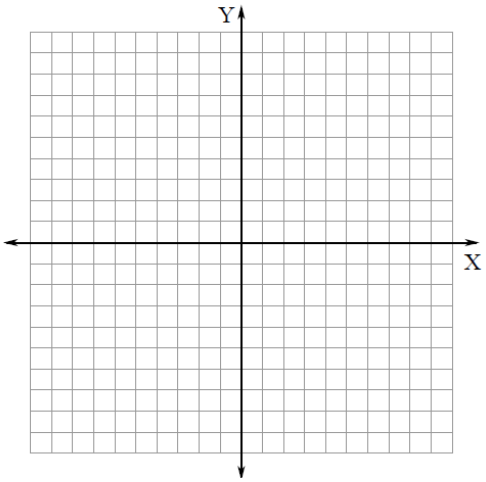
Algebra 2 Name: _____

Basic Functions Period: _____

Shifting Basic Graphs

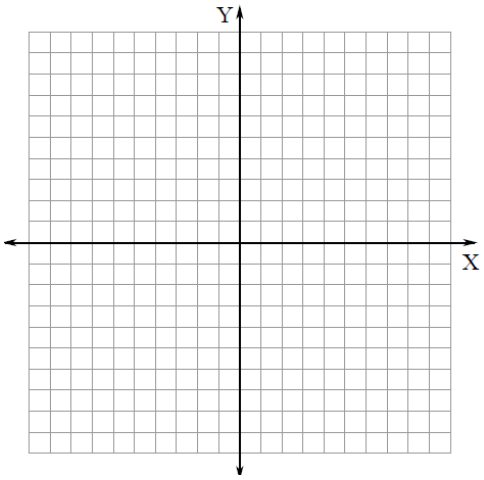
Part I - Shifting

1. Graph $y = |x| + 5$. How does it compare to the parent graph $y = |x|$?



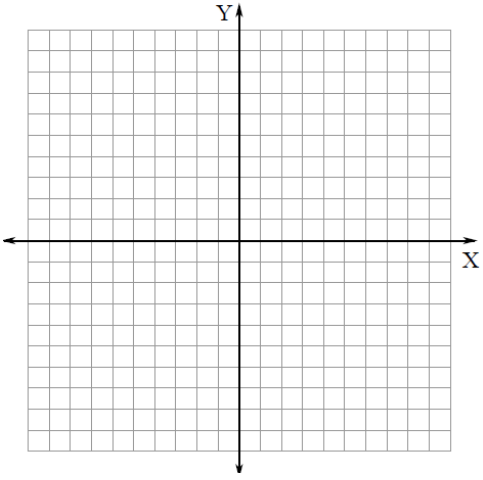
2. What equation will result in the parabola $y = x^2$ being shifted down 4 units?

3. Graph $y = (x+2)^3$. How does this graph compare to $y = x^3$?



4. What function would you use to shift $y = \sqrt{x}$ two units to the right?

5. Given $f(x) = \frac{1}{x-4} - 3$, what is the parent of $f(x)$? Describe the transformation completely and graph.



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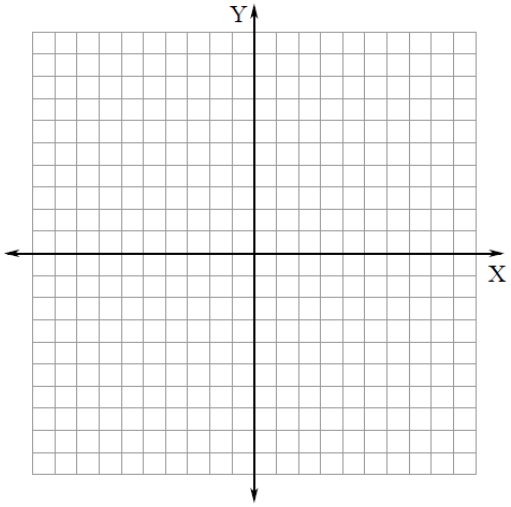
Part II – Stretching

6. Use the table below to graph $y = x^2$ and $y = 2x^2$ on the same axes. Label each graph with its equation.

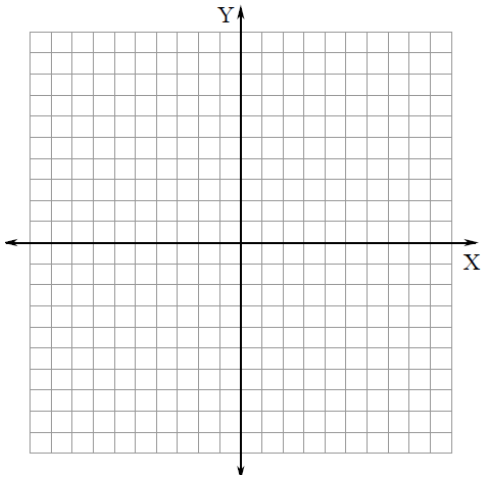
x	$y = x^2$	$y = 2x^2$
-4		
-3		
-2		
-1		
0		
1		
2		
3		
4		



a. What geometric transformation maps the parent graph $y = x^2$ to the graph of $y = 2x^2$? How would you describe how the first graph changed into the second?

b. What is happening to the *y*-value of the corresponding point?

7. Sketch the graph of $y = \sqrt{x}$. Use the idea from part (a) above to sketch the graph of $y = 2\sqrt{x}$.

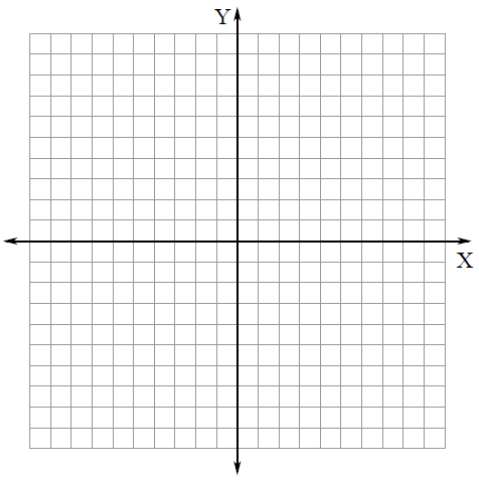


8. Using the graph of $f(x) = \frac{1}{2}x^3$.

a. What is the parent graph?

b. Sketch the graph with its parent graph on the same set of axes.

c. Describe the transformation.



9. Some parabolas open downward. How can you modify the equation of $y = x^2$ so that it will open downward and be congruent to $y = 2x^2$?