

Submission Guideline:

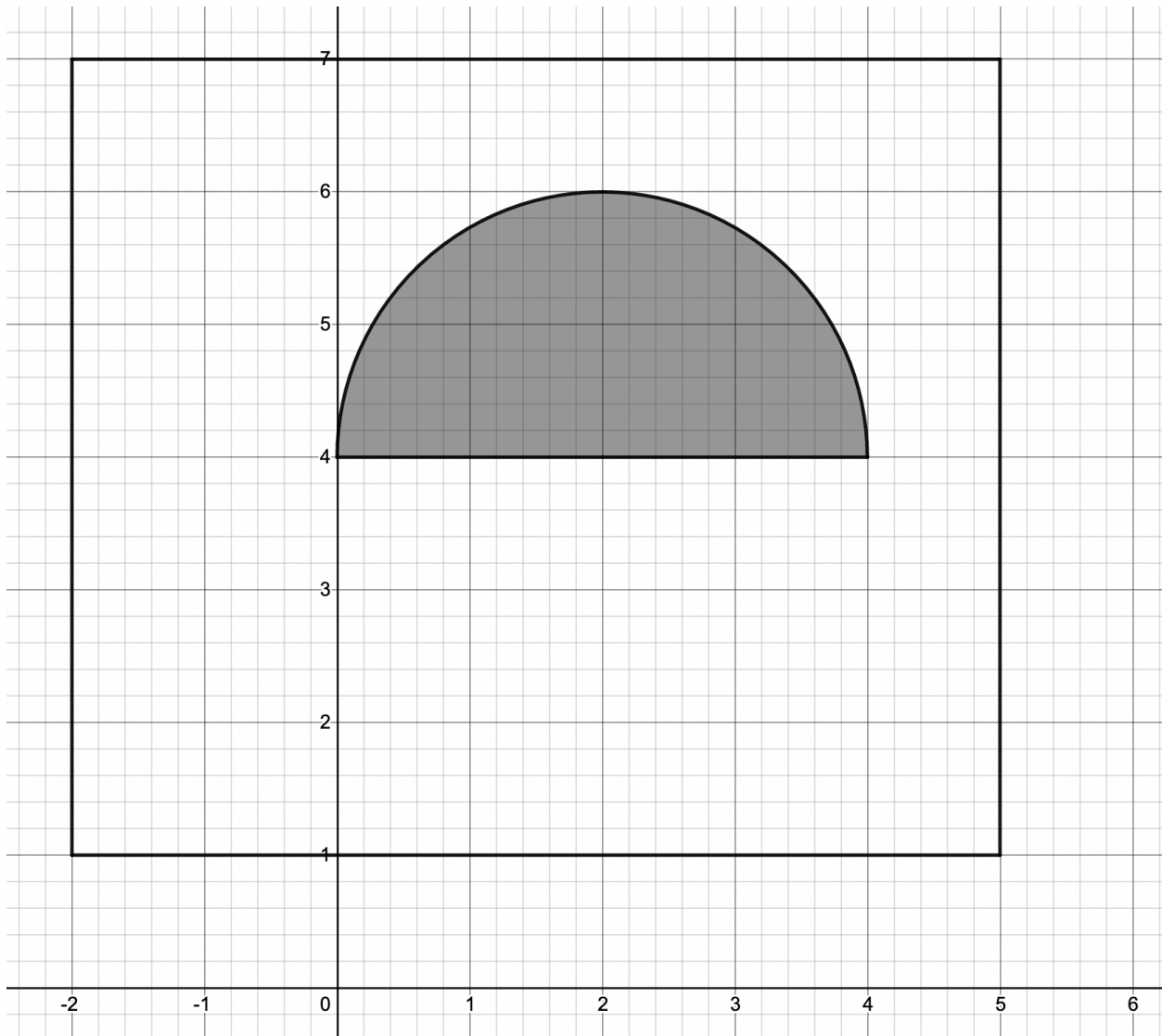
- Please solve the problems in separate files (**One notebook/python file per task**).
- **Download the python files** as instructed in the class. (File -> Download -> Download .py)
- Create a new **folder** and put all your python files inside the folder.
- Rename the folder with your 9 digit student ID.
- Make a ZIP of the folder and **submit the .zip file**.

Online assignment 1

1. **[5 marks]** Create list called *my_list*. Initiate *my_list* with [5, 10, 5, 30, 25, 10, 10]. Take an input *num_of_rounds*. For *num_of_rounds* times, repeat the following:
 - a. In each round, take two inputs named *index_1* and *index_2*. [Assume 0-indexing]
 - b. *index_1* and *index_2* must be two valid indices for *my_list*. If that is not true for the given input, print "Try again".
 - c. If valid indices are given, swap the two values found at those indices.
 - d. Print the updated *my_list*.

Sample Input	Sample Output
3 1 3 2 5 5 6	5 30 5 10 25 10 10 5 30 10 10 25 5 10 5 30 10 10 25 10 5

2. **[5 marks]** Estimate the value of π using the setup below. You may use your offline assignment code and edit that necessarily for this problem.



- **Task a)** If we randomly sample a point from the inside of the rectangle, what is the probability that the point will be inside the semi-circle? Express this value in terms of π (π). [Find this analytically using pen and paper]
- **Task b)** Simulate sampling 1000 data points and use the probability equation found from **Task a** to estimate the value of π .
- **Task c)** Make a scatter plot with your sampled data points. Mark points inside the circle red and outside the circle green.