1. [7 points] The entire graph of a function $g(x)$ is shown below to the left. Also shown is a table of some values for a different function $h(x)$. Assume that the function $h(x)$ is invertible.

<table>
<thead>
<tr>
<th>$x$</th>
<th>$-3$</th>
<th>$-1$</th>
<th>$0$</th>
<th>$1$</th>
<th>$3$</th>
<th>$4$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$h(x)$</td>
<td>7</td>
<td>5</td>
<td>3</td>
<td>0</td>
<td>$-2$</td>
<td>$-3$</td>
</tr>
</tbody>
</table>

\[ y = g(x) \]

a. [3 points] Find the domain of $g(x)$ and range of $g(x)$. Give your answers using interval notation or using inequalities. You do not need to explain or justify your answer.

**Answer:** $g(x)$ has domain $\ldots$ and range $\ldots$

b. [4 points] Find each of the following, or write N/A if a value does not exist or there is not enough information to find it. You do not need to show work.

i. $h^{-1}(-3)$

**Answer:** $h^{-1}(3) = \ldots$

ii. $g(h(0))$

**Answer:** $g(h(0)) = \ldots$

iii. all values of $x$ so that $g(h(x)) = 1$

**Answer:** $x = \ldots$

2. [5 points] On the axes below, sketch the graph of a single possible function $y = f(x)$ satisfying all the listed properties.

- $f(0) = 1$
- the average rate of change of $f(x)$ on $[-4, 0]$ is 1
- $f(x)$ is concave up for $-4 < x < 0$
- $f(x)$ is invertible (that is, it has an inverse)
- $f(x)$ has a constant rate of change for $0 < x < 4$