Section 3.2: Arithmetic Sequences and Series

Solutions

1. not arithmetic

2. yes, $d = -7$

3. no

4. no

5. yes, $d = -9$

6. yes, $d = \frac{1}{4}$

7. $a_n = 2n - 1$ and $\begin{cases} a_1 = 1 \\ a_n = a_{n-1} + 2 \end{cases}$

8. $a_n = 16 - 11n$ and $\begin{cases} a_1 = 5 \\ a_n = a_{n-1} - 11 \end{cases}$

9. $a_n = 3n - 43$ and $\begin{cases} a_1 = -40 \\ a_n = a_{n-1} + 3 \end{cases}$

10. $a_n = 4n + 20$ and $\begin{cases} a_1 = 24 \\ a_n = a_{n-1} + 4 \end{cases}$

11. $a_n = 20 - 2n$, so $a_{50} = -80$ and $a_{261} = -502$

12. $a_n = 11.7 + 0.3n$, so $a_{50} = 26.7$ and $a_{261} = 90$

13. first four terms are 5, 9, 13, 17, so arithmetic with $d = 4$

14. first four terms are 12, 24, 48, 96, so not arithmetic

15. first four terms are 75, 55, 35, 15, so arithmetic with $d = -20$

16. first four terms are 6, 7, 8, 9, so arithmetic with $d = 1$

17. first four terms are 7, –5, 7, –5, so not arithmetic

18. first four terms are 3, 9, 81, 6561, so not arithmetic

19. $a_n = 10n - 5$, so $a_{201} = 2005$

20. $a_n = 8n - 7$, so $n = 18$

21. $d = -40$

22. $a_1 = -3$

23. $a_1 = 2$ and $d = 3$, so the first four terms are 2, 5, 8, 11

24. $a_1 = 7$ and $d = 4$, so the first four terms are 7, 11, 15, 19

25. $a_n = -3n - 47$

26. $\begin{cases} a_1 = -16 \\ a_n = a_{n-1} + 6 \end{cases}$

27. $S_{20} = 1430$

28. $S_{15} = 705$

29. $S_{12} = 1332$

30. $S_{100} = 17800$

31. $S_{200} = 60000$

32. $S_{76} = 6650$

33. $S_{53} = 7101$

34. $S_{83} = 25398$

35. $S_{111} = 19647$

36. $S_{500} = -370{,}250$

37. $n = 16$

38. $S_{16} = 352$

39. $S_{20} = 690$