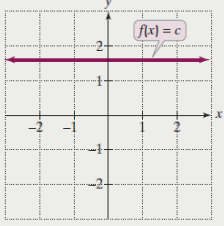
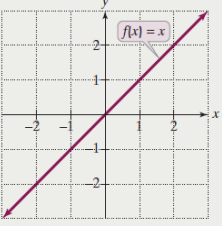
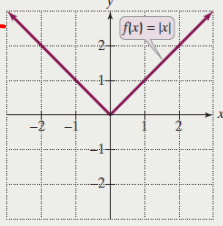


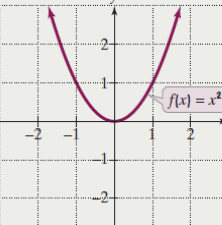
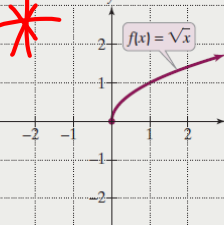
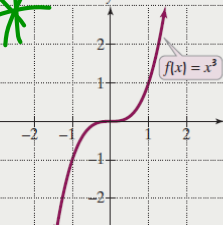
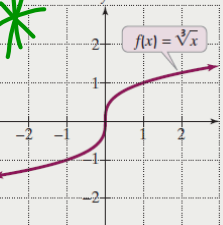
Topic 1.3 - Day 2 - Transformations on Parent Graphs

Parent Function: the function equation and/or graph without any transformations done to it.

Constant Function	Identity Function	Absolute Value Function
		
<ul style="list-style-type: none"> • Domain: $(-\infty, \infty)$ • Range: the single number c • Constant on $(-\infty, \infty)$ 	<ul style="list-style-type: none"> • Domain: $(-\infty, \infty)$ • Range: $(-\infty, \infty)$ • Increasing on $(-\infty, \infty)$ 	<ul style="list-style-type: none"> • Domain: $(-\infty, \infty)$ • Range: $[0, \infty)$ • Decreasing on $(-\infty, 0)$ and increasing on $(0, \infty)$
$f(x) = c$ ($c = \text{any number!}$)	$f(x) = x$	$f(x) = x $

x	f(x)
3	3
2	2
1	1
0	0
-1	1
-2	2
-3	3

More parent function graphs...

Standard Quadratic Function	Square Root Function	Standard Cubic Function	Cube Root Function
			
<ul style="list-style-type: none"> • Domain: $(-\infty, \infty)$ • Range: $[0, \infty)$ • Decreasing on $(-\infty, 0)$ and increasing on $(0, \infty)$ 	<ul style="list-style-type: none"> • Domain: $[0, \infty)$ • Range: $[0, \infty)$ • Increasing on $(0, \infty)$ 	<ul style="list-style-type: none"> • Domain: $(-\infty, \infty)$ • Range: $(-\infty, \infty)$ • Increasing on $(-\infty, \infty)$ 	<ul style="list-style-type: none"> • Domain: $(-\infty, \infty)$ • Range: $(-\infty, \infty)$ • Increasing on $(-\infty, \infty)$

$f(x) = x^2$

x	f(x)
3	9
2	4
1	1
0	0
-1	1
-2	4
-3	9

$f(x) = \sqrt{x}$

x	f(x)
0	0
1	1
4	2
9	3
16	4
25	5

$f(x) = x^3$

x	f(x)
3	27
2	8
1	1
0	0
-1	-1
-2	-8
-3	-27

$f(x) = \sqrt[3]{x}$

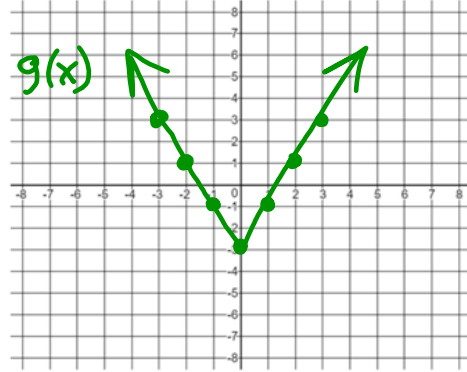
x	f(x)
27	3
8	2
1	1
0	0
-1	-1
-8	-2
-27	-3

Ex1. Graph the following, starting with the parent function.

a. $g(x) = 2|x| - 3$

Parent: $y = |x|$

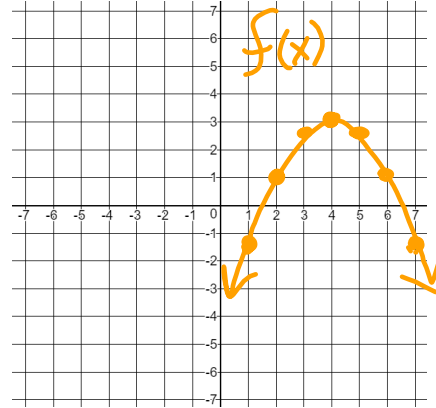
1. Vertical stretch by 2.
2. Down 3.



b. $f(x) = -\frac{1}{2}(x-4)^2 + 3$

Parent: $y = x^2$

1. Right 4.
2. Vertical shrink by $\frac{1}{2}$.
3. Reflect over x-axis.
4. Up 3.

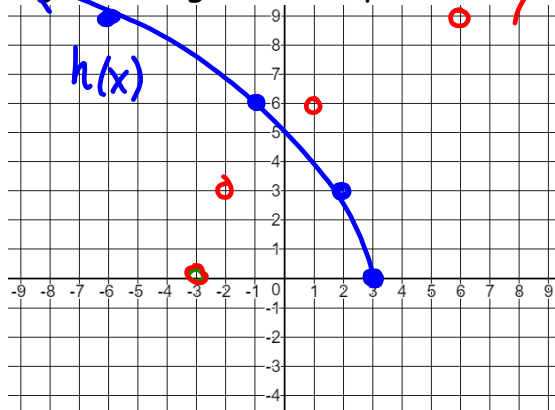


Ex2. Graph the following, starting with the parent function.

a. $h(x) = 3\sqrt{-x+3}$

Parent: $y = \sqrt{x}$

1. Left 3.
2. Vertical stretch by 3.
3. Reflect over y-axis



b. $f(x) = -2\sqrt[3]{x} + 1$

Parent: $y = \sqrt[3]{x}$

1. Vertical stretch by 2.
2. Reflect over x-axis
3. Up 1.

