

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.

x	-4	1	2	7
$g(x)$	0	-5	-5	0

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:** _____