Homework 2

Quadratic Equation Solver (Updated)

Program (60 points)

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!

You will need to refine the flowchart/design we did together to handle the new requirements and then implement the program.

Requirements

•The program should give all roots including imaginary ones. *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*

•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

Questions (20 points)

a.What is your updated design/flowchart? You can take a picture or scan and put in a document.