YEAR 12 MATHEMATICS
ASSESSMENT TASK
TERM 4, WEEK 8, 2009

Date: 9th December **Marks: 100%**
Time Allowed: 1 period **Weighting: 10%**

Outcomes Addressed

- Relates the derivative to the gradient of a function and applies the rules of differentiation.
- Understands and applies the relationship between the general quadratic function and its graph.

The Derivative

- Find the derivative from first principles given the formula.
- Find the gradient of a tangent to a curve using first derivative.
- Sketch a function and tangent to a function showing all intercepts.
- Differentiate functions using the chain rule, the product rule and the quotient rule.
- Find the equation of a normal to a curve using the derivative.

The Quadratic Polynomial

- Sketch quadratic functions using the axis of symmetry and vertex.
- Find maximum and minimum values of a quadratic function.
- Use the discriminant to describe the roots of a quadratic equation as real or unreal, rational or irrational, equal or unequal.
- Using α and β as the roots of a quadratic equation, find the sum and product of the roots and use these to simplify expressions involving α and β.
- Use a suitable substitution to solve an equation.
- Find unknown values in an identity.

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.