***Sequences VS Functions***

**Learning Target #1:** “I can recognize that sequences are functions with limited domain.” F-IF-3

**5-111.** Consider sequence: −5, −1, 3, 7, …

1. Create multiple representations, namely, a table, a graph and an equation (recursive or explicit), for the sequence.

|  |  |
| --- | --- |
| Explicit Equation: | Graph: |
| Recursive Equation: |
| Table:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *n* | 0 | 1 | 2 | 3 | 4 | 5 | 11 | 17 | 21 |
| *t(n)* |  |  |  |  |  |  |  |  |  |

 |

1. Is it possible for the equation representing $t(n)$ to equal 400? Justify your answer.
2. Create the same multiple representations as you did in part (a) for the function $f(x) = 4x - 9$.

|  |  |
| --- | --- |
| Equation:$$f(x) = 4x - 9$$ | Graph: |
| Table:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *n* | 0 | 1 | 2 | 3 | 4 | 5 | 11 | 17 | 21 |
| *t(n)* |  |  |  |  |  |  |  |  |  |

 |

1. How are $f(x) $and $t(n)$ different? How can you see their differences in each of the representations?

|  |  |  |
| --- | --- | --- |
| Equation: | Graph: | Table: |

1. For the function $f(x) = 4x - 9$, is it possible for $f(x)$ to equal 400? Explain why or why not.

**5-112.** Let us consider the difference between $t(n) = 2 · 3^{n}$ and $f(x) = 2 · 3^{x}$ .

1. Is $f(x) = 2 · 3^{x} $ a function? Why or why not? Is $(n) = 2 · 3^{n}$ a function?
2. Is it possible for $t(n)$ to equal 1400? If so, find the value of $n$ that makes $t(n) = 1400$. If not, justify why not.
3. Is it possible for $f(x$) to equal 1400? If so, find the value of $x$ that makes $f(x) = 1400$.
4. How are the two functions similar? How are they different?

**5-113. LEARNING LOG “Sequences vs. Functions”**

Is a sequence a function? Justify your answer completely. If so, what makes it different from the functions that are usually written in the form f(x) = \_\_\_\_\_\_\_\_? If not, why not?

**Learning Target #2:** “I can identify sequences as either arithmetic or geometric.” **Learning Target #5:** “I can write arithmetic and geometric sequences both explicitly and recursively.” F-BF-2

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| a.) | *n* | 0 | 1 | 2 | 3 | 4 | 5 |  | b.) | *n* | 0 | 1 | 2 | 3 | 4 | 5 |
|  | *t(n)* |  | 36 | 63 | 90 | 117 |  |  |  | *t(n)* |  | 12 | 72 | 432 | 2592 |  |

Here are two tables:

1. Determine if the tables represent geometric or arithmetic sequences or neither. Explain.
2. Determine the zeroth term and the fifth term for both tables.
3. Write the explicit and recursive equations for both tables.

|  |  |
| --- | --- |
| Table a.) | Table b.) |
| Explicit Equation: | Explicit Equation: |
| Recursive Equation: | Recursive Equation: |