

**Varsity College**  
**Year 12 Mathematical Methods**

**Term 1, 2023**

Week	Date	Topics	Assessment
1	23-27 January Australia Day PH - Thurs	<b>Unit 3 Topic 2: Further differentiation and applications 2 cont.</b> <ul style="list-style-type: none"> <li>Calculus of logarithmic functions:</li> <li>Review of logarithmic functions from term 4. <b>Ch.6</b></li> <li>Definition of the natural logarithm and inverse relationship between <math>y = e^x</math> and <math>y = \ln(x)</math></li> </ul>	
2	30 Jan – 3 Feb Swimming Carnival - Mon	<ul style="list-style-type: none"> <li>Review of differentiation skills. <b>Ch.8F, G, H, J, K</b></li> <li>Differentiation of the natural logarithm. <b>Ch.8D</b></li> </ul>	
3	6-10 February	<ul style="list-style-type: none"> <li>Differentiation of the natural logarithm using the product and quotient rules <b>Ch.8F, G</b></li> <li>Applications of logarithms and their derivatives. <b>Ch.8H, J, K</b></li> </ul> <b>Unit 3 Topic 3: Integrals</b> <ul style="list-style-type: none"> <li>Anti-Differentiation:</li> <li>Anti-differentiation of polynomials and power functions. <b>Ch.9A, 9B</b></li> </ul>	
4	13-17 February	<ul style="list-style-type: none"> <li>The anti-derivative of <math>(ax + b)^r</math> <b>Ch.9C</b></li> <li>The anti-derivative of <math>e^{kx}</math> <b>Ch.9D</b></li> <li>Anti-differentiation of trigonometric functions. <b>Ch.9E</b></li> </ul>	
5	20-24 February	<ul style="list-style-type: none"> <li>Further anti-differentiation techniques (recognition). <b>Ch.9F</b></li> <li>Applications to motion in a straight line. <b>Ch.9G</b></li> </ul>	
6	27 Feb – 3 Mar	Fundamental theorem of calculus and definite integrals: <ul style="list-style-type: none"> <li>Estimating the area under a graph. <b>Ch.10A</b></li> <li>The definite integral. <b>Ch.10B</b></li> </ul>	
7	6-10 March GIPSA - Wednesday	Applications of integration: <ul style="list-style-type: none"> <li>Signed area. <b>Ch.10C</b></li> <li>Integration of more families of functions. <b>Ch.10D</b></li> <li>Further integration techniques (recognition with definite integrals). <b>Ch.10E</b></li> </ul>	
8	13-17 March	<ul style="list-style-type: none"> <li>The area of a region between two curves. <b>Ch.10F</b></li> <li>Applications of integration <b>Ch.10G</b></li> </ul>	
9	20-24 March	<b>REVISION UNIT 3</b>	
10	27-31 March Cross Country - Thurs	<b>Exam Block</b>	<b>IA2 Unit 3 Exam</b>
<b>School Holidays: Saturday April 1 – Sunday April 16</b>			

## Term 2, 2023

Week	Date	Topics	Assessment
1	17-21 April Athletics Carnival - Wednesday	<b>Unit 4 Topic 1: Further differentiation and applications 3</b> <ul style="list-style-type: none"> <li><b>Exam Feedback – IA2</b></li> </ul> The second derivative and applications of differentiation <ul style="list-style-type: none"> <li>The second derivative and acceleration. <b>Ch.12A</b></li> </ul>	
2	24-28 April ANZAC Day PH - Tues	<ul style="list-style-type: none"> <li>Using the second derivative in graph sketching. <b>Ch.12B</b></li> </ul>	
3	1-5 May Labour Day PH - Monday GIPSA - Wednesday	<b>Unit 4 Topic 2: Trigonometric functions 2</b> <ul style="list-style-type: none"> <li>Absolute maximum and minimum values. <b>Ch.12C</b></li> <li>Optimisation. <b>Ch.12D</b></li> </ul> Cosine and sine rules <ul style="list-style-type: none"> <li>The sine rule. <b>Ch.13B</b></li> </ul>	
4	8-12 May	<ul style="list-style-type: none"> <li>The cosine rule. <b>Ch.13C</b></li> <li>The area of a triangle. <b>Ch.13D</b></li> <li>Angles of elevation, angles of depression and bearings. <b>Ch.13E</b></li> </ul>	
5	15-19 May GIPSA - Wednesday	<ul style="list-style-type: none"> <li>Problems in 3D. <b>Ch.13F</b></li> <li>Angles between planes and more complex 3D problems. <b>Ch.13G</b></li> </ul>	
6	22-26 May GIPSA - Wednesday	<b>Unit 4 Topic 3: Discrete random variables 2</b> Bernoulli and Binomial distributions <ul style="list-style-type: none"> <li>Introduction to Bernoulli sequences and the binomial distribution. <b>Ch.15A</b></li> <li>The graph, expectation and variance of a binomial distribution. <b>Ch.15B</b></li> <li>Finding sample size. <b>Ch.15C</b></li> </ul>	
7	29 May – 2 June	<b>Unit 4 Topic 4: Continuous random variables and the normal distribution</b> General continuous random variables <ul style="list-style-type: none"> <li>Introduction to continuous random variable (probability density functions). <b>Ch.16A</b></li> <li>Mean and median for a continuous random variable (mean, expected value only). <b>Ch.16B</b></li> </ul>	
8	5-9 June Exam Block – Tuesday L1, 2 GIPSA - Wednesday	<ul style="list-style-type: none"> <li>Measures of spread (variance and SD only). <b>Ch.16C</b></li> </ul> Normal distributions <ul style="list-style-type: none"> <li>The normal distribution. <b>Ch.17A</b></li> </ul>	
9	12-16 June	<ul style="list-style-type: none"> <li>Standardisation. <b>Ch.17B</b></li> <li>Determining normal probabilities. <b>Ch.17C</b></li> </ul>	
10	19-23 June	<ul style="list-style-type: none"> <li>Solving problems using the normal distribution. <b>Ch.17</b></li> </ul>	
<b>School Holidays: Saturday June 24 – Sunday July 9</b>			

### Term 3, 2023

Week	Date	Topics	Assessment
1	10-14 July	<b>Unit 4 Topic 5: Interval estimates for proportions</b> Random sampling: <ul style="list-style-type: none"> <li>Populations and sampling. <b>Ch.18A</b></li> <li>The exact distribution of the sample proportion. <b>Ch.18B</b></li> </ul>	
2	17-21 July	• <b>REVISION UNIT 4</b>	
3	24-28 July	• <b>REVISION UNIT 4</b>	
4	31 July – 4 August Exam Block Thursday	<b>IA3 Unit 4 Exam</b>	<b>EXAM Thursday am</b>
5	7-11 August	<ul style="list-style-type: none"> <li>Exam feedback</li> <li>Approximating the distribution of the sample proportion. <b>Ch.18C</b></li> <li>Confidence intervals for the population proportion. <b>Ch.18D</b></li> </ul>	
6	14-18 August	• <b>REVISION UNIT 3 &amp; 4</b>	
7	21-25 August	• <b>REVISION UNIT 3 &amp; 4</b>	
8	28 August – 1 Sept.	• <b>REVISION UNIT 3 &amp; 4</b>	
9	4-8 September	<b>Mock Exams</b>	
10	11-15 September	<b>Mock Exams</b>	
<b>School Holidays: Saturday September 16 – Monday October 2</b>			

### Term 4, 2023

Week	Date	Topics	Assessment
1	2-6 October Queen's Birthday PH - Mon	• <b>REVISION UNIT 3 &amp; 4</b>	
2	9-13 October	• <b>REVISION UNIT 3 &amp; 4</b>	
3	16-20 October	<ul style="list-style-type: none"> <li>No classes for Applied and Certificate subjects.</li> <li>Study lessons for General subjects.</li> </ul>	
4	23-27 October	<b>External Exam Block</b>	<b>External Assessment: Unit 3 and 4</b>
5	30 Oct – 3 Nov		
6	6-10 November		
7	13-17 November	<b>Graduation</b>	