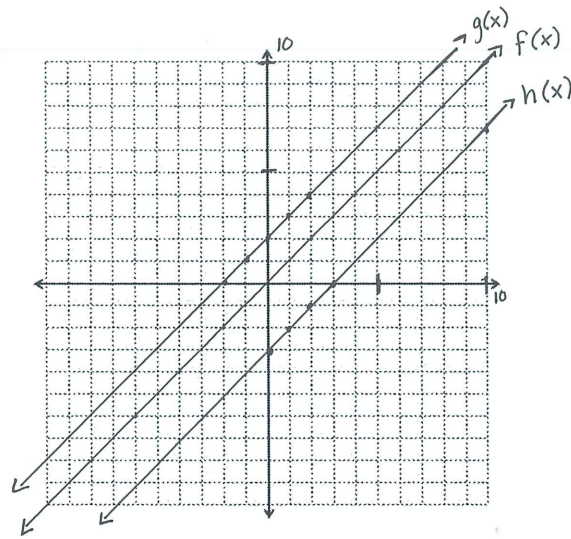
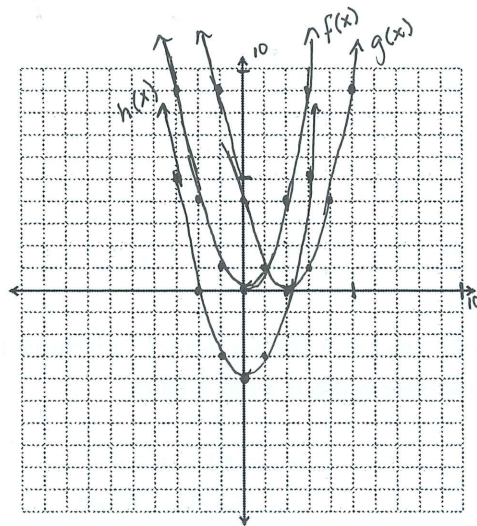


Sketch the graphs of the three functions on the same rectangular coordinate system.

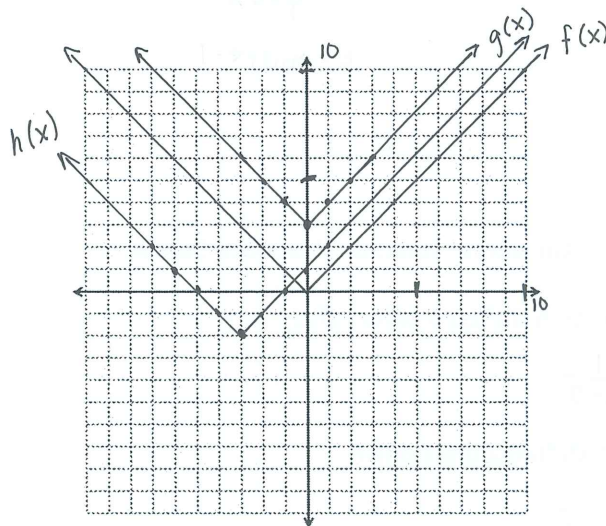
1. $f(x) = x$
 $g(x) = x + 2$
 $h(x) = x - 3$



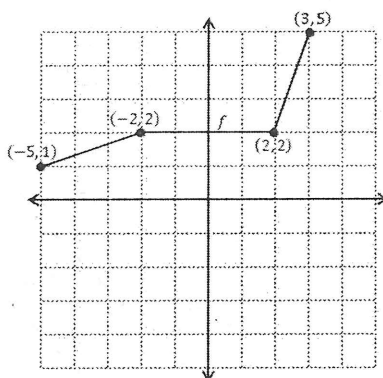
2. $f(x) = x^2$
 $g(x) = (x - 2)^2$
 $h(x) = x^2 - 4$



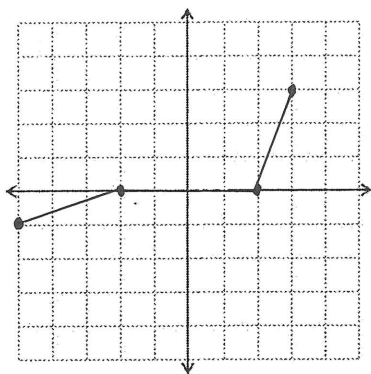
3. $f(x) = |x|$
 $g(x) = |x| + 3$
 $h(x) = |x + 3| - 2$



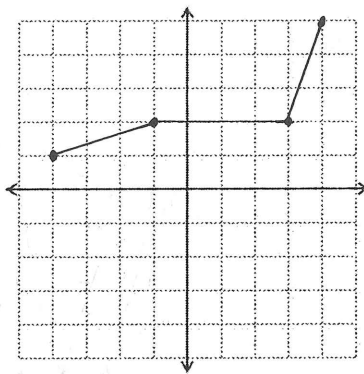
Use the graph of f to sketch each graph.



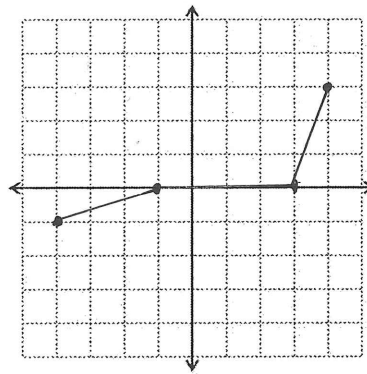
4. $y = f(x) - 2$



5. $y = f(x - 1)$



6. $y = f(x - 1) - 2$



In Exercises 7 – 9, g is related to one of the six parent functions. (a) Identify the parent function f . (b) Describe the sequence of transformations from f to g .

7. $g(x) = |x + 2|$

a) absolute value
 $y = |x|$

b) shift $\leftarrow 2$

8. $g(x) = \sqrt{x + 1}$

a) Square Root
 $y = \sqrt{x}$

b) shift $\leftarrow 1$

9. $g(x) = (x + 2)^3 - 1$

a) Cubic
 $y = x^3$

Write the equation for the parent function described below.

10. A rational function shifted 5 units right.

$$f(x) = \frac{1}{x-5}$$

11. A square root shifted 2 units down.

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

12. A cubic function shifted 3 units up and 4 units left.

$$f(x) = (x + 4)^3 + 3$$