

## Unit 1 Day 5 HW: Arithmetic Sequences

Write the recursive formula that goes with the following sequences:

1) 1, 2, 3, 4, 5...

2) 2, 4, 8, 16, 32...

3)  $8, 1, \frac{1}{8}, \frac{1}{64}, \dots$

4) 5, 2, -1, -4...

Find the first four terms of the given recursively defined sequence.

5)  $a_n = 2(a_{n-1} - 2)$  and  $a_1 = 3$

6)  $a_n = \frac{a_{n-1}}{2}$  and  $a_1 = -8$

7)  $a_n = 2a_{n-1} + 1$  and  $a_1 = 1$

8)  $a_n = a_{n-1} - 5$  and  $a_1 = 1$

9)  $a_n = 3a_{n-1}$  and  $a_1 = 1$

10)  $a_n = -2(a_{n-1} + 3)$  and  $a_1 = 1$

Write an explicit and recursive formula for the following sequences.

11) 19, 13, 7, 1...

12) 9, 17, 25, 33...

Explicit: \_\_\_\_\_

Explicit: \_\_\_\_\_

Recursive: \_\_\_\_\_

Recursive: \_\_\_\_\_

13) -3, -1, 1, 3...

14) 110, 88, 66, 44...

Explicit: \_\_\_\_\_

Explicit: \_\_\_\_\_

Recursive: \_\_\_\_\_

Recursive: \_\_\_\_\_

Find the finite sum  $S_n = \frac{n}{2}(a_1 + a_n)$  of the arithmetic sequence that satisfies the given conditions.

Show all work!

15)  $a_1 = 1, d = 2, n = 10$

16)  $a_1 = 3, d = 2, n = 12$

17)  $a_1 = 4, d = 2, n = 20$

18)  $a_1 = 100, d = -5, n = 8$

19)  $a_1 = 55, d = 12, n = 10$

20)  $a_1 = 8, d = 3, n = 15$