

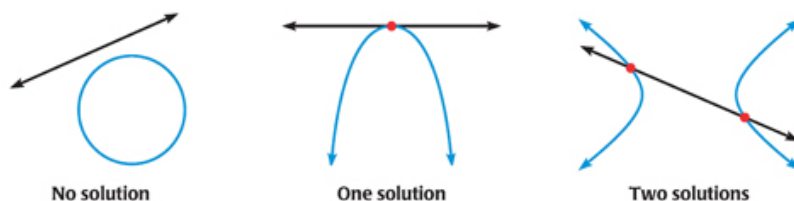
Honors Algebra II

Notes Section 8.7

Solve Quadratic Systems

Quadratic System: systems that contain one or more equations of conics.

Number of Solutions of a Linear Equation & a Conic Section



EXAMPLE 1 Solve the system using a graphing calculator.

a) $y^2 - 7x + 3 = 0$

$$2x - y = 3$$

STEP 1 Solve each equation for $y=$

STEP 2 Enter all equations into $y=$ function and graph.

STEP 3 2nd TRACE - INTERSECT to find solution(s).

b) $x^2 + 8y^2 - 4 = 0$

$$y = 2x + 7$$

EXAMPLE 2 Solve the system using substitution.

a) $x^2 + y^2 = 10$

$$y = -3x + 10$$

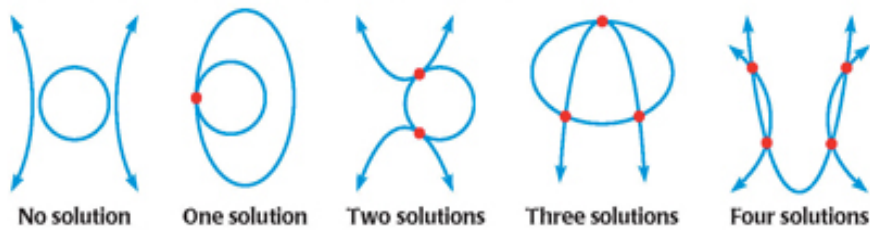
$$\text{b) } y^2 - 2x - 10 = 0$$

$$y = -x - 1$$

$$\text{c) } y = 4x - 8$$

$$9x^2 - y^2 - 36 = 0$$

Number of Solutions of any 2 Conic Sections



EXAMPLE 3 Solve the system by elimination.

$$\text{a) } 9x^2 + y^2 - 90x + 216 = 0$$

$$x^2 - y^2 - 16 = 0$$

$$b) -2y^2 + x + 2 = 0$$

$$x^2 + y^2 - 1 = 0$$

EXAMPLE 4 A ship uses LORAN (long-distance radio navigation) to find its position. Radio signals from stations A and B locate the ship on the blue hyperbola, and signals from stations B and C locate the ship on the red hyperbola. The equations of the hyperbolas are given below. Find the ship's position if it is east of the y-axis.

$$x^2 - y^2 - 16x + 32 = 0$$

$$-x^2 + y^2 - 8y + 8 = 0$$



$$x^2 - y^2 - 16x + 32 = 0$$

$$-x^2 + y^2 - 8y + 8 = 0$$