

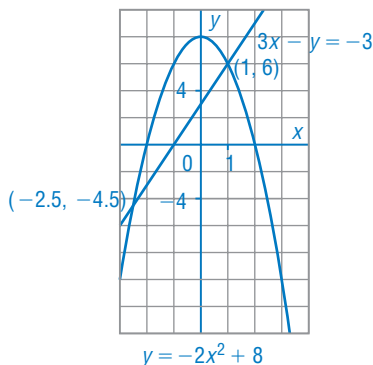
Lesson 5.4 Math Lab: Assess Your Understanding, pages 388–390

Use a graphing calculator.

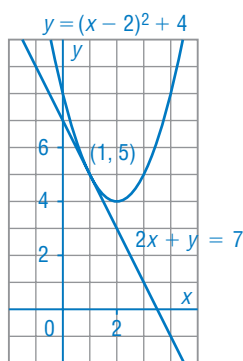
1. a) Graph each system of equations. On the grids below:

- Sketch the graphs.
- Label them with their equations.
- Write the coordinates of the points of intersection.

i) $y = -2x^2 + 8$
 $3x - y = -3$



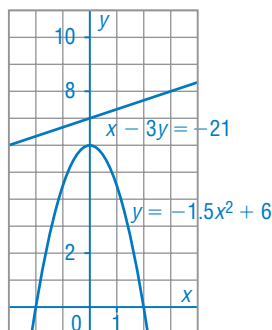
ii) $y = (x - 2)^2 + 4$
 $2x + y = 7$



iii) $y = -1.5x^2 + 6$
 $x - 3y = -21$



No points of intersection



b) Use the graphs in part a to identify the different numbers of solutions that a linear-quadratic system may have.

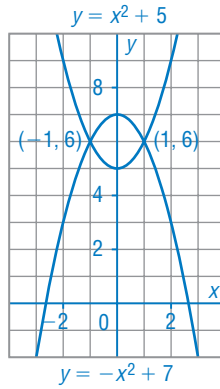


A linear-quadratic system may have 2 solutions, 1 solution, or no solution.

2. a) Graph each system of equations. On the grids below:

- Sketch the graphs.
- Label them with their equations.
- Write the coordinates of the points of intersection.

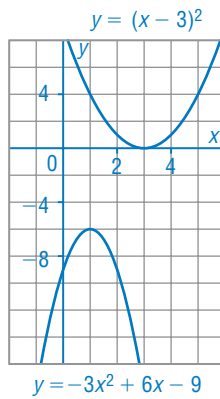
i) $y = x^2 + 5$
 $y = -x^2 + 7$



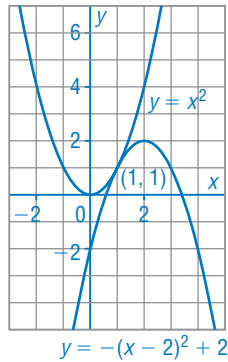
ii) $y = (x - 3)^2$
 $y = -3x^2 + 6x - 9$



No points of intersection



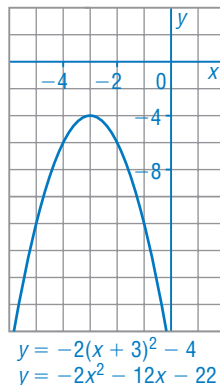
iii) $y = x^2$
 $y = -(x - 2)^2 + 2$



iv) $y = -2(x + 3)^2 - 4$
 $y = -2x^2 - 12x - 22$



Infinite points of intersection



- b) Use the graphs in part a to identify the different numbers of solutions that a quadratic-quadratic system may have.



A quadratic-quadratic system may have infinite solutions, 2 solutions, 1 solution, or no solution.

3. Graph each system of equations, then write the coordinates of the points of intersection to the nearest tenth.

a) $y = 2x^2 + 5x - 3$
 $y = -3x + 2$

b) $y = -2x^2 + 2x + 5$
 $y = x^2 - 7x + 9$

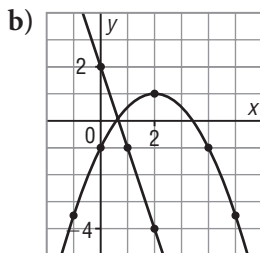
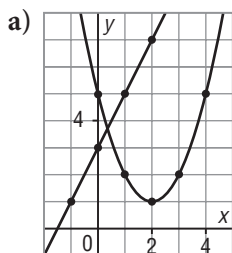


(-4.5, 15.6) and (0.5, 0.4)



(0.5, 5.5) and (2.5, -2.2)

4. Write the system of equations represented by each graph, then solve the system. Give the solutions to the nearest tenth.



The line has slope 2 and y-intercept 3: $y = 2x + 3$ ①
 The parabola has vertex (2, 1) and is congruent to $y = x^2$: $y = (x - 2)^2 + 1$ ②
 Equations ① and ② form the system.

The approximate solutions are: (0.4, 3.7), (5.6, 14.3)



The line has slope -3 and y-intercept 2: $y = -3x + 2$ ①
 The parabola has vertex (2, 1) and is congruent to $y = -0.5x^2$: $y = -0.5(x - 2)^2 + 1$ ②
 Equations ① and ② form the system.

The approximate solutions are: (0.6, 0.1), (9.4, -26.1)

5. Explain the meaning of the points of intersection of a linear-quadratic system or a quadratic-quadratic system.



The points of intersection of a linear-quadratic system or quadratic-quadratic system are the points where the graphs of the equations in the system intersect. The coordinates of each point of intersection satisfy both equations in the system.