```
# !/usr/bin/env python3
# (c) Dana Hughes 2021
#
# describe what the program is doing
#
#import the necessary modules
import numpy as np
import math
import random
import matplotlib.pyplot as plt


# define all of the functions

# 1. define the function to integrate
#     f(x) = math.sin(x) + sin(x*x) + 2
# A. draw a random number
# B. calculate the function
# C. add the function value to a sum
# D. repeat
#
# run the functions in this section:
#
# call the integration and present the result

#parameters


def integrate(a,b,n):
  def f(x):
    return math.sin(x) + math.sin(x*x) + 2
  summation = 0
  integral = 0
  h = ((b-a)*1.0)/n
  for n in range(1, n+1):
    summation += f(a+b*h)
  integral = h*summation
  return integral


if __name__ == "__main__":
  a, b = 0, 10
  n = 1000000
  area = integrate(a,b,n)
  print(area)
```

```
20.001000100259947
```