Review Exercise Set 4

Exercise 1: Determine the transformations present in the given function compared to the standard quadratic function, x^2.

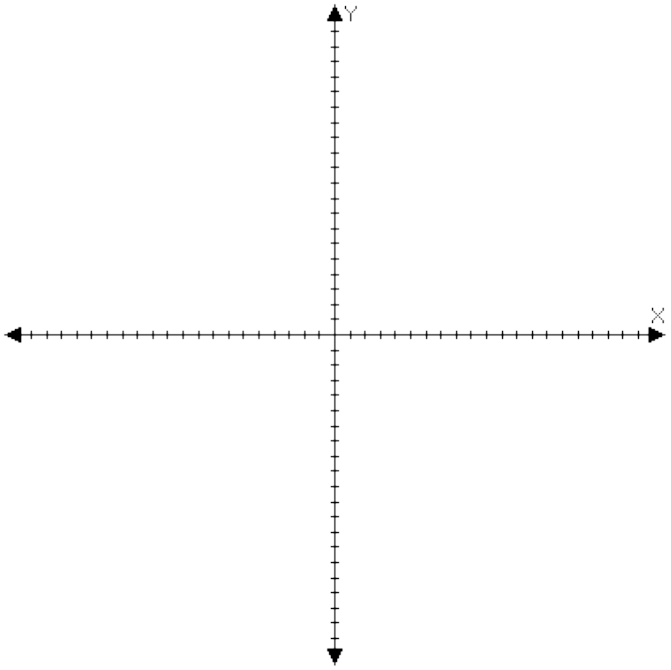
$g(x) = -x^2 - 2$

Exercise 2: Determine the transformations present in the given function compared to the standard absolute value function, $|x|$.

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

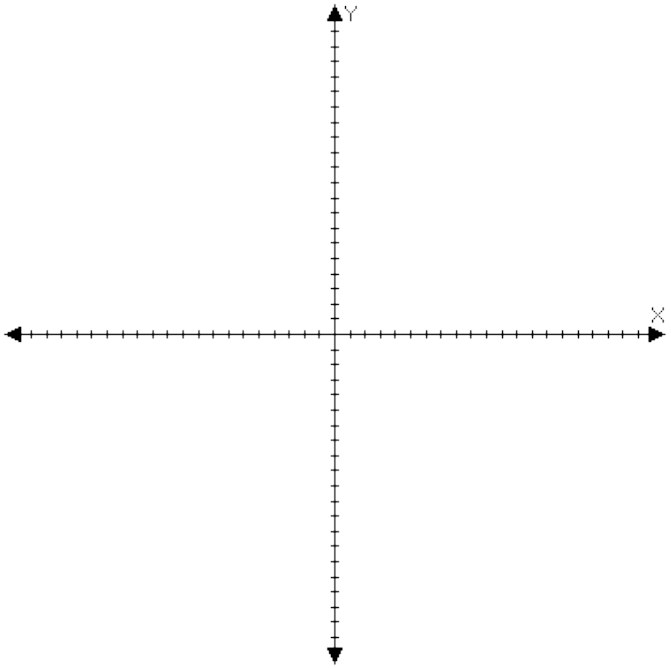
Exercise 3: Starting with the standard cube root function, write the function that would have the given transformations. Sketch the standard and transformed functions.

A horizontal shift left 1 unit
A vertical shift down 2 units



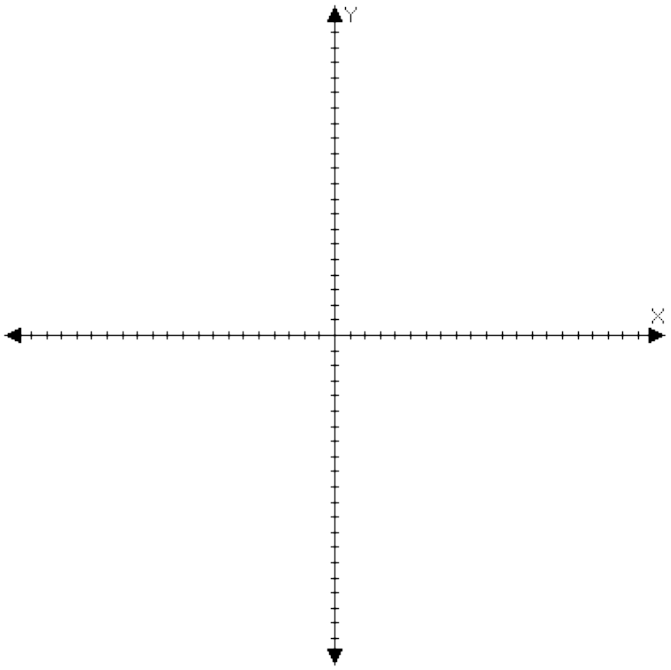
Exercise 4: Graph the standard quadratic function and then use transformations to sketch the graph of the given function.

$s(x) = -2(x + 1)^2 - 1$



Exercise 5: Graph the standard square root function and then use transformations to sketch the graph of the given function.

$h(x) = \sqrt{x+4} - 1$



Review Exercise Set 4 Answer Key

Exercise 1: Determine the transformations present in the given function compared to the standard quadratic function, x^2.

$g(x) = -x^2 - 2$

Reflection about the x-axis because of the -1 coefficient in front of x^2
Vertical shift down 2 units because of the - 2 at the end of the function

Exercise 2: Determine the transformations present in the given function compared to the standard absolute value function, $|x|$.

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

Vertical shrinking because of the fractional coefficient in front of the absolute value
Horizontal shift right 3 units because of the - 3 inside the absolute value
Vertical shift up 4 units because of the + 4 at the end of the function

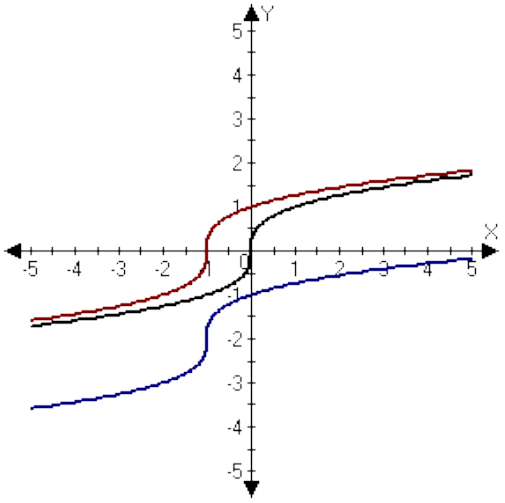
Exercise 3: Starting with the standard cube root function, write the function that would have the given transformations. Sketch the standard and transformed functions.

A horizontal shift left 1 unit
A vertical shift down 2 units

Standard function: $\sqrt[3]{x}$

Function with horizontal shift: $\sqrt[3]{x+1}$

Function with horizontal and vertical shifts: $\sqrt[3]{x+1}-2$



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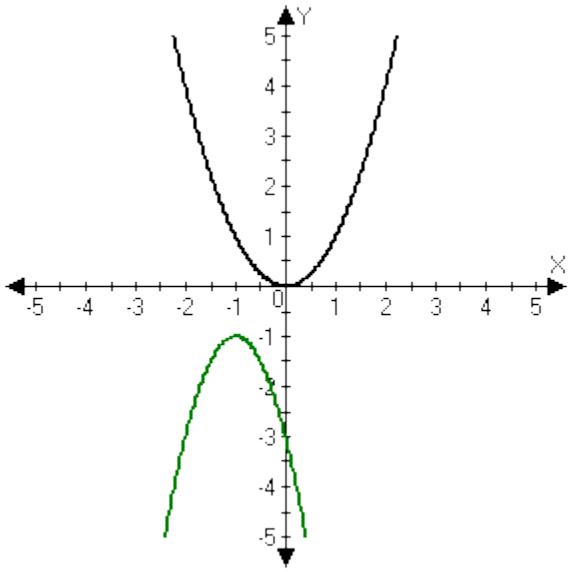

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$h(x) = \sqrt{x+4} - 1$