

```

#include <iostream>
using namespace std;

unsigned int Solve(double a, double b, double c, double& r1, double& r2)
{
    unsigned int retVal = 0;
    if (0 == a) {
        if (0 == b) {
            if (0 == c) { // Infinite solutions
                retVal = 5;
            } else { // Inconsistent equation
                retVal = 0;
            }
        } else { // Linear equation
            retVal = 1;
            r1 = -c/b;
        }
    } else {
        double disc = b*b - 4*a*c;
        if (0 == disc) { // Repeated roots
            retVal = 2;
            r1 = r2 = -b/(2*a);
        } else {
            if (disc > 0) { // Real distinct roots
                retVal = 3;
                r1 = (-b + sqrt(disc))/(2*a);
                r2 = (-b - sqrt(disc))/(2*a);
            } else { // Complex conjugate roots
                retVal = 4;
                // ...
            }
        }
    }
    return retVal;
}

```

Test Cases:

a	b	c	Case
0	0	0	Infinite roots
0	0	2	No root
0	2	-4	Single root
4	4	1	Repeated roots
1	-5	6	Distinct roots
2	3	4	Complex roots

```

int main()
{
    double a, b, c;
    double r1, r2;
    unsigned int retVal = 0;
    unsigned int moreInputs = 0;

    do {
        cout << "Input coefficients: a, b and c" << endl;
        cin >> a >> b >> c;
        cout << endl;

        switch (retVal = Solve(a, b, c, r1, r2)) {
            case 0: cout << "No root" << endl; break;
            case 1: cout << "Linear Eqn: r1 = " << r1 << endl; break;
            case 2: cout << "Repeated real roots: r1 = " << r1 << " r2 = " << r2 << endl; break;
            case 3: cout << "Distinct real roots: r1 = " << r1 << " r2 = " << r2 << endl; break;
            case 4: cout << "Complex conjugate roots" << endl; break;
            case 5: cout << "Infinite roots" << endl; break;
            default: cout << "Something wrong" << endl; break;
        }

        cout << "Continue Solving? Input 1" << endl;
        cin >> moreInputs;

    } while (1 == moreInputs);

    return 0;
}

```