# Algebraic Methods Glossary

| Term | Definition |
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| Factorisation | The process of expressing a polynomial as a product of smaller polynomials. |
| Quadratic Equation | An equation of the form ax^2 + bx + c = 0, where a, b, and c are constants. |
| Discriminant | The expression b^2 - 4ac, which determines the nature of the solutions to a quadratic equation. |
| Logarithm | The inverse function of exponentiation, used to solve exponential equations. |
| Parabola | A curve defined by the equation y = ax^2 + bx + c, where a, b, and c are constants. |
| Roots | The solutions to an equation, where the equation is set equal to zero. |
| Indices | The exponents or powers used in expressions. |
| Simplification | The process of reducing an expression to its most basic form. |
| Expansion | The process of multiplying out a product of factors. |
| Rearrangement | The process of solving for a specific variable in an equation. |
| Graphical Interpretation | Understanding the meaning of a solution in the context of a graph. |
| **Logarithm Rules** | |
| log(x) + log(y) = log(xy) | The sum of the logs of two numbers is the log of their product. |
| log(x) - log(y) = log(x/y) | The difference of the logs of two numbers is the log of their quotient. |
| log(x^n) = n log(x) | The log of a number raised to a power is the power times the log of the number. |

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| **Discriminant** | |
| Δ = b^2 - 4ac | The expression that determines the nature of the solutions to a quadratic equation ax^2 + bx + c = 0. |
| Δ > 0 | Two real, distinct solutions |
| Δ = 0 | One real, repeated solution |
| Δ < 0 | No real solutions |
| **Quadratic Formula** | |
| x = (-b ± √(b^2 - 4ac)) / (2a) | The formula used to solve a quadratic equation ax^2 + bx + c = 0 in terms of the coefficients a, b, and c. |
| **Perfect Square Form** | |
| f(x) = (x + a)^2 + b | The form of a quadratic function that reveals the vertex. |