ALGEBRA RH **HW**

1. Given the function $f(x)$ and $h(x) = f(x+5)+1$, describe the transformation.

affects x values (inside the symbol affects the input)

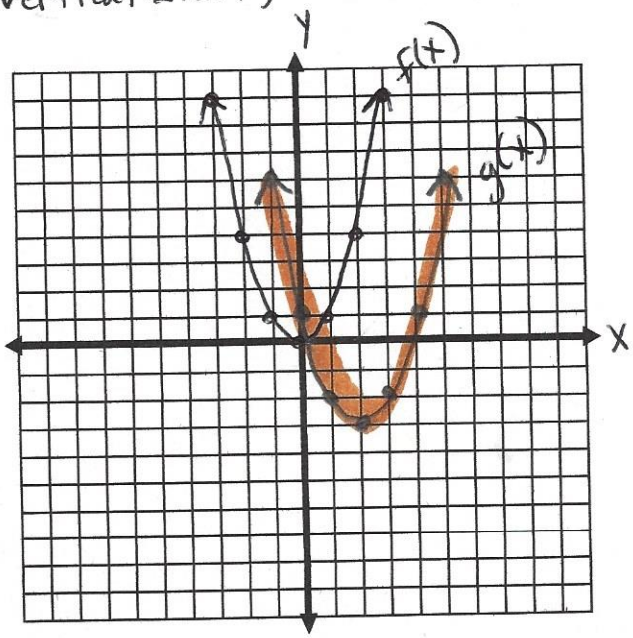
affects y values (outside the symbol affects the output)

horizontal shift 5 units to the left, vertical shift 1 unit up

2. On the set of axes, graph both functions *without a table of values*. Use your knowledge of parent functions and transformations. Describe the transformations that take place.

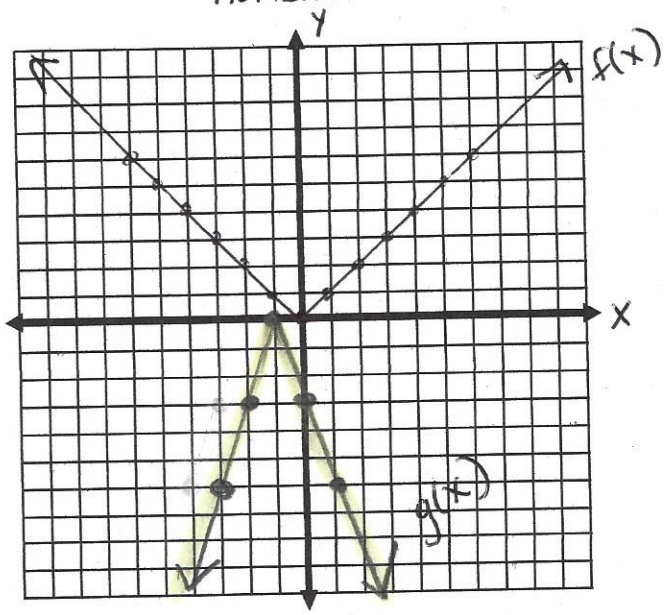
a) $f(x) = x^2$ and $g(x) = (x-2)^2 - 3$

(horizontal shift) right 2 units
(vertical shift) 3 units down



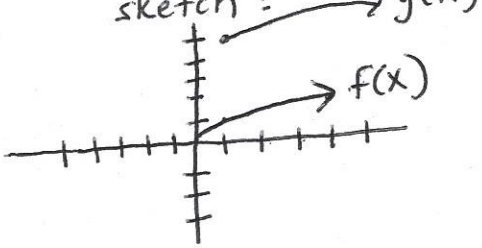
b) $f(x) = |x|$ and $g(x) = -3|x+1|$

reflection over x-axis
vertical stretch by a factor of 3
horizontal shift left 1 unit



3. Using your knowledge of the parent function $f(x) = \sqrt{x}$, state the domain and range of a new function given by $g(x) = \sqrt{x-1}+5$

sketch:



domain: $1 \le x$ or $[1, \infty)$

range: $y \ge 5$ or $[5, \infty)$

4. Given the function $f(x)$ and $g(x) = \frac{1}{5}f(x-3)+2$, describe the transformations.

vertical compression by a factor of $\frac{1}{5}$
horizontal shift 3 units to the right
vertical shift 2 units up

5. Given the function $f(x) = \sqrt{x}$ and $g(x) = 7\sqrt{x}$, determine if they will have the same domain and range. Explain your answer.

table of values

x	f(x)	g(x)
-1	error	error
0	0	0
1	1	7
2	1.4142	9.8995
3	1.7321	12.124
4	2	14

f(x) and g(x) has the same domain and range as shown by the table of values. D: $[0, \infty)$ R: $[0, \infty)$

6. Given the function $y = |x+3| - 6$, describe the transformation to the new function $y = |x-5| - 1$

Hint: Look at the vertex of the first function and then the vertex of the new function.
what change took place?
Describe that change with the vocabulary of transformations.

first function vertex: $(-3, -6)$

new function vertex: $(5, -1)$

to go from -3 to 5, 8 is added
to go from -6 to -1, 5 is added

horizontal shift 8 units to the right
vertical shift 5 units up