



Year 12 Advanced Mathematics

Task 3 – Breaking Down Questions: Investigation Task and Quiz

Due Date: 12th June 2025 – **Beginning of Period 3**

Task Distributed: 20/05/25

Unit: MA-C2 Differential Calculus (specifically Differentiation of trigonometric, exponential and logarithmic functions) , MA-C3 Applications of Differentiation & MA-C4 Integral Calculus

Task Type: Investigation and Quiz

Task Weighting: 25%

Outcomes: MA 12-3, MA 12-6, MA 12-7, MA 12-9, MA 12-10

Task Description

Part A: Create a Topic Study Guide

Students will create a Topic Study Guide for the topic outlined above, **Differential Calculus (specifically Differentiation of trigonometric, exponential and logarithmic functions) , Applications of Differentiation and Integral Calculus**. The Topic Study Guide will consist of:

- A glossary of the **key verbs** and **topic specific terminology** presented in these topics in identified HSC questions.
- **Identification of questions** presented in the **2023 and 2024 HSC Exam** papers that linked to the topic area listed above.
- **Annotations** of the worked solution to each identified HSC question.

Use the link below to access past HSC examination papers for **Advanced Mathematics Course**.

<https://educationstandards.nsw.edu.au/wps/portal/nesa/11-12/resources/hsc-exam-papers>

*Your teacher will provide you a **completed scaffold** from a prior HSC exam paper for one of your topics.*

*A **blank scaffold** will also be provided, if you wish to use it to form your topic study guide.*

Part B: Moodle Quiz

Students will sit a short in-class Moodle quiz assessing the knowledge and skills developed through your investigation. The questions will require you to:

- Identify key verbs and terminology in past HSC questions.
- Match definitions to key verbs and key math terms.
- Identify steps to solve a question when presented with a key term.

- Solve a range of past HSC multiple-choice questions from the topic areas listed above.

Instructional Marking Rubric for Part A

Category	0 Marks	1 Mark	2 Marks	3 Marks
Identification of key HSC verbs	Does not identify a question verb or does not show a clear understanding of the verb's meaning.	Correctly identifies at least one verb from a suitable HSC question and attempts to explain its meaning.	Correctly identifies at least three verbs from suitable HSC questions and correctly explains their meaning.	Correctly identifies at least two verbs from each topic area from suitable HSC questions and correctly explains their meaning.
Definitions of topic specific terminology	Does not correctly define any key mathematical terms for either topic or does not attempt to show some understanding of the terminology.	Correctly identifies at least one key term identified in suitable HSC questions, but the links to the syllabus ideas are not well explained.	Correctly defines at least four key terms identified in suitable HSC questions and provides sufficient understanding of how they link to syllabus ideas / techniques.	Correctly defines at least three key terms from each topic area identified in suitable HSC questions and provides sufficient understanding of how they link to syllabus ideas / techniques.
Identification of questions linked to the topic areas	Does not identify any questions that link to either topic.	Attempts to identify and highlight the key verbs and underline the topic terminology from a suitable HSC question.	Identifies and correctly highlights the key verbs and underlines the topic terminology for at least two questions. They must be suitable HSC questions.	Identifies and correctly highlights the key verbs and underlines the topic terminology for at least two questions from each topic. They must be suitable HSC questions.
Annotation of worked solutions, explaining why each step was used.	Does not identify a question or does attempt to annotate a solution to a question.	Attempts to annotate one identified question that provides a clear understanding of how the key verbs and topic specific terminology link to the solution.	Correctly annotates at least two of their identified questions that provides a clear understanding of how the key verbs and topic specific terminology link to the solution.	Correctly annotates at least two of their identified questions in each topic that provides a clear understanding of how the key verbs and topic specific

Details of Submission

Part A: Topic Study Guide

Students are encouraged to use the scaffold on google classroom to produce their Topic Study Guide.

This needs to be submitted ***before you attempt the Moodle Quiz: 12th June 2025.***

Part B: Moodle Quiz

For the Moodle Quiz, you must bring the following equipment.

- Board approved calculator
- Blue or black pen

You can successfully prepare for the Moodle Quiz by:

- Being familiar with your topic study guide
- Reviewing class work and past HSC examples from each topic in the study guide.
- Ensuring all set work is up to date.
- Practice completing examination questions with detailed answers under time pressure. (1 mark = 1.5 minutes).
- Seek teacher assistance for unclear work.
- Review the HSC Reference Sheet. You will be provided with one for the quiz.

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.

How does this link to my learning?

- It will assist you in developing your skills and understanding in how to recognise these key terms in examination style questions and determine how they lead you to the solution you are required to develop
- 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

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.