Practice 1：Quadratic Equation

1 Write a Java program to input double type numbers a, b, c, r1, and r2, where a, b, and c are the coefficients of quadratic equation$aX^2+bX+c=0$. Test whether r1 and r2 are the roots of the quadratic equation.
If both r1 and r2 are the roots, print a message to confirm the roots.

2 Write a Java program to input **double** type numbers a, b, and c, where a, b, and c are the coefficients of quadratic equation $aX^2+bX+c=0$.
The solution of quadratic equation is:

$$\frac{-b \pm \sqrt{b^2-4ac}}{2a}$$

Solve and output the quadratic equation and produce the real roots or complex roots. Also, judge if the solution is a pair of real roots, a pair of complex roots, or multiple real roots.

Practice 2：Wish Tea

- Create a class named **WishTea** that stores information about a single fruit tea. It should contain the following:
  1. Private instance variables to store the variety of fruit tea name, the size of the fruit tea (either small, medium, or large), the ice level (either no ice, a little, or regular), and with topping (such as bubble) or not.
  2. Constructor(s) that set all of the instance variables.
  3. Public methods to get and set the instance variables.
  4. A public method named calcCost( ) that returns a double that is the cost of the fruit tea. For example:
     - ✓ The signature fruit tea cost is determined by:
       - Small: $60, Medium: $80, Large: $90, + $5 per topping
     - ✓ The bubble milk tea cost is determined by:
       - Small: $40, Medium: $50, Large: $60, + $10 per topping
  5. A public method named getDescription( ) that returns a String containing the fruit tea size, with topping or not, and the fruit tea cost as calculated by calcCost( ).
- Write a program to let users order several fruit teas and output their descriptions and total cost (include 5% tax).

Practice 3：Rational Number

- A rational number p/q consists of two relatively prime integers p and q, where p is the numerator, q is the denominator, and q cannot be zero. If q is 0, the rational number p/0 is set to the value 0/1 a rational number of value 0. Write a Java program that **defines and implements a rational number class.** The class of rational numbers has three constructors:
  - Default constructor, constructs the rational number 0/1,
  - Constructor of an integer parameter p, constructing the rational number p/1, and
  - Constructor for two integer parameters p and q, constructs a rational number p/q.

  Arithmetic operations of rational numbers:
  - Addition: a/b＋c/d = (ad＋bc)/bd,
  - Subtraction: a/b－c/d = (ad－bc)/bd,
  - Multiplication: a/b×c/d = ac/bd,
  - Division: a/b÷c/d = ad/bc,
  - Absolute value: |a/b| = |a|/|b|.

  Supporting methods:
  - Get numerator: int getNume();
  - Get denominator: int getDeno();
  - Set numerator: void setNume(int);
  - Set denominator: void setDeno(int);
  - Print rational number: void printRational();

  If rational number p/q that p and q are not co-prime, simplify p/q by dividing p and q by their **greatest common divisor (GCD)** If p/q is a negative rational number, simplify the rational number to p<0 and q>0.

  In the application class, get the five rational numbers a, b, c, d, and e, and print them in the main program. Calculate and output the following arithmetic expressions:

  1 a + b,
  2 c - d,
  3 a × b,
  4 c ÷ d,
  5 |e|,
  6 (a × |d - b|) - (b + (c ÷ a)) × |(b × e) - (c ÷ d)|.