

# Monte Carlo, Exercise Session 3

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February 16, 2017

## 1 Exercise 1

Code: Ex1.cpp. Answer: Figure 1.

```
Exercise 1
N: 1, Volgyimi: 2+-0
N: 2, Volgyimi: 3.14168+-0.00107932
N: 3, Volgyimi: 4.18902+-0.00248752
N: 4, Volgyimi: 4.93425+-0.00575504
N: 5, Volgyimi: 5.2643+-0.00500032
N: 6, Volgyimi: 5.1679+-0.00612608
N: 7, Volgyimi: 4.72715+-0.0160602
N: 8, Volgyimi: 4.05555+-0.0121037
N: 9, Volgyimi: 3.29869+-0.0191181
N: 10, Volgyimi: 2.55503+-0.038656
N: 11, Volgyimi: 1.87685+-0.0285286
N: 12, Volgyimi: 1.32288+-0.0400179
N: 13, Volgyimi: 0.896286+-0.0566067
N: 14, Volgyimi: 0.591626+-0.0440729
N: 15, Volgyimi: 0.383058+-0.0527565
End!

Process returned 0 (0x0)   execution time : 937.251 s
Press ENTER to continue.
□
```

Figure 1: Ex1 answer.

Result makes sense, since the correct answers are  $2$ ,  $\pi$ ,  $4*\pi/3$  ...

## 2 Exercise 2

Answer presented in Figure 2.

```
Exercise 2
N: 1, Volgyi: 1.96099+-0.058554
N: 2, Volgyi: 3.09459+-0.0454919
N: 3, Volgyi: 4.11248+-0.0966952
N: 4, Volgyi: 4.81752+-0.149956
□
```

Figure 2: Ex2 answer.

Result in Exercise 1 and Exercise 2 are pretty similar. However the sampling method requires significantly more time, so had to increase binning, which increased the uncertainty.

### 3 Conclusion

Write your conclusion here.