Algebra 1

Topic: Geometric Sequence

Instructions

Solve the following problems related to geometric sequences. Show all steps clearly and check your solutions.

Practice Problems

1. **Find the common ratio of the geometric sequence:**

   (i) $5, 15, 45, 135, \ldots$

   (ii) $2, 10, 50, 250, \ldots$

   (iii) $-4, 8, -16, 32, \ldots$

   (iv) $7, 21, 63, 189, \ldots$

   (v) $1, 0.5, 0.25, 0.125, \ldots$

   (vi) $100, 50, 25, 12.5, \ldots$

2. **Determine whether the sequence is arithmetic, geometric, or neither. Explain your reasoning.**

   (i) $3, 6, 12, 24, \ldots$

   (ii) $10, 20, 30, 40, \ldots$

   (iii) $-5, 10, -20, 40, \ldots$

   (iv) $100, 90, 80, 70, \ldots$

   (v) $1, 4, 9, 16, \ldots$

   (vi) $50, 25, 12.5, 6.25, \ldots$

3. **Write the next three terms of the geometric sequence, and then graph the sequence:**

   (i) $5, 20, 80, 320, \ldots$

   (ii) $-3, 12, -48, 192, \ldots$

   (iii) $81, -27, 9, -3, \ldots$

   (iv) $32, 8, 2, \frac{1}{2}, \ldots$

4. **Write an equation for the nth term of the geometric sequence. Then find a_n:**
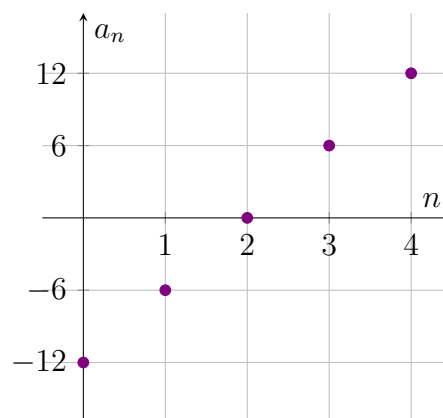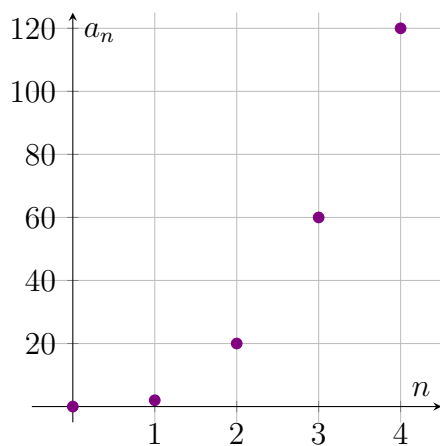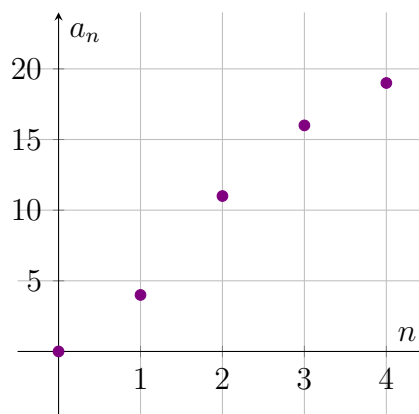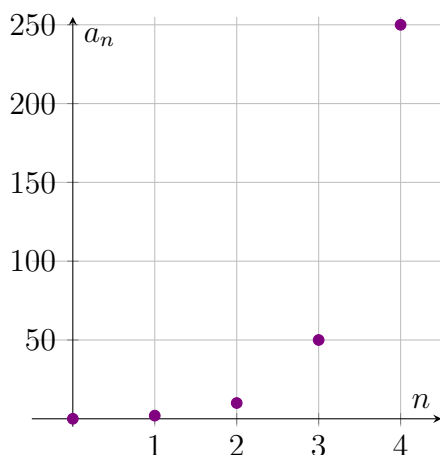
    (i) $2, 8, 32, 128, \ldots$ (iii) $-1, \frac{1}{4}, \frac{1}{16}, \frac{1}{64}, \ldots$

    (ii) $0.6, -3, -15, -75, \ldots$ (iv) $0.1, 0.9, 8.1, 72.9, \ldots$

5. **Determine whether the graph represents an arithmetic sequence, a geometric sequence, or neither.**

Multiple-Choice Questions

1. What is the 5th term of the geometric sequence $2, 6, 18, 54, \ldots$?

    A. 108   C. 324

    B. 162   D. 486

2. Find the sum of the first 4 terms of the geometric sequence $1, 3, 9, 27, \ldots$

3. If the first term of a geometric sequence is 5 and the common ratio is 2, what is the 6th term?

    A. 80   C. 160

    B. 100   D. 320

4. What is the common ratio of the geometric sequence $4, 12, 36, 108, \ldots$?

    A. 3   C. 5

    B. 4   D. 2

5. What is the sum of the first 5 terms of the geometric sequence $2, 8, 32, 128, 512, \ldots$?

    A. 984   C. 1048

    B. 1010   D. 1024

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