Advanced Algebra
Sequences & Series: Arithmetic & Geometric Sequences & Series - Homework

For 1 through 8 the sequences are arithmetic.
1. Write the first five terms and the 34th term of the sequence when $a_n = 3n - 4$.

2. Find the 20th term in the sequence for which $a_1 = 56$ and the common difference is -5.

3. Find the first term in the sequence for which $a_{17} = 5678$ and $d = 4.3$.

4. The third term in a sequence is 5 and the common difference is -13.2. Find the 80th term.

5. Find the sum of a finite sequence when $a_1 = 75$ and $a_{15} = 325$.

6. Find the number of terms when the first term is 34 and the sum of the terms is 850 and $d = 2$.

7. Write the first five terms of the sequence described by $a_1 = 3$ and $a_n = a_{n-1} + 6$ for $n \geq 2$. Discover a pattern for these terms and find a formula with variable n for the n th term.

8.   Find the common difference, the twelfth term and a formula for the n th term term of the arithmetic sequence -2, 7, 16, 25, 34, $\cdots$.

For 9 through 17 the sequences are geometric.
9. Write the first five terms and the 7th term of the sequence when $a_n = 1.2(0.6)^n$.

10. Find the 8th term in the sequence for which $a_1 = 56$ and the common ratio is -5.

11. Find the first term in the sequence for which $a_{17} = 5678$ and $r = 2$.

12. The third term in a sequence is 5 and the common ratio is -0.2. Find the 14th term.

13. Find the sum of a finite sequence when $a_1 = 75$ and $a_{15} = 325$.

14. Find the number of terms when the first term is 34 and the sum of the terms is 9034480 and the common ratio is 3.

15. Write the first five terms of the sequence described by $a_1 = 3$ and $a_n = (-2)a_{n-1}$ for $n \geq 2$. Discover a pattern for these terms and find a formula with variable n for the n th term.