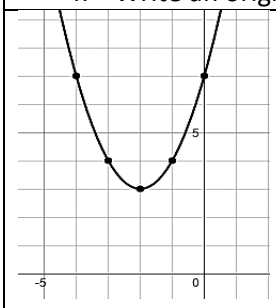
Transformations of Functions { 7.4 }

Secondary Math II Notes

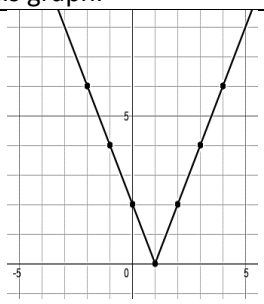
Objective: Identify the transformations that have occurred to the parent function given a graph, function, or description.

Mixed transformations from a graph.

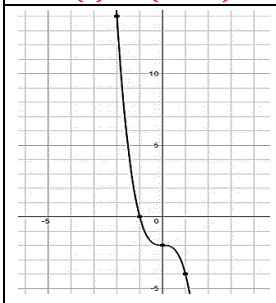
1. Identify the parent function.
2. List out the transformations that occurred to the parent function.
3. Write in terms of the parent function.
4. Write an original function that represents this graph.



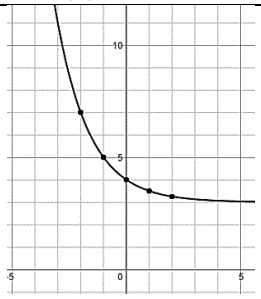
1. Quadratic function, $p(x) = x^2$
2. Vertical shift up three units, and horizontal shift left two units.
3. $p(x+2)+3$
4., $k(t) = (t+2)^2+3$



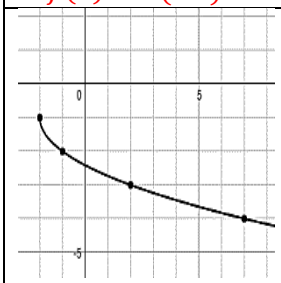
1. absolute value function, $f(x) = |x|$
2. Vertical stretch by a factor of 2 units and a horizontal shift right one unit
3. $2f(x-1)$
4. $k(x) = 2|x-1|$



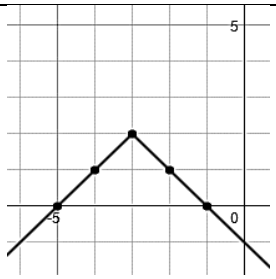
1. cubic function, $f(x) = x^3$
2. Vertical stretch by a factor of 2 units, a reflection about the y-axis, and Vertical shift down two units.
3. $2f(-x)-2$
4. $f(x) = 2(-x)^3 - 2$



1. Exponential function $f(x) = 2^x$
2. Vertical shift up 3 units and a reflection about the y-axis
3. $f(-x)+3$
4. $l(x) = 2^{-x}+3$



1. square root function, $f(x) = \sqrt{x}$
2. Horizontal shift to the left 2 units, reflection about the x-axis, vertical shift down 1 unit
3. $-f(x+2)-1$
4. $j(x) = -\sqrt{x+2}-1$

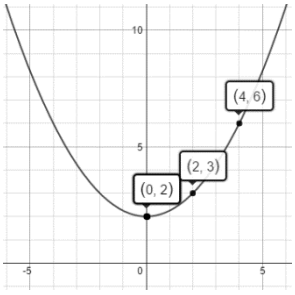


1. absolute value function, $f(x) = |x|$
2. Reflection about the x-axis, horizontal shift left 3 units, vertical shift up 2 units.
3. $-f(x+3)+2$
4., $g(x) = -|x+3|+2$

Mixed transformations from a function

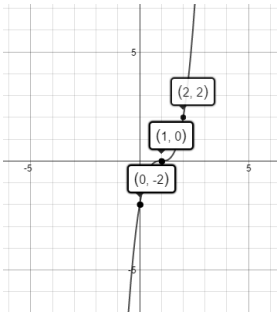
1. Identify the parent function.
2. List out the transformations that occurred to the parent function.
3. Write in terms of the parent function.
4. Graph the function.

$g(s) = (.5s)^2 + 2$



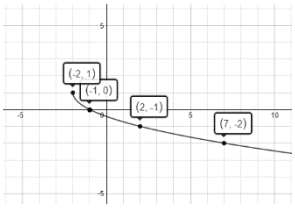
1. Quadratic function, $p(x) = x^2$
2. Hotizontal stretch by a factor of 0.5 and vertical shift up 2 units.
3. $p(.5x) + 2$

$h(a) = 2(a-1)^3$



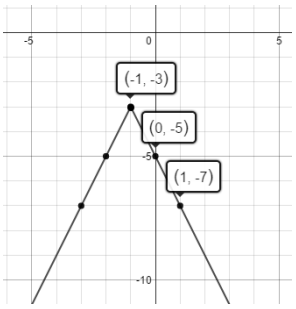
1. cubic function, $f(x) = x^3$
2. Vertical stretch by a factor of 2 units and horizontal shift right by 1 unit.
3. $2f(x-1)$

$k(r) = -\sqrt{(r+2)} + 1$



1. Square root function, $f(x) = \sqrt{x}$
2. horizontal shift left 2 units, reflection about the x-axis, and a vertical shift up 1 unit.
3. $-f(x+2) + 1$

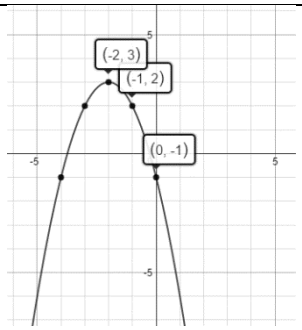
$t(b) = -2|b+1| - 3$



1. absolute value function, $f(x) = |x|$
2. Horizontal shift left 1 unit, vertical stretch by a factor of 2, reflection about the x-axis, and vertical shift down 3 units.
3. $-2f(x+1) - 3$

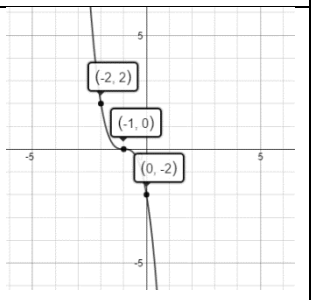
Mixed transformations from a description

Draw the graph and write the function that represents reflection about the x-axis, a horizontal shift to the left by 2 units, a vertical shift up by three units, and whose shape is a parabola.



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

Draw the graph and write the function that represents a vertical stretch by a factor of 2, a horizontal shift right 1 unit, a reflection about the y-axis, and whose parent function is a cubic.



$f(x) = 2(-x-1)^3$