

# 9.1 Exercises

In Exercises 1–22, write the first five terms of the sequence. (Assume  $n$  begins with 1.) Use the *table* feature of a graphing utility to verify your results.

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|----------------------------------|-----------------------------------------------|
| 1. $a_n = 2n + 5$                | 2. $a_n = 4n - 7$                             |
| 3. $a_n = 2^n$                   | 4. $a_n = \left(\frac{1}{2}\right)^n$         |
| 5. $a_n = (-2)^n$                | 6. $a_n = \left(-\frac{1}{2}\right)^n$        |
| 7. $a_n = \frac{n+1}{n}$         | 8. $a_n = \frac{n}{n+1}$                      |
| 9. $a_n = \frac{6n}{3n^2 - 1}$   | 10. $a_n = \frac{3n^2 - n + 4}{2n^2 + 1}$     |
| 11. $a_n = \frac{1 + (-1)^n}{n}$ | 12. $a_n = \frac{1 + (-1)^n}{2n}$             |
| 13. $a_n = 3 - \frac{1}{2^n}$    | 14. $a_n = \frac{3^n}{4^n}$                   |
| 15. $a_n = \frac{1}{n^{3/2}}$    | 16. $a_n = \frac{10}{n^{2/3}}$                |
| 17. $a_n = \frac{3^n}{n!}$       | 18. $a_n = \frac{n!}{2^n}$                    |
| 19. $a_n = \frac{(-1)^n}{n^2}$   | 20. $a_n = (-1)^n \left(\frac{n}{n+1}\right)$ |
| 21. $a_n = (2n-1)(2n+1)$         | 22. $a_n = n(n-1)(n-2)$                       |

In Exercises 23–28, find the indicated term of the sequence.

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|-------------------------------------------------------|--------------------------------------------------------------------|
| 23. $a_n = (-1)^n(3n - 2)$<br>$a_{25} = \square$      |                                                                    |
| 24. $a_n = (-1)^{n-1}[n(n-1)]$<br>$a_{16} = \square$  |                                                                    |
| 25. $a_n = \frac{2^n}{n!}$<br>$a_{10} = \square$      | 26. $a_n = \frac{n!}{2n}$<br>$a_8 = \square$                       |
| 27. $a_n = \frac{4n}{2n^2 - 3}$<br>$a_{12} = \square$ | 28. $a_n = \frac{4n^2 - n + 3}{n(n-1)(n+2)}$<br>$a_{15} = \square$ |

In Exercises 29–34, write the first five terms of the sequence defined recursively.

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|--------------------------------------------------------------|
| 30. $a_1 = 15, a_{k+1} = a_k + 3$                            |
| 31. $a_1 = 3, a_{k+1} = 2(a_k - 1)$                          |
| 32. $a_1 = 32, a_{k+1} = \frac{1}{2}a_k$                     |
| 33. $a_1 = 2, a_2 = 6, a_{k+2} = a_{k+1} + 2a_k$             |
| 34. $a_1 = 52, a_2 = 40, a_{k+2} = \frac{1}{2}a_{k+1} - a_k$ |

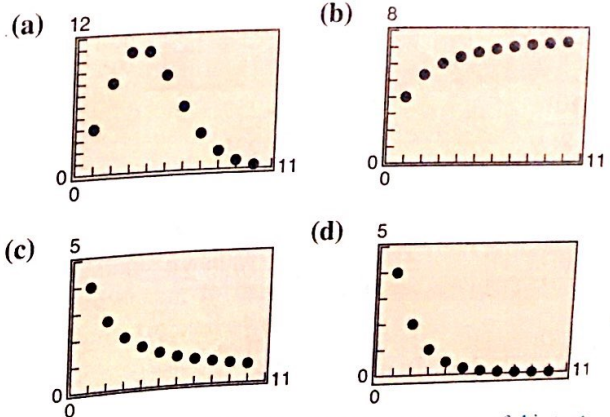
In Exercises 35–40, use a graphing utility to graph the first ten terms of the sequence. (Assume  $n$  begins with 1.)

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|----------------------------|----------------------------------|
| 35. $a_n = \frac{2}{3}n$   | 36. $a_n = 2 - \frac{4}{n}$      |
| 37. $a_n = 16(-0.5)^{n-1}$ | 38. $a_n = 8(0.75)^{n-1}$        |
| 39. $a_n = \frac{2n}{n+1}$ | 40. $a_n = \frac{3n^2}{n^2 + 1}$ |

In Exercises 41–46, use the *table* feature of a graphing utility to find the first ten terms of the sequence. (Assume  $n$  begins with 1.)

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|----------------------------|-----------------------------------|
| 41. $a_n = 2(3n - 1) + 5$  | 44. $a_n = \frac{n!}{(n^2 - 10)}$ |
| 42. $a_n = 2n(n+1)(n+2)$   | 45. $a_n = 1 + \frac{n+1}{n}$     |
| 43. $a_n = \frac{6^n}{n!}$ | 46. $a_n = \frac{4n^2}{n+2}$      |

In Exercises 47–50, match the sequence with its graph. [The graphs are labeled (a), (b), (c), and (d).]



The *Interactive CD-ROM* and *Internet* versions of this text contain step-by-step solutions to all odd-numbered Section and Review Exercises. They also provide Tutorial Exercises, which link to Guided Examples for additional help.