

12-1 Practice

Mathematical Patterns

Find the first six terms of each sequence.

1. $a_n = -2n + 1$

2. $a_n = n^2 - 1$

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

4. $a_n = 1^n + 1$

5. $a_n = 2^n + 2$

6. $a_n = 2n^2 - n$

7. $a_n = 4n + n^2$

8. $a_n = \frac{1}{3}n^3$

9. $a_n = (-2)^n$

Write a recursive definition for each sequence.

10. $-14, -8, -2, 4, 10, \dots$

11. $6, 5.7, 5.4, 5.1, 4.8, \dots$

12. $1, -2, 4, -8, 16, \dots$

13. $1, 3, 9, 27, \dots$

14. $1, \frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \frac{1}{16}, \dots$

15. $\frac{2}{3}, 1, 1\frac{1}{3}, 1\frac{2}{3}, 2, \dots$

16. $36, 39, 42, 45, 48, \dots$

17. $36, 30, 24, 18, 12, \dots$

18. $9.6, 4.8, 2.4, 1.2, 0.6, \dots$

Write an explicit formula for each sequence. Find the twentieth term.

19. $7, 14, 21, 28, 35, \dots$

20. $2, 8, 14, 20, 26, \dots$

21. $5, 6, 7, 8, 9, \dots$

22. $-1, 0, 1, 2, 3, \dots$

23. $3, 5, 7, 9, 11, \dots$

24. $0.8, 1.6, 2.4, 3.2, 4, \dots$

25. $\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, 1, \frac{5}{4}, \dots$

26. $\frac{1}{2}, \frac{1}{4}, \frac{1}{6}, \frac{1}{8}, \frac{1}{10}, \dots$

27. $\frac{2}{3}, 1\frac{2}{3}, 2\frac{2}{3}, 3\frac{2}{3}, 4\frac{2}{3}, \dots$

Find the eighth term of each sequence.

28. $1, 3, 5, 7, 9, \dots$

29. $400, 200, 100, 50, 25, \dots$

30. $0, -2, -4, -6, -8, \dots$

31. $1, 2, 4, 8, 16, \dots$

32. $44, 39, 34, 29, 24, \dots$

33. $0.7, 0.8, 0.9, 1.0, 1.1, \dots$

34. $4, 11, 18, 25, 32, \dots$

35. $1\frac{1}{4}, 2\frac{1}{2}, 5, 10, 20, \dots$

36. $-6, -9, -12, -15, -18, \dots$

37. A man swims 1.5 mi on Monday, 1.6 mi on Tuesday, 1.8 mi on Wednesday, 2.1 mi on Thursday, and 2.5 mi on Friday. If the pattern continues, how many miles will he swim on Saturday?