

Geometric Sequences and Series

1. Write the first four terms of the following G.S.

$$a = -5, r = -1/4 \quad \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}$$

2. What is the value of the sixth term if $a = 5$ and $r = 2/3$?
3. Which term of the geometric sequence $-20, -20/6, -20/36, \dots$ to $-20/46656$?
4. Insert three geometric means between 6 and 18750.
5. Find the sum of the following geometric series:
 - a) $a = 2, r = -3, n = 7$
 - b) $-5, 15, -45 \dots$ to 8 terms
6. Find the missing terms $a = 4, r = 4, S_n = 5460$

7. Expand and find the sum:

$$a) \sum_{n=6}^9 -2(4)^{n-1}$$

8. Write in summation notation: $4 + 20 + 100 + 500 + \dots$ to 24 terms
9. Write as a fraction: $0.\overline{459}$
10. If a ball is dropped from a height of 200 meters and rebounds $\frac{3}{4}$ the distance it fell, find:
 - a) the distance it fell in the 4th bounce
 - b) the distance it fell in four bounces
 - b) the distance it travels in coming to rest

11. Expand the find the sum $\sum_{n=1}^{\infty} 4\left(\frac{1}{3}\right)^{n-1}$

12. Find the 1st and 9th term if the 3rd term is 20 and the 7th term is 320.
13. The sum of a GP of eight terms if the 2nd term is -384 and the 7th term is 12

Arithmetic Sequences and Series

1. Which of the following sequences are arithmetic?
 - a) $15, 11, 7, 3, \dots$
 - c) $-3.5, -2, -0.5, 1, \dots$
 - c) $4, 8, 16, 32, \dots$
2. State the next 3 terms of each arithmetic sequence.
 - a) $8, -1, -10, \dots$
 - c) $1.25, 3.75, 6.25, \dots$

3. Find the specified term for each arithmetic sequence.
- a) 25, 31, 37...; find t_{14} b) $a = 5$, $d = 1.7$ find the 50th term
- b) $a = 13$, $t_n = -52$, $n = 14$, $d = ?$ d) $t_9 = 4$ $d = -2$, $a = ?$
4. Insert the specified number of arithmetic means between the given numbers.
- a) One between 19 and 30. b) Five between -147 and 42
5. Find the sum of a series where $n = 25$, $a = 7$, $l = 23$
6. Find the sum of the series where $d = 1.8$, $a = 6$, $n = 100$
7. Summarize: $5 + 8 + 11 + 14 + \dots$ to 30 terms
8. Expand and find the sum of $\sum_{n=1}^{12} 6 - 7n$
9. In a certain three digit number, the digits form an AP whose sum is 21. If the digits are reversed in order, the number is increased by 396. Find the number.
10. Find the missing elements $n = 11, l = -13, S_n = -33$