2. [13 points] Throughout this problem, remember to show your work carefully.

a. [4 points] Find a formula for the quadratic function $g(x)$ described by the table below.

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

Answer: $g(x) =$ ____________________________

b. [3 points] Given $f(x) = 13(x - 8)^2 + w$, find the average rate of change of $f$ from $x = 8$ to $x = 8 + h$. Simplify your answer completely. Your answer may include $h$ and/or $w$.

Answer: ____________________________

c. [6 points] Consider the function $C$ defined below.

$$C(x) = \begin{cases} -2 + x & \text{if } -5 \leq x < 0 \\ 3(1.06)^x & \text{if } 0 \leq x. \end{cases}$$

Sketch a graph of $y = C(x)$. Then find the domain and range of this function. Remember to clearly label your axes. Use either interval notation or inequalities to give your answers.

Domain: ____________________________ Range: ____________________________