Non-Textbook Lab 6: Functions (50 points)

Objectives: practice with math, while-loops, sentinels, input validation, functions

Starting with the provided file **`circles.py`**, write a program that uses functions to compute the area and circumference of a circle of a user-specified radius.

The program consists of a **`main()`** function and two other functions, as follows:

`main()`: Asks the user for the radius of a circle (floating point number). If the user enters a radius of **zero**, the program prints "Goodbye!" and ends. If the user enters a **negative** radius, the program prints "Invalid radius!", and asks again for a radius, and keeps asking until the user enters zero or a positive number. If the user enters a positive number, the program calls the two other functions and prints: **A circle of radius R has circumference C and area A.** (where **R** is the radius number, **C** is the calculated circumference, and **A** is the calculated area.) After printing the circumference and area, the program asks again for a new radius. [20 pts]

`circumference(r):` Takes a radius **r** as a parameter and computes and returns the circumference of the circle, using the math formula **$2\pi r$** (Note: this function does not print anything.) [15 pts]

`area(r):` Takes a radius **r** as a parameter and computes and returns the area of the circle, using the math formula **πr^2** (Note: this function does not print anything.) [15 pts]

The provided starter program imports Python's **math** module, which provides an accurate value for **pi** in the pre-defined variable **`math.pi`**.

Submitting

Test and run the program in the terminal on your computer before submitting.

Submit **`circles.py`** and **`readme.txt`** to NT Lab 6 in Canvas.

Ask a TA, or Professor for help if you need it.