

Practice 11-3

Geometric Sequences

Find the missing term of each geometric sequence.

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| 1. 4, ■, 16, ... | 2. 9, ■, 16, ... | 3. 2, ■, 8, ... |
| 4. 3, ■, 12, ... | 5. 2, ■, 50, ... | 6. 4, ■, 5.76, ... |

Is the given sequence geometric? If so, identify the common ratio and find the next two terms.

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| 7. 3, 9, 27, 81, ... | 8. 4, 8, 16, 32, ... | 9. 4, 8, 12, 16, ... |
| 10. 4, -8, 16, -32, ... | 11. 1, 0.5, 0.25, 0.125, ... | 12. 100, 30, 9, 2.7, ... |
| 13. -5, 0, 5, 10, ... | 14. 64, -32, 16, -8, ... | 15. 1, 4, 9, 16, ... |

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

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| 16. 9, 3, 1, $\frac{1}{3}$, ... | 17. 1, 0, -2, -5, ... | 18. 2, -2, 2, -2, ... |
| 19. -3, 2, 7, 12, ... | 20. 1, -2, -5, -8, ... | 21. 1, -2, 3, -4, ... |

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

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| 22. $a_1 = 3, r = -2$ | 23. $a_1 = 5, r = 3$ | 24. $a_1 = -1, r = 4$ |
| 25. $a_1 = -2, r = -3$ | 26. $a_1 = 32, r = -0.5$ | 27. $a_1 = 2187, r = \frac{1}{3}$ |
| 28. $a_1 = 9, r = 2$ | 29. $a_1 = -4, r = 4$ | 30. $a_1 = 0.1, r = -2$ |

31. When a pendulum swings freely, the length of its arc decreases geometrically. Find each missing arc length.
- 20th arc is 20 in.; 22nd arc is 18.5 in.
 - 8th arc is 27 mm; 10th arc is 3 mm
32. The deer population in an area is increasing. This year, the population was 1.025 times last year's population of 2537.
- Assuming that the population increases at the same rate for the next few years, write an explicit formula for the sequence.
 - Find the expected deer population for the fourth year of the sequence.
33. You enlarge a picture to 150% of its size several times. After the first increase, the picture is 1 in. wide.
- Write an explicit formula to model the size after each increase.
 - How wide is the photo after the 2nd increase?
 - How wide is the photo after the 3rd increase?
 - How wide is the photo after the 12th increase?