Unit 5.2 Geometric Sequences PRACTICE

Determine whether each sequence is geometric. If so, find the common ratio.

1. $3, 9, 27, 81, \ldots$ 2. $4, 8, 16, 32, \ldots$ 3. $4, 8, 12, 16, \ldots$

4. $4, -8, 16, -32, \ldots$ 5. $1, 0.5, 0.25, 0.125, \ldots$ 6. $100, 30, 9, 2.7, \ldots$

7. $-5, 0, 5, 10, \ldots$ 8. $64, -32, 16, -8, \ldots$ 9. $1, 4, 9, 16, \ldots$

Find the tenth term of each geometric sequence.

10. $2, 4, 8, \ldots$ 11. $1, 3, 9, \ldots$ 12. $-2, 6, -18, \ldots$

13. $-3, 9, -27, \ldots$ 14. $-3, -12, -48, \ldots$ 15. $-5, 25, -125, \ldots$

16. $\frac{1}{3}, \frac{1}{9}, \frac{1}{27}, \ldots$ 17. $0.3, 0.6, 1.2, \ldots$ 18. $\frac{1}{4}, \frac{1}{2}, 1, \ldots$

19.   When a pendulum swings freely, the length of its arc decreases geometrically.
        Find each missing arc length.

        a) 20th arc is 20 in.; 22nd arc is 18.5 in. 21st arc is: _____

        b) 8th arc is 27 mm.; 10th arc is 3 mm. 9th arc is: _____

        c) 5th arc is 25 cm.; 7th arc is 1 cm. 6th arc is: _____

        d) 100th arc is 18 ft.; 98th arc is 2 ft. 99th arc is: _____

Find the missing term of each geometric sequence.

20. $4, \square, 16, \ldots$ 21. $9, \square, 16, \ldots$ 22. $2, \square, 8, \ldots$

23. $3, \square, 12, \ldots$ 24. $2, \square, 50, \ldots$ 25. $4, \square, 5.76, \ldots$

26. $625, \square, 25, \ldots$ 27. $\frac{1}{3}, \square, 3, \ldots$ 28. $0.5, \square, 0.125, \ldots$

Identify each sequence as arithmetic, geometric, or neither. Then find the next two terms.

29. $9, 3, 1, \frac{1}{3}, \ldots$

30. $1, 0, -2, -5, \ldots$

31. $2, -2, 2, -2, \ldots$

32. $-3, 2, 7, 12, \ldots$

33. $1, -2, -5, -8, \ldots$

34. $1, -2, 3, -4, \ldots$

Write an explicit formula for each sequence. Then generate the first five terms.

35. $a_1 = 3, \ r = -2$

36. $a_1 = 5, \ r = 3$

37. $a_1 = -1, \ r = 4$

38. $a_1 = -2, \ r = -3$

39. $a_1 = 32, \ r = -0.5$

40. $a_1 = 2187, \ r = \frac{1}{3}$

41. $a_1 = 9, \ r = 2$

42. $a_1 = -4, \ r = 4$

43. $a_1 = 0.1, \ r = -2$

44. The deer population in an area is increasing. This year, the population was 1.025 times last year's population of 2537.

   a) Assuming that the population increases at the same rate for the next few years, write an explicit formula for the sequence.

   b) Find the deer population for the fourth year of the sequence.

Find the missing terms of each geometric sequence.

45. $12, \square, \square, \square, 0.75, \ldots$

46. $-9, \square, \square, \square, -2304, \ldots$

For the geometric sequence $6, 18, 54, 162, \ldots$ find the indicated term.

47. 6th term

48. 19th term

49. nth term