YEAR 12 EXTENSION 1
ASSESSMENT TASK
TERM 2, WEEK 6, 2010

Date: Thursday, 27th May **Marks: 100%**
Time Allowed: 1 period **Weighting: 10%**

Outcomes Addressed

- Uses the relationship between functions, inverse functions and their derivatives.
- Applies appropriate techniques for the study of probability.
- Uses and applies permutations and combinations in a variety of problems.
- Applies techniques of calculus to solve problems relating to the physical world.
- Manipulates and uses techniques of calculus with exponential and logarithmic functions.

Inverse Trigonometric Functions

- Inverse functions, their properties and domain and range related to the original function.
- Calculating the exact values of inverse trigonometric functions.
- Properties of inverse trigonometric functions.
- Differentiate and integrate inverse trigonometric functions.
- Graph inverse trigonometric functions and state domain and range.
- Integrate by change of variable involving inverse trigonometric functions.

Exponential and Logarithmic Functions

- Exponential and logarithmic laws.
- Change of base result.
- Differentiating and integrating exponential and logarithmic functions.
- Further exponential and logarithmic results.

Applications of Calculus to the Physical World

- Problems, involving differentiation or integration, where displacement, velocity and acceleration are in terms of time.
- Rates of change.
- Exponential growth and decay.

Probability and Counting Techniques

- Basic probability.
- Complementary and Mutually Exclusive events.
- The Product Rule.
- Tree diagrams.
- Counting techniques (combinations, permutations, factorial) and their application to probability.
- Binomial probability.
- Expected value.

Instructions

- Attempt all questions
- Show all necessary working
- Write in blue pen, black pen or dark pencil
- Approved calculators may be used

NOTE:

- Students who do not achieve the outcome (less than 39%) in this assessment task will receive an 'Official Warning' – non completion of the HSC course.
- Students will be required to re-sit the task within 7 days.
- Students will be given 2 further opportunities to achieve the required outcome.
- Failure to achieve the outcome may result in the student receiving an 'N' determination.