Unit 10 Lessons 1-2 Homework Set

Write the first four terms of each sequence whose general term is given.

1. $a_n = 3^n$

2. $a_n = (-1)^n(n+3)$

3. $a_n = \frac{2n}{n+4}$

4. $a_n = \frac{(-1)^{n+1}}{2^n-1}$

The sequences are defined using recursion formulas. Write the first four terms of each sequence.

5. $a_0 = 7$ and $a_n = a_{n-1} + 5$ for $n \geq 1$

6. $a_0 = 3$ and $a_n = 4a_{n-1}$ for $n \geq 1$

7. $a_0 = 4$ and $a_n = 2a_{n-1} + 3$ for $n \geq 1$

The general term of a sequence is given and involves a factorial. Write the first four terms of each sequence.

8. $a_n = \frac{n^2}{n!}$

9. $a_n = 2(n+1)!$

Write the first six terms of each arithmetic sequence.

10. $a_1 = 300, d = -90$

11. $a_1 = \frac{5}{2}, d = -\frac{1}{2}$

12. $a_n = a_{n-1} - 0.4, a_1 = 1.6$

Find the indicated term of the arithmetic sequence with first term, a_1 , and common difference, d.

13. Find a_{50} when $a_1 = 7, d = 5$

14. Find a_{60} when $a_1 = 35, d = -3$

Write a formula for the general term (the nth term) of each arithmetic sequence. Do not use a recursion formula. Then use the formula for to find , the 20^{th} tem of the sequence.

15.

16.

17. Find the sum of the first 20 terms of the arithmetic sequence:

18. Find the sum of the first 50 terms of the arithmetic sequence:

19. In 1970, the median age of first marriage for U.S. men was 23.2 (see above chart). On average, this age has increased by approximately 0.12 per year.
    a. Write a formula for the th term of the arithmetic sequence that describes the median age of first marriage for U.S. men years after 1969.
    b. What will be the median age of first marriage for U.S. men in 2009?

20. You are considering two job offers. Company A will start you at $19,000 a year and guarantee a raise of $2600 per year. Company B will start you at a higher salary, $27,000 a year, but will only guarantee a raise of $1200 per year. Find the total salary that each company will pay over a ten-year period. Which company pays the greater total amount?