

Sequence and Series Review

For each sequence, state if it is arithmetic, geometric, or neither. Then, write the explicit formula.

1) $-3, 15, -75, 375, -1875, \dots$

2) $-36, -26, -16, -6, 4, \dots$

3) $1, 9, 25, 49, 81, \dots$

Write out and find the sum of each series.

4) $\sum_{n=4}^8 (4n^2 - 3)$

5) $\sum_{k=0}^5 5^k$

Rewrite each series using sigma notation.

6) $501 + 502 + 503 + 504 + 505 + 506$

7) $3 + 9 + 27 + 81$

Find the sum of each geometric series described.

8) $3 + 9 + 27 + 81 + \dots + 2187$

9) $-3 + 6 - 12 + 24 \dots, n = 7$

10) A job offers a starting salary of \$35,400 a year with a yearly increase of 1.5%. What will be the total salary of an employee who has worked for this company for 15 years?

Determine if each geometric series converges or diverges.

11) $-81 - 27 - 9 - 3\dots$

12) $2 - 6 + 18 - 54\dots$

Find the sum of each infinite geometric series described.

13) $\sum_{n=1}^{\infty} 2 \cdot \left(-\frac{1}{3}\right)^{n-1}$

14) $\sum_{i=1}^{\infty} -\left(\frac{1}{4}\right)^{i-1}$

- 15) Due to friction and air resistance each swing of a pendulum is a little shorter than the previous swing. On the first swing it travels 10 inches and on the second it travels 9.5 inches. What will be the total distance traveled by the pendulum when it comes to rest?

Find the sum of each arithmetic series described.

16) $14 + 20 + 26 + 32\dots, n = 20$

- 17) In a swimming competition the first place winner is awarded \$5,000. Second place \$4,500, third place \$4,000 and so on, to the 8th place winner. What is the total amount of winnings given to swimmers in this competition?