

nth Term of an AP

Chapter 5: Arithmetic Progressions · Topic 1

Key Concept

For example, in the AP 2, 5, 8, 11... (first term $a=2$, common difference $d=3$), the 10th term is calculated as $a_{10} = 2 + (10-1) \times 3 = 2+27 = 29$. This formula allows finding any term in a sequence directly, without needing to list out and add up all the preceding terms one by one, making it especially useful for finding terms far into a long sequence, or for solving real-world problems involving regular patterns, like monthly savings that increase by a fixed amount each month.

Quick Revision Notes

- The nth term formula for an AP is: $a_n = a + (n-1)d$.
- 'a' is the first term, 'd' is the common difference, 'n' is the term's position.
- Example: for AP 2,5,8,11..., the 10th term is $2+(10-1) \times 3 = 29$.
- This formula avoids the need to list all preceding terms to find a distant term.

Practice Questions

- 1 Find the 15th term of the AP 3,7,11,15...
- 2 If the first term of an AP is 5 and the common difference is -2, find the 8th term.
- 3 Explain why the nth term formula is more efficient than listing all terms of an AP.