

**Varsity College**  
**Year 11 Mathematical Methods 2024**

**Term 1**

Week	Date	Topics	Assessment
1	22-26 January O-Week Australia Day PH Fri	O Week	
2	29 Jan-2 Feb	<b>Unit 1 Topic 3: Counting and probability</b> Language of events and sets <ul style="list-style-type: none"> <li>Assumed knowledge <b>Ch. 10A, 10B, 10C, 10D</b></li> </ul> Review of the fundamentals of probability <ul style="list-style-type: none"> <li>The addition rule <b>Ch. 10E</b></li> <li>Probability tables <b>Ch. 10F</b></li> </ul> Conditional probability and independence <ul style="list-style-type: none"> <li>Conditional probability <b>Ch. 10G</b></li> <li>Independent events <b>Ch. 10H, 11A</b></li> </ul>	
3	5-9 February Swimming Carnival - Thurs	<b>Unit 1 Topic 3: Counting and probability cont.</b> Binomial expansion <ul style="list-style-type: none"> <li>Arrangements <b>Ch. 11B</b></li> <li>Selections <b>Ch. 11C</b></li> <li>Application to probability <b>Ch. 11D</b></li> <li>Pascal's triangle and the binomial theorem <b>Ch. 11E</b></li> </ul>	
4	12-16 February	<b>Unit 1 Topic 4: Exponential Functions 1</b> Indices and the index laws <ul style="list-style-type: none"> <li>The index laws <b>Ch. 13A, Ch. 13B</b></li> </ul> <b>Unit 1 Topic 2: Functions and Graphs</b> Review of quadratic relationships: <ul style="list-style-type: none"> <li>Graphing quadratics <b>Ch. 3D</b></li> </ul>	
5	19-23 February	<ul style="list-style-type: none"> <li>Completing the square and turning points <b>Ch. 3E</b></li> <li>Graphing in polynomial form <b>Ch. 3F</b></li> <li>The discriminant <b>Ch. 3I</b></li> <li>Families of quadratic polynomial functions <b>Ch. 3K</b></li> </ul>	
6	26 Feb-1 Mar GC24 - Wednesday	<ul style="list-style-type: none"> <li>Quadratic models <b>Ch. 3L</b></li> </ul> Powers and polynomials <ul style="list-style-type: none"> <li>Division of polynomials <b>Ch. 8B</b></li> <li>Factorisation of polynomials <b>Ch. 8C</b></li> </ul>	
7	4-8 March	<ul style="list-style-type: none"> <li>Solving cubic equations <b>Ch. 8D</b></li> <li>Graphs and families of cubic functions <b>Ch. 8E, 8F, 8G</b></li> </ul>	
8	11-15 March	<ul style="list-style-type: none"> <li><b>REVISION</b></li> </ul>	
9	18-22 March GC24 - Thursday	<ul style="list-style-type: none"> <li><b>REVISION</b></li> </ul>	
10	25-29 March Good Friday PH	<b>EXAM BLOCK</b>	<b>UNIT 1 EXAM</b>
<b>School holidays: Friday March 29 - Sunday April 14</b>			

**Term 2**

Week	Date	Topics	Assessment
1	15-19 April Cross Country – Wed	Inverse proportions <ul style="list-style-type: none"> <li>Rectangular hyperbolas <b>Ch. 5A</b></li> </ul> Graphs of relations <ul style="list-style-type: none"> <li>The graph of <math>y = \sqrt{x}</math> <b>Ch. 5C</b></li> </ul> Functions <ul style="list-style-type: none"> <li>Functions <b>Ch. 7C</b></li> </ul>	
2	22-26 April GC24 - Tuesday Anzac Day PH - Thurs	<ul style="list-style-type: none"> <li>Piecewise-defined functions <b>Ch. 7D</b></li> <li>Function notation <b>Ch. 7E</b></li> </ul>	PSMT Hand out Lesson 1
3	29 Apr-3 May	<ul style="list-style-type: none"> <li>Quartic and other polynomial functions <b>Ch. 8H</b></li> <li>Applications of polynomial functions <b>Ch. 8I</b></li> </ul>	Checkpoint 1
4	6-10 May Labour Day PH - Mon	<b>Unit 2 Topic 1: Exponential Functions 2</b> Introduction to exponential functions <ul style="list-style-type: none"> <li>Solving exponential equations and inequalities <b>Ch. 13E</b></li> </ul> <b>Unit 2 Topic 2: Logarithmic Function 1</b> Introduction to logarithms <ul style="list-style-type: none"> <li>Logarithms <b>Ch. 13F</b></li> </ul>	Checkpoint 2
5	13-17 May	<ul style="list-style-type: none"> <li>Using logarithms to solve exponential equations and inequalities <b>Ch. 13G</b></li> <li>Graphs of exponential functions <b>Ch. 13D</b></li> </ul>	Checkpoint 3
6	20-24 May	<ul style="list-style-type: none"> <li>Graphs of logarithmic functions <b>Ch. 13H</b></li> <li>Exponential models and applications <b>Ch. 13I</b></li> </ul>	<b>PSMT Due</b> <b>Start Lesson 1</b>
7	27-31 May	<b>Unit 2 Topic 3: Trigonometric functions 1</b> Circular measure and radian measure <ul style="list-style-type: none"> <li>Measuring angles in degrees and radians <b>Ch. 15A</b></li> </ul> Introduction to trigonometric functions <ul style="list-style-type: none"> <li>Defining trigonometric functions: Sine &amp; Cosine <b>Ch. 15B</b></li> <li>Symmetry properties of trigonometric functions <b>Ch. 15E</b></li> </ul>	
8	3-7 June	<ul style="list-style-type: none"> <li>Exact values of trigonometric functions <b>Ch. 15F</b></li> <li>Graphs of sine and cosine <b>Ch. 15G</b></li> <li>Sketch the graphs of <math>y = A \cos(B(x + C)) + D</math> and <math>y = A \sin(B(x + C)) + D</math>.</li> </ul>	
9	10-14 June GC24 – Wednesday Exam shutdown - Fri	<ul style="list-style-type: none"> <li>Investigate the parameters of A, B, C &amp; D <b>Ch. 15I, 15J</b></li> </ul>	
10	17-21 June Athletics Carnival - Thurs	<ul style="list-style-type: none"> <li>Solution of trigonometric equations <b>Ch. 15H</b></li> <li>Applications of trigonometric functions <b>Ch. 15N</b></li> </ul>	
<b>School holidays: Saturday June 22 - Sunday July 7</b>			

**Term 3**

Week	Date	Topics	Assessment
1	8-12 July	<b>Unit 2 Topic 4: Introduction to differential calculus</b> Rates of change and the concept of derivatives <ul style="list-style-type: none"> <li>• Constant, average and instantaneous rates of change <b>Ch. 17B, 17C, 17D</b></li> <li>• Position and average velocity <b>Ch. 17E</b></li> <li>• The derivative (first principles) <b>Ch. 18B</b></li> </ul>	
2	15-19 July	Properties and computation of derivatives <ul style="list-style-type: none"> <li>• Rules of differentiation <b>Ch. 18C, Ch. 20A</b></li> <li>• Graphs of derivatives <b>Ch. 18D</b></li> </ul>	
3	22-26 July GC24 - Thursday	Applications of derivatives <ul style="list-style-type: none"> <li>• Tangents and normal <b>Ch. 19A</b></li> <li>• Rates of change <b>Ch. 19B</b></li> <li>• Stationary points <b>Ch. 19C</b></li> <li>• Types of stationary points (concavity) <b>Ch. 19D</b></li> </ul>	
4	29 Jul- 2 Aug	<ul style="list-style-type: none"> <li>• Applications to maximum and minimum problems (also 2<sup>nd</sup> derivatives) <b>Ch. 19E</b></li> <li>• Application of differentiation to kinematics <b>Ch. 19F</b></li> </ul> <b>Unit 2 Topic 5: Further differentiation and applications</b> Differentiation rules <ul style="list-style-type: none"> <li>• The chain rule <b>Ch. 20B</b></li> </ul>	
5	5-9 August	<ul style="list-style-type: none"> <li>• Differentiating rational powers <b>Ch. 20C</b></li> <li>• The product rule <b>Ch. 20E</b></li> <li>• The quotient rule <b>Ch. 20F</b></li> </ul>	
6	12-16 August GC24 Finals – Wed.	<b>Unit 2 Topic 6: Discrete random variables 1</b> General discrete random variables <ul style="list-style-type: none"> <li>• Discrete random variables <b>Ch. 22A</b></li> <li>• Determining discrete probability distributions <b>Ch. 22B</b></li> </ul>	
7	19-23 August	<ul style="list-style-type: none"> <li>• Expected value, variance and standard deviation <b>Ch. 22C</b></li> </ul>	
8	26-30 August	<ul style="list-style-type: none"> <li>• <b>REVISION</b></li> </ul>	
9	2-6 September	<ul style="list-style-type: none"> <li>• <b>REVISION</b></li> </ul>	
10	9-13 September	<b>EXAM BLOCK</b>	<b>Unit 2 Exam</b>
<b>School holidays: Saturday September 14 – Sunday September 29</b>			

**Term 4**

Week	Date	Topics	Assessment
1	30 Sept – 4 Oct	<b>Unit 3 Topic 2: Further differentiation and applications 2</b> <ul style="list-style-type: none"> <li>The exponential function <math>f(x) = e^x</math> <b>Ch.6B</b></li> <li>Revision of exponential equations <b>Ch.6C</b></li> </ul>	
2	7-11 October King's B'day PH - Monday	<ul style="list-style-type: none"> <li>Applications of exponential functions (Modelling) <b>Ch. 6H</b></li> </ul> Calculus of exponential functions: <ul style="list-style-type: none"> <li>Differentiation of <math>f(x) = e^x</math> <b>Ch.8C</b></li> <li>Product and Quotient rule (as they relate to exponential functions) <b>Ch. 8F, 8G</b></li> </ul>	
3	14-18 October	<ul style="list-style-type: none"> <li>Review of trigonometry <b>Ch.4A, 4B, 4C, 4D, 4E</b></li> <li>Building trigonometric models from data algebraically</li> <li>Building trigonometric models from data using technology</li> </ul>	<b>PSMT IA1 Handed out Lesson 1</b>
4	21 - 25 October	<ul style="list-style-type: none"> <li>Sketch graphs of <math>y = a \sin(b(x - c) + d)</math> and <math>y = a \cos(b(x - c) + d)</math> <b>Ch.4F, 4G</b></li> <li>Applications of trigonometric functions (Modelling tides, Ferris wheels, moon phases) <b>Ch. 4J</b></li> </ul>	
5	28 Oct – 1 Nov	Calculus of trigonometric functions: <ul style="list-style-type: none"> <li>Derivative of <math>y = \sin(x)</math> and <math>y = \cos(x)</math> <b>Ch.8E</b></li> <li>Product and Quotient rule (as they relate to trigonometric functions) <b>Ch. 8F, 8G</b></li> </ul>	
6	4-8 November	<b>Unit 3 Topic 1: The logarithmic function 2</b> Logarithmic laws and logarithmic functions <ul style="list-style-type: none"> <li>Review logarithm laws and graphs <b>Ch.6D, 6E</b></li> <li>Determining rules for graphs of exponential and logarithmic functions <b>Ch. 6F</b></li> </ul>	
7	11-15 November	<ul style="list-style-type: none"> <li>Solving logarithmic and exponential equations <b>Ch.6G</b></li> <li>Applications of logarithmic functions <b>Ch. 6I</b></li> </ul>	<b>PSMT Due Start of Lesson 1</b>
8	18-22 November	<b>EXAM BLOCK</b>	
<b>School holidays: Saturday November 23 – Monday January 27</b>			