**Pseudocode to compute the roots of a quadratic equation.**

**INPUT: the coefficients a, b, and c of the quadratic equation ax^2 + bx + c = 0**

**OUTPUT: the two roots of the equation, x1 and x2 (if they exist)**

**COMPUTE the discriminant of the quadratic equation**

**d = b^2 - 4\*a\*c**

**Check if the discriminant is negative, in which case there are no real roots**

**IF delta < 0:**

**PRINT("There are no real roots.")**

**ELSE:**

**Compute the two roots of the quadratic equation**

**x1 = (-b + sqrt(d)) / (2\*a)**

**x2 = (-b - sqrt(d)) / (2\*a)**

**OUTPUT the roots of the quadratic equation**

**PRINT("The roots are:", x1, "and", x2)**

**Pseudocode to compute the roots of a cubic equation.**

**INPUTS: the coefficients a, b, c, and d of the cubic equation ax^3 + bx^2 + cx + d = 0**

**OUTPUTS: the three roots of the equation, x1, x2, and x3 (if they exist)**

**COMPUTE the discriminant of the cubic equation**

**d = 18\*a\*b\*c\*d - 4\*b^3\*d + b^2\*c^2 - 4\*a\*c^3 - 27\*a^2\*d^2**

**COMPUTE the coefficients of the depressed cubic equation**

**p = (3\*a\*c - b^2) / (3\*a^2)**

**q = (2\*b^3 - 9\*a\*b\*c + 27\*a^2\*d) / (27\*a^3)**

**COMPUTE the discriminant of the depressed cubic equation**

**d\_0 = q^2 / 4 + p^3 / 27**

**IF d > 0:**

**Case 1: The cubic equation has three real roots**

**if d\_0 < 0:**

**u = cbrt((-q + sqrt(d\_0)) / 2)**

**v = cbrt((-q - sqrt(d\_0)) / 2)**

**x1 = u + v - b / (3\*a)**

**x2 = -(u + v) / 2 - b / (3\*a) + (u - v) \* sqrt(3) / 2**

**x3 = -(u + v) / 2 - b / (3\*a) - (u - v) \* sqrt(3) / 2**

**Case 2: The cubic equation has one real root and a pair of complex conjugate roots**

**else:**

**u = cbrt(-q / 2 + sqrt(d\_0))**

**v = cbrt(-q / 2 - sqrt(d\_0))**

**x1 = u + v - b / (3\*a)**

**x2\_real = -(u + v) / 2 - b / (3\*a)**

**x2\_imag = (u - v) \* sqrt(3) / 2**

**x3\_real = x2\_real**

**x3\_imag = -x2\_imag**

**Case 3: The cubic equation has three real roots, at least two of which are equal**

**ELSE IF d == 0:**

**if q >= 0:**

**x1 = -2\*cbrt(q) - b / (3\*a)**

**x2 = cbrt(q) - b / (3\*a)**

**x3 = x2**

**else:**

**x1 = cbrt(-q) - b / (3\*a)**

**x2 = x3 = -cbrt(-q) - b / (3\*a)**

**Case 4: The cubic equation has three real roots, all of which are equal**

**else:**

**x1 = x2 = x3 = -b / (3\*a)**

**OUTPUT the roots of the cubic equation**

**PRINT("The roots are:", x1, ",", x2, ", and", x3)**