Advanced Algebra
Spring 2006

Final Exam Review
Chapter 11

Name:___________________

1. Write the first five terms of the sequence defined by the formula: $a_n = 27 - 4n$

2. Write a recursive formula for the sequence, then write the next three terms. -2, 5, -9, 19, …

3. Evaluate $\sum_{n=1}^{6}(n^2 + 10n - 2)$

4. Determine if the sequence is arithmetic. If it is, identify the common difference, d.
$\frac{1}{3}, 1, \frac{5}{3}, \frac{7}{3}, 3, \ldots$

5. Find the four arithmetic means between 40 and 100.

6. Write an explicit formula for the *n*th term of the geometric sequence. 20, 5, $\frac{5}{4}, \frac{5}{16}, \ldots$

7. Find the three geometric means between 12 and 3072.

8. Evaluate $\sum_{j=1}^{17}(-3j + 4)$

9. Find the sum of the first 15 multiples of 3.

10. Find S_{22} for the arithmetic series: -6 + (-4) + (-2) + 0 + …

11. Find t_{14} for the geometric sequence 3, 6, 12, 24, …

12. Evaluate. Round to the nearest hundredth, if necessary.
$\sum_{k=1}^{8} 6(2^{k-1})$

13. Find the sum of the infinite geometric series, if it exists.
$\frac{4}{5} + \frac{4}{15} + \frac{4}{45} + \frac{4}{135} + \ldots$

14. Write $0.\overline{49}$ as a fraction in simplest form.

15. Write an infinite geometric series that converges to the given number: 0.934934934934…

16. State the location of the entry in Pascal's triangle, then give the value of the expression. ${}_7C_4$

17. Find the 4th and 6th entries in row 10 of Pascal's triangle.

(a) 120; 210 (b) 210; 210

(c) 126; 84 (d) 120; 252

18. For the expansion of $(r+s)^{22}$,
a) How many terms are in the expansion? ________
b) What is the exponent of *r* in the term that contains s^{15}? ________
c) Write the term that contains r^4.

19. Expand the binomial raised to a power. $(x - 2y)^5$

20. Find the 7th term in the expansion of $(3x - 1)^{10}$.

21. Which one of the following represents the 5th term in the series of: $\sum_{k=0}^{18}\binom{18}{k}a^{18-k}b^k$

(a) $\binom{18}{5}a^{18}b^5$ (b) $\binom{18}{4}a^{14}b^4$ (c) $\binom{18}{5}a^{13}b^5$ (d) $\binom{18}{4}a^{18}b^4$