11.1 Sequences Worksheet

Identify each sequence below as arithmetic, geometric, or neither and complete the missing elements.

1. 4, 7, 10, ___, ___ _____
2. 4, 8, 12, ___, ___ _____
3. 1, 2, 4, 8, ___, ___ _____
4. 1, -2, 4, -8, ___, ___ _____
5. 81, 27, 9, 3, ___, ___ _____
6. 4, 20, 100, 500, ___, ___ _____
7. ½, 1/3, ¼, 1/5, ___, ___ _____
8. 1, 4, 16, ___, ___ _____
9. 21, 18, 15, 12, ___, ___ _____
10. 12, 23, 34, 45, ___, ___ _____
11. $\frac{1}{3}, \frac{2}{5}, \frac{3}{7}, \frac{4}{9}$, ___, ___ _____
12. 1, 4, 9, 16, ___, ___ _____
13. $\frac{2}{5}, \frac{4}{25}, \frac{8}{125}$, ___, ___ _____
14. 81, -27, 9, ___, ___ _____
15. 90, -30, 10, ___, ___ _____
16. -3, -12, -21, ___, ___ _____
17. 2, 10, 18, 26, ___, ___ _____
18. 7, 14, 28, 56, ___, ___ _____

19. $-\frac{1}{4}, \frac{1}{2}, -1, 2,$ ___, ___ _____

20. 0.1, 0.01, 0.001, ___, ___ _____

21. $\frac{1}{2}$, ____, $\frac{1}{8}$ _____

22. 2, _____, 72 _____

23. -3, 0, ____, 6 _____

24. 1, 4, ____, 64 _____

25. 31, 27, 23, ____, 15, ____ _____

26. -2, ____, 12, 19, ____, 33 _____

27. 100, ____, 25, ____, 6.25 _____

28. 1, 3, 7, 13, ____ _____

29. 33, 22, ____ _____

30. 14, ____, -6, ____, -26 _____

The sum of an arithmetic sequence can be determined using the following formula:

$$S_n = n\left(\frac{a_1 + a_n}{2}\right)$$

"The Sum of n terms = the number of terms times the first term plus the last term divided by two."

Use the formula above to find the sum of the arithmetic sequences below:

31. 3 + 6 + 9 + 12 + 15 + 18 + 21 + 24 + 27 =

32. 6 + 14 + 22 + 30 + …+ 54 =

33. 1 + 2 + 3 + 4 + …+ 100 =

34. 9 + 18 + 27 + 36 + 45 + 54 + 63 + 72 + 81 + 90 =

35. A concert hall has 10 seats in the first row. The second row has 12 seats. If each row has two seats more than the row before it and there are 30 rows of seats, how many seats are in the entire concert hall?

Evaluate the sums below.

36. $\sum_{n=1}^{5} 5n$

37. $\sum_{n=1}^{10} 2n+1$

38. $\sum_{n=1}^{3} -7n+3$

39. $\sum_{n=1}^{4} \frac{1}{n}$

40. $\sum_{n=2}^{7} n^2$

41. $\sum_{n=4}^{9} 1-4n$

42. $\sum_{n=1}^{10} n$

43. $\sum_{n=1}^{4} n^3$

44. $\sum_{n=1}^{6} \frac{1}{n^2}$

45. $\sum_{n=1}^{4} n^2-2n+1$