Summative Review for Sequences and Series

You must know your formulas!

There are up to 8 (**Arithmetic**- Recursive, Explicit, Sum (2 forms); **Geometric**-Recursive, Explicit, Sum (2 cases : finite, and infinite sum when convergent)

Keep in mind that Every series is a sum of a sequence. You must confirm whether a sequence/ series is arithmetic or geometric before you start using a formula.

Problems 1- 6 fall in the same category since for all of them you have to find the explicit formula a_n .

1. Find the a_n given $a_1 = -7$ and $d = -3$.

2. Find the *nth* term formula for $-15, -7, 1, \ldots.$

3. Find a_{98} for $-8, -12, -16, \ldots.$

4. Write the following in Sigma Notation: $-6+3+12+21\ldots.$

5. Write the following in Sigma Notation: $\frac{1}{2}+\frac{1}{4}+\frac{1}{8}+\frac{1}{16}\ldots.$

6. Write the explicit and recursive formulas for $\frac{1}{2}, -1, 2, -4\ldots.$

Problems 7- 9 fall in the same category since you are finding the Sum.

7. Find S_{62} for $-1+12+25+38+\ldots.$

8. Evaluate $\sum_{k=1}^{56} -2k+9$

9. Find S_7 for the sequence given by $a_n = \frac{1}{16}(-2)^{n-1}$. (Use the formula)

10. Find n if $S_n = 300$ for the arithmetic sequence 3, 9, 15, 21, ... (now working backwards to find n)

Problems 11- 12 fall in the same category since you are finding an infinite sum.

11. Find the S_∞ for $4+2+1+\frac{1}{2}+\frac{1}{4}+\ldots.$

12. Determine whether convergent or divergent. If convergent find the sum.

a) $\frac{1}{4}+\frac{1}{2}+1+2+\ldots.$ b) $-3+1-\frac{1}{3}+\frac{1}{9}+\ldots.$

13. Given the two terms in the arithmetic sequence, find the explicit formula. (use a system)
$a_{12} = 48$ and $a_{41} = 193$

14. Evaluate $\sum_{k=0}^{4} 3^k - 2k - k^2$