Day 3: Graphing Quadratics in Factored Form

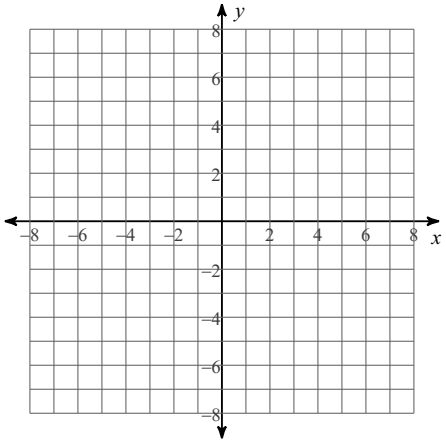
Date_____

Pick *x*-values (be smart) and build a table to find the corresponding *y*-values. Then graph the quadratic equation.

1) $y = x^2$

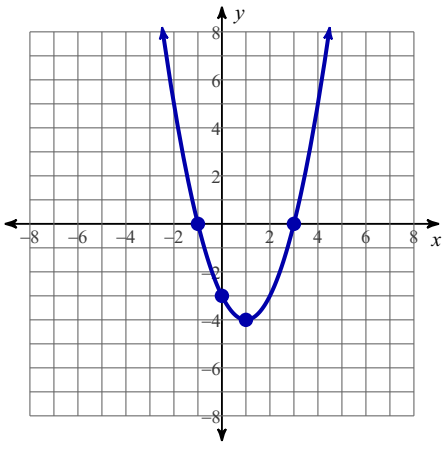
2) What do you notice about graph #1?

What happened when we chose negative *x*-values?



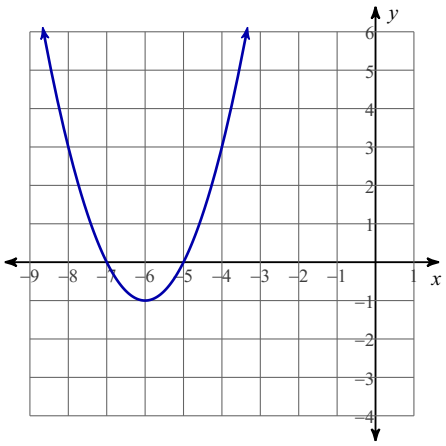
Key Features of a Quadratic

3) Each quadratic equation has _____ _____, that we must be sure to graph.
   a) Vertex
   b) Axis of Symmetry
   c) Minimum or Maximum point
   d) *x*-intercept(s)
   e) *y*-intercept



Identify the key featuers of the given graph.

4)



Vertex:

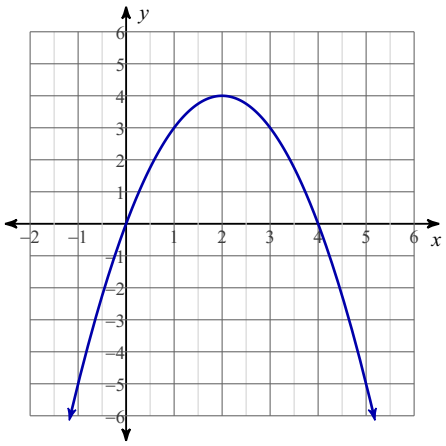
Axis of Symmetry:

x-intercept(s):

y-intercept:

Min/Max:

5)



Vertex:

Axis of Symmetry:

x-intercept(s):

y-intercept:

Min/Max:

Graphing Equations in Factored Form $y = A(x - r)(x - s)$

6) Once the equation is in Factored Form...

Step 1: Find *x*-intercepts.
From factored form you can find the *x*-intercepts by setting each factor equal zero.
We did this in Day 1.

Step 2: Locate the Axis of Symmetry. $x = ?$
The Axis of Symmetry is found in the middle of the *x*-intercepts.

Step 3: Find the Vertex.
Plug your *x*-value of the Axis of Symmetry into your equation to find the *y*-coordinate of your vertex.

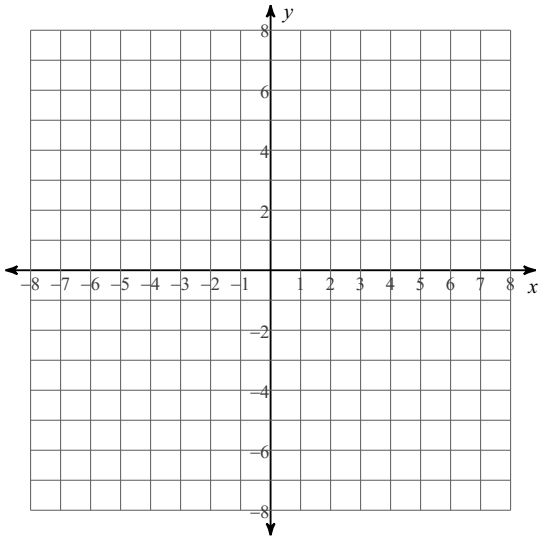
Step 4: Determine if it is a minimum or maximum and find the value. $y = ?$
The *y*-value from your vertex is where the minimum or maximum will be located.

Step 5: Find *y*-intercept.
Plug in $x = 0$ and solve your equation for *y*.

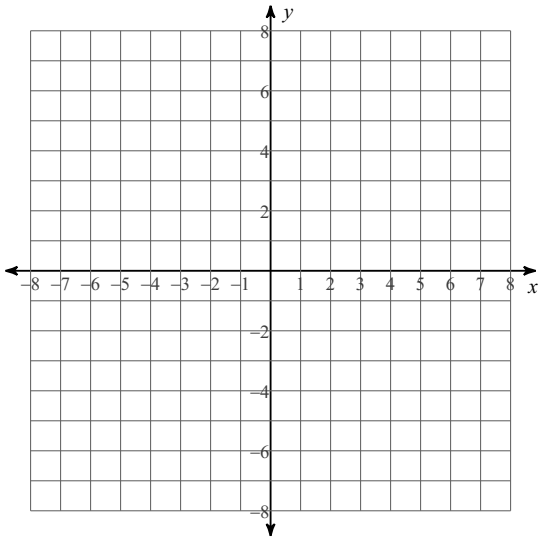
Step 6: Make a *t*-table with the vertex in the middle so that you can graph all 5 points needed on your graph.

Sketch the graph of each quadratic function from Factored Form. List all key features.

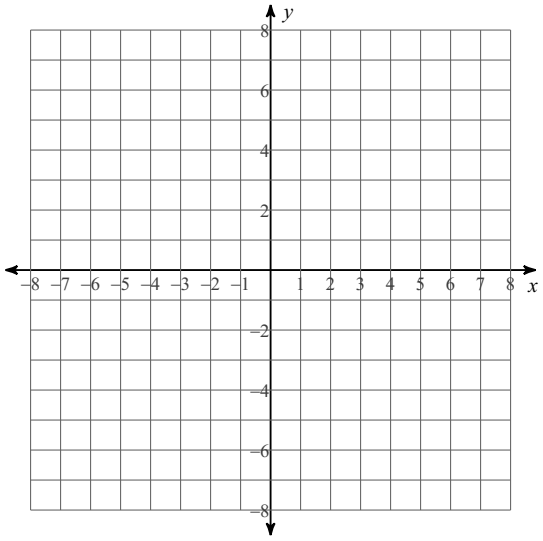
7) $f(x) = (x + 4)(x + 2)$



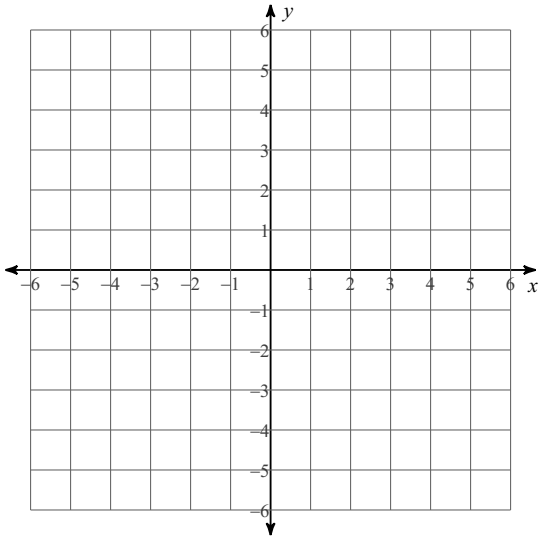
8) $y = -(x + 1)(x - 3)$



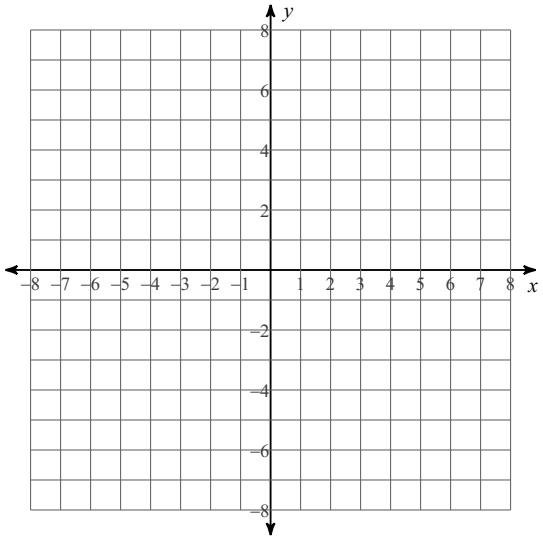
9) $y = (x - 6)(x - 4)$



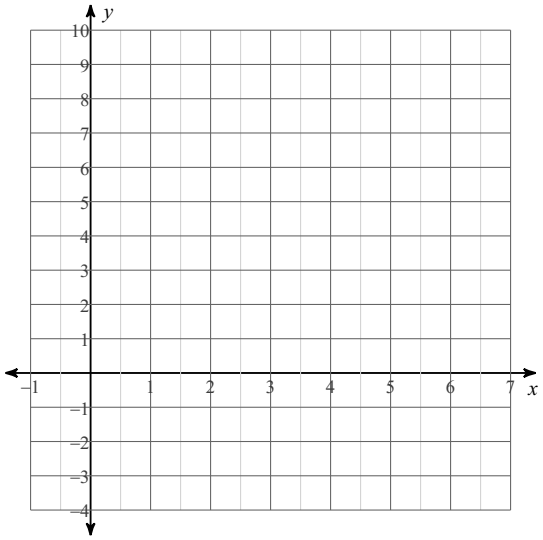
10) $y = \frac{1}{2}(x + 2)(x - 4)$



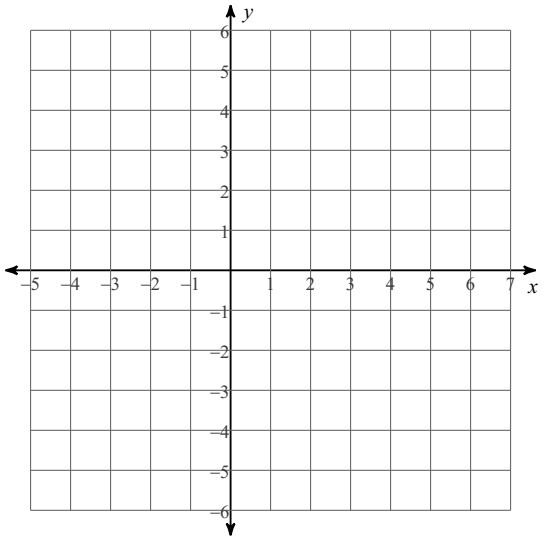
11) $f(x) = -(x + 3)(x + 3)$



12) $f(x) = 3(x-3)(x-5)$



13) $y = -\frac{1}{2}x(x-6)$



Factor each quadratic equation, and then graph each parabola. List all key features.

14) $f(x) = x^2 - 4x - 12$