Applying Integration Methods in Solving Problems

Achieved	Merit	Excellence
Apply integration methods in solving problems.	Apply integration methods, using relational thinking, in solving problems.	Apply integration methods, using extended abstract thinking, in solving problems.
Relational Thinking - Involves selecting and carrying out a logical sequence of steps, connecting different concepts or representations, demonstrating understanding of concepts, and relating findings to a context.		
Extended Abstract Thinking - Involves devising a strategy, identifying relevant concepts, developing logical reasoning, forming generalizations, and communicating mathematical insight.		

Integration Methods

The methods included in this standard are related to:

- ☐ Integrating power, polynomial, exponential (base e only), trigonometric, and rational functions
- ☐ Reverse chain rule, trigonometric formulae
- ☐ Rates of change problems
- ☐ Areas under or between graphs of functions, by integration
- ☐ Finding areas using numerical methods (e.g., the rectangle or trapezium rule)
- ☐ Differential equations of the forms $y' = f(x)$ or $y'' = f(x)$ for the above functions or situations where the variables are separable (e.g., $y' = ky$) in applications such as growth and decay, inflation, Newton's Law of Cooling, and similar situations

Problems

The problems will be set in real-life or mathematical contexts and provide opportunities to apply the integration knowledge and methods.

Key Vocabulary

Students are expected to understand and use terms related to integration methods, such as:

- ☐ Integration
- ☐ Antiderivative
- ☐ Area under a curve
- ☐ Rational functions
- ☐ Rates of change
- ☐ Even Function
- ☐ Differential equations
- ☐ Growth and decay
- ☐ Odd Function