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Practice

Student Edition
Pages 648–655

Arithmetic Sequences

Find the nth term of each arithmetic sequence.

1. $a_1 = -5, d = 4, n = 9$

2. $a_1 = 13, d = -\frac{5}{2}, n = 29$

3. $a_1 = 3, d = -4, n = 6$

4. $a_1 = -5, d = \frac{1}{2}, n = 10$

Complete each statement.

5. 97 is the ___?___th term of $-3, 1, 5, 9, \cdots$.

6. -10 is the ___?___th term of $14, 12.5, 11, 9.5, \cdots$.

Find the indicated term in each arithmetic sequence.

7. a_{15} for $-3, 3, 9, \cdots$

8. a_{19} for $17, 12, 7, \cdots$

9. a_{26} for $1, \frac{7}{3}, \frac{11}{3}, \cdots$

10. a_{35} for $17, 16\frac{2}{3}, 16\frac{1}{3}, \cdots$

Find the missing terms in each arithmetic sequence.

11. $3,$ _____, _____, 20

12. _____, $-10,$ _____, _____, _____, 14

13. $5,$ _____, _____, 27

14. _____, $4,$ _____, _____, _____, 29

15. How many multiples of 11 are there between 13 and 384?

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Arithmetic Series

Find S_n for each arithmetic series described.

1. $a_1 = 16, a_n = 98, n = 13$

2. $a_1 = 13, d = -6, n = 21$

3. $d = -\frac{2}{3}, n = 16, a_n = 44$

4. $a_1 = -121, d = 3, a_n = 5$

Find the sum of each arithmetic series.

5. $5 + 7 + 9 + \cdots + 27$

6. $-4 + 1 + 6 + \cdots + 91$

7. $13 + 20 + 27 + \cdots + 272$

8. $89 + 86 + 83 + \cdots + 20$

9. $\sum_{k=3}^{8} (5k - 10)$

10. $\sum_{p=4}^{10} (2p + 1)$

11. $\sum_{n=1}^{6} (3n + 5)$

12. $\sum_{j=1}^{5} (9 - 4j)$

Find the first three terms of each arithmetic series.

13. $a_1 = 14, a_n = -85, S_n = -1207$

14. $n = 16, a_n = 15, S_n = -120$

Solve.

15. A display in a grocery store has 1 can on the top row, 2 cans on the 2nd row, 3 cans on the 3rd row, and so on. How many cans are needed to make 25 rows?

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Geometric Sequences

Find the first four terms of each geometric sequence.

1. $a_1 = -6, r = -\frac{2}{3}$

2. $a_1 = 2, r = \sqrt{3}$

3. $a_1 = -\frac{5}{2}, r = 2$

4. $a_1 = \sqrt{2}, r = \sqrt{3}$

Find the nth term of each geometric sequence.

5. $a_1 = 5, n = 4, r = 3$

6. $a_4 = 20, n = 6, r = -3$

7. $a_1 = -4, n = 6, r = -2$

8. $a_6 = 8, n = 12, r = \frac{1}{2}$

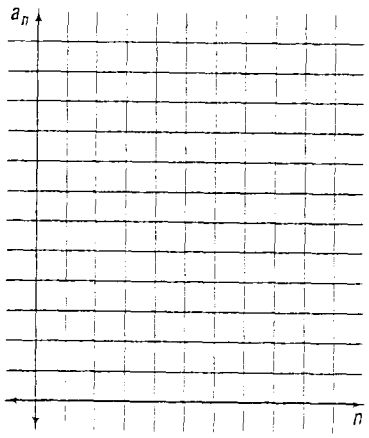
Solve.

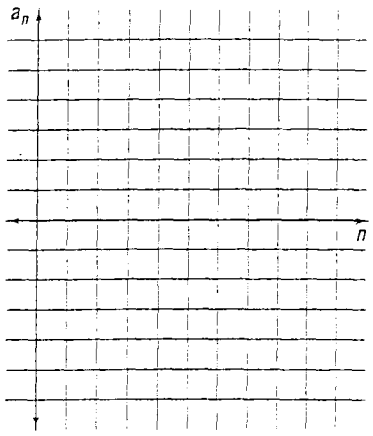
9. Each foot of water screens out 60% of the light above. What percent of the light remains after passing through 5 feet of water?

Find the geometric means in each sequence. Then graph each sequence, using the x-axis for the number of the term and the y-axis for the term itself.

10. _____, _____, 2, _____, _____, 54

11. 32, _____, _____, _____, 162





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Geometric Series

Find the sum of each geometric series.

1. $160 + 80 + 40 + \cdots, n = 6$

2. $a_1 = 5, r = -\frac{1}{2}, n = 7$

3. $a_2 = \frac{-3}{8}, a_3 = \frac{1}{4}, n = 5$

4. $a_3 = 8, a_5 = 2, n = 6$

Express each series in sigma notation and find the sum.

5. $54 + 18 + 6 + 2 + \frac{2}{3} + \frac{2}{9}$

6. $16 - 24 + 36 - 54 + 81 - 121.5 + 182.25$

Find a_1 for each geometric series described.

7. $S_n = -55, r = -\frac{2}{3}, n = 5$

8. $S_n = 2457, a_n = 3072, r = -4$

Solve.

9. A pile driver drives a post 9 feet into the ground on its first hit. Each additional hit drives the post $\frac{2}{3}$ the distance of the prior hit. Find the total distance the post has been driven after 4 hits.

10. In problem 9, what is the greatest distance the pole could be driven into the ground?

11. Hugh Moore makes up a joke and tells it to his 5 closest friends on Sunday morning. Each of those friends tells his or her 5 closest friends on Monday morning, and so on. Assuming no duplication, how many people will have heard the joke by the end of Saturday?