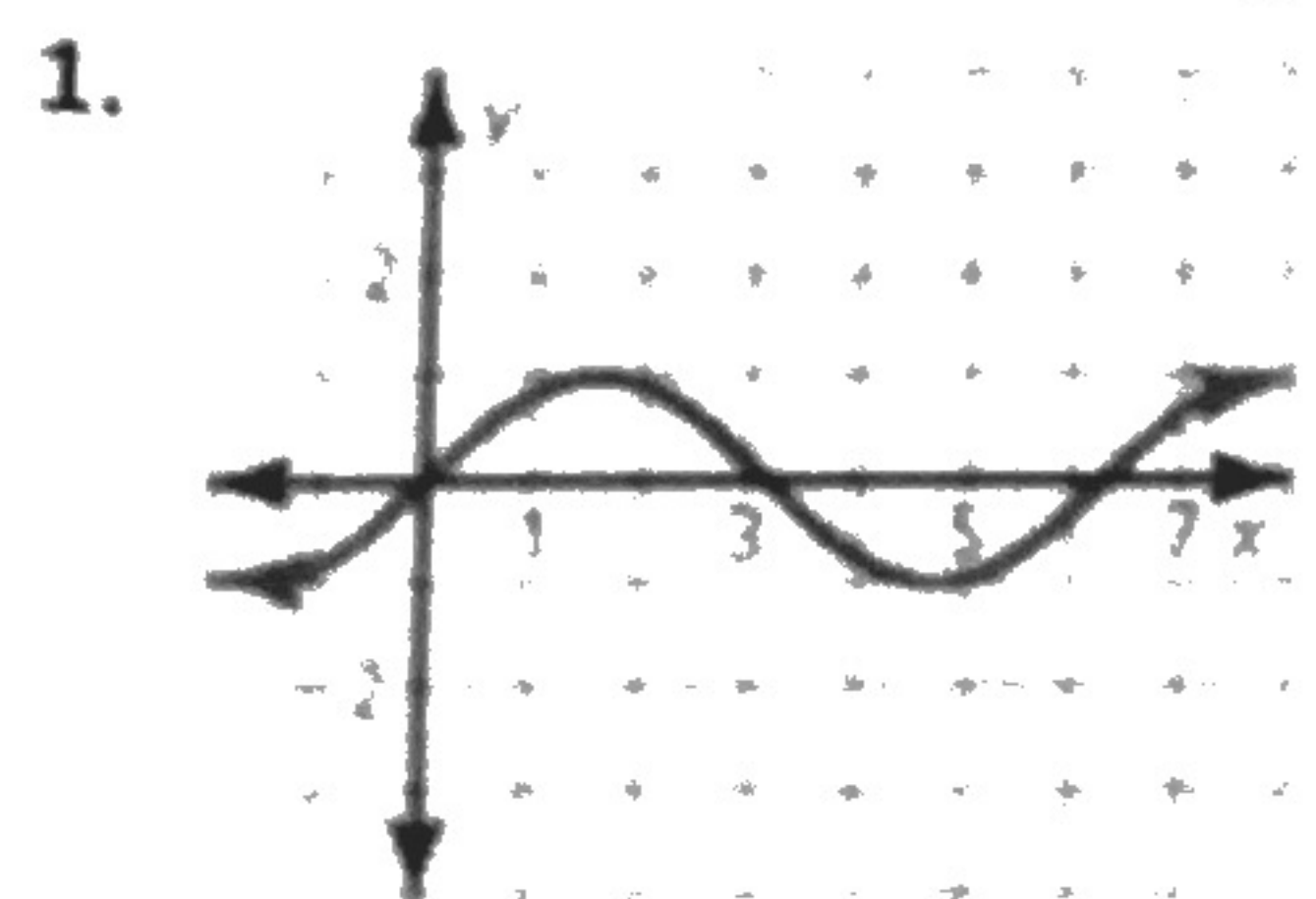
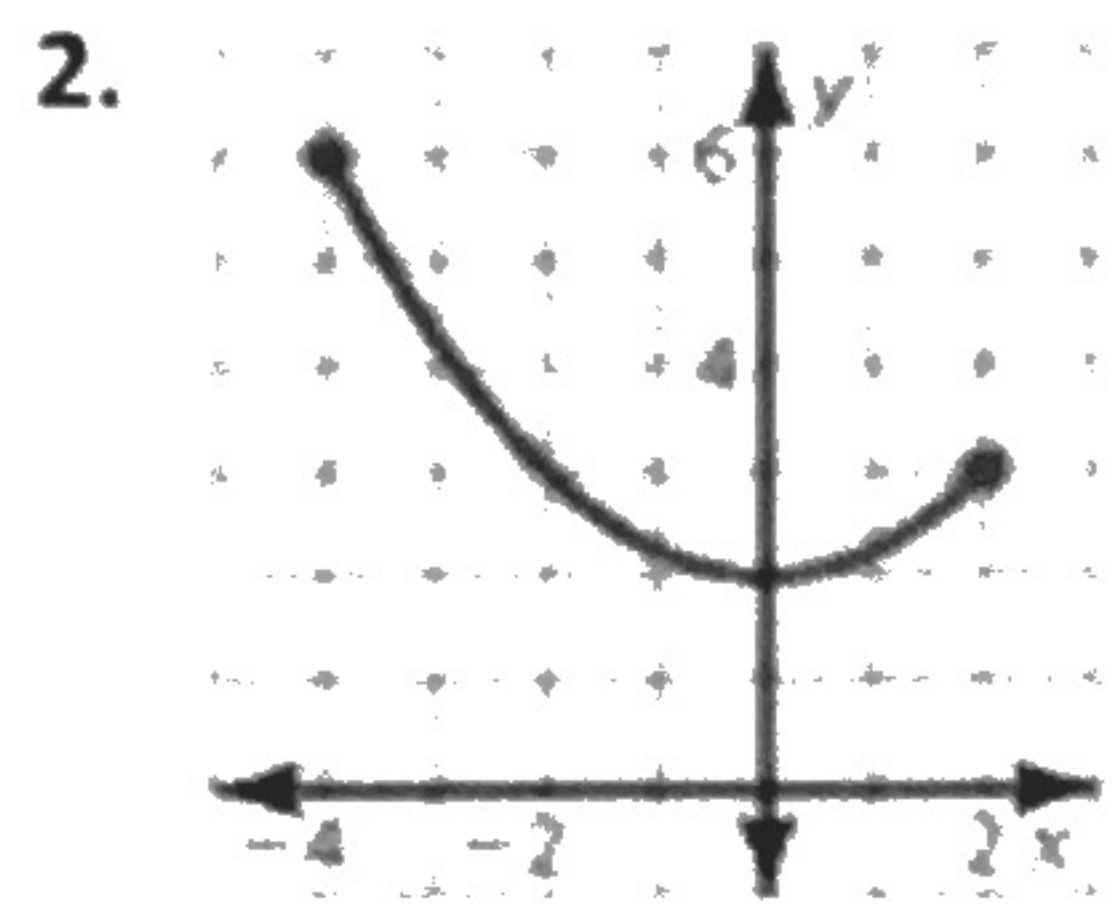


Unit 1: Functions PBA Practice

Find the domain and range of the function represented by the graph.

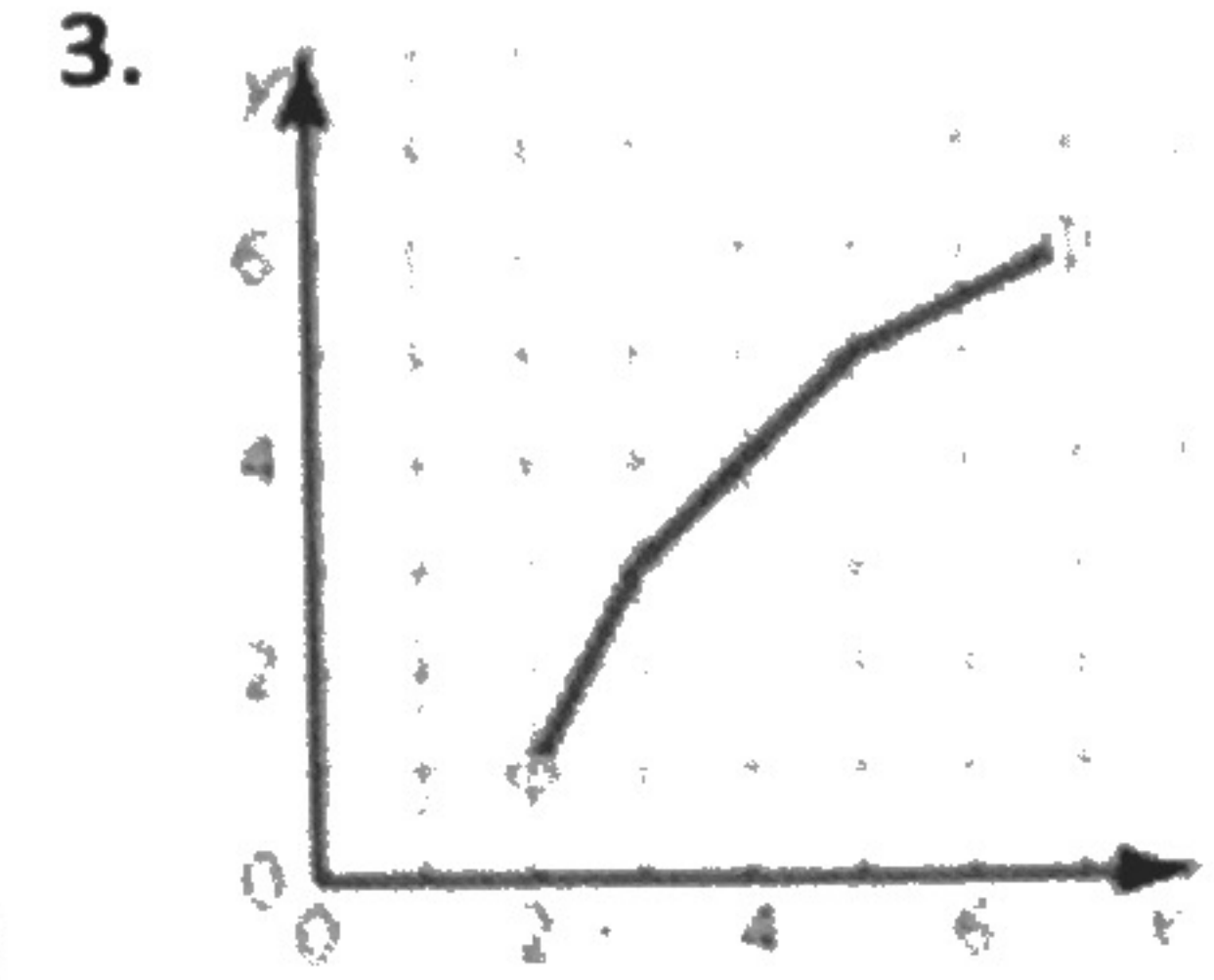


domain: all real #s
 range: $-1 \leq y \leq 1$ or $[-1, 1]$



domain: $-4 \leq x \leq 2$ or $[-4, 2]$

range: $2 \leq y \leq 6$ or $[2, 6]$



domain: $2 < x < 7$ or $(2, 7)$

range: $1 < y < 6$ or $(1, 6)$

Evaluate the function when $x = -2, 0,$ and $5.$

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

x	f(x) = 3x ³
-2	f(-2) = 3(-2) ³ = -24
0	f(0) = 3(0) ³ = 0
5	f(5) = 3(5) ³ = 375

5. $r(x) = -x^2 - 7$

x	r(x) = -x ² - 7
-2	r(-2) = -(-2) ² - 7 = -11
0	r(0) = -(0) ² - 7 = -7
5	r(5) = -(5) ² - 7 = -32

6. $b(x) = 18 - 0.5x$

x	b(x) = 18 - 0.5x
-2	b(-2) = 18 - 0.5(-2) = 19
0	b(0) = 18 - 0.5(0) = 18
5	b(5) = 18 - 0.5(5) = 15.5

Find the value of x so that the function has the given value.

7. $q(x) = \frac{1}{2}x - 3; q(x) = -4$

$$-4 = \frac{1}{2}x - 3$$

$$-1 = \frac{1}{2}x$$

$$\boxed{-2 = x}$$

8. $j(x) = -x^2 + 7; j(x) = -2$

$$-2 = -x^2 + 7$$

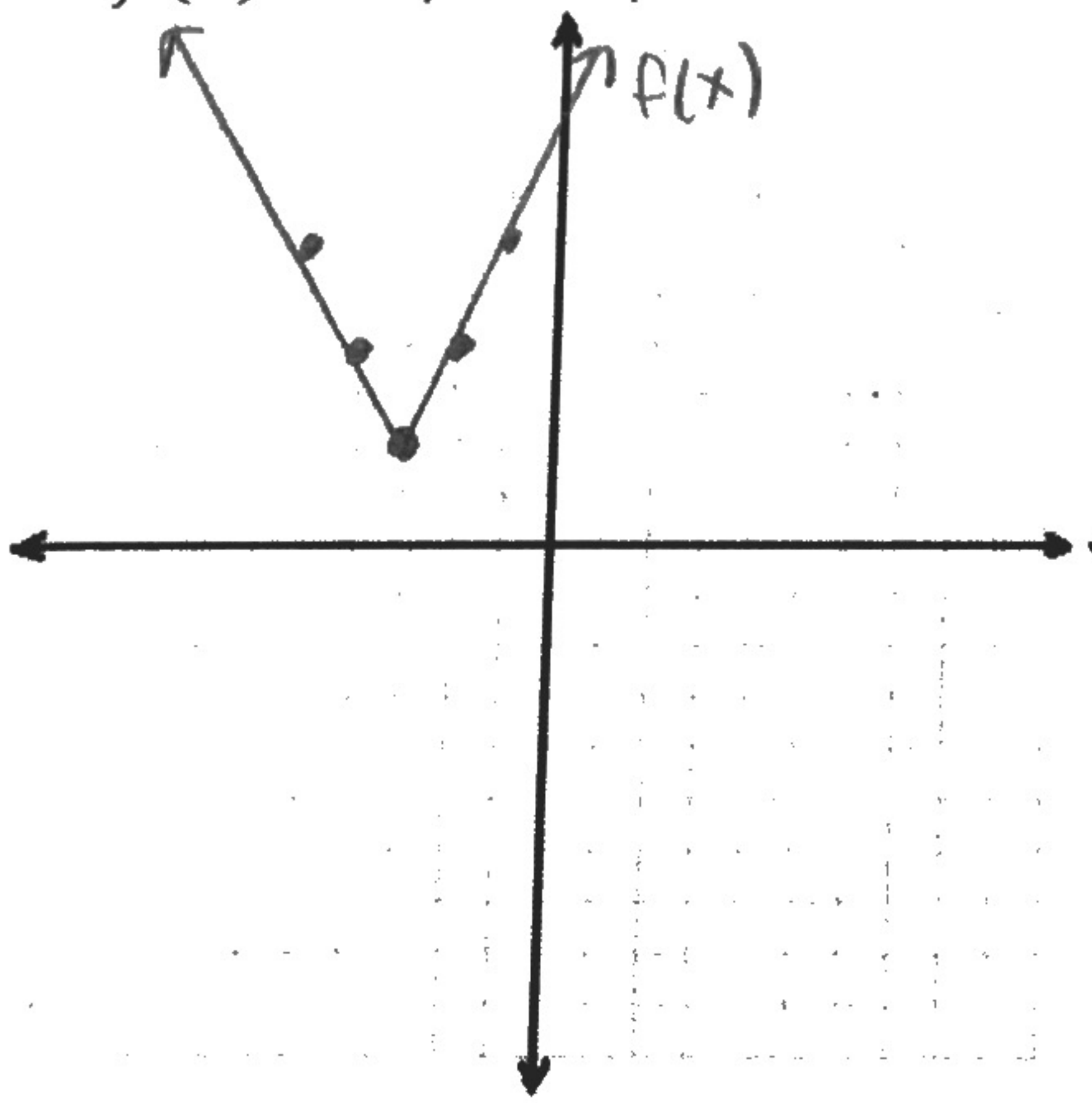
$$-9 = -x^2$$

$$9 = x^2$$

$$\boxed{\pm 3 = x}$$

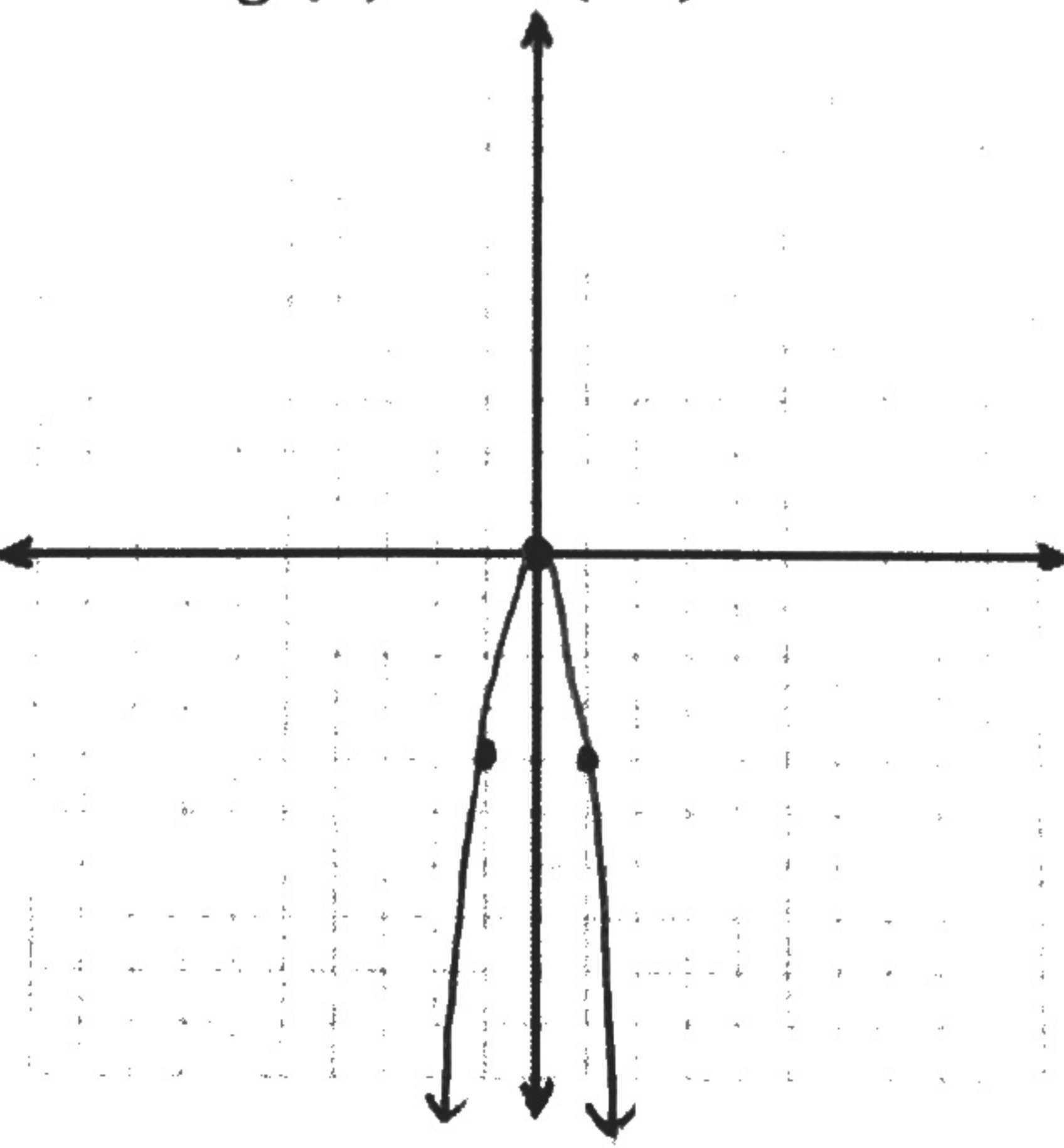
Identify the parent function. Describe the transformation in words. Graph at least 3 points.

9. $f(x) = 2|x + 3| + 2$



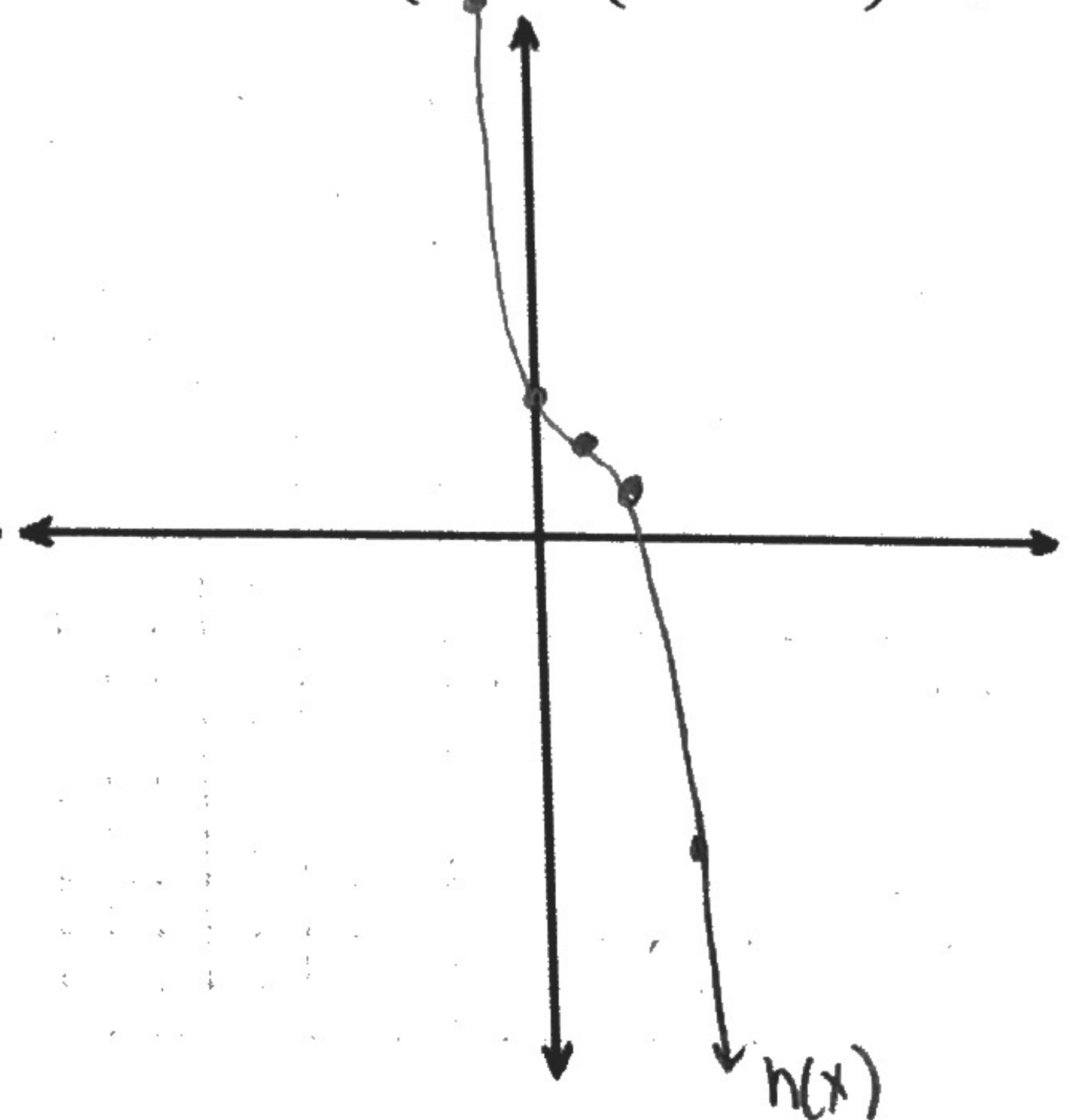
parent function: absolute value
 vertical stretch by a factor of 2
 horizontal translation left 3 units
 vertical translation up 2 units

10. $g(x) = -(2x)^2$



parent function: quadratic
 reflection over x-axis
 horizontal shrink by a factor of 2

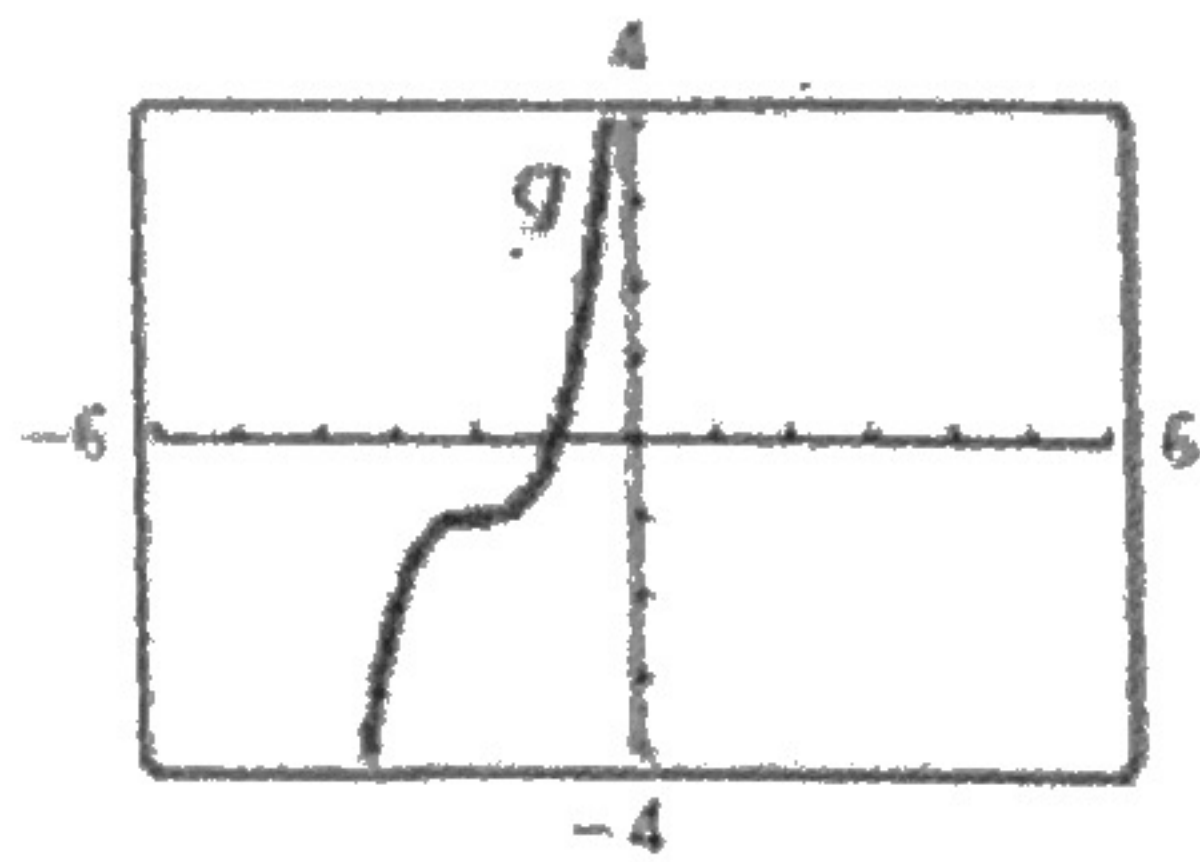
11. $h(x) = (-x - 1)^3 + 2$



parent function: cubic
 reflection over y-axis
 horizontal translation right 1 unit
 vertical translation up 2 units

Identify the parent function. Describe the transformation in words. Write an equation of the transformed function.

12.

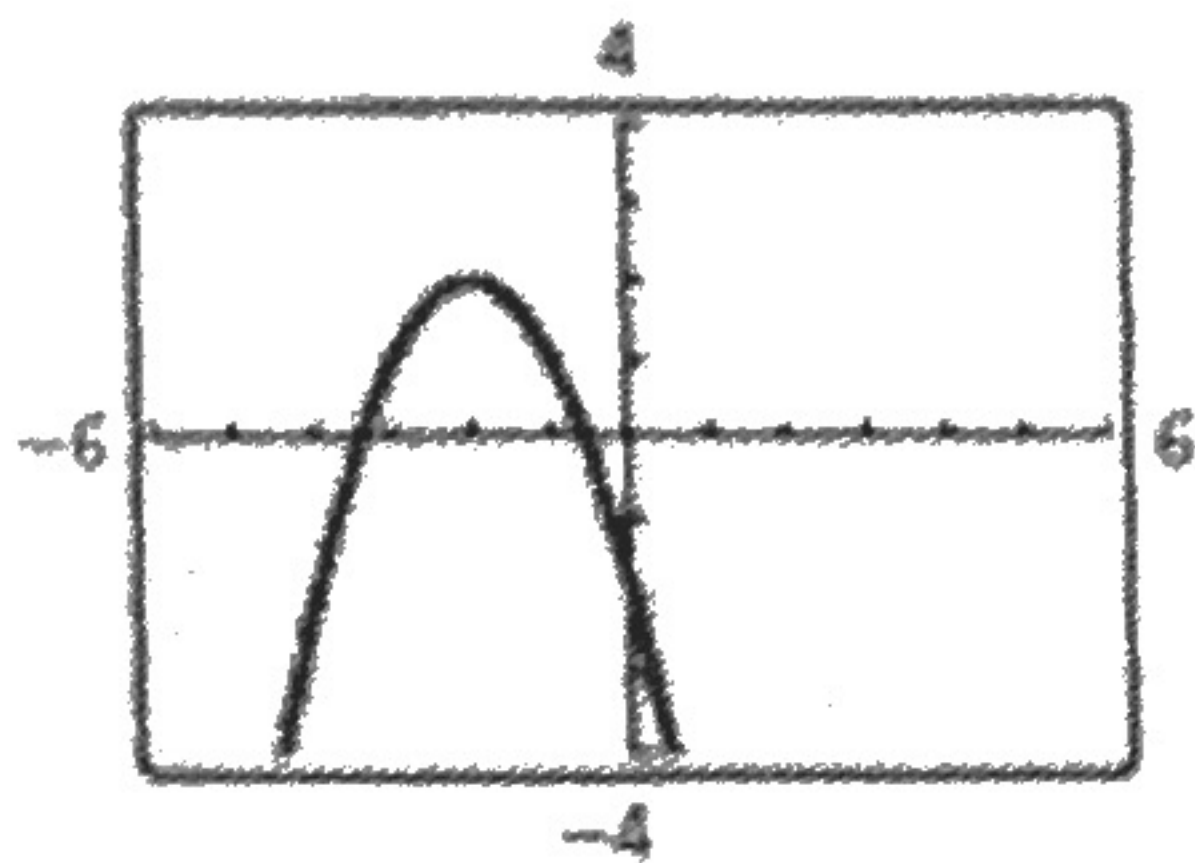


parent function: cubic
horizontal translation left 2 units
vertical translation down 1 unit

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

Use the graph of $y = f(x)$ to graph each function g .

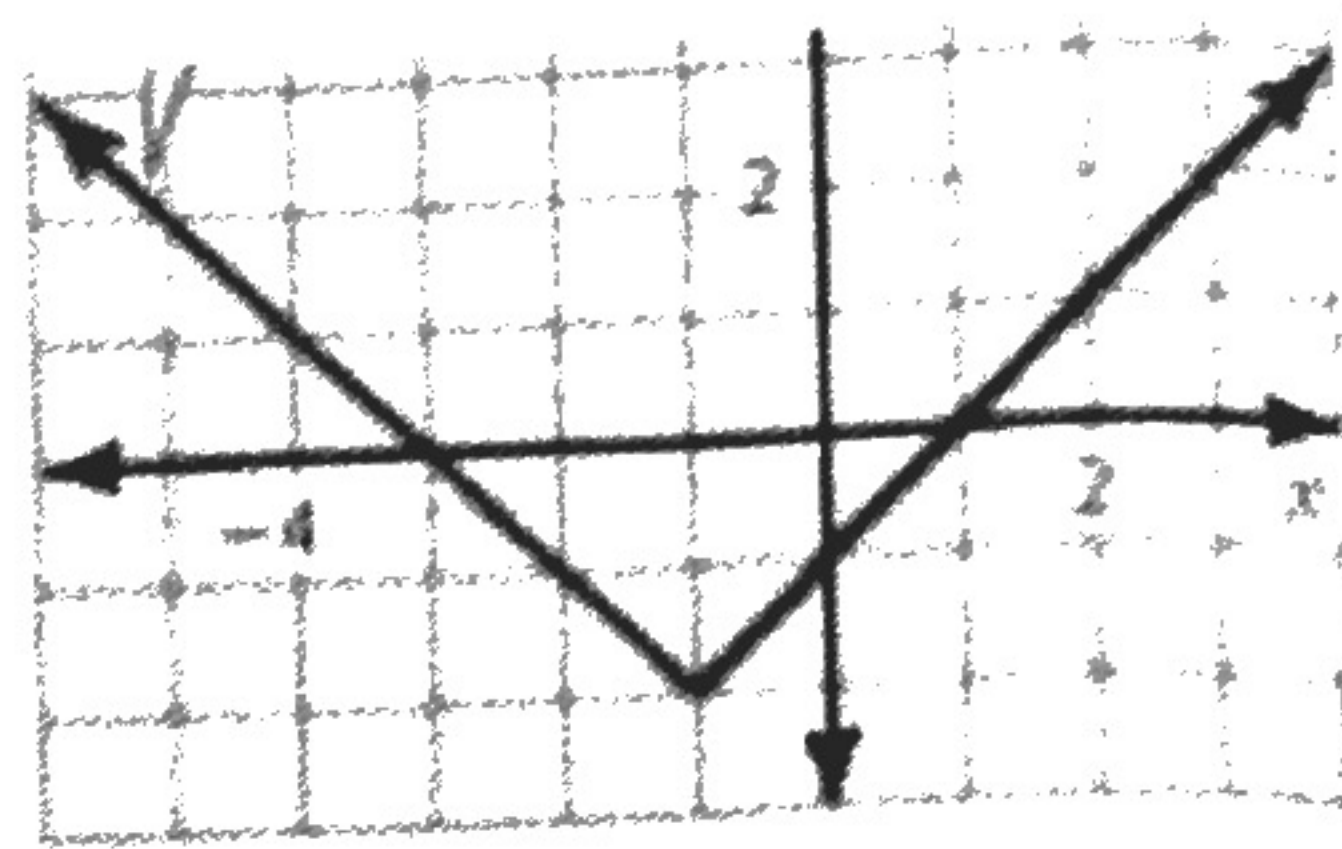
13.



parent function: quadratic
reflection over x-axis
horizontal translation left 2 units
vertical translation up 2 units

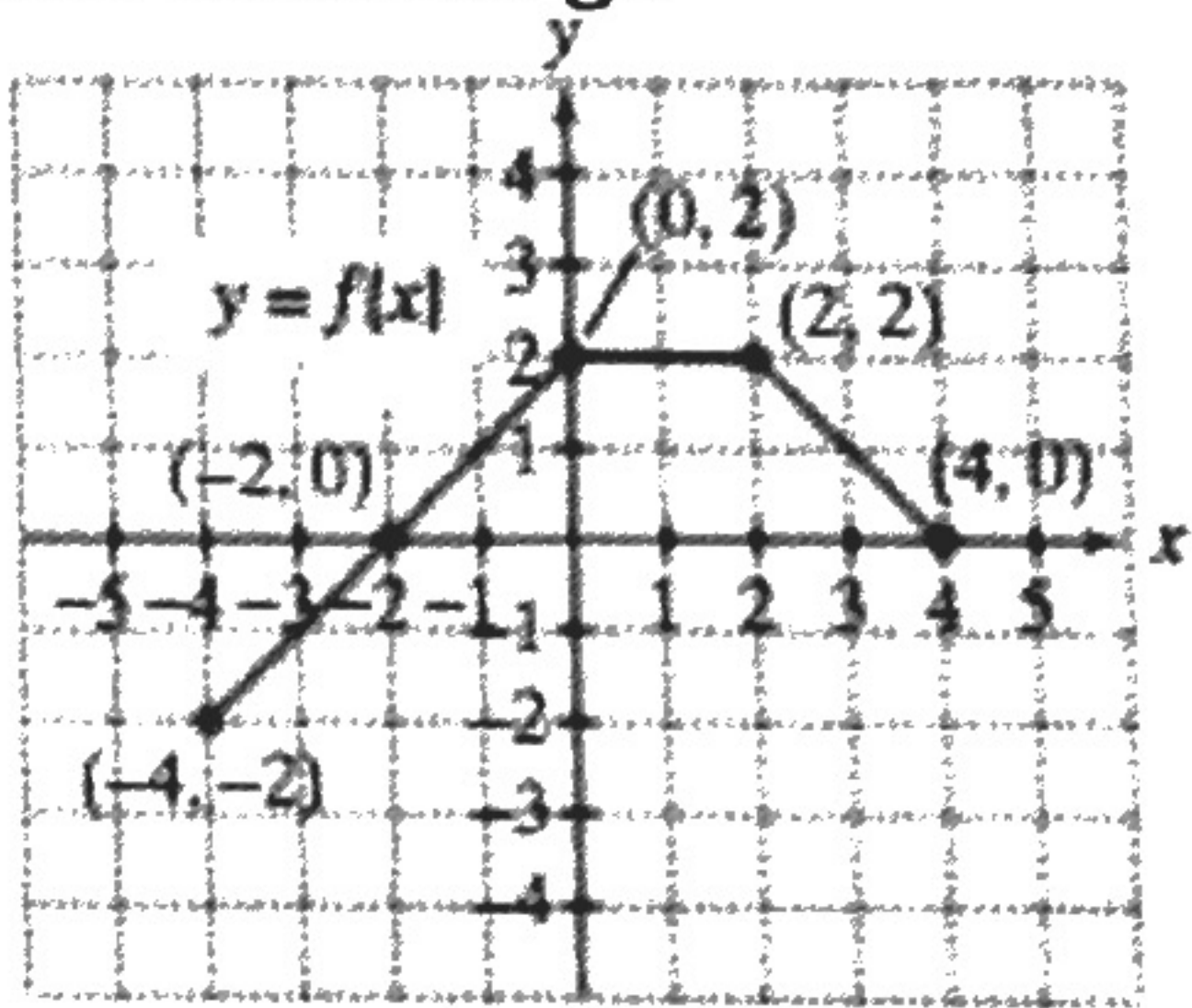
$$f(x) = -(x+2)^2 + 2$$

14.

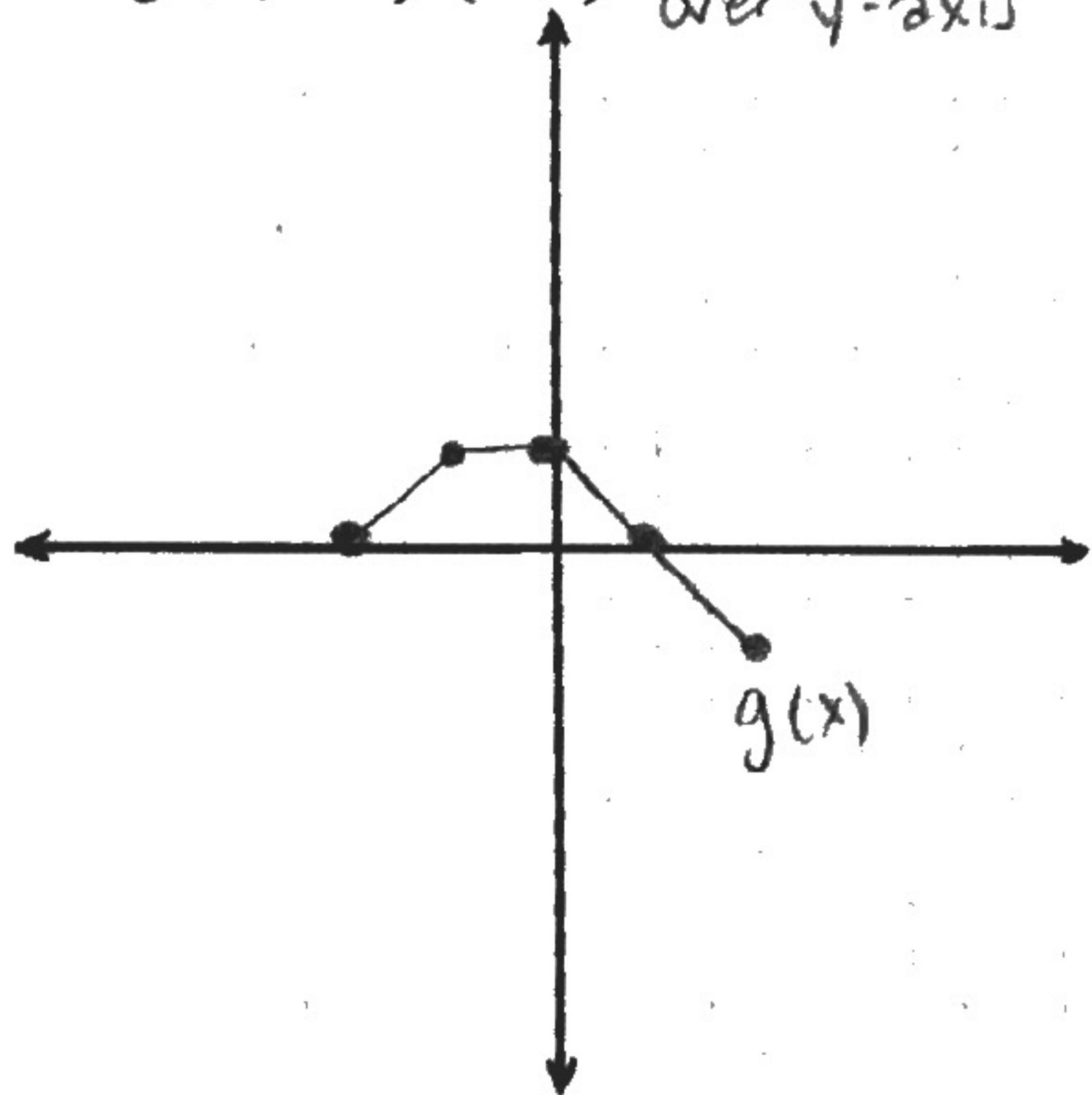


parent function: absolute value
horizontal translation left 1 unit
vertical translation down 2 units

$$p(x) = |x+1| - 2$$



15. $g(x) = f(-x)$ reflection over y-axis



negate all x-values
keep y-values same

$$(-4, -2) \rightarrow (4, -2)$$

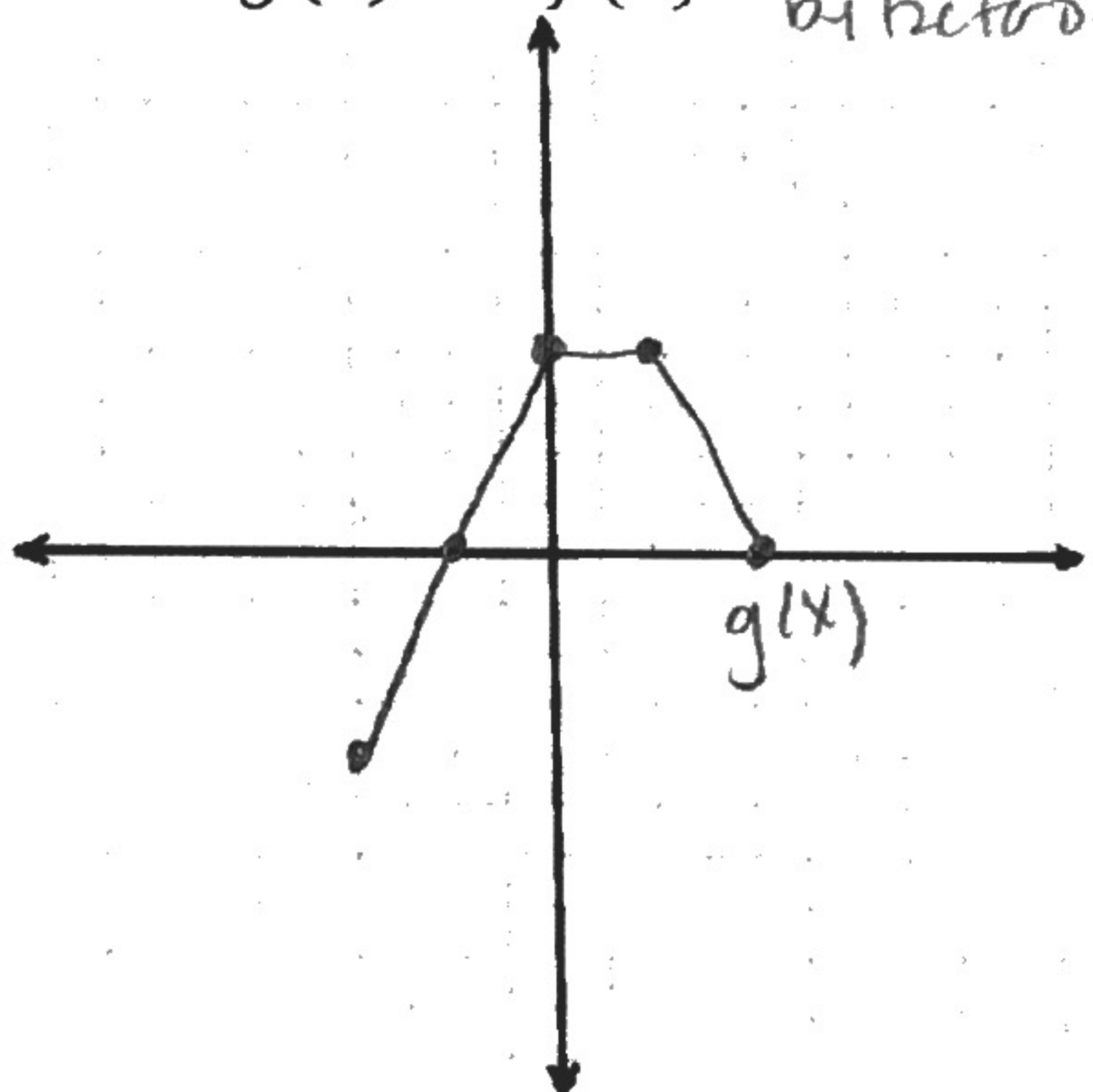
$$(-2, 0) \rightarrow (2, 0)$$

$$(0, 2) \rightarrow (0, 2)$$

$$(2, 2) \rightarrow (-2, 2)$$

$$(4, 0) \rightarrow (-4, 0)$$

16. $g(x) = 2f(x)$ vertical stretch by factor of 2



multiply y-values by 2
keep x-values same

$$(-4, -2) \rightarrow (-4, -4)$$

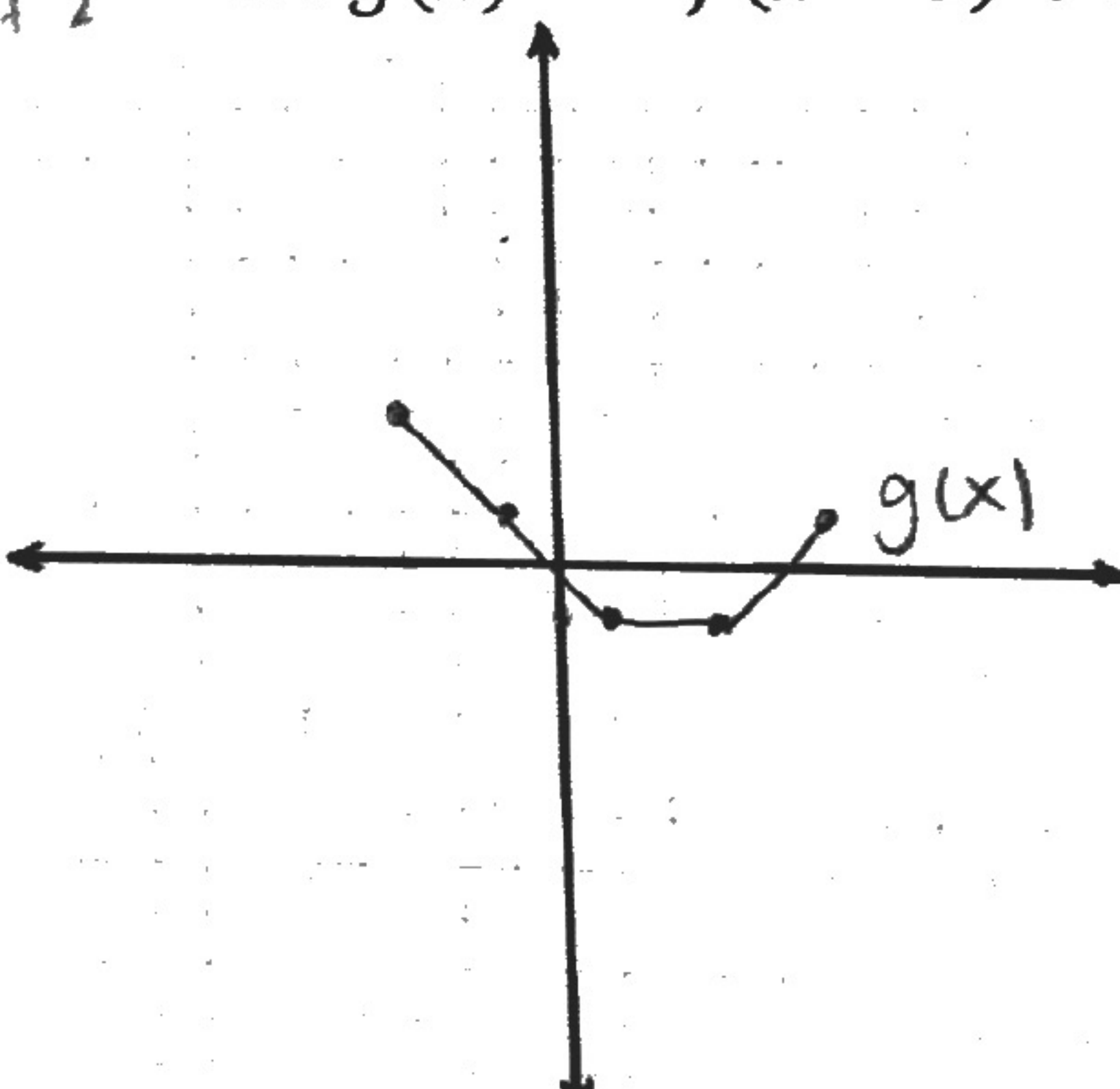
$$(-2, 0) \rightarrow (-2, 0)$$

$$(0, 2) \rightarrow (0, 4)$$

$$(2, 2) \rightarrow (2, 4)$$

$$(4, 0) \rightarrow (4, 0)$$

17. $g(x) = -f(x-1) + 1$ reflection over x-axis
horizontal translation right 1 unit
vertical translation up 1 unit



negate y-values
+1 to x-values
+1 to y-values

$$(-4, -2) \rightarrow (-3, 3)$$

$$(2, 0) \rightarrow (-1, 1)$$

$$(0, 2) \rightarrow (1, -1)$$

$$(2, 2) \rightarrow (3, -1)$$

$$(4, 0) \rightarrow (5, 1)$$