Lesson Plans

Course Mastering Algebra I: Course 2

Unit 1 Graphing Quadratic Functions and Equations

Session 3 Solving Quadratic Equations by Graphing

Learning Objectives:

- Recognize that if a parabola $Y = ax^2 + bx + c$ has two intercepts, there are two real solutions to the corresponding quadratic equation $ax^2 + bx + c = 0$.
- Discover that the maximum number of real solutions of a quadratic equation is 2.
- Recognize that if a parabola has only one x-intercept, there is only one real solution to the corresponding quadratic equation $ax^2 + bx + c = 0$.
- Recognize that if a parabola does not intersect the X-axis, the corresponding quadratic equation $ax^2 + bx + c = 0$ has no real solution.

Overview We examine the flight path of a golf ball, and look at parabolas describing a satellite dish and the suspension cable of the Golden Gate Bridge.

Key Words
quadratic function
trajectory
standard form of a quadratic equation in one variable
x-intercept of a graph
solution(s) of a quadratic equation in one variable
root of an equation

Teaching Strategies

Prior to the session

- Review the concepts of horizontal and vertical intercepts.
- Review graphing parabolas whose equations are of the form $Y = ax^2 + bx + c$.

At the end of the session

- Discuss the responses to the Student Logbook activity sheet.
- Examine critical points of a parabola whose equation is $Y = ax^2 + bx + c$ using the Tangible Math Function Investigator.
- Have students apply concepts of the tutorial by completing the Your Turn activity sheet.