**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Recursive and Iterative Functions**

**Determine if each sequence is an arithmetic or geometric sequence. If it is, identify the common differences (d) or the common ratio (r).**

1. 6, 12, 18, 24, … type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ d or r = \_\_\_\_\_\_\_\_\_

Recursive (Bn) \_\_\_\_\_\_\_\_\_\_\_\_\_\_ B1=\_\_\_\_\_\_\_\_ linear or exponential \_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. 6, 11, 17, … type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ d or r = \_\_\_\_\_\_\_\_\_

Recursive (Bn) \_\_\_\_\_\_\_\_\_\_\_\_\_\_ B1=\_\_\_\_\_\_\_\_ linear or exponential \_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. 2, 14, 98, 686, … type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ d or r = \_\_\_\_\_\_\_\_\_

Recursive (Bn) \_\_\_\_\_\_\_\_\_\_\_\_\_\_ B1=\_\_\_\_\_\_\_\_ linear or exponential \_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. 160, 80, 40, 20, … type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ d or r = \_\_\_\_\_\_\_\_\_

Recursive (Bn) \_\_\_\_\_\_\_\_\_\_\_\_\_\_ B1=\_\_\_\_\_\_\_\_ linear or exponential \_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. -40, -25, -10, 5, … type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ d or r = \_\_\_\_\_\_\_\_\_

Recursive (Bn) \_\_\_\_\_\_\_\_\_\_\_\_\_\_ B1=\_\_\_\_\_ linear or exponential \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. 7, -21, 63, -189,… type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ d or r = \_\_\_\_\_\_\_\_\_

Recursive (Bn) \_\_\_\_\_\_\_\_\_\_\_\_\_\_ B1=\_\_\_\_\_ linear or exponential \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**For the following sequences, find the first term (a1) and the common difference (d) and state the recursive formula and the general term. Don’t forget to simplify.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **First term:**  **a1** | **Difference: (d)** | **Recursive Formula****Bn** |
| 1. -10, -4, 2, 8, 14, …
 |  |  |  |
| 1. 10, 8, 6, 4, …
 |  |  |  |
| 1. 36, 31, 26, 21, …
 |  |  |  |

1. Using question # 9, find the value of a7 and a10.

Evaluate each function for the term given:

1. f(x) = -3x + 10 for f(7)
2. d(t) = 4t - 50 for d(100)
3. f(x) = -x2 + 4 for f(3)
4. C(n) = 4(5)n + 20 for C(2)
5. What does Bn represent in a recursive function?
6. What does Bn+1 represent?
7. Explain the difference between an arithmetic and a geometric sequence. (Use good vocabulary!)