public class Main *{* public static void main*(*String*[]* args*) {* Circle2D c1 = new Circle2D*(*2, 2, 5.5*)*;  
 System.*out*.println*(*"the area of c1 = " + c1.getArea*())*;  
 System.*out*.println*(*"the premeter of c1 = " + c1.getPremeter*())*;  
 System.*out*.println*(*"c1 contains (3, 3)? answer is " + c1.contains*(*3, 3*))*;  
 System.*out*.println*(*"c1 contains (circle(4, 5, 10.5))? answer is " + c1.contains*(*new Circle2D*(*4, 5, 10.5*)))*;  
 System.*out*.println*(*"c1 overlaps (circle(3, 5, 2.3))? answer is " + c1.overLaps*(*new Circle2D*(*3, 5, 2.3*)))*;  
 *}  
}*class Circle2D *{* private double x;  
 private double y;  
 private double radius;  
  
 *// --------------- constructors ------------------* Circle2D*() {* this.x = 0;  
 this.y = 0;  
 this.radius = 1;  
 *}* Circle2D*(*double x, double y, double radius*) {* this.x = x;  
 this.y = y;  
 this.radius = radius;  
 *}  
  
 // ----------------- getters --------------------* public double getX*() {* return this.x;  
 *}* public double getY*() {* return this.y;  
 *}* public double getRadius*() {* return this.radius;  
 *}  
  
 // -------------- methods -------------------* public double getArea*() {* return *(*Math.*PI)* \* Math.*pow(*this.radius, 2*)*;  
 *}* public double getPremeter*() {* return 2 \* *(*Math.*PI)* \* this.radius;  
 *}  
  
 // circle equation  
 // (x-a)^2 + (y-b)^2 - r^2 = 0 .. if so (a, b) on the circle  
 // if res < 0 .. so (a, b) inside the circle  
 // if res > 0 .. so (a, b) outside the circle* public boolean contains*(*double a, double b*) {* return *(*Math.*pow(*this.x - a, 2*)* + Math.*pow(*this.y - b, 2*)* - Math.*pow(*this.radius, 2*)* < 0*)*;  
 *}* public boolean contains*(*Circle2D circle*) {  
 /\* the circle contain another circle  
 \* if the distance between its center and the other circle's center is less than  
 \* the main cirlce radius \*/* double distance = Math.*pow(*this.x - circle.getY*()*, 2*)* + Math.*pow(*this.y - circle.getY*()*, 2*)*;  
 return distance < this.radius;  
  
 *}* public boolean overLaps*(*Circle2D circle*) {* double distance = *(*Math.*pow(*this.x - circle.getY*()*, 2*)* + Math.*pow(*this.y - circle.getY*()*, 2*))*;  
 return distance < *(*this.radius + circle.getRadius*())* && distance > *(*this.radius - circle.getRadius*())*;  
 *}  
   
}*