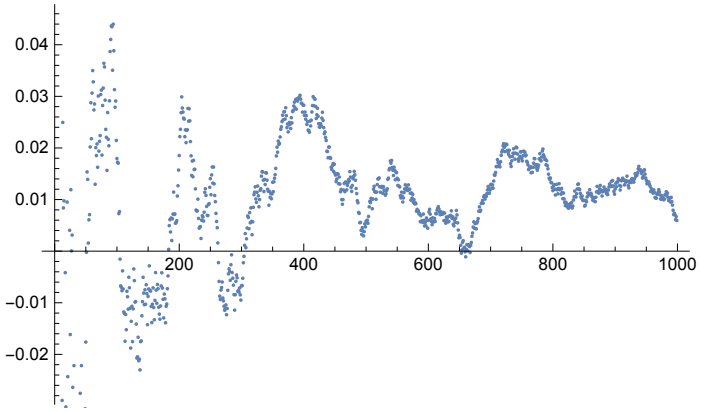
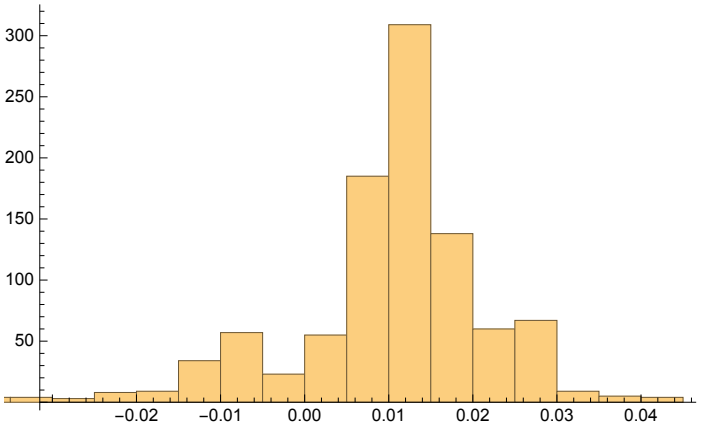
```
(* (a) Test the central limit theorem with square distribution *)
(* (b) Test convergence to mean with Normal distribution *)
(* (c) Test convergenve to mean with Levy distribution *)

NN = 1000;
(* create list with NN random draws from Uniform Distribution *)
dataR = RandomVariate[UniformDistribution[{-1.0, +1.0}], NN];
(*create a list of lists: list with one element,
list with two elements, list with three elements,... *)
dataRc = Table[Drop[dataR, -1 * n], {n, 1, NN - 1}];
sum1 = {};
(* calculate mean of every list in lists and accumualte results in sum1 *)
For[j = 1, j ≤ NN - 1, j++, AppendTo[sum1, Mean[dataRc[[NN - j]]] // N ]];
(* Plot mean for every list in dataRc *)
ListPlot[sum1]
```

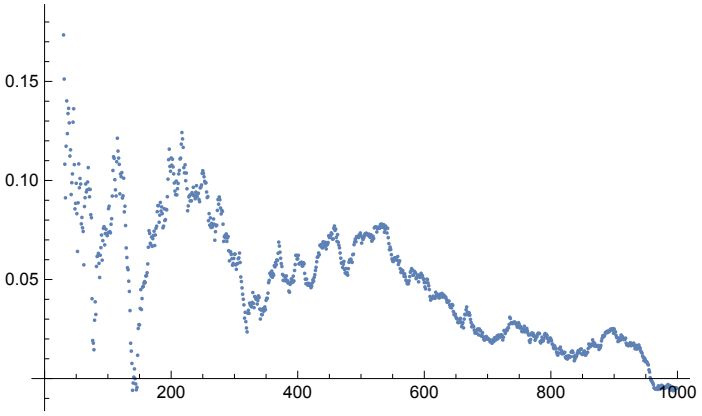



```
Histogram[sum1]
```

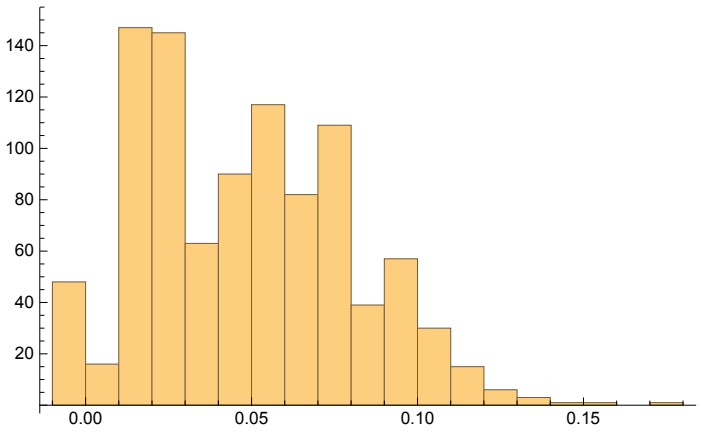


```
dataR = RandomVariate[NormalDistribution[0, 1.0], NN];
dataRc = Table[Drop[dataR, -1 * n], {n, 1, NN - 1}];
sum1 = {};
For[j = 1, j ≤ NN - 1, j++, AppendTo[sum1, Mean[dataRc[[NN - j]]] // N ]];

ListPlot[sum1]
```

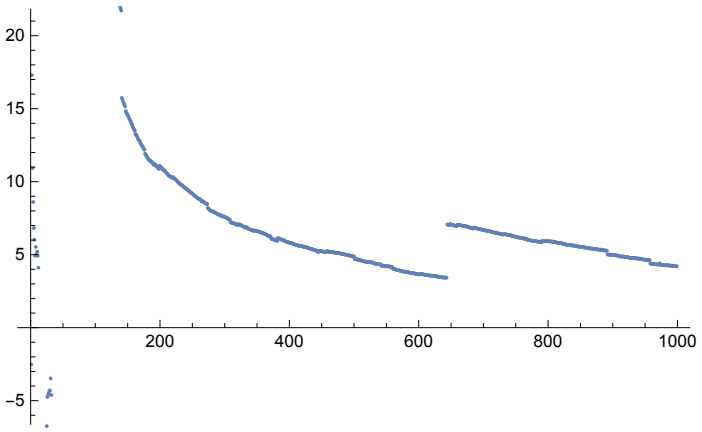



```
Histogram[sum1]
```



```
NN = 1000;
dataS = RandomVariate[StableDistribution[1, 1, 0, 0, 1.5], NN];
dataSc = Table[Drop[dataS, -1 * n], {n, 1, NN - 1}];
sum2 = {};
For[j = 1, j ≤ NN - 1, j++, AppendTo[sum2, Mean[dataSc[[NN - j]]] // N ]];

ListPlot[sum2]
```

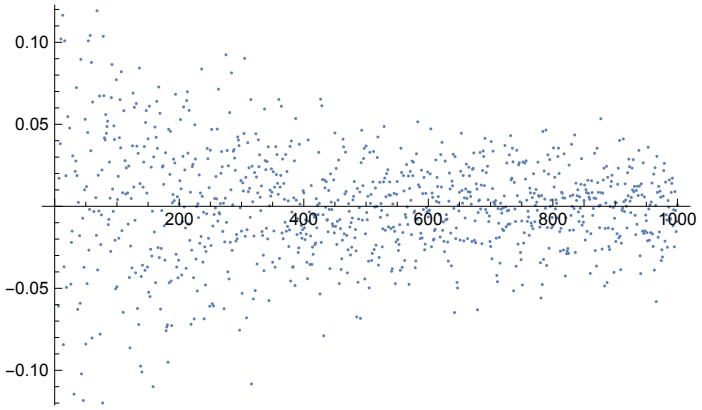



```
(* repeat manually and observe response *)
R = RandomVariate[UniformDistribution[{-1.0, +1.0}], 1000];
Mean[R]
R = RandomVariate[NormalDistribution[0, +1.0], 1000];
Mean[R]
```

```
-0.0150256

0.0178069
```

```
(* now let's do it with another approach *)
(* question: what is different here ? *)
dataSc =
  Table[Mean[RandomVariate[UniformDistribution[{-1.0, +1.0}], n]], {n, 1, NN}];
ListPlot[
 dataSc]
```



```
Histogram[dataSc]
```