Quadratic Equations Lesson Plan

Title: Introduction into Quadratic Formula

Objective: Students will be able to identify the discriminant of a quadratic equation and determine the number of solution(s), if any, of a quadratic equation.

Materials: Teacher: dry erase board/markers or overhead/markers  
Examples to present to students (can get from text)  
Student: Paper and Pencil (Supplied by student)  
Textbook (Supplied by school)

Introduction (Engage and Explore): Give students three quadratic equations: one with no roots, one with one (double) root, and a third with two roots. Have students graph each problem. Then have students try to solve each problem with the quadratic formula.

Procedures: Discuss the problems above. Have students discuss what they noticed in the quadratic formula when there was one root and when there were no roots. Introduce the discriminant. Then have students use the discriminant to predict the number of real solution(s) for various quadratic equations.

Adaptations: Have students practice predicting and then solving for the solution(s) of a quadratic equation.

Discussion Questions: Discuss when there are no roots, one root, or two roots for a quadratic equation.

Assessment/Evaluation: Students will be given homework problems out of the book to work on. Later these problems will be quizzed and tested over.

Extensions: Students can extend discussions to parabolas/quadratics in real-world problems.

Suggested Reading: Read section in the textbook. Also look for various websites and other resources over quadratic equations.

Animation of the derivation: http://www.csm.astate.edu/algebra/qform.html

Vocabulary: Quadratic, Discriminant, Roots (same as x-intercepts, solutions, zeros)

Academic Standards: Algebra 2 TEKS:

d) Quadratic and square root functions: knowledge and skills and performance descriptions.
(1) The student understands that quadratic functions can be represented in different ways and translates among their various representations. Following are performance descriptions.

(A) For given contexts, the student determines the reasonable domain and range values of quadratic functions, as well as interprets and determines the reasonableness of solutions to quadratic equations and inequalities.

(3) The student formulates equations and inequalities based on quadratic functions, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation. Following are performance descriptions.

(B) The student analyzes and interprets the solutions of quadratic equations using discriminants and solves quadratic equations using the quadratic formula.

(D) The student solves quadratic equations and inequalities.

*Time of Lesson:* Lessons are for 50 minute periods.