Table of Contents

TOPIC 1: Algebra	
Linear Functions	1
Simultaneous Equations	1
Discriminant	1
Factorising Quadratics	1
Remainder / Factor Theorem	1
Perfect Cubes	2
Change of Base Rule	2
Index Laws	2
Log Laws	2
Exponential Equations in Quadratic Form Trig Exact Values	2
Trig Identities	2
Trig Symmetry Properties	3
Complementary Angles	3
Negative Angles	3
General Solutions	3
TOPIC 2: Functions and Graphs	
TOFIC 2. I directions and Graphis	
Quadratics or Parabolas	4
Cubic Graphs	4
Quartic Graphs	5
Square Root Graphs	5
Hyperbola Graphs	6
Truncus Graphs	6 6
Cube Root Graphs Power Functions	7
Log Graphs	7
Exponential Graphs	7
Sine and Cosine Graphs	8
Finding Equation of Trig Graphs	8
Tangent Graphs	9
Hybrid or Piecewise Functions	9
Sums and Products of Functions	10
Composite Functions	10
Functional Equations	10
Inverse Functions	11
Transformations Function Notation	12
Transformation Using Matrices	13

Table of Contents

TOPIC 3: Differentiation	
Average Rate	14
Instantaneous Rate	14
The Gradient	15
The Derivative of x^n	15
The Derivative of e^x	15
The Derivative of $log_e(x)$	15
The Derivative of $sin(x)$	15
The Derivative of $cos(x)$	15
The Derivative of $tan(x)$	16
The Chain Rule	16
The Product Rule	17
The Quotient Rule	17
Conditions of Differentiability	17
Graph of The Derivative Function	18
Sign of the Derivative	19
Increasing and Decreasing Functions	19
Tangents and Normals	20
Stationary Points	21
Local an Absolute Maxima and Minima	21
Maximum Minimum Problems When Function is Known	22
Maximum Minimum Problems When Function is Unknown	22
TOPIC 4: Integration	
Indefinite Integrals	23
Properties of Integrals	24
Rules for Anti-Differentiation	24
Fundamental Theorem of Calculus	24
Properties of Definite Integrals	24
Integration By Recognition	25
Approximating Areas	25
Area Under a Curve	26
Area Between Curves	27
Average Value	28

Table of Contents

TOPIC 5: Probability	
Venn Diagram Shading	28
Additional Rule	29
Conditional Probability	29
Mutually Exclusive	29
Independent Events	29
Discrete Random Variables	30
Measure of Centre and Spread	30
Linear Properties	30
Binomial Distribution	30
Binomial Distribution Formulas	31
Finding the Sample Size	31
Graphs of Binomial Distributions	31
Probability Density Functions	32
Median and Mode	32
Measures of Spread	33
Normal Distribution	33
Effect of μ and σ on the Normal Graph	34
68 – 95 – 99.7% Rule	34
Symmetry Properties	35
The Standard Normal Distribution	35
The Inverse Normal Distribution	35
Finding the Mean or Standard Deviation	36
Percentile and Quantiles	36
TOPIC 6: Statistics	
Statistics and Parameters	36
Sample Size	36
Sampling Distribution	37
Sample Proportion \widehat{p}	37
Confidence Intervals	38
Margin of Error	38