

# Algebra I Packet # 4

I.) Watch three videos of your choice on solving quadratic equations by graphing using desmos.

II.) Write a brief summary on how to solve quadratic equations by graphing using desmos.

III.) Read the study guide and intervention worksheet 10-2. #1-3  
Type each quadratic equation into desmos.

Solution #1)  $-3, -4$

Solution #2  $4, -3$

Solution #3 no real root. (the parabola does not intercept the x axis).

IV). Use desmos to solve  
each quadratic equation.

# 1-12

V). Once you have completed  
packet # 4. Please email  
II, III and IV. to me at  
wiflythe@IWCS.k12.va.us .

# 10-2 Study Guide and Intervention

## Solving Quadratic Equations by Graphing

### Solve by Graphing

<b>Quadratic Equation</b>	an equation of the form $ax^2 + bx + c = 0$ , where $a \neq 0$
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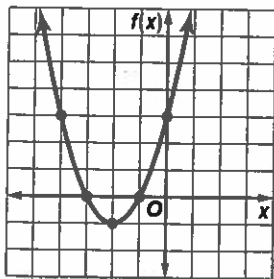
The solutions of a quadratic equation are called the **roots** of the equation. The roots of a quadratic equation can be found by graphing the related quadratic function  $f(x) = ax^2 + bx + c$  and finding the  $x$ -intercepts or **zeros** of the function.

**Example 1** Solve  $x^2 + 4x + 3 = 0$  by graphing.

Graph the related function  $f(x) = x^2 + 4x + 3$ . The equation of the axis of symmetry is

$x = -\frac{4}{2(1)}$  or  $-2$ . The vertex is at  $(-2, -1)$ .

Graph the vertex and several other points on either side of the axis of symmetry.



To solve  $x^2 + 4x + 3 = 0$ , you need to know where the value of  $f(x) = 0$ . This occurs at the  $x$ -intercepts,  $-3$  and  $-1$ .

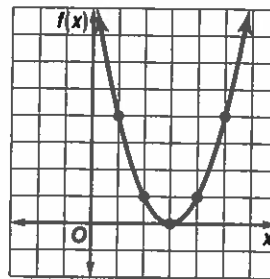
The solutions are  $-3$  and  $-1$ .

**Example 2** Solve  $x^2 - 6x + 9 = 0$  by graphing.

Graph the related function  $f(x) = x^2 - 6x + 9$ . The equation of the axis of symmetry is

$x = \frac{6}{2(1)}$  or  $3$ . The vertex is at  $(3, 0)$ . Graph

the vertex and several other points on either side of the axis of symmetry.



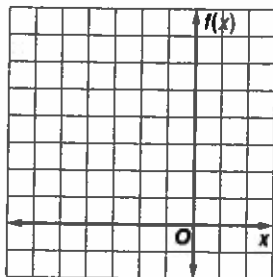
To solve  $x^2 - 6x + 9 = 0$ , you need to know where the value of  $f(x) = 0$ . The vertex of the parabola is the  $x$ -intercept. Thus, the only solution is  $3$ .

**Exercises**

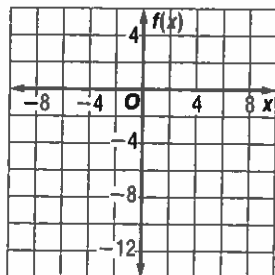
*\*Use Demos\**

Solve each equation by graphing.

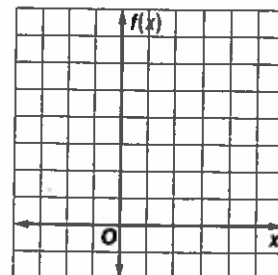
1.  $x^2 + 7x + 12 = 0$



2.  $x^2 - x - 12 = 0$



3.  $x^2 - 4x + 5 = 0$

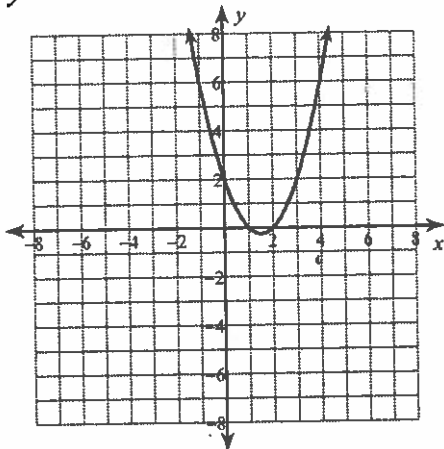


## Lesson 2- Solving Quadratics by Graphing

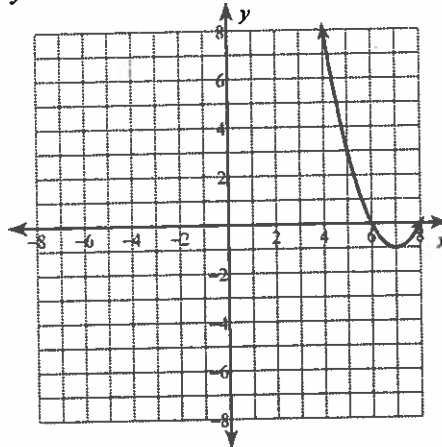
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Solve each equation by using the given graph.

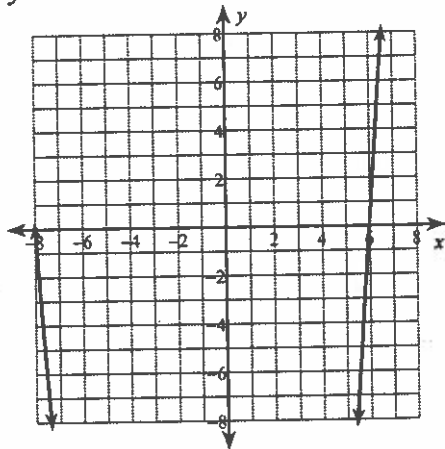
1)  $y = x^2 - 3x + 2$



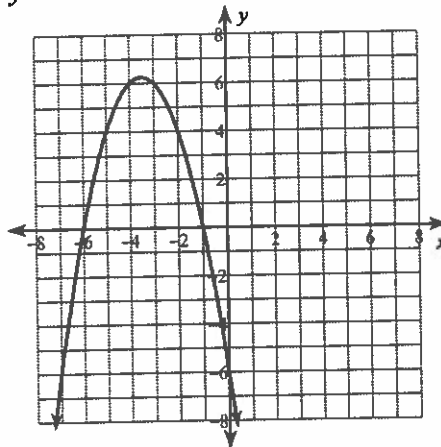
2)  $y = x^2 - 14x + 48$



3)  $y = x^2 + 2x - 48$



4)  $y = -x^2 - 7x - 6$



Solve each equation by graphing by hand.

5)  $k^2 - 11k + 24 = 0$

7)  $n^2 - n - 30 = 0$

9)  $x^2 - 11x + 19 = -5$

11)  $x^2 + x - 52 = 4$

6)  $x^2 - 5x - 14 = 0$

8)  $a^2 - 7a = 0$

10)  $m^2 - 5m + 4 = -2$

12)  $n^2 + 3 = 4$