

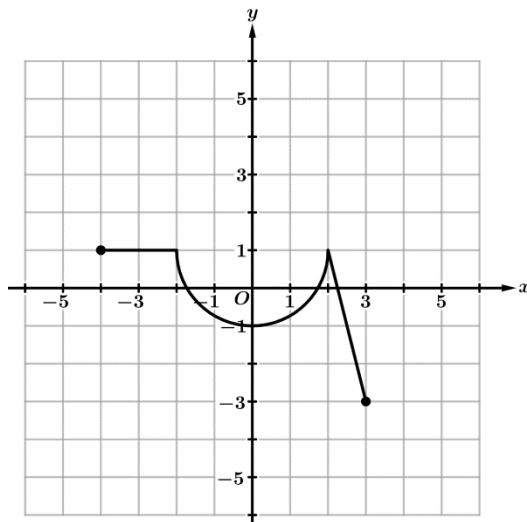
1. Let  $g$  be a function that is a transformation of the function  $f$  such that  $g(x) = \frac{1}{2}f(x + 2) + 5$ . Describe the transformations of the function  $f$  that result with the function  $g$ .
2. Let  $k$  be a function that is a transformation of the function  $h$  such that  $k(x) = 4h\left(\frac{x}{3}\right) - 1$ . Describe the transformations of the function  $h$  that result with the function  $k$ .
3. Let  $r$  be a function that is a transformation of the function  $p$  such that  $r(x) = -3p(4x)$ . Describe the transformations of the function  $p$  that result with the function  $r$ .
4. Let  $n$  be a function that is a transformation of the function  $m$  such that  $n(x) = 5 - m(-x)$ . Describe the transformations of the function  $m$  that result with the function  $n$ .

**Directions:** The table below gives values for a function  $f$  at selected values of  $x$ . Use the table to answer 5 – 6.

$x$	-20	-10	-5	0	2	4	6
$f(x)$	8	-3	2	6	-4	-1	9

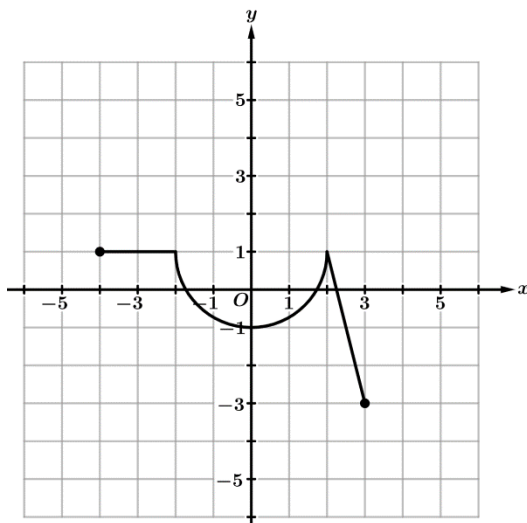
5. Let  $g(x) = 2f\left(\frac{x}{2}\right) - 3$ . Find the following values.
- (a)  $g(-10)$     (b)  $g(0)$
6. Let  $h(x) = 4 - f(x - 2)$ . Find the following values.
- (a)  $h(2)$     (b)  $h(4)$

7. The function  $k$  is constructed by applying three transformations to the graph of  $h$  in this order: a horizontal dilation by a factor of 4, a vertical dilation by a factor of  $\frac{1}{2}$ , and a vertical translation by 3 units. If  $k(x) = ah(bx) + c$ , find the values of  $a$ ,  $b$ , and  $c$ .



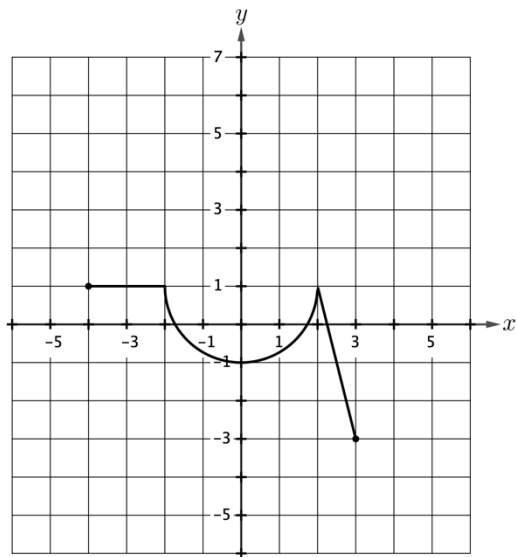
Graph of  $f$

8. The graph of  $y = f(x)$ , consisting of two line segments and a semicircle, is shown for  $-4 \leq x \leq 3$ . Sketch a graph of  $g$  on the same axes above where  $g(x) = f(x - 2)$ .



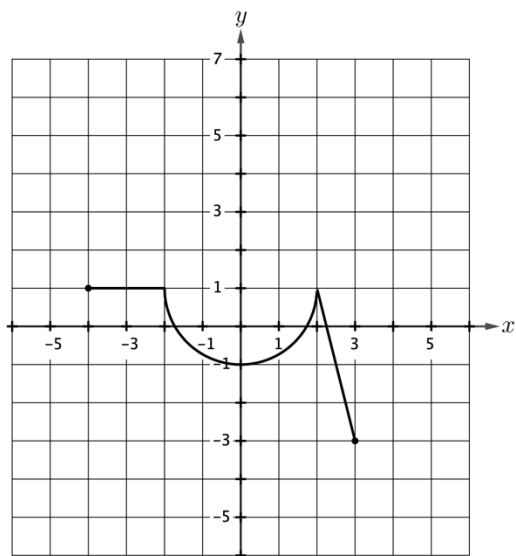
Graph of  $f$

9. The graph of  $y = f(x)$ , consisting of two line segments and a semicircle, is shown for  $-4 \leq x \leq 3$ . Sketch a graph of  $h$  on the same axes above where  $h(x) = 2f(x + 1)$ .



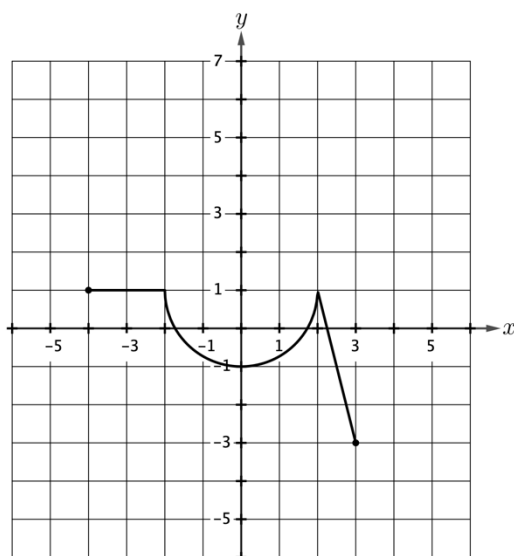
Graph of  $f$

10. The graph of  $y = f(x)$ , consisting of two line segments and a semicircle, is shown for  $-4 \leq x \leq 3$ . Sketch a graph of  $k$  on the same axes above where  $k(x) = -2f(x) + 1$ .



Graph of  $f$

11. The graph of  $y = f(x)$ , consisting of two line segments and a semicircle, is shown for  $-4 \leq x \leq 3$ . Sketch a graph of  $p$  on the same axes above where  $p(x) = f(-x)$ .



Graph of  $f$

12. The graph of  $y = f(x)$ , consisting of two line segments and a semicircle, is shown for  $-4 \leq x \leq 3$ . Sketch a graph of  $m$  on the same axes above where  $m(x) = f(2x)$ .

13. The domain of a function  $h$  is  $-4 \leq x \leq 7$  and the range of  $h$  is  $-6 \leq y \leq 0$ . Find the domain and range of  $g$ , where  $g(x) = 3h(x - 2)$ .

14. The domain of a function  $k$  is  $2 \leq x \leq 14$  and the range of  $k$  is  $-3 \leq y \leq 2$ . Find the domain and range of  $r$ , where  $r(x) = -2k(2x)$ .

15. The domain of a function  $f$  is  $-6 \leq x \leq 4$  and the range of  $f$  is  $-10 \leq y \leq 3$ . Find the domain and range of  $p$ , where  $p(x) = 5 - 3f(2(x + 1))$ .