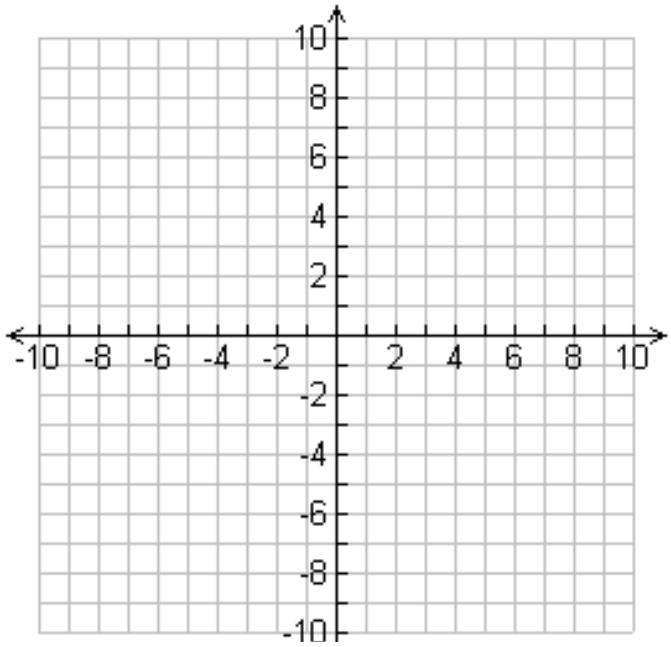
Graphing Parabolas of the Form $y = (x - h)^2$

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

x	y
-4	
-3	
-2	
-1	
0	
1	
2	



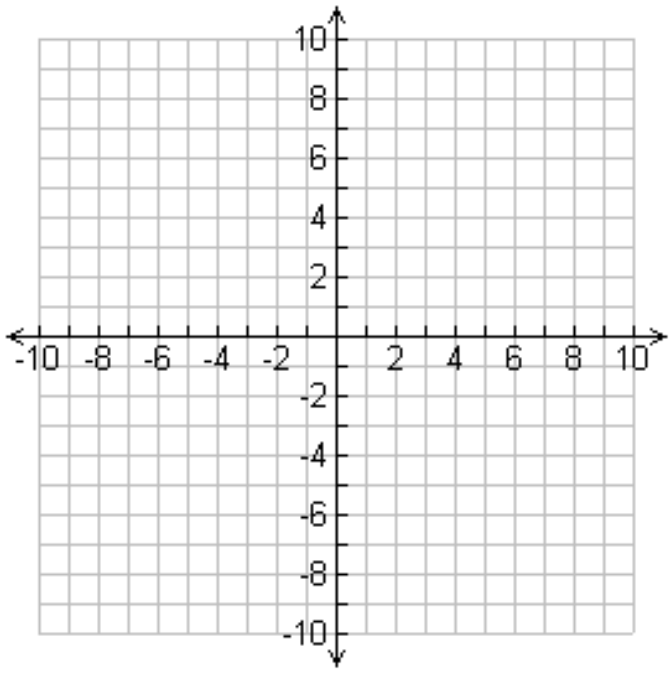
Vertex: **Zeroes:**

Step Pattern:

Direction of Opening:

Equation: $y = (x - 1)^2$

x	y
-3	
-2	
-1	
0	
1	
2	
3	



Vertex: **Zeroes:**

Step Pattern:

Direction of Opening:

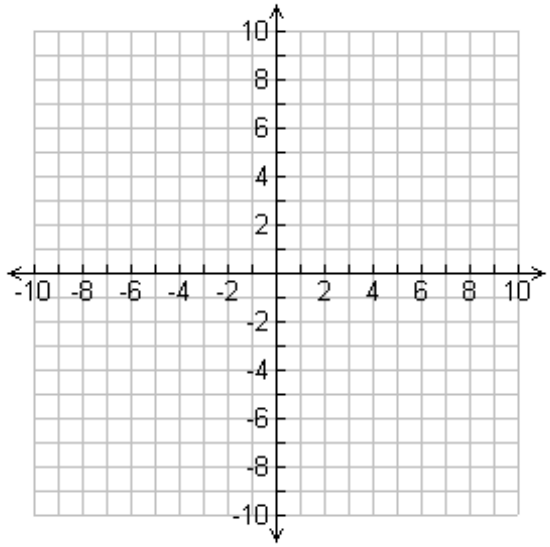
Summary

The graph of $y = (x - h)^2$ is the graph of $y = x^2$ _____.

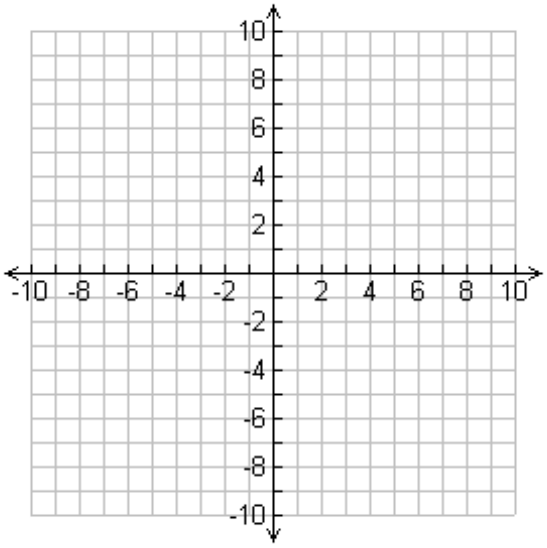
The step pattern will be _____. The vertex will be at _____.

Sketch each graph below without making a table of values.

$y = (x - 3)^2$

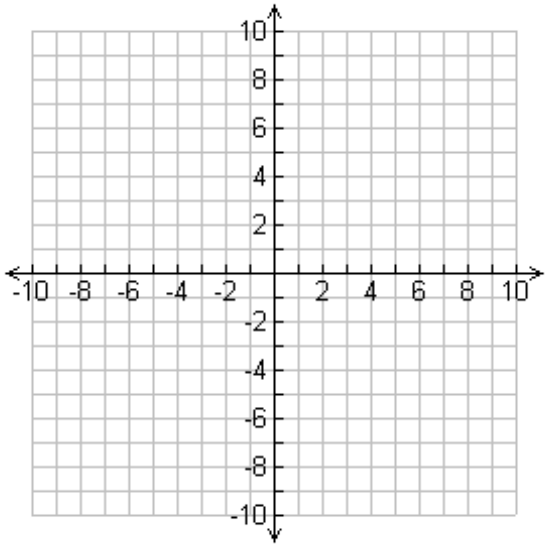


$y = (x + 4)^2$

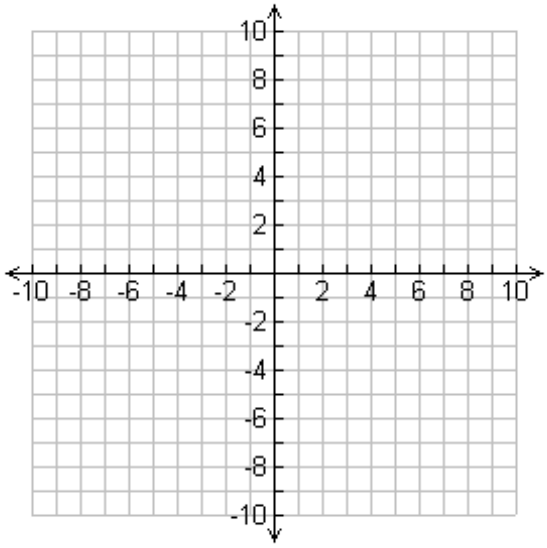


How about combining a couple of transformations? Try to graph the following without making a table of values. Check at least one point on your graph with the equation.

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



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



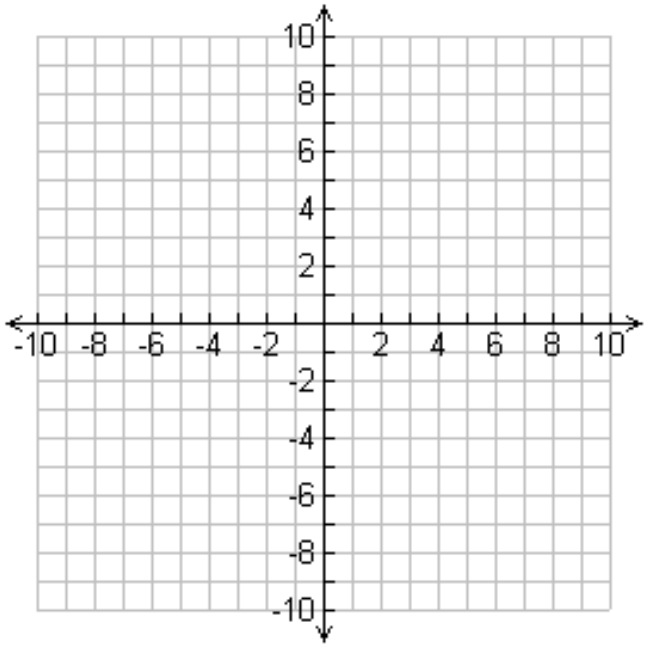
Putting it All Together – The Vertex Form of a Parabola

We can combine everything we have learned over the last 3 lessons to graph any quadratic relationship with an equation of the form $y = a(x - h)^2 + k$.

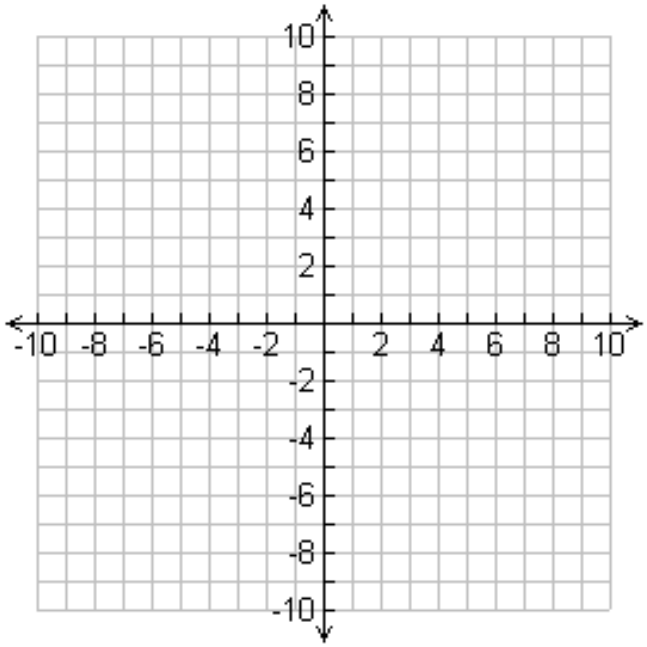
To graph quadratic equations in this form, start with the graph of $y = x^2$ and:

Examples Sketch each of the following. Describe the transformations below the graph.

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



$y = 0.5(x - 3)^2 - 5$

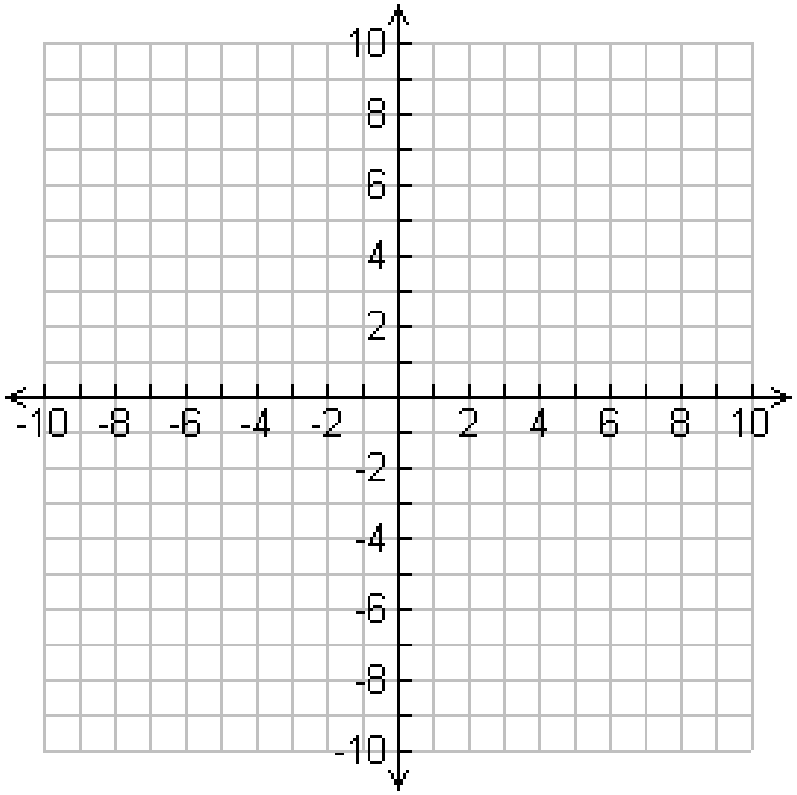


Why do you think the $y = a(x - h)^2 + k$ is referred to as *vertex form?*

$y = 3(x - 4)^2 + 10$ $y = -(x + 4)^2 - 1$ $y = 3x^2 + 12$

Graph the following.

$y = -(x+4)^2 + 5$ $y = 2(x-1)^2 - 7$ $y = -(x-4)^2$



Draw a very rough sketch of the parabola below. State the max/min value, the vertex and the axis of symmetry.

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

Text page 51 #1, 2, 3a, 4, 6ac