

Lab6

N K Sathvik

Submission deadline:September 13,2023

Exact value of $I = \int_0^1 e^{\sqrt{x}} dx$ (substituting $\sqrt{x} = t$)

$$= 2 \int_0^1 e^t t dt$$

$$= 2$$

M	95% confidence intervals	Mean
10^2	[1.885,2.084]	1.985
10^3	[1.953,2.008]	1.980
10^4	[1.997,2.014]	2.006
10^5	[1.995,2.000]	1.998

Formulas used to code:

$$\begin{aligned}\delta_i &= y_i - \hat{\mu}_{i-1} \\ \hat{\mu}_i &= \hat{\mu}_{i-1} + \frac{\delta_i}{i} \\ S_i &= S_{i-1} + \frac{i-1}{i} \delta_i^2\end{aligned}$$

familiar 95% confidence interval $\left(\hat{\mu}_n - 1.96 \frac{s_n}{\sqrt{n}}, \hat{\mu}_n + 1.96 \frac{s_n}{\sqrt{n}} \right)$.