5. [12 points] *Note: You do not have to show any work on this page.*

a. [6 points] If $(2, -6)$ is a point on the graph of $y = h(x)$, find a point on the graph of each of the functions below.

(i) $\left(\underline{\quad 1 \quad}, \underline{\quad -6 \quad}\right)$ is a point on the graph of $y = h(2x)$.

Solution: To obtain the graph of $y = h(2x)$ from the graph of $y = h(x)$ we compress horizontally towards the y–axis by a factor of $1/2$, moving $(2, -6)$ to the point $(-1, 6)$.

(ii) $\left(\underline{\quad -2 \quad}, \underline{\quad -5 \quad}\right)$ is a point on the graph of $y = h(-x) + 1$.

Solution: To obtain the graph of $y = h(-x) + 1$ from the graph of $y = h(x)$, we first reflect the graph across the y–axis (moving the point $(2, -6)$ to the point $(-2, -6)$) and then shift the resulting graph up by one unit (moving the point $(-2, -6)$ to the point $(-2, -5)$).

(iii) $\left(\underline{\quad 3 \quad}, \underline{\quad 18 \quad}\right)$ is a point on the graph of $y = -3h(x - 1)$.

Solution: To obtain the graph of $y = -3h(x - 1)$ from the graph of $y = h(x)$, we first stretch the graph vertically away from the x–axis by a factor of 3 (moving the point $(2, -6)$ to the point $(2, -18)$). Then we reflect this graph across the x–axis (moving the point $(2, -18)$ to the point $(2, 18)$). Finally, we shift the resulting graph to the right by one unit (moving the point $(2, 18)$ to the point $(3, 18)$).

b. [6 points] Some data for functions g and k is provided in the table below. Use this data to answer the questions that follow.

x	1	2	3
$g(x)$	4	-1	-2
$k(x)$	5	4	1

(i) If $g(x)$ is an even function, find $g(-2)$.

Solution: Since g is even, $g(-2) = g(2)$ and the table indicates that $g(2) = -1$. Hence $g(-2) = -1$.

Answer: $g(-2) = \underline{\quad -1 \quad}$

(ii) Let $m(t) = 2k(-t + 1)$. Find $m(-2)$.

Solution: Using the provided formula for $m(t)$ and the given table, we have $m(-2) = 2k(-(-2) + 1) = 2k(2 + 1) = 2k(3) = 2(1) = 2$.

Answer: $m(-2) = \underline{\quad 2 \quad}$

(iii) Let $n(x) = k(x - 1)$. If $n(x)$ is an odd function, find $k(-3)$.

Solution: Using the given formula (or the implication that the graph of $y = n(x)$ results from shifting the graph of $y = k(x)$ to the right one unit), we have $k(-3) = n(-2)$. Now n is odd so $n(-2) = -n(2)$. Using the formula provided, we thus find that $k(-3) = n(-2) = -n(2) = -k(2 - 1) = -k(1) = -5$. Hence $k(-3) = -5$.

Answer: $k(-3) = \underline{\quad -5 \quad}$