# The Big 50 Revision Guidelines for C1

**If you can understand all of these you'll do very well…**

1. Know the Laws of Indices, including the handling of negative and fractional powers, and powers of powers
2. Know how to manipulate surds with multiplying and dividing, for example knowing how to write the square root of 60 in terms of the roots of 3 and 5
3. Know how to rationalise surd denominators using the technique of The Difference of Two Squares
4. Know how to write the equation of a straight line in various forms
5. Know what is meant by parallel and perpendicular gradients
6. Know how to find the equation of a line given two points
7. Know how to find the equation of a line given one point and the gradient
8. Know how to find the equation of a line given one point and a parallel line
9. Know how to find the equation of a line given one point and a perpendicular line
10. Know how to use f(x) notation for polynomials

11. Understand the geometrical interpretation of algebraic solutions of equations
12. Know how to solve Quadratic equations using a variety of techniques
13. Understand and use the technique of completing the square
14. Know how to find the discriminant of a quadratic, and how to use it to classify the quadratic into one of three types.
15. Know how to sketch quadratic graphs
16. Know how to solve simultaneous equations where both are linear
17. Know how to solve simultaneous equations where one is linear and one is quadratic
18. Know how to solve Linear inequalities
19. Know how to solve Quadratic inequalities
20. Know what is meant by a Sequence
21. Know what is special about an Arithmetic sequence
22. Know how to write the nth term of any given arithmetic sequence e.g. 4, 7, 10, 13, 16, 19
23. Know how to write the nth term of the general arithmetic sequence
24. Know what n, a, d and l represent in the context of sequences and series

25. Know the proof of the sum formula Sn for any n, a, d and l
26. Know what is meant by a Series
27. Be able to understand and use Sigma notation
28. Know what is meant by a Recurrence Relation where each new term of a sequence depends on one or more previous terms
29. Know the shape of the reciprocal function
30. Know the shape of the cubic equation
31. Know what an asymptote is
32. Know the technique of Curve Sketching based on asymptotes, x,y intercepts and behaviour towards infinity
33. Understand and use Transformations of functions using f(x±a)
34. Understand and use Transformation of functions using f(x)±a
35. Understand and use Transformation of functions using f(±ax)
36. Understand and use Transformation of functions using ±af(x)
37. Know what is meant by a Tangent to a curve at any point
38. Understand the difference between Tangents and normals
39. Know that the gradient of the tangent at any point x on y=f(x) is defined as the Gradient Function f'(x)

40. Know how to find the derivative f'(x) for any polynomial function y=f(x)

41. Understand the idea of f'(x) representing the Rate of Change of f(x)

42. Know what is meant by Local Minimum and Local Maximum of y=f(x)

43. Know how to find the Second derivative of any polynomial function

44. Know how to use the Second Derivative to distinguish between Minimum and Maximum turning points on a graph

45. Know how to apply techniques of differentiation to problems involving gradients, tangents and normals to a curve

46. Understand Indefinite Integration as the reverse of differentiation

47. Know how to integrate any polynomial function involving x^n for any power n except n = -1

48. Know why it is necessary to have a "constant of integration"

49. Know how to calculate and interpret a Definite Integral

50. Given a point on a curve and the derivative function f'(x), know how to find the equation of the curve in the form y=f(x)