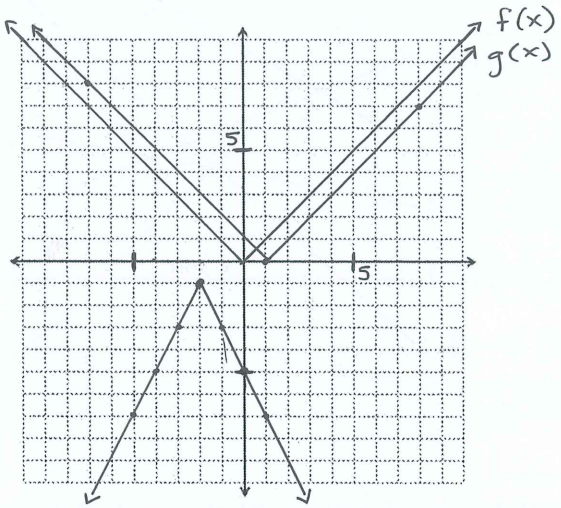
Name ANSWER KEY

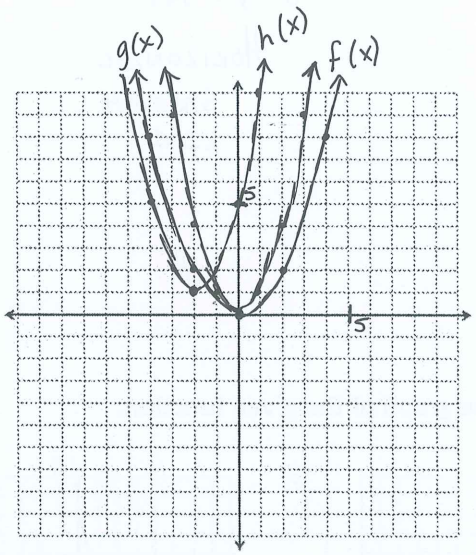
PreCalculus; Sec 1.4c – Stretching Graphs & Writing Equations

Sketch the graphs of the two functions on the same rectangular coordinate system.

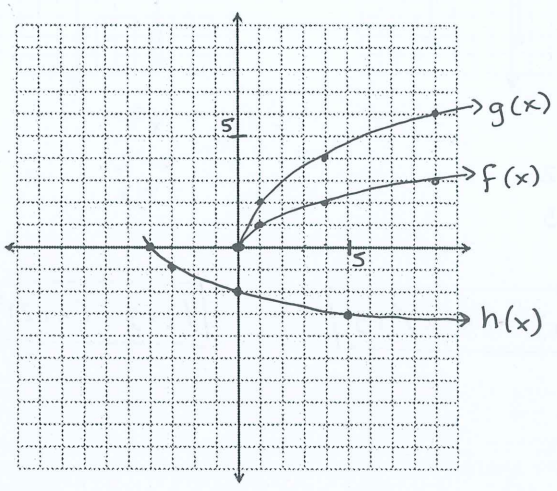
1. $f(x) = |x|$, $g(x) = |x - 1|$, $h(x) = -2|x + 2| - 1$



2. $f(x) = x^2$, $g(x) = \frac{1}{2}x^2$, $h(x) = (x + 2)^2 + 1$



3. $f(x) = \sqrt{x}$, $g(x) = 2\sqrt{x}$, $h(x) = -\sqrt{x + 4}$



4. Match the transformation of $y = f(x)$ with the correct representation, where $c > 0$.

(a) $h(x) = f(x) + c$	(i) horizontal shift *c* units to the left
(b) $h(x) = f(x) - c$	(ii) Reflection over the *x-axis*
(c) $h(x) = f(x - c)$	(iii) vertical shift *c* units up
(d) $h(x) = f(x + c)$	(iv) vertical stretch or shrink
(e) $h(x) = cf(x)$	(v) horizontal shift *c* units to the right
(f) $h(x) = f(cx)$	(vi) horizontal stretch or shrink
(g) $h(x) = -f(x)$	(vii) vertical shift *c* units down

Compare the graph of the given function with the graph of the parent function.

5. $y = 4|x|$

VERTICAL STRETCH of 4

6. $y = \sqrt{4x}$

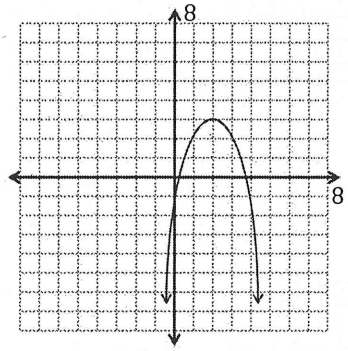
HORIZONTAL STRETCH of 4

7. $y = -x^3$

REFLECT OVER x-AXIS

Write the equation for the graph of the given function.

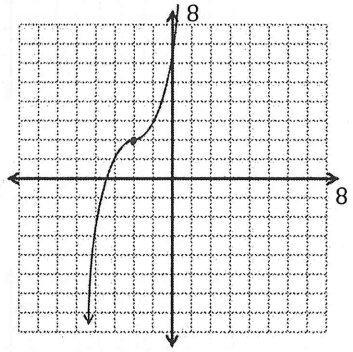
8.



x^2
→ 2
↑ 3

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

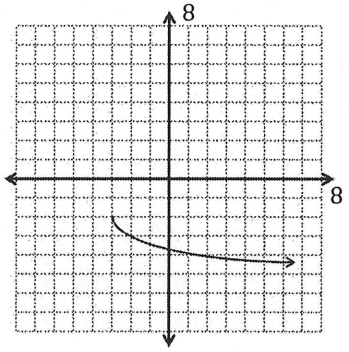
9.



x^3
← 2
↑ 2

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

10.



$\sqrt{x}$
← 3
↓ 2

$f(x) = -\sqrt{x+3} - 2$