

Algebra 2 - Section 8.1 and 8.2 Worksheet**Write the first six terms of the sequence.**

1. $a_n = n^2 - 5$

2. $a_n = 2^{2n}$

3. $a_n = -n^2 + 1$

Describe the pattern, write the next term, and write a rule for the n th term of the sequence.

4. 1, 4, 7, 10, ...

5. 1, 3, 9, 27, ...

6. 1.5, 3, 4.5, 6, ...

7. 4.2, 5.8, 7.4, 9, ...

8. 4.7, 3.4, 2.1, 0.8, ...

9. -5, 10, -15, 20, ...

10. $\frac{1}{6}, \frac{2}{6}, \frac{3}{6}, \frac{4}{6}, \dots$

11. $\frac{3}{2}, \frac{3}{4}, \frac{3}{6}, \frac{3}{8}, \dots$

12. You agree to work for your uncle. You earn \$10 the first day, \$20 the second day, \$40 the third day, and \$80 the fourth day. Write a rule for the number of dollars that you will earn on the n th day.

Write the series using summation.

13. $4 + 8 + 12 + 16 + 20$

14. $3 + 9 + 15 + 21 + 27$

15. $\frac{1}{5} + \frac{1}{25} + \frac{1}{125} + \frac{1}{625} + \dots$

16. $\frac{1}{7} + \frac{2}{8} + \frac{3}{9} + \frac{4}{10} + \dots$

Find the sum.

17. $\sum_{i=1}^4 3i$

18. $\sum_{i=1}^5 6i$

19. $\sum_{n=0}^5 n^2$

Section 8.2

In Exercises 1–4, tell whether the sequence is arithmetic. Explain your reasoning.

1. 5, 2, -1, -4, -7, ...

2. 9, 7, 4, 0, -5, ...

3. $\frac{1}{3}, \frac{2}{3}, \frac{3}{3}, \frac{4}{3}, \frac{5}{3}, \dots$

4. 1, 3, 9, 27, 81, ...

5. Write a rule for the arithmetic sequence with the given description.

a. The first term is -5 and each term is 4 more than the previous term.

b. The first term is 9 and each term is 3 less than the previous term.

In Exercises 6–9, write a rule for the n th term of the sequence. Then find a_{20} .

6. 15, 22, 29, 36, ...

7. 62, 53, 44, 35, ...

8. -25, -10, 5, 20, ...

9. $-3, -\frac{3}{2}, 0, \frac{3}{2}, \dots$

10. Describe and correct the error in writing a rule for the n th term of the arithmetic sequence -27, -12, 3, 18, 33, ...

\times Use $a_1 = 27$ and $d = 15$. $a_n = 27 + (n - 1)15$ $a_n = 12 + 15n$
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In Exercises 11 and 12, write a rule for the n th term of the sequence. Then graph the first six terms of the sequence.

11. $a_9 = 35, d = 4$

12. $a_{15} = -32, d = -4$

In Exercises 13–14, write a rule for the n th term of the sequence.

13. $a_6 = 37, a_{10} = 53$

14. $a_8 = 66, a_{13} = 96$

15. Find the sum of the positive even integers less than 250. Explain your reasoning.