

(C) Systems – A Conceptual Review

- a. What is meant by the idea of LINEAR SYSTEMS?

- b. How did we solve LINEAR SYSTEMS graphically?

- c. How did we solve LINEAR SYSTEMS algebraically?

- d. So what do we mean by the idea of a SYSTEM of equations?

(D) Linear – Quadratic Systems → As we work through these questions algebraically, we will REVIEW algebraic methods for solving quadratic equations

- a. Example 1

(i) as an equation:

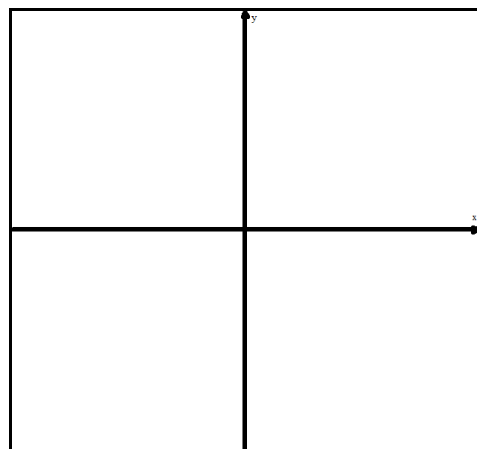
Solve for x : $x^2 - 2x + 2 = 12 - 5x$

(ii) as a system

Solve the system defined by

$$\begin{cases} f(x) = x^2 - 2x + 2 \\ g(x) = 12 - 5x \end{cases}$$

Graphic Verification/Interpretation



b. Example #2:

(i) as an equation:

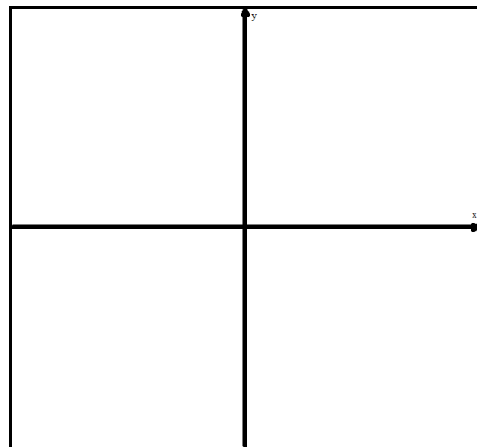
Solve for x: $x^2 - 4x - 2 = -6x - 3$

(ii) as a system

Solve the system

$$\begin{cases} f(x) = x^2 - 4x - 2 \\ g(x) = -6x - 3 \end{cases}$$

Graphic Verification/Interpretation



c. Example #3:

(i) as an equation:

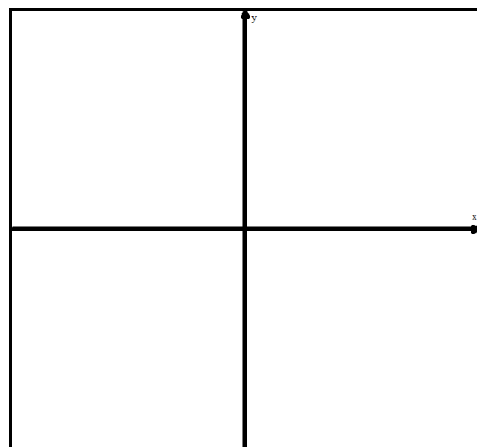
Solve for x: $-2x^2 - x + 5 = 3x + 1$

(ii) as a system

Solve the system

$$\begin{cases} f(x) = -2x^2 - x + 5 \\ g(x) = 3x + 1 \end{cases}$$

Graphic Verification/Interpretation



(E) Quadratic – Quadratic Systems → As we work through these questions algebraically, we will REVIEW algebraic methods for solving quadratic equations

a. Example 1

(i) as an equation:

Solve for x:

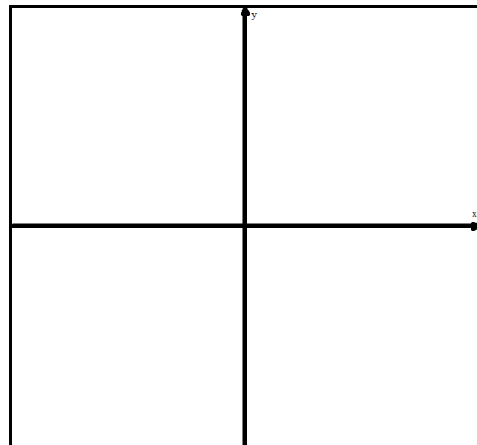
$$3x^2 - 5x - 10 = x^2 + 3x + 14$$

(ii) as a system

Solve the system defined by

$$\begin{cases} f(x) = 3x^2 - 5x - 10 \\ g(x) = x^2 + 3x + 14 \end{cases}$$

Graphic Verification/Interpretation



b. Example #2:

(i) as an equation:

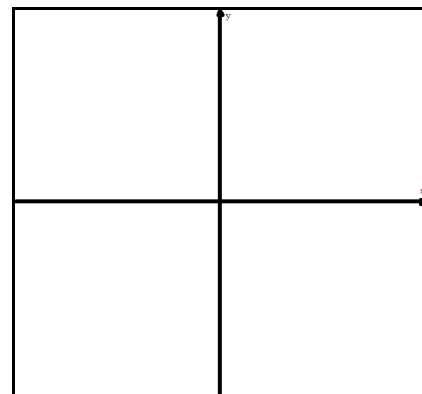
Solve for x: $x^2 - 2x - 3 = -x^2 + 2x + 9$

(ii) as a system

Solve the system

$$\begin{cases} f(x) = x^2 - 2x - 3 \\ g(x) = -x^2 + 2x + 9 \end{cases}$$

Graphic Verification/Interpretation



c. Example #3:

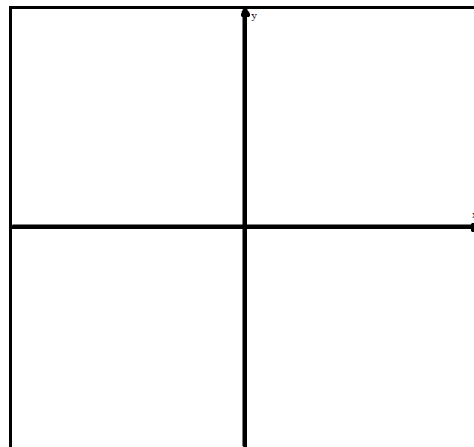
(i) as an equation:

Solve for x: $x^2 + x + 2 = x^2 - 3x$

(ii) as a system

Solve the system $\begin{cases} f(x) = x^2 + x + 2 \\ g(x) = x^2 - 3x \end{cases}$

Graphic Verification/Interpretation



(F) Challenge Question

Which value for b would result in the linear-quadratic system $y = x^2 + 3x + 1$ and $y = -x - b$ having only one intersection point? Justify your answer algebraically, graphically or with a table.

(G) Homework

Complete the worksheet pages 3 & 4 from

<http://www.teacherweb.com/ny/arlington/algebraproject/U6L16.SolvingLinear-QuadraticSystemsI.pdf>