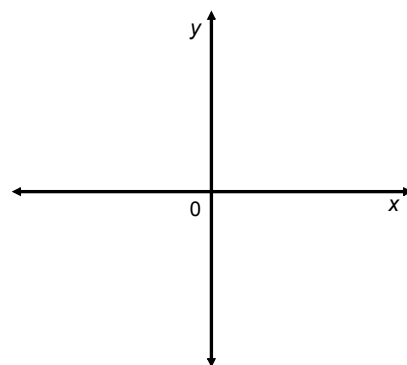
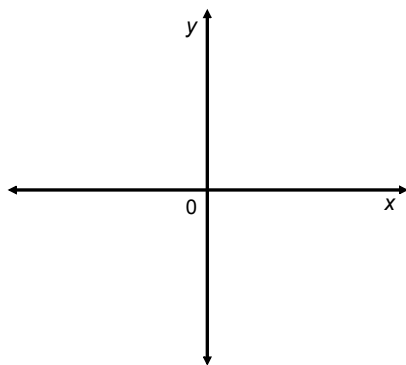
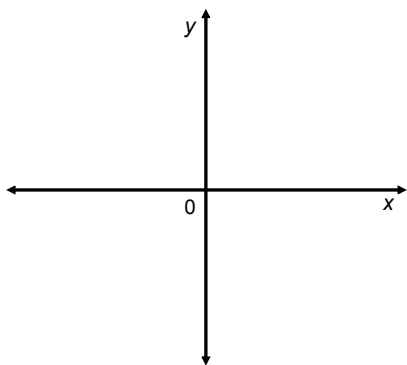
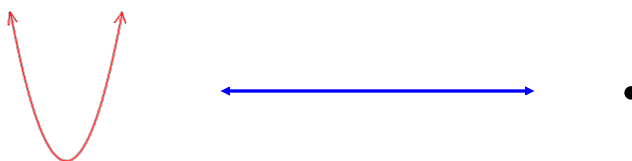


**Chapter**  
**8**

# Linear-Quadratic Systems

Drag the parabolas and line to construct three graphs representing each of the following scenarios. Mark the point(s) of intersection by dragging the point.

1. The maximum number of intersection points that a linear-quadratic system of equations could have.
2. A linear-quadratic system with only one point of intersection.
3. A linear-quadratic system of equations with no points of intersection.

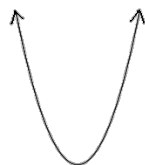
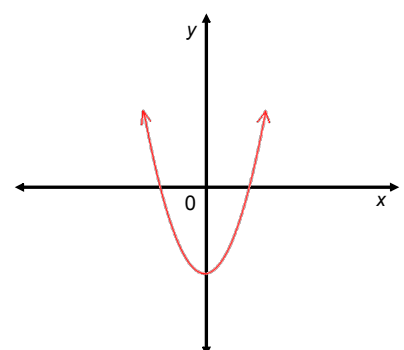
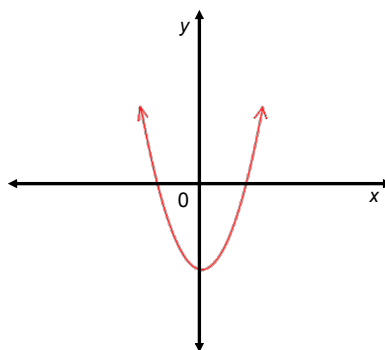
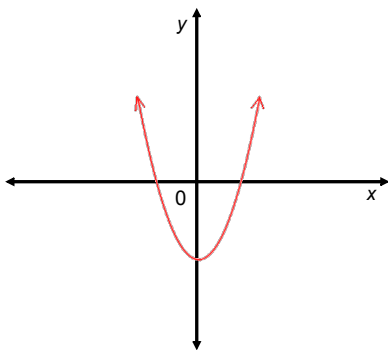


[Click here for the solution.](#)

**Chapter  
8****Quadratic-Quadratic Systems**

Use the parabolas to construct diagrams representing each of the following scenarios. Mark the point(s) of intersection by dragging the point.

1. The maximum number of intersection points that two parabolas could have.
2. Where the parabolas intersect at exactly one point.
3. Where the parabolas have no points of intersection.



[Click here for the solution.](#)

Any ordered pair  $(x, y)$  that satisfies both equations in a system of linear-quadratic or quadratic-quadratic equations is a solution of the system.

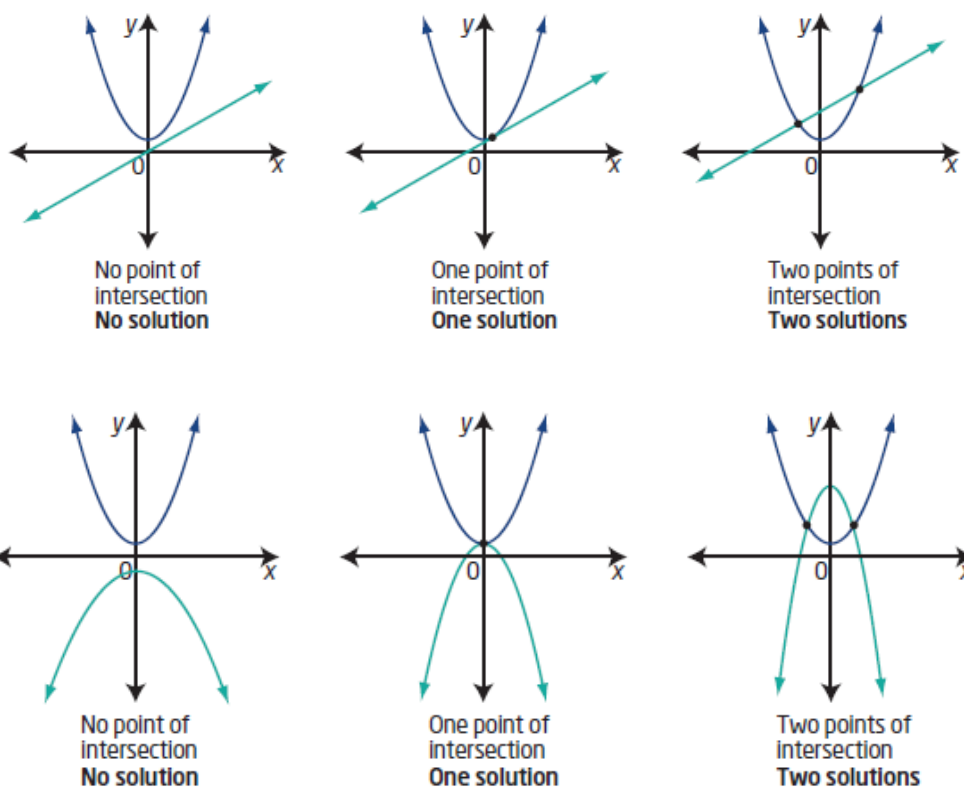
For example, the point  $(2, 4)$  is a solution of the system

$$y = x + 2$$

$$y = x^2$$

The coordinates  $x = 2$  and  $y = 4$  satisfy both equations.

A system of linear-quadratic or quadratic-quadratic equations may have no real solution, one real solution, or two real solutions. A quadratic-quadratic system of equations may also have an infinite number of real solutions.

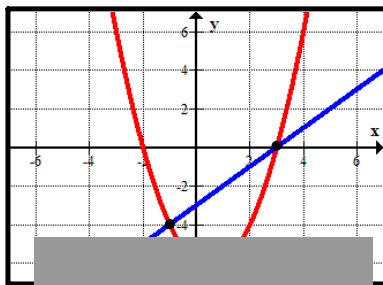


# Chapter 8

## Linear-Quadratic Systems

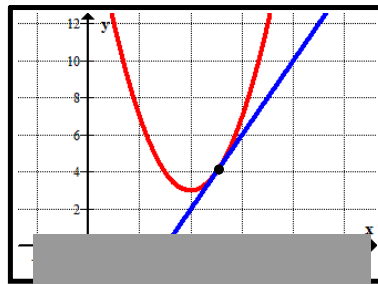
Determine the number of solutions in each scenario. Drag the number of solutions to the box below each scenario.

one solution



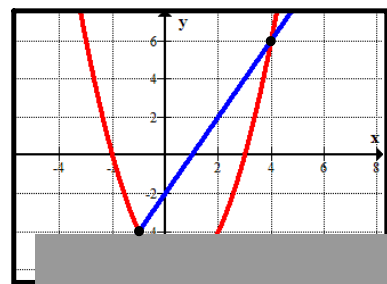
Drag text here

two solutions

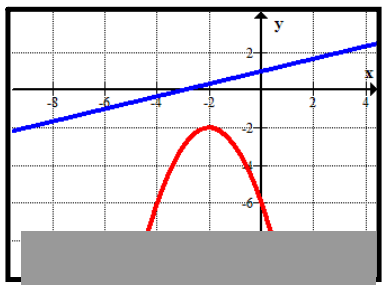


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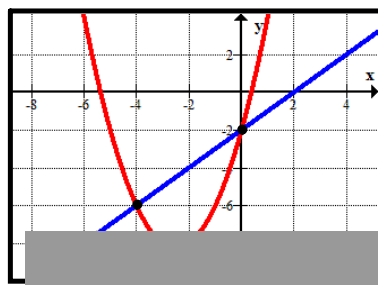
no solution



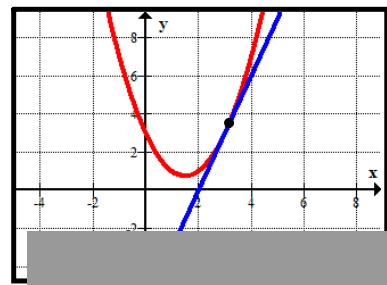
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Chapter  
8

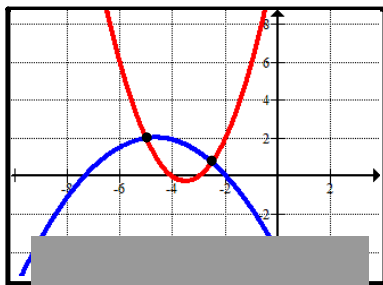
# Quadratic-Quadratic Systems

Determine the number of solutions in each scenario.  
Drag the number of solutions to the box below each scenario.

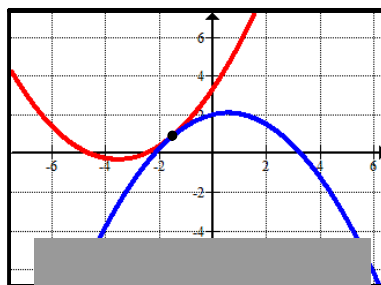
one solution

two solutions

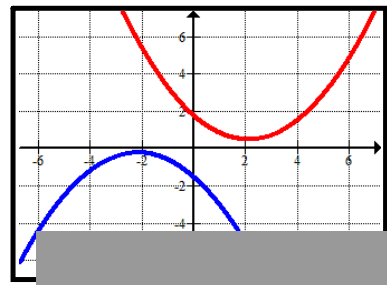
no solution



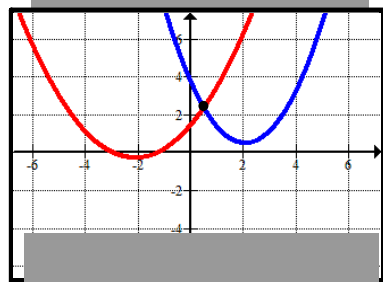
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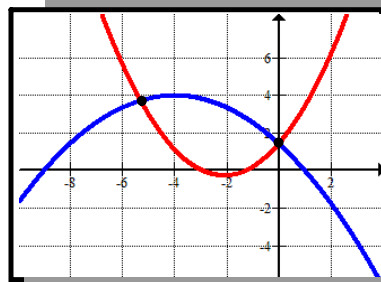
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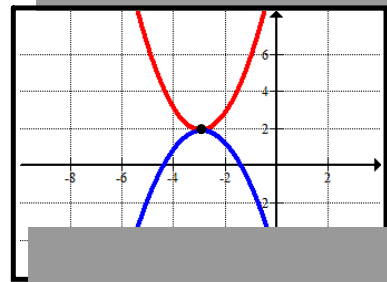
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Chapter  
8

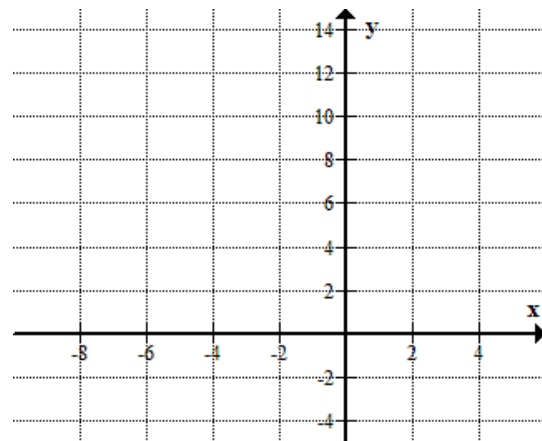
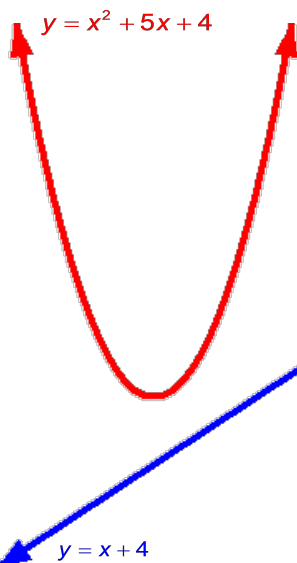
# Linear-Quadratic Systems

Solve the following system of equations graphically.

$$y = x^2 + 5x + 4$$

$$y = x + 4$$

Drag the graphs of the given equations to locate them in the correct position on the grid. Determine the points of intersection to solve the system.



Verify the solutions by substituting into the original equations using the pen tool.

[Click here for the solution.](#)

Chapter  
8

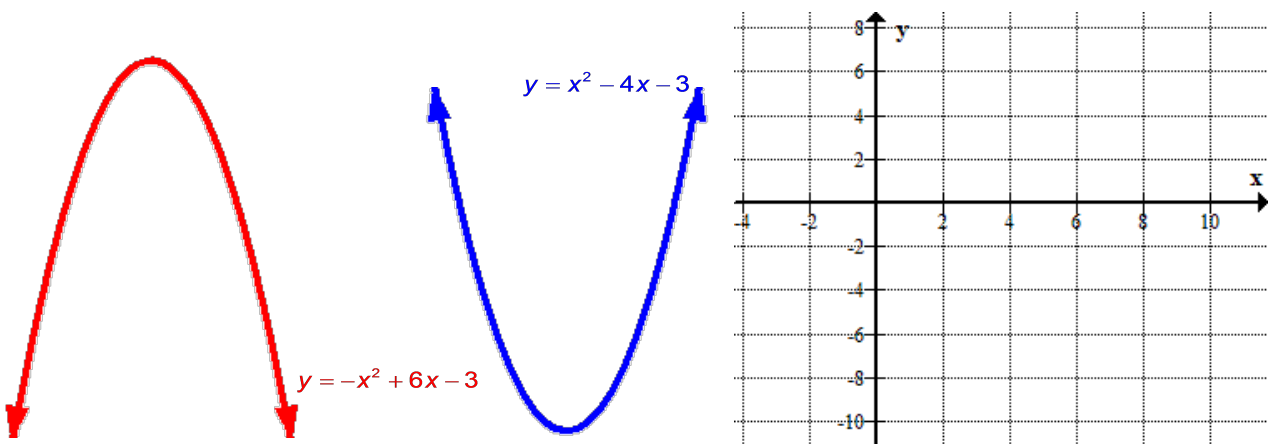
## Quadratic-Quadratic Systems

Solve the following system of equations graphically

$$y = -x^2 + 6x - 3$$

$$y = x^2 - 4x - 3$$

Drag the graphs of the given equations to locate them in the correct position on the grid. Determine the points of intersection to solve the system.



Verify the solutions by substituting into the original equations using the pen tool.

[Click here for the solution.](#)

**Chapter**  
**8**

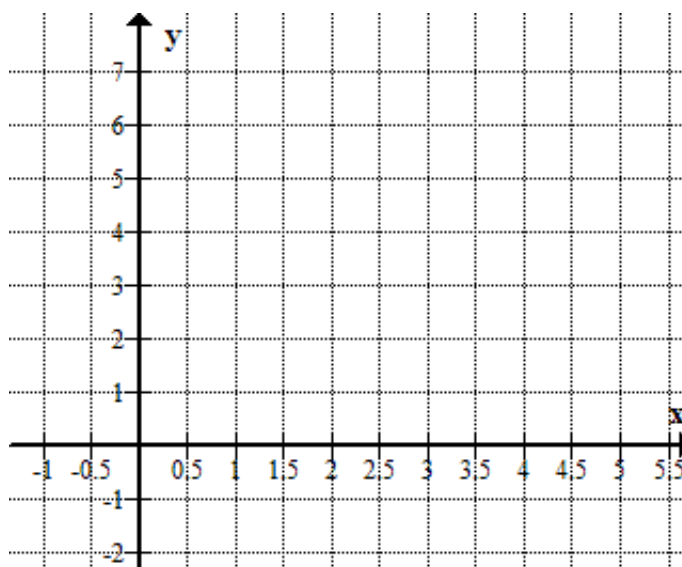
# Linear-Quadratic Systems

Solve the system of equations graphically.

$$y = x^2 - 5x + 5$$

$$2x + y = 5$$

Use the pen tool to sketch the graphs of the equations.



[Click here for the solution.](#)



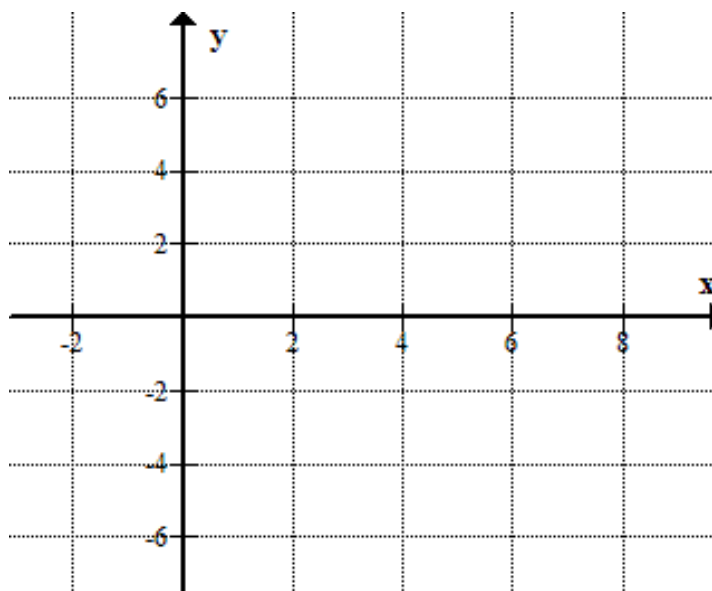
**Chapter**  
**8****Quadratic-Quadratic Systems**

Solve the following system of equations graphically

$$y = -x^2 + 10x - 21$$

$$y = x^2 - 4x - 1$$

Use the pen tool to sketch the graph of the equations.



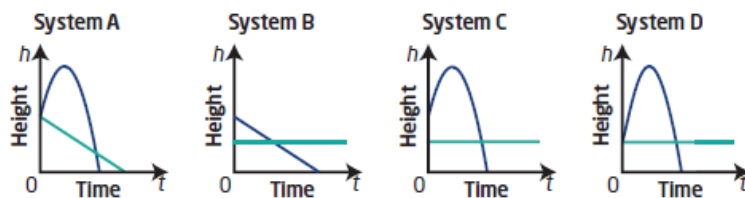
[Click here for the solution.](#)

### Example 1

#### Relate a System of Equations to a Context

Blythe Hartley, of Edmonton, Alberta, is one of Canada's best springboard divers. She is doing training dives from a 3-m springboard. Her coach uses video analysis to plot her height above the water.

- Which system could represent the scenario? Explain your choice and why the other graphs do not model this situation.
- Interpret the point(s) of intersection in the system you chose.



### Your Turn

Two divers start their dives at the same time. One diver jumps from a 1-m springboard and the other jumps from a 3-m springboard. Their heights above the water are plotted over time.

- Which system could model this scenario? Explain your choice. Tell why the other graphs could not model this situation.
- Explain why there is no point of intersection in the graph you chose.

