

Core Content

Cluster Title: Solve systems of equations.
Standard A.REI.7: Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. (For example, find the points of intersection between the line $y = -3x$ and the circle $x^2 + y^2 = 3$.)
Concepts and Skills to Master
<ul style="list-style-type: none"> Solve a simple system consisting of a linear equation and a quadratic equation (i.e., parabolas and circles) in two variables graphically. Solve a simple system consisting of a linear equation and a quadratic equation (i.e., parabolas and circles) in two variables algebraically. Recognize that the solutions of a system that includes a unit circle centered at the origin and a line with a y-intercept of 0 are points on a unit circle.

Supports for Teachers

Critical Background Knowledge	
<ul style="list-style-type: none"> Know that a quadratic function is a vertical parabola and a quadratic equation can be a parabola or any conic section. Understand what a system is and the nature of the solutions. Solve systems (Sec. I: A.REI.6). 	
Academic Vocabulary	
quadratic function, unit circle, system of equations	
Suggested Instructional Strategies	Resources
<ul style="list-style-type: none"> Find the intersection of a line with a y-intercept of 0 and a unit circle centered at the origin with a solution that is a fraction. The solution will be a point on the unit circle that corresponds to a right triangle and the trigonometric ratios. 	
Sample Formative Assessment Tasks	
Skill-Based Task: Find the intersection of the circle with a radius of 1 centered at the origin and the line $y = -3(x - 2)$. Show your work both graphically and algebraically.	Problem Task: For a system consisting of a linear equation and a quadratic equation, how many possible solutions are there? Give an example for each possibility and include the graph and system.