Algebra IB: Recursive, Arithmetic and Geometric Review

Find the first 5 terms of each sequence given the recursive formula.

1. \( f(n + 1) = 4f(n) + 3 \) and \( f(1) = 5 \)

2. If the recursive formula is \( f(n + 1) = f(n) - 7 \) and \( f(1) = 6 \) find the 3rd term.

3. Write the recursive formula for the sequence: \(-5, -2, 1, 4, \ldots\)

Sequence | Next three terms? | Arithmetic or Geometric? | State the explicit formula
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4. \( 10, -100, 1000, \ldots \) |  |  |  
5. \( 1, 9, 17, 25, \ldots \) |  |  |  
6. \( 2, 10, 50, 250, \ldots \) |  |  |  

Write the next 4 terms of each arithmetic sequence.

7. \( f(1) = 6, d = -8 \) |  |  |  
8. \( f(1) = 7, d = -5 \) |  |  |  
9. The first term of an arithmetic sequence is 8, and the common difference is $-7$.
   a) Write the explicit formula for the $n$th term.

   b) What is $f(4)$?

   c) What is $f(20)$?

10. Write the explicit formula for the $n$th term of each geometric sequence and then use the formula to find $f(9)$.

   a) $4, 12, 36, 108, ...$

   b) $72, 18, \frac{9}{2}, \frac{9}{8}, ...$

11. Write the geometric explicit formula when $f(1) = -4$ and whose common ratio is 3 and find $f(4)$ of the geometric sequence.

12. Given the explicit formula $f(n) = 8n - 1$, write the recursive formula.