Advanced Algebra Name _____
Homework 7.2
Recursive Rules for Sequences Period _____

SHOW ALL WORK.

Complete Parts A & B OR Parts B & C

PART A:

Write the first 5 terms in the sequence.

1. $a_1 = 1$
$a_n = a_{n-1} + 3$

2. $a_1 = 4$
$a_n = 2a_{n-1}$

3. $a_1 = -1$
$a_n = a_{n-1} - 5$

Write a recursive rule for the sequence.

4. 21, 14, 7, 0, -7, . . .

5. 3, 12, 48, 192, 768, . . .

6. 4, -12, 36, -108, 324, . . .

7. 1, 8, 15, 22, 29, . . .

8. 54, 43, 32, 21, 10, . . .

9. A lake initially contains 5000 fish. Each year the population declines 20% due to fishing and other causes, and the lake is restocked with 500 fish.

a. Write a recursive rule for the number a_n of fish at the beginning of the nth year. How many fish are there at the beginning of the 5^{th} year?

b. What happens to the population of fish in the lake over time?

PART B:

Write the first 5 terms in the sequence.

10. $a_1 = 3$
$a_n = a_{n-1} - n^2$

11. $a_1 = 2$
$a_n = (a_{n-1})^2 + 1$

12. $a_1 = 4$
$a_n = (a_{n-1})^2 - 10$

13. $a_0 = 3$
$a_n = 3a_{n-1} - 2$

14. $a_0 = -2$
$a_n = 5a_{n-1} + 6$

15. $a_0 = 1$
$a_n = -4a_{n-1} + 7$

Write a recursive rule for the sequence.

16. $44, 11, \frac{11}{4}, \frac{11}{16}, \frac{11}{64}, \ldots$

17. 1, 4, 5, 9, 14, . . .

18. 3, 5, 15, 75, 1125, . . .

19. 2, 5, 11, 23, 47, . . .

20. 16, 9, 7, 2, 5, . . .

21. $5, 5\sqrt{3}, 15, 15\sqrt{3}, 45, \ldots$

22. You are adding chlorine to a swimming pool. You add 34 ounces of chlorine the first week and 16 ounces every week thereafter. Each week 40% of the chlorine in the pool evaporates. Write a recursive rule for the amount of chlorine in the pool each week. What happens to the amount of chlorine in the pool over time?

PART C:

Write the first 5 terms in the sequence.

23. $a_1 = 2$
$a_n = n^2 + 3n - a_{n-1}$

24. $a_0 = 2, a_1 = 4$
$a_n = a_{n-1} - a_{n-2}$

25. $a_1 = 2, a_2 = 3$
$a_n = a_{n-1} \cdot a_{n-2}$

Write a recursive rule for the sequence.

26. 3, 8, 17, 81, 370, . . .

27. 1, 2, 12, 56, 272, . . .

28. 2, 5, 11, 26, 59, . . .