



Year 10 Mathematics Advanced

Task 4: Yearly Exam

Due Date: Wednesday 13th November, Term 4 Week 5 Periods 3 & 4

Task Distributed: 28th October 2024

Unit: All topics covered this year (outlined below)

Task Type: Formal Examination

Task Weighting: 0% (100% Report Mark)

Outcomes: MA11-1 – MA11-9

Task Description

Duration: 80 Minutes plus 5 min reading time

This task is an **80-minute examination with 5 minutes** reading time to be completed under examination conditions in the school hall during the Yearly Examination period. The exam will consist of two sections covering the topics listed below:

- **Section 1 – Multiple Choice:** 10 Multiple Choice questions worth 1 mark each assessing a range of skills from the topics below.
- **Section 2 – Long Response:** A variety of questions worth 1 mark or more assessing a range of skills from the topics below.

Linear Functions	Quadratic and Cubic Functions
<ul style="list-style-type: none"> ● Derive equations of straight lines ● Calculate gradients using gradient formula ● Determine parallel and perpendicular lines ● Solve simultaneous equations and break-even analysis problems 	<ul style="list-style-type: none"> ● Manipulate a range of algebraic expressions ● Determine properties of quadratic equations ● Find and solve quadratic equations ● Understand the discriminant and use it to find appropriate roots ● Solve problems involving modelling of quadratic equations and quadratic simultaneous equations. ● Recognise and sketch cubic functions in factored form.
Function Notation	Further Functions and Relations
<ul style="list-style-type: none"> ● Use function notation ● Define the domain and range, of a given function ● Use the vertical line test to determine whether/if a function exists ● Prove odd and even functions graphically 	<ul style="list-style-type: none"> ● Recognise and sketch equations of hyperbolas, circles, exponentials and absolute values ● Derive equations of circles

Introduction to Calculus	Trigonometry
<ul style="list-style-type: none"> • Differentiate a range of functions by applying the appropriate law(s) • Calculate gradients of tangents • Find the equation of tangents and normal to curves 	<ul style="list-style-type: none"> • Manipulate a range of expressions involving surds • Use right-angled trig ratios to solve problems • Solve problems involving bearings and angles of elevations and depression • Use the Sine, Cosine and Area of a Triangle rules for non-right-angled triangles. • Calculate angles of any magnitude and exact values

NESA Glossary of Key Words

Understand the verb associated with the task. The verb will provide an understanding of the detail needed to successfully answer the question.

- **Calculate** - Provide a numerical answer
- **Identify**: Recognise and name properties using correct mathematical terminology / notation
- **Evaluate** - Determine the value of
- **Prove / Show** - Provide all algebraic steps and working in a logical sequence
- **Simplify** - Write an expression in its simplest form
- **Sketch** - Neatly draw a function on a number plane, clearly showing key features
- **Solve** - Use algebraic techniques to find a solution

Check the NESA Glossary of Key Words for further guidance

<https://educationstandards.nsw.edu.au/wps/portal/nesa/11-12/hsc/hsc-student-guide/glossary-keywords>

Details of Submission

For successful completion of this assessment, you must have the following equipment:

- Board approved calculator
- Pencil, eraser and ruler for graphs and diagrams
- Blue or black pen

Students are NOT permitted to bring an electronic device into the exam.

Section 1 is to be answered on the multiple-choice answer sheet attached to the back of your exam.

Section 2 is to be answered in the space provided under each question showing all relevant working out. A Reference Sheet will be provided for use with the entire exam.

How to Prepare

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

- Making summary notes of each topic listed above (mind map, flow chart, dot points).
- Accessing practice past papers on Moodle.
- Regularly completing weekly formative tasks
- Regularly completing practice examination questions.
- Seeking teacher assistance on unclear work.
- Ensuring all set work is up to date.

Teacher Feedback and Student Self-Reflection

- The task will typically be returned to students within 14 days of the due date.
- At this time feedback including information on how to improve will be provided through analysis of the examination questions as a class discussion. Explanation will be provided as requested.
- Students can clarify or seek further feedback by speaking with their teacher or the assessment marker.

Upon return of the task, students will also be expected to complete a self-reflection. This will require students to review incorrect responses by seeking clarification from the teacher. Additionally, students will be required to complete a survey in reflection of the examination.

How does this link to my learning?

- The structure of the questioning style in this task will mirror that of the HSC examination.
- This task will be used by you and your teachers to assess your knowledge and understanding of course outcomes and allow you to refine your skills as you prepare for the HSC examination.
- This task will draw together the above outcomes and assess your ability to apply a range of mathematical skills and techniques that you have covered in class.

Assessment Procedures

All students should be fully aware of the School Assessment Procedures for their year group. These were provided at the beginning of the school year and are available on the school website under the Learning Tab for each year group.