

Tuesday, October 03, 2017
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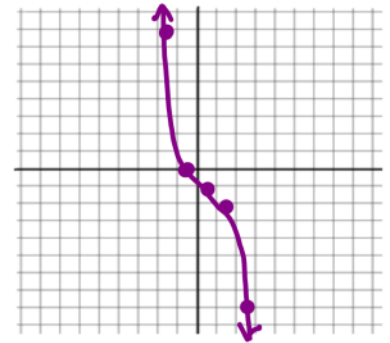
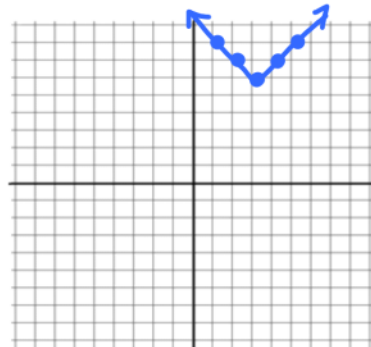
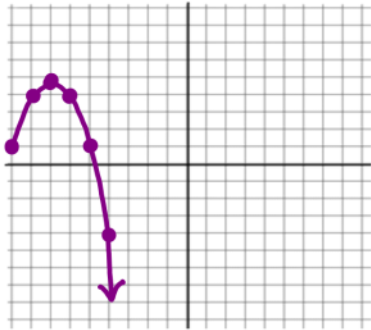
Name: KEY Period: _____ Date: _____

Section 1.7B – Transforming Functions (Reflections & Shifts)

Always start by **factoring the negative** if it is grouped with x (i.e., reflections in y -axis). Then follow order of operations.

- Steps for transforming a function: 1.) Reflect horizontally, then shift horizontally.
 2.) Reflect vertically, then shift vertically.

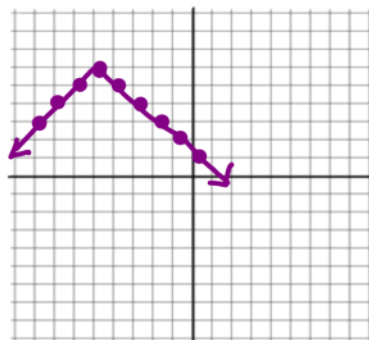
Sketch the graph for each of the transformed functions:
 $g(x) = |-(x-3)| + 6$ ① ② ③
 a.) $g(x) = -(x+7)^2 + 5$ ② ① ③ b.) $g(x) = |-x+3| + 6$ ① ② c.) $g(x) = -x^3 - 1$ ① ②



$g(x) = \sqrt{-(x-1)} - 6$ ① ② ③
 d.) $g(x) = \sqrt{-x+1} - 6$

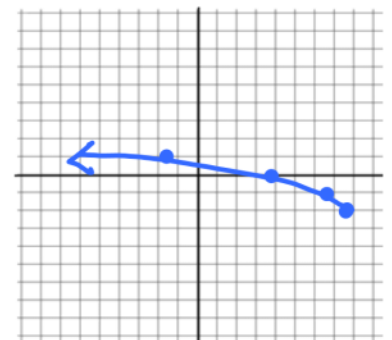


$g(x) = -|x+5| + 6$ ② ① ③
 e.) $g(x) = 6 - |x+5|$



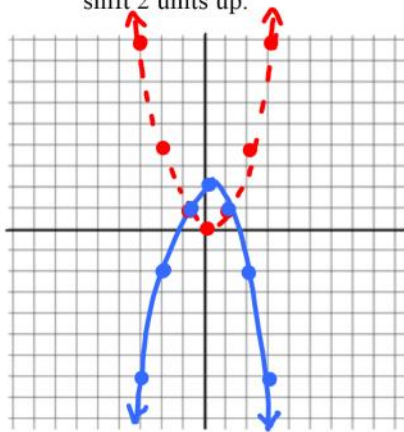
$g(x) = \sqrt{-x+7} - 2$
 $= \sqrt{-(x-7)} - 2$ ① ② ③

f.) $g(x) = \sqrt{7-x} - 2$



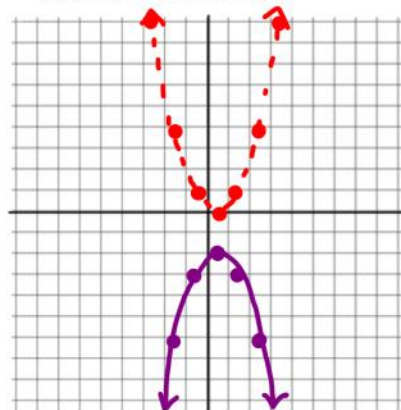
Given $f(x) = x^2$ and the transformations described, graph and write the equation of the new function, $g(x)$.

- a) Reflection in x -axis and vertical shift 2 units up.



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

- b) Vertical shift 2 units up and a reflection in the x -axis.

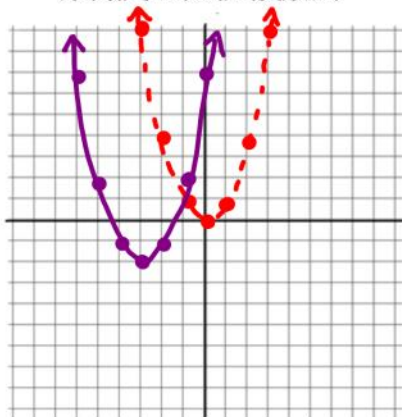


$$g(x) = -(x^2 + 2) \\ = -x^2 - 2$$

Are a) and b) above the same? Why or why not?

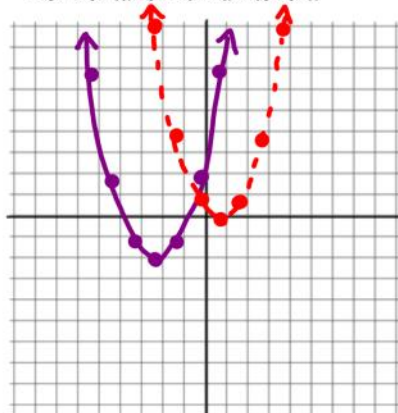
No because we changed the order of operations. ORDER MATTERS!!!

- c) Horizontal shift 3 units left and vertical shift 2 units down.



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

- d) Vertical shift 2 units down and horizontal shift 3 units left.



$$g(x) = -2 + (x+3)^2 \\ = (x+3)^2 - 2$$

Are c) and d) above the same? Why or why not?

Yes! Order of transformations for horizontal and vertical shifts does not matter. Just like order of operations, add & subtract from left to right in order of appearance.