

### C++11 code 3.3.3: Sub-problem (3-3.e): Implementation of `solveQuadraticEquation()`

→ [GitLab](#)

```
2 std::pair<double, double> solveQuadraticEquation(double a, double b, double c) {
3     // Implement the cases which are solvable and return their solutions
4     if (a != 0.) {
5         b /= a;
6         c /= a;
7         const double D = b * b - 4 * c; // discriminant
8         if (D >= 0) { // real solutions
9             const double rtD = std::sqrt(D);
10            // Real solutions, cancellation-free formulas !
11            if (b < 0) {
12                const double root = 0.5 * (-b + rtD);
13                return {root, c / root};
14            } // b >= 0
15            const double root = 0.5 * (-b - rtD);
16            return {root, c / root};
17        }
18    } else {
19        if (b != 0.0) {
20            return {-c / b, -c / b};
21        }
22    }
23    // Return NAN if there are no (real) roots
24    return {NAN, NAN};
25 }
```