

Algebra 1: 12.4 Guided Notes  
Solving Quadratics by Factoring

Name \_\_\_\_\_ Period \_\_\_\_\_

**Warm Up - Turn and Talk**

Turn and talk to your neighbor. Describe what it means to *factor* a polynomial. Your explanation should include terms like *polynomial*, *factor*, and *multiply*. Be prepared to discuss your thoughts with the class.

**Notes**

Recall, the **Zero Product Property** states if the product of 2 or more factors = 0, then at least 1 of the factors = 0.

\_\_\_\_\_

**"I Do"**

Factor the polynomial  $x^2 - 4x - 5 = 0$ . Then, use the Zero Product Property to determine the solutions or  $x$ -intercepts.

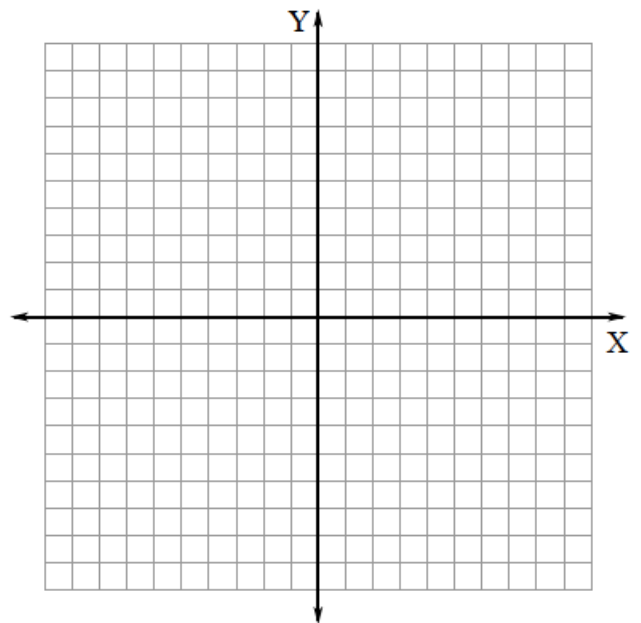
The  $x$ -intercepts are \_\_\_\_\_ and \_\_\_\_\_.

Graph the solutions to the quadratic equation  $y = x^2 - 4x - 5$  on the coordinate plane. Find the  $x$ -intercept(s), axis of symmetry, and vertex.

$x$ -intercept(s):

axis of symmetry:

vertex:



The \_\_\_\_\_ are the \_\_\_\_\_ to the quadratic equation.  
They are also called the \_\_\_\_\_ or \_\_\_\_\_ because you set the quadratic equation = 0 and solve for  $x$ .  
On the coordinate plane, the  $x$ -intercepts are where the parabola crosses the \_\_\_\_\_.

**“We Do”**

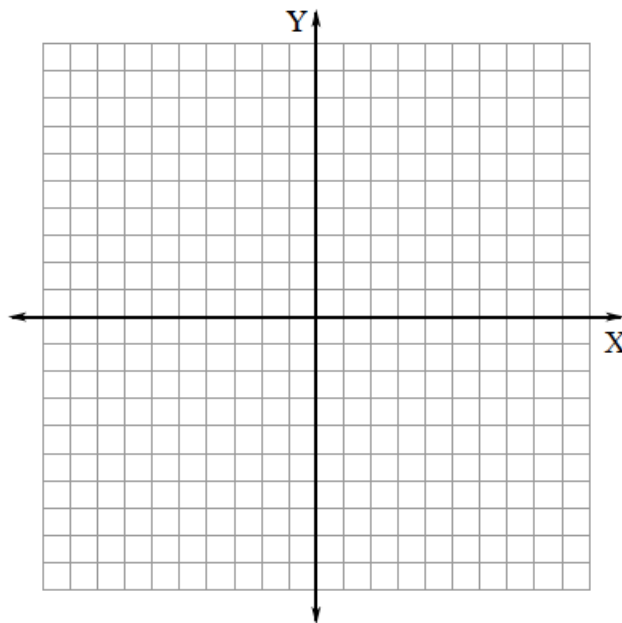
Factor each polynomial to determine the solution(s) or  $x$ -intercept(s), if possible. Then, graph the solution(s).

1.  $x^2 + 8x = -7$

**$x$ -intercept(s):**

**axis of symmetry:  $x =$**

**vertex:**

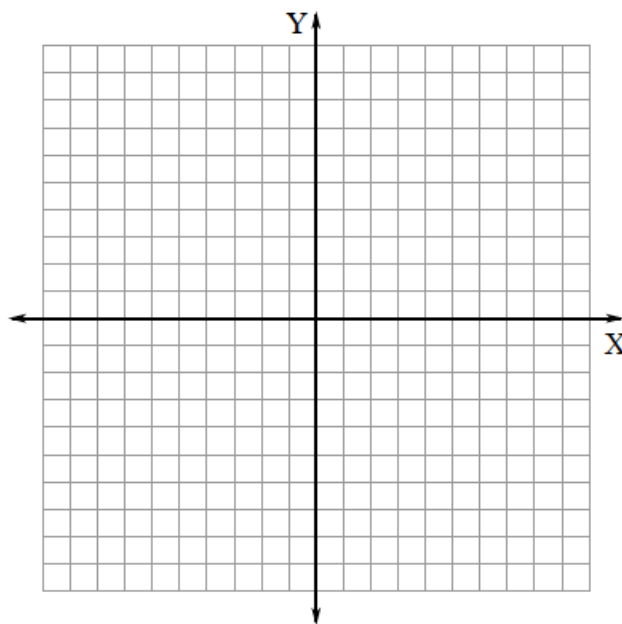


2.  $x^2 - 5x = 13x - 81$

**$x$ -intercept(s):**

**axis of symmetry:  $x =$**

**vertex:**

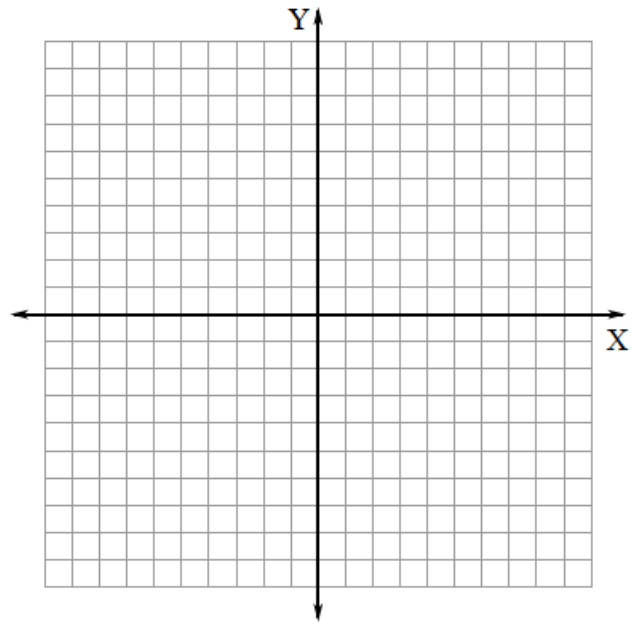


3.  $x^2 - 11x + 12$

**$x$ -intercept(s):**

**axis of symmetry:  $x =$**

**vertex:**



4.  $2x^2 + 4x$

**$x$ -intercept(s):**

**axis of symmetry:  $x =$**

**vertex:**

