

PDS Lab - Section 9

Assignment 1

January 13th, 2020

1. Read four positive real numbers a , b , c and d from the user. If the user enters a negative number, the program should take its absolute value. If the user enters a zero, the program should quit.

Once the numbers have been entered, the program should compute their

- Arithmetic mean (AM)
- Geometric mean (GM)
- Harmonic mean (HM)
- Standard deviation (SD)

The program should output these in separate lines.

2. Read three integers a , b and c from the user in an increasing order, i.e. $a < b < c$. If the user doesn't follow this order, the program should quit.

Now let $f(x) = (x - a)(x - b)(x - c)$ be a polynomial function. Read a value z from the user. The program should then return to the user:

- The root of $f(x)$ that is nearest to z
- The point of extremum (maxima/minima) of $f(x)$ that is farthest from z

3. The defining equation for a circle is:

$$x^2 + y^2 + ax + by + c = 0$$

Input three real numbers a, b, c from the user. Then determine if these three numbers define a circle. If not, print a diagnostic message and quit. Otherwise determine (and print) the center and radius of the circle. Also input the coordinates x and y of a point. Print whether this new point lies on, inside or outside the circle.