

Practice A

For use with pages 666–673

Decide whether the sequence is *arithmetic*, *geometric*, or *neither*. Explain your answer.

1. $1, -4, 16, -64, \dots$

2. $2, 5, 10, 13, \dots$

3. $-5, 5, 7, -7, \dots$

4. $3, 6, 9, 12, \dots$

5. $3, 12, 21, 30, \dots$

6. $5, \frac{5}{2}, \frac{5}{4}, \frac{5}{8}, \dots$

Find the common ratio of the geometric sequence.

7. $6, 8, \frac{32}{3}, \frac{128}{9}, \dots$

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

9. $24, 12, 6, 3, \dots$

Write a rule for the n th term of the geometric sequence. Then find a_6 .

10. $-5, 10, -20, 40, \dots$

11. $5, 15, 45, 135, \dots$

12. $4, 6, 9, \frac{27}{2}, \dots$

13. $1, \frac{2}{3}, \frac{4}{9}, \frac{8}{27}, \dots$

14. $-4, 16, -64, 256, \dots$

15. $100, 5, \frac{1}{4}, \frac{1}{80}, \dots$

Write a rule for the n th term of the geometric sequence.

16. $a_1 = 6, r = \frac{1}{2}$

17. $a_1 = 1, r = \frac{3}{5}$

18. $a_1 = 7, r = -3$

19. $a_1 = 15, r = \frac{2}{3}$

20. $a_3 = 18, a_6 = -486$

21. $a_3 = 180, a_6 = 38,880$

Graph the arithmetic sequence.

22. $a_n = 3(2)^{n-1}$

23. $a_n = 2(4)^{n-1}$

24. $a_n = 2\left(\frac{1}{3}\right)^{n-1}$

For part (a), find the sum of the first n terms of the geometric series. For part (b), find n for the given sum S_n .

25. $1 + 4 + 16 + 64 + \dots$

26. $2 + (-4) + 8 + (-16) + \dots$

a. $n = 10$ b. $S_n = 21,845$

a. $n = 16$ b. $S_n = 86$

Find the sum of the series.

27. $\sum_{i=1}^{15} 4\left(\frac{1}{2}\right)^{i-1}$

28. $\sum_{i=1}^{10} \frac{1}{2}(6)^{i-1}$

29. $\sum_{i=0}^{11} 6\left(\frac{1}{2}\right)^i$

30. **Salary Plan** Suppose you go to work at a company that pays \$0.01 for the first day, \$0.02 for the second day, \$0.04 for the third day, and so on. So, each day your wage doubles. What would your total income be if you worked 10 days? 20 days? 30 days?