

Teacher: Kaleena Carter	Grade Level: 10 - 12th Grade
Subject Area: Algebra II w/ Trigonometry	Lesson Title: Use the Quadratic Formula and the Discriminant
Unit Title: Quadratic Equations, Functions & Expressions	
<p>Objective/ Standards: CC.9-12. N.CN.7 Solve Quadratic equations with real coefficients that have complex solutions. CC.9.12.A.REI.4a Derive the quadratic equation from completing the square. CC.9-12.A.REI.4b Solve Quadratic equations by inspection, taking square roots, completing the square, the quadratic formula, and factoring, as appropriate to find the initial form of the equation. Recognize when the quadratic formula gives us complex solutions and write them in standard form. CC.9-12.F.IF.4 For a function that models a relationship between two quantities interpret key features of graphs and tables in terms of the quantities and sketch graphs showing key features given a verbal description of the relationship. CC.9-12.F.IF.5 Relate the domain of a function to its graph and, where applicable, to the quantity relationship it describes.</p>	
<p>Materials/Resources Needed: Ipads Class set (5 ipads, one per table), Personal Cell Phones, Class note pages, tablet PC (for teacher) Class Work Page (Guided Notes). Access to internet : Desmos Graphing Calculator Application Activity</p>	
<p>Anticipatory Set: Students will be asked to draw parabolas that cross the x - axis once, twice and not at all using the desmos graphing application activity (questions 1 - 3)</p>	
<p>Objective/Purpose: Students will be able to use the quadratic formula to find solutions to quadratic equations. Students will be able to determine what the discriminant tells us about the number and type of solutions to a quadratic equation. Students will use graphing calculator technology to help visual solutions on the parabola (graph of a quadratic equation)</p>	
<p>Input (What information is essential for the student to know before beginning and how will this skill be communicated to students?): Students must understand that a solution to a quadratic equation is essentially where it crosses the x - axis in a coordinate grid when graphed as a parabola.</p>	
<p>Model (If you will be demonstrating the skill or competence, how will this be done?): Using my tablet PC , digitizer pen and projector along with a guided note page, I will be guiding students through using the lesson on the quadratic formula and the discriminant.</p>	
<p>Check for Understanding (Identify strategies to be used to determine if students have learned the objectives.): Upon completion of my guided examples students will be required to solve quadratics using the quadratic equation. They are welcome to continue using the desmos calculator as a way to visually check their solutions. They will also be required to find the discriminant of quadratic equations and explain how many solutions and what type, after my completion of my guided examples.</p>	

Guided Practice (List activities which will be used to guide student practice and provide a time frame for completing this practice.):

[5 minutes] Do now activity (anticipatory set) : students will be required to sketch graphs of parabolas with one x -intercept, two x - intercepts and no x intercepts. (in the desmos activity) We will observe screenshots from each table and discuss.

[7 minutes] I will model how to solve quadratic equations with one real solution, two real solutions and two imaginary solutions using my tablet PC. Students will follow along on their note page

[7 minutes] Students will log into the [Custom made desmos Activity](#) for this lesson and graph guided examples 1 - 3 and answer the corresponding multiple choice questions.

[5 minutes] Students will solve the checkpoint examples 1-3 and check their solutions using the desmos graphing calculator.

[5 minutes] Teacher will guide students through the definition of the discriminant and its applications.

[5 minutes] Students will graph guided examples A - C and answer the multiple choice questions in the Desmos graphing activity.

[5 minutes] Students will try the checkpoint examples 5 - 8

[5 minutes] Teacher will close with a guided application problem

[6 minutes] Students will be asked to summarize their learning as a table in the Desmos graphing calculator activity. They may show their understanding visually and or verbally.

Total [50 minute lesson]

Closure : Students will be asked to summarize what they learned in today's lesson as a collective table. They will come together with a concise paragraph and input their answers into the desmos graphing activity for other class members and the teacher to review.

Independent Practice: Students will be required to complete a worksheet on the quadratic formula and the discriminant. It will be highly suggested to continue using desmos as a resource to check their solutions and understanding.

From Holt McDougal LARSON algebra 2 Common Core Edition:

BW pg. 62 #4-24 evens, 32-36 evens, 40, 42, 50, 52, 54, 68 (20 problems)