

Review 7.1-7.3
Advanced Algebra

Name _____

Class Hour _____

Write the first five terms of the sequence.

1. $a_n = n^2 + 6$

_____, _____, _____, _____, _____

3. $a_1 = 7$
 $a_n = 2a_{n-1} - 5$

_____, _____, _____, _____, _____

2. $a_n = 3^{n+1}$

_____, _____, _____, _____, _____

$a_1 = -2$
 4. $a_2 = 3$
 $a_n = n(a_{n-1} - a_{n+2})$

_____, _____, _____, _____, _____

Answer the following:

- a. Tell whether the sequence is arithmetic, geometric, or neither.
- b. Write an explicit rule. (skip if blank)
- c. Write the recursive rule. (skip if blank)

5. $-10, -15, -20, -25, -30 \dots$ 6. $\sqrt{3}, 3, 9, 81, 6561, \dots$

7. $-6, -2, -\frac{2}{3}, -\frac{2}{9}, -\frac{2}{27}, \dots$

a. _____

a. _____

a. _____

b. _____

b. _____

c. _____

c. _____

c. _____

8. $3, 5, 9, 17, 33$

a. _____

9. $10, 7, -3, -10, -7, 3, \dots$

a. _____

10. $2, 9, 28, 65, 126, \dots$

a. _____

b. _____

b. _____

c. _____

c. _____

Write an explicit rule for the nth term of the sequence. Find a_6 .

11. $a_{15} = 73$ $d = -12$

12. $a_9 = 458,752$ $r = \frac{1}{4}$

Write the series using Sigma Notation.

13. $5 + 10 + 15 + \dots + 50$

14. $\frac{1}{4} + \frac{2}{5} + \frac{3}{6} + \frac{4}{7} + \dots$

Find the sum of the series.

15. $\sum_{k=2}^6 (k^2 - 2)$

16. $\sum_{i=1}^{42} (7i - 15)$

17. $\sum_{i=1}^{12} 3$

18. $54 + 46 + 38 + \dots + 6$

19. $\sum_{i=1}^6 486\left(\frac{1}{3}\right)^{i-1}$

20. $\sum_{i=1}^{12} 5(2)^{i-1}$

21. Find the sum of all positive odd integers less than 300.

22. Suppose that you start an exercise program to build up your biceps. On the 1st day, your biceps increase by 3 millimeters. The amount of increase on each following day is 0.95 times the amount of increase the day before.
- a. Your biceps increase by how much on the 10th day? b. By how many millimeter, total have your biceps increased after 10 days?
23. Suppose that you put \$.50 into an empty piggy bank. One week later you put in \$.75. At the end of the next week, you put in \$1.00, and so on.
- a. What amount do you deposit on the 76th week? b. What total amount do you have in the Piggy bank at the end of 76 weeks?
24. Calvin Butterball and Phoebe Small start walking at the same time from the same point in the same direction. Phoebe starts with a 12 inch step, and increases her stride by $\frac{1}{2}$ inch each step. She goes 21 steps, then stops. Calvin starts with a 36 inch step, and each subsequent step in 90% as long as the preceding one.
- a. What kind of sequence do Phoebe's steps follow? b. What kind of sequence do Calvin's steps follow?
- c. How long is Phoebe's last step? d. How long is Calvin's last step?
- e. After each has taken 21 steps, who is ahead? Justify your answer.