Task 1:

|  |  |  |  |
| --- | --- | --- | --- |
| Purpose of the test | Input (enter a number) | Expected Output | Actual Output |
| Square root of a positive square root number | 9 | 3 | 3.00002 |
| Square root of a negative square root number | -4 | -2 | -2 |
| Square root of zero | 0 | 0 | -nan<ind> |
| Square root of a non-positive square root number | 10 | 3.16228 | 3.16228 |

#include <iostream>

using namespace std;

double squareRoot(double x);

double fabs(double x) {

if (x > 0) return x;

return -x;

}

int main() {

double sqrtNum;

double num;

cout << "Enter a Number: ";

cin >> num;

if (num < 0) {

sqrtNum = squareRoot(-num);

cout << -sqrtNum << endl;

}

else {

sqrtNum = squareRoot(num);

cout << sqrtNum << endl;

}

return 0;

}

double squareRoot(double x)

{

/\*

pre: X is greater than or equal to zero

post: returns the square root of X

\*/

double x1, diff=100000;

x1 = x / 2;

do {

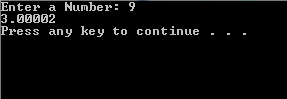
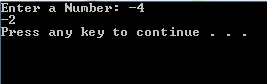
x1 = (x1 + (x / x1)) / 2;

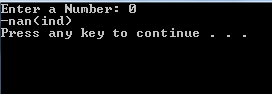
diff = (x1\*x1) - x;

} while (fabs(diff) > 0.0001);

return x1;

}





Task 2:

#include <iostream>

#include <iomanip>

#include <cmath>

using namespace std;

double quad(double a, double b, double c);

int main() {

double num1, num2, num3;

double value;

cout << "Enter 3 integers: ";

cin >> num1 >> num2 >> num3;

if (num1 == 0) {

cout << "Invalid quadratic equation";

}

else {

value = quad(num1, num2, num3);

cout << "The largest quadractic value among " << num1

<< ", " << num2 << ", and " << num3 << " is "

<< value << endl;

}

return 0;

}

double quad(double a, double b, double c) {

/\*

pre : Function to compute the quadratic equation

post: Returns the largest of the roots of the quadratic equation

\*/

double x1, x2;

x1 = (-b - sqrt((b\*b) - (4 \* a \* c))) / (2 \*(a));

x2 = (-b + sqrt((b\*b) - (4 \* a \* c))) / (2\* (a));

if (x1 > x2) {

return x1;

}

else {

return x2;

}

}

|  |  |  |  |
| --- | --- | --- | --- |
| Purpose of the test | Input (enter a number) | Expected Output | Actual Output |
| Imaginary Number | 50 50 50 | Negative infinity | -nan<ind> |
| Not a Quadratic Equation | 0 50 50 | Invalid quadratic equation | Invalid quadratic equation |
| Equal Roots | 50 100 50 | -1 | -1 |
| Real Roots | 1 50 50 | -1.02084 | -1.02084 |