

# Mathematics Methods

## Units 1-2

Students taking this subject should have a good mathematical background and have achieved strong results in Year 10 Mathematics. Mathematical Methods and Specialist Mathematics taken together form the best possible preparation for the study of Mathematical Methods Units 3 and 4.

**Students in this course must have an approved CAS calculator.**

### UNIT 1

Students will study simple algebraic functions in relation to the following areas of study: Functions and Graphs, Algebra, Rates of Change, and Probability and Counting Methods. Students use CAS calculators to explore skills and concepts as well as practising skills without using technology.

#### LEARNING ACTIVITIES

Textbook exercises, online revision activities, tests and an application task.

#### KEY SKILLS REQUIRED

Well-developed mathematical skills and understanding, graphing calculator (CAS) technology.

Ability to apply mathematical skills and knowledge to solve application problems.

#### ASSESSED TASKS

Topic tests, application task and a mid-year examination.

### UNIT 2

In this unit, students will focus on the following areas of study: circular, exponential and logarithmic functions and graphs, algebra, Differentiation and Integration. Students use CAS calculators to explore skills and concepts as well as practising skills without using technology.

#### LEARNING ACTIVITIES

Textbook exercises, online revision activities and an application task.

#### KEY SKILLS REQUIRED

Well-developed mathematical skills and understanding, graphing calculator (CAS) technology.

Ability to apply mathematical skills and knowledge to solve application problems.

#### ASSESSED TASKS

Topic tests, application task and two end of semester written examinations.

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## Units 3-4

This unit is designed to equip students to undertake Mathematics at a tertiary level. As algebra is instrumental in much of the content of this subject, students should have developed strong algebraic skills and achieved very good to excellent results in General Mathematics and Mathematical Methods Units 1 and 2, or alternatively, in Mathematical Methods Units 1 and 2 when only one subject of Mathematics was undertaken.

### UNIT 3

The focus of this unit will be a selection of content that would typically include Functions and Graphs, Algebra and applications of derivatives and differentiation. This also includes identifying and analysing key features of functions and their graphs with Calculus as a focal point. Students use CAS calculators to explore skills and concepts as well as practising skills without using technology.

#### LEARNING ACTIVITIES

Textbook exercises, revision activities and application task.

#### KEY SKILLS REQUIRED

Mathematical skills and understanding, graphing calculator technology, application of mathematical skills and knowledge.

#### ASSESSED TASKS

Topic tests and application task.

### UNIT 4

Students will continue to study Algebra and Functions and Graphs as well as Calculus including anti-differentiation, integration, the relationship between integration and the area of regions specified by lines or curves with a focus on real world applications of Calculus. Students will also study random variables and discrete and continuous probability distributions and the distribution of sample proportions. Students use CAS calculators to explore skills and concepts as well as practising skills without using technology.

#### LEARNING ACTIVITIES

Textbook exercises, revision activities and application tasks.

**KEY SKILLS REQUIRED** Mathematical skills and understanding, graphing calculator technology, application of mathematical skills and knowledge

#### ASSESSED TASKS

Two analysis tasks and two end of year written examinations.

#### VCAA ASSESSMENT – The overall Study Score will consist of:

School Assessed Coursework (34%), 1-hour written Examination 1 (technology free) in November (22%), 2-hour written Examination 2 (technology active) in November (44%).