

Determine whether each sequence is arithmetic or geometric. If possible, find the common difference or ratio.

1. 7, 14, 28, 56, 112, ...

2. 25.5, 31, 36.5, 42, 47.5, ...

3. 3, 6, 21, 42, 69, ...

4. 2, 4, 6, 2, 4, ...

5. 15.5, 28, 40.5, 53, 65.5, ...

6. 4, 1, $\frac{1}{4}$, $\frac{1}{16}$, $\frac{1}{64}$, ...

Find the first 5 terms of each sequence.

7. $a_1 = 16, a_n = 0.25a_{n-1}$

8. $a_n = 5(n - 1)$

9. $a_n = 3^n - 4$

10. $a_n = (n + 2)^2$

Find the indicated term of the arithmetic sequence.

11. $a_1 = 4.5, d = 1.5, n = 8$

12. $a_1 = 74, d = -6, n = 10$

13. $a_3 = 29$ and $a_6 = 56; a_1 = ?$

14. $a_4 = 16$ and $a_7 = -2; a_1 = ?$

Find the indicated term of the geometric sequence.

15. $a_1 = 200, r = \frac{1}{2}, n = 6$

16. $a_1 = -1, r = 3, n = 7$

17. $a_4 = 4$ and $a_5 = 8; a_1 = ?$

18. $a_3 = 125$ and $a_5 = 5; a_1 = ?$

Find the missing terms in each arithmetic sequence

19. 13, _____, _____, 37

20. 9.5, _____, _____, _____, -0.5

21. 10, _____, _____, _____, 26

22. 50, _____, _____, _____, 14

Find the missing terms in each geometric sequence

23. -16, _____, _____, -2

24. -6, _____, _____, _____, -96

25. 5, _____, _____, -135

26. 5, _____, _____, _____, 80

Write a simplified explicit formula for the n th term and find the 10th of each sequence.

****You need to determine if it is arithmetic or geometric first.****

27. -4, -8, -12, -16,

28. 5, 20, 80, 320, ...

29. -16, -8, -4, ...

30. 27, 18, 12, ...

31. 27, 18, 12, ...

32. -6, 12, -24, ...

Find S_n for each series described. You will need to determine if it's an arithmetic or geometric sequence. You may also need to find a_n .

31. 18, 21, 24, 27, ... $n = 30$

32. $\frac{3}{4}, 3, 12, 48, \dots n = 6$

33. $4, \frac{4}{5}, \frac{4}{25}, \frac{4}{125}, \dots$

34. 20, 18.5, 17, 15.5, ... $n = 15$

35. -2700, 900, -300, ...

36. $1, \frac{1}{3}, \frac{1}{9}, \frac{1}{27}, \dots n = 5$

37. 5, -15, 45, -135, ... $n = 8$

38. -1, -5, -9, -13, ... $n = 18$

39. 13, 2, -9, -20, ... $n = 18$

40. 25, -5, 1, $\frac{-1}{5}, \dots$

41. 1, 5, 25, 125, ... $n = 6$

42. 40, 30, 20, 10, ... $n = 10$

43. $\frac{3}{4}, \frac{1}{2}, \frac{1}{3}, \frac{2}{9}, \dots$

44. 12, 7, 2, -3, ... $n = 16$

45. -6, -1, 4, 9, ... $n = 14$

45. 12, -24, 48, -96, ... $n = 6$

Evaluate the given sum.

(arithmetic, geometric, constant, linear, and quadratic are all mixed together)

$$46. \sum_{k=1}^9 (5k + 8)$$

$$47. \sum_{k=1}^{20} (-2.75k + 15)$$

$$48. \sum_{k=1}^5 12(2)^{k-1}$$

$$49. \sum_{k=1}^7 (-4)^{k-1}$$

$$50. \sum_{k=1}^8 -5$$

$$51. \sum_{k=1}^{10} k^2$$

$$52. \sum_{k=1}^{12} k$$

$$53. \sum_{k=1}^{15} (-14 + 3k)$$

$$54. \sum_{k=1}^8 (4)^{k-1}$$

$$55. \sum_{k=1}^{\infty} 9\left(\frac{1}{3}\right)^{k-1}$$

$$56. \sum_{k=15}^{825} 12$$

$$57. \sum_{k=1}^{18} k^2$$

$$58. \sum_{k=1}^{55} k$$

$$59. \sum_{k=1}^{15} 18\left(\frac{1}{2}\right)^{k-1}$$

$$60. \sum_{k=1}^7 -2(5)^{k-1}$$

$$61. \sum_{k=1}^{\infty} 8\left(\frac{4}{10}\right)^{k-1}$$