

Laboratory Exercise #1

Roots of a Quadratic Equation

Consider the quadratic equation:

$$A * x^{**2} + B * x + C = 0$$

where x is the unknown and A , B and C are constants (with A not equal to 0). A quadratic equation has two solutions (called roots), which may not be distinct values and which may not be real values.

The two roots of a quadratic equation may be calculated using the quadratic formula. See the brief article at Wolfram MathWorld if you don't recall the formula:

<http://mathworld.wolfram.com/QuadraticFormula.html>

Develop a program to compute the two roots of a quadratic equation.

1. Copy the file named “lab01.py” into your account.
2. Modify that program to compute the two roots of a quadratic equation, as described in the program comments. Note that the program does not perform any error checking, so the results displayed by the program may not be correct in all cases. For example, when A is zero, the equation is not quadratic (e.g. if you get a `ValueError: math domain error`, you have tried to take the square root of a negative value.)
3. Test your completed program using the following values:

Test1: $A = 1, B = 0, C = -4$

Root #1 = _____ (should be 2.0)

Root #2 = _____ (should be -2.0)

Test2: $A = 1, B = 5, C = -36$

Root #1 = _____

Root #2 = _____

Test3: $A = 2, B = 7.5, C = 6$

Root #1 = _____

Root #2 = _____

Test4: A = 0, B = 3.5, C = 8 # this test case fails and generates an error (why?):
ZeroDivisionError: float division by zero
There is no Mimir test for this case.

Root #1 = _____

Root #2 = _____

Test5: A = 5, B = 0, C = 6.5 # this test case fails and generates an error (why?):
ValueError: math domain error
There is no Mimir test for this case.

Root #1 = _____

Root #2 = _____