Today's Learning – 6 February 2026

Topic: Geometric Progression (GP) – Advanced (Infinite GP & Mixed Questions)

Infinite GP Formula: S_infinity = a / (1 - r), where |r| < 1.

nth term of GP: a_n = a * r^(n-1).

Sum of n terms: S_n = a(r^n - 1) / (r - 1), where r ≠ 1.

Important: Infinite GP works only when the absolute value of r is less than 1.

Solved Examples

Example 1: Infinite sum of 1 + 1/2 + 1/4 + ... → Answer: 2

Example 2: Infinite sum of 3 + 1 + 1/3 + ... → Answer: 9/2

Example 3: 4th term of GP: 2, 6, 18... → Answer: 54

Example 4: Bacteria doubles hourly from 5. After 4 hours → Answer: 80

Practice Questions with Answers

1. Infinite sum of 2 + 1 + 1/2 + ... → Answer: 4

2. 5th term of GP: 3, 9, 27... → Answer: 243

3. Find r in GP: 10, 5, 2.5... → Answer: 1/2

4. If a = 4, r = 1/2, infinite sum → Answer: 8

5. Population triples yearly from 2. After 3 years → Answer: 54