Chapter 10 Review Worksheet #2

1. Write the first five terms of the sequence. (Assume that *n* begins with 1.)
   $a_n = -7n + 8$

2. Write an expression for the apparent *n*th term of the sequence. (Assume that *n* begins with 1.)
   5, 8, 11, 14, 17

3. Write the first five terms of the sequence defined recursively. $a_1 = -15,\ a_{k+1} = a_k - 3$

4. Simplify the factorial expression.
   $\frac{11!}{8!}$

5. Find the sum of the infinite series.
   $\sum_{i=1}^{\infty} 4\left(\frac{1}{4}\right)^i$

6. Determine whether the sequence is arithmetic. If so, find the common difference.
   8, 13, 18, 23, 28

7. Find a formula for a_n for the arithmetic sequence.
   $a_4 = -23,\ a_7 = -44$

8. Write the first five terms of the arithmetic sequence.
   $a_4 = 13,\ a_{12} = 37$

9. Find the indicated *n*th partial sum of the arithmetic sequence.
   1.9, 4.8, 7.7, 10.6, ..., n = 20

10. Find the indicated *n*th term of the geometric sequence.
    $7th$ term: $5, 20, 80, \ldots$. Also find the sum of the first 7 terms

11. Use summation notation to write the sum.
    $3 - 6 + 12 - \ldots + 192$

12. Find the sum of the infinite geometric series.

$$\sum_{n=0}^{\infty} 4\left(\frac{1}{6}\right)^n$$

13. Change the decimal to a common fraction.

$$.9\overline{27}$$

14. Find the sum of the infinite geometric series: $-\frac{3}{2}+\frac{15}{8}-\frac{75}{32}+.....$

15. Given $x^2, 3x\text{-}5, 16,..$ Find the value(s) of x which make this a geometric sequence.

16. Expand: $(2x-1)^6$

Answers: 1) $1,-6,-13,-20,-27$ 2) $a_n = 3n+2$ 3) $-18,-21,-24,-27$ 4) 990 5) $\frac{4}{3}$ 6) Arithmetic, d = 5

7) $a_n = 5-7n$ 8) 4,7,10,13,16 9) $S_{20} = 589$ 10) $a_7 = 20{,}480$ $S_7 = 27{,}305$ 11) $\sum_{n=1}^{7}\left(-\frac{3}{2}\right)(-2)^n$

12) $S = \frac{24}{5}$ 13) $.9+[.027+.00027+.0000027+...]$

13) S= 51/55 14) Since $|r| \geq 1$, the series diverges and therefore no infinite geometric sum

15) x = -5, and 5/7 16) $64x^6-192x^5+240x^4-160x^3+60x^2-12x+1$