Algebra 2 Trig Warm Up

1) Write the expressions as a complex number in standard form.

a) $\frac{7+4i}{2-3i}$ $(2+3i)$ $(2+3i)$

$14+21i+8i+12i^2$ (-1)

$4+6i-6i-9i^2$ (-1)

$\frac{2+29i}{13}$

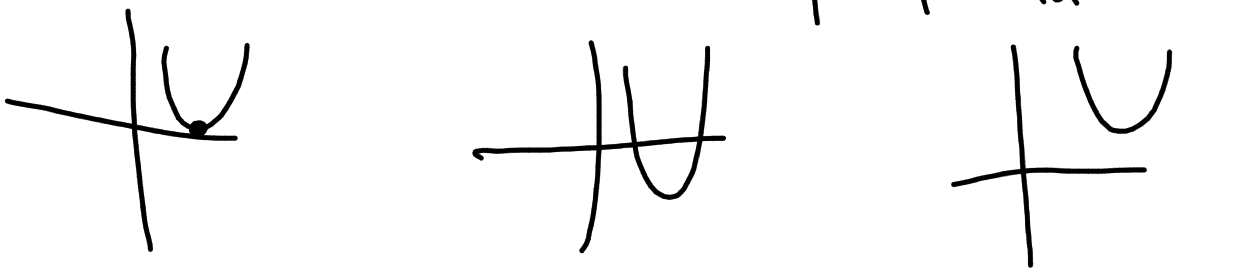
b) $(5+i)(4-2i)$ (-1)

$20-10i+4i-2i^2$

$22-6i$

2) Discriminant... What is the formula? What does that mean in regards to graphing quadratics? b^2-4ac $2x^2+5x+7$

$b^2-4ac=0$ $b^2-4ac=+$ $b^2-4ac=-$



Algebra 2 Trig Daily Learning Target Quiz

Quadratic Formula-Discriminant-Imaginary Numbers Day 5

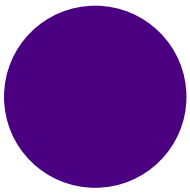
1.) Solve using the quadratic formula, then solve by factoring. $3x^2 + 7x - 24 = 13x$	2.) Draw and explain the graphs of a quadratic function when the discriminant is positive, negative, and zero.
3.)Write the expression as a complex number in standard form. $2(3+4i)+(5-i)$	4.)Write the expression as a complex number in standard form. $\frac{5+2i}{3-2i}$

Algebra 2 Trig DLT Extra Credit
Unit 2 Day 7

For variables a and b, $x = 5a^2$ and $y = -2a^3 + b$. Which of the following expressions represents the product xy?

A) $3a^2 + b$
B) $3a^3 + b$
C) $-40a^5 + 5a^2b$
D) $-10a^5 + 5a^2b$
E) $-10a^6 + 5a^2b$

*Go over Quiz



Graphing Quadratics

graphic organizer

For every graph find the following:

-vertex (max/min)

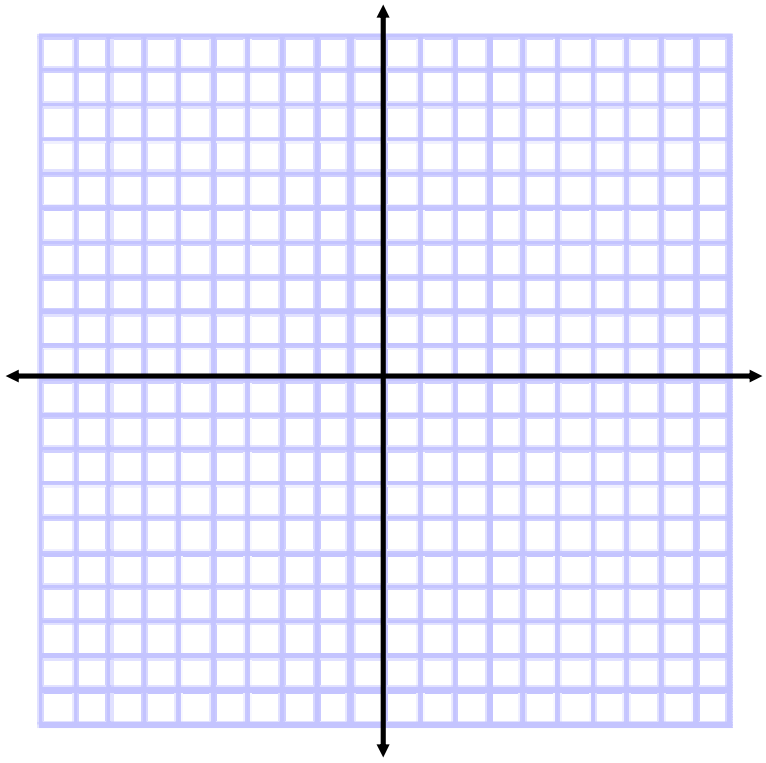
-line of symmetry

-x-intercepts

-y-intercepts

-domain

-range

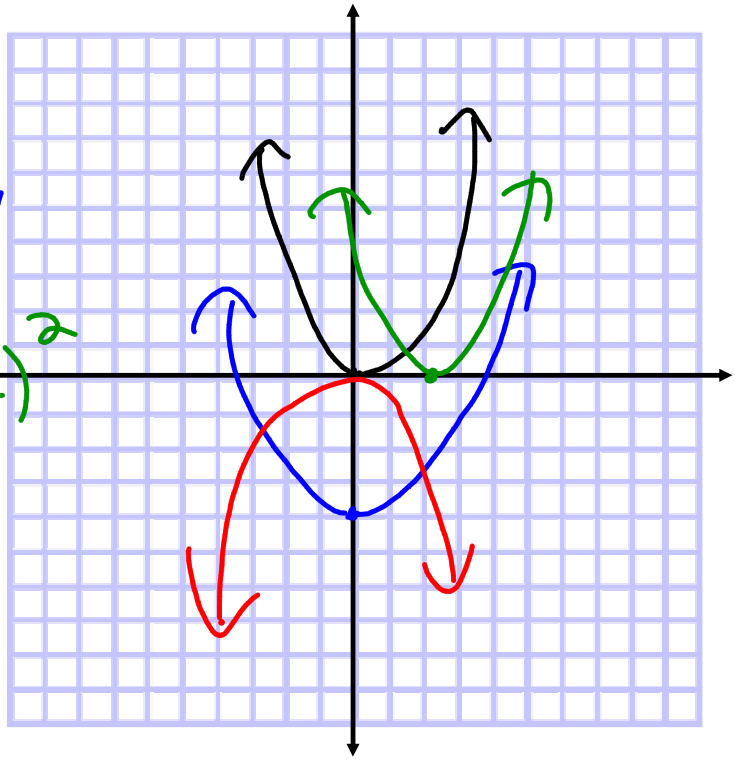


Graphing Quadratics

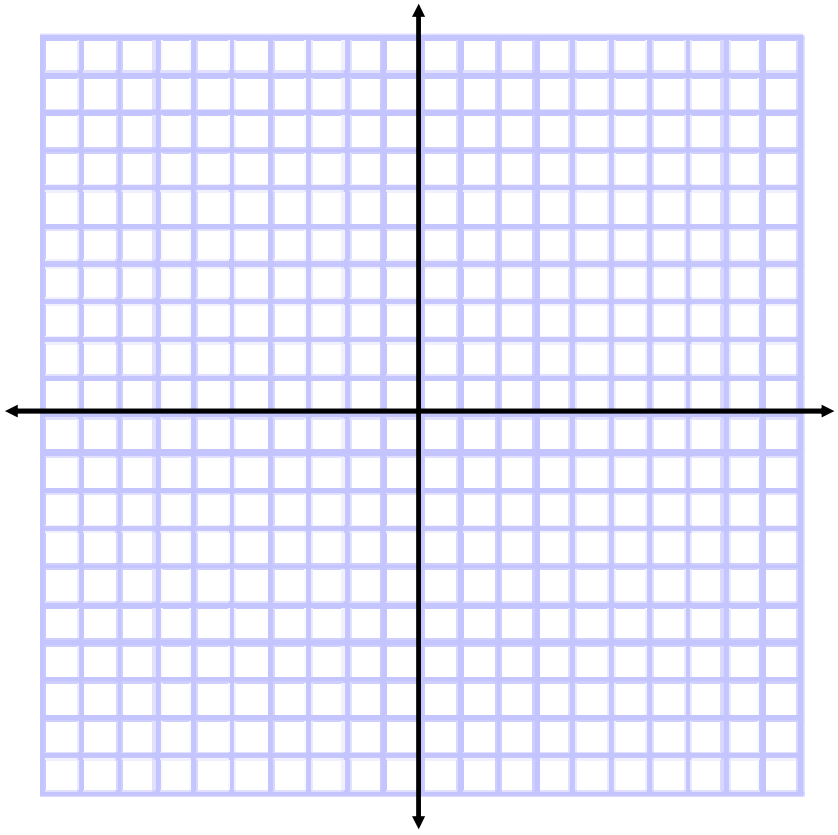
$y=x^2-4$

$y=(x-2)^2$

$y=-x^2$



1. Graph $f(x) = 2x^2$

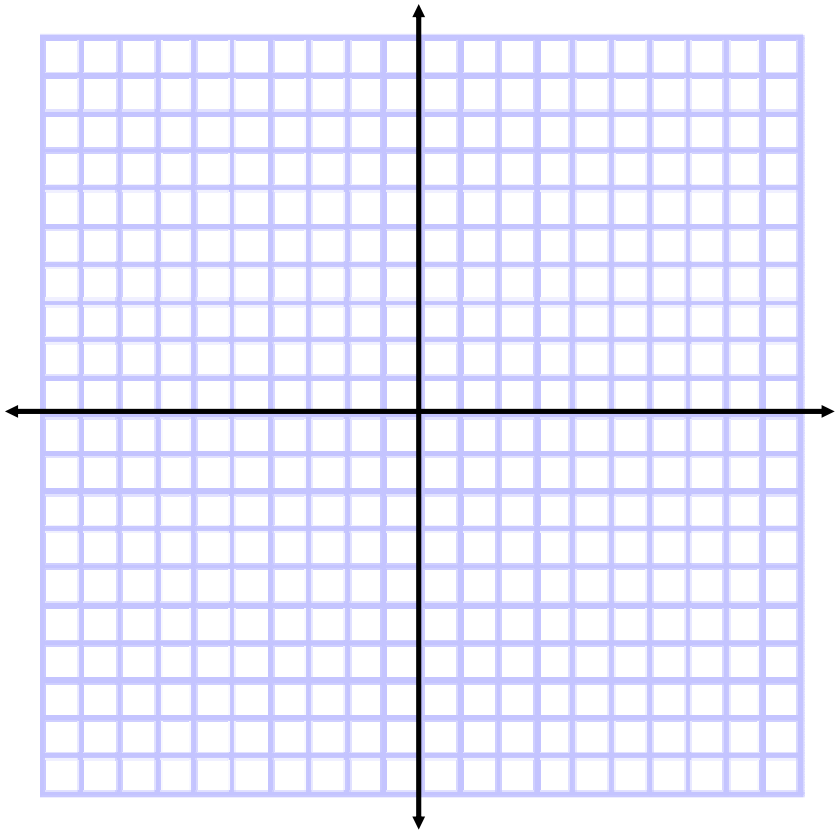


2. Graph $f(x) = {}^1/_2x^2$

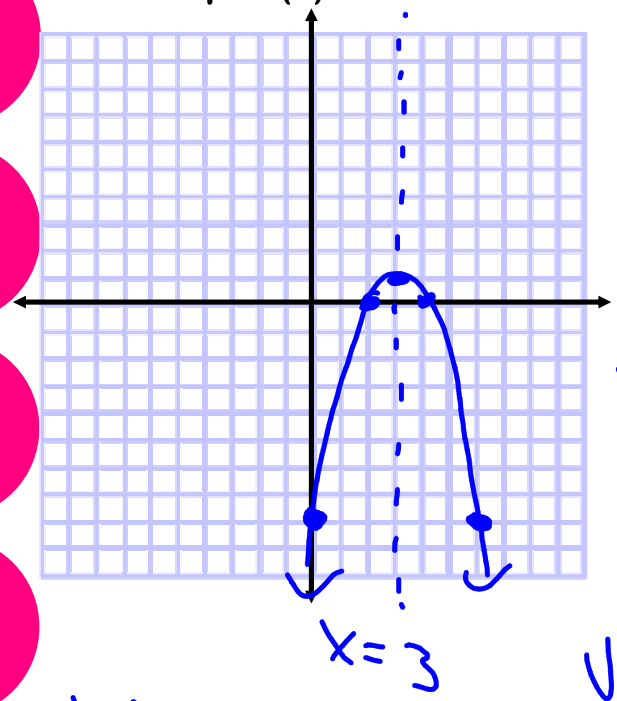
$$If\ |a| > 1,\ then\ it's\ skinnier\ than\ normal.$$

$$If\ 0 < |a| < 1,\ then\ it's\ wider\ than\ normal.$$

1. Graph $f(x) = -2x^2 + 4$



1. Graph $f(x) = -x^2 + 6x - 8$



a - ∩

y-intercept = -8

$x = -\frac{b}{2a} = \frac{-6}{2(-1)} = 3$

$y = -1(3)^2 + 6(3) - 8$

$y = -9 + 18 - 8$

$y = 1$

$x = 3$

Vertex (3, 1)

Domain - $(-\infty, \infty)$

Range - $(-\infty, 1]$

x-intercepts

$y = -x^2 + 6x - 8$

$y = -1(x^2 - 6x + 8)$

$(x-4)(x-2)$

$x = 4 \quad x = 2$

1. STANDARD FORM

$$f(x) = ax^2 + bx + c$$

Steps for Graphing ...
1. look at "a", does the parabola open up or down?

2. find the vertex
x - value = $^{-b}/_{2a}$, then plug the x you found into the equation to find the y value

3. sketch axis of symmetry

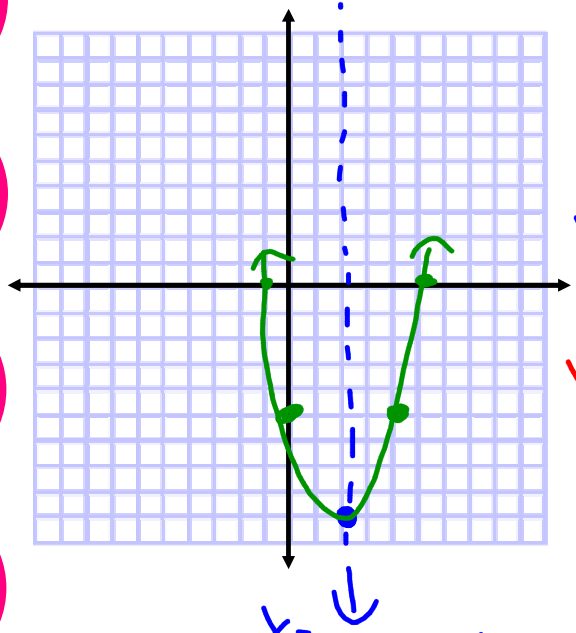
4. find the y - intercept (c) & reflect across the axis of symmetry

5. evaluate function for another x value & reflect across axis of symmetry

6. draw the parabola through the points

If a>0, then it opens up.

If a<0, then it opens down.



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

$a + \cup$

$x = \frac{-b}{2a}$ Vertex $(2, -9)$

$x = \frac{4}{2(1)} = 2$

$y = 2^2 - 4(2) - 5$

$y = 4 - 8 - 5$

$y = -9$

$x = 2$ axis of symmetry

Domain $-(-\infty, \infty)$

Range $-(-9, \infty)$

x-intercepts $-(5,0)(-1,0)$

y-intercept $-(0, -5)$

A.O.S $- x = 2$

(Axis of Symmetry

vertex $-(2, -9)$

x-intercepts

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

$y = (x-5)(x+1)$

$x - 5 = 0 \quad x + 1 = 0$

$x = 5 \quad x = -1$

2. VERTEX FORM

$$y = a(x - h)^2 + k$$

"a" : steepness of the parabola

"h" : moves left & right

"k" : moves up & down

vertex : (h, k)

Steps for Graphing ...

1. look at "a", does the parabola open up or down?

2. plot the vertex (h, k)

3. sketch axis of symmetry x = h

4. evaluate function for another x value & reflect across axis of symmetry

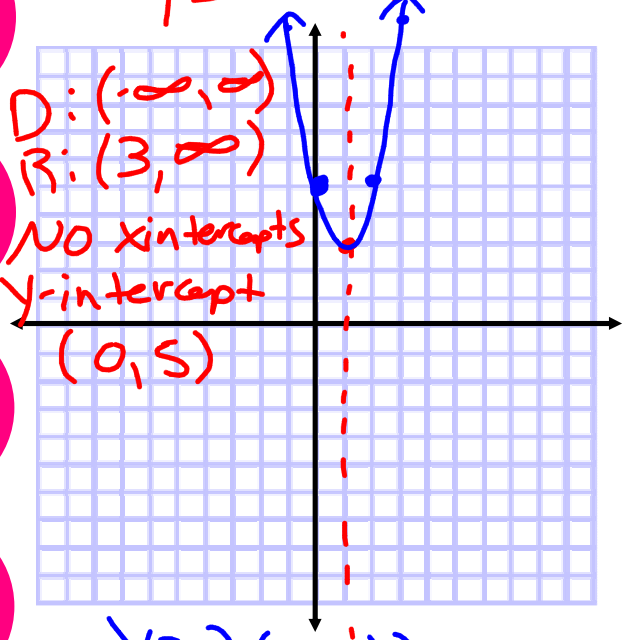
5. draw the parabola through the points

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

∪ a+

V (1 , 3)

aos x = 1



x	y
-1	11
0	5
1	3
2	5
3	11

$y = 2(0-1)^2 + 3$

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

$y = 2(1) + 3$

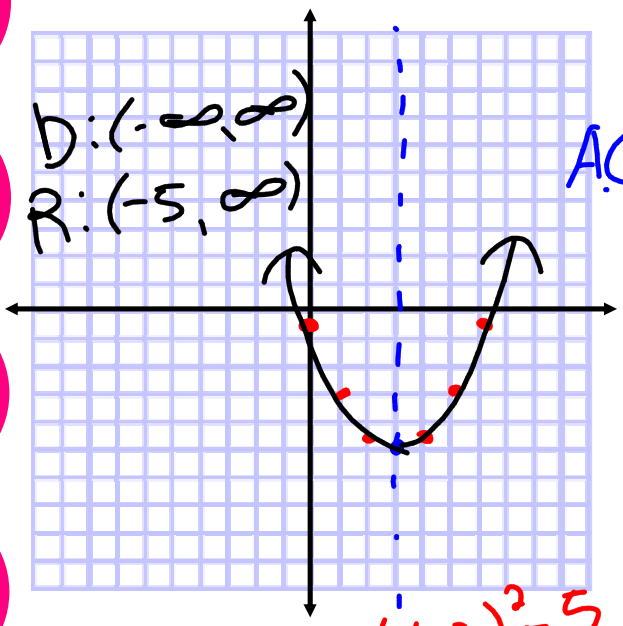
$y = 5$

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

$y = 2(2)^2 + 3$

$y = 2(4) + 3$

2. Graph $f(x) = \frac{1}{2}(x - 3)^2 - 5$



D: $(-\infty, \infty)$

R: $(-5, \infty)$

$V(3, -5)$

A.O.S $x = 3$

x	y
1	-3
2	$-\frac{9}{2}$
3	-5
4	$-\frac{9}{2}$
5	-3

$y = \frac{1}{2}(4-3)^2 - 5$

$y = \frac{1}{2}(1)^2 - 5$

$y = \frac{1}{2} - \frac{5}{2} \cdot 2$

$\frac{1}{2} - \frac{10}{2}$

$-\frac{9}{2}$

$y = \frac{1}{2}(5-3)^2 - 5$

$y = \frac{1}{2}(2)^2 - 5$

$y = \frac{1}{2}(4) - 5$

$y = 2 - 5$

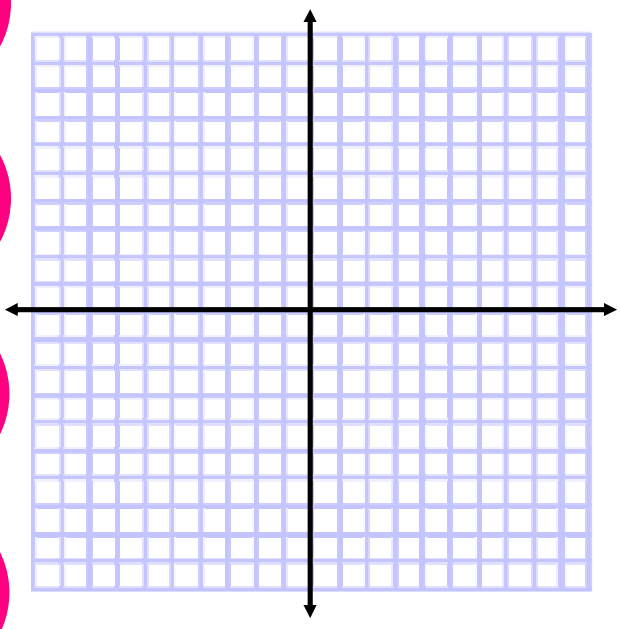
Vertex $(-5, 2)$

Axis of Symmetry $x = -5$

$y = a(x-h)^2 + k$

D $y = -3(x+5)^2 + 2$

2. Graph $f(x) = 2(x + 1)^2 - 3$



3. INTERCEPT FORM

$$y = a(x - p)(x - q)$$

Steps for Graphing ...
1. plot the x - intercepts at (p, 0) and q, 0)

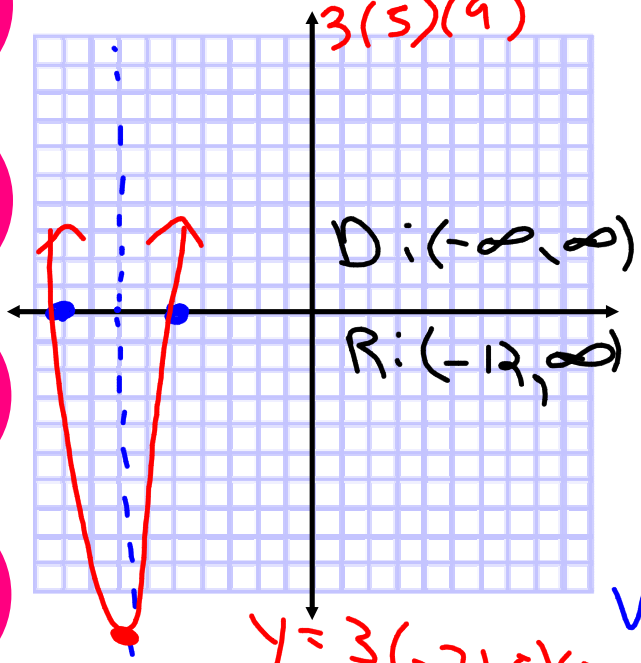
2. find the coordinates of the vertex ... $x = {}^{p+q}/_{2}$ ... plug the x value in to the equation to find the y value of the vertex

3. plug in another x value & reflect across the axis of symmetry

4. connect the dots!

$y = 3(x+5)(x+9)$

$3(5)(9)$



$x+5=0 \quad x+9=0$

$x=-5 \quad x=-9$

$x = \frac{p+q}{2}$

$x = \frac{-5+-9}{2}$

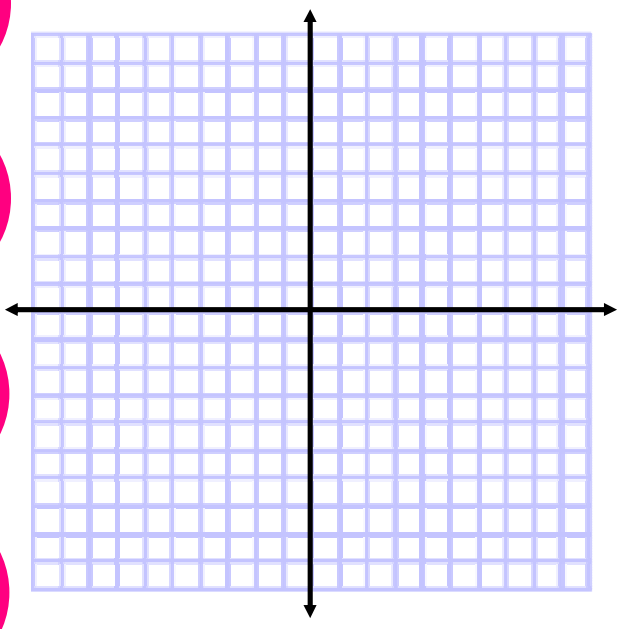
$x = \frac{-14}{2} = -7$

$V(-7, -12)$

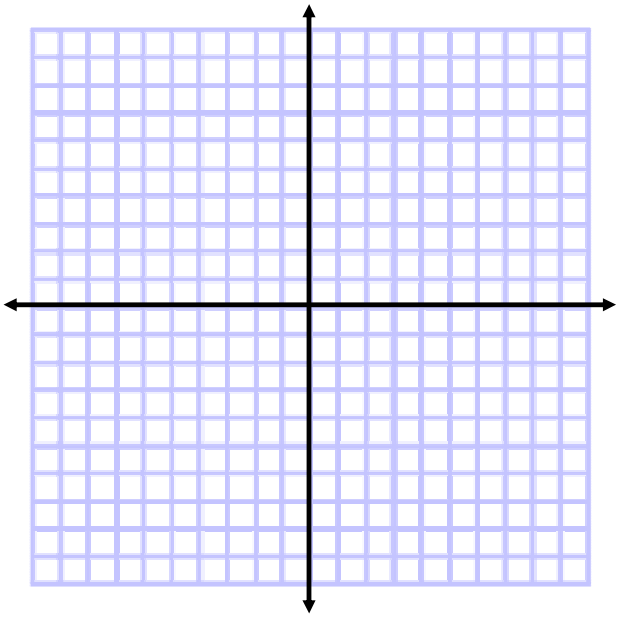
$y = 3(-7+5)(-7+9)$

$y = 3(-2)(2)$

2. Graph f(x) = (x - 3)(x + 4)



Matching Activity



IV. Rewrite the form

Write the function in standard form!

1.) $y = (x+1)(x-2)$ Intercept

$x^2 - 2x + 1x - 2$

$x^2 - 1x - 2$

Standard $Ax^2 + bx + c$

IV. Rewrite the form

So some owlgebra to cleanse your palate…

Write the function in standard form!

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

IV. Rewrite the form

Write the function in standard form!

2.) $y = -(x-4)^2+1$ Vertex

$y = -((x-4)(x-4))+1$ Standard

$y = -(x^2-4x-4x+16)+1$

$y = -(x^2-8x+16)+1$

$y = -x^2+8x-16+1$

$y = -x^2+8x-15$

IV. Rewrite the form

Write the function in intercept form!

3.) $y = x^2 - 7x + 10$ (A, M) Standard

$y = (x-5)(x-2)$ intercept

IV. Rewrite the form

Write the function in vertex form!

Completing $\square$

4.) $y = x^2 + 4x + 2$

-2

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

$+4$

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

$-2 \qquad -2$

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

$c = \left(\frac{b}{2}\right)^2$

$c = \left(\frac{4}{2}\right)^2 = 4$

IV. Rewrite the form

Write the function in intercept form!

3.) $y = x^2 - 7x + 10$

IV. Rewrite the form

Write the function in vertex form!

4.) $y = x^2 + 4x + 2$

Homework

Pg 240 # 21-24, 27

Pg 249 # 6-10, 16-19