

## CMSC131 Fall 2004 Quiz #4, Duration 20 Minutes

**First Name:**

**Last Name:**

**Student Id:**

**Section time (10am/11am):**

**TAs:**

### Problem Description

Write a complete Java class called **Circle**, which represents a mathematical circle. The class has only one private instance variable name **radius** which represents the radius of the circle. All the methods of the class are **non-static** except the method named **area**. The methods you must implement are:

1. **Default Constructor** – Initializes the radius to 1.0.
2. **Constructor** – Initializes the radius with the single parameter value (of type double).
3. **getRadius** – Returns the radius.
4. **increaseRadius** – Increases the radius by the single parameter value (of type double).
5. **toString** – Returns a string with the string “**Radius:** ” followed by the radius value.
6. **equals** – Boolean method that tests whether the current object has the same radius as another Circle, which is given as the single parameter.
7. **doubleRadius** – Returns a reference to a new Circle whose radius is twice the radius of the current object. The current object is not modified.
8. **area** – A static method that returns the area of the Circle given as the single parameter. The area of a circle is defined as ( $\pi * \text{radius} * \text{radius}$ ). You can use the Java constant `Math.PI` for the value of  $\pi$ .

### Restrictions/Assumptions

1. You don't need to use meaningful variable names; however you must use good indentation.
2. You don't need to provide comments.
3. You cannot add any other instance variables or methods.

**WRITE YOUR IMPLEMENTATION ON THE NEXT PAGE**



**WRITE YOUR IMPLEMENTATION HERE**