

Given $f(x) = -2x + 2$ and $g(x) = -x^2 + 1$ find the following. Then, state the domain of each, except #14.

1.) $(f + g)(x)$

2.) $(f - g)(x)$

3.) $(fg)(x)$

4.) $\left(\frac{f}{g}\right)(x)$

5.) $(f \circ g)(x)$

6.) $(g \circ f)(-2)$

7.) If $h(x) = \frac{-x^2+3}{4-x^2}$ represents the composition of 2 functions, find each function, and show that it is in fact a composition of both.

Find the inverse of each function. Show all work.

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

9.) $f(x) = \frac{1}{1+x}$

10.) $f(x) = \frac{4x+3}{2x+5}$

11.) $f(x) = \sqrt{8x+6}$

Circle true if the statement is true, and false if the statement is false.

12.) TRUE / FALSE The domain of the parent function $f(x) = \sqrt{x}$ is $[0, \infty)$

13.) TRUE / FALSE The parent function $f(x) = \frac{1}{x}$ has an x intercept, but no y intercept.

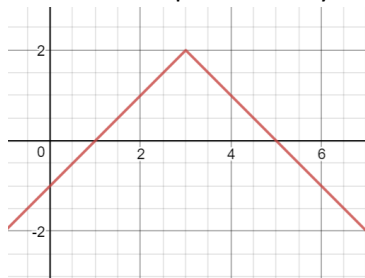
14.) TRUE / FALSE The parent function $f(x) = x^3$ has the same x and y intercepts.

15.) TRUE / FALSE The graph of $g(x) = (2x)^2$ would be a horizontal stretch of the parent function $f(x) = x^2$

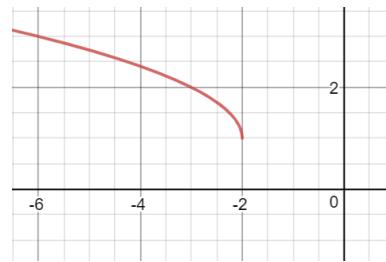
16.) TRUE / FALSE To graph of $k(x) = -(x-3)^2$, you would reflect over the x axis before shifting 3 to the right.

Write the function represented by each graph.

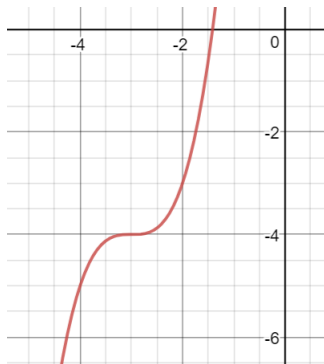
17.)



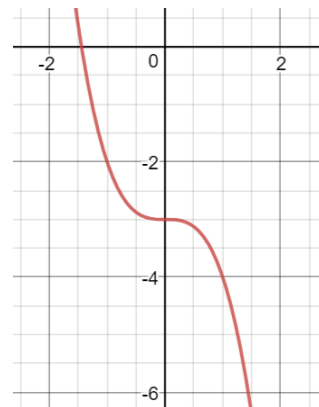
18.)



19.)



20.)



Describe the transformations of each function in comparison to its parent function. If there is a specific order in which the transformations should occur, please write them in that order. **For any vertical or horizontal stretches or shrinks, describe how the x or y values will change in comparison to the x or y values of the parent function.**

21.) Parent function: $f(x) = \sqrt{x}$

a.) $g(x) = -\sqrt{(x-3)} + 1$

b.) $h(x) = -\sqrt{-x} - 2$

22.) Parent function: $f(x) = |x|$

a.) $k(x) = -|x+4| + 4$

b.) $m(x) = |-x| - 5$