Year 12 Mathematics Advanced

Assessment Task 2 - 2024

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| **TOPIC**: Sequences and Series, Curve sketching and applications, Integration | **MARKS:**  45 marks |
| **SUBMISSION REQUIREMENTS:**  Term 1 – Week 7 - Written test to be completed in class on Friday 15th March 2024 (Period 4) | **WEIGHTING:**  30% |
| **OUTCOMES TO BE ASSESSED:**  **MA12-3** **Applies** calculus techniques to model and solve problems.  **MA12-4** **Applies** the concepts and techniques of arithmetic and geometric sequences and series in the solution of problems.  **MA12-7 Applies** the concepts and techniques of indefinite and definite integrals in the solution of problems.  **MA12-10 Constructs** arguments to prove and justify results and provides **reasoning** to support conclusions which are appropriate to the context. | |
| **Directional Verbs**:  **Apply** – Use, utilise, employ in a particular situation  **Reasoning** - Action of thinking about something in a logical, sensible way  **Construct** – To build or make a case for | |
| **TASK DESCRIPTION**:  This task is an in-class written test consisting of:  • 3 short answer questions on Sequences and Series totalling 15 marks of the total marks  • 2 short answer questions on Curve sketching and applications totalling 13 marks of the total marks  • 5 multiple choice and 5 short answer questions on Integration totalling 17 marks of the total marks  **Time allowed** for the task will be **1 hour.**  **A HSC (NESA) formula sheet will be provided.**  **No notes or books can be used during the exam.**  **Equipment required: Calculator - Ruler - Pen - Pencil - Eraser**  **ASSESSMENT CRITERIA:**  You will be marked on your ability to answer the questions correctly.  You are required to show relevant mathematical working, reasoning and/or calculations.  You are encouraged to revise the following concepts learnt in class.   |  |  |  | | --- | --- | --- | | **Sequences and Series**   * General sequences and series * Arithmetic sequences and series * Geometric sequences and series * Limiting sum of a geometric series | **Curve sketching and applications**   * Increasing and decreasing curves * Stationary points * Concavity and points of inflection * Interpreting rates of change * Application of second derivatives * Curve sketching * Optimisation problems | **Integration**   * Areas under a curve * Trapezoidal rule * Definite integrals * Indefinite integrals * Chain rule | | |
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