

Rate of Growth Quiz Solutions

1. Recursive formula: $a_n = a_{n-1} + 3$ with $a_0 = 5$; Closed formula: $a_n = 3n + 5$; Business will have 41 clients after 12 months.
2. Recursive formula: $a_n = 2a_{n-1}$ with $a_0 = 100$; Closed formula: $a_n = 100 \cdot 2^n$; There will be 6400 bacteria after 6 hours.
3. Differences: 4, 6, 8, 10, ... (arithmetic sequence). It is neither arithmetic nor geometric. The differences form an arithmetic sequence. $a_n = a_{n-1} + 2n$ with $a_1 = 2$.
4. First 5 terms: 5, 8, 13, 20, 29. Differences: 3, 5, 7, 9 (not constant); Ratios: $8/5$, $13/8$, $20/13$, $29/20$ (not constant). $a_n = n^2 + 4$.