7.4 Practice Set

1. How can you tell by looking at a series if it is an arithmetic series, a geometric series, or neither? Give an example of each.

Evaluate each of the following series. State whether the series is arithmetic, geometric, or neither.

2. $\sum_{k=1}^{7}(2k+5)$
3. $\sum_{k=1}^{10}(-3)^{k-1}$
4. $\sum_{k=1}^{4} k^2$
5. $\sum_{i=1}^{20}(4i-3)$
6. $\sum_{k=1}^{10} 5(2)^{k-1}$
7. $\sum_{j=1}^{82}(-6j+1)$
8. $\sum_{k=1}^{3} \frac{k}{k+1}$
9. $\sum_{i=1}^{18}(2-10i)$
10. $\sum_{k=1}^{8} -2(3)^{k-1}$
11. $\sum_{k=1}^{6} \left(\frac{2}{5}\right)^{k-1}$
12. $\sum_{j=12}^{25}(3j+8)$
13. $\sum_{j=2}^{7} \left(\frac{1}{2}\right)^{j-1}$
14. $\sum_{k=5}^{8} k(k-3)$

Determine whether each infinite series converges or diverges. If it converges, evaluate the sum. Give a reason for your answer.

15. $\sum_{i=1}^{\infty} 2\left(\frac{1}{3}\right)^{i-1}$

16. $\sum_{k=1}^{\infty} 4\left(\frac{3}{2}\right)^{k-1}$

17. $\sum_{i=1}^{\infty} -3(2)^{i-1}$

18. $\sum_{j=1}^{\infty} (2j-3)$

19. $\sum_{k=1}^{\infty} \left(\frac{4}{5}\right)^{k-1}$

20. $\sum_{i=5}^{\infty} 2\left(\frac{3}{4}\right)^{i-1}$

Write each of the following series in summation notation. (Hint: You must find the general term for the associated sequence.)

21. $4 + 7 + 10 + 13 + 16 + 19 + 22 + 25 + 28$

22. $3 + 6 + 12 + 24 + 48 + 96 + 192 + 384 + 768 + 1536$

23. $\frac{4}{3} + \frac{4}{9} + \frac{4}{27} + \frac{4}{81} + \cdots$

Distributed Practice Problems

Give the domain for each of the following functions.

24. $y = \sqrt{x+2} - 1$

25. $f(x) = \sqrt[3]{x+1}$

26. $y = \log_2(x+4)$

27. $y = \frac{3x}{x+2} + \frac{1}{\sqrt{x+5}}$