

Geometric Sequences

Target: Generate and identify the explicit rule for geometric sequences

Review of Prior Concepts

Is the sequence arithmetic? If yes, find the common difference.

- a) 1,5,9,13,17, ...
- b) 1,4,9,16,25, ...
- c) $4x, x, -2x, -5x, -8x, \dots$



SAT Connection

Passport to Advanced Math

10. Interpret parts of nonlinear expressions in terms of their context

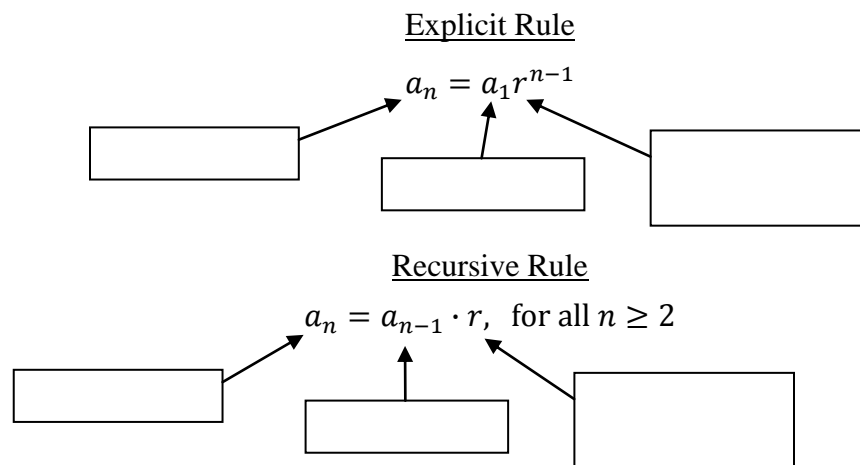
Example: Jessica opened a bank account that earns 2 percent interest compounded annually. Her initial deposit was \$100, and she uses the expression $\$100(x)^t$ to find the value of the account after t years. What is the value of x in the expression?

/	○	○	
.	○	○	○
0	○	○	○
1	○	○	○
2	○	○	○
3	○	○	○
4	○	○	○
5	○	○	○
6	○	○	○
7	○	○	○
8	○	○	○
9	○	○	○

NOTE: You may start your answers in any column, space permitting. Columns you don't need to use should be left blank.

Geometric Sequence

Geometric Sequence – sequence written as $\{a, ar, ar^2, ar^3, \dots, ar^{n-1}, \dots\}$



Example 1: Find the common ratio and 10th term, and write a recursive rule and explicit rule for the sequence: 9,18,36,72, ...

Example 2: Find the common ratio and 10th term, and write a recursive rule and explicit rule for the sequence: 7, 0.7, 0.07, 0.007, ...

Example 3: Given $a_3 = \frac{1}{2}$ and $a_5 = \frac{9}{2}$, find a_1 .

Example 4: The fifth and eighth terms of a geometric sequence are 1920 and 30, respectively, find a_1 .

Example 5: A population of ants is growing at a rate of 8% a year. If there are 160 ants in the initial population, find the number of ants after 6 years.

Example 6: Find which term in the geometric sequence 1, 3, 9, 27, ... is the first to exceed 7,000.