Graphing Quadratic Functions

Quadratic Function: standard form_____ sometimes called a _____

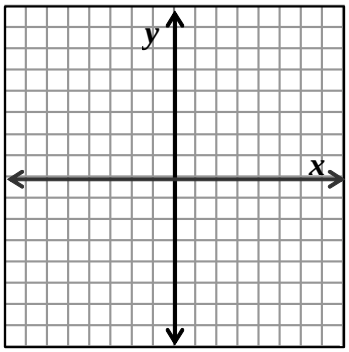
Vertex:_____

Axis of symmetry:_____

Form: $y = ax^2$. Graph each quadratic function. Label the vertex and axis of symmetry.

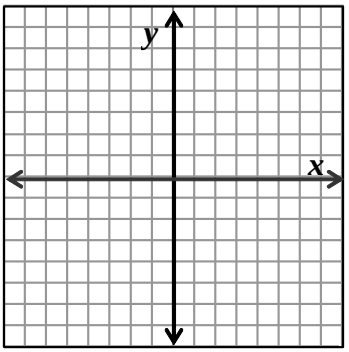
1. $y = x^2$

x	y
-2	
-1	
0	
1	
2	



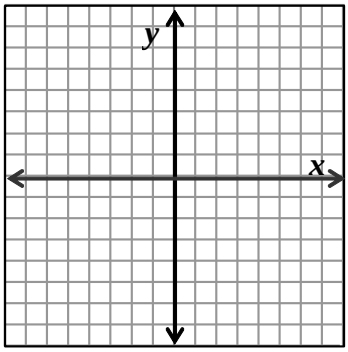
2. $y = -x^2$

x	y
-2	
-1	
0	
1	
2	



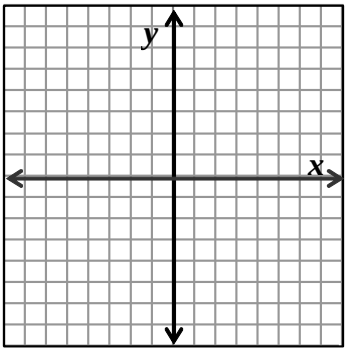
3. $y = 2x^2$

x	y
-2	
-1	
0	
1	
2	



4. $y = \frac{1}{3}x^2$

x	y
-6	
-3	
0	
3	
6	



4. Compare the graphs from #1 and #2. How are they similar? How do they differ?

5. Compare the graphs of #1, #3, and #4. How are they similar? How do they differ?

6. What is the *y*-intercept of each graph?

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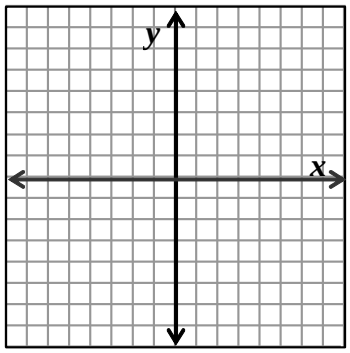
Based on Graphs #1 – 2, we can conclude that for $y = ax^2$:

- If $a > 0$, then the parabola will open _____ , the vertex will be _____ and the axis of symmetry will be _____.
- If $a < 0$, then the parabola will open _____ , the vertex will be _____ and the axis of symmetry will be _____.

Form: $y = ax^2 + c$.

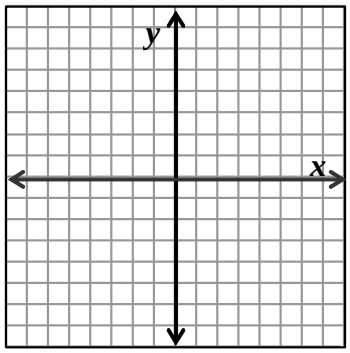
7. $y = x^2 + 1$

x	y
-2	
-1	
0	
1	
2	



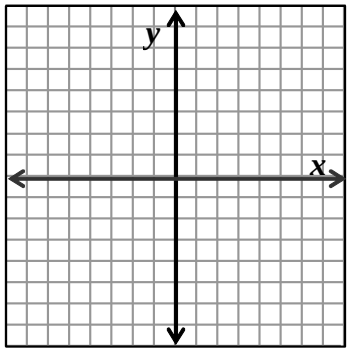
8. $y = x^2 - 2$

x	y
-2	
-1	
0	
1	
2	



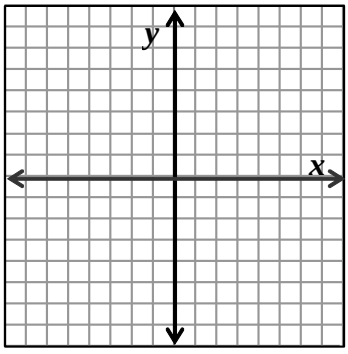
9. $y = -2x^2 - 3$

x	y
-2	
-1	
0	
1	
2	



10. $y = \frac{1}{3}x^2 + 2$

x	y
-6	
-3	
0	
3	
6	



11. Compare the graphs from #1, #7 and #8. How are they similar? How do they differ?

12. Compare the graphs from #3 and #9, then #4 and #10. How are they similar? How do they differ?

13. Find the *y*-intercept of #7 – 10. Compare the value of *c* and the *y*-intercept of each graph.

Based on Graphs #7 – 10, we can conclude that for $y = ax^2 + c$:

- The value of *c* determines the _____ of the graph.