Advanced Mathematics 2200

Unit 4: Quadratics Equations

Text: Pre – Calculus 11   Chapter 4

By the end of the unit, it is expected that students will:

Outcomes	Text Book
1. **Solve problems that involve quadratic equations.** • *Explain, using examples, the relationship among the roots of a quadratic equation, the zeros of the corresponding quadratic function and the x-intercepts of the graph of the quadratic function.* • *Solve a quadratic equation of the form* $ax^2 + bx + c, a \neq 0$ *by using strategies such as:* *- determining square roots* *- factoring* *- completing the square* *- applying the quadratic formula* *- graphing its corresponding function.*	Section 4.1 pp. 206 - 217
2. **Factor polynomial expressions of the form:** $ax^2 + bx + c, a \neq 0$ - $a^2x^2 - b^2y^2, a \neq 0, b \neq 0$ - $a(f(x))^2 - b(f(x)) + c, a \neq 0$ - $a^2(f(x))^2 - b^2(g(y))^2, a \neq 0, b \neq 0$ **where** *a*, *b*, **and** *c* **are rational numbers.** • *Factor a given polynomial expression that requires the identification of common factors.* • *Factor a given polynomial expression of the form:* *- $ax_2 + bx + c$, $a \neq 0$* *- $a_2x_2 - b_2y_2$, $a \neq 0$, $b \neq 0$* • *Determine whether a given binomial is a factor for a given polynomial expression, and explain why or why not.* • *Factor a given polynomial expression that has a quadratic pattern, including:* *- $a(f(x))^2 - b(f(x)) + c, a \neq 0$* *- $a^2(f(x))^2 - b^2(g(y))^2, a \neq 0, b \neq 0$* • *Derive the quadratic formula, using deductive reasoning.* • *Identify and correct errors in a solution to a quadratic equation.*	Section 4.2 pp. 218 - 233 Section 4.3 pp.234-243 Section 4.4

• *Select a method for solving a quadratic equation, justify the choice, and verify the solution.*
 	
• *Explain, using examples, how the discriminant may be used to determine whether a quadratic equation has two, one, or no real roots; and relate the number of zeros to the graph of the corresponding quadratic function.*
 	
• *Solve a problem by:*
  - analyzing a quadratic equation
  - determining and analyzing a quadratic equation.
	pp.244-256