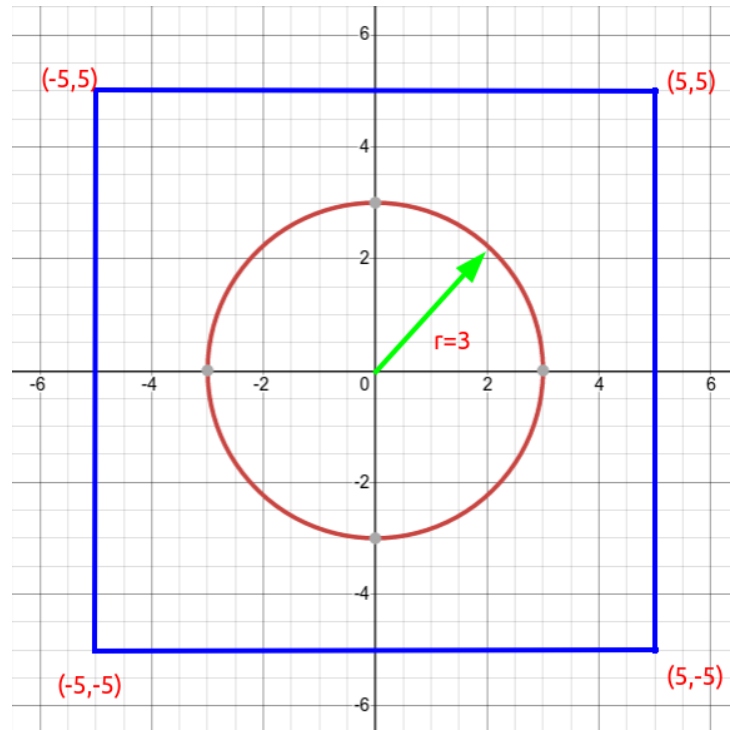


Assignment 02 Specification

Section B

Problem 1:

See the following figure.



Using Monte Carlo simulation, find the value of PI and area of the circle **using the given circle and square**.

Simulate for $N = 100$, 1000 and 10000 .

Provide the following outputs for each N :

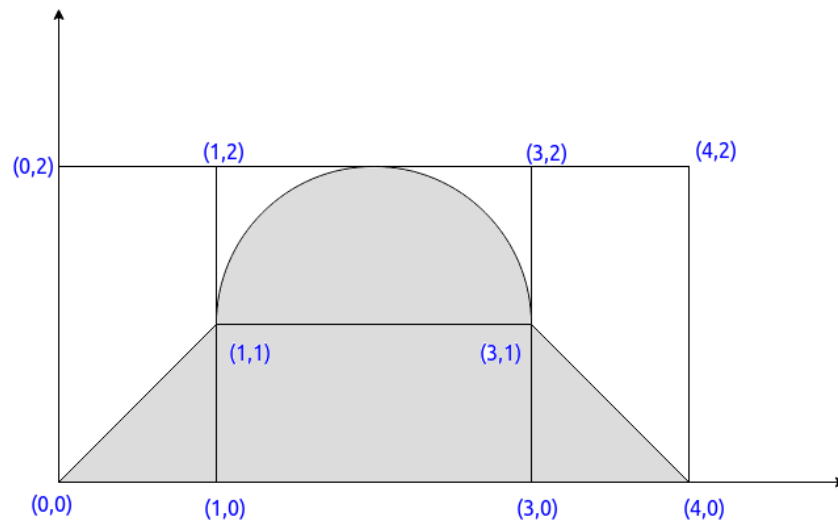
- Scatter plot of the sample points (red points inside of the circle, blue points outside of the circle),
- Estimated value of PI,
- Estimated value of the area of the circle.

At the end of the simulation, draw two bar diagrams:

- First bar plot: x-axis: N (number of trials); y-axis: PI value
- Second bar plot: x-axis: N (number of trials); y-axis: Area of the circle

Problem 2:

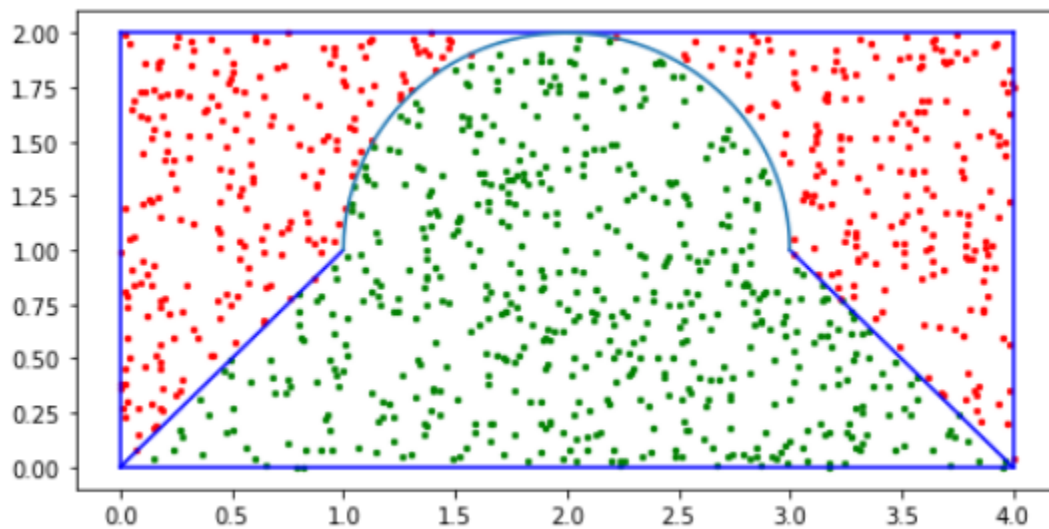
Find the shaded area **using the Monte Carlo simulation**. Use the drawn rectangle.



Simulate for $N = 100$, 1000 and 10000.

Print the value of area and draw scatter plot (as shown below) for each N .

Scatter plot example for $N = 1000$:



Instructions:

1. Code each problem in separate python files. (problem1.py, problem2.py etc.)
2. Create a folder. Rename it with your 9-digit student ID.
3. Put all your python files into the folder.
4. ZIP the folder and upload to LMS submission window.
5. Deadline: Monday 11:55 PM.
6. Do not copy! Copy checker will be used during evaluation. Negative marking is possible.