8-5 Additional Practice

Comparing Linear, Exponential, and Quadratic Models

Use a table to determine whether the function below is linear, quadratic, or exponential. Then, use regression to find the function that models the data.

1.

x	y	Differences		
		1st	2nd	Ratio
0	7			
1	28			
2	49			
3	70			
4	90			

2.

x	y	Differences		
		1st	2nd	Ratio
0	5			
1	5			
2	11			
3	23			
4	41			

3.

x	y	Differences		
		1st	2nd	Ratio
0	1			
1	0.25			
2	0.0625			
3	0.0156			
4	0.0039			

4. The data in the table represent the population of a town for the past five years. When the population reaches 100,000 the town can be reclassified as a city. Does this situation suggest a linear, exponential, or quadratic function model? Will the town be reclassified as a city in the next 8 years?

x	y
1	85,000
2	88,000
3	87,000
4	92,000
5	93,000

5. Consider linear, quadratic, and exponential functions.

   a. What type of function would best model the area of a figure?

   b. What type of function would best model the perimeter of a figure?

6. Compare the rates of change for $f(x) = 2x + 4$, $g(x) = 2x^2 + 4$, and $h(x) = 2^x$ over the interval $x = 3$ to $x = 5$. Which function has the greatest rate of change?