Java introduction to OOP

Programming assignment

1. Write a class called *Mathematic* with two class methods get*PI()* and get*E().* Methods *getPI()* and *getE()* should return final variable of named PI and E with value of 3.14 and 2.71 respectively. So You are able to call: *Mathematic.getPi();* and *Mathematic.getE();*

2. Write an abstract class *Figure* with an abstract method *getArea()* and using anonymous classes make an instance.

3. Write a class called *Circle* that inherits from class *Figure* and has instance variable *r*. The variable *r* should be initialised using constructor and should be read-only. Class *Circle* should implements abstract method getArea() from abstract class *Figure* (to calculate the area use class *Mathematic* form first assignment).

4. Write **sealed** class *Shape* that permits class *Square* and *Rectangle*. Class *Shape* should have field *position*. Implement **final** classes *Square* and *Rectangle* that extends class *Shape* and provide methods for getting position: *getSquarePosition()* and *getRectanglePosition().* Using switch and pattern matching write a function *getCentre(Shape s)* that will print the position of the shape based on the object type either for *Square* or *Rectangle*.

Each java classes should be in their own java file.