

7 Appendix

7.1 Topics and their Booklets

Topic	Booklets	Videos	Tests
Basic Techniques			1
	Algebraic Manipulation	6	4
	Understanding Powers	1	2
	Understanding Logarithms	4	4
	Solving Elementary Equations	9	3
	Solving Elementary Inequalities	3	3
Basic Functions			1
	Functions: Domains and Ranges	7	2
	Basic Trigonometry	5	3
	Absolute Value Function	2	2
	Limits and Continuous Functions	4	3
	Sequences and Series		3
	Exponential, Logarithm Functions		2
Basic Differentiation			1
	Basic Differentiation	8	4
	Increasing and Decreasing Functions		2
	Tangents and Approximations	5	3
Basic Integration			1
	Basic Integration	5	2
Further Functions			1
	Inverse Functions	1	2
Further Differentiation			1
	The Chain Rule	5	3
	Implicit Differentiation	3	2
	Deriving Inverse Functions	3	2
	Higher Derivatives	1	3
Applications of Differentiation			1
	Stationary Points	5	3
	Taylor Polynomials and Power Series	8	3
Further Integration			1
	Integration by Parts	4	2
	Integration by Substitution	6	2
	Integration and Partial Fractions	5	3
Definite Integration			1
	Definite Integration 1	8	2

7.2 Booklets and their Videos

Booklets	Videos
Algebraic Manipulation	
	Expanding Three Brackets Combining Algebraic Fractions Expand the difference of two squares Factorize a Quadratic by Completing the Square Factorize a Quadratic Finding the Roots of a Cubic
Understanding Powers	
	Simplifying Powers
Understanding Logarithms	
	Simplifying a sum of logarithms Solving an equation using logarithms Solving an equation involving exponentials Graphing a function by taking logarithms
Solving Elementary Equations	
	Changing the subject of an equation 1 Changing the subject of an equation 2 Solving a linear equation Solving a pair of linear equations Solving a quadratic equation by completing the square Finding the roots of a cubic equation Solving a rational equation Solving an equation using graphs Solving an equation using logarithms
Solving Elementary Inequalities	
	Solving a linear inequality Solving a quadratic inequality Finding all x such that $1/(1 + 2x) > 1$
Functions: Domains and Ranges	
	Domain of Square Root of linear function Domain of Square Root of Quadratic function 1 Domain of reciprocal of quadratic Range of Square root of linear function Range of Quadratic 1 Range of Quadratic 2 Range of reciprocal of linear function

Booklets	Videos
Basic Trigonometry	
	Graphs of periodic functions Graph of $\tan(x)$ Sketching the graph of $\sin(2x)$ and $\sin(3x)$ Using Pythagoras' Theorem in a Triangle Expanding $\cos(6x)$ in powers of $\cos(x)$
Absolute Value Function	
	Solve for x the inequalities $1 < x - 1 < 3$ Sketch a function defined in terms of the absolute value
Limits and Continuous Functions	
	Limit of continuous function Limit of $0/0$ case (1) Limit of $0/0$ case (2) Limit of $\sin(3x)/\tan(x)$ as x tends to 0
Sequences and Series	No Videos
Exponential, Logarithm Functions	No Videos
Basic Differentiation	
	Derive powers of x from first principles Derive powers of x from first principles(contd.) Derive combinations of standard functions Product Rule Example 1 Product Rule Example 2 Product Rule Example 3 Differentiate the product of three functions Quotient Rule 1
Increasing and Decreasing Functions	No Videos
Tangents and Approximations	
	Finding the equation of a tangent to a graph Approximate square root of 1.1 Approximate cube root of 26 Approximate $\ln(0.95)$ Approximate $\sin(3\pi/10)$
Basic Integration	
	Two indefinite integrals Indefinite integral of $f'(x)/f(x)$ Indefinite integral of $f'(ax + b)$ Indefinite integral of $f'(x)g(f(x))$ Indefinite integral of $(ax + b)/(cx + d)^n$
Inverse Functions	
	Finding the inverse function of $f(x) = 2 - 1/x$

Booklets	Videos
The Chain Rule	
	Chain Rule 1 Chain Rule 2 Chain Rule 3 Chain Rule 4 Chain Rule 5
Implicit Differentiation	
	Implicit Differentiation 1 Implicit Differentiation 2 Implicit Differentiation 3
Deriving Inverse Functions	
	Differentiate log of a quadratic Differentiate log of a sin(quadratic) Differentiate arctan of a function
Higher Derivatives	
	First and second derivatives of two functions
Stationary Points	
	Stationary Points 1 Stationary Points 2 Stationary Points 3 Finding the maximum of a function Finding the minimum of a function
Taylor Polynomials, Power Series	
	First 3 terms in expansion of $\sin(2x)$ First 3 terms in expansion of $\ln(1 - x/2)$ First 3 terms in expansion of $1/(2 - 3x)$ First 3 terms in expansion of $\sqrt{3 + 2x}$ First 3 terms in expansion of $\sqrt{1 - x}/(1 + x)$ First 4 terms in expansion of $\sqrt{2 - 3x}$ Taylor expansion about $x = -1$ of cube root of $6 + 4x$ Finding a limit using power series expansion
Integration by Parts	
	Indefinite integration by parts 1 Indefinite integration by parts 2 Indefinite integration by parts of $x \arctan(x)$ Integrating by parts twice

Booklets	Videos
Integration by Substitution	
	Indefinite integral of $f'(ax + b)$ Indefinite integral - substitution and by parts Indefinite integral - a trig identity, substitution Indefinite integral of a trigonometric power Indefinite integral of linear over quadratic Indefinite integral of a cubic over a quadratic
Integration and Partial Fractions	
	Indefinite integral using partial fractions Partial Fractions Example 1 Partial Fractions Example 2 Integral using Partial fractions example 1 Integral using Partial fractions example 2
Definite Integration 1	
	Three definite integrals Finding area under a curve Finding area between curves Definite integral of $f'(x)g(f(x))$ Definite integral using a trig substitution Definite integral -integrating by parts twice Definite integral using partial fractions Definite integral of a cubic over a quadratic