

Senior Mathematics - Level 3 Calculus – Differentiation Essential Skills

CONTENT

A1. Differentiation of Polynomials. $(ax^n)' = anx^{n-1}$	5, 6
A2. Differentiation of Polynomials Term by Term	7, 8
A3. Differentiation of Composite Functions. The Chain Rule	9, 10
A4. Differentiation of Exponential Functions	11, 12
A5. Differentiation of Logarithm Functions	13, 14
A6. Differentiation of $\sin[f(x)]$ and $\cos[f(x)]$	15, 16
A7. Differentiation of $\tan[f(x)]$ and $\cot[f(x)]$	17, 18
A8. Differentiation of $\sec[f(x)]$ and $\operatorname{cosec}[f(x)]$	19, 20
A9. The Product Rule. Worksheet 1	21, 22
A10. The Product Rule. Worksheet 2	23, 24
A11. The Product Rule. Worksheet 3	25, 26
A12. The Product Rule. Worksheet 4	27, 28
A13. The Quotient Rule. Worksheet 1	29, 30
A14. The Quotient Rule. Worksheet 2	31, 32
A15. The Quotient Rule. Worksheet 3	33, 34
A16. The Quotient Rule. Worksheet 4	35, 36
A17. Differentiation of Parametric Functions. Worksheet 1	37, 38
A18. Differentiation of Parametric Functions. Worksheet 2	39, 40
A19. Finding the Gradient of the Tangent to the Curve at the Specified Point	41, 42
A20. Finding the Gradient of the Normal to the Curve at the Specified Point	43, 44
A21. Finding the Co-ordinate(s) from the Given Gradient	45, 46
A22. Stationary Points	47, 48
A23. Rate of Change	49, 50
A24. Second Derivative	51, 52
M25. Second Derivative of a Parametric Function	53, 54
M26. Finding the Equation of the Tangent to the Curve. Worksheet 1	55, 56
M27. Finding the Equation of the Tangent to the Curve. Worksheet 2	57, 58
M28. Finding the Equation of the Normal to the Curve	59, 60

M/E29. The Nature of Stationary Points. Worksheet 1	61, 62
M/E30. The Nature of Stationary Points. Worksheet 2	63, 64
M/E31. Harder Problems Involving the Rate of Change 1	65, 66
M/E32. Harder Problems Involving the Rate of Change 2	67, 68
M/E33. Optimisation. Worksheet 1	69, 70
M/E34. Optimisation. Worksheet 2	71, 72
M/E35. Optimisation. Worksheet 3	73, 74
M/E36. Optimisation. Worksheet 4	75, 76
M/E37. Optimisation. Worksheet 5	77, 78
M/E38. Optimisation. Worksheet 6	79, 80
M/E39. Optimisation. Worksheet 7	81, 82
M/E40. Optimisation. Worksheet 8	83, 84
M/E41. Optimisation. Worksheet 9	85, 86