**Algorithm for finding roots of a Quadratic Equation:**

1. **Input:** Coefficients A, B, and C of the quadratic equation.
2. **Calculate Discriminant:** Calculate the discriminant D = B^2 - 4AC.
3. **Check Discriminant:**
   * If D > 0, there are two real roots.
   * If D = 0, there is one real root (a double root).
   * If D < 0, there are two complex roots.
4. **Calculate Roots:**
   * If D > 0:
     + Root 1 = (-B + sqrt(D)) / (2A)
     + Root 2 = (-B - sqrt(D)) / (2A)
   * If D = 0:
     + Root 1 = Root 2 = -B / (2A)
   * If D < 0:
     + Real part = -B / (2A)
     + Imaginary part = sqrt(abs(D)) / (2A)
     + Roots are complex conjugates: Root 1 = Real part + Imaginary part \* i and Root 2 = Real part - Imaginary part \* i.
5. **Output:** The roots of the quadratic equation.

**Algorithm for finding roots of a Cubic Equation:**

1. **Input:** Coefficients A, B, C, and D of the cubic equation.
2. **Calculate Discriminant of Cubic Polynomial:**
   * Calculate the discriminant D0 = B^2 - 3AC.
3. **Check Discriminant:**
   * If D0 > 0, there's one real root and two complex roots.
   * If D0 = 0, there's one real root and two roots that are the same.
   * If D0 < 0, all roots are real and distinct.
4. **Calculate Roots:**
   * If D0 > 0:
     + Calculate p = (3AC - B^2) / (3A^2).
     + Calculate q = (2B^3 - 9ABC + 27A^2D) / (27A^3).
     + Calculate the discriminant of the quadratic equation, D1 = (q/2)^2 + (p/3)^3.
     + If D1 ≥ 0:
       - Calculate u = cbrt(-q/2 + sqrt(D1)).
       - Calculate v = cbrt(-q/2 - sqrt(D1)).
       - Calculate the real root, Root 1 = u + v - B / (3A).
       - Calculate the complex roots, Root 2 = -(u + v) / 2 - B / (3A) + (u - v) \* sqrt(3) \* i / 2 and Root 3 = -(u + v) / 2 - B / (3A) - (u - v) \* sqrt(3) \* i / 2.
     + If D1 < 0:
       - Calculate the real root using trigonometric functions.
       - Calculate the complex roots using trigonometric functions.
   * If D0 = 0:
     + Calculate the real root using a simplified formula.
     + Calculate the equal roots using a simplified formula.
   * If D0 < 0:
     + Calculate the real roots using a differ
     + rent formula.
5. **Output:** The roots of the cubic equation.

**Algorithm for finding roots of a Quartic Equation:**

1. **Input:** Coefficients A, B, C, D, and E of the quartic equation.
2. **Reduce to a Depressed Quartic Equation:**
   * Calculate the coefficients of the depressed quartic equation by shifting the variable x to eliminate the cubic term.
3. **Calculate the Discriminant:**
   * Calculate the discriminant Δ0 = B^2 - 4AC.
4. **Check Discriminant:**
   * If Δ0 > 0, then there are two real and two complex roots.
   * If Δ0 = 0, then there are four real roots, with two being equal.
   * If Δ0 < 0, then there are four real and distinct roots.
5. **Calculate Roots:**
   * If Δ0 > 0:
     + Use a method like Ferrari's method or solve as a system of two quadratic equations to find the roots.
   * If Δ0 = 0:
     + Use a simpler approach to find the roots, considering the two equal roots.
   * If Δ0 < 0:
     + Use formulas for finding the real roots and the complex roots separately.
6. **Output:** The roots of the quartic equation.