

**Directions:** Selected values of several functions are given in the table below. For each table, determine if the function could be linear, exponential, or neither. Give a reason for your answer.

1. 

$x$	$f(x)$
0	$\frac{1}{2}$
2	2
4	8
6	32
8	128

2. 

$x$	$g(x)$
1	-1
2	0
3	2
4	5
5	9

3. 

$x$	$h(x)$
10	100
20	50
30	25
40	12.5
50	6.25

4. 

$x$	$k(x)$
1	-9
6	-2
11	5
16	12
21	19

5. Immediately following the AP Precalculus Exam, memes are created and shared online. The number of people that have seen the meme can be modeled using a geometric sequence, where one hour after the Exam ends is hour 1. At hour 3, a total of 2500 people had seen the meme, and 20,000 people had seen the meme by hour 6. Using this model, how many people will have seen the meme by hour 10?
6. Across the United States, there are approximately 45,000 flights each day. In a certain simulation, the total number of flights that have begun across the United States  $n$  hours since midnight on a given day can be modeled using an arithmetic sequence, where 12:00AM is represented by  $n = 0$ . The total number of flights that had begun by 5AM that day was 11,750, and by 11AM there had been a total of 22,250 flights that had begun. Based on the simulation, how many total flights had begun across the United States by 6PM that day?
7. Since being adopted as the national symbol for the United States in 1782, the bald eagle population has experienced large fluctuations. By the early 1960's, the bald eagle nearly became extinct. In 1963, there were only 417 nesting pairs of bald eagles in the US. The population of bald eagles can be modeled using a geometric sequence where 1963 represents year 0. In 2019 (year 56), there were a total of 71,400 nesting pairs of bald eagles across the US. Based on this model, how many nesting pairs of bald eagles were in the US in 2000?