exampro

VCE Mathematical Methods (CAS) Units 3&4

Book 1: Topic Tests and Trial Examinations

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Preface

This guide has been written to help students understand the concepts that appear in the VCE Mathematical Methods (CAS) 3&4 Study design. This book is intended to run the gamut of all the types of questions that can appear on the exam at the end of the year.

Book 1 is divided into two sections, the first comprising topic tests for the four main areas of the Mathematical Methods course; Functions and Graphs, Algebra, Calculus and finally Probability. Each section has two Exam 1-standard and two Exam 2-standard topic tests, which when combined is equivalent to a practice Exam 1 and an Exam 2 for each area. This section is designed to be completed throughout the year as students learn the course material, and aims to teach the key concepts and skills that the student will be able to use immediately in SACs, and also apply it later on when they move onto exams. The second section comprises 3 full sets of practice examinations (3 exam 1's and 3 exam 2's) which should be attempted after students have completed the course. These exams have been designed to expose students to what they are likely to face in exams. They are of a fair standard, but also contain numerous questions that have subtle tricks to them. These types of questions are the ones VCAA (Victorian Curriculum and Assessment Authority) will invariably use to determine the top students sitting each exam.

The main feature that separates this study guide from the rest on the market is the Detailed Solutions section in Book 2. While model solutions will show the student what they need to do to get marks for a given question, they do not always tell the student why they are doing a particular task or why to take a particular approach. Some students learn how to get through problems but not actually understand **why** they are undertaking the process. Instead of blindly applying $f'(x)$ to find stationary points, the detailed solutions go through the theory behind the concept so that the student has a better understanding of the course. These solutions also go through the best way to approach a question, and give more than one option in places where neither method is better or worse.

Thought processes in interpreting a question are also explored, as sometimes students have the skills and the knowledge required to complete a question, but have trouble in actually understanding what the question is trying to ask them, and what they need to apply. For example, an area of study that students tend to struggle with is probability. Most students know the tools (probability methods) they need to complete a given question, but cannot work out what type of probability (tool) they need to apply to the situation, so the detailed solutions pick apart the information and wording of the question so that they should be able to interpret most of the problems that they will face. While the goal was to maintain a particular standard for the questions that have been written, our many writers have managed to come up with some excellent challenging questions that cater to the above-average student. The standard of VCAA exams in the past few years has been trending steadily upwards in difficulty, so these will serve as good practice for the inevitable curveball you will face in the exam proper. As always, the solutions will walk you through every small part of the question so that even a struggling student should be able to understand how to do the question from the solutions.

Throughout the solutions, calculator screenshots and tips for the TI-nspire CX have been included to try and help students learn when it is best to use the calculator and when it is best to work through the problem by hand. Throughout the year, it is advised that the student doesn't use the calculator unless they actually need to, as this will help develop algebraic skills that will benefit them in exam 1, the tech-free exam. This way, the student can still jump to the calculator when needed in an exam situation, but not become reliant on the calculator from working with it too much throughout the year. Those students who do exceptionally well are generally those who don't rely on the calculator (or their bound reference, for that matter).

On the team we have three writers that scored a perfect study score of 50 (of whom two achieved this impressive feat in year 11), two that scored a near perfect 49 and one with a 45. We also had our brilliant editor William, who also scored a 50. We are students who excelled in this system. There is nothing mythical or unattainable about what we did. We were in the same position as you were, 1 year, 2 years etc. ago. We intend through this book to communicate to you all of the thought processes that we learned to ace this subject, from a perspective that we know all too well (and so recently) as bewildered students. As such, the language of the detailed solutions can be quite colloquial at times, preferring plain English over needlessly wordy and long-winded explanations. We also hope you enjoy our (attempted) humour, as we try to ease the pain of year 12 for you, one bad maths joke at

a time. You may notice that the writing styles vary throughout the book. This is because different authors were writing different sections. This is a natural outcome of having such a varied team of writers. Through our editing processes, we hope that the quality of the book is roughly uniform throughout, but naturally some sections may be more detailed than others.

If you are having difficulty understanding any part of the book, find any errors or want to discuss the book with others, then feel free to log onto www.atarnotes.com and visit the forum. Follow the links to the ExamPro Units 3&4 Mathematical Methods (CAS) Study Guide messageboard, and post on the errata thread if you find an error, or start a new thread if you have a different query.

Best of luck with your studies,
Trevor Batty