task_3

October 5, 2023

```python
[156]: import numpy as np # import the Python package numpy, rename it as np

       # implement the integrand f(x) as a Python function
       def f(x):
         f = x # the integrand is f(x) = x
         return x

       N = 953462 # number of random samples to use

       x_i = np.random.uniform(size=N) # draw N random, uniform samples

       print("Shape of x_i is ",x_i.shape)

       f_i = f(x_i) # evaluate the integrand at these N samples
       print("Shape of f_i is ",f_i.shape)
       I_N = np.sum(f_i) / N # Monte Carlo approximation to the integrand

       print("Monte Carlo approximation is %f"%I_N)
```

```
Shape of x_i is  (953462,)
Shape of f_i is  (953462,)
Monte Carlo approximation is 0.500012
```