

Assessment Task 2 – Half Yearly

Due Date: Wednesday 04/04/18, Week 10 Term 1

Date Distributed: Tuesday 20th March 2018

Task Weighting: 30%

Outcomes

H1 seeks to apply mathematical techniques to problems in a wide range of practical contexts.

H2 constructs arguments to prove and justify results.

H5 applies appropriate techniques from the study of calculus, geometry, ~~probability~~, trigonometry and ~~series~~ to solve problems.

H6 uses the derivative to determine the features of the graph of a function.

H7 uses the features of a graph to deduce information about the derivative.

H8 uses techniques of integration to calculate areas and volumes.

H9 communicates using mathematical language, notation, diagrams and graphs.

ASSESSMENT OUTLINE

1. WHAT AREAS OF LEARNING DOES THIS ASSESSMENT ADDRESS?

You will need to develop solutions and provide reasoning to a wide variety of problems and demonstrating your understanding of the following concepts:

<p>Geometrical Applications of Calculus</p> <ul style="list-style-type: none"> • Gradient curves • Identifying stationary points • Higher derivatives • Applications of the second derivative • Determining the nature of stationary points • Curve Sketching • Identifying maximum and minimum values • Maxima and minima problems 	<p>The Quadratic Function</p> <ul style="list-style-type: none"> • Identifying roots of quadratic functions • The relationship between the discriminant and a quadratics roots • The relationship of the coefficients – Sum and product of roots • Classification of quadratic functions – positive and negative definite • Equations reducible to quadratics •
<p>Concepts from the following Preliminary topics will also be assessed in this examination: Functions, Algebra and Arithmetic, Geometry, Trigonometry, Linear Functions, Introduction to Calculus and Locus.</p>	<p>Integration</p> <ul style="list-style-type: none"> • Primitive Functions • Approximation methods – Trapezoidal and Simpsons Rule • Definite Integrals • Indefinite Integrals • Areas enclosed by the x-axis • Areas enclosed by the y-axis • Sum and difference of areas • Volumes

2. WHY IS THE COMPLETION OF THIS ASSESSMENT IMPORTANT?

- This task will draw together the above outcomes and assess a range of mathematical skills and techniques that you have covered in class.
- The structure and questioning style presented in this task will mirror that of the HSC examination.
- You will be required to apply your knowledge to a series of unseen questions require you to problem-solve solutions.
- It will be used by you and your teachers to assess your knowledge and understanding of the course outcomes, allowing you to refine your skills in preparation for the HSC examination.

3. WHAT STEPS DO I TAKE TO COMPLETE THIS TASK?

Task Outline

This examination will mirror the setup and questioning style of your HSC examination. While it will predominately test the content we have studied since starting your HSC studies, it will rely on your thorough understanding of the preliminary content we have studied, with some questions directly assessing that content.

You will have **2 hours with 5 minutes additional reading time** to complete this exam. A HSC Reference Sheet will also be provided.

The examination consists of the following two compulsory sections:

- **Section 1: Multiple-Choice.** This section contains 7 multiple-choice questions worth 1 mark each covering a range of the concepts listed in the Areas of Learning above. The questions increase in difficulty throughout this section. These must be answered on the multiple choice answer sheet in your answer booklet. You should allow **15 minutes** to complete this section.
- **Section 2: Written Response.** This section contains four questions with parts worth a total of 15 marks each. The parts of each question will be a mixture of short and long response questions worth 1 mark or more covering a range of the concepts listed in the Areas of Learning above. You should allow **1 hour and 35 minutes** to complete this section. You need to complete your answers in the Answer Booklet provided, starting each new question on a new page. All necessary working must be shown for this section.

Preparation for this Task

As this is an examination you will need to prepare for this task by:

- Creating your summary notes page covering each topic listed above (you can use mind maps, flow charts, dot point lists).
- Accessing practice past papers on Moodle.
- Regularly complete practice examination questions.
- Seeking teacher assistance on unclear work.
- Ensuring all set work is up to date.

Details for Submission

For successful completion of this examination you must bring the following equipment.

- Board approved calculator
- Blue or black pen,
- Pencils and eraser for graphs
- A ruler

Students who are absent from the examination, or have a legitimate reason for missing the task, must notify the school before the exam commences. To avoid a zero mark being awarded, any absence must be supported by valid misadventure/illness documentation as outlined in the Year 12 Assessment Booklet.

You will also need to complete a self-reflection on your assessment that is to be submitted to your teacher after receiving the solutions. This is to assist you and your teacher in refining your knowledge, skills and examination technique for future assessments.

4. HOW WILL MARKS BE AWARDED TO MEASURE MY LEARNING?

Worked solutions with marking criteria for each question will be provided when the exam is marked and returned. You should ensure that you go through these solutions thoroughly to correct your mistakes and ask your teacher if there is anything you are unsure about.