

Learning Target

4.9 Quadratic Systems

I can solve a system consisting of a linear equation and a quadratic equation by graphing.

see pg. 55

p. 72-73 Solving Quadratic Systems 4.9

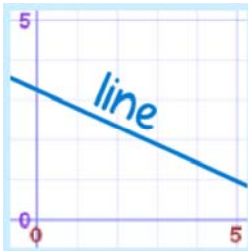
Warm-up: $y = a(x-h)^2 + k$ p. 72

Identify the vertex and axis of symmetry:

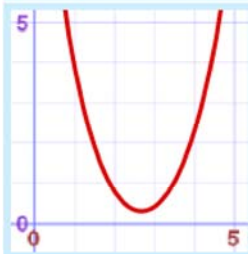
1) $y = -3(x-1)^2 + 6$ 2) $y = (x+2)^2 + 4$

$(1, 6)$ (h, k) $x = -2$

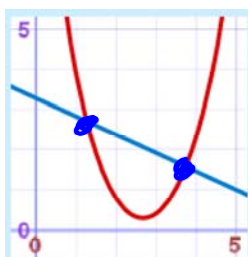
$x = 1$ $x = h$ $(-2, 4)$



A [Linear Equation](#) is an **equation** of a **line**.



A [Quadratic Equation](#) is the equation of a [parabola](#) and has at least one variable squared (such as x^2)



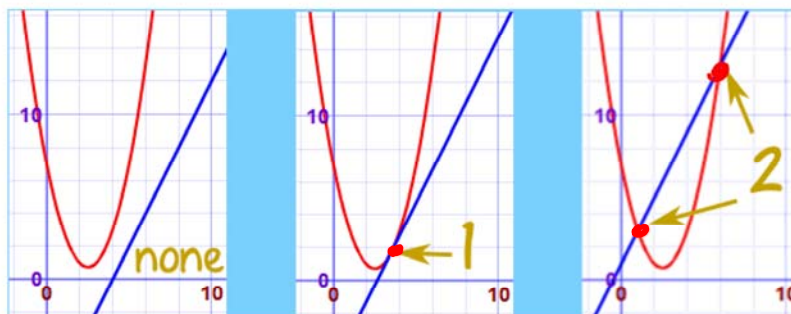
And together they form a **System** of a Linear and a Quadratic Equation

Solutions

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There are three possible cases:

- **No** real solution (happens when they never intersect)
- **One** real solution (when the straight line just touches the quadratic)
- **Two** real solutions (like the example above)



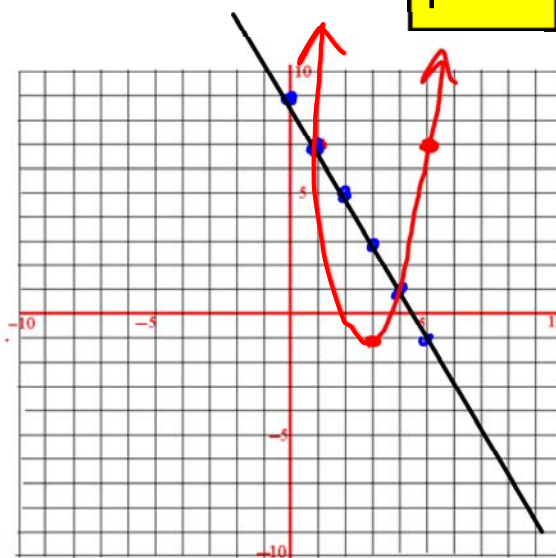
Solve the given system of equations graphically.

1.) $y = 2(x - 3)^2 - 1$
 $y = -2x + 9$ $y = mx + b$

x	y
0	17
1	7
3	-1
5	7
6	17

Solution(s): $(1, 7)$ and $(4, 1)$

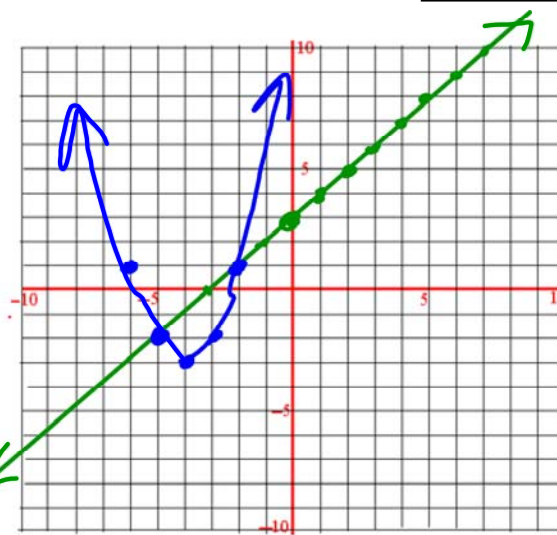
p. 73



p. 73

2.) $y = (x + 4)^2 - 3$
 $y = x + 3$

x	y
-2	1
-3	-2
-4	-3
-5	-2
-6	1



Solution(s):

 $(-5, -2), (-2, 1)$

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Homework - Solving Quadratic Systems

Review Question / Exit Slip

p. 72

1. Given the function below, identify the key information

$$y = 3x^2 - 12x + 10$$

Opens: _____

Axis of Symmetry: _____

Vertex: _____

Maximum / Minimum: (Circle One)

Domain: _____

Range: _____

HINT