11-6) Skills Practice

Recursion and Special Sequences

Find the first five terms of each sequence.

1. $a_1 = 4, a_{n+1} = a_n + 7$

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

3. $a_1 = 5, a_{n+1} = 2a_n$

4. $a_1 = -4, a_{n+1} = 6 - a_n$

5. $a_1 = 1, a_{n+1} = a_n + n$

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

7. $a_1 = -6, a_{n+1} = a_n + n + 1$

8. $a_1 = 8, a_{n+1} = a_n - n - 2$

9. $a_1 = -3, a_{n+1} = 2a_n + 7$

10. $a_1 = 4, a_{n+1} = -2a_n - 5$

11. $a_1 = 0, a_2 = 1, a_{n+1} = a_n + a_{n-1}$

12. $a_1 = -1, a_2 = -1, a_{n+1} = a_n - a_{n-1}$

13. $a_1 = 3, a_2 = -5, a_{n+1} = -4a_n + a_{n-1}$

14. $a_1 = -3, a_2 = 2, a_{n+1} = a_{n-1} - a_n$

Find the first three iterates of each function for the given initial value.

15. $f(x) = 2x - 1, x_0 = 3$

16. $f(x) = 5x - 3, x_0 = 2$

17. $f(x) = 3x + 4, x_0 = -1$

18. $f(x) = 4x + 7, x_0 = -5$

19. $f(x) = -x - 3, x_0 = 10$

20. $f(x) = -3x + 6, x_0 = 6$

21. $f(x) = -3x + 4, x_0 = 2$

22. $f(x) = 6x - 5, x_0 = 1$

23. $f(x) = 7x + 1, x_0 = -4$

24. $f(x) = x^2 - 3x, x_0 = 5$

Algebra 2 Section 11-6: Word Problems

1.) INVESTING

Haley's parents started a savings account for her when she was a wee little child. Their initial investment was $500 in an account paying 6% interest compounded annually. Find how much is in her account after each of the first three years. Hint: begin with the formula $b_1 = b_0 + (0.06)b_0$ **where b_0 is initial investment.**

2.) BACTERIA

All the bacteria in a bacterial culture divide in two every hour. Also, every hour, 1,000 bacteria are removed from the culture. If the initial population consisted of 1,100 bacteria, what are the population sizes every hour for the next four hours?

3.) WORK

The company that Robert works for has a policy where the number of hours you must work one week depends on the number of hours worked the previous week. If you worked h hours one week, then the next week you must work at least $80 - h$ hours. Robert worked 20 hours his first week with the company. From then on, he always worked the minimum number of hours required of him. Describe the number of hours Robert worked from week to week.