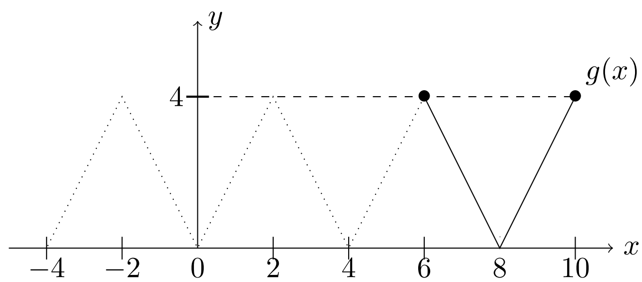
2. [12 points] A table for the function $f(x)$ and part of the graph of the piecewise-linear function $g(x)$ are given below. The following are true:

- $f(x)$ and $g(x)$ are both defined on $(-\infty, +\infty)$.
- f is an odd function.
- g is a periodic function with period 4.

x	-2	-1	0	2	3
$f(x)$	4	2	a	b	7



a. [3 points] Find the values of a and b.

Solution: Since f is odd, the following holds for every x in $(-\infty, +\infty)$: $f(-x) = -f(x)$. Therefore:
$f(2) = -f(-2) = -4$ and $f(0) = -f(0)$, which means that $f(0) = 0$.

b. [3 points] Find a formula for $g(x)$ for x in $[2, 4]$.

Solution: Since g is a periodic function with period 4, we know that $g(2) = g(6) = 4$ and $g(4) = g(8) = 0$.
The function g is also piecewise linear. Therefore, the slope is : $\dfrac{0-4}{4-2} = -2$ and by the point-slope formula we get: $g(x) = -2(x-2) + 4$.

$g(x) =$ $\underline{\quad -2(x-2)+4 \quad}$ for x in $[2, 4]$.

c. [6 points] Compare the following values by writing one of the symbols: " $<$ ", " $>$ " or " $=$ " in the blank. If the relationship cannot be determined using the information given, write "N" in the blank.

i. [2 points] $g(f(-1))$ $\underline{\quad = \quad}$ $g(f(1))$

ii. [2 points] $g(14)$ $\underline{\quad > \quad}$ $g(5)$

iii. [2 points] $f(g(3))$ $\underline{\quad = \quad}$ $f(g(-3))$