Assignment 8

Question 1

Write a class **Rectangle** to represent a rectangle with a given width, height and a center point. Represent the center using your **MyPoint** class from the previous assignment. Include methods in your class:

- **double getWidth()** – to **get** the width of the rectangle.
- **double getHeight()** – to **get** the height of the rectangle.
- **double getArea()** – to **compute** the area of the rectangle.

Write a **main** program that creates two distinct rectangles and prints their areas.

Question 2

Write a class **Square**, which inherits from class **Rectangle**, to represent a square with a given width and center point. Represent the center using your **MyPoint** class from the previous assignment. Class **Square** should have two constructors:

- A constructor to make a square with a given width, centered at a given point.
- A constructor with no arguments that makes the unit square – this constructor **must** call the first constructor.

Write a **main** program that creates the unit square, and prints its width and area by calling the **getWidth** and **getArea** methods. **Carefully explain in detail** how the unit square is constructed, and how the **getWidth** and **getArea** methods are called.

Question 3

Write a class called **GeometricCircle** to represent a circle **with a center**. The class must sub-class the class Circle that we developed in class and have appropriate constructors and methods. Represent the center using your **MyPoint** class from the previous assignment.

Question 4

Write a class called **GeometricEllipse** to represent an ellipse **with a center**. The class should sub-class appropriately and have appropriate constructors and methods. Represent the center using your **MyPoint** class from the previous assignment.