HW: Quadratic Equation Solver

Points

Points		**Due**
10	Design	February 3, 2017
90	Runs correctly	February 8, 2017
100	**TOTAL**	

Submission

1. **Design**: Submit the PDF to eCampus.
2. **Source Code**: Submit the source code (.cpp file) to Vocareum

Specifications

Cannot use complex number class.

Design

1. Create the flowchart for the program. You may start with what we did in class, but you should update it to match the specifications of this assignment.
2. What variables and equations do you need? You might have to explore imaginary numbers and figure out what equations you will need for that. This website can help you visualize the problem and what the expected roots would look like. http://www.mathwarehouse.com/quadratic/quadratic-formula-calculator.php

Program

The requirements for our solver were updated. We now have to solve the linear solution that can result when a=0, and we have to output imaginary roots as well!

Requirements

- The program should give all roots including imaginary ones.
- If the coefficients constitute a linear equation you should calculate the single root.
- Input:
  - Three coefficients (a, b, and c respectively) on a single line separated by spaces.
- Output:
  - The equation being solved.
  - Roots.
    - Each root on a separate line.
    - If there is more than one root, then the one obtained by subtraction is first.
    - Roots should be reported as
      - x = <number>
      - x = <number> + <number>i
    - Note that there is a single space on either side of an '=', a '+' or a '-'.
  - If no valid solutions can be calculated, then output:

    Unable to determine root(s).

  - Note that endl puts a line return at the end. You should not put one after your last line of output.

Sample Runs

This is not complete testing!

- 3 4 -4

  3x^2 + 4x + -4 = 0

  x = -2

  x = 0.666667

- 3 4 4

  3x^2 + 4x + 4 = 0

  x = -0.666667 - 0.942809i

  x = -0.666667 + 0.942809i

- -7 9 -8

  -7x^2 + 9x + -8 = 0

  x = 0.642857 - -0.854161i

  x = 0.642857 + -0.854161i