Practice 8-6

Geometric Sequences

Find the next three terms of each sequence.

1. $4, 12, 36, 108, \ldots$

2. $2, -8, 32, -128, \ldots$

3. $18, 9, \frac{9}{2}, \frac{9}{4}, \ldots$

4. $1, -\frac{1}{3}, \frac{1}{9}, -\frac{1}{27}, \ldots$

5. $-2, 20, -200, 2000, \ldots$

6. $30, -10, \frac{10}{3}, -\frac{10}{9}, \ldots$

7. $\frac{1}{3}, 1\frac{1}{3}, 5\frac{1}{3}, 21\frac{1}{3}, \ldots$

8. $20, 4, \frac{4}{5}, \frac{4}{25}, \ldots$

9. $-100, -40, -16, -6.4, \ldots$

10. $40, 20, 10, 5, \ldots$

Determine whether each sequence is arithmetic or geometric.

11. $-8, -10, -12.5, -15.625, \ldots$

12. $5, 1, -3, -7, \ldots$

13. $1, \frac{2}{5}, \frac{4}{25}, \frac{8}{125}, \ldots$

14. $-0.2, -0.02, -0.002, -0.0002, \ldots$

15. $-10, -5, 0, 5, \ldots$

16. $6, -3, \frac{3}{2}, -\frac{3}{4}, \ldots$

Write a rule for each sequence.

17. $4, 12, 36, 108, \ldots$

18. $2, -8, 32, -128, \ldots$

19. $18, 9, \frac{9}{2}, \frac{9}{4}, \ldots$

20. $1, -\frac{1}{3}, \frac{1}{9}, -\frac{1}{27}, \ldots$

21. $-2, 20, -200, 2000, \ldots$

22. $30, -10, \frac{10}{3}, -\frac{10}{9}, \ldots$

23. $1, 4, 16, 64, \ldots$

24. $6, 12, 24, 48, \ldots$

25. $125, 25, 5, 1, \ldots$

26. $50, 25, 12.5, 6.25, \ldots$

Find the first, fourth, and eighth terms of each sequence.

27. $A(n) = 2 \cdot 3^{n-1}$

28. $A(n) = 3 \cdot 4^{n-1}$

29. $A(n) = 3 \cdot 2^{n-1}$

30. $A(n) = -1 \cdot 5^{n-1}$

31. $A(n) = 4 \cdot 2^{n-1}$

32. $A(n) = \frac{1}{2} \cdot 2^{n-1}$

33. $A(n) = 0.1 \cdot 4^{n-1}$

34. $A(n) = -2.1 \cdot 3^{n-1}$

35. $A(n) = 10 \cdot 5^{n-1}$

Write a rule and find the given term in each geometric sequence described below.

36. What is the sixth term when the first term is 4 and the common ratio is 3?

37. What is the fifth term when the first term is -2 and the common ratio is $-\frac{1}{2}$?

38. What is the tenth term when the first term is 3 and the common ratio is -1.2?

39. What is the fourth term when the first term is 5 and the common ratio is 6?

40. Suppose a manufacturer invented a computer chip in 1978 that had a computational speed of s. The company improves its chips so that every 3 years, the chip doubles in speed. What would the chip's speed have been for the year 2002? Write your solution in terms of s.