1.13 Function Model Selection

AP Precalculus Name: _____ **CA #2**

Select the appropriate model for the data (linear/quadratic/cubic). Explain why it models the data.

1.

x	1	2	3	4	5	6
y	19	-1	-21	-41	-61	-81

2.

x	2	4	6	8	10	12
y	-10	-42	-66	-58	6	150

3.

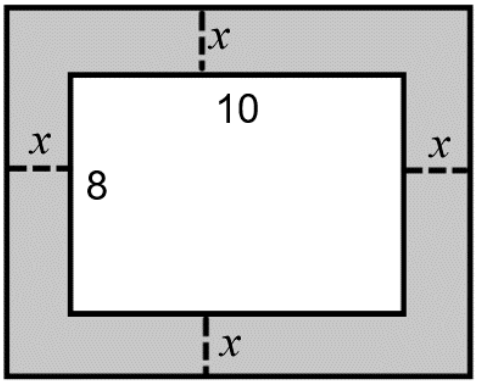
x	0	1	2	3	4	5
y	6	1	-14	-39	-74	-119

4.

x	2	4	5	6	7	8
y	20	56	80	108	140	176

CALCULATOR ACTIVE. Use the model to answer the questions in context.

5. Mr. Brust would like to frame a picture of his kids. The picture is 8 inches by 10 inches. He plans to put a border on the picture x inches. The wall space available for the entire picture with border is 20 inches by 22 inches. The area of the picture and border is modeled by $A(x) = (8 + 2x)(10 + 2x)$



   a. Find $A(2)$. Explain your solution in context.

   b. What is the average rate of change from $x = 2$ to $x = 3$? Explain your solution in context.

   c. What is the restricted domain in this context?

   d. What is the restricted range in this context?

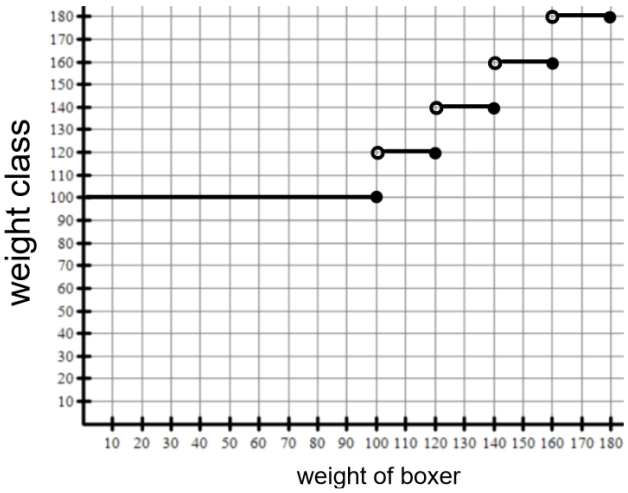
Use the graph of the piecewise function to answer the questions in context.

6. Boxers must weigh in before fights. The graph shows the weight class a boxer can compete at given their weight.

   a. What is the domain in this context?

   b. What is the range in this context?

   c. Find $f(130)$. What does it mean in this context?



Answers to 1.13 CA #2

1. Linear, first difference of 20	2. Cubic, third difference of 24
3. Quadratic, second difference of -10	4. Quadratic, second difference of 16
5. a. $A(2) = 168$ A 2 inch border has a total area of 168 in^2 b. 56 in^2 per 1 inch of border c. Domain: $[0,\ 6]$ d. Range: $[0, 440]$	6. a. Domain: $[0, 180]$ b. Range: $\{100, 120, 140, 160, 180\}$ c. $f(130) = 140$ A 130 pound boxer would compete in the 140 weight class